DATASHEET - MFD-RA17

I/O module, 24 V DC, for MFD-CP8/CP10, 12DI(4AI), 4DO relays, 1AO

Part no. MFD-RA17
Catalog No. 265364

EL-Nummer (Norway) 4519706

Powering Business Worldwide

Delivery program

Supply voltage			24 V DC
Inputs			
Digital			12
of which can be used as analog			4
Outputs			
Relay 10 A (UL)			4
Analog			1
Temperature range			
Temperature detector			-
For use with			MFD-CP8.. MFD-CP10..
Connection type			screw terminal

Technical data

General

Standards			EN 61000-6-1/-2/-3/-4, IEC/EN 61000-4, IEC 60068-2-6, IEC 60068-2-27
Dimensions (W x H x D)		mm	89 x 90 x 44
Weight		kg	0.153
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 (symmetrical power lines)
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

Digital inputs 24 V DC

Number			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
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 - I6, I9 - I10) < 8 (I7, I8, I11, I12)
On 1 signal	U_e	V DC	< 5.0 (I1 - I6, I9 - I10) < 8 (I7, I8, I11, I12)
Input current on 1 signal			
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		ms	
Debounce ON		ms	20
Debounce OFF		ms	Normally 0.025 (I1 - I4), normally 0.25 (I5, I6, I9, I10), normally 0.15 (I7, I8, I11, I12)
Delay time from 1 to 0		ms	
Debounce ON		ms	20
Debounce OFF		ms	Normally 0.025 (I1 - I4), normally 0.25 (I5, I6, I9, I10), normally 0.15 (I7, I8, I11, I12)
Cable length (unscreened)		m	100
Frequency counter			
Quantity			4 (I1, I2, I3, I4)
Counter frequency		kHz	< 3
Pulse shape			Square
Pulse pause ratio			01:01
Incremental counter			
Quantity			2 (I1 + I2, I3 + I4)
Counter frequency		kHz	≦ 3
Pulse shape			Square
Signal offset			90°
Pulse pause ratio			01:01
Rapid counter inputs			
Number			4 (I1, I2, I3, I4)
Counter frequency		kHz	< 3
Pulse shape			Square
Pulse pause ratio			01:01
Cable length, screened		m	< 20

Analog inputs

Number			1
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	Every CPU cycle
Input current		mA	< 1
Cable length screened		m	< 30

Analog inputs temperature resistance Pt100 or Ni1000 sensors

Potential isolation			
From power supply			No
From the digital inputs			No
From the outputs			Yes

Relay outputs

Number			4
Parallel switching of outputs for increased output			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 according to EN 50178		V AC	300
Basic insulation		V AC	600
Lifespan, mechanical	Operations	x 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 to 0.7, characteristic B16 at 900 A		A	16
Rated impulse withstand voltage U_{imp} of contact 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, 230 V AC, 3 A	Operations		300000
DC-13, 24 V DC, 5 A, 0.1 Hz	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 S/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 x 58 W at 230/240 V AC			
With upstream electrical device	Operations		25000
Uncompensated	Operations		25000
Fluorescent lamp load 1 x 58 W at 230/240 V AC, conventional, compensated	Operations		25000
Switching frequency			
Mechanical operations		x 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 continuous current cos φ = 1 at B 300		A	5
max. make/break cos φ ≠ capacity 1 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

Analog outputs

Number			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
Output type			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		µs	100
Accuracy			
-25 °C - 55 °C		%	2
25°C		%	1
Conversion time			Every CPU cycle

Design verification as per IEC/EN 61439

Technical data for design verification			
Rated operational current for specified heat dissipation	I_n	A	0
Heat dissipation per pole, current-dependent	P_{vid}	W	0
Equipment heat dissipation, current-dependent	P_{vid}	W	0
Static heat dissipation, non-current-dependent	P_{vs}	W	2
Heat dissipation capacity	P_{diss}	W	0
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	55
IEC/EN 61439 design verification			
10.2 Strength of materials and parts			
10.2.2 Corrosion resistance			Meets the product standard's requirements.
10.2.3.1 Verification of thermal stability of enclosures			Meets the product standard's requirements.
10.2.3.2 Verification of resistance of insulating materials to normal heat			Meets the product standard's requirements.
10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects			Meets the product standard's requirements.
10.2.4 Resistance to ultra-violet (UV) radiation			Meets the product standard's requirements.
10.2.5 Lifting			Does not apply, since the entire switchgear needs to be evaluated.
10.2.6 Mechanical impact			Does not apply, since the entire switchgear needs to be evaluated.
10.2.7 Inscriptions			Meets the product standard's requirements.

