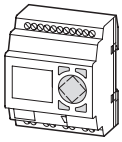
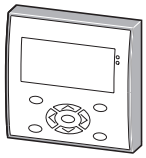
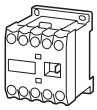
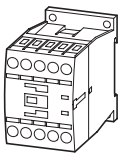
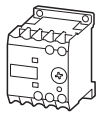
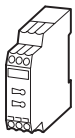
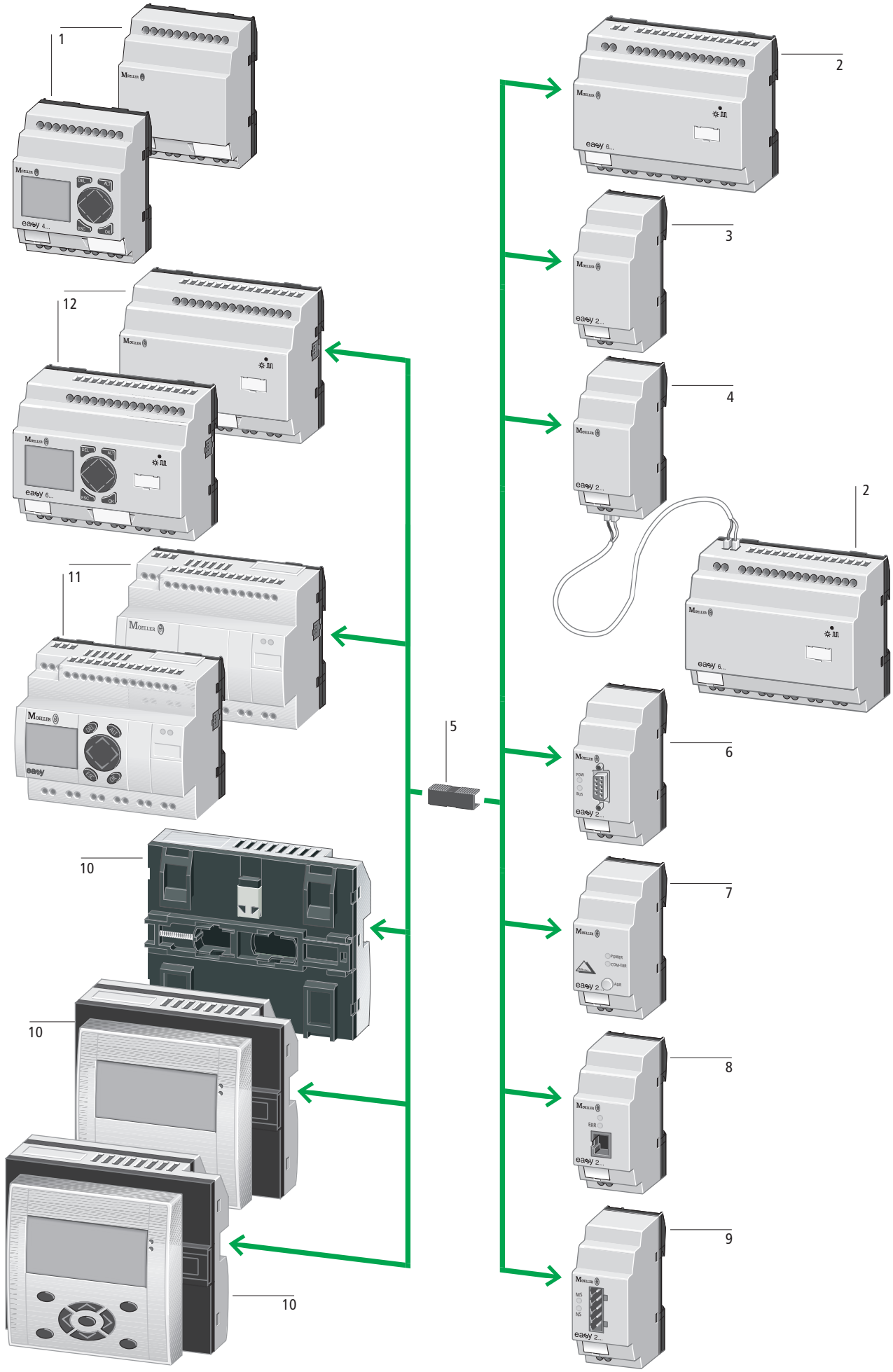





Base units, easy512 1

AC or DC operated

Power supply
AB 24 V AC
AC 100 (115) – 240 V AC, 50/60 Hz
DC 24 V DC
DA 12 V DC

8 digital inputs
(2 inputs usable as analog inputs [all AB, DA and DC versions])

4 relay outputs (max. 10 A)

4 transistor outputs

LCD display, X versions without LCD

Bolt-on and top-hat rail mounting

Connection via screw terminals

→ 4/5

Base units, expandable easy719/721 12

AC or DC operated

Supply voltage
AB 24 V AC
AC 100 – 240 V AC, 50/60 Hz
DA 12 V DC
DC 24 V DC

12 digital inputs
(2 inputs usable as analog inputs [all AB, DA and DC versions])

6 relay outputs (max. 10 A)

8 transistor outputs

LCD display, X versions without LCD

Bolt-on and top-hat rail mounting

Connection via screw terminals

→ 4/5

Base units, expandable easy819/822 11

AC or DC operated

Supply voltage
AC 100 – 240 V, 50/60 Hz
DC 24 V DC

12 digital inputs
(4 inputs usable as analog inputs [all DC versions])

6 relay outputs (max. 10 A)

8 transistor outputs

1 analog output
(optional on DC versions)

LCD display, X versions without LCD

All DC versions with high-speed counters, frequency counters and incremental counters

Bolt-on and top-hat rail mounting

Connection via screw terminals

Network easy-NET built in

→ 4/5

Expansion units 2

Input/output expansion

AC or DC operated

Supply voltage
AC 100 – 240 V AC, 50/60 Hz
DC 24 V DC

12 digital inputs

6 relay outputs (max. 10 A)

8 transistor outputs

Bolt-on and top-hat rail mounting

Connection via screw terminals

→ 4/9

MFD-Titan multi-function display, expandable 10

AC or DC operated

Supply voltage
AC 100 – 240 V AC, 50/60 Hz
DC 24 V DC

12 digital inputs
(4 inputs usable as analog inputs [all DC versions])

4 relay outputs (max. 10 A)

4 transistor outputs

1 analog output
(optional on DC versions)

LCD display, full graphics, monochrome

Bolt-on and top-hat rail mounting
(2 × 22.5 mm, display fastened using 2 threaded fixing rings)

Spring-loaded terminals

Network easy-NET built in

→ 4/12

Expansion unit 3

EASY202-RE

Output expansion

2 relay outputs (max. 10 A)

Bolt-on and top-hat rail mounting

Connection via screw terminals

→ 4/9

Coupling unit 4

EASY200-EASY

For the remote connection of an easy6... expansion unit via 2-pole connecting cable (max. 30 m)
e.g. NYM 3 × 1.5 mm²

→ 4/9

EASY-LINK-DS data plug 5

For connecting the base unit with the expansion unit (ordering only necessary if required for replacement, since this is supplied with each expansion unit)

→ 4/14

Network connections 6

EASY205-ASI
AS-Interface connection as slave

→ 4/9

Network connections 7

EASY204-DP
PROFIBUS DP connection as slave

→ 4/9

Network connections 8

EASY221-CO
CANopen connection
(in preparation for easy800, MFD)

→ 4/9

Network connections 9

EASY222-DN
DeviceNet connection
(in preparation for easy800, MFD)
PROFIBUS DP connection as slave

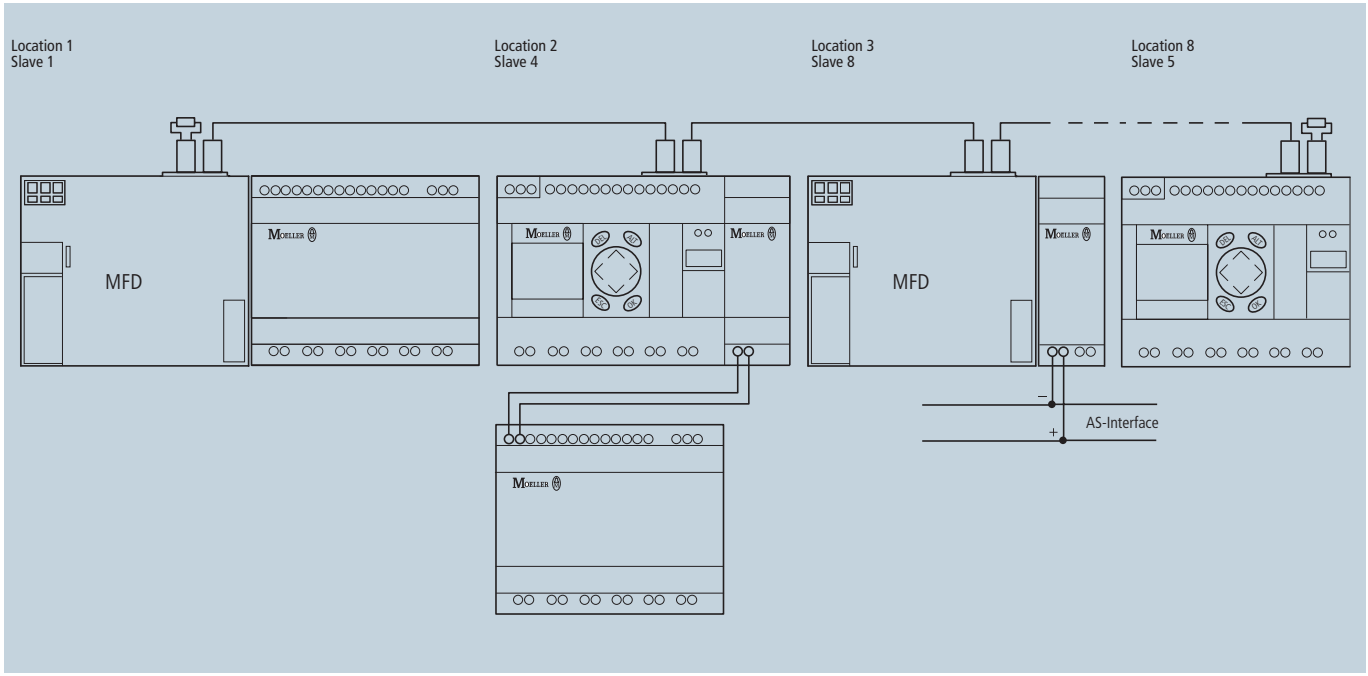
→ 4/9

Features of easy control relay, MFD-Titan

- Extensive range of operating temperatures -25 °C/+55 °C
- Standard front dimension for mounting in service distribution boards, 18 mm space unit
- Electronic wiring by key stroke, LCD and keypad or via software (PC)
- Zero-voltage safe internal and external circuit configuration storage in EEPROM memory
- 3 contacts (easy500, easy700), 4 contacts (easy800, MFD-Titan) as make contacts or break contacts in series plus one coil per current path
- Series and parallel connection
- 128 current paths (easy500, easy700)
- 256 current paths (easy800, MFD)
- Integral password protection for circuit configuration and relay and parameter value presets
- Current flow display for checking the circuit configuration (LCD types)
- Menu guidance in 12 languages (easy500, easy700) or 10 languages (easy800, MFD) : English, German, French, Italian, Spanish, Portuguese, Dutch, Swedish, Polish, Turkish, (Czech, Hungarian)
- Circuit configuration can be saved on memory card with LCD types (X versions: read only)

Functions

- 16 timing relays 0.01 s to 99 h 59 min (easy500, easy700)
- 32 timing relays 0.005 s to 99 h 59 min (easy800, MFD)
  - On-delayed (optionally: random switching)
  - Off-delayed (optionally: random switching)
  - On-delayed and Off-delayed (optionally: random switching) pulse shaping
  - Flashing
- 16 counting relays (easy500, easy700) up-, down counting, 00000 to 32000
- 32 counting relays (easy800, MFD)
  - Up-, down counting, value range $\pm 2^{31}$
- 2 high-speed counters (easy500, easy700)
  - Max. 1 kHz, optionally instead of standard counter
- 4 high-speed counters (easy800, MFD)
  - Max. 5/3 kHz
- 2 frequency counters (easy500, easy700)
  - Max. 1 kHz, optionally instead of standard counter
- 2 incremental value counters (easy800, MFD)
  - Max. 3 kHz
- 4 hours-run counters
  - Super-retentive saving of hours-run value (e.g. even at change of program)
- 8 weekly timers (easy500, easy700)
- 32 weekly timers (easy800, MFD)
  - 4 channels per timer, each channel offers one On/Off time
- 8 annual timers (easy500, easy700)
- 32 annual timers (easy800, MFD)
  - 4 channels per timer, each channel offers one On/Off time
- 16 analog value comparators (easy500, easy700)
- 32 analog value comparators (easy800, MFD)
  - Range: 0 – 10 V DC
  - Resolution: 10 Bit (1024 increments)
- 16 freely editable text displays (easy500, easy700)
  - 4 × 12 characters, editable via EASY-SOFT
- 32 freely editable text displays (easy800)
  - 4 × 16 characters, editable via EASY-SOFT
- 32 markers or auxiliary relays (easy500, easy700)
- 96 markers or auxiliary relays (easy800, MFD)
- 32 arithmetic modules (easy800, MFD)
  - Functions: ADD, SUB, MUL, DIV
- 32 Boolean functions (easy800)
  - Functions: AND, OR, NOT
- Retentive actual values (easy500, easy700)
  - 16 markers, 6 timing relays, 8 counters
  - 4 hours-run counters, super-retentive
- Retentive actual values (easy800, MFD)
  - 200 Bytes possible, data = MB (Marker Bytes) Function blocks = C; CF; CH; CI; DB; T i. e. 80 MB and up to 40 modules depending on storage space requirement
  - 4 hours-run counters, super-retentive



Networking

Addressing the slaves:
When all slaves are connected, the addresses can be assigned automatically, each slave number being assigned on the basis of geographical location. Slaves can also be addressed individually. The geographical address does not have to match the slave address.

Example of a network topology:
4 slaves are interconnected. Slave address 1 is always the first location. All the other slave addresses do not correspond to the geographical location.

Technical data

- A total of 320 digital inputs and outputs are possible
- 8 slaves
- Baud rate: 10 kBit/s to 1000 kBit/s
- Length: up to 1000 m possible
- Operating modes.
  – 1 master (location 1, slave address 1) and 7 intelligent slaves
  up to
  – 1 master (location 1, slave address 1) and 7 intelligent slaves
- Transfer of up to 32 double words
- Synchronization of time, date
- Direct access to inputs/outputs
- Program down- and upload via easy-NET

Change

The familiar and highly successful easy control relays of the easy400 and easy600 series, are now becoming even more efficient, versatile and quick. In order to advertise this new efficiency to the user externally too, the type references were modified accordingly.

The easy400 series became the improved series: easy500. Correspondingly, the easy600 series became the improved series: easy700. All the devices are fully downwards compatible. This means that all the already created circuit diagrams and programs can be transferred to and used on the new devices without any changes being necessary.

The following table shows the existing type references with the corresponding new ones and relevant Article numbers:

Previous Type	Previous Article no.	New Type	New Article no.
EASY412-AC-R	202405	EASY512-AC-R	274103
EASY412-AC-RC	202406	EASY512-AC-RC	274104
EASY412-AC-RCX	212308	EASY512-AC-RCX	274105
EASY412-DA-RC	224471	EASY512-DA-RC	274106
EASY412-DA-RCX	268232	EASY512-DA-RCX	274107
EASY412-DC-R	202403	EASY512-DC-R	274108
EASY412-DC-RC	202404	EASY512-DC-RC	274109
EASY412-DC-RCX	221596	EASY512-DC-RCX	274110
EASY412-DC-TC	207808	EASY512-DC-TC	274111
EASY412-DC-TCX	212307	EASY512-DC-TCX	274112
EASY619-AC-RC	218721	EASY719-AC-RC	274115
EASY619-AC-RCX	212312	EASY719-AC-RCX	274116
EASY619-DC-RC	224473	EASY719-DC-RC	274119
EASY619-DC-RC	224474	EASY719-DC-RCX	274120
EASY621-DC-TC	218719	EASY721-DC-TC	274121
EASY621-DC-TCX	212311	EASY721-DC-TCX	274122

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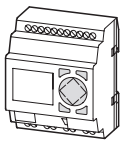
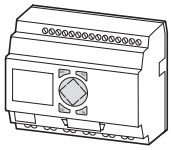
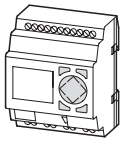
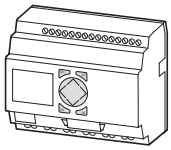
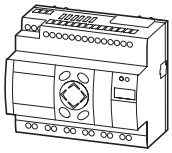
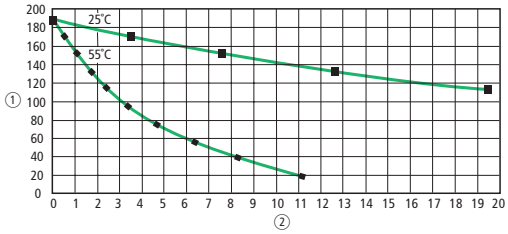
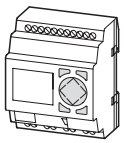
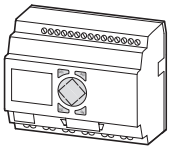
	Description	Type Article no.	Price See Price List	Std. pack
Base units				
24 V AC				
	• 8 digital inputs (2 inputs available as analog inputs) • 4 relay outputs • LCD display • Operating buttons • Screw terminals • Timer	**EASY512-AB-RC** 274101		1 off
	Features same as EASY512-AB-RC, without keypad and LCD display	**EASY512-AB-RCX** 274102		
	• 12 digital inputs (4 inputs available as analog inputs) • 6 relay outputs • LCD display • Operating buttons • Screw terminals • Timer • Can be expanded using easy expansion units	**EASY719-AB-RC** 274113		
	Features same as EASY719-AB-RC, without keypad and LCD display	**EASY719-AB-RCX** 274114		
115/230 V AC				
	• 8 digital inputs • 4 relay outputs • LCD display • Operating buttons • Screw terminals	**EASY512-AC-R** 274103		1 off
	Features same as EASY512-AC-R, with additional timer	**EASY512-AC-RC** 274104		
	Features same as EASY512-AC-RC, without keypad and LCD display	**EASY512-AC-RCX** 274105		
	• 12 digital inputs • 6 relay outputs • LCD display • Operating buttons • Screw terminals • Timer • Can be expanded using easy expansion units	**EASY719-AC-RC** 274115		
	Features same as EASY719-AC-RC, without keypad and LCD display	**EASY719-AC-RCX** 274116		
	• 12 digital inputs • 6 relay outputs • LCD display • Operating buttons • Screw terminals • Timer • Can be expanded using easy expansion units • Network easy-NET	**EASY819-AC-RC** 256267		
	Features same as EASY819-AC-RC, without keypad and LCD display	**EASY819-AC-RCX** 256268		

Notes

Real-time clock back-up (only for devices with real-time clock)

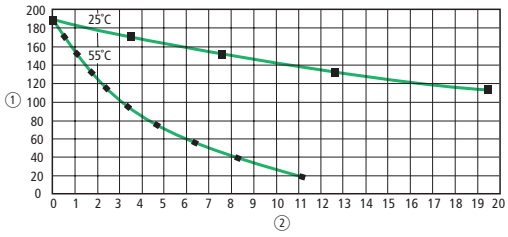


① Back-up time (hours)
② Service life (years)

	Description	Type Article no.	Price See Price List	Std. pack
Base units				
12 V DC				
	• 8 digital inputs (2 inputs available as analog inputs) • 4 relay outputs • LCD display • Operating buttons • Screw terminals • Timer	**EASY512-DA-RC** 274106		1 off
	Features same as EASY512-DA-RC, without keypad and LCD display	**EASY512-DA-RCX** 274107		
	• 12 digital inputs (4 inputs available as analog inputs) • 6 relay outputs • LCD display • Operating buttons • Screw terminals • Timer • Can be expanded using easy expansion units	**EASY719-DA-RC** 274117		
	Features same as EASY719-DA-RC, without keypad and LCD display	**EASY719-DA-RCX** 274118		

Notes

Real-time clock back-up (only for devices with real-time clock)



① Back-up time (hours)
② Service life (years)

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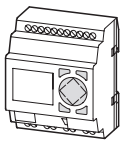
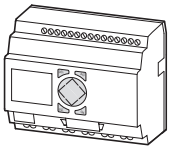
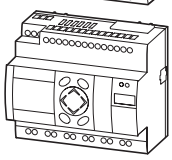
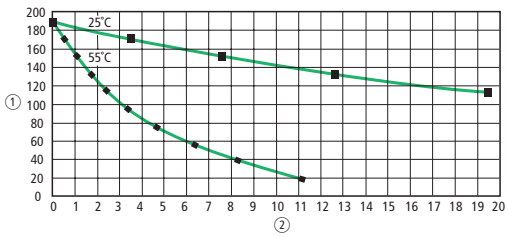
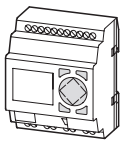
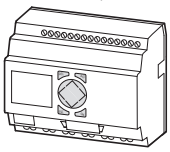
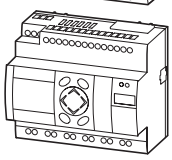
	Description	Type Article no.	Price See Price List	Std. pack
Base units				
24 V DC				
	• 8 digital inputs (2 inputs available as analog inputs) • 4 relay outputs • LCD display • Operating buttons • Screw terminals	**EASY512-DC-R** 274108		1 off
	Features same as EASY512-DC-R, with additional timer	**EASY512-DC-RC** 274109		
	Features same as EASY512-DC-RC, without keypad and LCD display	**EASY512-DC-RCX** 274110		
	• 8 digital inputs (2 inputs available as analog inputs) • 4 transistor outputs • LCD display • Operating buttons • Screw terminals • Timer	**EASY512-DC-TC** 274111		
	Features same as EASY512-DC-TC, without keypad and LCD display	**EASY512-DC-TCX** 274112		
	• 12 digital inputs (4 inputs available as analog inputs) • 6 relay outputs • LCD display • Operating buttons • Screw terminals • Timer • Can be expanded using easy expansion units	**EASY719-DC-RC** 274119		
	Features same as EASY719-DC-RC, without keypad and LCD display	**EASY719-DC-RCX** 274120		
	• 12 digital inputs (4 inputs available as analog inputs) • 8 transistor outputs • LCD display • Operating buttons • Screw terminals • Timer • Can be expanded using easy expansion units	**EASY721-DC-TC** 274121		
	Features same as EASY721-DC-TC, without keypad and LCD display	**EASY721-DC-TCX** 274122		
	• 12 digital inputs (4 inputs available as analog inputs) • 6 relay outputs • LCD display • Operating buttons • Screw terminals • Timer • Can be expanded using easy expansion units • Network easy-NET	**EASY819-DC-RC** 256269		
	Features same as EASY819-DC-RC, without keypad and LCD display	**EASY819-DC-RCX** 256270		

Notes

Real-time clock back-up (only for devices with real-time clock)

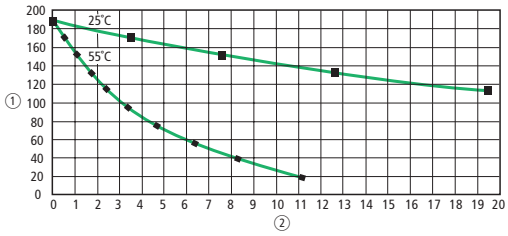


① Back-up time (hours)
② Service life (years)

	Description	Type Article no.	Price See Price List	Std. pack
Base units				
24 V DC				
	• 12 digital inputs (4 inputs available as analog inputs) • 6 relay outputs • 1 analog output • LCD display • Operating buttons • Screw terminals • Timer • Can be expanded using easy expansion units • Network easy-NET	**EASY820-DC-RC** 256271		1 off
	Features same as EASY820-DC-RC, without keypad and LCD display	**EASY820-DC-RCX** 256272		
	• 12 digital inputs (4 inputs available as analog inputs) • 8 transistor outputs • LCD display • Operating buttons • Screw terminals • Timer • Can be expanded using easy expansion units • Network easy-NET	**EASY821-DC-TC** 256273		
	Features same as EASY821-DC-TC, without keypad and LCD display	**EASY821-DC-TCX** 256274		
	• 12 digital inputs (4 inputs available as analog inputs) • 8 transistor outputs • 1 analog output • LCD display • Operating buttons • Screw terminals • Timer • Can be expanded using easy expansion units • Network easy-NET	**EASY822-DC-TC** 256275		
	Features same as EASY822-DC-TC, without keypad and LCD display	**EASY822-DC-TCX** 256276		
	Customized with company logo inscription, programmed with user program	**EASY-COMBINATION-*** 257823		

Notes

Real-time clock back-up (only for devices with real-time clock)



① Back-up time (hours)
② Service life (years)

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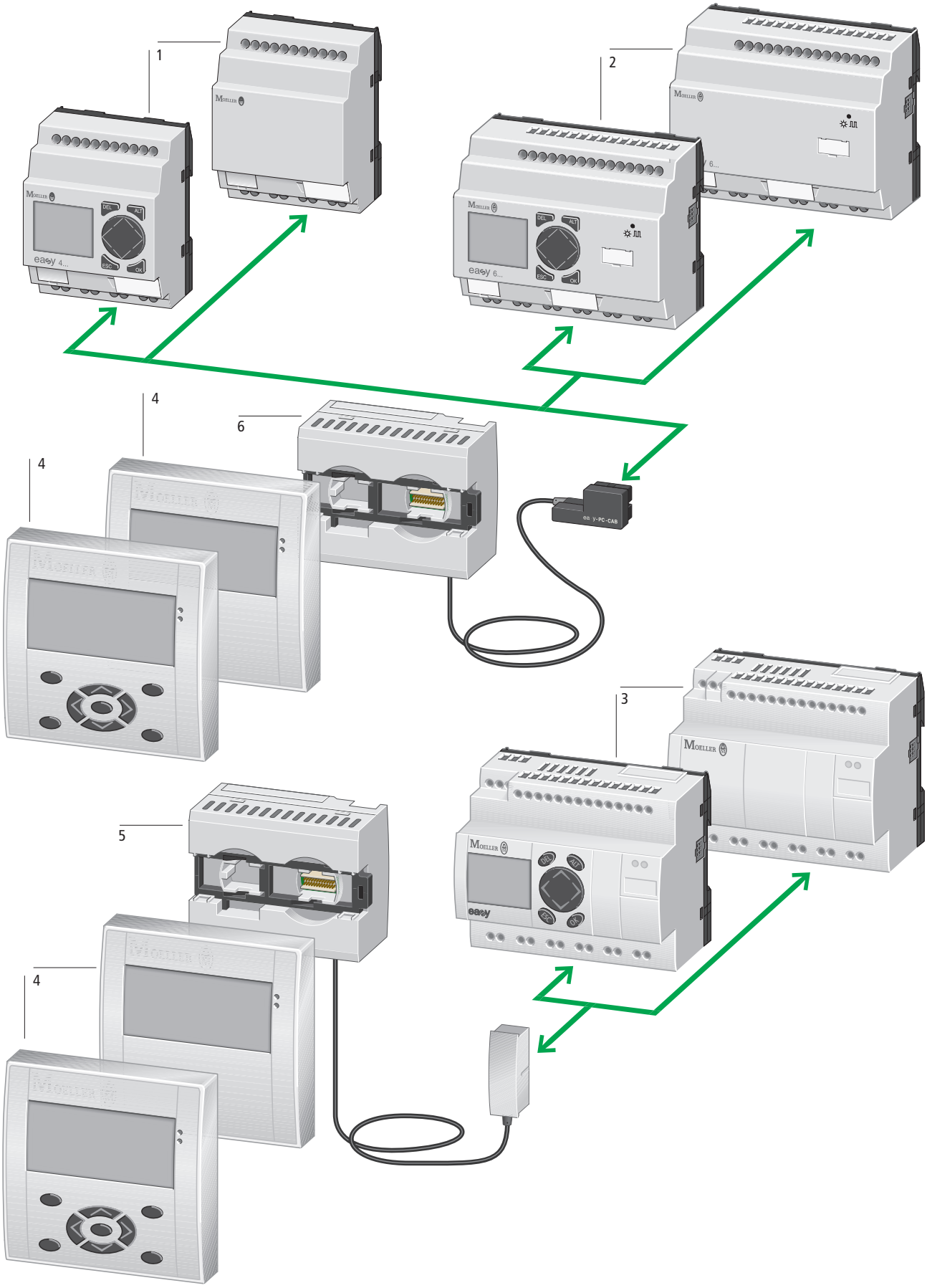
	Description	Type Article no.	Price See Price List	Std. pack
Expansion units				
115/230 V AC				
	• 12 digital inputs • 6 relay outputs	**EASY618-AC-RE** 212314		1 off
24 V DC				
	• 12 digital inputs • 6 relay outputs	**EASY618-DC-RE** 232112		1 off
	• 12 digital inputs • 8 transistor outputs	**EASY620-DC-TE** 212313		1 off
Without power supply				
	• 2 relay outputs (common potential) (Not for use in combination with EASY719-DA-... base units)	**EASY202-RE** 232186		1 off
Coupling unit				
	• Gateway for coupling with a base unit: easy700, easy800, MFD-Titan • Terminals for remote expansion, up to 30 m to/from the expansion unit	**EASY200-EASY** 212315		1 off
Expansion units for networking				
AS-Interface				
	• AS-Interface connection • Slave • 4 inputs, 4 outputs, 4 parameter bits • Addresses available: 0 to 31	**EASY205-ASI** 221598		1 off
PROFIBUS DP				
	• PROFIBUS DP slave • Addresses available: 1 to 126	**EASY204-DP** 212316		1 off
CANopen				
	• CANopen interface • Addresses available: 1 to 127	**EASY221-CO** 233539		1 off
DeviceNet				
	• DeviceNet interface • Addresses available: 0 to 63	**EASY222-DN** 233540		1 off



Power supply unit/communication module	6
MFD-CP4-500	
Supply voltage: 24 V DC	
Serial interface	
Spring-loaded terminals	
Programming port connection to easy500/easy700 as display repeater with MFD-80-... (ASCII characters)	
With integral extension cable (5 m, can be cut to length)	
→ 4/13	

MFD-Titan multi-function display, expandable	4
AC or DC operated	
Supply voltage AC 100 – 240 V AC, 50/60 Hz DC 24 V DC	
12 digital inputs (4 inputs usable as analog inputs [all DC versions])	
4 relay outputs (max. 10 A)	
4 transistor outputs	
1 analog output (optional on DC versions)	
LCD display, full graphics, monochrome	
Bolt-on and top-hat rail mounting (2 × 22.5 mm, display fastened using 2 threaded fixing rings)	
Spring-loaded terminals	
Network easy-NET built in	
→ 4/12	

Base units, easy512	1
AC or DC operated	
Power supply AB 24 V AC AC 100 (115) – 240 V AC, 50/60 Hz DC 24 V DC DA 12 V DC	
8 digital inputs (2 inputs usable as analog inputs [all AB, DA and DC versions])	
4 relay outputs (max. 10 A)	
4 transistor outputs	
LCD display, X versions without LCD	
Bolt-on and top-hat rail mounting	
Connection via screw terminals	
→ 4/5	

Power supply unit/communication module	5
MFD-CP4-800	
Supply voltage: 24 V DC	
Serial interface	
Spring-loaded terminals	
Programming port connection to easy800/MFD..CP8-.. as display repeater with MFD-80-... (ASCII characters)	
With integral extension cable (5 m, can be cut to length)	
→ 4/13	

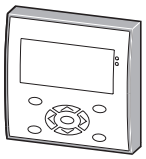
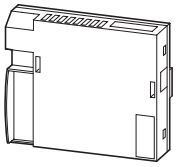
Base units, expandable easy719/721	2
AC or DC operated	
Supply voltage AB 24 V AC AC 100 – 240 V AC, 50/60 Hz DA 12 V DC DC 24 V DC	
12 digital inputs (2 inputs usable as analog inputs [all AB, DA and DC versions])	
6 relay outputs (max. 10 A)	
8 transistor outputs	
LCD display, X versions without LCD	
Bolt-on and top-hat rail mounting	
Connection via screw terminals	
→ 4/5	

Base units, expandable easy819/822	3
AC or DC operated	
Supply voltage AC 100 – 240 V, 50/60 Hz DC 24 V DC	
12 digital inputs (4 inputs usable as analog inputs [all DC versions])	
6 relay outputs (max. 10 A)	
8 transistor outputs	
1 analog output (optional on DC versions)	
LCD display, X versions without LCD	
All DC versions with high-speed counters, frequency counters and incremental counters	
Bolt-on and top-hat rail mounting	
Connection via screw terminals	
Network easy-NET built in	
→ 4/5	

Features of easy control relay, MFD-Titan
- Extensive range of operating temperatures -25 °C/+55 °C
- Standard dimensions for mounting in service distribution boards, 18 mm space unit
- Electronic wiring by key stroke, LCD and keypad or via software (PC)
- Zero-voltage safe internal and external circuit configuration storage in EEPROM-memory
- 3 contacts (easy500, easy700), 4 contacts (easy800, MFD) as make contacts or break contacts in series plus one coil per current path
- Series and parallel connection
- 128 current paths (easy500, easy700)
- 256 current paths (easy800, MFD)
- Integral password protection for circuit configuration and relay and parameter value presets
- Current flow display for checking the circuit configuration (LCD types)

- Menu guidance in 12 languages (easy500, easy700) or 10 languages (easy800, MFD) : English, German, French, Italian, Spanish, Portuguese, Dutch, Swedish, Polish, Turkish, (Czech, Hungarian)
- Circuit configuration can be saved on memory card with LCD types (X versions: read only)

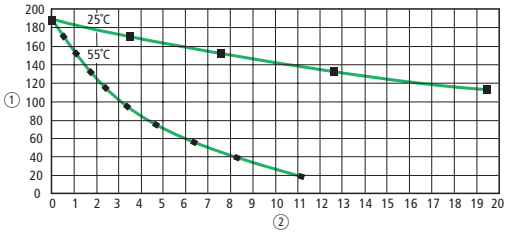
Functions
- 16 timing relays 0.01 s to 99 h 59 min (easy500, easy700)
- 32 timing relays 0.005 s to 99 h 59 min (easy800, MFD)
  – On-delayed (optionally: random switching)
  – Off-delayed (optionally: random switching)
  – On-delayed and Off-delayed (optionally: random switching)
  – Single pulse
  – Flashing
- 16 counting relays (easy500, easy700)
  – Up-, down counting, 00000 to 32000
- 32 counting relays (easy800, MFD)
  – Up-, down counting, value range $\pm 2^{31}$
- 2 high-speed counters (easy500, easy700)
  – Max. 1 kHz, optionally instead of standard counter
- 4 high-speed counters (easy800, MFD)
  – Max. 5/3 kHz
- 2 frequency counters (easy500, easy700)
  – Max. 1 kHz, optionally instead of standard counter
- 2 incremental value counters (easy800, MFD)
  – Max. 3 kHz
- 4 hours-run counters
  – Super-retentive saving of hours-run value (e.g. even at change of program)
- 8 weekly timers (easy500, easy700)
- 32 weekly timers (easy800, MFD)
  – 4 channels per timer, each channel offers one On/Off time
- 8 annual timers (easy500, easy700)
- 32 annual timers (easy800, MFD)
  – 4 channels per timer, each channel offers one On/Off time
- 16 analog value comparators (easy500, easy700)
- 32 analog value comparators (easy800, MFD)
  – Range: 0 – 10 V DC
  – Resolution: 10 Bit (1024 increments)
- 16 freely editable text displays (easy500, easy700)
  – 4 × 12 characters, editable via EASY-SOFT
- 32 freely editable text displays (easy800)
  – 4 × 16 characters, editable via EASY-SOFT
- 32 markers or auxiliary relays (easy500, easy700)
- 96 markers or auxiliary relays (easy800, MFD)
- 32 arithmetic modules (easy800, MFD)
  – Functions: ADD, SUB, MUL, DIV
- 32 Boolean functions (easy800)
  – Functions: AND, OR, NOT
- Retentive actual values (easy500, easy700)
  – 16 markers, 6 timing relays, 8 counters
  – 4 hours-run counters, super-retentive
- Retentive actual values (easy800, MFD)
  – 200 Bytes possible, data = MB (Marker Bytes) function blocks = C; CF; CH; CI; DB; T i. e. 80 MB and up to 40 modules depending on storage space requirement
  – 4 hours-run counters, super-retentive

	Description	Type Article no.	Price See Price List	Std. pack
Multi-function display				
Display/operating unit IP65, NEMA 4x, Removable Titan front frame				
	Graphics display: 132 × 64 pixels Switchable backlight Freely definable status LEDs red + green Customized laser inscription via MFD-Combination-*	**MFD-80** 265250		1 off
	Graphics display: 132 × 64 pixels Switchable backlight Freely definable status LEDs red + green Illuminated keypad with: 4 cursor buttons 4 function buttons 1 mode button Customized laser inscription via MFD-Combination-*	**MFD-80-B** 265251		1 off
Individual laser inscription Only for MFD-80/-B				
	Inscription effected via the inscription editor in EASY-SOFT-PRO or by downloading the inscription editor only from → www.moeller.net	**MFD-COMBINATION-*** 265260		1 off
Power supply/CPU modules IP20, cage clamp terminals				
	115/230 V AC			
	Serial interface I/O modules and easy expansions connectable	**MFD-AC-CP8-ME** 274091		1 off
	Serial interface I/O modules and easy expansions connectable Network easy-NET	**MFD-AC-CP8-NT** 274092		1 off
	24 V DC			
	Serial interface I/O modules and easy expansions connectable	**MFD-CP8-ME** 267164		1 off
	Serial interface I/O modules and easy expansions connectable Network easy-NET	**MFD-CP8-NT** 265253		1 off

