

Type: **MFD-T16**
 Article No.: **265255**

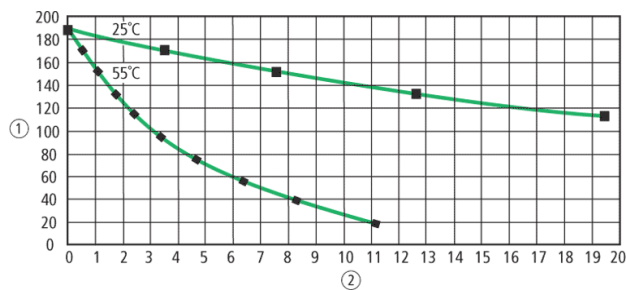


IP20, cage clamp terminals

Ordering information			
Description			12 digital inputs (4 inputs available as analog inputs) 4 transistor outputs For MFD-CP8...
Power supply		V DC	24 V DC

Notes concerning the product group

Backup of real-time clock (only for appropriate devices)



① Backup time (hours)

② Operating time (years)

General			
Standards			EN 61000-6-1/-2/-3/-4, IEC/EN 61000-4, IEC 60068-2-6, IEC 60068-2-27
Weight		kg	0,14
Mounting			Fitted into the power supply unit.
Terminal capacities			
Solid		mm ²	0.24 (AWG 24 – 12)
Flexible with ferrule		mm ²	0.22.5 (AWG 24 – 12)
Standard screwdriver		mm	3.5 × 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
Degree of protection (IEC/EN 60529)			IP 20
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
		V/m	10

Electromagnetic fields (IEC/EN 61000–4–3, RFI)			
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
Signal lines		kV	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 (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
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
From the PC interface, memory card NET network, EASY–Link			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	> 15.0 (I1 – I6, I9 – I10), > 8.0 (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			
Debounce ON		ms	20
Debounce OFF		ms	

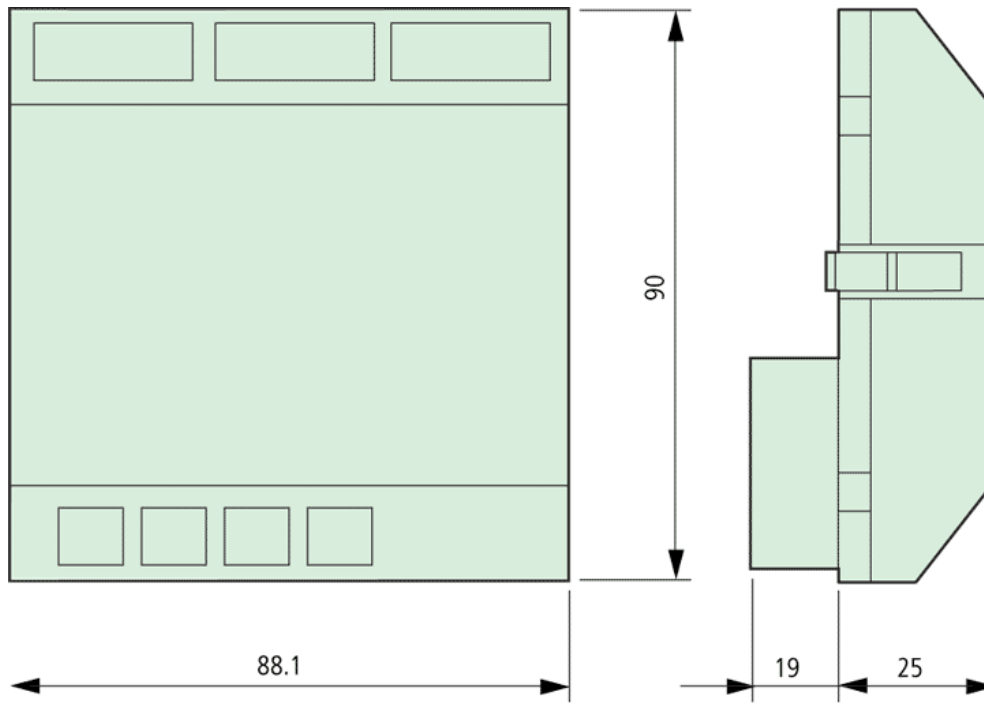
			Normally 0.025 (I1 – I4), normally 0.25 (I5, I6, I9, I10), normally 0.15 (I7, I8, I11, I12)
Delay time from 1 to 0			
Debounce ON		ms	20
Debounce OFF		ms	Normally 0.025 (I1 – I4), normally 0.25 (I5, I6, I9, I10), normally 0.15 (I7, I8, I11, I12)
Cable length (unscreened)		m	100
Frequency counter			
Quantity			4 (I1, I2, I3, I4)
Counter frequency		kHz	< 3
Pulse shape			Square
Pulse pause ratio			1:1
Incremental counter			
Quantity			2 (I1 + I2, I3 + I4)
Counter frequency		kHz	< 3
Pulse shape			Square
Signal offset			90°
Pulse pause ratio			1:1
Rapid counter inputs			
Number			4 (I1, I2, I3, I4)
Counter frequency		kHz	< 3
Pulse shape			Square
Pulse pause ratio			1:1
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		k	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
Transistor outputs			
Number			4
Rated operational voltage	U_e	V DC	24
Admissible range	U_e	V DC	20,4 – 28,8
Residual ripple		%	5
Supply current			
On 0 signal	Normallymax.	mA	18 – 32
On 1 signal	Normallymax.	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 on 1 signal DC	I_e	A	max. 0.5
Lamp load without R_v		W	5 (Q1 – Q4)
Residual current on 0 signal per channel		mA	< 0,1
Max. output voltage			
On 0 signal with external load < 10 M		V	2,5
On 1 signal with $I_e = 0.5$ A		V	$U = U_e - 1$ V
Short-circuit protection			Thermal (Q1 – Q4), (evaluation with diagnostics input I16)
Short-circuit tripping current for R_a 10 m		A	$0.7 I_e$ 2
Total short-circuit current		A	8
Peak short-circuit current		A	16
Thermal cutout			Yes
Max. operating frequency with constant resistive load $R_L < 100$ k (depending on number of active		Ops./h	40000

channels and their load)			
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			
Without external suppressor circuit			
$T_{0.95} = 1 \text{ ms}, R = 48, L = 16 \text{ mH}$			
Utilization factor		g	0,25
Duty factor		% DF	100
Max. switching frequency $f = 0.5$ Hz (max. DF = 50 %)		Operations	1500
DC-13, $T_{0.95} = 72 \text{ ms}, R = 48, L = 1.15 \text{ H}$			
Utilization factor		g	0,25
Duty factor		% DF	100
Max. switching frequency $f = 0.5$ Hz (max. DF = 50 %)		Operations	1500
$T_{0.95} = 15 \text{ ms}, R = 48, L = 0.24 \text{ H}$			
Utilization factor		g	0,25
Duty factor		% DF	100
Max. switching 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

Dimensions

Dimensions



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