10.3 Degree of protection of ASSEMBLIES			Meets the product standard's requirements.
10.4 Clearances and creepage distances			Meets the product standard's requirements.
10.5 Protection against electric shock			Does not apply, since the entire switchgear needs to be evaluated.
10.6 Incorporation of switching devices and components			Does not apply, since the entire switchgear needs to be evaluated.
10.7 Internal electrical circuits and connections			Is the panel builder's responsibility.
10.8 Connections for external conductors			Is the panel builder's responsibility.
10.9 Insulation properties			
10.9.2 Power-frequency electric strength			Is the panel builder's responsibility.
10.9.3 Impulse withstand voltage			Is the panel builder's responsibility.
10.9.4 Testing of enclosures made of insulating material			Is the panel builder's responsibility.
10.10 Temperature rise			The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
10.11 Short-circuit rating			Is the panel builder's responsibility.
10.12 Electromagnetic compatibility			Is the panel builder's responsibility.
10.13 Mechanical function			The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

Technical data ETIM 7.0

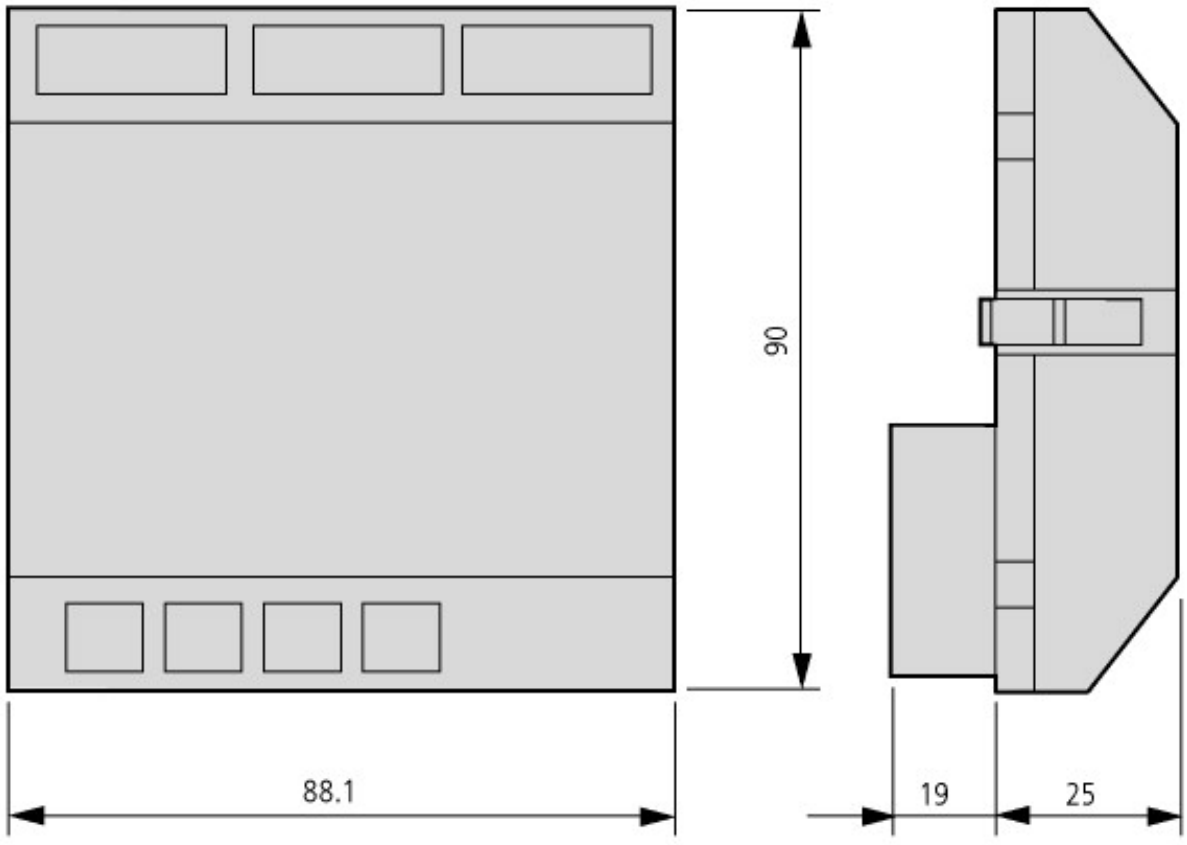
PLC's (EG000024) / PLC digital I/O-module (EC001419)		
Electric engineering, automation, process control engineering / Control / Programmable logic control (SPS) / SPS digital input/output module (ecl@ss10.0.1-27-24-22-04 [AKE527014])		
Supply voltage AC 50 Hz	V	0 - 0
Supply voltage AC 60 Hz	V	0 - 0
Supply voltage DC	V	20.4 - 28.8
Voltage type of supply voltage		DC
Number of digital inputs		12
Number of digital outputs		4
Digital inputs configurable		No
Digital outputs configurable		No
Input current at signal 1	mA	3.3
Permitted voltage at input	V	20.4 - 28.8
Type of voltage (input voltage)		DC
Type of digital output		Relay
Output current	A	8
Permitted voltage at output	V	20.4 - 28.8
Type of output voltage		AC/DC
Short-circuit protection, outputs available		No
Redundancy		No
Type of electric connection		Spring clamp connection
Time delay at signal exchange	ms	0.1 - 20
Suitable for safety functions		No
Category according to EN 954-1		
SIL according to IEC 61508		None
Performance level acc. EN ISO 13849-1		None
Appendant operation agent (Ex ia)		No
Appendant operation agent (Ex ib)		No
Explosion safety category for gas		None
Explosion safety category for dust		None
Width	mm	90
Height	mm	44
Depth	mm	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)

Instruction leaflet "Multi-function display, easy control relays" IL05013014Z (AWA2528-2019)	
Instruction leaflet "Multi-function display, easy control relays" IL05013014Z (AWA2528-2019)	https://es-assets.eaton.com/DOCUMENTATION/AWA_INSTRUCTIONS/IL05013014Z2018_02.pdf
Manual "MFD-Titan multi-function display" 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&amp