Notes

The MFD-Titan multi-function display can be run in the following configurations:
Power supply unit/CPU
Power supply unit/CPU + I/O modules
Power supply unit/CPU + display and operating unit
Power supply unit/CPU + display and operating unit + I/O modules
Power supply unit/communication modules + display and operating unit

Real-time clock back-up (only for devices with real-time clock)



① Back-up time (hours)
② Service life (years)

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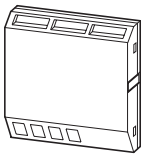
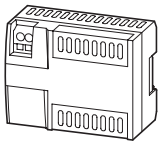
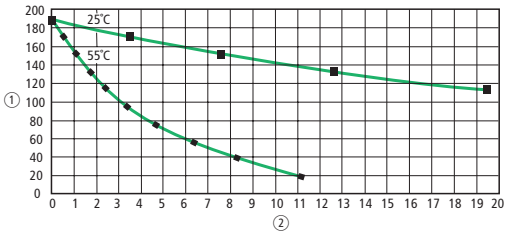
	Description	Type Article no.	Price See Price List	Std. pack
Multi-function display				
I/O modules IP20, cage clamp terminals				
	115/230 V AC			
	12 digital inputs 4 relay outputs For MFD-AC-CP8...	**MFD-AC-R16** 274093		1 off
	24 V DC			
	12 digital inputs (4 inputs available as analog inputs) 4 relay outputs For MFD-CP8...	**MFD-R16** 265254		1 off
	12 digital inputs (4 inputs available as analog inputs) 4 transistor outputs For MFD-CP8...	**MFD-T16** 265255		1 off
	12 digital inputs (4 inputs available as analog inputs) 4 relay outputs 1 analog output For MFD-CP8...	**MFD-RA17** 265364		1 off
	12 digital inputs (4 inputs available as analog inputs) 4 transistor outputs 1 analog output For MFD-CP8...	**MFD-TA17** 265256		1 off
Power supply unit/communication modules IP20, cage clamp terminals				
	24 V DC			
	Serial interface Programming port connection to easy500/easy700 as display repeater with MFD-80.. (ASCII characters) With integral connecting cable (5 m, can be cut to length)	**MFD-CP4-500** 274094		1 off
	Serial interface Programming port connection to easy800/MFD-..-CP8-... as display repeater with MFD-80.. (ASCII characters) With integral connecting cable (5 m, can be cut to length)	**MFD-CP4-800** 274095		1 off

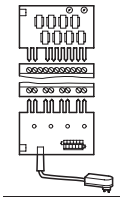
Notes

The MFD-Titan multi-function display can be run in the following configurations:
Power supply unit/CPU
Power supply unit/CPU + I/O modules
Power supply unit/CPU + display and operating unit
Power supply unit/CPU + display and operating unit + I/O modules
Power supply unit/communication modules + display and operating unit

Real-time clock back-up (only for devices with real-time clock)



① Back-up time (hours)
② Service life (years)

	Description	Type Article no.	Price See Price List	Std. pack
Accessories				
Software	Programming and operating software CD, menu selection in 7 languages, installation on WIN NT 4.0 SP6 and higher, WIN2000, WIN XP			
	Basic version of EASY-SOFT for easy400/500/600/700	**EASY-SOFT-BASIC** 284545		1 off
	EASY-SOFT for easy400/600/800, (additionally, installation possible on WIN98, WIN ME)	**EASY-SOFT** 202407		1 off
	Professional version, as EASY-SOFT, additionally programming and visualization of MFD-Titan.	**EASY-SOFT-PRO** 266040		1 off
Memory card				
	32k module for saving the entire easy program for easy500, easy700.	**EASY-M-32K** 270884		1 off
	256k module for saving the entire easy program for easy800 and MFD-Titan.	**EASY-M-256K** 256279		1 off
PC programming cable				
	Length: 2m, for connection to 9-pole serial PC interface with interface electronics for easy500 and easy700	**EASY-PC-CAB** 202409		1 off
	Length: 2m, for connection to 9-pole serial PC interface with interface electronics for easy800 and MFD-Titan	**EASY800-PC-CAB** 256277		1 off
Input/output simulator				
	Simulator with 115/230 V AC plug-in power supply unit/24 V DC output, suitable for easy500-DC	**EASY412-DC-SIM** 212318		1 off
	As EASY412-DC-SIM with 120 V AC plug-in power supply unit/24 V DC output, plug suitable for North America	**EASY412-DC-SIM-NA** 222566		1 off
Fixing bracket For screw fixing to mounting plate				
	For screw fixing to mounting plate 3 fixing brackets per easy400, 500, 600, 700, 800 2 brackets per EASY2... 3 fixing brackets per MFD-CP8.., MFD-AC-CP8...	**ZB4-101-GF1** 061360		9 off
Coupling piece				
	Spare link between base unit and expansion units	**EASY-LINK-DS** 221607		1 off
Telescopic clip				
	With 35mm top-hat rail to IEC/EN 60715 for mounting depth compensation when rear mounting in CI-K... enclosures and cabinets. Steplessly adjustable via scales from 75 to 115 mm. Screw and snap fixing (also suitable for PKZM0, FAZ, FIP, ETR, EMR4 etc.)	**M22-TA** 226161		1 off
Switched-mode power supply unit Primary-switched mode, regulated				
	Rated input voltage: 50/60 Hz: 115/230 V Rated output voltage: 24 V/12 V DC Rated output current: 0.25 A/20 A	**EASY200-POW** 229424		1 off
	Rated input voltage: 50/60 HZ: 115/230 V AC Rated output voltage (residual ripple): 24 V DC (± 3 %) Rated output current: 1.25 A	**EASY400-POW** 212319		1 off
Series connected device To increase the AC input current				
	6 channels	**EASY256-HCI** 231168		1 off

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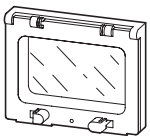
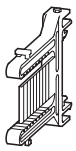
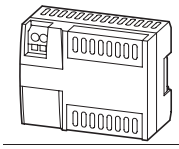
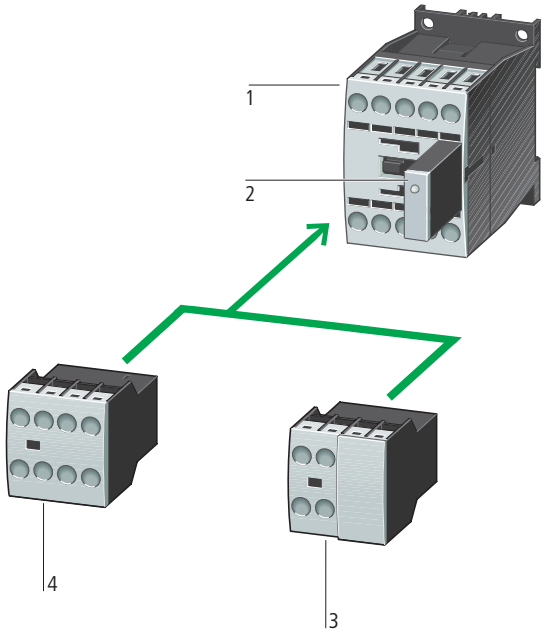
	Description	Type Article no.	Price See Price List	Std. pack
Accessories				
Network connecting cable (remote coupling) to easy-NET, fully prepared for easy800, MFD-AC-CP8-NT and MFD-CP8-NT				
	Length: 0.3 m	**EASY-NT-30** 256283		1 off
	Length: 0.8 m	**EASY-NT-80** 256284		1 off
	Length: 1.5 m	**EASY-NT-150** 256285		1 off
Data cable				
	4-core 4 × 0.14 mm², twisted pair, AWG 26 Length: 100 m	**EASY-NT-CAB** 256286		1 off
Remote coupling				
	Bus connection plug for easy-NET network, 8-pole, RJ45	**EASY-NT-RJ45** 256280		10 off
	Bus termination resistor, complete with plug for easy-NET network	**EASY-NT-R** 256281		2 off
	Crimping tool for 8-pole plug, RJ45	**EASY-RJ45-TOOL** 256282		1 off
Hinged inspection window (SKF) • Mounting frame with hinged window • Material: transparent polycarbonate, UV-resistant • Self-extinguishing to ASTM-D 635/72, UNE 53 315-75, UNE 20 672/83 (2-1) and IEC-695-2-1 • Degree of protection IP65 to IEC-144 and 525				
	94 mm × 77 mm × 25 mm (4 space units)	**SKF-FF4** 233780		1 off
	130 mm × 77 mm × 25 mm (6 space units)	**SKF-FF6** 233781		1 off
Top-hat rail adapter for hinged inspection window				
	12 mm × 66 mm × 82 mm Installation on hinged inspection window, for front fitting of devices. Complete set, consisting of 2 brackets and 4 screws	**SKF-HA** 233782		1 off
PROFIBUS DP bus connector plug				
	Pins, 9-pole Cable entry, angled by 90°	**ZB4-209-DS2** 206982		1 off
	Metallised insulated housing Maximum transfer rate 12 MBit/s Integrated switch (accessible from the outside) for the bus terminating resistors Terminal block for two cable entries, with straight or 90° angled cable entry, as required Suitable for EASY204-DP	**ZB4-209-DS3** 217820		1 off
PROFIBUS DP data cable				
	Twisted pair, without plug, 2 × 0.64 mm² (only suitable for fixed wiring)	**ZB4-900-KB1** 206983		100 m

	Description	Type Article no.	Price See Price List	Std. pack
Accessories				
Protective cover, transparent For MFD-Titan multi-function display				
	Can be turned through 4 × 90° Sealing facility for protection against accidental actuation (without RMQ-Titan front frame)	**MFD-XS-80** 265259		1 off
	Transparent version for harsh environmental conditions and application in the food industry (with RMQ-Titan front frame)	**MFD-XM-80** 265258		1 off
Point-to-point connecting cable, serial interfaces For connecting MFD-Titan to easy800 or MFD-Titan to MFD-Titan				
	2 m long, made up	**MFD-800-CAB** 265257		1 off
	5 m long, can be prepared as required, with separate plug	**MFD-800-CAB5** 266041		1 off
Mounting rail to EN 50022 for MFD-AC-CP8.../MFD-CP8...				
	Mounting rail with cutout specifically for MFD-AC-CP8.../MFD-CP8... for fixing easy expansion units (2 space units) Length: 142.5 mm	**MFD-TS-144** 274090		1 off
Stand-by power supply unit/communication module 24 V DC, IP20				
	Spare part for power supply unit/communication module MFD-CP4-500/MFD-CP4-800 without connecting cable Serial interface Programming port connection to easy500/easy700/easy800/MFD-...-CP8.. as display repeater with MFD-80.. (ASCII characters)	**MFD-CP4** 280888		1 off
Spare connecting cables				
	Spare point-to-point connecting cable for connection of MFD-CP4-500 to easy500/easy700 5 m, can be cut to length	**MFD-CP4-500-CAB5** 280886		1 off
	Replacement point-to-point connecting cable for connection of MFD-CP4-800 to easy800/MFD-..-CP8... 5 m, can be cut to length	**MFD-CP4-800-CAB5** 280887		1 off

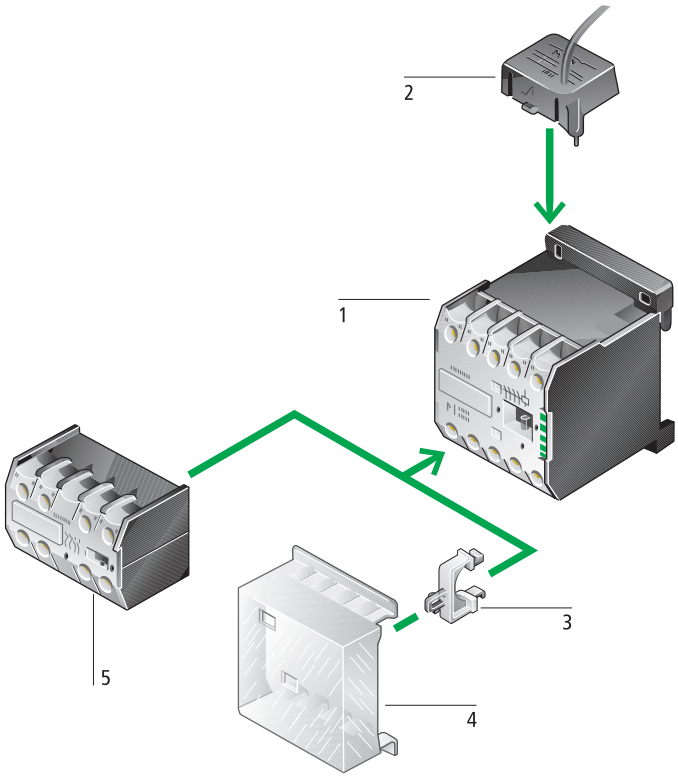
	Language	Type Article no.	Price See Price List	Std. pack	Notes
Documentation					
Manual for control relays easy500 and easy700					
	German	**AWB2528-1508D** 278499		1 off	Other languages in preparation.
	English	**AWB2528-1508GB** 278500		1 off	Other languages in preparation.
Manual for control relay easy800					
	German	**AWB2528-1423D** 261371		1 off	Other languages in preparation.
	English	**AWB2528-1423GB** 262671		1 off	Other languages in preparation.
Manual for the MFD-Titan					
	German	**AWB2528-1480D** 267187		1 off	Other languages in preparation.
	English	**AWB2528-1480GB** 267188		1 off	Other languages in preparation.

Notes Download of AWA2528-2019 from www.moeller.net

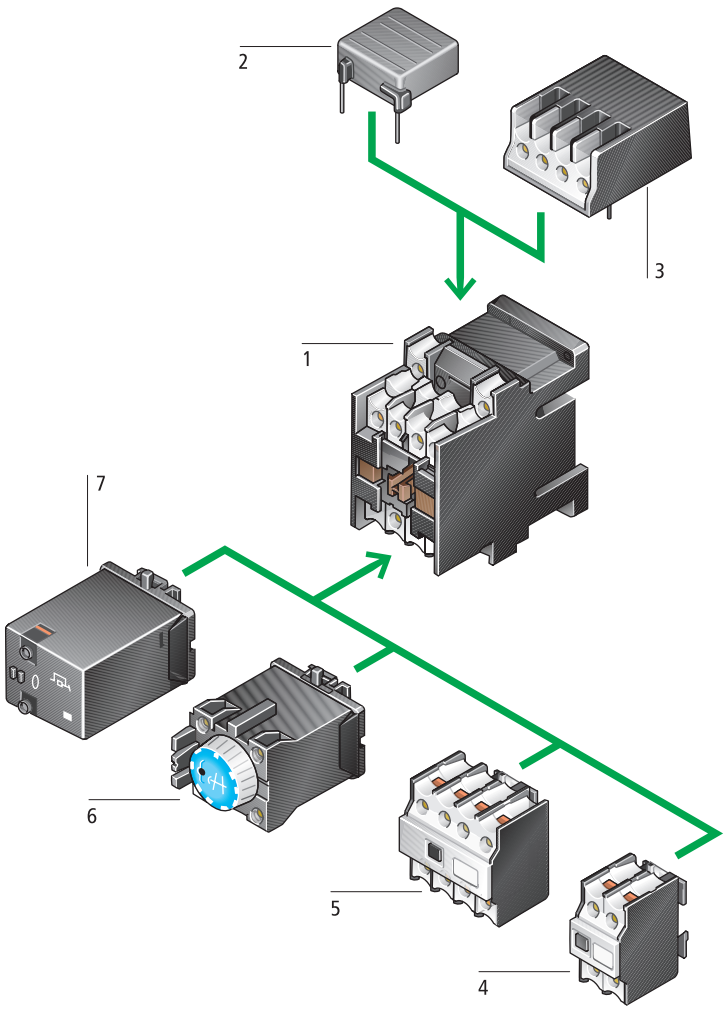
DILA



DILER



DILR



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DILA contactor relays

Base units 1

AC or DC operated

Magnet systems
AC 12 – 600 V, 50, 60, 50/60 Hz
0.8 – 1.1 × U_c
24 VA/4 VA
DC 12 – 220 V DC
0.8 – 1.1 × U_c
at 24 V:
0.7 – 1.3 × U_c without additional auxiliary contact module and at ambient temperature +40 °C
3 W/3 W

Can be expanded to 8 contacts

Interlocked opposing contacts

Modular system

Screw- and snap fitting

Finger proof

Screw terminals

Spring-loaded terminals

→ 4/20

Suppressors 2

All DC contactor relays have integral suppressor circuits

Suppressor circuits for AC contactor relays

→ 4/44

Auxiliary contact modules 3, 4

2- or 4-pole

Overlapping contacts

Interlocked opposing contacts

→ 4/22

DILER mini contactor relays

Base units 1

AC or DC operated

Magnet systems
AC 12 – 480 V, 50, 60, 50/60 Hz
0.8 – 1.1 × U_c
25 VA/4.6 VA
DC 12 – 220 V DC
0.85 – 1.1 × U_c
2.6 W/2.6 W

Can be expanded to 8 contacts

Interlocked opposing contacts

Modular system

Screw- and snap fitting

Finger proof

Screw terminals

Spring-loaded terminals

→ 4/24

Suppressors 2

All DC contactor relays have integral suppressor circuits

Suppressor circuits for AC contactor relays

→ 4/45

Sealable shroud with support bracket 3, 4

As cover for IVS enclosures

→ 4/46

Auxiliary contact modules 5

2- or 4-pole

Overlapping contacts

Interlocked opposing contacts

→ 4/26

DILR contactor relays

Base units 1

AC or DC operated

Magnet systems
AC 12 – 600 V, 50, 60, 50/60 Hz
0.8 – 1.1 × U_c
67 VA/8.5 VA
DC 12 – 250 V DC
0.85 – 1.1 × U_c
9.5 W/9.5 W

Coils for non-standard voltages

Can be expanded to 8 contacts

Interlocked opposing contacts

Modular system/complete units

Screw- and snap fitting

Finger proof

Screw terminals

Spring-loaded terminals

→ 4/28

Suppressors 2

RC suppressor

Varistor suppressor

Free-wheel diode suppressor

→ 4/45

Amplifier modules 3

With and without built-in suppressor circuit

Plug-in type

Separate mounting

→ 4/47

Auxiliary contact modules 4

2-pole

Plug-in type

Interlocked opposing contacts

→ 4/30

Auxiliary contact modules 5

4-pole

Plug-in type

Interlocked opposing contacts

→ 4/30

Pneumatic timer modules 6

On- and Off-delayed

With or without TÜV* approval to VDE 0116

(TÜV = German Technical Supervisory Association)

→ 4/31

Mechanical latching module 7

For latching of contactor relays in the event of control voltage failure

→ 4/28

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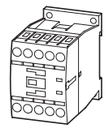
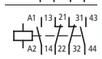
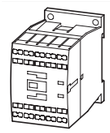
	Terminations	Contacts		Rated operational current		Conventional current, open at 60 °C	Distinctive number/Configuration of combinations			Circuit symbol
		M = Make contact B = Break contact		AC–15 220 V 380 V 230 V 400 V 240 V 415 V			DILA(C)-40	DILA(C)-31	DILA(C)-22	
				I_e A	I_e A	I_{th} A				
Base units with interlocked opposing contacts										
	Screw terminals	4 M	–	6	4	10	40E	–	–	
		3 M	1 B				–	31 E	–	
		2 M	2 B				–	–	22E	
	Spring-loaded terminals	4 M	–	6	4	10	40E	–	–	
		3 M	1 B				–	31 E	–	
		2 M	2 B				–	–	22E	

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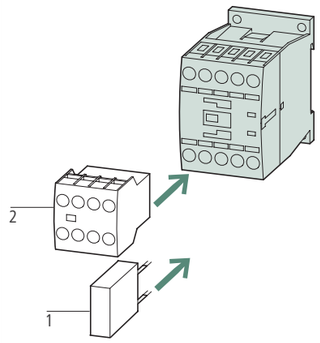
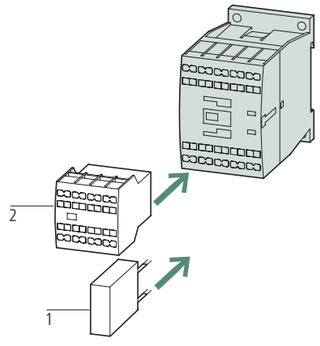
Can be combined with auxiliary contact module	AC operation Type Article no.	Price See Price List	DC operation Type Article no.	Price See Price List	Std. pack	Notes
DILA-XHI(V)...	**DILA-40(230V50HZ)** 276329		**DILA-40(24VDC)** 276344		1 off	**With screw terminals:**
	DILA-31(230V50HZ) 276364		**DILA-31(24VDC)** 276379			
	DILA-22(230V50HZ) 276399		**DILA-22(24VDC)** 276414			
DILA-XHIC(V)...	**DILAC-40(230V50HZ)** 276441		**DILAC-40(24VDC)** 276456			
	DILAC-31(230V50HZ) 276473		**DILAC-31(24VDC)** 276488			
	DILAC-22(230V50HZ) 276505		**DILAC-22(24VDC)** 276520			



Accessories Page
1 Suppressor a 4/44
2 Auxiliary contact module a 4/22
Further actuating voltages a 4/49

With spring-loaded terminals:



Accessories Page
1 Suppressor a 4/44
2 Auxiliary contact module a 4/22
Further actuating voltages a 4/49

Contact numbers to EN 50011
Coil terminal markings to EN 50005

DC operated contactor relays have a built-in suppressor circuit.

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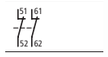
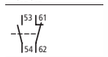
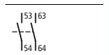
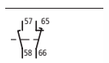
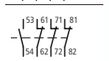
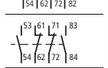
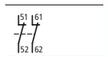
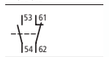
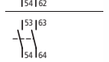
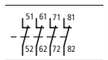
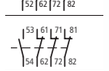
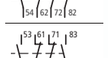
Terminations		Contacts M = Make, M_E = Early-make	Contacts B = Break, B_L = Late-break	Rated operational current AC–15 220 V 230 V 240 V I_e A	Rated operational current AC–15 380 V 400 V 415 V I_e A	Conventional current, open at 60 °C I_{th} A	Circuit symbol
DILA auxiliary contact modules							
With interlocked opposing contacts (exception: ...XHI(C)V...)							
Screw terminals		2-pole	–	6	3	10	
			1 M				
			2 M				
			1 M_E				
		4-pole	–				
			1 M				
			2 M				
			3 M				
			4 M				
			1 M, 1 M_E				
Spring-loaded terminals		2-pole	–				
			1 M				
			2 M				
			1 M_E				
		4-pole	–				
			1 M				
			2 M				
			3 M				
			4 M				
			1 M, 1 M_E				

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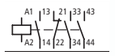
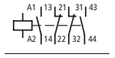
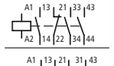
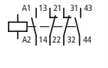
Distinctive number/Configuration of combinations DILA(C)-40	DILA(C)-31	DILA(C)-22	**Type** Article no.	**Price** See Price List	Std. pack	**Notes**
42E	33	24	**DILA-XHI02** 276420		5 off	Version E combinations correspond to EN 50011 and are to be preferred; other combinations correspond to EN 50005
51E	42	33	**DILA-XHI11** 276421			
60 E	51	42	**DILA-XHI20** 276422			
51	42	33	**DILA-XHIV11** 276423			
44 E	35	–	**DILA-XHI04** 276424			
53 E	44	–	**DILA-XHI13** 276425			
62E	53	–	**DILA-XHI22** 276426			
71E	62	–	**DILA-XHI31** 276427			
80E	71	–	**DILA-XHI40** 276428			
62	53	–	**DILA-XHIV22** 276429			
42E	33	24	**DILA-XHIC02** 276526			
51E	42	33	**DILA-XHIC11** 276527			
60 E	51	42	**DILA-XHIC20** 276528			
51	42	33	**DILA-XHICV11** 276529			
44 E	35	–	**DILA-XHIC04** 276530			
53 E	44	–	**DILA-XHIC13** 276531			
62E	53	–	**DILA-XHIC22** 276532			
71E	62	–	**DILA-XHIC31** 276533			
80E	71	–	**DILA-XHIC40** 276534			
62	53	–	**DILA-XHICV22** 276535			

Mini Contactor Relays and Contactor Relays, Electronic Relays

Moeller HPL0211-2004/2005

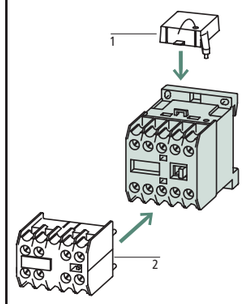
	Terminations	Contacts M = Make	Contacts B = Break	Rated operational current AC–15 220 V 230 V 240 V I_e A	Rated operational current AC–15 380 V 400 V 415 V I_e A	Conventional thermal current I_{th} A	Distinctive number			Circuit symbol
Base units with interlocked opposing contacts										
	Screw terminals	4 M	–	6	3	10	40E	–	–	
		3 M	1 B				–	31 E	–	
		2 M	2 B				–	–	22E	
	Spring-loaded terminals	4 M	–	6	3	10	40E	–	–	
		3 M	1 B				–	31 E	–	
		2 M	2 B				–	–	22E	

Notes With DC operated coil:
Built-in resistor/diode combination, coil consumption 2.6 W

Moeller HPL0211-2004/2005

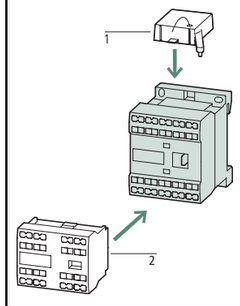
Can be combined with auxiliary contact	AC operation Type Article no.	AC operation Price See Price List	Can be combined with auxiliary contact	DC operation Type Article no.	DC operation Price See Price List	Std. pack
...DILE	**DILER-40(230V50HZ)** 051759		...DILE	**DILER-40-G(24VDC)** 010223		5 off
	DILER-31(230V50HZ) 051768		...DILE	**DILER-31-G(24VDC)** 010157		
	DILER-22(230V50HZ) 051777		–	**DILER-22-G(24VDC)** 010042		
...DILE-C	**DILER-40-C(230V50HZ)** 230239		...DILE-C	**DILER-40-G-C(24VDC)** 230241		
	DILER-31-C(230V50HZ) 230178		...DILE-C	**DILER-31-G-C(24VDC)** 230179		
	DILER-22-C(230V50HZ) 230176		–	**DILER-22-G-C(24VDC)** 230177		

With screw terminals:



Accessories	Page
1 Suppressor	a 4/45
2 Auxiliary contact modules	a 4/26
Further actuating voltages	a 4/50

With spring-loaded terminals:



Accessories	Page
1 Suppressor	a 4/45
2 Auxiliary contact modules	a 4/26
Further actuating voltages	a 4/50

Contact numbers to EN 50011
Coil terminal markings to EN 50005

Moeller HPL0211-2004/2005

		Terminations	Contacts M = Make	Contacts B = Break	Rated operational current AC–15 220 V 230 V 240 V I_e A	Rated operational current AC–15 380 V 400 V 415 V I_e A	Conventional thermal current I_{th} A	Distinctive number/Style of combinations with base unit DILER-40(-G)(-C)	DILER-31(-G)(-C)	DILER-22(-C)	Circuit symbol
Auxiliary contact modules											
2-pole		Screw terminals	–	2 B	4	2	10	42E	33	24	
			1 M	1 B				51E	42	33	
			2 M	–				60 E	51	42	
			1 M	1 B				51	42	33	
4-pole			–	4 B				44 E	35	26	
			1 M	3 B				53 E	44	35	
			2 M	2 B				62E	53	44	
			3 M	1 B				71E	62	53	
			4 M	–				80E	71	62	
			2 M	2 B				62	53	44	
2-pole		Spring-loaded terminals	1 M	1 B				51E	42	33	
4-pole			–	4 B				44 E	35	26	
			1 M	3 B				53 E	44	35	
			2 M	2 B				62E	53	44	
			3 M	1 B				71E	62	53	
			4 M	–				80E	71	62	
			2 M	2 B				62	53	44	

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Type Article no.	Price See Price List	Std. pack	Notes	
02DILE 010240		5 off	Interlocked opposing contacts	Version E combinations correspond to EN 50011 and are to be preferred; other combinations correspond to EN 50005
11DILE 010224				
20DILE 010208				
11DDILE 049824			1 early-make contact, 1 late-break contact	
04DILE 010256			Interlocked opposing contacts	
13DILE 002397				
22DILE 010288				
31DILE 048912				
40DILE 010304				
22DDILE 049823			1 early-make contact, 1 late-break contact	
11DILE-C 230257			Interlocked opposing contacts	
04DILE-C 230258				
13DILE-C 230259				
22DILE-C 230260				
31DILE-C 230262				
40DILE-C 230263				
22DDILE-C 230264			1 early-make contact, 1 late-break contact	

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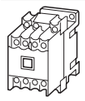
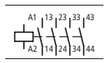
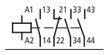
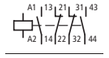
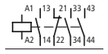
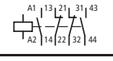
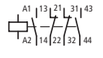
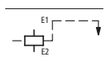
	Connection types	Contacts M = Make	B = Break contact	Rated operational current AC–15 220 V 230 V 240 V I_e A	380 V 400 V 415 V I_e A	Conventional thermal current I_{th} A	Distinctive number/ Configuration of combinations			Circuit symbol	Can be combined with auxiliary contact module
Base units with interlocked opposing contacts											
	Screw terminals	4 M	–	6	4	16	40E	–	–		...DIL
		3 M	1 B				–	31 E	–		
		2 M	2 B				–	–	22E		
	Spring-loaded terminals	4 M	–				40E	–	–		...DIL-C
		3 M	1 B				–	31 E	–		
		2 M	2 B				–	–	22E		
Base units with interlocked opposing contacts, integral suppressor circuit											
	Spring-loaded terminals	4 M	–	6	4	16	40E	–	–		...DIL-C
		3 M	1 B				–	31 E	–		
		2 M	2 B				–	–	22E		
Mechanical latching module											
	Screw terminals	–	–	–	–	–	40E	31 E	22E		–

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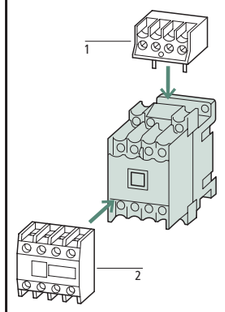
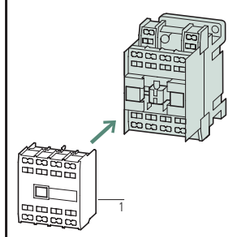
AC operation Type Article no.	Price See Price List	Can be combined with base unit	DC operation Type Article no.	Price See Price List	Std. pack	Notes
DILR40(230V50HZ) 043756		...DIL	**DILR40-G(24VDC)** 048537		1 off	**With screw terminals:** 
DILR31(230V50HZ) 043768			**DILR31-G(24VDC)** 048532			
DILR22(230V50HZ) 043780			**DILR22-G(24VDC)** 048526			
DILR40-C(230V50HZ) 230253		–	**DILR40-G-C(24VDC)** 230254			
DILR31-C(230V50HZ) 230250		–	**DILR31-G-C(24VDC)** 230252			
DILR22-C(230V50HZ) 230247		–	**DILR22-G-C(24VDC)** 230248			
DILR40-C(230V50HZ-Z) 232039		–	**DILR40-G-C(24VDC-Z)** 232044		1 off	**With spring-loaded terminals:** 
DILR31-C(230V50HZ-Z) 232030		–	**DILR31-G-C(24VDC-Z)** 232032			
DILR22-C(230V50HZ-Z) 232024		–	**DILR22-G-C(24VDC-Z)** 232026			
VDIL(230V50HZ) 043825		–	**V-GDIL(24VDC)** 048562		1 off	

Accessories Page

1 Amplifier module	a 4/47
2 Auxiliary contact modules	a 4/30
Additional accessories	a 4/45
Further actuating voltages	a 4/50

	Contacts		AC–15		Conventional thermal current	Circuit symbol	Distinctive number/ Configuration of combinations			**Type** Article no.	**Price** See Price List	Std. pack
	M = Make	B = Break	220 V 230 V 240 V I_e A	380 V 400 V 415 V I_e A	I_{th} A		DILR-40 (-G)(-C)	DILR-31 (-G)(-C)	DILR-22 (-G)(-C)			
Auxiliary contact modules												
Can be combined with auxiliary contacts for side mounting up to a maximum of 5 contacts.												
Screw terminals												
	2-pole	–	2 B	6	4	16		42E	33	24	**02DIL** 098145		5 off
		1 M	1 B					51E	42	33	**11DIL** 010345		
		2 M	–					60 E	51	42	**20DIL** 012718		
	4-pole	–	4 B					44 E	35	26	**04DIL** 015091		
		1 M	3 B					53 E	44	35	**13DIL** 017464		
		2 M	2 B					62E	53	44	**22DIL** 019837		
		3 M	1 B					71E	62	53	**31DIL** 010752		
		4 M	–					80E	71	62	**40DIL** 022210		
Interlocked opposing contacts												
Spring-loaded terminals												
	2-pole	1 M	1 B	–	4	16		51E	42	33	**11DIL-C** 268233		
	4-pole	–	4 B	6				44 E	35	26	**04DIL-C** 230282		
		1 M	3 B					53 E	44	35	**13DIL-C** 230284		
		2 M	2 B					62E	53	44	**22DIL-C** 230286		
		3 M	1 B					71E	62	53	**31DIL-C** 230289		
		4 M	–					80E	71	62	**40DIL-C** 230290		

Notes Version E combinations correspond to EN 50011 and are to be preferred; other combinations correspond to EN 50005
Auxiliary contact modules with interlocked opposing contacts

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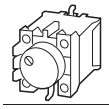
Contacts		AC–15		Conventional thermal current	Circuit symbol	Distinctive number/Style of combinations with base unit			**Type** Article no.	**Price** See Price List	Std. pack
M = Make	B = Break	230 V I_e A	400 V I_e A	I_{th} A		DILR40 (-G)(-C)	DILR31 (-G)(-C)	DILR22 (-G)(-C)			
Pneumatic timer modules, time ranges of 0.2 – 30 s and 20 – 180 s											
											
On-delayed											
1 M	1 B	4	4	10		51	42	33	**TPE11DIL** 002279		1 off
Off-delayed											
1 M	1 B	4	4	10		51	42	33	**TPD11DIL** 002280		1 off
With TÜV* approval to VDE 0116, for furnaces											
On-delayed											
1 M	1 B	4	4	10		51	42	33	**TPEH11DIL** 046924		1 off
Off-delayed											
1 M	1 B	4	4	10		51	42	33	**TPDH11DIL** 046925		1 off

Notes Combinations of version E comply with EN 50011 and are to be preferred;
the other combinations comply with EN 50005
* TÜV = German Technical Supervisory Association

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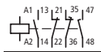
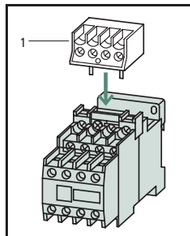
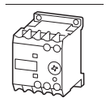
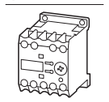
Contacts M = Make	B = Break	Rated operational current AC–15 220 V 230 V 240 V I_e A	380 V 400 V 415 V I_e A	Conventional thermal current I_{th} A	Circuit symbol	Distinctive number	AC operation **Type** Article no.	**Price** See Price List	DC operation **Type** Article no.	**Price** See Price List	Std. pack	**Notes**
Complete units with 1 early-make contact, 1 late-break contact												
2 M	2 B	6	4	16		22	**DILR22D(230V50HZ)** 043792		**DILR22D-G(24VDC)** 048542		1 off	Coil terminal markings to EN 50005
4 M	4 B					44	**DILR44D(230V50HZ)** 043803		**DILR44D-G(24VDC)** 048547			
5 M	3 B					53	**DILR53D(230V50HZ)** 043814		**DILR53D-G(24VDC)** 048552			



Accessories Page
1 Amplifier module a 4/47
Additional accessories a 4/45
Other actuating voltages a 4/50

Mini Contactor Relays and Contactor Relays, Electronic Relays

Moeller HPL0211-2004/2005

	Rated operational current AC-11 220 V 230 V 240 V I_e A	380 V 400 V 440 V I_e A	Conventional thermal current I_{th} A	Time range	**Type** Article no.	**Price** See Price List	**Type** Article no.	**Price** See Price List	Std. pack
Timing relays, On-delayed									
	3	3	6	1.5 – 30 s	**DILET11-30-A** 048878		**DILET11-30-W** 048904		1 off
	3	3	6	0.05 – 1 s 0.15 – 3 s 0.5 – 10 s 3 – 60 s 0.15 – 3 min 0.5 – 10 min 3 – 60 min 0.15 – 3 h 0.5 – 10 h 3 – 60 h	**DILET11-M-A** 048886		**DILET11-M-W** 048891		1 off
Multi-function relay with connection for remote potentiometer									
	3	3	6	0.05 – 1s 0.15 – 3 s 0.5 – 10 s 3 – 60 s 0.15 – 3 min 0.5 – 10 min 3 – 60 min 0.15 – 3 h 0.5 – 10 h 3 – 60 h	**DILET70-A** 048893		**DILET70-W** 048899		1 off

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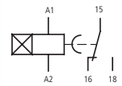
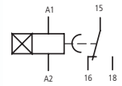
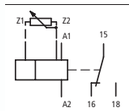
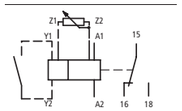
Function	Terminal marking according to EN 50042	Function	Terminal marking according to EN 50042
Fixed 11, On-delayed		–	–
Fixed 11, On-delayed		–	–
Adjustable 11, On-delayed 21, Fleeting contact on energization 42, Flashing 81, Pulse generating ON-OFF		Adjustable 12, Off-delayed 16, On- and Off-delayed 22, Fleeting contact on de-energization 82, Pulse shaping ON-OFF	

Notes

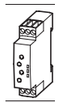
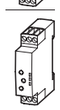
Type suffix	Actuating voltage	
	V DC	V AC
-A	24 – 240	24 – 240, 50/60 Hz
-W	–	400, 50/60 Hz

