



I/O module with temperature measuring, range A, 6DI(2AI), 2I-Pt100, 4DO-Trans

Type **MFD-TP12-PT-A**
Catalog No. **106042**

Delivery program

Description			Configurable temperature range
Supply voltage			24 V DC
Inputs			
Digital			6
of which can be used as analog			2
Pt100, Pt1000, Ni1000			2
Outputs			
Transistor			4
Temperature range			
Temperature detector			-40...+90 °C 0...+250 °C 0...+400 °C
For use with			MFD-CP8... from device version 08 MFD-CP10..
Connection type			screw terminal

Technical data

General

Standards			EN 61000-6-1/-2/-3/-4, IEC 60068-2-6, IEC 60068-2-27
Dimensions (W x H x D)		mm	89 x 90 x 25 (installed)
Weight		kg	0.14
Mounting			Fitted into the power supply unit.

Terminal capacities

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 x 0.6

Climatic environmental conditions

Operating ambient temperature		°C	-25 to 55, cold as per IEC 60068-2-1, heat as per IEC 60068-2-2
Condensation			Take appropriate measures to prevent condensation
Storage		°C	- 40 - 70
Relative humidity, non-condensing (IEC/EN 60068-2-30)		%	5 - 95
Air pressure (operation)		hPa	795 - 1080

Ambient conditions, mechanical

Pollution degree			2
Protection type (IEC/EN 60529, EN50178, VBG 4)			IP20
Vibrations (IEC/EN 60068-2-6)		Hz	
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			Vertical or horizontal

Electromagnetic compatibility (EMC)

Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)		kV	
Air discharge		kV	8
Contact discharge		kV	6
Electromagnetic fields (RFI) to IEC EN 61000-4-3		V/m	10
Radio interference suppression			EN 55011 Class B, EN 55022 Class B

Burst Impulse (IEC/EN 61000-4-4, Level 3)			
Supply cable		kV	2
Signal lines		kV	2
Power pulses (surge) (IEC/EN 61000-4-5)		kV	2 (supply cables, symmetrical)
power pulses (surge) (IEC/EN 61000-4-5, level 2)		kV	0.5 (supply cables, symmetrical)
Immunity to line-conducted interference to (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

Power supply

Heat dissipation		W	2
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Digital inputs 24 V DC

Number			6
Inputs can be used as analog inputs			2 (I11, I12)
Potential isolation			
From power supply			No
Between digital inputs			No
From the outputs			Yes
to PC interface, memory card, easyNet, easyLink			Yes
Rated operational voltage	U _e	V DC	24
On 0 signal	U _e	V DC	< 5.0 (I1 - I4) < 8.0 (I11, I12)
On 1 signal	U _e	V DC	>15.0 (I1 - I4) > 8.0 (I11, I12)
Input current on 1 signal			
I11, I12		mA	2.2 (at 24 V DC)
Delay time from 0 to 1		ms	
Debounce ON		ms	20
Debounce OFF		ms	Normally 0.1 (I1 - I4), Normally 0.25 (I11 - I12)
Delay time from 1 to 0		ms	
Debounce ON		ms	20
Debounce OFF		ms	Normally 0.1 (I1 - I4), normally 0.2 (I11, I12)
Cable length (unscreened)		m	100
Frequency counter			
Quantity			4 (I1, I2, I3, I4)
Counter frequency		kHz	< 3
Pulse shape			Square
Incremental counter			
Quantity			2 (I1 + I2, I3 + I4)
Counter frequency		kHz	≤ 3
Pulse shape			Square
Signal offset			90°
Rapid counter inputs			
Number			4 (I1, I2, I3, I4)
Counter frequency		kHz	< 3
Pulse shape			Square
Cable length, screened		m	< 20

Analog inputs

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
Input type			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			
two MFD devices		%	± 3
Within a single device		%	± 2
Conversion time, analog/digital		ms	Each CPU cycle
Input current		mA	< 1
Cable length screened		m	< 30

