

› Logic Controller em4 expansion

EM4ED

Digital expansion E10R

- › Up to two digital / analog expansions can be added to the em4 nanoPLC to expand up to 46 I/Os
- › Up to 6 digital / analog configurable inputs (0-10 V_{DC}, 0-28.8 V_{DC}, Potentiometer) allowing the use of NTC temperature sensors without using an additional converter
- › 4 relay outputs (2x 6A/250 V_~ & 2X 8A/250 V_~) allowing controlling power actuators (valves, pumps...)



Digital expansion E10R

Specific characteristics	
Part number	88 982 113
Finish	Glossy Black
On front panel color	Black RAL 9011
On terminal block color	Blue RAL 5017
Protection rating (in accordance with IEC/EN 60529)	IP 40 on front panel IP 20 on terminal block
Weight	Without packing: 130 g With packing: 170 g
Dimensions	Without packing: 60.4 x 90 x 60.6 mm / 2.37 x 3.54 x 2.38 inch With packing: 93 x 103 x 65 mm / 3.66 x 4.06 x 2.56 inch
General characteristics	
Products certification	CE, cULus Listed
Conformity with the low voltage directive (in accordance with BT 2006/95/EC)	IEC/EN 61131-2 (Open equipment)
Conformity with the EMC directive (in accordance with 2004/108/EC)	IEC/EN 61000-6-1 (Residential, commercial and light-industrial environments) IEC/EN 61000-6-2 (Industrial) IEC/EN 61000-6-3 (Residential, commercial and light-industrial environments) IEC/EN 61000-6-4 (Industrial)
Earthing	None
Overvoltage category	3 in accordance with IEC/EN 60664-1
Pollution	Degree: 2 in accordance with IEC/EN 61131-2
Maximum utilization altitude	Operation: 2000 m Transport: 3000 m
Mechanical resistance	Immunity to vibrations IEC/EN 60068-2-6, Fc test Immunity to shock IEC/EN 60068-2-27, Ea test
Resistance to electrostatic discharge	Immunity to ESD IEC/EN 61000-4-2, level 3
Resistance to HF interference (Immunity)	Immunity to radiated electrostatic fields IEC/EN 61000-4-3, level 3 Immunity to fast transients (burst immunity) IEC/EN 61000-4-4, level 3 Immunity to shock waves IEC/EN 61000-4-5 Radio frequency in common mode IEC/EN 61000-4-6, level 3
Conducted and radiated emissions (in accordance with EN 55022/11 group 1)	Class B
Operation temperature	-20 °C (-4 °F) → +60 °C (140 °F) (+40 °C (104 °F) in a non-ventilated enclosure)
Storage temperature	-40 °C (-40 °F) → +80 °C (176 °F)
Relative humidity	95% max. (no condensation or dripping water)

Screw terminals connection capacity	Flexible wire with ferrule: 1 conductor: 0.2 to 2.5 mm ² , AWG 24-14 Flexible wire with ferrule: 2 conductors: 0.2 to 0.75 mm ² , AWG 24-18 Rigid wire: 1 conductor: 0.2 to 2.5 mm ² , AWG 24-14 Rigid wire: 2 conductors: 0.2 to 0.75 mm ² , AWG 24-18 Tightening torque: 0.5 N.m (4.5 lb-in) (tighten using screwdriver diam. 3.5 mm) Stripping length: 6 mm
Supply	
Nominal voltage	Powered by the controller
Max. absorbed power	2.5 W
Inputs	
Digital 24 V_{DC} and analog inputs 12 bits / 20.8 V - 6 inputs from I1 to I6	
Input used as digital input (power off state)	
Input voltage	24 V _{DC} (-15% / +20%)
Input current	1.8 mA @ 20.4 V 2.1 mA @ 24 V 2.5 mA @ 28.8 V
Input impedance	11.6 kΩ
Logic 1 voltage threshold	≥ 11 V _{DC}
Making current at logic state 1	≥ 1 mA
Logic 0 voltage threshold	≤ 9 V _{DC}
Release current at logic state 0	≤ 0.7 mA
Response time	1 to 2 cycle times
Sensor type	Contact or 3-wire PNP
Conforming to IEC/EN 61131-2	Type 1
Input type	Resistive
Isolation between power supply and inputs	None
Isolation between inputs	None
Protection against polarity inversions	Yes
Status indicator	On LCD screen
Cable length	≤ 100 m
Input used as analog input	
Measuring range	0 → 10 V or V power supply
Input impedance	11.6 kΩ
Maximum value without destruction	28.8 V _{DC} max
Input type	Common mode
Resolution	12 bit at maximum input voltage (10 bit at 10V)
Value of LSB	7.03 mV
Conversion time	Controller cycle time
Maximum error in 0-10V mode	± 1.1 % of full scale at 25 °C (77 °F) ± 1.6 % of full scale at 55 °C (131 °F)
Maximum error in 0-V power supply mode	± 3.5 % of full scale at 25 °C (77 °F) ± 4.4 % of full scale at 55 °C (131 °F)
Repeat accuracy at 55 °C (131 °F)	± 0.5 %
Isolation between analogue channel and power supply	None
Protection against polarity inversions	Yes
Potentiometer control	2.2 kΩ / 0.5 W (recommended), 10 kΩ max.
Cable length	≤ 10 m with shielded twisted cable (sensor not isolated)
Outputs	
6 A relay output - 2 outputs from O1 to O2	
Breaking voltage	250 V _~ max
Breaking current	6A
Maximum breaking current in the common	IEC @ 25 °C (77 °F): 12 A IEC @ 60 °C (140 °F) or UL: 10 A