Admissible cable length	Connection to
Cable unscreened, with cable cross-section 0.5 – 1.5 mm²	Y1/Y2, Z1/Z2
Two-core cable	M 250
Two-core cable in the same cable duct with the mains cable, 50/60 Hz	M 50

Accessories	Page
Timing functions	
Sealable shroud	a 4/46
Potentiometer	a 4/48
Screw adapter	a 4/48

Mini Contactor Relays and Contactor Relays, Electronic Relays

Moeller HPL0211-2004/2005

		Rated operational current AC–15 230 V I_e A	Rated operational current AC–15 400 V I_e A	Conventional thermal current I_{th} A	Time range	Type Article no.	Price See Price List	Type Article no.	Price See Price List	Std. pack
ETR4 electronic timing relays, 22.5 mm wide										
	On-delayed	3	3	6	0.05 – 1 s 0.15 – 3 s 0.5 – 10 s 1.5 – 30 s 5 – 100 s 15 – 300 s 1.5 – 30 min 15 – 300 min 1.5 – 30 h 5 – 100 h	**ETR4-11-A** 031882		**ETR4-11-W** 031883		1 off
	Multi-function relay	3	3	6		**ETR4-69-A** 031891		**ETR4-69-W** 031887		1 off
	Multi-function relay with connection for potentiometer, and two changeover contacts that can be converted to two timed contacts or one non-delayed contact and one timed contact.	3	3	6		**ETR4-70-A** 031888				1 off
	Star-delta timing relays	3	3	6	3 – 60 s	**ETR4-51-A** 031884		**ETR4-51-W** 031885		1 off
ETR2 electronic timing relays, 17.5 mm wide										
	On-delayed	3	–	5	0.05 – 1 s 0.5 – 10 s 5 – 100 s 0.5 – 10 min 5 – 100 min 0.5 – 10 h 5 – 100 h	**ETR2-11** 262684				1 off
	Off-delayed	3	–	5		**ETR2-12** 262686				1 off
	Fleeting contact on energization	3	–	5		**ETR2-21** 262687				1 off
	Flashing, pulse initiating	3	–	5		**ETR2-42** 262688				1 off
	Flashing, 2 speeds	3	–	5		**ETR2-44** 262730				1 off
	Multi-function relay	3	–	5		**ETR2-69** 262689				1 off

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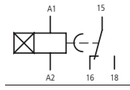
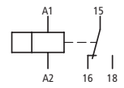
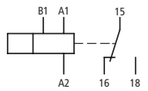
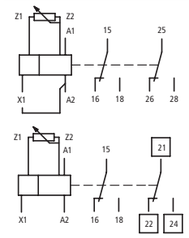
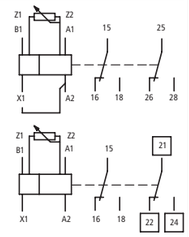
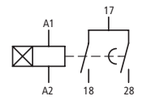
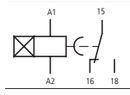
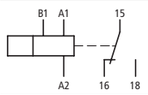
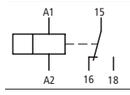
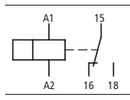
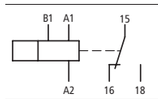
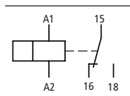
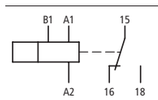
Function	Terminal marking according to EN 50042	Function	Terminal marking according to EN 50042	Notes
Fixed 11, On-delayed		–	–	
Adjustable 11, On-delayed 21, Fleeting contact on energization 42, Flashing, pulse initiating 81, Pulse generating ON-OFF		Adjustable 12, Off-delayed 16, On- and Off-delayed 22, Fleeting contact on de-energization 82, Pulse shaping ON-OFF		
A2/X1 linked 11, On-delayed 21, Fleeting contact on energization 42, Flashing, pulse initiating 81, Pulse generating ON-OFF A2/X1 not linked 11, On-delayed 21, Fleeting contact on energization 42, Flashing, pulse initiating 81, Pulse generating ON-OFF		A2/X1 linked 12, Off-delayed 16, On- and Off-delayed 22, Fleeting contact on de-energization 82, Pulse shaping ON-OFF A2/X1 not linked 12, Off-delayed 16, On- and Off-delayed 22, Fleeting contact on de-energization 82, Pulse shaping ON-OFF		
Fixed 51, star-delta		–	–	
Fixed 11, On-delayed		–	–	
Fixed 12, Off-delayed	–	–		
Fixed 21, Fleeting contact on energization		–	–	
Fixed 42, Flashing, pulse initiating		–	–	
Fixed 44, Flashing, 2 speeds Can be set to either pulse or pause initiating.	–	–		
Adjustable 11, On-delayed 21, Fleeting contact on energization 42, Flashing, pulse initiating 43, Flashing, pause initiating		Adjustable 12, Off-delayed 22, Fleeting contact on de-energization 82, Pulse shaping		

Type suffix	Actuating voltage V DC	V AC
-A	24 – 240	24 – 240, 50/60 Hz
-W	–	400, 50/60 Hz

Admissible cable length	Connection to
Cable unscreened, with cable cross-section 0.5 – 1.5 mm²	B1, Z1/Z2
Two-core cable	M 250
Two-core cable in the same cable duct with mains cable, 50/60 Hz	M 50

Accessories	Page
Timing functions	
Sealable shroud	a 4/46
Potentiometer	a 4/48
Screw adapter	a 4/48

Actuating voltage V DC	V AC
24 – 48	24 – 240, 50/60 Hz

Timing functions

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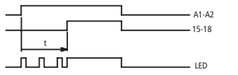
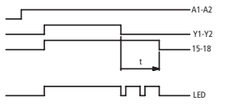
Electronic timing relays — **Flow diagram**

DILET

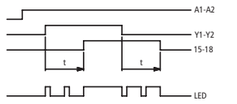
11 On-delayed



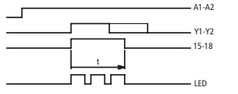
12 Off-delayed



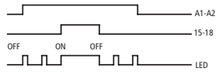
16 On- and Off-delayed



82 Pulse shaping

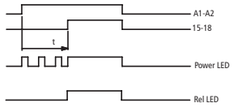


On-Off function

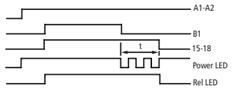


ETR2..., ETR4...

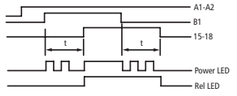
11 On-delayed



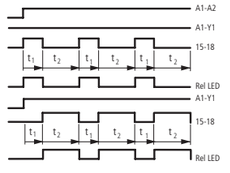
12 Off-delayed



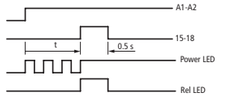
16 On- and Off-delayed



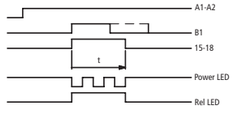
44, Flashing, 2 speeds



81 Pulse generating

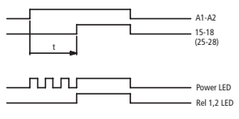


82 Pulse shaping

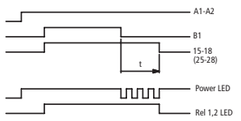


ETR4-70...
A2/X1 linked

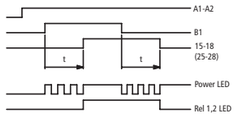
11 On-delayed



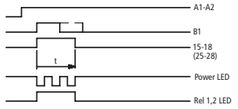
12 Off-delayed



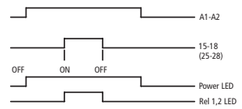
16 On- and Off-delayed



82 Pulse shaping

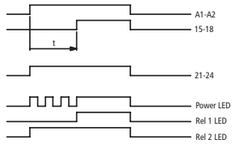


On-Off function

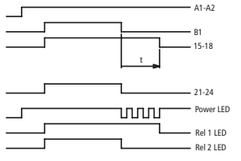


ETR4-70...
A2/X1 not linked

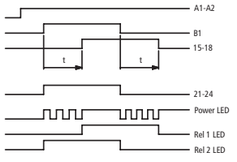
11 On-delayed



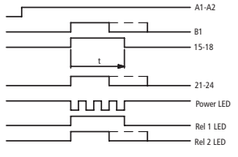
12 Off-delayed



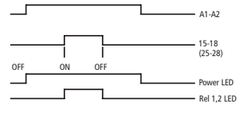
16 On- and Off-delayed



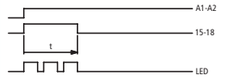
82 Pulse shaping



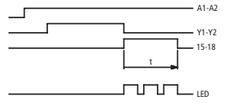
ON-OFF function



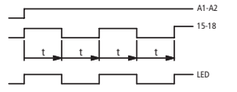
21 Fleeting contact on energization



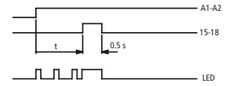
22 Fleeting contact on de-energization



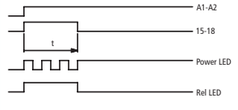
42 Flashing, pulse initiating



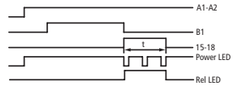
81 Pulse generating



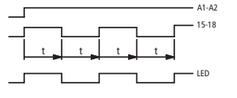
21 Fleeting contact on energization



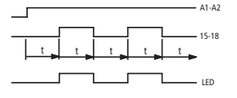
22 Fleeting contact on de-energization



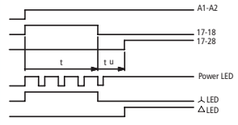
42 Flashing, pulse initiating



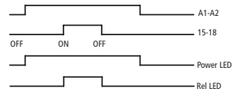
43 Flashing, pause initiating



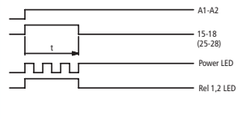
51 Star-delta



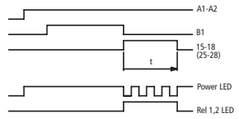
On-Off function



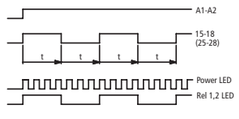
21 Fleeting contact on energization



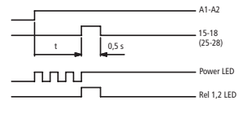
22 Fleeting contact on de-energization



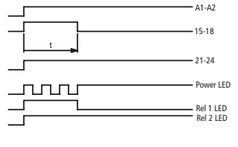
42 Flashing



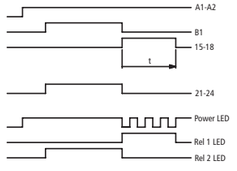
81 Pulse generating



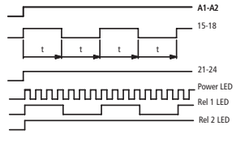
21 Fleeting contact on energization



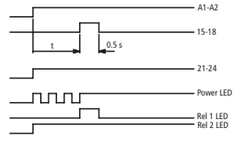
22 Fleeting contact on de-energization



42 Flashing



81 Pulse generating



Flow diagrams, explanations

LED display

Time not running,
Contact 15 – 18 closed

Time running,
Contact 15 – 18 closed

Time running,
Contact 15 – 18 not closed

Applications

Electronic safety relays are used for monitoring safety-related control systems. The requirements for the electrical equipment of machines are specified in IEC/EN 60204. EN 954-1stipulates that machine users must carry out a risk assessment of their machines and implement a control system that meets the requirements of safety categories 1, 2, 3, or 4.

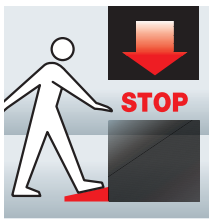
Construction

The electronic safety relays consist of a power section, the electronics and two redundant relays with interlocked opposing contacts for the enabling- and signalling paths.

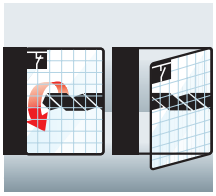
Product range overview

The range includes relays for

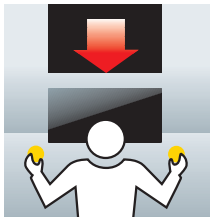
Emergency-Stop circuits



Monitoring of contact mats, safety mats and safety bumpers



Protective guard monitoring



Monitoring of two-hand controls

Contact expansion modules with and without delay are also available.

Safety category

ESR electronic safety relays are approved by employers' liability associations and meet the requirements of safety category 3 or 4. The safety category of the control system is determined by the combination with the external circuitry, for which the machine operator is responsible.
The electronic safety relays are single-fault proof, i. e. one fault in the safety circuit does not cause hazardous conditions. EN 954-1 excludes the possibility of two independent faults occurring at the same time.

Stop category

IEC/EN 60204-1 defines two relevant stop categories for stopping in the event of an emergency:

- Stop category 0: shut-down by means of immediate removal of the power supply to the machine actuators.
- Stop category 1: controlled stopping with power available to the machine actuators to achieve the stop. Power is not removed until the stop is achieved.

Base units as well as expansion modules are available for both categories.

Function

In fault-free operation, following the starting command, the safety circuits are monitored by the electronics, and the enabling paths are activated via the relays. Following the switch Off command, as well as in the event of a fault (earth fault, faulty insulation, wire breakage), the enabling paths are blocked immediately (stop category 0) or with a time delay (stop category 1) and the motor is disconnected from the power supply. Since a short circuit in a redundant safety circuit does not cause a hazardous condition, the fault is not detected until the system is reset, when switching On is prevented.

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Single-/dual-channel construction

Safety relays for stopping in the event of an emergency and for monitoring of protective guards are available for single-channel and dual-channel applications. The single-channel construction enables earth fault monitoring to be implemented for the safety circuit. The dual-channel application provides a redundant Emergency-Stop or protective guard monitoring circuit. This allows monitoring for short circuits and cable insulation faults to be implemented as well. The device can also be used with or without reset monitoring. Here, the device is not started and enabling paths switched until the falling edge of the On pushbutton has been detected. An application for the device without reset monitoring is for example, for monitoring of protective doors for an automatic restart.

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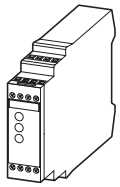
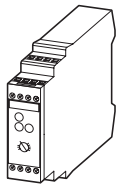
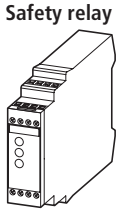
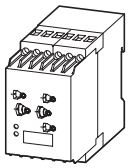
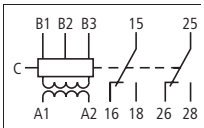
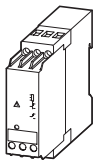
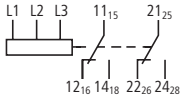
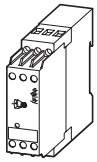
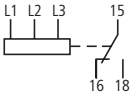
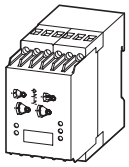
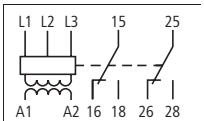
	Actuating voltage U_c	Approval mark	Safety category to EN 954-1: Delayed contacts	Safety category to EN 954-1: Non-delayed contacts	Number of enabling paths to IEC/EN 60204 Stop category 0	Number of enabling paths to IEC/EN 60204 Stop category 1	Signal contacts	**Type** Article no.	**Price** See Price List	Std. pack
Safety relay for monitoring of Emergency-Stop applications and safety doors										
	24 V DC, 24 V AC, 50/60 Hz	Dual-channel	–	3	3	–	–	**ESR4-NO-30-24VAC-DC** 279368		1 off
	115 V AC, 50/60 Hz		–			–	–	**ESR4-NO-30-115VAC** 279410		
	230 V AC, 50/60 Hz		–			–	–	**ESR4-NO-30-230VAC** 279369		
	24 V DC, 24 V AC, 50/60 Hz	Single-channel	–	3	3	–	1	**ESR4-NO-31** 214612		1 off
	115 V AC, 50/60 Hz		–			–		**ESR4-NO-31-115VAC** 279367		
	230 V AC, 50/60 Hz		–			–		**ESR4-NO-31-230VAC** 279365		
	24 V DC, 24 V AC, 50/60 Hz	Dual-channel	–	4	2	–	1	**ESR4-NO-21** 214613		1 off
	24 V DC	Dual-channel, Off-delayed, 0.15 — 3 s	3	4	2	1	–	**ESR4-NV3-30** 214616		1 off
		Dual-channel, Off-delayed, 1.5 — 30 s					–	**ESR4-NV30-30**[1] 214617		
		Dual-channel, delayed, 1.5 — 30 s					–	**ESR4-NT30-30**[2] 225011		
Safety relay										
										
For contact mat monitoring	24 V DC	Dual-channel	–	4	2	–	1	**ESR4-NM-21** 214619		1 off
Two-hand relay	24 V DC, 24 V AC 50/60 Hz	Dual-channel	–		2	–	1	**ESR4-NZ-21**[3] 214620		
Contact expansion modules	24 V DC, 24 V AC 50/60 Hz	Non-delayed	–		4	–	2	**ESR4-NE-42**[4] 214614		
	24 V DC	Off-delayed, t_A = 3 s	–		–	4	2	**ESR4-VE3-42**[4] 214618		

Notes

[1] Suitable for AT0-...MT-ZBZ safety position switches with mechanical securing action
[2] Suitable for AT0-...FT-ZBZ safety position switches with mechanical securing action
Contact closes following Emergency-Stop actuation, On-delayed
[3] Suitable for applications to EN 574 Type III C
[4] The base unit determines the maximum safety category.
The base unit determines the maximum stop category.

	Description	Current measuring range $I\sim/I=$ A	Circuit symbol	Supply voltage	**Type** Article no.	**Price** See Price List	Std. pack
EMR4-I... current monitoring relays, single-phase							
	• Switching hysteresis adjustable from 5 – 30 % • Response delay 0.1 – 30 s • EMR4...-A: monitors one upper or lower limit • EMR4...-B: monitors one upper limit • Extension of the measurement range possible with current transformers	3 – 30 mA 10 – 100 mA 0.1 – 1 A		24 – 240 V AC/DC	**EMR4-I1-2-A** 221781		1 off
		0.3 – 1.5 A 1 – 5 A 3 – 15 A		24 – 240 V AC/DC	**EMR4-I15-2-A** 221782		
		0.3 – 1.5 A 1 – 5 A 3 – 15 A		220 – 240 V AC	**EMR4-I15-2-B** 221783		

	Description	Monitoring voltage	Circuit symbol	Supply voltage	**Type** Article no.	**Price** See Price List	Std. pack
EMR4-F... phase sequence relay							
	• Monitors three-phase systems for phase sequence and phase failure (< 0.6 × U_e) • Supply voltage = voltage being monitored	200 – 500 V AC		200 – 500 V AC	**EMR4-F500-2** 221784		1 off
EMR4-A... phase imbalance monitoring relay							
	• Monitors three-phase systems for phase imbalance • Detects phase failure even at 95% voltage feedback from the motor • Response delay: 0.5 s • Phase imbalance response threshold adjustable from 5 – 15 % • Phase sequence detection • Supply voltage = voltage being monitored	380 – 415 V 50 Hz		380 – 415 V 50 Hz	**EMR4-A400-1** 221788		1 off

	Description	Monitoring voltage adjustable from	Circuit symbol	Supply voltage	**Type** Article no.	**Price** See Price List	Std. pack
EMR4-W phase monitoring relay							
	• Monitors three-phase systems for phase sequence, over- and undervoltage and phase failure (< 0.6 × U_e) • 3-phase voltage monitoring within a range • Selectable On-delay or Off-delay (0.1 – 10 s)	U_{min} 300 – 380 V AC U_{max} 420 – 500 V AC		160 – 330 V AC	**EMR4-W500-2-C** 221785		1 off
				300 – 500 V AC	**EMR4-W500-2-D** 221786		
		U_{min} 350 – 430 V AC U_{max} 500 – 580 V AC		300 – 500 V AC	**EMR4-W580-2-D** 221787		

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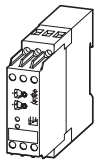
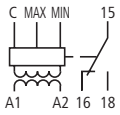
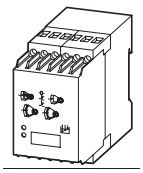
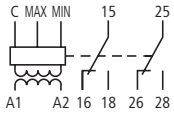
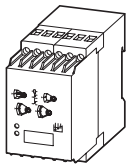
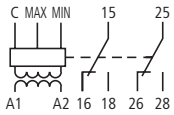
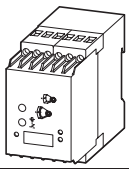
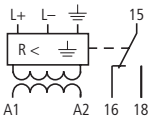
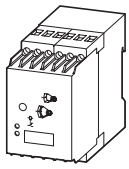
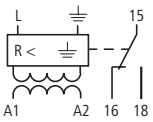
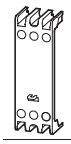
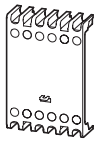
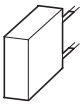
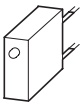
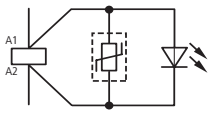
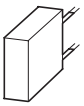
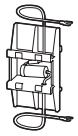
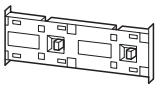
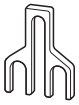
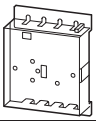
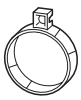
	Description	Response sensitivity Ω	Circuit symbol	Supply voltage	Type Article no.	Price See Price List	Std. pack
EMR4-N... liquid level monitoring relays							
	• Monitors the level of conductive liquids • Monitors the ratio of mixtures of conductive liquids • Selectable: protection against running dry or overflowing	5 kΩ – 100 kΩ		220 – 240 V AC	**EMR4-N100-1-B** 221789		1 off
	• Monitors the level of conductive liquids • Monitors the ratio of mixtures of conductive liquids • Selectable On-delay or Off-delay between 0.5 – 10 s	250 Ω – 500 kΩ		220 – 240 V AC	**EMR4-N500-2-B** 221790		
	• Monitors the level of conductive liquids • Monitors the ratio of mixtures of conductive liquids • Selectable On-delay or Off-delay between 0.5 – 10 s	250 Ω – 500 kΩ		24 – 240 V AC/DC	**EMR4-N500-2-A** 221791		

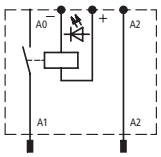
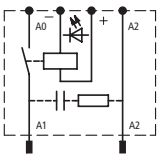
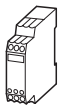
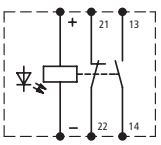
	Description	Insulation resistance range Ω	Circuit symbol	Supply voltage	Type Article no.	Price See Price List	Std. pack
EMR4-R... insulation monitoring relays							
	• Monitors the insulation resistance in non-earthed DC supply systems • Selector switch for open- or closed-circuit principle • With test and reset facilities • Status indication via LEDs	10 – 110 kΩ		24 – 240 V AC/DC	**EMR4-RDC-1-A** 221792		1 off
	• Monitors the insulation resistance between non-earthed AC supply systems and the protective conductor/earth • Tripping function memory • Insulation monitoring in 1- and 3-phase AC supply systems • Test via local test button or remote test operation • Status indication via LEDs to VDE 0413 / Part 2	1 – 110 kΩ		24 – 240 V AC/DC	**EMR4-RAC-1-A** 221793		

	Mounting width mm	Type Article no.	Price See Price List	Std. pack
EMR4-PH... sealable shrouds				
	22.5	**EMR4-PH22** 221795		1 off
	45	**EMR4-PH45** 221794		

	Actuating voltage U_s V AC	Circuit symbol	For use with	**Type** Article no.	**Price** See Price List	Std. pack	
Suppressors							
Varistor suppressors							
	24 – 48		DILM7 – DILM12 DILMP20 DILA	**DILM12-XSPV48** 281208		10 off	For AC operated 50 – 60 Hz contactor relays. The suppressor is fitted as standard in DC operated contactor relays. Note drop-out delay
	48 – 130			**DILM12-XSPV130** 281209			
	130 – 240			**DILM12-XSPV240** 281210			
	240 – 500			**DILM12-XSPV500** 281211			
Varistor suppressors with LED							
	24 – 48		DILM7 – DILM12 DILMP20 DILA	**DILM12-XSPVL48** 281220			
	130 – 240			**DILM12-XSPVL240** 281221			
RC suppressors							
	24 – 48		DILM7 – DILM12 DILMP20 DILA	**DILM12-XSPR48** 281199			
	130 – 240			**DILM12-XSPR240** 281200			
	240 – 500			**DILM12-XSPR500** 281201			
Connector							
For mechanically linking contactor relays in combinations							
	–	–	DILM7 – DILM32 DILA	**DILM32-XVB** 281227		50 off	0 mm distance between relays
Mechanical interlock							
	–	–	DILM7 – DILM12 DILA	**DILM12-XMV** 281196		5 off	For two AC or DC operated contactor relays, distance between relays 0 mm, mechanical lifespan 2.5×10^6 operations, additional auxiliary contact modules can be fitted

	Actuating voltage U_s V AC	Circuit symbol	For use with contactor relays	**Type** Article no.	**Price** See Price List	Std. pack	
Suppressors							
Varistor suppressors							
	24 – 48		DILE...	**VGDILE48** 010320		10 off	For AC operated 50 – 60 Hz contactor relays. The suppressor is fitted as standard in DC operated contactor relays. Note drop-out delay
	110 – 250			**VGDILE250** 010336			
	380 – 415			**VGDILE415** 010463			
	24 – 48		DILE...-C	**VGDILE48-C** 230265			For AC operated 50 – 60 Hz contactor relays with spring-loaded terminals. The suppressor is fitted as standard in DC operated contactor relays. Note drop-out delay
	110 – 250		DILE...-C	**VGDILE250-C** 230266			
	12 – 24		DILR...	**VGBDIL24** 076837			For AC operated 50 – 60 Hz and DC operated contactor relays.
	24 – 48			**VGBDIL48** 071609			
	110 – 250			**VGBDIL250** 071610			
	380 – 415			**VGBDIL415** 071611			
RC suppressors							
	24 – 48		DILE...	**RCDILE48** 044264		10 off	For AC operated 50 – 60 Hz contactor relays. Note drop-out delay
	110 – 250			**RCDILE250** 046320		10 off	
	24 – 48		DILE...-C	**RCDILE48-C** 230267		10 off	For AC operated 50 – 60 Hz contactor relays with spring-loaded terminals. Note drop-out delay
	110 – 250			**RCDILE250-C** 230268		10 off	
	24 – 48		DILR...	**RCBDIL48** 067345		10 off	For AC operated 50 – 60 Hz contactor relays. Note drop-out delay
	110 – 250			**RCBDIL250** 069718			
	380 – 415			**RCBDIL415** 072091			
Free-wheel diode suppressor							
	12 – 250		DILR...	**FDBDIL** 074464		10 off	For DC operated contactors Note drop-out delay
Off-delay mechanism							
	24		DILE...	**TDDILE24** 090200		5 off	For use with DILER(M) with DC operated coil only Off-delay: with auxiliary contact approx. 100 ms, without auxiliary contact approx. 130 ms.

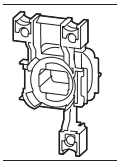
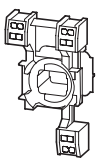
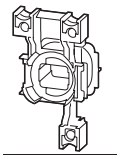
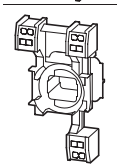
	For use with	Type Article no.	Price See Price List	Std. pack	
Connector					
For mechanically arranging contactor relays and timing relays in combinations					
	DILE... DILET...	**V0DILE** 026634		50 off	0 mm distance between relays
	DILR... ETR4	**V0DIL** 010772		20 off	0 mm distance between relays
	DILR... ETR4	**V5/15DIL** 013145		10 off	5 mm distance between relays, for use with DC operated contactor relays 15 mm distance between relays, for mechanical interlock between the two relays
Mechanical interlock					
	DILE...	**MVDILE** 010113		5 off	For two AC or DC operated contactor relays, distance between relays 0 mm, mechanical lifespan 2.5 × 10^6 operations, additional auxiliary contact modules can be fitted
Paralleling link					
For parallel connection of contacts					
	DILE... ...DILE DILR ...DIL	**BT480** 052785		100 off	Not protected against accidental contact in accordance with IEC 536
Blade terminal, DIN 46 244					
For contacts and coil connections 1 × 6.3 × 0.8/2 × 2.8 × 0.8 mm					
	DILE... DILET... DILR...	**BT483** 059904		100 off	Use insulated ferrules to DIN 46245.
Sealable shrouds					
Transparent					
	DILE... DILET...	**HDILE** 010482		1 off	Snap-fitting on the contactor relay, for use with open-type contactor relays or in service distribution boards Degree of protection: IP40 front Can be drilled to accommodate timing relay setting dials.
	TPE(H) TPD(H)	**PL-DILT** 036073		5 off	For screw fixing on the timer block and subsequent sealing

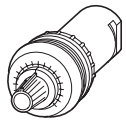
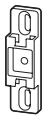
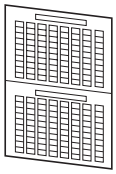
		Rated operational current AC–15 240 V I_e A	AC–15 415 V I_e A	DC[1] 220 V I_e A	Actuating voltage U_s V DC	Actuating current I mA	Circuit symbol	For use with contactor relays	**Type** Article no.	**Price** See Price List	Std. pack
Amplifier modules, plug-in type[2]											
Can be mounted directly											
		1.5	1	0.2	24	25		DILR...	**VS1DIL** 055480		1 off
	Output with built-in suppressor circuit	1.5	1	0.2	24	25		DILR...	**VS2DIL** 057853		1 off
Amplifier module, for separate mounting[2]											
Input with built-in suppressor circuit for overvoltage limitation											
	–	2	2	0.03	24	25		As required	**ETS4-VS3** 083094		1 off

Notes

[1] Rated operational current DC:
Making and breaking conditions DC-13, time L/R 300ms

[2] Contactor coils with rated operational current > 2 A must be actuated via the DILER-G mini contactor relay.

	For use with	**Type** Article no.	**Price** See Price List	Std. pack	**Notes**
Individual coils					
AC operated					
	DILR with screw terminals	**J-DIL00M(230V50HZ)** 043833		1 off	Further actuating voltages → 4/50 → 4/51
	DILR...-C with spring-loaded terminals	**J-DIL00M-C(230V50HZ)** 232055			
	DILR...-C with spring-loaded terminals and integrated suppressor	**J-DIL00M-C(230V50HZ-Z)** 232073			
DC operated					
	DILR with screw terminals	**G-DIL00M(24VDC)** 048557		1 off	
	DILR...-C with spring-loaded terminals	**G-DIL00M-C(24VDC)** 232065			
	DILR...-C with spring-loaded terminals and integrated suppressor	**G-DIL00M-C(24VDC-Z)** 232075			

	For use with	Type Article no.	Price See Price List	Std. pack	
Remote potentiometer, IP66					
10 kΩ; 0.5 W max.					
	DILET... ETR4-70	**M22-R10K** 229491		1 off	Front ring colour: Titan
	DILET... ETR4-70	**M22S-R10K** 232233		1 off	Front ring colour: black
Screw adapter					
For screw fixing					
	ETR4	**CS-TE** 095853		1 off	–
Component labelling					
Sheet of labels					
	Labelling with laser printer, plotter, film plotter, copier	**XGKE-GE** 207517		25 off	1 off = 1 sheet 240 labels per sheet 1 sheet = DIN A4, Can be split into two DIN A5 sheets

	With screw terminals:			With spring-loaded terminals:		
	DILA-40(...)	DILA-31(...)	DILA-22(...)	DILAC-40(...)	DILAC-31(...)	DILAC-22(...)
	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]
Standard voltages	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
12V50Hz	276315	276350	276385	276430	276462	276494
24V50Hz	276316	276351	276386	276431	276463	276495
48V50Hz	276317	276352	276387	276432	276464	276496
240V50Hz	276318	276353	276388	276433	276465	276497
500V50Hz	276319	276354	276389	281415	281418	281421
24V60Hz	276320	276355	276390	276434	276466	276498
110V60Hz	276321	276356	276391	276435	276467	276499
115V60Hz	276322	276357	276392	276436	276468	276500
208V60Hz	276323	276358	276393	281416	281419	281422
600V60Hz	276324	276359	276394	281417	281420	281423
42V50Hz 48V60Hz	276325	276360	276395	276437	276469	276501
110V50Hz 120V60Hz	276326	276361	276396	276438	276470	276502
190V50Hz 220V60Hz	276327	276362	276397	276439	276471	276503
220V50Hz 240V60Hz	276328	276363	276398	276440	276472	276504
230V50Hz 240V60Hz	276329	276364	276399	276441	276473	276505
380V50Hz 440V60Hz	276330	276365	276400	276442	276474	276506
400V50Hz 440V60Hz	276331	276366	276401	276443	276475	276507
415V50Hz 480V60Hz	276332	276367	276402	276444	276476	276508
24V50Hz/60Hz	276333	276368	276403	276445	276477	276509
42V50Hz/60Hz	276334	276369	276404	276446	276478	276510
110V50Hz/60Hz	276335	276370	276405	276447	276479	276511
220V50Hz/60Hz	276336	276371	276406	276448	276480	276512
230V50Hz/60Hz	276337	276372	276407	276449	276481	276513
380V50Hz/60Hz	276338	276373	276408	276450	276482	276514
Non-standard voltages (i.e. voltages other than the standard voltages listed above)[2]	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
...V50Hz(12-500V)	276341	276376	276411	276453	276485	276517
...V60Hz(12-600V)	276342	276377	276412	276454	276486	276518

DC	With screw terminals:			With spring-loaded terminals:		
	DILA-40(...)	DILA-31(...)	DILA-22(...)	DILAC-40(...)	DILAC-31(...)	DILAC-22(...)
	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]
Standard voltages	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
12 V DC	276343	276378	276413	276455	276487	276519
24 V DC	276344	276379	276414	276456	276488	276520
48 V DC	276345	276380	276415	276457	276489	276521
60V DC	276346	276381	276416	276458	276490	276522
110V DC	276347	276382	276417	276459	276491	276523
220V DC	276348	276383	276418	276460	276492	276524
Non-standard voltages (i.e. voltages other than the standard voltages listed above)[2]	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
...VDC(12-250V)	276349	276384	276419	276461	276493	276525

Notes

[1] To obtain the article number for ordering, read under selected type and actuating voltage from the table.
[2] For non-standard voltages, state the actuating voltage selected from the range (...–...V) shown.

AC	DILER-40(...)	DILER-31(...)	DILER-22(...)	DILR40(...)	DILR31(...)	DILR22(...)
	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]
Standard voltages	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
12V50Hz	066169	066170	066171	–	–	–
24V50Hz	010094	010251	010344	025066	029810	077267
48V50Hz	010190	010044	010201	055915	058286	091505
240V50Hz	010478	010300	010138	017947	022691	017943
24V60Hz	010110	010267	010497	027439	032183	084386
110V60Hz	010254	010172	010265	–	–	–
115V60Hz	010270	010204	010211	096255	010826	093878
42V50Hz, 48V60Hz	051755	051764	051773	043752	043764	043776
110V50Hz, 120V60Hz	051756	051765	051774	043753	043765	043777
190V50Hz, 220V60Hz	051757	051766	051775	043754	043766	043778
220V50Hz, 240V60Hz	051758	051767	051776	043755	043767	043779
230V50Hz, 240V60Hz	051759	051768	051777	043756	043768	043780
380V50Hz, 440V60Hz	051760	051769	051778	043757	043769	043781
400V50Hz, 440V60Hz	051761	051770	051779	043758	043770	043782
415V50Hz, 480V60Hz	051762	051771	051780	043759	043771	043783
24 V 50/60 Hz	021924	021594	021704	022693	027437	058284
42 V 50/60 Hz	033459	029869	029433	039304	044048	060657
110V50/60Hz	021961	021624	021871	091509	096253	065403
230 V 50/60 Hz	052725	052509	052508	052762	052761	052726
Non-standard voltages (i.e. voltages other than the standard voltages listed above)[2]	–	–	–	See Price List	See Price List	See Price List
...V50HZ(12 – 600V)	–	–	–	986763	991507	934554
...V60HZ(12 – 600V)	–	–	–	989136	993880	936927

DC	DILER-40-G(...)	DILER-31-G(...)	DILER-22-G(...)	DILR40-G(...)	DILR31-G(...)	DILR22-G(...)
	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]
Standard voltages	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
12 V DC	079711	079761	080728	–	–	–
24 V DC	010223	010157	010042	048537	048532	048526
48 V DC	010255	010205	010346	048538	048533	048527
60V DC	010271	010221	010499	048539	048534	048528
110V DC	010287	010253	010043	048535	048530	048529
220V DC	010303	010269	010091	048536	048531	048525
Non-standard voltages (i.e. voltages other than the standard voltages listed above)[2]	–	–	–	See Price List	See Price List	See Price List
...VDC(12 – 250V)	–	–	–	915590	915591	915592

Notes
[1] To obtain the article number for ordering, read under selected type and actuating voltage from the table.
[2] For non-standard voltages, state the actuating voltage selected from the range (...–...V) shown.