Analog inputs temperature resistance Pt100 or Ni1000 sensors

Number			2 x Pt 100 or 2 x Ni1000 (according to part no.)
Input type resistance sensor			Platinum sensor Pt100 according to DIN EN 60751, IEC 751: MFD-TP12-PT... Nickel sensor Ni1000 according to DIN 43760: MFD-TP12-NI...
Temperature range		°C, (°F)	Pt100, area A, selectable: -40 — +90, (-40 — +194); 0 — +250 (+32 — +482); 0 — +400, (+32 — +752) Ni1000, area A, selectable: -40 — +90, (-40 — +194); 0 — +250 (+32 — +482) Pt100, area B: -0 — +850, (+32 — +1562); -200 — +200 (-328 — +392)
Potential isolation			
From power supply			No
From the digital inputs			No
From the outputs			Yes
to PC interface, memory card, easyNet, easyLink			Yes
Resolution digital, scaling per sensor			With operands "IA" and "MD", selectable under scaling: 12 (0- 4095) Bit With operand "MD", selectable under scaling: 1, 0.1 °C (1, 0.1 °F)
Measurement value resolution analog/digital		Bit	Depending upon the scaling
Measuring current		mA	< 1.6
Damage limit (in the case of a wiring error)			Apply external voltage
Measuring principle			Two or three wire per sensor, selectable by connection of sensor
Accuracy (without electromagnetic compatibility interference)		%	Two MFD devices between each other: Typically 1; max. 1.6 (Pt), 1.2 (Ni) Pt100 sensor (offset error, linearity error, repetition accuracy, temperature error of device included): ± 0.8 of measuring range Ni1000 sensor (offset error, linearity error, repetition accuracy, temperature error of device included): ± 0.8 of measuring range
Conversion time, analog/digital		ms	without sampling time setting, selectable per sensor: 200 with sampling time (adjustable), selectable per sensor: 200 - 65535
additional measurement aids			Filtering (software), smoothing of analog input signal (PT1 behavior), only with set sampling time, selectable per sensor: yes Filter for the suppression of certain frequencies and their multiples: 50, 60, 250, 500 Hz
Diagnostics			Card diagnostic: yes Wire break diagnostic per sensor: yes Wire break diagnostic per sensor: yes below lower measurement range: yes Upper sensor measuring range exceeded: yes
Cable length screened		m	< 10

Relay outputs

Potential isolation			
From power supply			Yes

Transistor outputs

Number			4
Rated operational voltage	U _e	V DC	24
Admissible range	U _e	V DC	20.4 - 28.8
Supply current			
On 0 signal	Normally/max.	mA	18/32
On 1 signal	Normally/max.	mA	24 /44
Protection against polarity reversal			yes (Caution: A short circuit will result if 0 V or earth is applied to the outputs in the event that the supply voltage is connected to the wrong poles.)
Potential isolation			
Potential isolation of the power supply, inputs			Yes
From the inputs			Yes
to PC interface, memory card, easyNet, easyLink			Yes
Rated operational current at signal „1“ DC per channel	I _e	A	max. 0.5
Lamp load without R _v per channel		W	5 (Q1 - Q4)
Residual current on 0 signal per channel		mA	< 0.1
Max. output voltage			

On 0 signal with external load < 10 MΩ		V	2.5
On 1 signal with I _g = 0.5 A		V	U = U _g -1 V
Short-circuit protection			Thermal (Q1 - Q4), (evaluation with diagnostics input I16)
Short-circuit tripping current for R _a ≤ 10 mΩ		A	0.7 ≤ I _g ≤ 2 per output
Total short-circuit current		A	8
Peak short-circuit current		A	16
Thermal cutout			Yes
Max. operating frequency with constant resistive load		Operation 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 switched simultaneously and for the same period.)
Inductive load to EN 60947-5-1			
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. switching frequency f = 0.5 Hz (max. DF = 50 %)		Operation	4500
DC-13, T _{0.95} = 72 ms, R = 48 Ω, L = 1.15 H			
Utilization factor		g	0.25
Duty factor		% DF	100
Max. switching frequency f = 0.5 Hz (max. DF = 50 %)		Operation	4500
T _{0.95} = 15 ms, R = 48 Ω, L = 0.24 H			
Utilization factor		g	0.25
Duty factor		% DF	100
Max. switching frequency f = 0.5 Hz (max. DF = 50 %)		Operation	4500
With external suppressor circuit			
Utilization factor		g	1
Duty factor		% DF	100
Max. switching frequency, max. duty factor		Operation	Depending on the suppressor circuit

Analog outputs

Potential isolation			
From power supply			No
From the digital inputs			No

Point-to-point connection

Potential isolation			
From power supply			Yes

Design verification as per IEC/EN 61439

Technische gegevens ontwerpverificatie			
Nominale bedrijfsstroom voor specificatie verliesvermogen	I _n	A	0
Verliesvermogen per pool, stroomafhankelijk	P _{vid}	W	0
Verliesvermogen van het bedrijfsmiddel, stroomafhankelijk	P _{vid}	W	0
Verliesvermogen statisch, stroomonafhankelijk	P _{vs}	W	2
Vermogensverliesafgiftecapaciteit	P _{ve}	W	0
Bedrijfsomgevingstemperatuur min.		°C	-25
Bedrijfsomgevingstemperatuur max.		°C	55
Typebeproeving IEC/EN 61439			
10.2 sterkte van materialen en delen			
10.2.2 Corrosiebestendigheid			Aan de eisen van de productnorm is voldaan.
10.2.3.1 Warmtebestendigheid van omhulling			Aan de eisen van de productnorm is voldaan.
10.2.3.2 Bestendigheid van kunststoffen tegen normale warmte			Aan de eisen van de productnorm is voldaan.
10.2.3.3 Bestendigheid van kunststoffen tegen buitengewone warmte			Aan de eisen van de productnorm is voldaan.
10.2.4 Bestendigheid tegen UV-straling			Aan de eisen van de productnorm is voldaan.