Mechanical life	5 000 000 operations (cycles)
Electrical durability for 50 000 operating cycles	24 V --- tau = 0 ms: 6 A, tau = 7 ms: 3 A, tau = 15 ms: 1.8 A Usage category DC-12: 24 V, 6 A Usage category DC-14: 24 V, 1.8 A 250 V \sim cos phi = 1: 6 A, cos phi = 0.7: 5 A, cos phi = 0.4: 2.5 A Usage category AC-12: 250 V, 6 A Usage category AC-13: 250 V, 5 A Usage category AC-15: 250 V, 2 A
Minimum switching capacity	100 mA (at minimum voltage of 12V)
Maximum operating rate	Off load: 10 Hz At operating current: 0.1 Hz
Voltage for withstanding shocks	In accordance with IEC/EN 60947-1 and IEC/EN 60664-1: 4 kV
Response time	Make = 1 cycle time + 8 ms typical Release = 1 cycle time + 4 ms typical
Built-in protections	Against short-circuits: None Against over voltages and overload: None
Status indicator	On LCD screen
Cable length	\leq 30 m

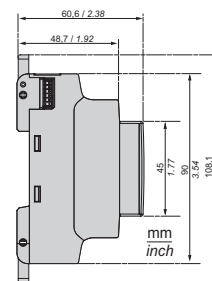
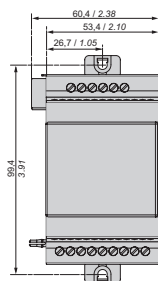
8 A relay output - 2 outputs from O3 to O4

Breaking voltage	250 V \sim max
Breaking current	8 A, \geq 55 °C: 6 A
Mechanical life	20 000 000 operations (cycles)
Electrical durability for 50 000 operating cycles	24 V --- tau = 0 ms: 8 A, tau = 7 ms: 3 A, tau = 15 ms: 1.5 A Usage category DC-12: 24 V, 8 A Usage category DC-14: 24 V, 1.5 A 250 V \sim cos phi = 1: 8 A, cos phi = 0.7: 4.75 A, cos phi = 0.4: 3 A Usage category AC-12: 250 V, 8 A Usage category AC-13: 250 V, 4.3 A Usage category AC-15: 250 V, 1.5 A
Minimum switching capacity	100 mA (at minimum voltage of 12V)
Maximum operating rate	Off load: 10 Hz At operating current: 0.1 Hz
Voltage for withstanding shocks	In accordance with IEC/EN 60947-1 and IEC/EN 60664-1: 4 kV
Response time	Make = 1 cycle time + 10 ms typical Release = 1 cycle time + 5 ms typical
Built-in protections	Against short-circuits: None Against over voltages and overload: None
Status indicator	On LCD screen
Cable length	\leq 30 m

Schemes

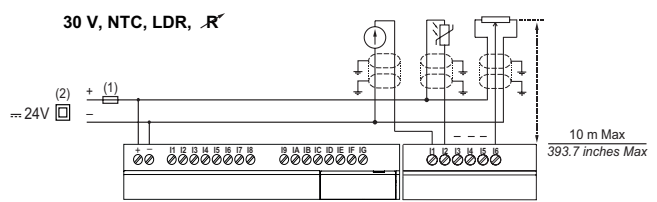
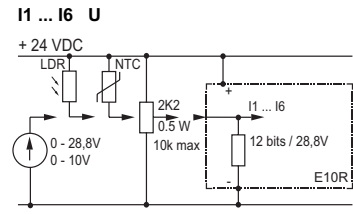
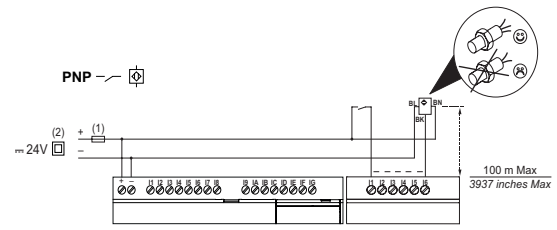
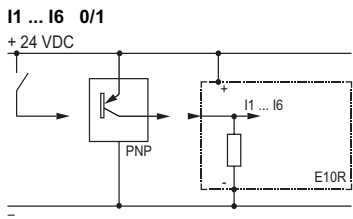
Dimensions

E10R Glossy



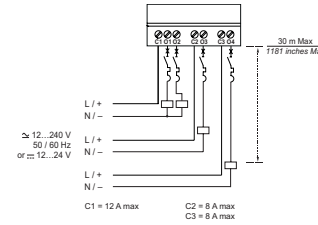
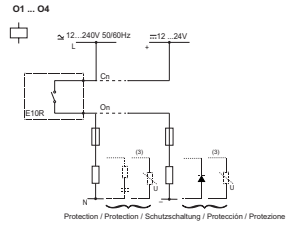
Connections

INPUTS



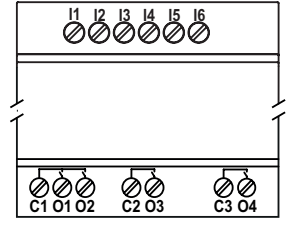
- (1) 1 A (UL248) quick-blowing fuse, circuit-breaker or circuit protector (US)
- (2) Isolating source

OUTPUTS



- (3) Inductive load

I/O installations



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