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AC	DILR22D(...)	DILR44D(...)	DILR53D(...)	VDIL(...)	J-DIL00M(...) Individual coil
	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]
Standard voltages	See Price List	See Price List	See Price List	See Price List	See Price List
24V50Hz	013207	072533	055923	053536	000079
48V50Hz	041683	010836	084399	055493	023809
240V50Hz	096261	065414	044058	053115	066693
24V60Hz	015580	074906	058296	053659	099744
115V60Hz	084396	053549	032193	052241	043837
42V50Hz, 48V60Hz	043788	043799	043810	043821	043829
110V50Hz, 120V60Hz	043789	043800	043811	043822	043830
190V50Hz, 220V60Hz	043790	043801	043812	043823	043831
220V50Hz, 240V60Hz	043791	043802	043813	043824	043832
230V50Hz, 240V60Hz	043792	043803	043814	043825	043833
380V50Hz, 440V60Hz	043793	043804	043815	–	043834
400V50Hz, 440V60Hz	043794	043805	043816	–	043835
415V50Hz, 480V60Hz	043795	043806	043817	–	043836
24 V 50/60 Hz	010834	070160	048804	053217	002452
42 V 50/60 Hz	027445	086771	070161	055218	011944
110V50/60Hz	079650	048803	027447	051165	085506
230 V 50/60 Hz	052760	052838	052961	054487	051352
Non-standard voltages (i.e. voltages other than the standard voltages listed above)[2]	See Price List	See Price List	See Price List	See Price List	See Price List
...V50Hz(12 – 415V)	–	–	–	903184	–
...V50Hz(12 – 600V)	974904	944057	922701	–	910098
...V60Hz(12 – 415V)	–	–	–	903183	–
...V60Hz(12 – 600V)	977277	946430	925074	–	910099

DC	DILR22D-G(...)	DILR44D-G(...)	DILR53D-G(...)	V-GDIL(...)	G-DIL00M(...)
	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]
Standard voltages	See Price List	See Price List	See Price List	See Price List	See Price List
24 V DC	048542	048547	048552	048562	048557
48VDC	048543	048548	048553	048563	048558
60 V DC	048544	048549	048554	048564	048559
110 V DC	048540	048545	048550	048560	048555
220 V DC	048541	048546	048551	048561	048556
Non-standard voltages (i.e. voltages other than the standard voltages listed above)[2]	See Price List	See Price List	See Price List	See Price List	See Price List
...VDC(12 – 250V)	915578	915579	915580	915545	910110

Notes
[1] To obtain the article number for ordering, read under selected type and actuating voltage from the table.
[2] For non-standard voltages, state the actuating voltage selected from the range (...–...V) shown.

AC	DILER-40-C(...)	DILER-31-C(...)	DILER-22-C(...)	DILR40-C(...)	DILR31-C(...)	DILR22-C(...)
	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]
Standard voltages	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
12V50Hz	231833	231808	231785	–	–	–
24V50Hz	231834	231811	231786	231911	231889	231856
48V50Hz	231835	231812	231787	231912	231890	231857
240V50Hz	231836	231813	231788	231913	231891	231858
24V60Hz	231837	231814	231789	231914	231892	231859
110V60Hz	231838	231815	231790	–	–	–
115V60Hz	231839	231816	231791	231915	231894	231860
42V50Hz, 48V60Hz	231840	231817	231792	231916	231896	231861
110V50Hz, 120V60Hz	231841	231818	231793	231917	231897	231862
190V50Hz, 220V60Hz	231842	231819	231794	231918	231898	231863
220V50Hz, 240V60Hz	231843	231820	231795	231919	231899	231864
230V50Hz, 240V60Hz	230239	230178	230176	230253	230250	230247
380V50Hz, 440V60Hz	231844	231821	231796	231920	231900	231865
400V50Hz, 440V60Hz	231845	231822	231797	231921	231901	231866
415V50Hz, 480V60Hz	231846	231823	231798	231922	231902	231867
24 V 50/60 Hz	231847	231824	231799	231923	231903	231868
42 V 50/60 Hz	231848	231825	231800	231924	231904	231869
110V50/60Hz	231849	231826	231801	231925	231905	231870
230 V 50/60 Hz	231850	231827	231802	231926	231906	231871
DC	**DILER-40-G-C(...)**	**DILER-31-G-C(...)**	**DILER-22-G-C(...)**	**DILR40-G-C...)**	**DILR31-G-C(...)**	**DILR22-G-C(...)**
	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]
Standard voltages	See Price List	See Price List	See Price List	See Price List	See Price List	See Price List
12 V DC	231851	231828	231803	–	–	–
24 V DC	230241	230179	230177	230254	230252	230248
48 V DC	231852	231829	231804	231927	231907	231872
60V DC	231853	231830	231805	231928	231908	231873
110V DC	231854	231831	231806	231929	231909	231874
220V DC	231855	231832	231807	231930	231910	231875

Notes
[1] To obtain the article number for ordering, read under selected type and actuating voltage from the table.

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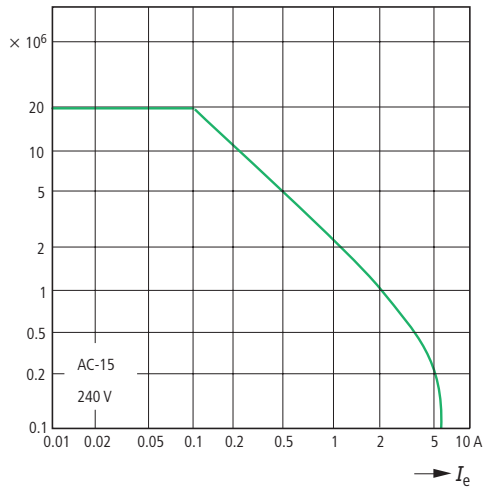
AC	With spring-loaded terminals and built-in suppressor circuit			With spring-loaded terminals:	
	DILR40-C(...-Z)	DILR31-C(...-Z)	DILR22-C(...-Z)	J-DIL00M-C(...) Individual coil	J-DIL00M-C(...-Z) Individual coil
	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]
Standard voltages	See Price List	See Price List	See Price List	See Price List	See Price List
24V50Hz	232033	232027	232021	232045	232070
48V50Hz	–	–	–	232046	–
240V50Hz	–	–	–	232047	–
24V60Hz	–	–	–	232049	–
115V60Hz	–	–	–	232050	–
42V50Hz, 48V60Hz	232035	232028	232022	232051	232071
110V50Hz, 120V60Hz	232037	232029	232023	232052	232072
190V50Hz, 220V60Hz	–	–	–	232053	–
220V50Hz, 240V60Hz	–	–	–	232054	–
230V50Hz, 240V60Hz	232039	232030	232024	232055	232073
380V50Hz, 440V60Hz	–	–	–	232056	–
400V50Hz, 440V60Hz	–	–	–	232057	–
415V50Hz, 480V60Hz	–	–	–	232058	–
24 V 50/60 Hz	–	–	–	232059	–
42 V 50/60 Hz	–	–	–	232060	–
110V50/60Hz	–	–	–	232061	–
230 V 50/60 Hz	232041	232031	232025	232062	232074
DC	**DILR40-G-C(...-Z)**	**DILR31-G-C(...-Z)**	**DILR22-G-C(...-Z)**	**G-DIL00M-C(...)**	**G-DIL00M-C(...-Z)**
	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]	Article no.[1]
Standard voltages	See Price List	See Price List	See Price List	See Price List	See Price List
24 V DC	232044	232032	232026	232065	232075
48VDC	–	–	–	232066	–
60 V DC	–	–	–	232067	–
110 V DC	–	–	–	232068	–
220 V DC	–	–	–	232069	–

Notes
[1] To obtain the article number for ordering, read under selected type and actuating voltage from the table.

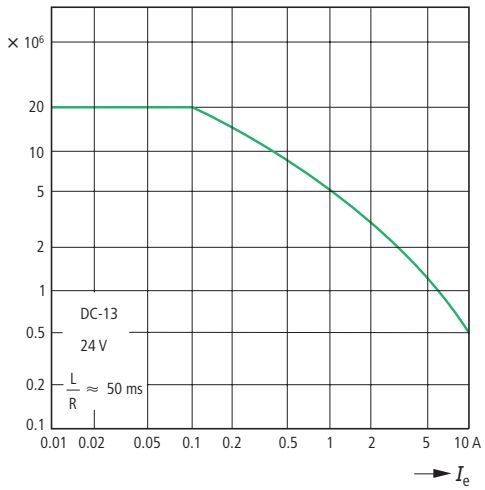
DILA (AC-15)

Component lifespan (operations)
I_e = Rated operational current



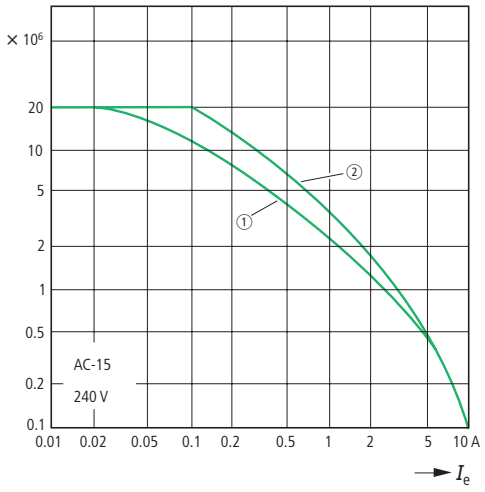
DILA (DC-13[1])

Component lifespan (operations)
I_e = Rated operational current



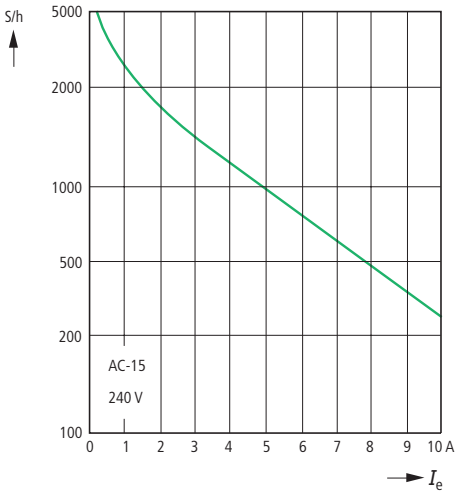
DILR (AC-15)

Component lifespan (operations)
I_e = Rated operational current
① = Make
② = Break



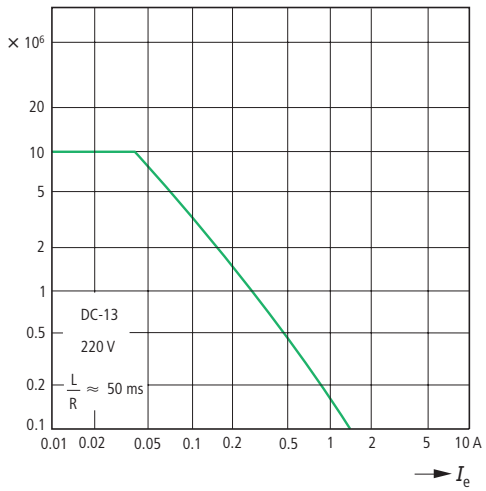
DILR (AC-15)

Maximum operating frequency (approximate value)
I_e = Rated operational current



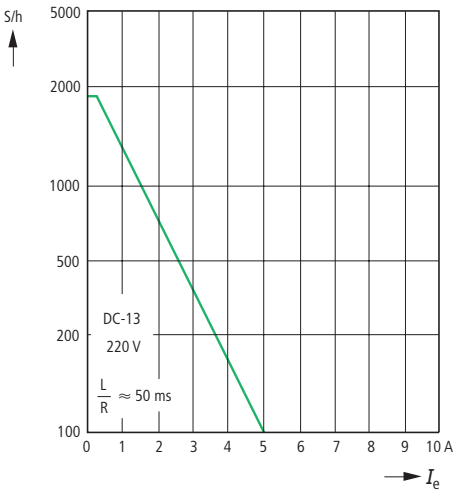
DILR (DC-13[1])

Component lifespan (operations)
I_e = Rated operational current



DILR (DC-13[1])

Maximum operating frequency (approximate value)
I_e = Rated operational current



Notes

[1] Making and breaking conditions to DC-13, time constant as stated.

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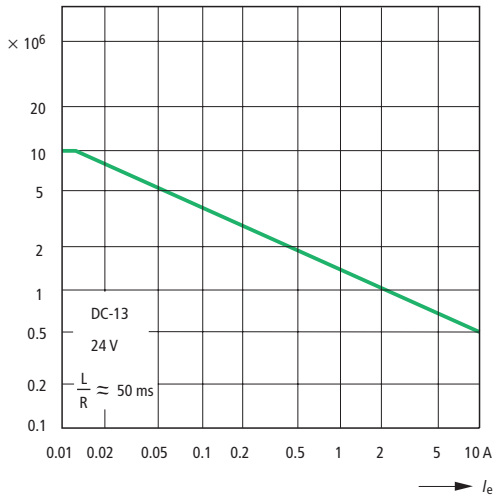
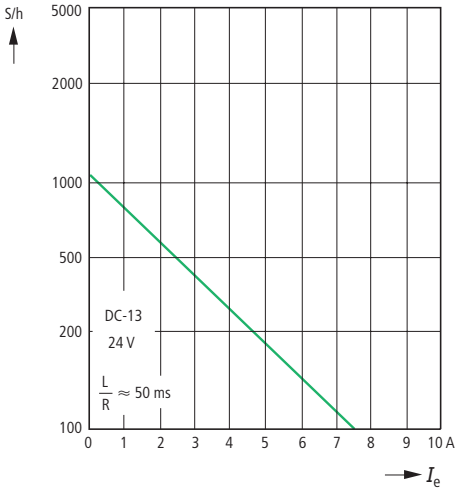
DILR (DC-13[1])

Component lifespan (operations)
I_e = Rated operational current



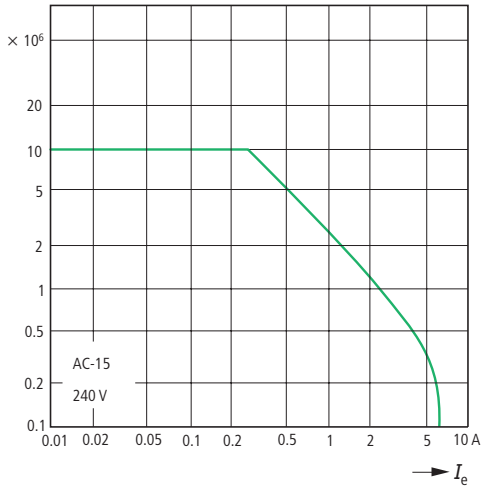
DILR (DC-13[1])

Maximum operating frequency (approximate value)
I_e = Rated operational current



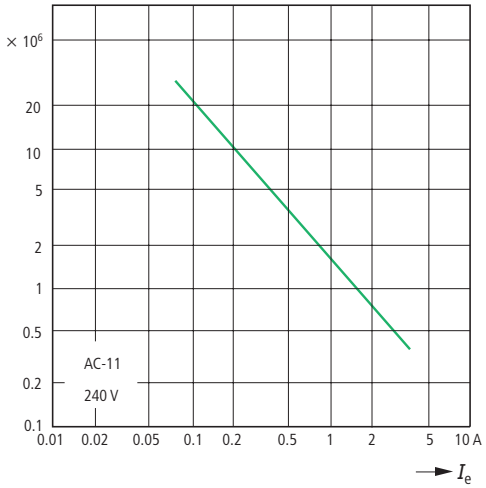
DILER (AC-15)

Component lifespan (operations)
I_e = Rated operational current



DILET (AC-11)

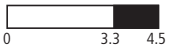
Component lifespan (operations)
I_e = Rated operational current



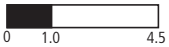
The diagrams show the closing and opening travel of the contact of the contactor relays and auxiliary contacts at no load.
Tolerances are not taken account of.

DILA-....AC

Make contact

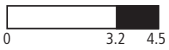


Break contact



DILA-XHI(C)..AC

Make contact



Break contact

DILA-XHI(C)V..AC

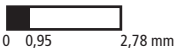
Early-make contact

Late-break contact

DILER-AC

Make contact

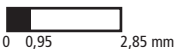
Break contact



DILER-DC

Make contact

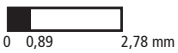
Break contact



...DILE

Make contact

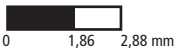
Break contact



...DDILE

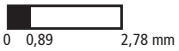
Early-make contact

Late-break contact



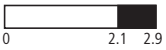
Make contact

Break contact

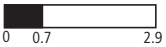


DILA-....DC

Make contact

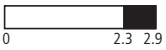


Break contact

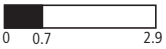


DILA-XHI(C)..DC

Make contact



Break contact



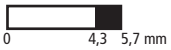
DILA-XHI(C)V..DC

Early-make contact

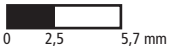
Late-break contact

DILR

Make contact



Break contact



Early-make contact

Late-break contact

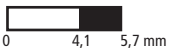
...DIL

Make contact

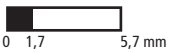
Break contact

TP...11DIL

Make contact



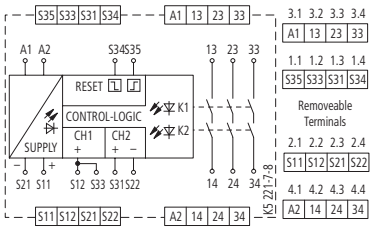
Break contact



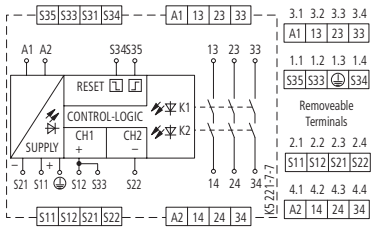
Moeller HPL0211-2004/2005

Safety relay for monitoring of Emergency-Stop applications and safety doors

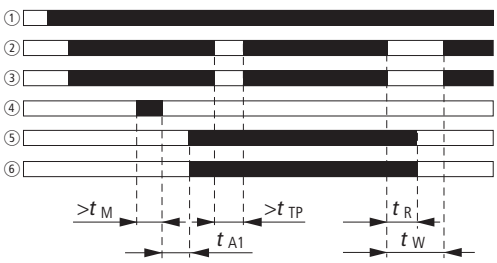
ESR4-NO-30-...(AC/DC 24 V)



ESR4-NO-30-...(AC 115/230 V)



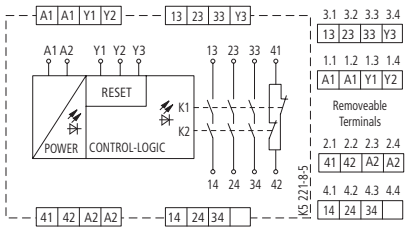
Manual start with manual reset



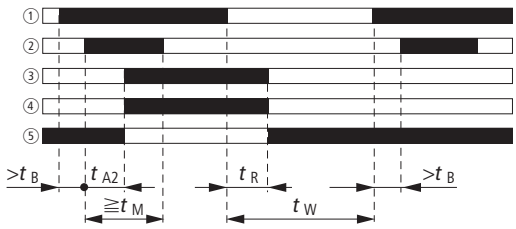
① A1/A2
② S12
③ S31/S22
④ S34
⑤ K1, K2
⑥ 13/14, 23/24, 33/34

t_M = Minimum closing delay
t_{A1} = Pick-up time
t_{TP} = Test pulse duration
t_R = Reset time
t_W = Recovery time

ESR4-NO-31...(AC/DC 24 V)



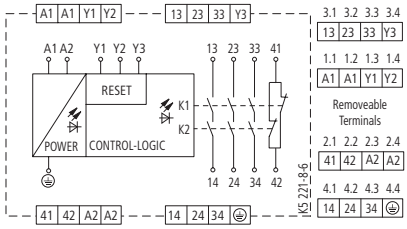
Manual start with reset button monitoring



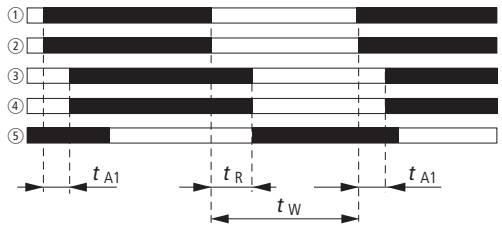
① A1, SUPPLY LED
② Y3
③ K1/K2, LED K1/K2
④ 13/14, 23/24, 33/34
⑤ 41/42

t_B = Stand-by delay
t_{A2} = Pick-up time
t_M = Minimum closing delay
t_R = Reset time
t_W = Recovery time

ESR4-NO-31-...(AC 115/230 V)



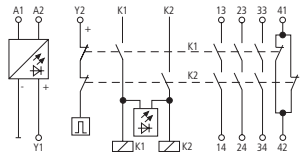
Automatic start



① A1, SUPPLY LED
② Y2
③ K1/K2, LED K1/K2
④ 13/14, 23/24, 33/34
⑤ 41/42

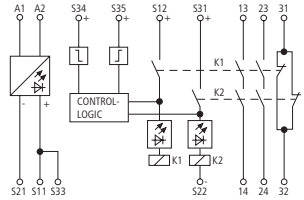
t_{A1} = Pick-up time
t_R = Reset time
t_W = Recovery time

ESR4-NO-31



① A1/A2 supply voltage, Power LED
② A2 supply voltage
③ Y2 Reset
④ K1, K2, LED K1/K2
⑤ 13/14, 23/24, 33/34
⑥ 41/42

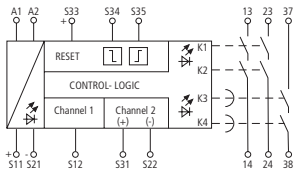
ESR4-NO-21

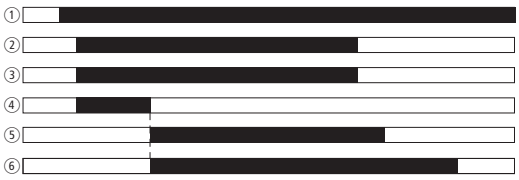


① A1/A2 supply voltage, Power LED
② S21/S22 Emergency-Stop
③ S34 Reset (with reset button monitoring)
④ K1, LED K1
⑤ K2, LED K2, 13/14, 23/24
⑥ 31/32

Safety relay for monitoring of Emergency-Stop applications and safety doors

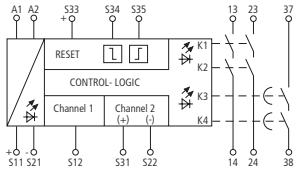
ESR4-NV3(30)-30





① A1/A2 supply voltage, Power LED
② S12 Emergency-Stop (channel 1)
③ S31/S22 Emergency-Stop (channel 2)
③ S34 Reset (with reset button monitoring)
⑤ 13/14, 23/24, LED K1/K2
⑥ 37/38, LED K3/K4

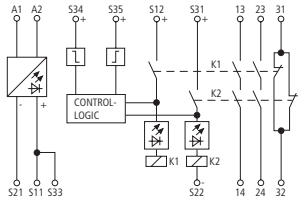
ESR4-NT30-30

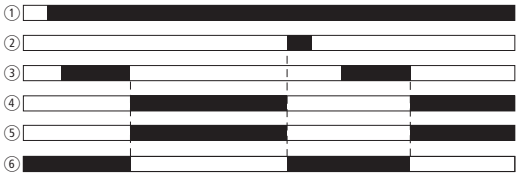


① A1/A2 supply voltage, Power LED
② S12 Emergency-Stop (channel 1)
③ S31/S22 Emergency-Stop (channel 2)
③ S34 Reset (with reset button monitoring)
⑤ 13/14, 23/24, LED K1/K2
⑥ 37/38, LED K3/K4

Safety relay for contact mat monitoring

ESR4-NM-21

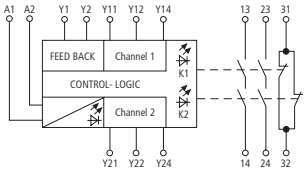


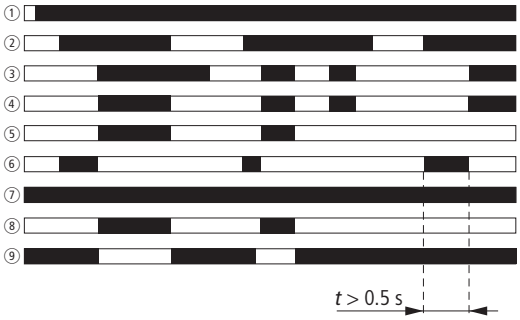


① A1/A2 supply voltage, Power LED
② S11/S21, S12/S22 contact mat
③ S34 Reset (with reset button monitoring)
④ K1, LED K1
⑤ K2, LED K2, 13/14, 23/24
⑥ 31/32

Two-hand relay

ESR4-NZ-21

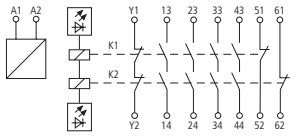




① A1/A2 supply voltage, Power LED
② Actuator S1
③ Actuator S2
④ K1, LED K1
⑤ K2, LED K2
⑥ < 0.5 s monitoring
⑦ Y1/Y2 feedback
⑧ 13/14, 23/24
⑨ 31/32

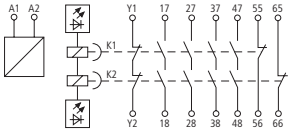
Contact expansion modules

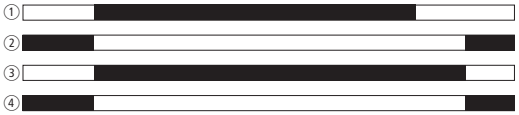
ESR4-NE-42



① A1/A2 supply voltage
② Y1, Y2 feedback circuit
③ 13/14, 23/24, 33/34, 43/44, LED K1, LED K2
④ 51/52, 61/62

ESR4-VE3-42

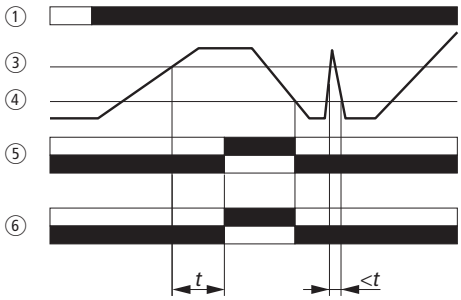




① A1/A2 supply voltage
② Y1, Y2 feedback circuit
③ 17/18, 27/28, 37/38, 47/48, LED K1, LED K2
④ 55/56, 65/66

Moeller HPL0211-2004/2005

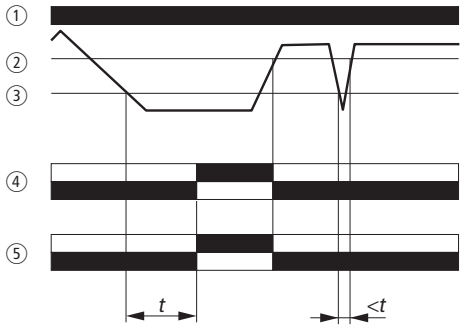
EMR4-I... current monitoring relay



Function at overcurrent OC

① Supply voltage A1-A2
③ Current being monitored
④ Hysteresis (reset value) overcurrent OC
⑤ Timed contact 1: 15-18, 15-16
⑥ Timed contact 2: 25-28, 25-26

Measuring cycle = 80 ms
t = (0.1 – 1 s; 3 – 30 s)
On-delay

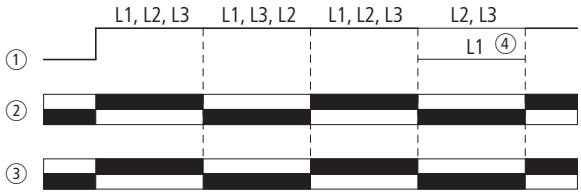


Function at undercurrent UC

① Supply voltage A1-A2
② Hysteresis (reset value) undercurrent UC
③ Response threshold for measuring the current
④ Timed contact 1: 15-18, 15-16
⑤ Timed contact 2: 25-28, 25-26

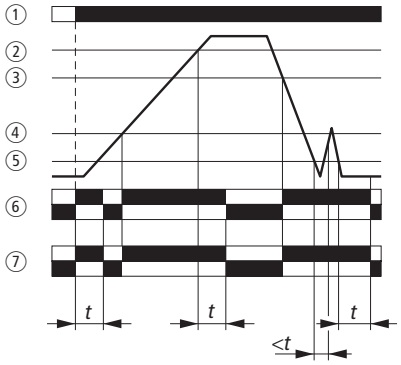
Measuring cycle = 80 ms
t = (0.05 – 1 s; 1.5 – 30 s)
Response delay

EMR4-F... phase sequence relay



① Voltage being monitored, three-phase system L1, L2, L3
② Timed contact 1: 11-14, 11-12
③ Timed contact 2: 21-24, 21-22
④ Phase failure 100 %

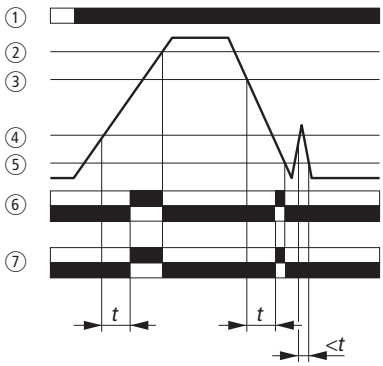
EMR4-W phase monitoring relay



On-delayed fault indication: Function ☒

① Supply voltage A1-A2
② U_{max}
③ Hysteresis – 5 %
④ Hysteresis + 5 %
⑤ U_{min}
⑥ Timed contact 1: 15-18, 15-16
⑦ Timed contact 2: 25-28, 25-26

t = Delay time applies only with overvoltage/undervoltage

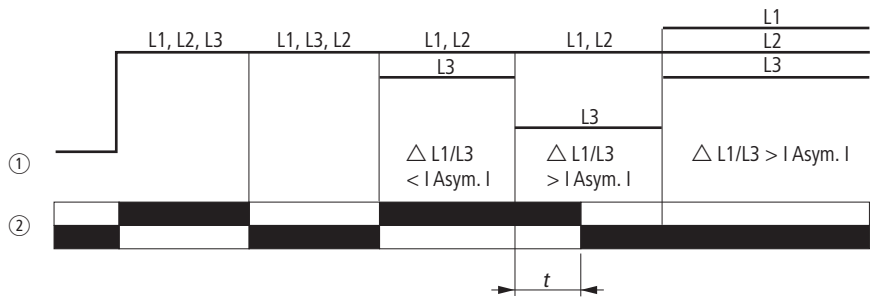


Off-delayed fault indication: Function ■

① Supply voltage A1-A2
② U_{max}
③ Hysteresis – 5 %
④ Hysteresis + 5 %
⑤ U_{min}
⑥ Timed contact 1: 15-18, 15-16
⑦ Timed contact 2: 25-28, 25-26

t = Delay time applies only with overvoltage/undervoltage

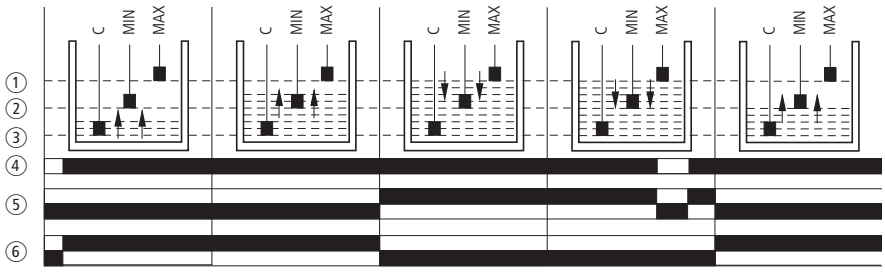
EMR4-A... phase imbalance monitoring relay



① Signal level L1, L2, L3
② Timed contact 1: 15-18, 15-16

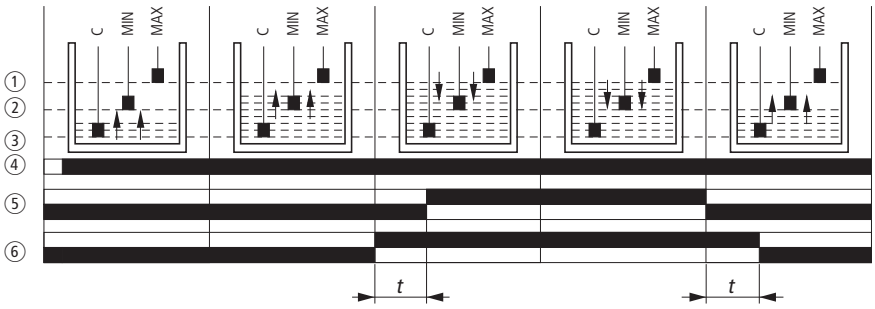
t = Delay time applies only with phase imbalance, 500 ms fixed setting

EMR4-N... liquid level monitoring relay



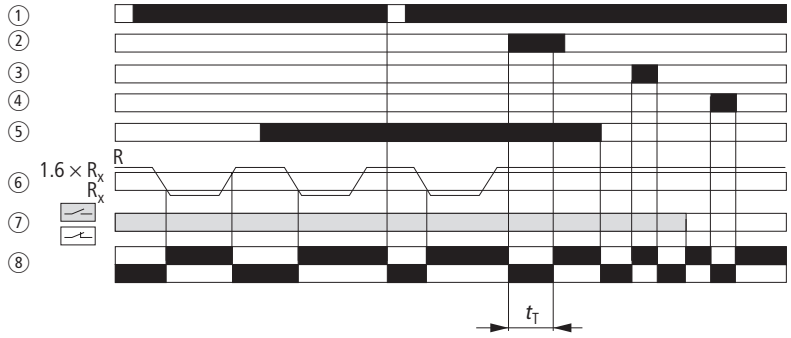
① Maximum filling level
② Minimum filling level
③ Reference electrode C
④ Supply voltage A1-A2
⑤ Function protection against running dry
DOWN: 11-14, 11-12
⑥ Function protection against overflowing
UP: 11-14, 11-12

EMR4-N500 liquid level monitoring relay



① Maximum filling level
② Minimum filling level
③ Reference electrode C
④ Supply voltage A1-A2
⑤ Function On-delay ⊠
15-18, 25-28,
15-16, 25-26
⑥ Function Off-delay ■
15-18, 25-28,
15-16, 25-26

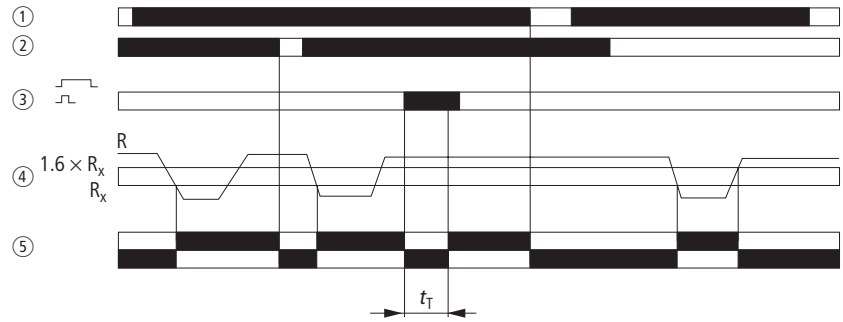
EMR4-RDC insulation monitoring relay



① Supply voltage A1-A2
② Front actuator: reset L+ and L–/test L+
③ Front actuator: test L–
Remote connection S3-S4: test L–
④ Remote connection S3-S1: test L+
⑤ Remote connection S3-S2: reset,
⑥ Insulation resistance R of the supply system, Set response value R_x
⑦ Front selector switch
⊣: Open-circuit principle,
⊣: Closed-circuit principle
⑧ Timed contact: 15-18, 15-16

t_T = Test duration approx. 1 s

EMR4-RAC insulation monitoring relay



① Supply voltage A1-A2
② Remote connection S1-S2: save, reset,
③ Front actuator: reset, test
Remote connection S1-⏚: reset, test
⑥ Insulation resistance of the supply system, Set response value R_x
⑤ Timed contact: 15-18, 15-16

t_T = Test duration > approx. 300 ms

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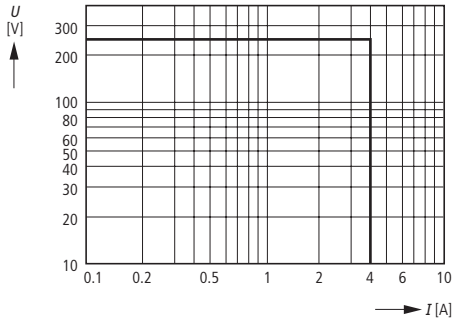
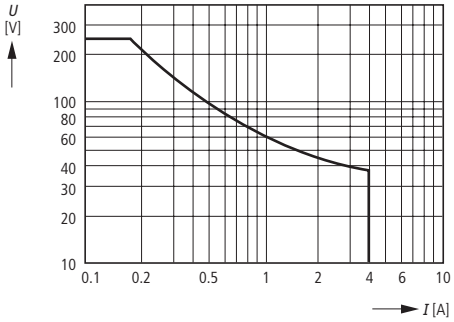
Load limit curves, 22.5 mm range

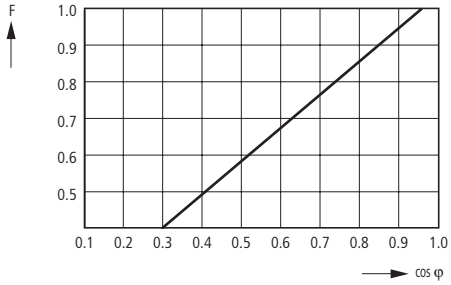
AC load (resistive)



DC load (resistive)

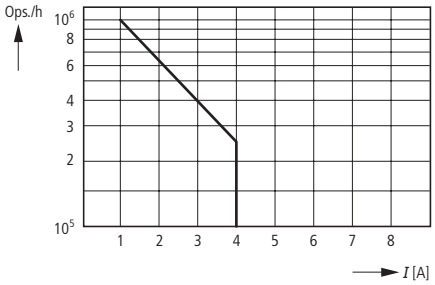


Derating factor with inductive AC load



Derating factor F
with inductive load

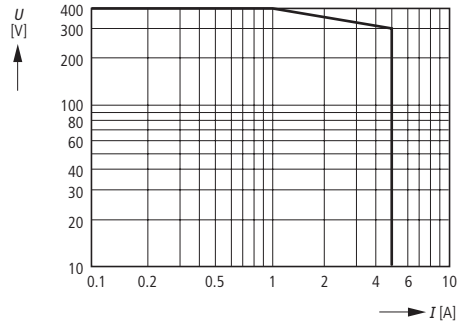
Contact life



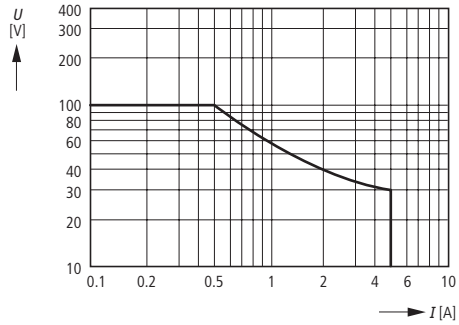
Contact life
Operations Ops.
220 V 50 Hz AC-1
360 operations/h

Load limit curves, 45 mm range

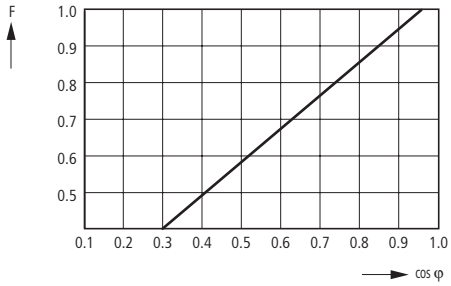
AC load (resistive)



DC load (resistive)

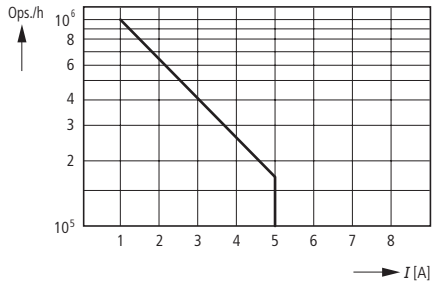


Derating factor with inductive AC load



Derating factor F
with inductive load

Contact life



Contact life
Operations Ops.
220 V 50 Hz AC-1
360 operations/h

Overload capacity of EMR4-I...