10.2.5 Optillen			Niet van toepassing omdat de volledige schakelinstallatie moet worden beoordeeld.
10.2.6 Slagtest			Niet van toepassing omdat de volledige schakelinstallatie moet worden beoordeeld.
10.2.7 Opschriften			Aan de eisen van de productnorm is voldaan.
10.3 Beschermingsgraad van omhullingen			Aan de eisen van de productnorm is voldaan.
10.4 Lucht- en kruipwegen			Aan de eisen van de productnorm is voldaan.
10.5 Beveiliging tegen elektrische schokken			Niet van toepassing omdat de volledige schakelinstallatie moet worden beoordeeld.
10.6 Inbouw van bedrijfsmiddelen			Niet van toepassing omdat de volledige schakelinstallatie moet worden beoordeeld.
10.7 Interne stroomcircuits en verbindingen			Is de verantwoording van de bouwer van de schakelinstallatie.
10.8 Aansluitingen van extern ingevoerde aders			Is de verantwoording van de bouwer van de schakelinstallatie.
10.9 Isolatie-eigenschappen			
10.9.2 Bedrijfsfrequente stootspanningsvastheid			Is de verantwoording van de bouwer van de schakelinstallatie.
10.9.3 Stootspanningsvastheid			Is de verantwoording van de bouwer van de schakelinstallatie.
10.9.4 Beproeving van omhullingen van kunststof			Is de verantwoording van de bouwer van de schakelinstallatie.
10.10 Opwarming			Verwarmingsberekening is de verantwoording van de bouwer van de schakelinstallatie. Eaton levert de gegevens over vermogensverlies van de apparaten.
10.11 Kortsluitvastheid			Is de verantwoording van de bouwer van de schakelinstallatie.
10.12 EMC			Is de verantwoording van de bouwer van de schakelinstallatie.
10.13 Mechanische functie			Voor het apparaat is aan de eisen voldaan, voor zover informatie van de montagehandleiding (IL) in acht worden genomen.