	Current measuring ranges	Input resistance R_i	Terminal configuration/ Measuring input	Long-term overload	Overload for t < 1 s
EMR4-I1...	3...30 mA 10...100 mA 0.1...1 A	33 Ω 10 Ω 1 Ω	B1-C B2-C B3-C	50 mA 150 mA 1,5 A	300 mA 1 A 10 A
EMR4-I15...	0.3...1.5 A 1...5 A 3...15 A	0,06 Ω 0,018 Ω 0,006 Ω	B1-C B2-C B3-C	2 A 7 A 20 A	15 A 50 A 100 A

			EASY200-EASY EASY202-RE	EASY512-...
General technical data				
Standards			EN 55011, EN 55022, EN 61000-4, IEC 60068-2-6, IEC 60068-2-27	
Dimensions (W × H × D)		mm	35.5 × 90 × 58 (2 space units)	71.5 × 90 × 58 (4 space units)
Weight		kg	0.07	0.2
Mounting			Top-hat rail IEC/EN 60715, 35 mm or screw fixing using fixing brackets ZB4-101-GF1 (accessories)	
Terminal capacity				
Solid		mm^2	0.2 / 4 (AWG 22 – 12)	0.2 / 4 (AWG 22 – 12)
Flexible with ferrule		mm^2	0.2 / 2.5 (AWG 22 – 12)	0.2 / 2.5 (AWG 22 – 12)
Standard screwdriver		mm	3.5 × 0.8	3.5 × 0.8
Max. tightening torque		Nm	0.6	0.6
Ambient climatic conditions				
Operational ambient temperature		°C	–25/+55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2	
Condensation			Prevent condensation by means of suitable measures	
LCD display (clearly legible)		°C	0 – 55	0 – 55
Storage		°C	40 – 70	40 – 70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5 – 95	5 – 95
Atmospheric pressure (operation)		hPa	795 – 1080	795 – 1080
Corrosion resistance				
IEC/EN 60947-2-42	4 days SO_2	cm^3/m^3	10	10
IEC/EN 60068-2-43	4 days H_2S	cm^3/m^3	1	1
Ambient mechanical conditions				
Pollution degree			2	2
Degree of protection (IEC/EN 60529)			IP20	IP20
Vibrations (IEC/EN 60068-2-6)				
Constant amplitude 0.15 mm		Hz	10 – 57	10 – 57
Constant acceleration, 2 g		Hz	57 – 150	57 – 150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1	1
Mounting position			Horizontal / vertical	Horizontal / vertical
Electromagnetic compatibility (EMC)				
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)				
Air discharge		kV	8	8
Contact discharge		kV	6	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)		V/m	10	10
Radio interference suppression (EN 55011)			EN 55011 Class B, EN 55022 Class B	
Burst pulses (IEC/EN 61000-4-4, level 3)				
Supply cables		kV	2	2
Signal lines		kV	2	2
High-energy pulses (surge) (IEC/EN 61000-4-5)		kV	2 (supply cables, symmetrical, EASY...AC)	
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)		kV	0.5 (supply cables, symmetrical, EASY...DC)	
Immunity to line-conducted interference to (IEC/EN 61000-4-6)		V	10	10
Insulation resistance				
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, No. 142	
Insulation resistance			EN 50178	EN 50178
Back-up/Accuracy of the real-time clock				
Back-up of real-time clock			–	→ Page 5
Accuracy of the real-time clock			–	Normally ± 5 (± 0.5 h / year)
Repetition accuracy of timing relays				
Accuracy of timing relays (of values)		%	–	± 1
Resolution				
Range "S"		ms	–	10
Range "M:S"		s	–	1
Range "H:M"		min	–	1
Retentive memory				
Write cycles of the retentive memory (at least)			–	1000000 (10^6)

Notes For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423GB

Moeller HPL0211-2004/2005

			EASY6..xEASY7...	EASY8..-...
General technical data				
Standards			EN 55011, EN 55022, EN 61000-4, IEC 60068-2-6, IEC 60068-2-27	
Dimensions (W × H × D)		mm	107.5 × 90 × 58 (6 space units)	107.5 × 90 × 72 (6 space units)
Weight		kg	0.3	0.3
Mounting			Top-hat rail IEC/EN 60715, 35 mm or screw fixing using fixing brackets ZB4-101-GF1 (accessories)	
Terminal capacity				
Solid		mm^2	0.2 / 4 (AWG 22 – 12)	0.2 / 4 (AWG 22 – 12)
Flexible with ferrule		mm^2	0.2 / 2.5 (AWG 22 – 12)	0.2 / 2.5 (AWG 22 – 12)
Standard screwdriver		mm	3.5 × 0.8	3.5 × 0.8
Max. tightening torque		Nm	0.6	0.6
Ambient climatic conditions				
Operational ambient temperature		°C	–25/+55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2	
Condensation			Prevent condensation by means of suitable measures	
LCD display (clearly legible)		°C	0 – 55	0 – 55
Storage		°C	40 – 70	40 – 70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5 – 95	5 – 95
Atmospheric pressure (operation)		hPa	795 – 1080	795 – 1080
Corrosion resistance				
IEC/EN 60947-2-42	4 days SO_2	cm^3/m^3	10	10
IEC/EN 60068-2-43	4 days H_2S	cm^3/m^3	1	1
Ambient mechanical conditions				
Pollution degree			2	2
Degree of protection (IEC/EN 60529)			IP20	IP20
Vibrations (IEC/EN 60068-2-6)				
Constant amplitude 0.15 mm		Hz	10 – 57	10 – 57
Constant acceleration, 2 g		Hz	57 – 150	57 – 150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1	1
Mounting position			Horizontal / vertical	Horizontal / vertical
Electromagnetic compatibility (EMC)				
Electrostatic discharge (IEC/EN 61000-4-2, severity level 3, ESD)				
Air discharge		kV	8	8
Contact discharge		kV	6	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)		V/m	10	10
Radio interference suppression (EN 55011)			EN 55011 Class B, EN 55022 Class B	
Burst pulses (IEC/EN 61000-4-4, level 3)				
Supply cables		kV	2	2
Signal lines		kV	2	2
High-energy pulses (surge) (IEC/EN 61000-4-5)		kV	2 (supply cables, symmetrical, EASY...AC)	
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)		kV	0.5 (supply cables, symmetrical, EASY...DC)	
Immunity to line-conducted interference to (IEC/EN 61000-4-6)		V	10	10
Insulation resistance				
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, No. 142	
Insulation resistance			EN 50178	EN 50178
Back-up/Accuracy of the real-time clock (not easy600)				
Back-up of real-time clock			→ Page 5	→ Page 5
Accuracy of the real-time clock			Normally ± 5 (± 0.5 h / year)	Normally ± 5 (± 0.5 h / year)
Repetition accuracy of the timing relays (not easy600)				
Accuracy of timing relays (of values)		%	± 1	± 0.02
Resolution				
Range "S"		ms	10	5
Range "M:S"		s	1	1
Range "H:M"		min	1	1
Retentive memory				
Write cycles of the retentive memory (at least)			1000000 (10^6)	10000000 (10^{10}) (read / write cycles)

Notes For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423GB

			EASY512-AB-...	EASY719-AB-...
Power supply				
Rated operational voltage	U_e	V	24 AC	24 AC
Admissible range		V AC	20.4 – 26.4	20.4 – 26.4
Frequency		Hz	50 / 60 (± 5%)	50 / 60 (± 5%)
Input current				
At 24 V AC 50/60 Hz		mA	Normally 200	Normally 300
Voltage dips (IEC/EN 61131-2)		ms	20	20
Power loss				
At 24 V AC		VA	Normally 5	Normally 7

			EASY512-AB-...	EASY719-AB-...
Digital inputs 24 V DC				
Quantity			8	12
Inputs can be used as analog inputs			2 (I7, I8)	4 (I7, I8, I11, I12)
Status indication			LCD display (if provided)	LCD display (if provided)
Potential isolation				
From power supply			No	No
Between digital inputs			No	No
From the outputs			Yes	Yes
Rated operational voltage	U_e	V	24 AC	24 AC
Rated voltage L (sinusoidal)				
At signal "0"		V AC	0 – 6	0 – 6
At signal "1"	U_e	V	(I7, I8) > 7 AC, > 9.5 DC (I1 - I6) 14 – 26.4 AC	(I7, I8, I11, I12) > 7 AC, > 9.5 DC (I1 - I6, I9, I10) 14 – 26.4 AC
Rated frequency		Hz	50 – 60	50 – 60
Input current at signal "1"				
I1 to I6		mA	4 (at 24 V AC, 50 Hz)	4 (at 24 V AC, 50 Hz)
I7, I8		mA	2 (at 24 V AC, 50 Hz) 2 (at 24 V DC)	2 (at 24 V AC, 50 Hz) 2 (at 24 V DC)
I9, I10		mA	–	4 (at 24 V AC, 50 Hz)
I11, I12		mA	–	2 (at 24 V AC, 50 Hz) 2 (at 24 V DC)
Delay time (0 – 1/1 – 0) I1 - I12				
Debounce ON, 50/60 Hz		ms	80 / 66⅔	80 / 66⅔
Debounce OFF, 50/60 Hz		ms	20 / 16⅔	20 / 16⅔
Max. admissible cable length (per input)				
Maximum cable length between stripped ends		m	40	40
I9, I10		m	–	Normally 40

Notes For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423GB

			EASY512-AC-R..	EASY618-AC-RE
Power supply				
Rated operational voltage	U_e	V	100/110/115/120/230/240 AC (+10/-15 %)	100/110/115/120/230/240 AC (+10/-15 %)
Admissible range		V AC	85 – 264	85 – 264
Frequency		Hz	50 / 60 (± 5%)	50 / 60 (± 5%)
Input current				
At 115/120 V AC 60 Hz		mA	Normally 40	Normally 70
At 230/240 V AC 50 Hz		mA	Normally 20	Normally 35
Voltage dips (IEC/EN 61131-2)		ms	20	20
Power loss				
At 115/120 V AC		VA	Normally 5	Normally 10
At 115/230 V AC		VA	Normally 5	Normally 10

			EASY512-AC-R..	EASY618-AC-RE
Digital inputs 115/230 V AC				
Quantity			8	12
Status indication			LCD display (if provided)	LCD display (if provided)
Potential isolation				
From power supply			No	No
Between digital inputs			No	No
From the outputs			Yes	Yes
Rated voltage L (sinusoidal)				
At signal "0"		V AC	0 – 40	0 – 40
At signal "1"		V AC	79 – 264	79 – 264
Rated frequency		Hz	50 – 60	50 – 60
Input current at signal "1"				
R1 to R12		mA	–	12 × 0.25 (at 115 V AC, 60 Hz) 12 × 0.5 (at 230 V AC, 50 Hz)
I1 to I6		mA	6 × 0.25 (at 115 V AC, 60 Hz) 6 × 0.5 (at 230 V AC, 50 Hz)	–
I7, I8		mA	2 × 4 (at 115 V AC, 60 Hz) 2 × 6 (at 230 V AC, 50 Hz)	–
Delay time				
Delay time (0 – 1/1 – 0) I1 - I6, I9 - I12, R1 - R12				
Debounce ON, 50/60 Hz		ms	80 / 66⅔	80 / 66⅔
Debounce OFF, 50/60 Hz		ms	20 / 16⅔	20 / 16⅔
Delay time I7, I8 (1 – 0)				
Debounce ON, 50/60 Hz		ms	160 / 150	80 / 66⅔
Debounce OFF, 50/60 Hz		ms	100 / 100	20 / 16⅔
Delay time I7, I8 (0 – 1)				
Debounce ON, 50/60 Hz		ms	80 / 66⅔	80 / 66⅔
Debounce OFF, 50/60 Hz		ms	20 / 16⅔	20 / 16⅔
Max. admissible cable length (per input)				
R1 to R12		m	–	Normally 40
I1 to I6		m	Normally 40	Normally 40
I7, I8		m	Normally 100	Normally 100
I9 to I12		m	–	Normally 40

Notes

For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423GB

			EASY719-AC-...	EASY819-AC-RC.
Power supply				
Rated operational voltage	U_e	V	100/110/115/120/230/240 AC (+10/-15 %)	100/110/115/120/230/240 AC (+10/-15 %)
Admissible range		V AC	85 – 264	85 – 264
Frequency		Hz	50 / 60 (± 5%)	50 / 60 (± 5%)
Input current				
At 115/120 V AC 60 Hz		mA	Normally 70	Normally 70
At 230/240 V AC 50 Hz		mA	Normally 35	Normally 35
Voltage dips (IEC/EN 61131-2)		ms	20	20
Power loss				
At 115/120 V AC		VA	Normally 10	Normally 10
At 115/230 V AC		VA	Normally 10	Normally 10

			EASY719-AC-R..	EASY819-AC-R..
Digital inputs 115/230 V AC				
Quantity			12	12
Status indication			LCD display (if provided)	LCD display (if provided)
Potential isolation				
From power supply			No	No
Between digital inputs			No	No
From the outputs			Yes	Yes
From the PC interface, memory card NET network, EASY-Link			–	Yes
Rated voltage L (sinusoidal)				
At signal "0"		V AC	0 – 40	0 – 40
At signal "1"		V AC	79 – 264	79 – 264
Rated frequency		Hz	50 – 60	50 – 60
Input current at signal "1"				
I1 to I6		mA	6 × 0.25 (at 115 V AC, 60 Hz) 6 × 0.5 (at 230 V AC, 50 Hz)	6 × 0.25 (at 115 V AC, 60 Hz) 6 × 0.5 (at 230 V AC, 50 Hz)
I7, I8		mA	2 × 4 (at 115 V AC, 60 Hz) 2 × 6 (at 230 V AC, 50 Hz)	2 × 4 (at 115 V AC, 60 Hz) 2 × 6 (at 230 V AC, 50 Hz)
I9 to I12		mA	4 × 0.25 (at 115 V AC, 60 Hz) 4 × 0.5 (at 230 V AC, 50 Hz)	4 × 0.25 (at 115 V AC, 60 Hz) 4 × 0.5 (at 230 V AC, 50 Hz)
Delay time				
Delay time (0 – 1/1 – 0) I1 - I6, I9 - I12, R1 - R12				
Debounce ON, 50/60 Hz		ms	80 / 66⅔	80 / 66⅔
Debounce OFF, 50/60 Hz		ms	20 / 16⅔	20 / 16⅔
Delay time I7, I8 (1 – 0)				
Debounce ON, 50/60 Hz		ms	80 / 66⅔	120 / 100
Debounce OFF, 50/60 Hz		ms	20 / 16⅔	40 / 33⅓
Delay time I7, I8 (0 – 1)				
Debounce ON, 50/60 Hz		ms	80 / 66⅔	80 / 66⅔
Debounce OFF, 50/60 Hz		ms	20 / 16⅔	20 / 16⅔
Max. admissible cable length (per input)				
I1 to I6		m	Normally 40	Normally 60
I7, I8		m	Normally 100	Normally 100
I9 to I12		m	Normally 40	Normally 60

Notes For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423GB

			EASY512-DA-...	EASY719-DA-...	EASY512-DC-...
Power supply					
Rated operational voltage	U_e	V	12 DC (-15/+30%)	12 DC (-15/+30%)	24 DC (-15/+20%)
Admissible range		V DC	10.2 – 15.6	10.2 – 15.6	20.4 – 28.8
Residual ripple		%	≦ 5	≦ 5	≦ 5
Input current					
At rated voltage		mA	Normally 140	Normally 200	Normally 80
Voltage dips (IEC/EN 61131-2)		ms	10	10	10
Power loss		W	Normally 2	Normally 3.5	Normally 2

			EASY512-DA-...	EASY719-DA-...
Digital inputs 12 V DC				
Quantity			8	12
Inputs can be used as analog inputs			(2) I7, I8	(4) I7, I8, I11, I12
Status indication			LCD display (if provided)	LCD display (if provided)
Potential isolation				
From power supply			No	No
Between digital inputs			No	No
From the outputs			Yes	Yes
Rated operational voltage	U_e	V DC	12	12
At signal "0"	U_e	V DC	4 (I1 – I8)	4 (I1 – I12)
At signal "1"	U_e	V DC	8 (I1 – I8)	8 (I1 – I12)
Input current at signal "1"				
I1 to I6		mA	3.3 (at 12 V DC)	3.3 (at 12 V DC)
I7, I8		mA	1.1 (at 12 V DC)	1.1 (at 12 V DC)
I9 to I12		mA	–	3.3 (at 12 V DC)
Delay time from 0 to 1				
Debounce ON		ms	20	20
Debounce OFF		ms	Normally 0.3 (I1 – I6), 0.35 (I7, I8)	Normally 0.3 (I1 – I6, I9, I10), 0.35 (I7, I8, I11, I12)
Delay time from 1 to 0				
Debounce ON		ms	20	20
Debounce OFF		ms	Normally 0.3 (I1 – I6), 0.15 (I7, I8)	Normally 0.4 (I1 – I6, I9, I10), 0.35 (I7, I8, I11, I12)
Cable length (unscreened)		m	100	100
Frequency counter			2 (I3, I4)	2 (I3, I4)
High-speed counter inputs			2 (I1, I2)	2 (I1, I2)
Counter frequency			< 1	< 1
Pulse shape			Square	Square
Pulse pause ratio			1:1	1:1
Cable length, screened			< 20	< 20

			EASY512-AB-..., DA, DC	EASY719-AB-..., DA, DC	EASY8..-DC-...
Analog inputs					
Quantity			2 (I7, I8)	4 (I7, I8, I11, I12)	4 (I7, I8, I11, I12)
Potential isolation					
From power supply			No	No	No
From the digital inputs			No	No	No
From the outputs			Yes	Yes	Yes
From the PC interface, memory card NET network, EASY-Link			No	No	Yes
Type of input			DC voltage	DC voltage	DC voltage
Signal range		V DC	0 – 10	0 – 10	0 – 10
Resolution, analog		V	0.01	0.01	0.01
Resolution, digital		V	0.01	0.01	0.01
Resolution, digital		Bit	10 (value 1 – 1023)	10 (value 0 – 1023)	10 (value 0 – 1023)
Input impedance		kΩ	11.2	11.2	11.2
Accuracy of actual value					
Two EASY devices		%	± 3	± 3	± 3
Within a single device		%	± 2, ± 0.12 V	± 2, ± 0.12 V	± 2
Conversion time, analog/digital		ms	Input delay ON: 20; Input delay OFF: each cycle time		Every CPU cycle
Input current		mA	< 1	< 1	< 1
Cable length screened		m	< 30	< 30	< 30

Notes For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423GB

			EASY6..-DC-.E	EASY7..-DC-...	EASY8..-DC-...
Power supply					
Rated operational voltage	U_e	V	24 DC (-15/+20%)	24 DC (-15/+20%)	24 DC (-15/+20%)
Admissible range		V DC	20.4 – 28.8	20.4 – 28.8	20.4 – 28.8
Residual ripple		%	≦ 5	≦ 5	≦ 5
Input current					
At rated voltage		mA	Normally 140	Normally 140	Normally 140
Voltage dips (IEC/EN 61131-2)		ms	10	10	10
Power loss		W	Normally 3.4	Normally 3.5	Normally 3.4

			EASY512-DC-...	EASY6..-DC-.E	EASY7..-DC-...	EASY8..-DC-...
Digital inputs 24 V DC						
Quantity			8	12	12	12
Inputs can be used as analog inputs			2 (I7, I8)	–	4 (I7, I8, I11, I12)	4 (I7, I8, I11, I12)
Status indication			LCD display (if provided)			
Potential isolation						
From power supply			No	No	No	No
Between digital inputs			No	No	No	No
From the outputs			Yes	Yes	Yes	Yes
From the PC interface, memory card NET network, EASY-Link			–	–	–	Yes
Rated operational voltage	U_e	V DC	24	24	24	24
At signal "0"	U_e	V DC	< 5 (I1 – I8)	< 5 (I1 – I12, R1 – R12)	< 5 (I1 – I12, R1 – R12)	< 5 (I1 – I6, I9, I10) < 8 (I7, I8, I11, I12)
At signal "1"	U_e	V DC	> 15 (I1 – I6), > 8 (I7, I8)	–	> 15.0 (I1 – I6, I9, I10), > 8.0 (I7, I8, I11, I12)	> 15.0 (I1 – I6, I9, I10), > 8.0 (I7, I8, I11, I12)
Input current at signal "1"						
R1 to R12		mA	–	3.3 (at 24 V DC)	–	–
I1 to I6		mA	3.3 (at 24 V DC)	–	3.3 (at 24 V DC)	3.3 (at 24 V DC)
I7, I8		mA	2.2 (at 24 V DC)	–	2.2 (at 24 V DC)	2.2 (at 24 V DC)
I9, I10		mA	–	–	3.3 (at 24 V DC)	3.3 (at 24 V DC)
I11, I12		mA	–	–	2.2 (at 24 V DC)	2.2 (at 24 V DC)
Delay time from 0 to 1						
Debounce ON		ms	20	20	20	20
Debounce OFF		ms	Normally 0.25 (I1 – I8)	Normally 0.25 (R1 – R12)	Normally 0.25 (I1 – I12)	Normally 0.1 (I1 – I4), Normally 0.25 (I5 – I12)
Delay time from 1 to 0						
Debounce ON		ms	20	20	20	20
Debounce OFF		ms	–	–	–	Normally 0.1 (I1 – I4), Normally 0.4 (I5, I6, I9, I12), Normally 0.2 (I7, I8, I11, I12)
Cable length (unscreened)		m	100	100	100	100
Frequency counter			2 (I3, I4)	–	2 (I3, I4)	4 (I1, I2, I3, I4)
Counter frequency		kHz	< 1	–	< 1	< 5
Pulse shape			Square	–	Square	Square
Pulse pause ratio			1:1	–	1:1	1:1
Incremental counter			–	–	–	2 (I1 + I2, I3 + I4)
Counter frequency		kHz	–	–	–	< 3
Pulse shape			–	–	–	Square
Counter inputs I1 and I2, I3 and I4			–	–	–	2
Signal offset			–	–	–	90°
Pulse pause ratio			–	–	–	1:1
High-speed counter inputs			2 (I1, I2)	–	2 (I1, I2)	4 (I1, I2, I3, I4)
Counter frequency		kHz	< 1	–	< 1	< 5
Pulse shape			Square	–	Square	Square
Pulse pause ratio			1:1	–	1:1	1:1
Cable length, screened		m	–	–	–	< 20

Notes For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423GB

			EASY202-RE	EASY512-..-R..
Relay outputs				
Quantity			2	4
Outputs in groups of			2	1
Parallel switching of outputs to increase performance			Not permissible	Not permissible
Protection of an output relay			Miniature circuit-breaker B16 or fuse 8 A (slow)	
Potential isolation				
From power supply			Yes	Yes
From the inputs			Yes	Yes
From the PC interface, memory card, NET network, EASY-Link			No	No
Safe isolation		V AC	300	300
Basic insulation		V AC	600	600
Lifespan, mechanical	Operations	× 10^6	10	10
Contacts				
Conventional thermal current (10 A UL)		A	8	8
Recommended for load: 12 V AC/DC		mA	> 500	> 500
Short-circuit proof cos φ = 1, characteristic B16 at 600 A		A	16	16
Short-circuit proof cos φ = 0.5 - 0.7; characteristic B16 at 900 A		A	16	16
Rated impulse withstand voltage U_{imp} contact to coil		kV	6	6
Rated operational voltage	U_e	V AC	250	250
Rated insulation voltage	U_i	V AC	250	250
Safe isolation to EN 50178 between coil and contact		V AC	300	300
Safe isolation to EN 50178 between 2 contacts		V AC	300	300
Making capacity				
AC–15, 250 V AC, 3 A (600 ops./h)	Operations		300000	300000
DC-13, L/R ≦ 150 ms, 24 V DC, 1 A (500 ops./h)	Operations		200000	200000
Breaking capacity				
AC–15, 250 V AC, 3 A (600 ops./h)	Operations		300000	300000
DC-13, L/R ≦ 150 ms, 24 V DC, 1 A (500 ops./h)	Operations		200000	200000
Filament bulb load				
1000 W at 230/240 V AC	Operations		25000	25000
500 W at 115/120 V AC	Operations		25000	25000
Fluorescent lamp load				
Fluorescent lamp load 10 × 58 W at 230/240 V AC				
With series-connected electrical device	Operations		25000	25000
Uncompensated	Operations		25000	25000
Fluorescent lamp load 1 × 58 W at 230/240 V AC conventionally compensated	Operations		25000	25000
Switching frequency				
Mechanical operations		× 10^6	10	10
Switching frequency		Hz	10	10
Resistive load/lamp load		Hz	2	2
Inductive load		Hz	0.5	0.5
UL/CSA				
Uninterrupted current at 240 V AC		A	10	10
Uninterrupted current at 24 V DC		A	8	8
AC				
Control circuit rating codes (utilization category)			B 300 Light Pilot Duty	B 300 Light Pilot Duty
Max. rated operational voltage		V AC	300	300
Max. uninterrupted thermal current cos φ = 1 at B 300		A	5	5
Max. make/break capacity cos φ ≠ 1 at B 300		VA	3600 / 360	3600 / 360
DC				
Control circuit rating codes (utilization category)			R 300 Light Pilot Duty	R 300 Light Pilot Duty
Max. rated operational voltage		V DC	300	300
Max. thermal uninterrupted current at R 300		A	1	1
Max. make/break capacity at R 300		VA	28 / 28	28 / 28

Notes

For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423GB

			EASY618/719-..-R..	EASY8..-...-R...
Relay outputs				
Quantity			6	6
Outputs in groups of			1	1
Parallel switching of outputs to increase performance			Not permissible	Not permissible
Protection of an output relay			Miniature circuit-breaker B16 or fuse 8 A (slow)	Miniature circuit-breaker B16 or fuse 8 A (slow)
Potential isolation				
From power supply			Yes	Yes
From the inputs			Yes	Yes
From the PC interface, memory card, NET network, EASY-Link			No	Yes
Safe isolation		V AC	300	300
Basic insulation		V AC	600	600
Lifespan, mechanical	Operations	× 10^6	10	10
Contacts				
Conventional thermal current (10 A UL)		A	8	8
Recommended for load: 12 V AC/DC		mA	> 500	> 500
Short-circuit proof cos φ = 1, characteristic B16 at 600 A		A	16	16
Short-circuit proof cos φ = 0.5 - 0.7; characteristic B16 at 900 A		A	16	16
Rated impulse withstand voltage U_{imp} contact to coil		kV	6	6
Rated operational voltage	e	V AC	250	250
Rated insulation voltage	i	V AC	250	250
Safe isolation to EN 50178 between coil and contact		V AC	300	300
Safe isolation to EN 50178 between 2 contacts		V AC	300	300
Making capacity				
AC–15, 250 V AC, 3 A (600 ops./h)	Operations		300000	300000
DC-13, L/R ≦ 150 ms, 24 V DC, 1 A (500 ops./h)	Operations		200000	200000
Breaking capacity				
AC–15, 250 V AC, 3 A (600 ops./h)	Operations		300000	300000
DC-13, L/R ≦ 150 ms, 24 V DC, 1 A (500 ops./h)	Operations		200000	200000
Filament bulb load				
1000 W at 230/240 V AC	Operations		25000	25000
500 W at 115/120 V AC	Operations		25000	25000
Fluorescent lamp load				
Fluorescent lamp load 10 × 58 W at 230/240 V AC				
With series-connected electrical device	Operations		25000	25000
Uncompensated	Operations		25000	25000
Fluorescent lamp load 1 × 58 W at 230/240 V AC conventionally compensated	Operations		25000	25000
Switching frequency				
Mechanical operations		× 10^6	10	10
Switching frequency		Hz	10	10
Resistive load/lamp load		Hz	2	2
Inductive load		Hz	0.5	0.5
UL/CSA				
Uninterrupted current at 240 V AC		A	10	10
Uninterrupted current at 24 V DC		A	8	8
AC				
Control circuit rating codes (utilization category)			B 300 Light Pilot Duty	B 300 Light Pilot Duty
Max. rated operational voltage		V AC	300	300
Max. uninterrupted thermal current cos φ = 1 at B 300		A	5	5
Max. make/break capacity cos φ ≠ 1 at B 300		VA	3600 / 360	3600 / 360
DC				
Control circuit rating codes (utilization category)			R 300 Light Pilot Duty	R 300 Light Pilot Duty
Max. rated operational voltage		V DC	300	300
Max. thermal uninterrupted current at R 300		A	1	1
Max. make/break capacity at R 300		VA	28 / 28	28 / 28

Notes

For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423GB

			EASY512-DC-T..	EASY620-DC-TE
Transistor outputs				
Quantity			4	8
Rated operational voltage [transistor outputs]	U_e	V DC	24	24
Admissible range	U_e	V DC	20.4 – 28.8	20.4 – 28.8
Residual ripple		%	≦ 5	≦ 5
Supply current				
At signal "0"	Normally / max.	mA	9 / 16	18 / 32
At signal "1"	Normally / max.	mA	12 / 22	24 – 44
Protection against polarity reversal			Yes (Caution: A short circuit will result if voltage is applied to the outputs in the event that the supply voltage is connected to the wrong poles.)	
Potential isolation				
From power supply			Yes	Yes
From the inputs			Yes	Yes
From the PC interface, memory card, NET network, EASY-Link			–	–
Rated operational current at signal "1" DC	I_e	A	max. 0.5	max. 0.5
Lamp load without R_v		W	5	5
Residual current at signal "0" per channel		mA	< 0.1	< 0.1
Max. output voltage				
With condition "0" at external load < 10 MΩ		V	2.5	2.5
With condition "1" at I_e = 0.5 A		V	$U = U_e$ -1 V	$U = U_e$ -1 V
Short-circuit protection			Yes, thermal (analysis via diagnostics input I16, I15; R15, R16)	
Short-circuit tripping current for R_a ≦ 10 mΩ		A	0.7 ≦ I_e ≦ 2 per output	0.7 ≦ I_e ≦ 2
Total short-circuit current		A	8	16
Peak short-circuit current		A	16	32
Thermal cutout			Yes	Yes
Max. operating frequency at constant resistive load R_L < 100 kΩ (dependent on program and load)		Ops/h	40000	40000
Parallel connection of outputs				
With resistive load, inductive load with external suppressor circuit, combination within a group			Group 1: Q1 to Q4	Group 1: S1 - S4 Group 2: S5 - S8
Number of outputs	max.		4	4
Total max. current		A	2 (Caution! Outputs must be actuated simultaneously and for the same length of time.)	
Status indication of outputs			LCD display (if provided)	LCD display (if provided)
Inductive load[1)]				
Without external suppressor circuit				
$T_{0.95}$ = 1 ms, R = 48 Ω, L = 16 mH				
Utilization factor		g	0.25	0.25
Duty factor		% DF	100	100
Max. operating frequency f = 0.5 Hz (max. DF = 50 %)		Operations	1500	1500
DC-13, $T_{0.95}$ = 72 ms, R = 48 Ω, L = 1.15 H				
Utilization factor		g	0.25	0.25
Duty factor		% DF	100	100
Max. operating frequency f = 0.5 Hz (max. DF = 50 %)		Operations	1500	1500
$T_{0.95}$ = 15 ms, R = 48 Ω, L = 0.24 H				
Utilization factor		g	0.25	0.25
Duty factor		% DF	100	100
Max. operating frequency f = 0.5 Hz (max. DF = 50 %)		Operations	1500	1500
With external suppressor circuit				
Utilization factor		g	1	1
Duty factor		% DF	100	100
Max. switching frequency, max. duty factor		Operations	Depending on the suppressor circuit	

Notes

1) $T_{0.95}$ = Time in ms, until 95 % of the steady-state current has been reached. $T_{0.95} \approx 3 \times T_{0.65} = 3 \times L/R$. Bus lengths greater than 40 m can only be achieved with enhanced cross-section conductors and terminal adapters.

For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423GB

			EASY721-DC-TC.	EASY8..-DC-TC.
Transistor outputs				
Quantity			8	8
Rated operational voltage	U_e	V DC	24	24
Admissible range	U_e	V DC	20.4 – 28.8	20.4 – 28.8
Residual ripple		%	≦ 5	≦ 5
Supply current				
At signal "0"	Normally / max.	mA	18 / 32	18 / 32
At signal "1"	Normally / max.	mA	24 – 44	24 – 44
Protection against polarity reversal			Yes (Caution: A short circuit will result if voltage is applied to the outputs in the event that the supply voltage is connected to the wrong poles.)	
Potential isolation				
From power supply			Yes	Yes
From the inputs			Yes	Yes
From the PC interface, memory card NET network, EASY-Link			–	Yes
Rated operational current at signal "1" DC	I_e	A	max. 0.5	max. 0.5
Lamp load without R_v		W	5	3 (Q1 – Q4) 5 (Q5 – Q8)
Residual current at signal "0" per channel		mA	< 0.1	< 0.1
Max. output voltage				
With condition "0" at external load < 10 MΩ		V	2.5	2.5
With condition "1" at I_e = 0.5 A		V	$U = U_e$ -1 V	$U = U_e$ -1 V
Short-circuit protection			Yes, thermal (analysis via diagnostics input I16, I15; R15, R16)	Yes, electronic (Q1 – Q4), thermal (Q5 – Q8), (analysis via diagnostics input I16, I15)
Short-circuit tripping current for R_a ≦ 10 mΩ		A	0.7 ≦ I_e ≦ 2 per output	0.7 ≦ I_e ≦ 2 per output
Total short-circuit current		A	16	16
Peak short-circuit current		A	32	32
Thermal cutout			Yes	Yes
Max. operating frequency at constant resistive load R_L < 100 kΩ (dependent on program and load)		Ops/h	40000	40000
Parallel connection of outputs				
With resistive load, inductive load with external suppressor circuit, combination within a group			Group 1: Q1 to Q4 Group 2: Q5 - Q8	Group 1: Q1 to Q4 Group 2: Q5 - Q8
Number of outputs	max.		4	4
Total max. current		A	2 (Caution! Outputs must be actuated simultaneously and for the same length of time.)	
Status indication of outputs			LCD display (if provided)	LCD display (if provided)
Inductive load[1)]				
Without external suppressor circuit				
$T_{0.95}$ = 1 ms, R = 48 Ω, L = 16 mH				
Utilization factor		g	0.25	0.25
Duty factor		% DF	100	100
Max. operating frequency f = 0.5 Hz (max. DF = 50 %)		Operations	1500	1500
DC-13, $T_{0.95}$ = 72 ms, R = 48 Ω, L = 1.15 H				
Utilization factor		g	0.25	0.25
Duty factor		% DF	100	100
Max. operating frequency f = 0.5 Hz (max. DF = 50 %)		Operations	1500	1500
$T_{0.95}$ = 15 ms, R = 48 Ω, L = 0.24 H				
Utilization factor		g	0.25	0.25
Duty factor		% DF	100	100
Max. operating frequency f = 0.5 Hz (max. DF = 50 %)		Operations	1500	1500
With external suppressor circuit				
Utilization factor		g	1	1
Duty factor		% DF	100	100
Max. switching frequency, max. duty factor		Operations	Depending on the suppressor circuit	

Notes

[1)] $T_{0.95}$ = Time in ms, until 95 % of the steady-state current has been reached. $T_{0.95} \approx 3 \times T_{0.65} = 3 \times L/R$.
Bus lengths greater than 40 m can only be achieved with enhanced cross-section conductors and terminal adapters.

For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423GB

		EASY820-DC-RC(X) EASY822-DC-TC(X)
Analog outputs		
Quantity		1
Potential isolation		
From power supply		No
From the digital inputs		No
From the digital outputs		Yes
From the PC interface, memory card NET network, EASY-Link		Yes
Type of output		DC voltage
Signal range	V DC	0 – 10
Max. output current	A	0.01
Load resistance		1 kΩ
Overload and short-circuit protection		Yes
Resolution, analog	V DC	0.01
Resolution, digital	Bit	10, (value: 0 – 1023)
Recovery time	µσ	100
Accuracy		
–25 °C to 55 °C	%	2
25 °C	%	1
Conversion time, analog/digital	ms	Every CPU cycle
Notes		For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423GB

		EASY8..-..-...
NET network		
Stations	Quantity	max. 8
Data transfer rate/distance		1000 KBit/s, 6 m 500 KBit/s, 25 m 250 KBit/s, 60 m 125 KBit/s, 125 m 50 KBit/s, 300 m 20 KBit/s, 700 m 10 KBit/s, 1000 m
Potential isolation		
From power supply		Yes
From the inputs		Yes
From the outputs		Yes
From the PC interface, memory card NET network, EASY-Link		Yes
Bus termination (first and last station)		Yes
Terminations		RJ45, 8-pole
Notes		For additional Technical Data EASY5... and EASY7... → AWB2528-1508GB, EASY8... → AWB2528-1423GB The following applies to data transfer rate/distance in the NET network: Bus lengths greater than 40 m can only be achieved with enhanced cross-section conductors and terminal adapters.

			EASY205-ASI	EASY204-DP
General technical data				
Standards			EN 55011, EN 55022, IEC/EN 61000-4, IEC/EN 60068-2-27, EN 50295	
Dimensions (W × H × D)		mm	35.5 × 90 × 58 (2 space units)	35.5 × 90 × 58 (2 space units)
Weight		kg	0.12	0.15
Mounting			Top-hat rail IEC/EN 60715, 35 mm or screw fixing using fixing brackets ZB4-101-GF1 (accessories)	
Terminal capacity				
Solid		mm^2	0.2 /4 (AWG 22 – 12)	0.2 /4 (AWG 22 – 12)
Flexible with ferrule		mm^2	0.2 /2.5 (AWG 22 – 12)	0.2 /2.5 (AWG 22 – 12)
Standard screwdriver		mm	3.5 × 0.8	3.5 × 0.8
Max. tightening torque		Nm	0.6	0.6
Ambient climatic conditions				
Operational ambient temperature		°C	–25/+55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2	
Condensation			Prevent condensation by means of suitable measures	
Storage		°C	40 – 70	40 – 70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5 – 95	5 – 95
Atmospheric pressure (operation)		hPa	795 – 1080	795 – 1080
Corrosion resistance				
IEC/EN 60947-2-42	4 days SO_2	cm^3/m^3	10	10
IEC/EN 60068-2-43	4 days H_2S	cm^3/m^3	1	1
Ambient mechanical conditions				
Pollution degree			2	2
Degree of protection (IEC/EN 60529)			IP20	IP20
Vibrations (IEC/EN 60068-2-6)				
Constant amplitude 0.15 mm		Hz	10 – 57	10 – 57
Constant acceleration, 2 g		Hz	57 – 150	57 – 150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1	1
Mounting position			Horizontal / vertical	Horizontal / vertical
Electromagnetic compatibility (EMC)				
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)				
Air discharge		kV	8	8
Contact discharge		kV	6	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)		V/m	10	10
Radio interference suppression (EN 55011)			EN 55011 Class B, EN 55022 Class B	EN 55011 Class A, EN 55022 Class A
Burst pulses (IEC/EN 61000-4-4, level 3)				
AS-Interface cables		kV	2	–
Supply cables		kV	–	2
Signal lines		kV	–	2
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)		kV	–	0.5 (supply cables, symmetrical)
Immunity to line-conducted interference (IEC/EN 61000-4-6)		V	10	10
Insulation resistance				
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, No. 142	
Insulation resistance			EN 50178	EN 50178
Power supply				
Rated operational voltage	U_e	V	26.5 – 31.6	24 (-15/+20 %)
Admissible range		V DC	–	20.4 – 28.8
Total power consumption of the AS-Interface		mA	≦ 30	–
Residual ripple		%	–	< 5
At 24 V DC		mA	–	Normally 200
Voltage dips (IEC/EN 61131-2)		ms	–	10
Heat dissipation at 24 V DC		W	–	4.8
Protection against polarity reversal				
AS-Interface protection against polarity reversal			Yes	–
AS-Interface profile			7F (hex)	–
Slave addresses			0 – 31	–
Addressing unit interface			3.5 mm socket	–
Power supply			–	Yes

	EASY205-ASI	EASY204-DP
LED displays		
Power supply	Power: green	Power LED (POW): green
LED display	Com Error: red	LED-PROFIBUS-DP (BUS): red
Logic links		
easy700/easy800 contact and coil ↔ AS-Interface	S1 → input 0 S2 → input 1 S3 → input 2 S4 → input 3 R1 ← output 0 R2 ← output 1 R3 ← output 2 R4 ← output 3 R5 ← PARAMETEROUTPUT 0 R6 ← PARAMETEROUTPUT 1 R7 ← PARAMETEROUTPUT 2 R8 ← PARAMETEROUTPUT 3	–
PROFIBUS DP		
Terminations	–	SUB-D 9-pole, socket
Potential isolation	–	Between bus and power supply (simple), between bus and power supply and easy base unit (safe isolation)
Function	–	PROFIBUS DP slave
Interface	–	RS 485
Bus protocol	–	PROFIBUS DP
Baud rates	–	Automatic search up to 12 MBit / s
Bus terminating resistors	–	Can be connected via plug
Bus addresses	–	1 – 126, can be addressed via easy base unit with display or via EASY-SOFT
Services		
Cyclical	–	All data R1 – R16, S1 – S8
Acyclical	–	Read / write, real-time, day, summer- / winter time, all the parameters of the EASY function relay

			EASY221-CO	EASY222-DN
General technical data				
Standards			EN 55011, EN 55022, EN 61000-4, IEC 60068-2-6, IEC 60068-2-27	
Dimensions (W × H × D)		mm	35.5 × 90 × 58 (2 space units)	35.5 × 90 × 58 (2 space units)
Weight		kg	0.15	0.15
Mounting			Top-hat rail IEC/EN 60715, 35 mm or screw fixing using fixing brackets ZB4-101-GF1 (accessories)	
Terminal capacity				
Solid		mm^2	0.2 /4 (AWG 22 – 12)	0.2 /4 (AWG 22 – 12)
Flexible with ferrule		mm^2	0.2 /2.5 (AWG 22 – 12)	0.2 /2.5 (AWG 22 – 12)
Standard screwdriver		mm	3.5 × 0.8	3.5 × 0.8
Max. tightening torque		Nm	0.6	0.6
Ambient climatic conditions				
Operational ambient temperature		°C	–25/+55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2	
Condensation			Prevent condensation by means of suitable measures	
Storage		°C	40 – 70	40 – 70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5 – 95	5 – 95
Atmospheric pressure (operation)		hPa	795 – 1080	795 – 1080
Corrosion resistance				
IEC/EN 60947-2-42	4 days SO_2	cm^3/m^3	10	10
IEC/EN 60068-2-43	4 days H_2S	cm^3/m^3	1	1
Ambient mechanical conditions				
Pollution degree			2	2
Degree of protection (IEC/EN 60529)			IP20	IP20
Vibrations (IEC/EN 60068-2-6)				
Constant amplitude 0.15 mm		Hz	10 – 57	10 – 57
Constant acceleration, 2 g		Hz	57 – 150	57 – 150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1	1
Mounting position			Horizontal / vertical	Horizontal / vertical
Electromagnetic compatibility (EMC)				
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)				
Air discharge		kV	8	8
Contact discharge		kV	6	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)		V/m	10	10
Radio interference suppression (EN 55011)			EN 55011 Class B, EN 55022 Class B	
Burst pulses (IEC/EN 61000-4-4, level 3)				
AS-Interface cables		kV	–	–
Supply cables		kV	2	2
Signal lines		kV	2	2
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)		kV	0.5 (supply cables, symmetrical)	
Immunity to line-conducted interference (IEC/EN 61000-4-6)		V	10	10

			EASY221-CO	EASY222-DN
Insulation resistance				
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, No. 142	
Insulation resistance			EN 50178	EN 50178
Power supply				
Rated operational voltage	U_e	V	24 (-15/+20 %)	24 (-15/+20 %)
Admissible range		V DC	20.4 – 28.8	20.4 – 28.8
Residual ripple		%	< 5	< 5
At 24 V DC		mA	Normally 200	Normally 200
Voltage dips (IEC/EN 61131-2)		ms	10	10
Heat dissipation at 24 V DC		W	4.8	4.8
Protection against polarity reversal				
Power supply			Yes	Yes
LED displays				
Power supply			RUN LED (RUN): green	Module status LED (MS): green
LED display			LED ERROR (ERR): red	Network status LED (NS): red/green
Network				
Terminations			RJ45	5-pole, pluggable screw terminal
Potential isolation			Between bus and power supply (simple), between bus and power supply and easy base unit (safe isolation)	Between bus and power supply (simple), between bus and power supply and easy base unit (safe isolation)
Function			CANopen slave	DeviceNet slave
Interface			CAN	CAN
Bus protocol			CANopen	DeviceNet
Baud rates			Automatic search up to 1 MBit / s	Automatic search up to 500 kBit / s
Bus terminating resistors			Separate external bus termination required (120 Ω)	Separate external bus termination required (120 Ω)
Bus addresses			1 – 127, can be addressed via easy base unit with display or via EASY-SOFT	0 – 63, can be addressed via easy base unit with display or via EASY-SOFT
Services				
Cyclical			All data R1 – R16, S1 – S8	All data R1 – R16, S1 – S8
Acyclical			Read / write, real-time, day, summer- / winter time, all the parameters of the EASY function relay	Read / write, real-time, day, summer- / winter time, all the parameters of the EASY function relay

			EASY200-POW	EASY400-POW
General technical data				
Standards			EN 55011, EN 55022, IEC/EN 61000-4..., IEC/EN 60068-2-27	
Dimensions (W × H × D)		mm	35.5 × 90 × 58 (2 space units)	71.5 × 90 × 58 (4 space units)
Weight		kg	0.1	0.25
Mounting			Top-hat rail IEC/EN 60715, 35 mm or screw fixing using fixing brackets ZB4-101-GF1 (accessories)	
Terminal capacity				
Solid		mm^2	0.2 / 4 (AWG 22 – 12)	0.2 / 4 (AWG 22 – 12)
Flexible with ferrule		mm^2	0.2 / 2.5 (AWG 22 – 12)	0.2 / 2.5 (AWG 22 – 12)
Standard screwdriver		mm	3.5 × 0.8	3.5 × 0.8
Max. tightening torque		Nm	0.6	0.6
Ambient climatic conditions				
Operational ambient temperature		°C	–25/+55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2	
Condensation			Prevent condensation by means of suitable measures	
Storage		°C	40 – 70	40 – 70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5 – 95	5 – 95
Atmospheric pressure (operation)		hPa	795 – 1080	795 – 1080
Corrosion resistance				
IEC/EN 60947-2-42	4 days SO_2	cm^3/m^3	10	10
IEC/EN 60068-2-43	4 days H_2S	cm^3/m^3	1	1
Max. installation altitude above sea level, observe derating at higher altitudes		m	2000	2000
Ambient mechanical conditions				
Pollution degree			2	2
Degree of protection (IEC/EN 60529)			IP20	IP20
Vibrations (IEC/EN 60068-2-6)				
Constant amplitude 0.15 mm		Hz	10 – 57	10 – 57
Constant acceleration, 2 g		Hz	57 – 150	57 – 150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1	1
Mounting position			Horizontal / vertical	Horizontal / vertical
Electromagnetic compatibility (EMC)				
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)				
Air discharge		kV	8	8
Contact discharge		kV	6	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)		V/m	10	10
Radio interference suppression (EN 55011)			EN 50011 Class B; EN 60715 Class B, EN 50081-2 Class B	
Burst pulses (IEC/EN 61000-4-4, level 3)		kV	2	2
High-energy pulses (surge) (IEC/EN 61000-4-5)		kV	2 (supply cables, symmetrical, EASY...AC)	
High-energy pulses (surge) (IEC/EN 61 000-4-5, level 2), 24 V		kV	0,5 (output cables, symmetrical)	
Immunity to line-conducted interference (IEC/EN 61000-4-6)		V	10	10
Surge voltage (EN 50178), 24 V		kV	6	6
Insulation resistance				
Clearance in air and creepage distances			EN 50178	EN 50178
Insulation resistance			EN 50178	EN 50178
Protection class U_{out} against U_{in}			Class II to IEC 60536	Class II to IEC 60536
Potential isolation primary/secondary			Yes, SELV (VDE 0100 Part 410; IEC 60364-4-41, HD 384.4.41 S2) EN 60950	
Input voltage				
Rated input voltage AC		V	100/120/230/240 (–15/+10 %)	100/120/230/240 (–15/+10 %)
Protective switches AC			FAZ-C1/1 or FAZ-B6/1	FAZ-C2/1 or FAZ-B6/1
Rated input voltage DC		V	85 – 265	85 – 265
DC protective switches			FAZ-C2/1-DC	FAZ-C2/1-DC
Voltage range		V AC	85 – 264	85 – 264
Frequency range		Hz	47 – 63	47 – 63
Power failure bridging 115/230 V		ms	> 10/> 20	> 10/> 20
Fuse 115/230 V		A	1.5 slow	2/1 slow

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		EASY200-POW	EASY400-POW
Rating data			
Efficiency	%	> 81	> 87
Power consumption	W	Normally 7	Normally 35
Power loss	W	Normally 1	Normally 5
Input current			
Rated input current value 115/230 V AC	A	Approx. 0.17/0.05	Approx. 0.3/0.15
Inrush current at 25 °C 230 V	A	< 5	< 5
Output voltage			
12 V DC (reference voltage)			
Rated value	V DC	12	–
Tolerance	%	± 4	–
Switching peaks	mV_{SS}	< 7	–
Effect of input voltage	%	± 1	–
Effect with 25 – 100 % load change	%	± 1	–
24 V DC			
Rated value	V DC	24	24
Tolerance	%	± 3	± 5
Switching peaks 115/230	mV_{SS}	< 50/30	< 5
Effect of input voltage	%	± 1	± 1
Effect with 25 – 100 % load change	%	± 1	± 2
Output current			
12 V DC (reference voltage)			
Output current	mA	0 – 20	–
Effectiveness of current limitation	mA	20	–
Reduction of output voltage after current limitation	V	< 12	–
Overload proof		Yes, by current limitation permanently short-circuit proof	–
Proof against sustained short circuit		Yes	–
24 V DC			
Output current	A	0 – 0.25	0 – 1.25
Effectiveness of current limitation	A	> 0.3	> 1.25
Reduction of output voltage after current limitation	V	–	< 18
Overload proof		Yes, by current limitation	Yes, by current limitation
Proof against sustained short circuit		Yes, hickup-mode	Yes, hickup mode, approx. 10 Hz
Special load conditions			
Lamp load, cold, 24 V DC	W	2	10
Base load present	W	2	5
Behaviour in the event of Emergency-Stop in 24 V circuit, switch Off using contactor (contactor load, no damage)	W	6	30
Displays			
Indication of output voltage (LED, continuous green light = OK)	V DC	24	24

			EASY256-HCI
General technical data			
Standards			EN 55011, EN 55022, IEC/EN 61000-4, IEC 60068-2-6, IEC 60068-2-27
Dimensions (W × H × D)		mm	35.5 × 90 × 58 (2 space units)
Mounting			Top-hat rail IEC/EN 60715, 35 mm or screw fixing using fixing brackets ZB4-101-GF1 (accessories)
Channels		Quantity	6
Voltage range at U_e			0 – 264
Current increase 115/230 V AC		mA	4/6
Extension of the Off-delay of each EASY input ("1" after "0") 50/60 Hz		ms	40/37
Cable length		m	100
Parallel switching of outputs to increase performance			Several possible (Off-delay extended depending on the number of parallel channels)
Kind of resistor			Capacitive
Terminal capacity			
Solid		mm^2	0.2/4 (AWG 22 – 12)
Flexible with ferrule		mm^2	0.2/2.5 (AWG 22 – 12)
Standard screwdriver		mm	3.5 × 0.8
Max. tightening torque		Nm	0.6
Ambient climatic conditions			
Operational ambient temperature		°C	-25 to 55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2
Condensation			Prevent condensation by means of suitable measures
Storage		°C	40 – 70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5 – 95
Atmospheric pressure (operation)		hPa	795 – 1080
Corrosion resistance			
IEC/EN 60947-2-42	4 days SO_2	cm^3/m^3	10
IEC/EN 60068-2-43	4 days H_2S	cm^3/m^3	1
Ambient mechanical conditions			
Pollution degree			2
Degree of protection (IEC/EN 60529)			IP20
Vibrations (IEC/EN 60068-2-6)			
Constant amplitude 0.15 mm		Hz	10 – 57
Constant acceleration, 2 g		Hz	57 – 150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1
Mounting position			Horizontal / vertical
Electromagnetic compatibility (EMC)			
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)			
Air discharge		kV	8
Contact discharge		kV	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)		V/m	10
Radio interference suppression (EN 55011)			EN 55011 Class B, EN 55022 Class B
High-energy pulses (surge) (IEC/EN 61000-4-5)		kV	2 (supply cables, symmetrical, EASY...AC)
Immunity to line-conducted interference (IEC/EN 61000-4-6)		V	10
Insulation resistance			
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, No. 142
Insulation resistance			EN 50178

			MFD-80..	MFD-CP8.., MFD-AC-CP8..
General technical data				
Standards			EN 61000-6-1/-2/-3/-4, IEC 60068-2-6, IEC 60068-2-27	
Dimensions (W × H × D)		mm	86.5 × 86.5 × 21.5 (with actuators) 86.5 × 86.5 × 20 (without actuators)	107.5 × 90 × 30
Weight		kg	0.13	0.145
Mounting			2 × 22.5 mm, display fastened using 2 threaded fixing rings	Fitted on the fixing shaft of the display or on top-hat rail to IEC/EN 60715, 35 mm (without display) or by means of brackets (without display)
Terminal capacity				
Solid		mm^2	–	0.2 / 4 (AWG 24 – 12)
Flexible with ferrule		mm^2	–	0.2 / 2.5 (AWG 24 – 12)
Standard screwdriver		mm	–	3.5 × 0.6
Ambient climatic conditions				
Operational ambient temperature		°C	–25/+55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2	
Condensation			Prevent condensation by means of suitable measures	
LCD display (clearly legible)		°C	-5 to 50, (-10 to 0 with back-lighting switched On (continuous duty)	–
Storage		°C	40 – 70	40 – 70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5 – 95	5 – 95
Atmospheric pressure (operation)		hPa	795 – 1080	795 – 1080
Ambient mechanical conditions				
Pollution degree			3	2
Degree of protection (IEC/EN 60529)			IP65	IP20
Vibrations (IEC/EN 60068-2-6)				
Constant amplitude 0.15 mm		Hz	10 – 57	10 – 57
Constant acceleration, 2 g		Hz	57 – 150	57 – 150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1	1
Mounting position			Horizontal / vertical	Horizontal / vertical
Electromagnetic compatibility (EMC)				
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)				
Air discharge		kV	8	8
Contact discharge		kV	6	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)		V/m	10	10
Radio interference suppression (EN 55011)			EN 55011 Class B, EN55022 Class B	
Burst pulses (IEC/EN 61000-4-4, level 3)				
Supply cables		kV	2	2
Signal lines		kV	2	2
High-energy pulses (surge) (IEC/EN 61000-4-5)		kV	2 (supply cables, symmetrical, MFD-AC-CP8..)	
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)		kV	0.5 (supply cables, symmetrical, MFD-CP8..)	
Immunity to line-conducted interference (IEC/EN 61000-4-6)		V	10	10
Insulation resistance				
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, No. 142	
Insulation resistance			EN 50178	EN 50178
Back-up/Accuracy of the real-time clock				
Back-up of real-time clock			–	→ Page 5
Accuracy of the real-time clock			–	Normally ±5 s/day (±0.5 h / year)
Repetition accuracy of timing relays				
Accuracy of timing relays (of values)		%	–	± 0.02
Resolution				
Range "S"		ms	–	5
Range "M:S"		s	–	1
Range "H:M"		min	–	1
Retentive memory				
Write cycles of the retentive memory (at least)			–	≧ 10^{10} (Read / write cycles)

			MFD-CP4...
General technical data			
Standards			EN 61000-6-1/-2/-3/-4, IEC 60068-2-6, IEC 60068-2-27
Dimensions (W × H × D)		mm	75 × 58 × 36.2
Weight		kg	0,164
Mounting			Plug-fitted to the display fixing shaft
Terminal capacity			
Power supply			
Solid		mm^2	0.2 / 4 (AWG 24 – 12)
Flexible with ferrule		mm^2	0.2 / 2.5 (AWG 24 – 12)
Standard screwdriver		mm	3.5 × 0.6
Data cable			
Solid		mm^2	0.08 / 2.5 (AWG 28 – 12)
Flexible with ferrule		mm^2	0.08 / 1.5 (AWG 28 – 12)
Standard screwdriver		mm	–
Ambient climatic conditions			
Operational ambient temperature		°C	-25 to 55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2
Condensation			Prevent condensation by means of suitable measures
Storage		°C	40 – 70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5 – 95
Atmospheric pressure (operation)		hPa	795 – 1080
Ambient mechanical conditions			
Pollution degree			2
Degree of protection (IEC/EN 60529)			IP20
Vibrations (IEC/EN 60068-2-6)			
Constant amplitude 0.15 mm		Hz	10 – 57
Constant acceleration, 2 g		Hz	57 – 150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1
Mounting position			Horizontal / vertical
Electromagnetic compatibility (EMC)			
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)			
Air discharge		kV	8
Contact discharge		kV	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)		V/m	10
Radio interference suppression (EN 55011)			EN 55011 Class B, EN55022 Class B
Burst pulses (IEC/EN 61000-4-4, level 3)			
Supply cables		kV	2
Signal lines		kV	2
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)		kV	1 (supply cables, symmetrical)
Immunity to line-conducted interference (IEC/EN 61000-4-6)		V	10
Insulation resistance			
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, No. 142
Insulation resistance			EN 50178

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			MFD-R.., MFD-AC-R..	MFD-T...
General technical data				
Standards			EN 61000-6-1/-2/-3/-4, IEC/EN 61000-4, IEC 60068-2-6, IEC 60068-2-27	
Dimensions (W × H × D)		mm	89 × 90 × 44	89 × 90 × 25 (built-in)
Weight		kg	0.15	0.14
Mounting			Fitted into the power supply unit.	Fitted into the power supply unit.
Terminal capacity				
Solid		mm^2	0.2 / 4 (AWG 24 – 12)	0.2 / 4 (AWG 24 – 12)
Flexible with ferrule		mm^2	0.2 / 2.5 (AWG 24 – 12)	0.2 / 2.5 (AWG 24 – 12)
Standard screwdriver		mm	3.5 × 0.6	3.5 × 0.6
Ambient climatic conditions				
Operational ambient temperature		°C	–25/+55, low temperatures to IEC 60068-2-1, high temperatures to IEC 60068-2-2	
Condensation			Prevent condensation by means of suitable measures	
Storage		°C	40 – 70	40 – 70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5 – 95	5 – 95
Atmospheric pressure (operation)		hPa	795 – 1080	795 – 1080
Ambient mechanical conditions				
Pollution degree			2	2
Degree of protection (IEC/EN 60529)			IP20	IP20
Vibrations (IEC/EN 60068-2-6)				
Constant amplitude 0.15 mm		Hz	10 – 57	10 – 57
Constant acceleration, 2 g		Hz	57 – 150	57 – 150
Mechanical shock resistance (IEC/EN 60068-2-27) semi-sinusoidal 15 g/11 ms		Impacts	18	18
Drop to IEC/EN 60068-2-31	Drop height	mm	50	50
Free fall, packaged (IEC/EN 60068-2-32)		m	1	1
Mounting position			Horizontal / vertical	Horizontal / vertical
Electromagnetic compatibility (EMC)				
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)				
Air discharge		kV	8	8
Contact discharge		kV	6	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)		V/m	10	10
Radio interference suppression (EN 55011)			EN 55011 Class B, EN 55022 Class B	
Burst pulses (IEC/EN 61000-4-4, level 3)				
Supply cables		kV	2	2
Signal lines		kV	2	2
High-energy pulses (surge) (IEC/EN 61000-4-5)		kV	2 (supply cables, symmetrical)	
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)		kV	0.5 (supply cables, symmetrical)	
Immunity to line-conducted interference (IEC/EN 61000-4-6)		V	10	10
Insulation resistance				
Clearance in air and creepage distances			EN 50178, UL 508, CSA C22.2, No. 142	
Insulation resistance			EN 50178	EN 50178

			MFD-AC-CP8..
Power supply			
Rated operational voltage	U_e	V	100/110/115/120//230/240 AC (+10/-15 %)
Admissible range		V AC	85 – 264
Frequency		Hz	50 / 60 (± 5%)
Input current			
At 115/120 V AC 60 Hz		mA	Normally 90
At 230/240 V AC 50 Hz		mA	Normally 60
Voltage dips (IEC/EN 61131-2)		ms	10
Power loss			
At 115/120 V AC		VA	Normally 11
At 230 / 240 V AC		VA	Normally 15

			MFD-CP8..	MFD-CP4...
Power supply				
Rated operational voltage	U_e	V	24 DC (-15 / +20 %)	24 DC (-15 / +20 %)
Admissible range		V DC	20.4 – 28.8	20.4 – 28.8
Residual ripple		%	≦ 5	≦ 5
Input current				
At 24 V DC		mA	Normally 200	Normally 185
Voltage dips (IEC/EN 61131-2)		ms	10	10
Heat dissipation at 24 V DC		W	3.4	1.5

			MFD-CP4...
Point-to-point connection			
Stations			1
Data transfer rate			
easy500, easy700			9.6 kBaud
easy800, MFD			19.2 kBaud
Distance		m	Max. 5
Potential isolation			
From power supply			Yes
From the connected device			Yes
Terminations			Cage clamp terminals

			MFD-CP8-NT, MFD-AC-CP8-NT
NET network			
Stations		Quantity	Max. 8
Data transfer rate/distance			1000 kBit/s, 6 m 500 kBit/s, 25 m 250 kBit/s, 40 m 125 kBit/s, 125 m 50 kBit/s, 300 m 20 kBit/s, 700 m 10 kBit/s, 1000 m
Potential isolation			
From power supply			Yes
From the inputs			Yes
From the outputs			Yes
From the PC interface, memory card NET network, EASY-Link			Yes
Bus termination (first and last station)			Yes
Terminations			RJ45, 8-pole

		MFD-TA.., MFD-RA..
Analog outputs		
Quantity		1
Potential isolation		
From power supply		No
From the digital inputs		No
From the digital outputs		Yes
From the PC interface, memory card NET network, EASY-Link		Yes
Type of output		DC voltage
Signal range	V DC	0 – 10
Max. output current	A	0.01
Load resistance		1 kΩ
Overload and short-circuit protection		Yes
Resolution, analog	V DC	0.01
Resolution, digital	Bit	10, (value: 0 – 1023)
Recovery time	µσ	100
Accuracy		
–25 °C to 55 °C	%	2
25 °C	%	1
Conversion time		Every CPU cycle

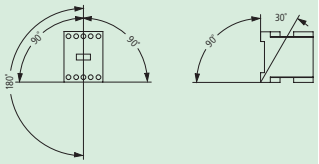
		MFD-T..., MFD-R...
Analog inputs		
Quantity		4 (I7, I8, I11, I12)
Potential isolation		
From power supply		No
From the digital inputs		No
From the outputs		Yes
From the PC interface, memory card NET network, EASY-Link		Yes
Type of input		DC voltage
Signal range	V DC	0 – 10
Resolution, analog	V	0.01
Resolution, digital	V	0.01
Resolution	Bit	10 (value 0 – 1023)
Input impedance	kΩ	11.2
Accuracy of actual value		
2 MFD devices	%	± 3
Within a single device	%	± 2
Conversion time, analog/digital	ms	Every CPU cycle
Input current	mA	< 1
Cable length screened	m	< 30

		MFD-AC-R16
Digital inputs 115/230 V AC		
Quantity		12
Status indication		LCD display (if provided)
Potential isolation		
From power supply		No
Between digital inputs		No
From the outputs		Yes
From the PC interface, memory card NET network, EASY-Link		Yes
Rated voltage L (sinusoidal)		
At signal "0"	V AC	0 – 40
At signal "1"	V AC	79 – 264
Rated frequency	Hz	50 – 60
Input current at signal "1"		
I1 - I12	mA	12 × 0.2 (at 115 V AC, 60 Hz), 12 × 0.5 (at 230 V AC, 50 Hz)
Delay time		
Delay time (0 – 1 / 1 – 0) I1 - I12, 50 / 60 Hz		10 / 100
Max. admissible cable length (per input)		
I1 - I12	m	Normally 60

			MFD-T..., MFD-R...
Digital inputs 24 V DC			
Quantity			12
Inputs can be used as analog inputs			4 (I7, I8, I11, I12)
Potential isolation			
From power supply			No
Between digital inputs			No
From the outputs			Yes
From the PC interface, memory card, NET network, EASY-Link			Yes
Rated operational voltage	U_e	V DC	24
At signal "0"	U_e	V DC	< 5.0 (I1 – I6, I9 – I10), < 8 (I7, I8, I11, I12)
At signal "1"	U_e	V DC	> 15.0 (I1 – I6, I9 – I10), > 8.0 (I7, I8, I11, I12)
Input current at signal "1"			
I1 to I6		mA	3.3 (at 24 V DC)
I7, I8		mA	2.2 (at 24 V DC)
I9, I10		mA	3.3 (at 24 V DC)
I11, I12		mA	2.2 (at 24 V DC)
Delay time from 0 to 1			
Debounce ON		ms	20
Debounce OFF		ms	Normally 0.1 (I1 – I4), normally 0.25 (I5 – I12)
Delay time from 1 to 0			
Debounce ON		ms	20
Debounce OFF		ms	Normally 0.1 (I1 – I4), normally 0.4 (I5, I6, I9, I10), normally 0.2 (I7, I8, I11, I12)
Cable length (unscreened)		m	100
Frequency counter			4 (I1, I2, I3, I4)
Counter frequency		kHz	< 3
Pulse shape			Square
Pulse pause ratio			1:1
Incremental counter			2 (I1 + I2, I3 + I4)
Counter frequency		kHz	< 3
Pulse shape			Square
Signal offset			90°
Pulse pause ratio			1:1
High-speed counter inputs			4 (I1, I2, I3, I4)
Counter frequency		kHz	< 3
Pulse shape			Square
Pulse pause ratio			1:1
Cable length, screened		m	< 20

			MFD-R.., MFD-AC-R..
Relay outputs			
Quantity			4
Parallel switching of outputs to increase performance			Not permissible
Protection of an output relay			Miniature circuit-breaker B16 or fuse 8 A (slow)
Potential isolation			
From power supply			Yes
From the inputs			Yes
From the PC interface, memory card NET network, EASY-Link			Yes
Safe isolation		V AC	300
Basic insulation		V AC	600
Lifespan, mechanical	Operations	× 10^6	10
Contacts			
Conventional thermal current (10 A UL)		A	8
Recommended for load: 12 V AC/DC		mA	> 500
Short-circuit proof cos φ = 1, characteristic B16 at 600 A		A	16
Short-circuit proof cos φ = 0.5 - 0.7; characteristic B16 at 900 A		A	16
Rated impulse withstand voltage U_{imp} contact to coil		kV	6
Rated operational voltage	U_e	V AC	250
Rated insulation voltage	U_i	V AC	250
Safe isolation to EN 50178 between coil and contact		V AC	300
Safe isolation to EN 50178 between 2 contacts		V AC	300
Making capacity			
AC–15, 250 V AC, 3 A (600 ops./h)	Operations		300000
DC-13, L/R ≦ 150 ms, 24 V DC, 1 A (500 ops./h)	Operations		200000
Breaking capacity			
AC–15, 250 V AC, 3 A (600 ops./h)	Operations		300000
DC-13, L/R ≦ 150 ms, 24 V DC, 1 A (500 ops./h)	Operations		200000
Filament bulb load			
1000 W at 230/240 V AC	Operations		25000
500 W at 115/120 V AC	Operations		25000
Fluorescent lamp load			
Fluorescent lamp load 10 × 58 W at 230/240 V AC			
With series-connected electrical device	Operations		25000
Uncompensated	Operations		25000
Fluorescent lamp load 1 × 58 W at 230/240 V AC conventionally compensated	Operations		25000
Switching frequency			
Mechanical operations		× 10^6	10
Switching frequency		Hz	10
Resistive load/lamp load		Hz	2
Inductive load		Hz	0.5
UL/CSA			
Uninterrupted current at 240 V AC		A	10
Uninterrupted current at 24 V DC		A	8
AC			
Control circuit rating codes (utilization category)			B 300 Light Pilot Duty
Max. rated operational voltage		V AC	300
Max. thermal uninterrupted current at B 300		A	5
Max. make/break capacity at B 300		VA	3600 / 360
DC			
Control circuit rating codes (utilization category)			R 300 Light Pilot Duty
Max. rated operational voltage		V DC	300
Max. thermal uninterrupted current at R 300		A	1
Max. make/break capacity at R 300		VA	28 / 28

			MFD-T..
Transistor outputs			
Quantity			4
Rated operational voltage	U_e	V DC	24
Admissible range	U_e	V DC	20.4 – 28.8
Residual ripple		%	–
Supply current			
At signal "0"	Normally / max.	mA	18 – 32
At signal "1"	Normally / max.	mA	24 – 44
Protection against polarity reversal			Yes caution: A short circuit will occur if voltage is applied to the outputs on account of reverse polarity).
Potential isolation			
From power supply			Yes
From the inputs			Yes
From the PC interface, memory card NET network, EASY-Link			Yes
Rated operational current at signal "1" DC	I_e	A	Max. 0.5
Lamp load without R_v		W	5 (Q1 – Q4)
Residual current at signal "0" per channel		mA	< 0.1
Max. output voltage			
With condition "0" at external load < 10 MΩ		V	2.5
With condition "1" at I_e = 0.5 A		V	$U = U_e$ -1 V
Short-circuit protection			Thermal (Q1 – Q4), (analysis via diagnostics input I16)
Short-circuit tripping current for $R_a \leqq 10$ mΩ		A	$0.7 \leqq I_e \leqq 2$
Total short-circuit current		A	8
Peak short-circuit current		A	16
Thermal cutout			Yes
Max. operating frequency at constant resistive load R_L < 100 kΩ (dependent on program and load)		Ops/h	40000
Parallel connection of outputs			
With resistive load, inductive load with external suppressor circuit, combination within a group			Group 1: Q1 to Q4
Number of outputs	Max.		4
Total max. current		A	2 (Caution! Outputs must be actuated simultaneously and for the same length of time.)
Inductive load			
Without external suppressor circuit			
$T_{0.95}$ = 1 ms, R = 48 Ω, L = 16 mH			
Utilization factor		g	0.25
Duty factor		% DF	100
Max. operating frequency f = 0.5 Hz (max. DF = 50 %)		Operations	1500
DC13, $T_{0.95}$ = 72 ms, R = 48 Ω, L = 1.15 H			
Utilization factor		g	0.25
Duty factor		% DF	100
Max. operating frequency f = 0.5 Hz (max. DF = 50 %)		Operations	1500
$T_{0.95}$ = 15 ms, R = 48 Ω, L = 0.24 H			
Utilization factor		g	0.25
Duty factor		% DF	100
Max. operating frequency f = 0.5 Hz (max. DF = 50 %)		Operations	1500
With external suppressor circuit			
Utilization factor		g	1
Duty factor		% DF	100
Max. switching frequency, max. duty factor		Operations	Depending on the suppressor circuit

			DILA	DILA...XHI	DILER	...DILE	DILR	...DIL
General technical data								
Standards			IEC/EN 60947, VDE 0660, UL, CSA					
Lifespan, mechanical								
AC operated	Operations	× 10^6	20	10	10	10	20	20
DC operated	Operations	× 10^6	20	10	20	20	20	20
Maximum operating frequency								
Maximum operating frequency	Operations/h		9000	9000	9000	9000	7000	7000
Climatic proofing			Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclical, to IEC 60068-2-30					
Ambient temperature								
Open		°C	-25/60	-25/60	-25/50	-25/50	-25/50	-25/50
Enclosed		°C	-25/40	-25/40	-25/40	-25/40	-25/40	-25/40
Ambient temperature for storage		°C	-40/80	-40/80	–	–	–	–
Mounting position					As required, except vertically A1/A2 at the bottom		As required, except suspended	
Mechanical shock resistance (IEC/EN 60068-2-27)								
Half-sinusoidal shock 10 ms								
Base unit with auxiliary contact module								
Make contact		g	7	–	10	10	–	–
Break contact		g	5	–	8	8	–	–
Half-sinusoidal shock 20 ms								
Base unit with auxiliary contact module								
Make contact		g	–	–	–	–	10	10
Break contact		g	–	–	–	–	6	6
Degree of protection			IP20					
Protection against direct contact from the front when actuated by a perpendicular test finger (IEC 536)			Finger- and back-of-hand proof					
Weight								
AC operated		kg	0.23		0.17	–	0.32	–
DC operated		kg	0.28		0.2	–	0.5	–
Terminal capacity								
Screw terminals								
Solid		mm^2	1 × (0.75 – 4) 2 × (0.75 – 2.5)		1 × (0.75 – 2.5) 2 × (0.75 – 2.5)		1 × (0.75 – 4) 2 × (0.75 – 4)	
Flexible with ferrule		mm^2	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)		1 × (0.75 – 1.5) 2 × (0.75 – 1.5)		1 × (0.75 – 2.5) 2 × (0.75 – 2.5)	
Solid or stranded		AWG	18 – 14		18 – 14		18 – 12	
Terminal screw			M3.5		M3.5		M3.5	
Pozidriv screwdriver		Size	2		2	2	2	2
Standard screwdriver		mm	0.8 × 5.5 1 × 6		0.8 × 5.5 1 × 6		0.8 × 5.5 1 × 6	
Max. tightening torque		Nm	1.2		1.2	1.2	1.2	1.2
Spring-loaded terminals								
Solid		mm^2	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)		1 × (1 – 2.5) 2 × (1 – 2.5)		1 × (1 – 2.5) 2 × (1 – 2.5)	
Flexible with or without ferrule DIN 46228		mm^2	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)		1 × (1 – 2.5) 2 × (1 – 2.5)		1 × (1 – 2.5) 2 × (1 – 2.5)	
Solid or stranded		AWG	18 – 14		1 × (16 – 14) 2 × (16 – 14)		1 × (16 – 14) 2 × (16 – 14)	
Standard screwdriver		mm	0.6 × 3.5		0.6 × 3.5		0.6 × 3.5	