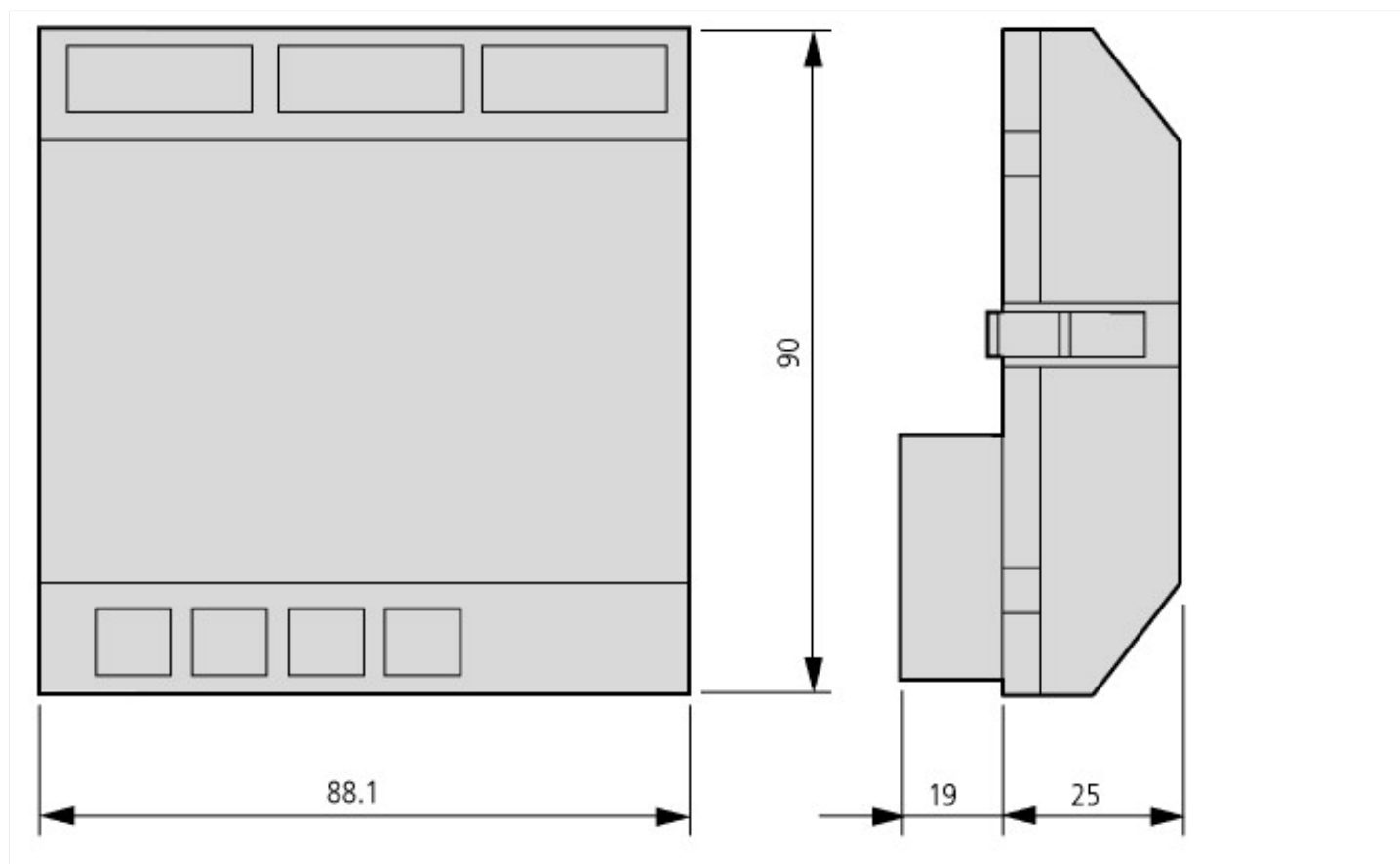
Technical data ETIM 7.0

PLC's (EG000024) / PLC analoge in- en uitgangsmodule (EC001420)			
Elektro-, automatiserings- en procesbesturingstechniek / Besturing / Programmeerbare logische besturing (pLC) / PLC-analoge in-/uitgangsmodule (ecl@ss10.0.1-27-24-22-01 [AKE524014])			
Aantal analoge ingangen			2
Aantal analoge uitgangen			0
Configureerbare analoge ingangen			Nee
Configureerbare analoge uitgangen			Nee
Ingang, stroom			Nee
Ingang, spanning			Ja
Ingang, weerstand			Nee
Ingang, weerstandsthermometer			Ja
Ingang, thermo-element			Nee
Ingangssignaal configureerbaar			Ja
Analoge ingangen, resolutie		Bit	12
Uitgang, stroom			Nee
Uitgang, spanning			Nee
Uitgangssignaal configureerbaar			Nee
Analoge uitgangen, resolutie		Bit	0
Uitvoering elektrische aansluiting			Veerklemaansluiting
Geschikt voor veiligheidsfunctie			Nee
Categorie volgens EN 954-1			
SIL conform IEC 61508			Geen
Performance Level volgens EN ISO 13849-1			Geen
Bijbehorend bedrijfsmiddel (Ex ia)			Nee
Bijbehorend bedrijfsmiddel (Ex ib)			Nee
Explosieveiligheidscategorie voor gas			Geen
Explosieveiligheidscategorie voor stof			Geen
Breedte		Millimeter	90
Hoogte		Millimeter	25
Diepte		Millimeter	89

Approvals

Product Standards		IEC/EN see Technical Data; UL 508; CSA C22.2 No. 142-M1987; CSA C22.2 No. 213-M1987; CE marking
UL File No.		E135462
UL Category Control No.		NRAQ
CSA File No.		012528
CSA Class No.		2252-01 + 2258-02
North America Certification		UL listed, CSA certified
Degree of Protection		IEC: IP20, UL/CSA Type: -

Dimensions



Additional product information (links)

Montagehandleiding MFD-Titan temperatuurmodule IL05013020Z (AWA2528-2339)	
Montagehandleiding MFD-Titan temperatuurmodule IL05013020Z (AWA2528-2339)	https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL05013020Z2018_02.pdf
Handboek Multi-Functioneel-Display MFD-Titan MN05002001Z (AWB2528-1480)	
Handbuch „Multifunktions-Display MFD-Titan“ MN05002001Z (AWB2528-1480) - Deutsch	https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN05002001Z_DE.pdf
Manual "MFD-Titan multi-function display" MN05002001Z (AWB2528-1480) - English	https://es-assets.eaton.com/DOCUMENTATION/AWB_MANUALS/MN05002001Z_EN.pdf
f1=1454&f2=1179;Labeleditor	http://applications.eaton.eu/sdlc?LX=11&f1=1454&f2=1179;Labeleditor