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				DILA	DILA...XHI	DILER	...DILE	DILR	...DIL
Contacts									
Interlocked opposing contacts to ZH 1/457, including auxiliary contact module				–	–	Yes	Yes	Yes	Yes
Rated impulse withstand voltage		U_{imp}	V AC	6000	6000	6000	6000	6000	6000
Overvoltage category/pollution degree				III/3	III/3	III/3	III/3	III/3	III/3
Rated insulation voltage		U_i	V AC	690	690	690	690	690	690
Rated operational voltage		U_e	V AC	690	500	600	600	500	500
Safe isolation to VDE 0106 Part 101 and Part 101/A1									
Between coil and auxiliary contacts			V AC	400	400	300	300	440	440
Between the auxiliary contacts			V AC	400	400	300	300	440	440
Rated operational current									
AC–15	220/240 V	I_e	A	6	6	6	4	6	6
	380/415 V	I_e	A	4	3	3	2	4	4
	500 V	I_e	A	1.5	–	1.5	1.5	1.5	1.5
DC-13[1]	DC-13 L/R ≦ 15 ms								
	Contacts in series:								
	1	24 V	A	2.5	–	2.5	2.5	10	10
	1	60 V	A	1	–	–	–	6	6
	2	60 V	A	3	–	2.5	2.5	10	10
	1	110 V	A	0.5	–	–	–	3	3
	3	110 V	A	3	–	1.5	1.5	6	6
	1	220 V	A	0.25	–	–	–	1	1
	3	220 V	A	1	–	0.5	0.5	5	5
	DC-13 L/R ≦ 50 ms								
	Contacts in series:								
	2	24 V	A	–	–	–	–	6	6
	3	24 V	A	4	–	–	–	6	6
	2	60 V	A	–	–	–	–	6	6
	3	60 V	A	4	–	–	–	6	6
	1	110 V	A	–	–	–	–	1.5	1.5
	3	110 V	A	2	–	–	–	3	3
	1	220 V	A	–	–	–	–	1	1
	3	220 V	A	1	–	–	–	2	2
Contact reliability (at U_e = 24 V DC, U_{min} = 17 V, I_{min} = 5.4 mA)		Fault probability	λ	$<10^{-8}$, < one failure in 100 million operations					
Conventional thermal current		I_{th}	A	10	10	10	10	16	16
Short-circuit rating without welding									
Maximum overcurrent protective device									
	220/240 V		PKZM0	4	–	4	4	4	4
	380/415 V		PKZM0	4	–	4	4	2.4	2.4
	220/230 V		FAZ-C	–	–	–	–	4	4
Short-circuit protection, max. fuse[2]									
	500 V		A gG/gL	10	10	6	6	16	16
	500 V		A fast	–	–	10	10	–	–
Current heat losses at load of I_{th}									
AC operated			W	0.3	0.3	0.2	0.2	0.8	0.8
DC operated			W	0.3	0.3	0.3	0.3	0.8	0.8

Notes

[1] Making and breaking conditions to DC-13, time constant as stated
[2] See transparent overlay "Fuses" for time/current characteristics (please enquire)

			DILA	DILA... XHI	DILER	...DILE	DILR	...DIL
Magnet systems								
Pick-up and drop-out values								
AC operated								
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Pick-up	× U_c	0.8 – 1.1	–	0.8 – 1.1	–	0.8 – 1.1	–
Dual-frequency coil 50/60 Hz	Pick-up	× U_c	0.8 – 1.1	–	0.85 – 1.1	–	0.85 – 1.1	–
DC operated[1]								
Pick-up voltage	Pick-up	× U_c	0.8 – 1.1	–	0.85 – 1.3	–	0.85 – 1.1	–
At 24 V: without auxiliary contact module (40 °C)	Pick-up	× U_c	0.7 – 1.3	–	0.7 – 1.3	–	–	–
Power consumption								
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Pick-up	VA	24	–	25	–	67	–
	Pick-up	W	19	–	22	–	52	–
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Sealing	VA	4	–	4.6	–	8.5	–
	Sealing	W	1.2	–	1.3	–	2.5	–
Dual-frequency coil 50/60 Hz at 50 Hz	Pick-up	VA	28	–	30	–	–	–
	Pick-up	W	22	–	26	–	–	–
Dual-frequency coil 50/60 Hz at 50 Hz	Sealing	VA	4.6	–	5.4	–	–	–
	Sealing	W	1.4	–	1.6	–	–	–
Dual-frequency coil 50/60 Hz at 60 Hz	Pick-up	VA	26	–	29	–	–	–
	Pick-up	W	21	–	24	–	–	–
Dual-frequency coil 50/60 Hz at 60 Hz	Sealing	VA	3.9	–	3.9	–	–	–
	Sealing	W	1.2	–	1.1	–	–	–
DC operated	Pull-in = sealing	W	3	–	2.6	–	9.5	–
Duty factor		% DF	100	–	100	–	100	–
Switching times at 100 % U_c (approximate values)								
AC operated closing delay		ms	≦ 20	–	14 – 21	–	22	–
AC operated make contact opening delay		ms	≦ 15	–	8 – 18	–	14	–
AC operated with auxiliary contact module, max. closing delay		ms	–	–	45	45	–	–
DC operated closing delay		ms	≦ 35	–	26 – 35	–	38	–
DC operated, make contact opening delay		ms	≦ 15	–	15 – 25	–	9	–
DC operated with auxiliary contact module, max. closing delay		ms	–	–	70	70	–	–

Notes

[1] Smoothed DC or three-phase bridge rectifier

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			TPE11DIL TPD11DIL	TPEH11DIL TPDH11DIL	VDIL	VS1DIL VS2DIL	ETS4-VS3
General technical data							
Standards			IEC/EN 60947, VDE 0660, UL, CSA				
Lifespan, mechanical							
AC operated	Operations	× 10^6	1	1	5	–	–
DC operated	Operations	× 10^6	1	1	1	10	30
Maximum operating frequency							
AC operated	Operations	× 10^6	3600	100	1500	–	–
DC operated	Operations	× 10^6	3600	100	1500	9000	72000
Climatic proofing			Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclical, to IEC 60068-2-30				
Ambient temperature							
Open		°C	-25/50	-10/50	-25/50	-25/50	-25/60
Enclosed		°C	-25/40	-10/40	-25/40	-25/40	-25/45
Mounting position			As required, except suspended		As required		
Mechanical shock resistance (half-sinusoidal shock, 20 ms)							
Make contact		g	10	10	–	10	10
Break contact		g	6	6	–	–	–
Mechanical latching		g	–	–	20	–	–
Degree of protection			IP00	IP00	IP00	IP00	IP20
Protection against direct contact from the front when actuated by a perpendicular test finger (IEC 536)			Finger- and back-of-hand proof				
Weight		kg	0.08	0.08	0.1	0.05	0.09
Terminal capacity							
Solid		mm^2	1 × (0.5 – 2.5) 2 × (0.5 – 2.5)	1 × (0.5 – 2.5) 2 × (0.5 – 2.5)	1 × (0.5 – 2.5) 2 × (0.5 – 2.5)	1 × (0.75 – 4) 2 × (0.75 – 4)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)[1]
Flexible with ferrule		mm^2	1 × (0.5 – 1.5) 2 × (0.5 – 0.75)	1 × (0.5 – 1.5) 2 × (0.5 – 0.75)	1 × (0.5 – 1.5) 2 × (0.5 – 0.75)	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)[1]
Solid or stranded		AWG	18 – 14	18 – 14	18 – 14	18 – 12	16 – 14
Terminal screw			M3	M3	M3	M3.5	M3.5
Pozidriv screwdriver		Size	2	2	2	2	2
Standard screwdriver		mm	0.8 × 5.5 1 × 6	0.8 × 5.5 1 × 6	0.8 × 5.5 1 × 6	0.8 × 5.5 1 × 6	0.8 × 5.5 1 × 6
Max. tightening torque		Nm	1.2	1.2	1.2	1.2	1.2

Notes [1] Use equal cross-sections only

TP Timer Modules, V Latching Module, VS Amplifier Module

					TPE11DIL TPD11DIL	TPEH11DIL TPDH11DIL	VDIL	VS1DIL VS2DIL	ETS4-VS3
Contacts									
Interlocked opposing contacts to ZH 1/457, including auxiliary contact module					Yes	Yes	–	–	–
Rated impulse withstand voltage			U_{imp}	V AC	6000	6000	8000	4000	6000
Overvoltage category/pollution degree					III/3	III/3	III/3	III/2	III/2
Rated insulation voltage			U_i	V AC	690	690	690	440	440
Rated operational voltage			U_e	V AC	500	500	415	415	440
Rated operational current									
AC–15	220/240 V		U_e	A	4	4	–	1.5	2
	380/415 V		U_e	A	4	4	–	1	2
DC-13[1]	DC-13 L/R ≦ 15 ms								
	Contacts in series:								
		1	24 V	A	10	10	–	1	2.6
		1	60 V	A	6	6	–	1	1
		1	110 V	A	3	3	–	1	0.6
		1	220 V	A	1	1	–	1	0.2
	DC-13 L/R ≦ 50 ms								
	Contacts in series:								
		1	24 V	A	4	4	–	0.5	2
		1	60 V	A	4	4	–	0.5	0.6
		1	110 V	A	1	1	–	0.5	0.08
		1	220 V	A	0.5	0.5	–	0.5	0.08
	DC-13 L/R ≦ 300 ms								
	Contacts in series:								
		1	24 V	A	–	–	–	0.2	0.6
		1	60 V	A	–	–	–	0.2	0.2
		1	110 V	A	–	–	–	0.2	0.08
		1	220 V	A	–	–	–	0.2	0.03
Contact reliability (at U_e = 24 V DC, U_{min} = 17 V, I_{min} = 5.4 mA		Fault probability	λ		<10^{-8}, < one failure in 100 million operations				
Conventional thermal current			I_{th}	A	10	10	–	8	6
Component lifespan									
AC–15	230 V, I_e = 0.1 A	Operations		× 10^6	–	–	–	8	7
	230 V, I_e = 1.2 A	Operations		× 10^6	–	–	–	–	1
DC-13	230 V, I_e = 0.1 A	Operations		× 10^6	–	–	–	0.85	–
Short-circuit rating without welding									
Maximum overcurrent protective									
	220 / 240 V			PKZM0	2.5	2.5	–	–	–
	380 / 415 V			PKZM0	1.6	1.6	–	–	–
Short-circuit protection, max. fuse[2]									
	500 V			A gG/gL	6	6	–	–	–
	500 V			A fast	–	–	–	4	4
Current heat losses at load of I_{th}									
Max. per contact				W	0.3	0.3	–	–	–

Notes

[1] Making and breaking conditions to DC-13, time constant as stated
[2] See transparent overlay "Fuses" for time/current characteristics (please enquire)

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			TPE11DIL TPD11DIL	TPEH11DIL TPDH11DIL	VDIL	VS1DIL VS2DIL	ETS4-VS3
Magnet systems							
Pick-up and drop-out values							
AC operated							
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Unlatching	× U_c	–	–	0.85 – 1.1	–	–
Dual-frequency coil ..., 50/60 Hz	Unlatching	× U_c	–	–	0.85 – 1.1	–	–
DC operated[1]							
	Pick-up	× U_c	–	–	–	0.75 – 1.25	0.85 – 1.2
	Unlatching	× U_c	–	–	0.85 – 1.1	–	–
Power consumption							
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Pick-up	VA	–	–	13	–	–
	Pick-up	W	–	–	12	–	–
Single-voltage coil 50 Hz and dual-voltage coil 50 Hz, 60 Hz	Sealing	VA	–	–	5	–	–
	Sealing	W	–	–	2	–	–
DC operated	Pull-in = sealing	W	–	–	26	0.27	0.6
Duty factor		% DF	100	100	100 at AC 200 ms at DC	100	100
Switching times at 100 % U_c (approximate values)							
DC operated closing delay		ms	–	–	–	6	7
DC operated opening delay		ms	–	–	–	2.5	3
Minimum command time AC operated							
Latching		ms	–	–	35	–	–
Unlatching		ms	–	–	25	–	–
Minimum command time DC operated							
Latching		ms	–	–	45	–	–
Unlatching		ms	–	–	25	–	–
Repetition accuracy		%	<3	<5	–	–	–
Time deviation in relation to ambient temperature, based on +20 °C		%/K	0.2	0.2	–	–	–
Long-time deviation		%	15	15	–	–	–
Recovery time (after 100% time delay)		ms	20	20	–	–	–

Notes [1] Smoothed DC or three-phase bridge rectifier

			DILET-A	DILET-W	ETR4-A	ETR4-W	ETR2
General technical data							
Standards			IEC/EN 60947, VDE 0660, UL, CSA IEC/EN 60255, VDE 0435				IEC/EN 61812, VDE 0435
Lifespan, mechanical							
AC operated	Operations	× 10^6	30	30	30	30	30
DC operated	Operations	× 10^6	30	30	30	30	30
Climatic proofing			Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclical, to IEC 60068-2-30				
Ambient temperature							
Storage		°C	–	–	-45/60	-45/60	-40/85
Open		°C	-20/60	-20/60	-25/60	-25/60	-20/60
Enclosed		°C	-20/45	-20/45	-25/45	-25/45	-20/60
Mounting position			As required	As required	As required	As required	As required
Mechanical shock resistance (IEC/EN 60068-2-27)							
Half-sinusoidal shock 20 ms							
Make contact		g	4	4	4	4	4
Degree of protection							
Terminals			IP20	IP20	IP20	IP20	IP20
Weight		kg	0.09	0.09	0.1	0.1	0.05
Terminal capacity							
Solid		mm^2	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)	1 × (0.75 – 2.5) 2 × (0.75 – 2.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)
Flexible with ferrule		mm^2	1 × (0.75 – 1.5) 2 × (0.75 – 1.5)	1 × (0.75 – 1.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)	1 × (0.75 – 2.5) 2 × (0.75 – 1.5)
Solid or stranded		AWG	1 × (18 – 14)	1 × (18 – 14)	1 × (20 – 14)	1 × (20 – 14)	1 × (20 – 14)
Contacts							
Rated impulse withstand voltage	U_{imp}	V AC	6000	6000	6000	6000	4000
Overvoltage category/pollution degree			III/2	III/2	III/3	III/3	III/3
Rated insulation voltage	U_i	V AC	600	600	600	600	300
Rated operational voltage	U_e	V AC	440	440	440	440	250
Safe isolation to IEC 536							
Between coil and auxiliary contacts		V AC	250	250	250	250	–
Between the auxiliary contacts		V AC	250	250	250	250	–
Making capacity							
AC-14 $\cos\varphi = 0{,}3$ 440 V		A	48	48	48	48	–
AC-15 $\cos\varphi = 0{,}3$ 220 V		A	50	50	50	50	30
DC-11 L/R ≦ 40 ms		× I_e	1.1	1.1	1.1	1.1	–
Breaking capacity							
AC -14 $\cos\varphi = 0{,}3$ 440 V		A	3	3	3	3	–
AC -15 $\cos\varphi = 0{,}3$ 220 V		A	3	3	3	3	–
DC -11 L/R ≦ 40 ms		× I_e	1.1	1.1	1.1	1.1	1.1
Rated operational current							
AC -14 440 V	I_e	A	3	3	3	3	–
AC -15 220 V	I_e	A	3	3	3	3	3
AC -12 AC-12 at 230 V	I_e	A	–	–	–	–	8
DC -12 DC-12 at 24 V	I_e	A	–	–	–	–	8
DC -13 24 V	I_e	A	–	–	–	–	2
DC -11[1] L/R max. 15 ms							
24 V		A	1.5	1.5	1.5	1.5	–
L/R max.50 ms		A	1.2	1.2	1.2	1.2	–
Conventional thermal current	I_{th}	A	6	6	6	6	5
Short-circuit rating[2] without welding							
Max. fuse, make contacts		A gG/gL	6	6	6	6	10
Max. fuse, break contacts		A gG/gL	6	6	6	6	6
Max. overcurrent protective device, 220/230 V		Type	–	–	FAZ-B4/1-	FAZ-B4/1-	–

Notes

[1] Making and breaking conditions to DC-13, time constant as stated
[2] When supplied directly from mains or transformer > 1000 VA

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			DILET-A	DILET-W	ETR4-A	ETR4-W	ETR2
Magnet systems							
Pick-up and drop-out values							
Pick-up voltage							
AC operated	Pick-up	× U_c	0.85 – 1.1	0.85 – 1.1	0.85 – 1.1	0.85 – 1.1	0.85 – 1.1
DC operated[1]	Pick-up	× U_c	0.7 – 1.1	–	0.7 – 1.1	–	0.85 – 1.1
Power consumption							
Pick-up AC		VA	2	0.5	2	0.5	–
Sealing AC		VA	2	0.5	2	0.5	–
Pull-in DC		W	1.8	–	1.8	–	–
Sealing DC		W	1.8	–	1.8	–	–
Duty factor		% DF	100	100	100	100	100
Maximum operating frequency							
Max. operating frequency		Ops/h	4000	4000	4000	4000	360: 8 A/250 V 7200: 120 mA/12 V
8 A/250 V	Operations/h		–	–	–	–	360
120 mA/12 V	Operations/h		–	–	–	–	7200
Minimum command time							
AC		ms	50	50	50	50	20
DC		ms	30	–	30	–	20
Repetition accuracy (with constant parameters)		%	±0.5	±0.5	±0.5	±0.5	±0.5
Recovery time (after 100% time delay)		ms	70	70	70	70	50
Contact changeover time[2]	t_u	ms	–	–	4	50	10

Notes

[1] Not DILET...-W
[2] ETR4-51: 50 ms

				ESR4-NO-30	ESR4-NO-31	ESR4-NO-21	ESR4-NV3(30)-30, ESR-NT30-30
General technical data							
Standards				IEC/EN 60255, VDE 0660, IEC/EN 60947, UL, CSA			
Lifespan, mechanical		Operations	× 10^6	10	10	10	10
Maximum operating frequency			Ops/h	3600	3600	3600	3600
Climatic proofing				FW 24 DIN 50 016: Changeable humid climate with 24 h cycle, 23 °C, 83% relative humidity, 40 °C, 92% relative humidity			
Ambient temperature			°C	25/55	25/55	25/55	25/55
Ambient temperature for storage			°C	25 /70	25 /70	25 /70	25 /70
Mounting position				As required	As required	As required	As required
Vibration resistance			g	5, to IEC/EN 60068-2-6; frequency: 10 – 55 Hz, amplitude: 0.35 mm			
Degree of protection							
Housing				IP40	IP40	IP40	IP40
Terminals				IP20	IP20	IP20	IP20
Protection against direct contact from the front when actuated by a perpendicular test finger (IEC 536)				Finger- and back-of-hand proof			
Weight			kg	0.2	0.2	0.2	0.2
Terminal capacity							
Solid			mm^2	1 – (0.25 × 2.5) 2 – (0.25 × 0.5)	1 – (0.5 × 1.5) 2 – (0.5 × 1.5)	1 – (0.25 × 2.5) 2 – (0.25 × 0.5)	1 – (0.25 × 2.5) 2 – (0.25 × 0.5)
Flexible with ferrule			mm^2	1 – (0.14 × 2.5) 2 – (0.14 × 0.75)	1 – (0.14 × 2.5) 2 – (0.14 × 0.75)	1 – (0.14 × 2.5) 2 – (0.14 × 0.75)	1 – (0.14 × 2.5) 2 – (0.14 × 0.75)
Solid or stranded			AWG	18 – 16	18 – 16	18 – 16	18 – 16
Terminal screw							
Pozidriv screwdriver			Size	2	2	2	2
Standard screwdriver			mm	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5
Max. tightening torque			Nm	0.6	0.6	0.6	0.6
Main contacts							
Rated impulse withstand voltage		U_{imp}	V AC	4000	4000	4000	4000
Overvoltage category/pollution degree							
Outside				III/3	III/3	III/3	III/3
Inside				III/2	III/2	III/2	III/2
Rated insulation voltage		$_i$	V AC	300	300	300	300
Rated operational voltage		$_e$	V AC	230	230	230	230
Rated operational current							
AC–15	230 V	$_e$	A	6	6	6	6
DC-13	24 V (360 ops./h)	$_e$	A	6	6	6	6
	24 V (3600 ops./h)	$_e$	A	3	3	3	3
Max. summation current of all poles				12	12	12	12
Short-circuit protection							
Max. fuse			A gG/gL	6	6	6	6

Notes For additional Technical Data see AWA... Fitting Instructions

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			ESR4-NO-30	ESR4-NO-31	ESR4-NO-21	ESR4-NV3(30)-30, ESR-NT30-30
Magnet systems						
Actuating voltage 50/60 Hz		V AC	24/115/230	24/115/230	24	24
Actuating voltage	U_s	V DC	24	24	24	24
Voltage tolerance pick-up voltage		× U_c	0.85 – 1.1	0.85 – 1.1	0.85 – 1.1	0.85 – 1.1
Power consumption						
AC operated 50/60 Hz 24 V/115 V/230 V		VA	4.4/4.4/4.4	3.2/2.3/2.3	3.5	–
AC operated 50/60 Hz 24 V/115 V/230 V		W	4.4/2.4/2.4	1.8/2.0/2.0	2.1	–
DC operated		W	2.4/–/–	1.3/–/–	1.5	2.5
Control circuit						
Rated output voltage		V DC	≦24	≦24	≦24	≦24
No-load voltage		V DC	≦40	–	–	–
Rated current		mA	100	40	50	50
Max. resistive impedance of the conductor	R	Ω	70	70	70	70
Short-circuit current		A	1.0	1.4	2.2	2.2
Fuse						
24 V			Protection against short circuit	PTC resistor	PTC resistor	PTC resistor
115 V/230 V		W	Protection against short circuit	Short-circuit proof transformer	–	–
Response time		ms	2000	2000	2000	2000
Recovery time		ms	3000	3000	3000	3000
Inputs						
Rated current		mA	S12, 31, 32, 33: 40, S34, 35: 5	Y2: 15 Y3: 15	S12: 30; S31, S22: 20	S12, S22, S31: 25; S34, S35: 40
Response time with reset monitoring	t_{A1}	ms	20 – 40	50	80	30
Response time without reset monitoring	t_{A1}	ms	200 – 600	180	60	200
Reset time	t_R/t_{R1}	ms	<25	60	40/100	25/adjustable
Minimum contact closing time	t_M	ms	> 80	50	<50	<200
Reset time	t_W	ms	≧100	<200	500	500
Synchronisation monitoring time	t_S	ms	Approx. 200	–	–	–
Electromagnetic compatibility (EMC)						
Emitted interference			To EN50 081-1 and EN50 081-2			
Noise immunity			To EN 50 082-2			

Notes For additional Technical Data see AWA... Fitting Instructions

				ESR4-NM-21	ESR4-NZ-21	ESR4-NE-42	ESR4-VE3-42
General technical data							
Standards				IEC/EN 60255, VDE 0660, IEC/EN 60947, UL, CSA			
Lifespan, mechanical		Operations	× 10^6	10	10	10	10
Maximum operating frequency			Ops/h	3600	3600	3600	3600
Climatic proofing				Damp heat to DIN 50016: changeable humid climate with 24 h cycle, 23 °C, 83% relative humidity, 40 °C, 92% relative humidity			
Ambient temperature			°C	25/55	25/55	25/55	25/55
Ambient temperature for storage			°C	25/70	25/70	25/70	25/70
Mounting position				As required	As required	As required	As required
Vibration resistance			g	5, to IEC/EN 60068-2-6; frequency: 10 – 55 Hz, amplitude: 0.35 mm			
Degree of protection							
Housing				IP40	IP40	IP40	IP40
Terminals				IP20	IP20	IP20	IP20
Protection against direct contact from the front when actuated by a perpendicular test finger (IEC 536)				Finger- and back-of-hand proof			
Weight			kg	0.2	0.2	0.2	0.2
Terminal capacity							
Solid			mm^2	1 – (0.25 × 2.5) 2 – (0.25 × 0.5)	1 – (0.25 × 2.5) 2 – (0.25 × 0.5)	1 – (0.25 × 2.5) 2 – (0.25 × 0.5)	1 – (0.25 × 2.5) 2 – (0.25 × 0.5)
Flexible with ferrule			mm^2	1 – (0.14 × 2.5) 2 – (0.14 × 0.75)	1 – (0.14 × 2.5) 2 – (0.14 × 0.75)	1 – (0.14 × 2.5) 2 – (0.14 × 0.75)	1 – (0.14 × 2.5) 2 – (0.14 × 0.75)
Solid or stranded			AWG	18 – 16	18 – 16	18 – 16	18 – 16
Terminal screw							
Pozidriv screwdriver			Size	2	2	2	2
Standard screwdriver			mm	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5	0.6 × 3.5
Max. tightening torque			Nm	0.6	0.6	0.6	0.6
Main contacts							
Rated impulse withstand voltage		U_{imp}	V AC	4000	4000	4000	4000
Overvoltage category/pollution degree							
Outside				III/3	III/3	III/3	III/3
Inside				III/2	III/2	III/2	III/2
Rated insulation voltage		U_i	V AC	300	300	300	300
Rated operational voltage		U_e	V AC	230	230	230	230
Rated operational current							
AC–15	230 V	I_e	A	6	6	6	6
DC-13	24 V (360 ops./h)	I_e	A	6	6	6	6
	24 V (3600 ops./h)	I_e	A	3	3	3	3
Max. summation current of all poles				12	12	12	12
Short-circuit protection							
Max. fuse			A gG/gL	6	6	6	6

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			ESR4-NM-21	ESR4-NZ-21	ESR4-NE-42	ESR4-VE3-42
Magnet systems						
Actuating voltage 50/60 Hz		V AC	–	24	24	–
Actuating voltage	U_s	V DC	24	24	24	24
Pick-up voltage tolerance		× U_c	0.85 – 1.1	0.85 – 1.1	0.85 – 1.1	0.85 – 1.1
Power consumption						
AC operated 50/60 Hz		VA	–	2.7	2.7	–
AC operated 50/60 Hz		W	–	1.6	1.5	–
DC operated		W	2.7	1.5	1	1
Control circuit						
Rated output voltage		V DC	≤24	≤24	–	–
No-load voltage		V DC	–	–	–	–
Rated current		mA	50	60	–	–
Max. resistive impedance of the conductor	R	Ω	70	70	–	–
Short-circuit current		A	0.1	1	–	–
Fuse			Electronic fuse	PTC resistor	–	–
Response time		ms	5	2000	–	–
Recovery time		ms	5	3000	–	–
Inputs						
Rated current		mA	S12: 30; S31, S22: 20	Y2: 60; Y11, Y21: 60	–	–
Response time with reset monitoring	t_{A1}	ms	80	–	–	–
Response time without reset monitoring	t_{A1}	ms	60	40	25	25
Reset time	t_R/t_{R1}	ms	40/100	< 50	15	–
Minimum contact closing time	t_M	ms	50	–	–	–
Recovery time	t_W	ms	500	250	–	–
Synchronisation monitoring time	t_S	ms	–	500	–	–
Electromagnetic compatibility (EMC)						
Emitted interference			To EN50081-1 and EN50081-2			
Noise immunity			To EN 50082-2			

			EMR4-I1-2-A	EMR4-I15-2-A	EMR4-I15-2-B
General technical data					
Standards			IEC/EN 60255-6, EN 61557, UL, CSA, GL		
Lifespan, mechanical	Operations	× 10^6	30	30	30
Climatic proofing			Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h		
Ambient temperature	Open	°C	-25/65	-25/65	-25/65
	Storage	°C	-40/85	-40/85	-40/85
Mounting position			As required	As required	As required
Mechanical shock resistance		g	10	10	10
Degree of protection	Terminals		IP20	IP20	IP20
Weight		kg	Approx. 0.3	Approx. 0.3	Approx. 0.3
Terminal capacity					
Solid		mm^2	2 × 2.5	2 × 2.5	2 × 2.5
Flexible with ferrule		mm^2	2 × 2.5	2 × 2.5	2 × 2.5
Standard screwdriver		mm	5.5 × 0.8	5.5 × 0.8	5.5 × 0.8
Tightening torque		Nm	0.5 – 0.8	0.5 – 0.8	0.5 – 0.8
Fixing			Snap fixing, top-hat rail IEC/EN 60715		
Contacts					
Rated impulse withstand voltage	U_{imp}	V AC	4000	4000	4000
Overvoltage category/pollution degree			III/3	III/3	III/3
Rated insulation voltage	U_i	V AC	400	400	400
Power supply					
Supply voltage AC/DC		V AC/DC	24 – 240	24 – 240	–
Supply voltage AC		V AC	–	–	220 – 240
Pick-up and drop-out values		× U_c	0.85 – 1.1	0.85 – 1.1	0.85 – 1.1
Power consumption		VA	2	2	2
Rated frequency		Hz	50 – 60	50 – 60	50 – 60
Duty factor		% DF	100	100	100
Timing circuit					
Response delay time	Adjustable	s	0.1 – 1 and 1.5 – 30	0.1 – 1 and 1.5 – 30	0.1 – 1 and 1.5 – 30
Time error within supply voltage		%	≦ 0.5	≦ 0.5	≦ 0.5
Time error within temperature range		%/°C	≦ 0.06	≦ 0.06	≦ 0.06
Measuring circuits					
Inputs	B1-C	A	0.003 – 0.03	0.3 – 1.5	0.3 – 1.5
	B2-C	A	0.01 – 0.1	1 – 5	1 – 5
	B3-C	A	0.1 – 1	3 – 15	3 – 15
Hysteresis		%	5 – 30	5 – 30	5 – 30
Measuring cycle		ms	Max. 80	Max. 80	Max. 80
Temperature error		%/°C	≦ 0.06	≦ 0.06	≦ 0.06
Error within supply voltage		%	≦ 0.5	≦ 0.5	≦ 0.5
Status indication					
Supply voltage			LED, green	LED, green	LED, green
Output relay energized			LED, yellow	LED, yellow	LED, yellow
Relay output contacts					
Rated operational voltage	U_e	V AC	400	400	400
Rated operational current					
AC-12 at 230 V	I_e	A	5	5	5
AC-15 at 230 V	I_e	A	3	3	3
DC-12 at 24 V	I_e	A	5	5	5
DC-13 at 24 V	I_e	A	2.5	2.5	2.5
Lifespan, electrical (AC-12/230 V/5 A)	Operations	× 10^6	0.1	0.1	0.1
Short-circuit rating					
Maximum fuse	Fast/gL	A	5	5	5
Load limit curves			→ Page 4/61	→ Page 4/61	→ Page 4/61
Electromagnetic compatibility (EMC)					
Electromagnetic compatibility			IEC/EN 60947-6-2		
ESD			IEC/EN 61000-4-2 level 3		
HF immunity to radiation			IEC/EN 61000-4-3 level 3		
Burst			IEC/EN 61000-4-4 level 3		
Surge			IEC/EN 61000-4-5 level 4		
HF immunity to line-conducted interference			IEC/EN 61000-4-6 level 3		

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				EMR4-F500-2
General technical data				
Standards				IEC/EN 60255-6, EN 61557, UL, CSA, GL
Lifespan, mechanical		Operations	× 10^6	30
Climatic proofing				Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h
Ambient temperature		Open	°C	-20/60
		Storage	°C	-40/80
Mounting position				As required
Mechanical shock resistance			g	10
Degree of protection		Terminals		IP20
Weight			kg	Approx. 0.15
Terminal capacity	Solid		mm^2	2 × 2.5
	Flexible with ferrule		mm^2	2 × 2.5
Standard screwdriver			mm	5.5 × 0.8
Tightening torque			Nm	0.5 – 0.8
Fixing				Snap fixing, top-hat rail EN 50022
Contacts				
Rated impulse withstand voltage		U_{imp}	V AC	4000
Overvoltage category/pollution degree				III/3
Rated insulation voltage		U_i	V AC	400
Power supply				
Supply voltage AC			V AC	200 – 500
Pick-up and drop-out values			× U_c	0.85 – 1.1
Power consumption			VA	15
Rated frequency			Hz	50 – 60
Duty factor			% DF	100
Measuring circuits				
Monitoring voltage		U_N	V AC	200 – 500
Frequency			Hz	50 – 60
Measuring cycle			ms	Max. 500
Temperature error			%/°C	≦ 0.06
Error within supply voltage			%	≦ 0.5
Status indication				
Output relay energized				LED, yellow
Relay output contacts				
Rated operational voltage		I_e	V AC	500
Rated operational current	AC-12 at 230 V	I_e	A	4
	AC-15 at 230 V	I_e	A	3
	DC-12 at 24 V	I_e	A	4
	DC-13 at 24 V	I_e	A	2
Lifespan, electrical (AC-12/230 V/4 A)		Operations	× 10^6	> 0.3
Short-circuit rating				
Maximum fuse		Fast/gL	A	10
Load limit curves				→ Page 4/61
Electromagnetic compatibility (EMC)				
Electromagnetic compatibility				IEC/EN 60947-6-2
ESD				IEC/EN 61000-4-2 level 3
HF immunity to radiation				IEC/EN 61000-4-3 level 3
Burst				IEC/EN 61000-4-4 level 3
Surge				IEC/EN 61000-4-5 level 4
HF immunity to line-conducted interference				IEC/EN 61000-4-6 level 3

				EMR-W500-2-C	EMR-W500-2-D	EMR-W580-2-D
General technical data						
Standards				IEC/EN 60255-6, EN 61557, UL, CSA, GL		
Lifespan, mechanical		Operations	× 10^6	30	30	30
Climatic proofing				Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h		
Ambient temperature		Open	°C	25/65	25/65	25/65
		Storage	°C	40/85	40/85	40/85
Mounting position				As required	As required	As required
Mechanical shock resistance			g	10	10	10
Degree of protection		Terminals		IP20	IP20	IP20
Weight			kg	Approx. 0.3	Approx. 0.3	Approx. 0.3
Terminal capacity	Solid		mm^2	2 × 2.5	2 × 2.5	2 × 2.5
	Flexible with ferrule		mm^2	2 × 2.5	2 × 2.5	2 × 2.5
Standard screwdriver			mm	5.5 × 0.8	5.5 × 0.8	5.5 × 0.8
Tightening torque			Nm	0.5 – 0.8	0.5 – 0.8	0.5 – 0.8
Fixing				Snap fixing, top-hat rail EN 50022		
Contacts						
Rated impulse withstand voltage		U_{imp}	V AC	4000	4000	4000
Overvoltage category/pollution degree				III/3	III/3	III/3
Rated insulation voltage		U_i	V AC	400	400	400
Power supply						
Supply voltage AC			V AC	160 – 300	300 – 500	300 – 500
Pick-up and drop-out values			× U_c	0.85 – 1.1	0.85 – 1.1	0.85 – 1.1
Power consumption			VA	3	3	3
Rated frequency			Hz	50 – 60	50 – 60	50 – 60
Duty factor			% DF	100	100	100
Timing circuit						
Response delay time			s	Adjustable from 0.1 – 10	Adjustable from 0.1 – 10	Adjustable from 0.1 – 10
Reset delay time			s	Adjustable from 0.1 – 10	Adjustable from 0.1 – 10	Adjustable from 0.1 – 10
Time error within supply voltage			%	≦ 0.5	≦ 0.5	≦ 0.5
Time error within temperature range			%/°C	≦ 0.06	≦ 0.06	≦ 0.06
Measuring circuits						
Undervoltage response value		U_{min}	V AC	300 – 380	300 – 380	350 – 430
Overvoltage response value		U_{max}	V AC	420 – 500	420 – 500	500 – 580
Hysteresis			%	0 – 5	0 – 5	0 – 5
Measuring cycle			ms	Max. 80	Max. 80	Max. 80
Temperature error			%/°C	≦ 0.06	≦ 0.06	≦ 0.06
Error within supply voltage			%	≦ 0.5	≦ 0.5	≦ 0.5
Status indication						
Supply voltage				LED, green	LED, green	LED, green
Output relay energized				LED, yellow	LED, yellow	LED, yellow
Overvoltage				LED >U, red	LED >U, red	LED >U, red
Undervoltage				LED <U, red	LED <U, red	LED <U, red
Phase failure, phase sequence error				LED P, red	LED P, red	LED P, red
Relay output contacts						
Rated operational voltage		U_e	V AC	500	500	500
Rated operational current	AC-12 at 230 V	I_e	A	5	5	5
	AC-15 at 230 V	I_e	A	3	3	3
	DC-12 at 24 V	I_e	A	5	5	5
	DC-13 at 24 V	I_e	A	2.5	2.5	2.5
Lifespan, electrical (AC-12/230 V/5 A)		Operations	× 10^6	0.1	0.1	0.1
Short-circuit rating						
Maximum fuse		Fast/gL	A	5	5	5
Load limit curves				→ Page 4/61	→ Page 4/61	→ Page 4/61
Electromagnetic compatibility (EMC)						
Electromagnetic compatibility				IEC/EN 60947-6-2		
ESD				IEC/EN 61000-4-2 level 3		
HF immunity to radiation				IEC/EN 61000-4-3 level 3		
Burst				IEC/EN 61000-4-4 level 3		
Surge				IEC/EN 61000-4-5 level 4		
HF immunity to line-conducted interference				IEC/EN 61000-4-6 level 3		

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				EMR4-A400-1
General technical data				
Standards				IEC/EN 60255-6, EN 61557, UL, CSA, GL
Lifespan, mechanical		Operations	× 10^6	30
Climatic proofing				Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h
Ambient temperature		Open	°C	-20/60
		Storage	°C	-40/80
Mounting position				As required
Mechanical shock resistance			g	10
Degree of protection		Terminals		IP20
Weight			kg	Approx. 0.3
Terminal capacity	Solid		mm^2	2 × 2.5
	Flexible with ferrule		mm^2	2 × 2.5
Standard screwdriver			mm	5.5 × 0.8
Tightening torque			Nm	0.5 – 0.8
Fixing				Snap fixing, top-hat rail EN 50022
Contacts				
Rated impulse withstand voltage		U_{imp}	V AC	4000
Overvoltage category/pollution degree				III/3
Rated insulation voltage		U_i	V AC	400
Power supply				
Supply voltage AC			V AC	380 – 415
Pick-up and drop-out values			× U_c	0.8 – 1.2
Power consumption			VA	15
Rated frequency		f	Hz	50
Duty factor			% DF	100
Timing circuit				
Response delay time			s	0.5 indication of phase imbalance
Time error within supply voltage			%	≦ 0.5
Time error within temperature range			%/°C	≦ 0.06
Measuring circuits				
Monitoring voltage		U_N	V AC	380 – 415
Frequency			Hz	50
Phase imbalance level adjustable			%	5 – 15
Switching hysteresis			%	20
Temperature error			%/°C	≦ 0.06
Error within supply voltage			%	≦ 0.5
Status indication				
Output relay energized				LED, yellow
Relay output contacts				
Rated operational voltage		U_e	V AC	500
Rated operational current	AC-12 at 230 V	I_e	A	4
	AC-15 at 230 V	I_e	A	3
	DC-12 at 24 V	I_e	A	4
	DC-13 at 24 V	I_e	A	2
Lifespan, electrical (AC-12/230 V/4 A)		Operations	× 10^6	0.3
Short-circuit rating				
Maximum fuse		Fast/gL	A	10
Load limit curves				→ Page 4/61
Electromagnetic compatibility (EMC)				
Electromagnetic compatibility				IEC/EN 60947-6-2
ESD				IEC/EN 61000-4-2 level 3
HF immunity to radiation				IEC/EN 61000-4-3 level 3
Burst				IEC/EN 61000-4-4 level 3
Surge				IEC/EN 61000-4-5 level 4
HF immunity to line-conducted interference				IEC/EN 61000-4-6 level 3

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				EMR4-N100-1-B	EMR4-N500-2-B	EMR4-N500-2-A
General technical data						
Standards				IEC/EN 60255-6, EN 61557, UL, CSA, GL		
Lifespan, mechanical		Operations	× 10^6	30	30	30
Climatic proofing				Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h		
Ambient temperature		Open	°C	-20/60	-25/65	-25/65
		Storage	°C	-40/80	-40/85	-40/85
Mounting position				As required	As required	As required
Mechanical shock resistance			g	10	10	10
Degree of protection		Terminals		IP20	IP20	IP20
Weight			kg	Approx. 0.15	Approx. 0.3	Approx. 0.3
Terminal capacity	Solid		mm^2	2 × 2.5	2 × 2.5	2 × 2.5
	Flexible with ferrule		mm^2	2 × 2.5	2 × 2.5	2 × 2.5
Standard screwdriver			mm	5.5 × 0.8	5.5 × 0.8	5.5 × 0.8
Tightening torque			Nm	0.5 – 0.8	0.5 – 0.8	0.5 – 0.8
Fixing				Snap fixing, top-hat rail EN 50022		
Contacts						
Rated impulse withstand voltage		U_{imp}	V AC	4000	4000	4000
Overvoltage category/pollution degree				III/3	III/3	III/3
Rated insulation voltage		U_i	V AC	400	400	400
Power supply						
Supply voltage AC/DC			V AC/DC	–	–	24 – 240
Supply voltage AC			V AC	220 – 240	220 – 240	–
Pick-up and drop-out values			× U_c	0.85 – 1.1	0.85 – 1.1	0.85 – 1.1
Power consumption			VA	2.5	3	2
Rated frequency			Hz	50 – 60	50 – 60	50 – 60
Duty factor			% DF	100	100	100
Timing circuit						
Response delay time			s	–	Adjustable from 0.1 – 10	Adjustable from 0.1 – 10
Reset delay time			s	–	Adjustable from 0.1 – 10	Adjustable from 0.1 – 10
Measuring circuits						
Sensor inputs		B1		Earth reference sensor	Earth reference sensor	Earth reference sensor
		B2		Maximum level	Maximum level	Maximum level
		B3		Minimum level	Minimum level	Minimum level
Response range			kΩ	5 – 100	5 – 100	5 – 100
Sensor voltage			V AC	Max. 30	Max. 20	Max. 20
Reset range			kΩ	1.3 – 2.3	–	–
Sensor current			mA	Max.1	–	–
Cable capacity			nF	10	–	–
Cable length			m	Max. 100	–	–
Response delay			ms	Approx. 250	–	–
Status indication						
Supply voltage				LED, green	LED, green	LED, green
Output relay energized				LED, yellow	LED, yellow	LED, yellow
Relay output contacts						
Rated operational voltage		U_e	V AC	250	400	400
Rated operational current	AC-12 at 230 V	I_e	A	4	5	5
	AC-15 at 230 V	I_e	A	3	3	3
	DC-12 at 24 V	I_e	A	4	5	5
	DC-13 at 24 V	I_e	A	2	2.5	2.5
Lifespan, electrical (AC-12/230 V/5 A)		Operations	× 10^6	0.3	0.1	0.1
Short-circuit rating						
Maximum fuse		Fast/gL	A	10	5	5
Load limit curves				→ Page 4/61	→ Page 4/61	→ Page 4/61
Electromagnetic compatibility (EMC)						
Electromagnetic compatibility				IEC/EN 60947-6-2		
ESD				IEC/EN 61000-4-2 level 3		
HF immunity to radiation				IEC/EN 61000-4-3 level 3		
Burst				IEC/EN 61000-4-4 level 3		
Surge				IEC/EN 61000-4-5 level 4		
HF immunity to line-conducted interference				IEC/EN 61000-4-6 level 3		

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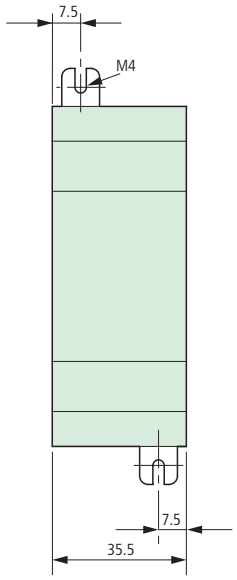
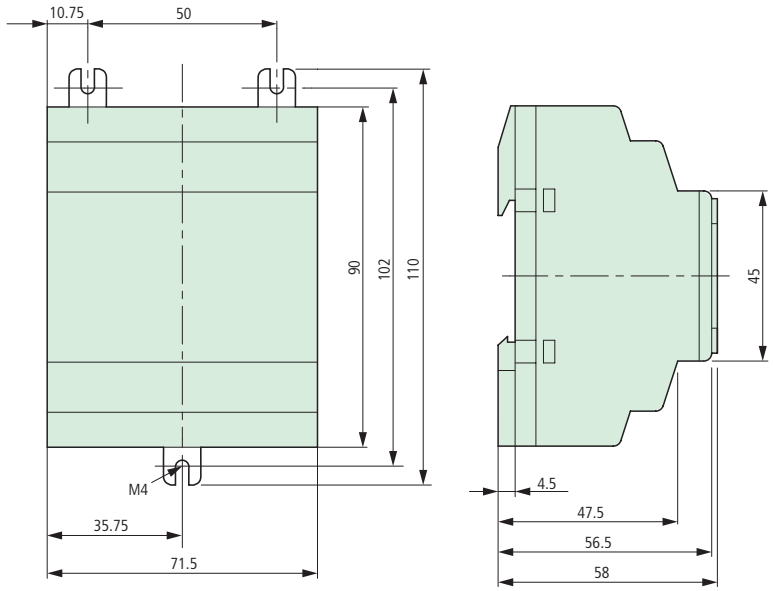
				EMR4-RDC-1-A	EMR4-RAC-1-A
General technical data					
Standards				IEC/EN 60255-6, EN 61557, UL, CSA, GL	
Lifespan, mechanical		Operations	× 10^6	30	30
Climatic proofing				Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h	
Ambient temperature		Open	°C	-25/65	-25/65
		Storage	°C	-40/85	-40/85
Mounting position				As required	As required
Mechanical shock resistance			g	10	10
Degree of protection		Terminals		IP20	IP20
Weight			kg	Approx. 0.3	Approx. 0.3
Terminal capacity	Solid		mm^2	2 × 2.5	2 × 2.5
	Flexible with ferrule		mm^2	2 × 2.5	2 × 2.5
Standard screwdriver			mm	5.5 × 0.8	5.5 × 0.8
Tightening torque			Nm	0.5 – 0.8	0.5 – 0.8
Fixing				Snap fixing, top-hat rail EN 50022	
Contacts					
Rated impulse withstand voltage		U_{imp}	V AC	4000	4000
Overvoltage category/pollution degree				III/3	III/3
Rated insulation voltage		U_i	V AC	400	400
Power supply					
Supply voltage AC/DC			V AC/DC	24 – 240	24 – 240
Pick-up and drop-out values			× U_c	0.85 – 1.1	0.85 – 1.1
Power consumption			VA	5.5	4.5
Rated frequency			Hz	50 – 60	50 – 60
Duty factor			% DF	100	100
Timing circuit					
Time delay	At $R_{insulation}$		s	< 1	< 1
	× response value		s	< 0.9	< 0.9
Measuring circuits					
Input				L+, L-, PE	L, PE
Response range			kΩ	10 – 110	1 – 11, 10 – 110
Minimum internal resistance of alternating current			kΩ	–	100
Minimum internal resistance of direct current			kΩ	–	100
Minimum internal resistance			kΩ	57	–
Test resistance			kΩ	–	0.82
Insulation voltage		AC	V AC	–	415
		DC	V DC	300	–
Voltage being monitored			V	24 – 240	≦ 30
Cable length for cancellation- and test button			m	Max.10	Max.10
Status indication					
Supply voltage				LED, green	LED, green
Faults				LED, yellow	LED, red
Fault at L+				LED, red	LED, red
Fault at L-				LED, red	LED, red
Relay output contacts					
Rated operational voltage		U_e	V AC	400	320
Rated operational current	AC-12 at 230 V	I_e	A	5	5
	AC-15 at 230 V	I_e	A	3	3
	DC-12 at 24 V	I_e	A	5	3
	DC-13 at 24 V	I_e	A	2.5	2.5
Lifespan, electrical (AC-12/230 V/5 A)		Operations	× 10^6	0.1	0.1
Short-circuit rating	Maximum fuse	Fast/gL	A	5	5
Load limit curves				→ Page 4/61	→ Page 4/61
Electromagnetic compatibility (EMC)					
Electromagnetic compatibility				IEC/EN 60947-6-2	
ESD				IEC/EN 61000-4-2 level 3	
HF immunity to radiation				IEC/EN 61000-4-3 level 3	
Burst				IEC/EN 61000-4-4 level 3	
Surge				IEC/EN 61000-4-5 level 4	
HF immunity to line-conducted interference				IEC/EN 61000-4-6 level 3	

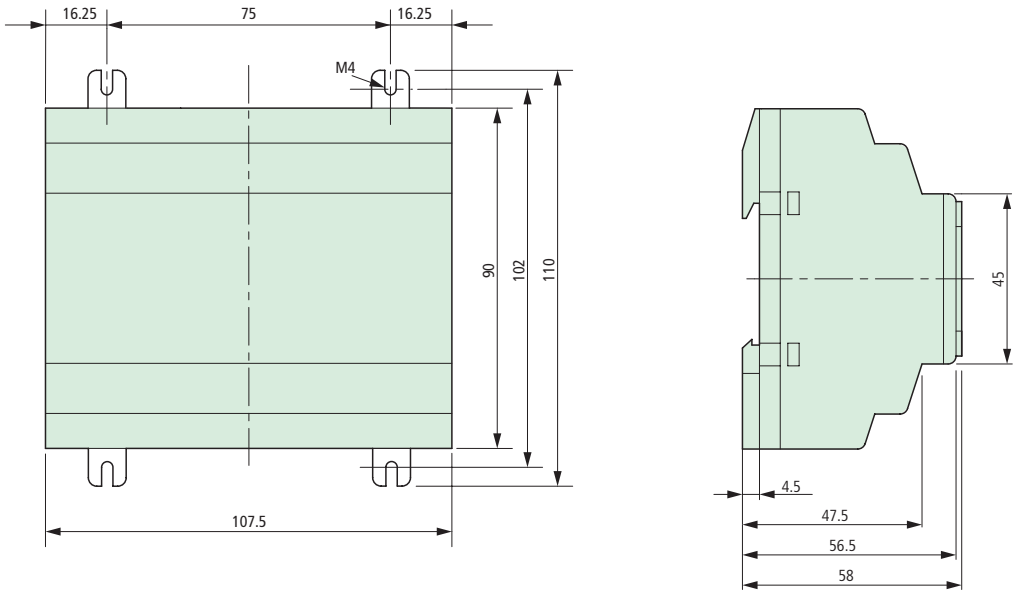
EASY2...



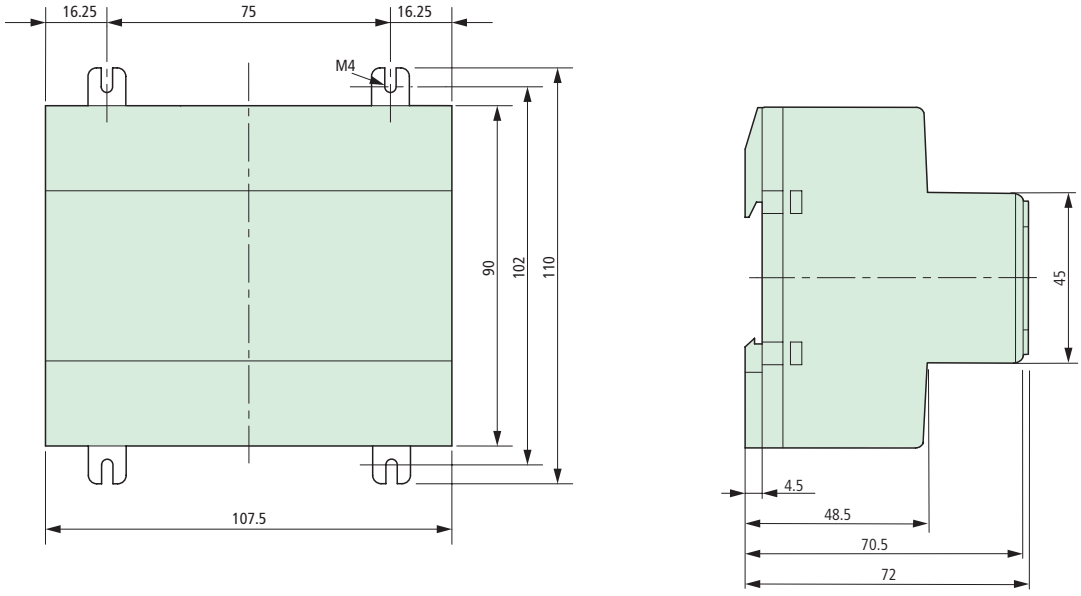
EASY5...



EASY7...



EASY8..



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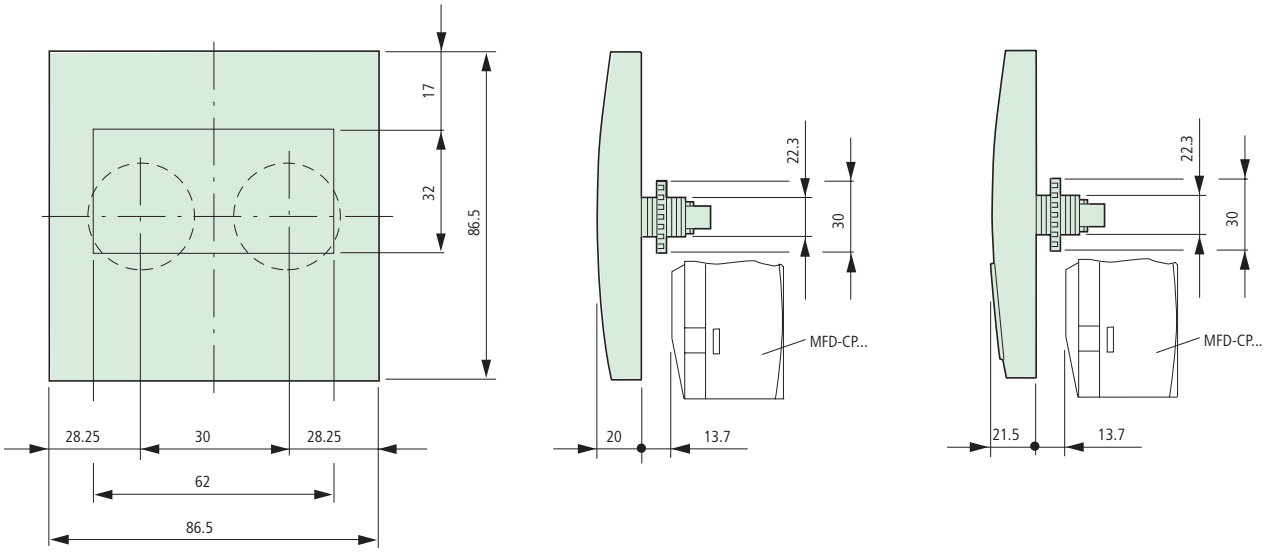
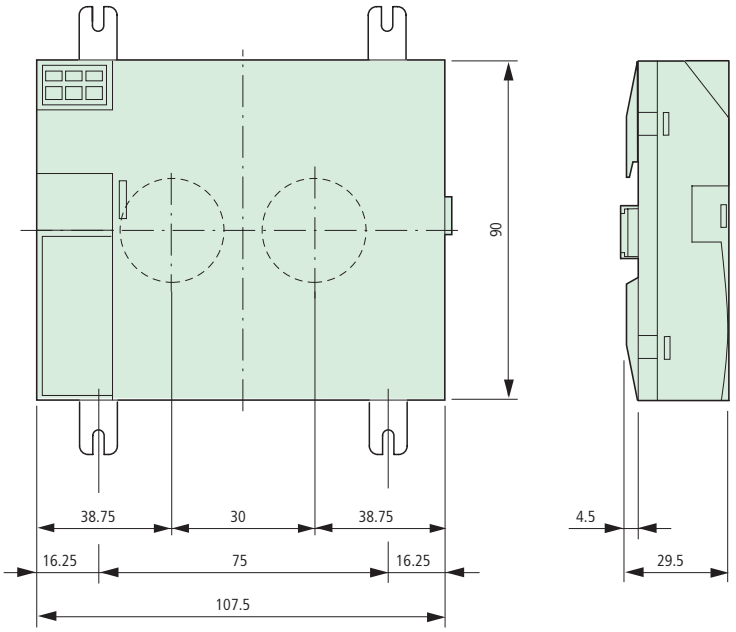
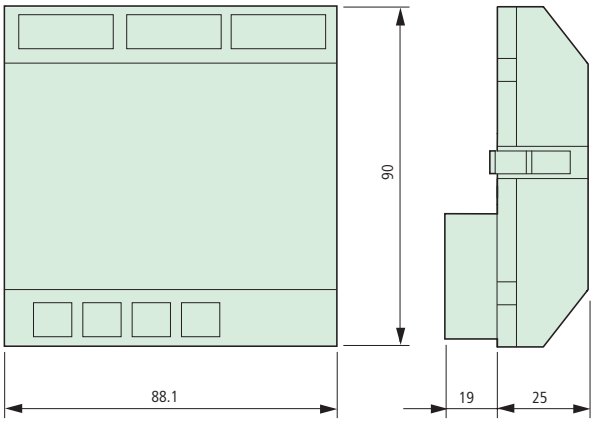
MFD-80...



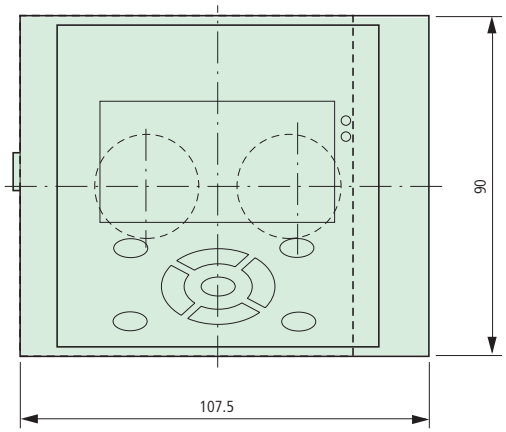
MFD-CP..., MFD-AC-CP...



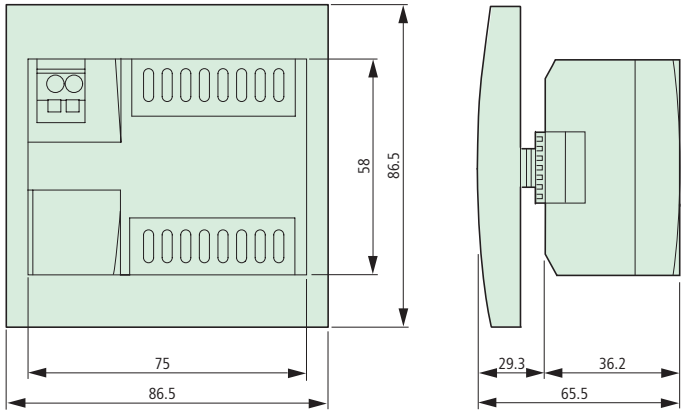
MFD-R..., MFD-T..., MFD-AC-R

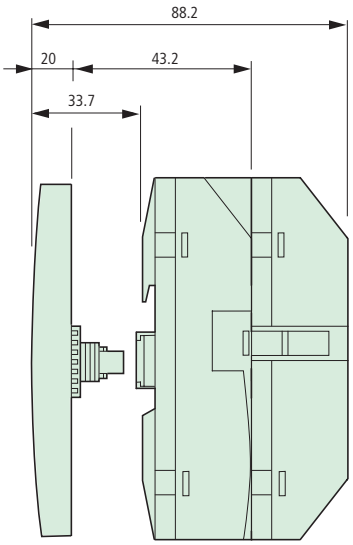


MFD-80... + MFD-CP... + MFD-R.../MFD-T...
MFD-80... + MFD-AC-CP... + MFD-AC-R...



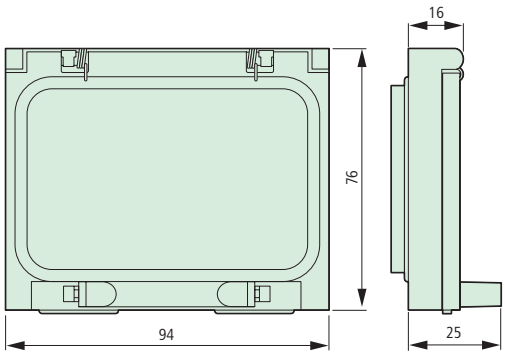
MFD-80...+ MFD-CP4...



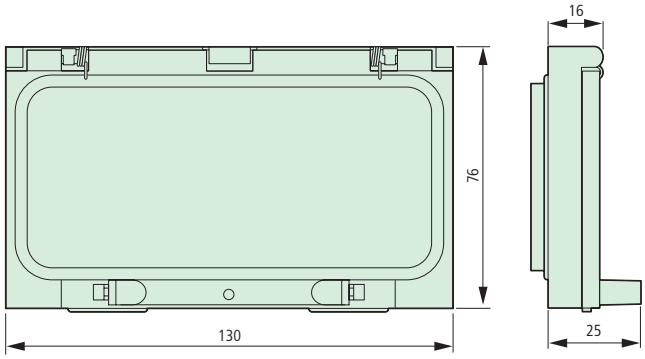


SKF hinged inspection window

SKF-FF4



SKF-FF6



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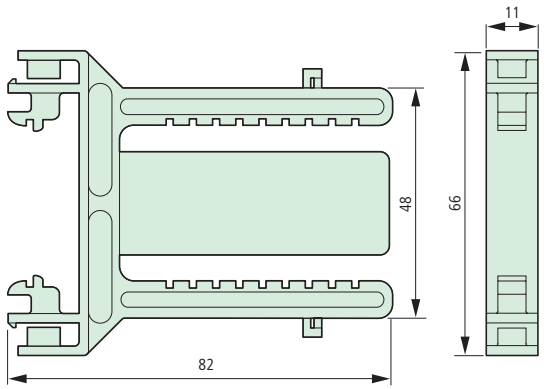
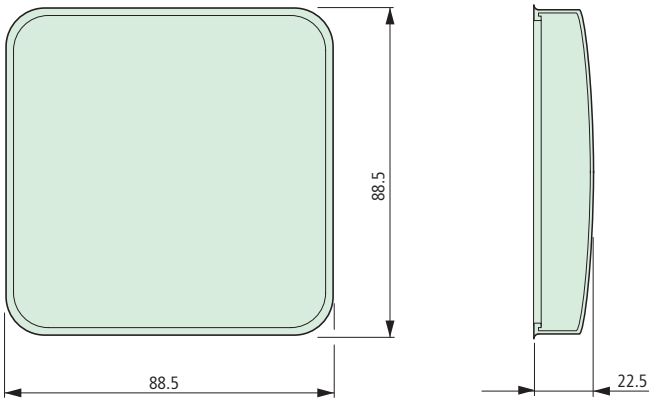
Top-hat rail adapter for hinged inspection window

SKF-HA



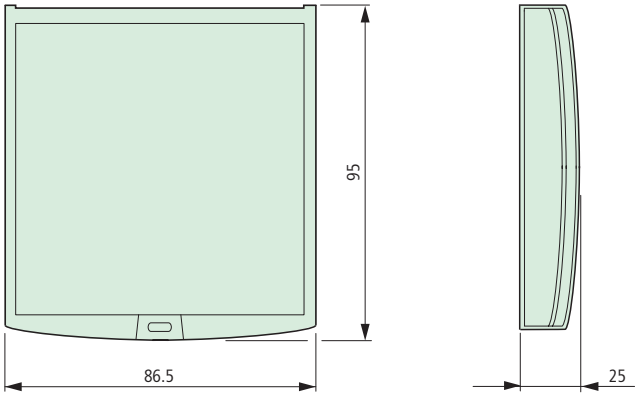
Protective membrane

MFD-XM-80



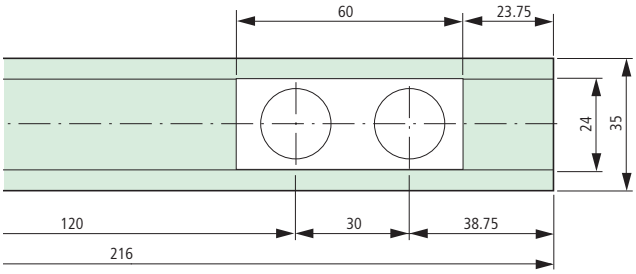
Protective cover, transparent

MFD-XS-80



Mounting rail

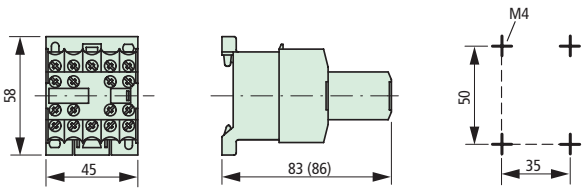
MFD-TS-144



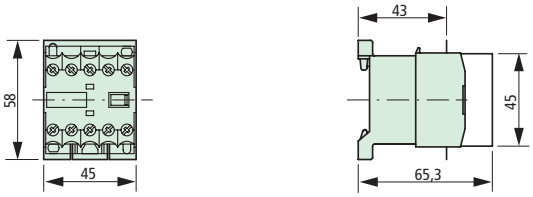
Mini contactor relays

DILER-...(-C)
DILER-...-G(-C)

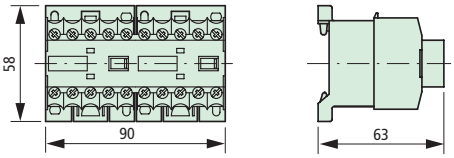
DILER-...(-C) + ...DILE(-C)
DILER-...-G(-C) + ...DILE(-C)



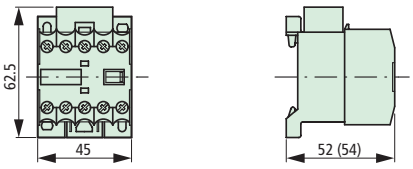
DILER-... + HDILE
DILER-...-G + HDILE



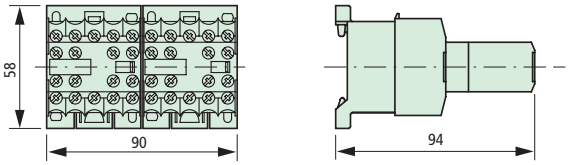
2DILER-... + MVDILE
2DILER-...-G + MVDILE



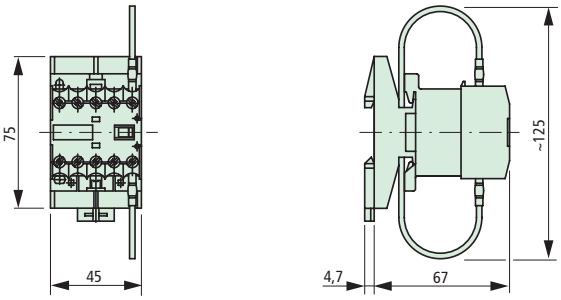
DILER-...(-C) + RCDILE(-C)
DILER-...-G(-C) + VGDILE(-C)



2DILER-... + MVDILE + ...DILE
2DILER-...-G + MVDILE + ...DILE

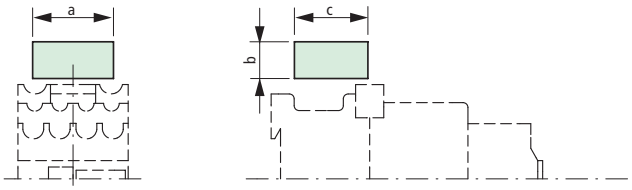


DILER-... + TDDILE24



Suppressors, amplifier modules

RCBDIL,
FDBDIL
VGBDIL
VS1(2)DIL



	RCBDIL	FDBDIL	VGBDIL	VS1DIL	VS2DIL
a	33	33	33	45	45
b	15	15	15	26	26
c	30	30	30	55	55

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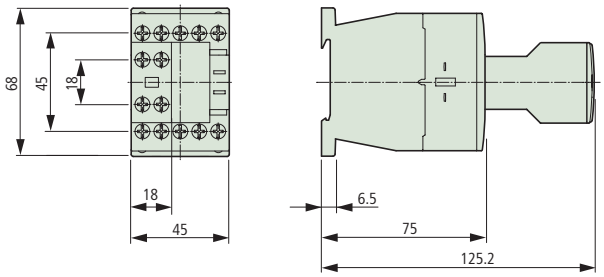
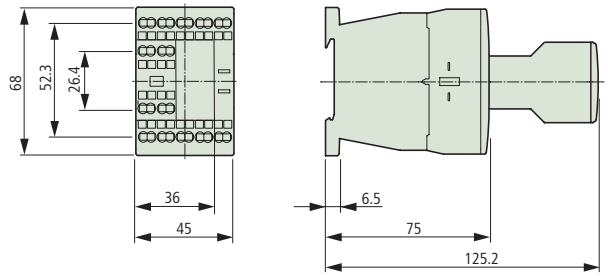
Mini contactor relays

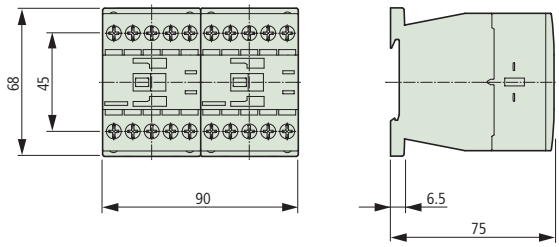
DILA-...-XHI...



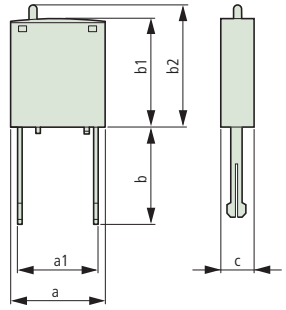
DILA-...(-C)-XHI...



DILA with DILM...XMV mechanical interlock



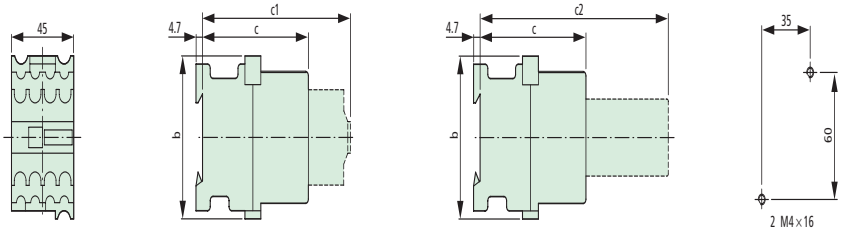
DILM12-XSPR...
DILM12-XSPV(L)...



	DILM12-XSPR... XSPV...
a	25
a1	9.2
b	25.9
b1	28
b2	≈32
c	9

Contactor relays

DILR...(-G)
DILR...(-G)+...DIL
DILR...(-G)+TPD(TPE)
DILR...(-G)+V(G)DIL



c1= With ...DIL auxiliary contact module or DILR...D(-G) complete unit

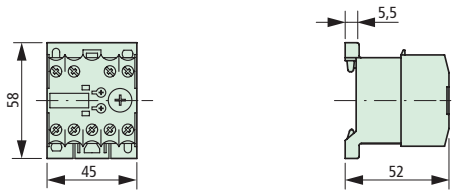
c2= With V(-G)DIL mechanical latching module or with TP...11DIL pneumatic timer module

	DILR... +...DIL	DILR...-G +...DIL	DILR...-C +...DIL-C	DILR...-G-C +...DIL-C	DILR... +TPD(TPE)	DILR...-G +TPD(TPE)	DILR... +VDIL	DILR...-G +V-GDIL
c (with HDIL00M)	76.5	101.5	–	–	–	–	–	–
c (without HDIL00M)	74	99	74	99	–	–	–	–
	107	132	107	132	–	–	–	–
c1	77	77	83	83	77	77	77	77
c2	–	–	–	–	136	161	137	162

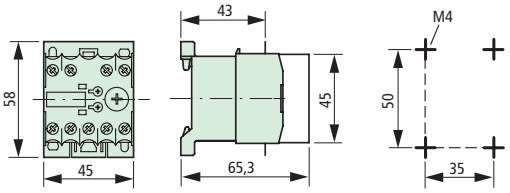
A minimum distance of 5 mm must be maintained between DILR contactor relays when fitting DC operated units side-by-side.

Electronic timing relays

DILET...

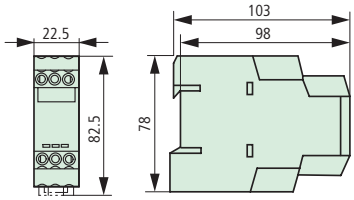


DILET... + HDILE

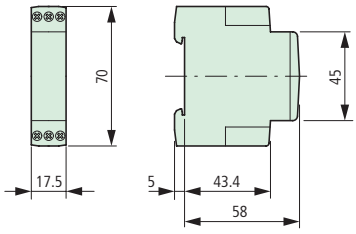


Electronic timing relays

ETR4-11...
ETR4-51...
ETR4-69...
ETR4-70...



ETR2

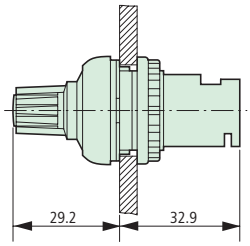


Terminal capacity

Solid	1× (0.75–2.5) mm² 2× (0.75–2.5) mm²
Flexible with ferrule	1× (0.75–2.5) mm² 2× (0.75–1.5) mm²

Potentiometer

M22(S)-R10K



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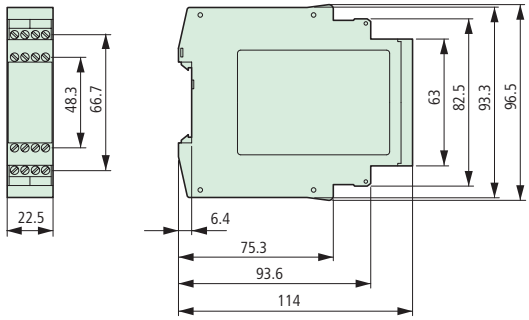
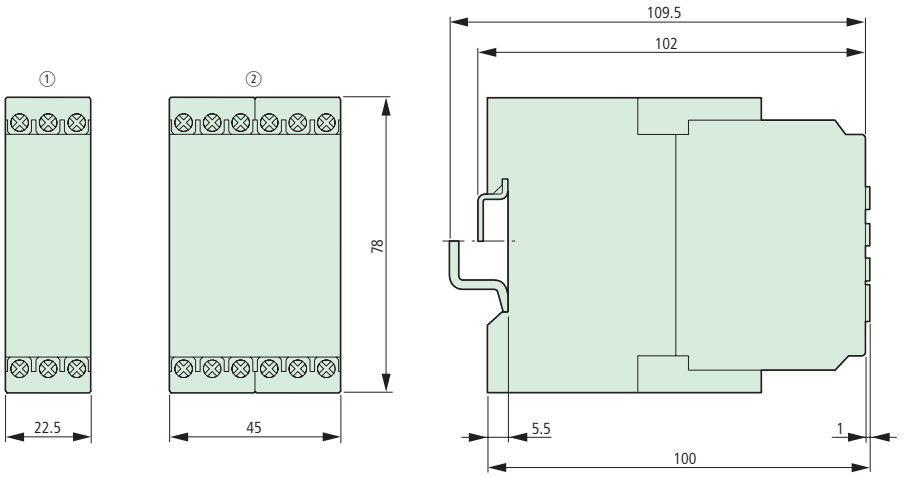
ESR4-NO-30...
ESR4-NO-31...
ESR4-NO-21
ESR4-NM-21
ESR4-NZ-21
ESR4-NV3(30)-30
ESR4-NT30-30
ESR4-NE-42
ESR4-VE3-42



Measuring and monitoring relays
EMR4-...



	①	②
EMR4-I1-2-A		●
EMR4-I15-2-A		●
EMR4-I15-2-B		●
EMR4-F500-2	●	
EMR4-W500-2-C		●
EMR4-W500-2-D		●
EMR4-W580-2-C		●
EMR4-A400-1	●	
EMR4-N100-1-B	●	
EMR4-N500-2-B		●
EMR4-N500-1-A		●
EMR4-RDC-1-A		●
EMR4-RAC-1-A		●

Sealable shroud
EMR4-PH...