› Millenium Evo expansion
XAP10
Analog expansion 10 I/O

- › Analog Expansion with 6 DI (4 AI) and 4 DO (2 PWM)
- › 12 bits for 0-10 V & 11 bits for 4-20 mA
- › Programmable PWM outputs from 0-100%
- › Can be used twice to reach 44 I/Os configuration
- › Power supply by the controller

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General characteristics	
Reference	**88 975 303**
Products certification	CE, cULus Listed
Conformity with the low voltage directive (in accordance with 2014/35/EU)	IEC/EN 61131-2 (Open equipment)
Conformity with the EMC directive (in accordance with 2014/30/EU)	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) UL: maximum surrounding air: +50 °C (122 °F)
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 mm², AWG 24-14 Flexible wire with ferrule: 2 conductors: 0.2 to 0.75 mm², AWG 24-18 Rigid wire: 1 conductor: 0.2 to 2.5 mm², AWG 24-14 Rigid wire: 2 conductors: 0.2 to 0.75 mm², AWG 24-18 Tightening torque: 0.5 N.m (4.5 lb-in) (tighten using screwdriver diam. 3.5 mm) Stripping length: 6 mm
Material	Lexan, UL94V0, Halogen free 1272/2008/CE
On front panel color	Grey RAL 7035
On sole color	Black RAL 9011

Protection rating (in accordance with IEC/EN 60529)	IP 40 on front panel IP 20 on terminal block
Weight	Without packing: 105 g With packing: 145 g
Dimensions	Without packing: 60.4 x 90 x 60.3 mm / 2.37 x 3.54 x 2.37 inch With packing: 93 x 103 x 65 mm / 3.66 x 4.06 x 2.56 inch
Supply	
Nominal voltage	Powered by the controller
Max. absorbed power	2.5 W
Inputs	
Digital 24 VDC and analog inputs 12 bits / 10 V & 11 bits / 0-20 mA - 6 inputs from I1 to I6 (from I1 to I4 Analog)	
Input used as digital input (power off state)	
Input voltage	24 VDC (-15% / +20%)
Input current	1.5 mA @ 20.4 V 1.7 mA @ 24 V 2.1 mA @ 28.8 V
Input impedance	13.9 kΩ
Logic 1 voltage threshold	≥ 11 VDC
Making current at logic state 1	≥ 0.8 mA
Logic 0 voltage threshold	≤ 8 VDC
Release current at logic state 0	≤ 0.5 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	No
Status indicator	On LCD screen
Cable length	≤ 30 m
Input used as 0-10 V analogue input	
Measuring range	0 → 10 V
Input impedance	13.9 kΩ
Maximum value without destruction	28.8 VDC max
Input type	Common mode
Resolution	12 bit / 10V
Value of LSB	2.45 mV
Conversion time	Controller cycle time
Maximum error at 25°C (77°F)	± 1.5 % of full scale
Maximum error at 55°C (131°F)	± 2 % of full scale
Repeat accuracy at 55°C (131°F)	± 0.8 %
Isolation between analogue channel and power supply	None
Protection against polarity inversions	Yes for voltage ≤ 10 V
Potentiometer control	2.2 kΩ / 0.5 W (recommended), 10 KΩ max.
Cable length	≤ 10 m with shielded twisted cable (sensor not isolated)
Input used as 0-20 mA analogue input	
Measuring range	0 → 20 mA (4 → 20 mA by the application)
Input impedance	245 Ω
Maximum value without destruction	30 mA max
Input type	Common mode
Resolution	11 bit (normalized at 0 - 2000) / 20 mA
Value of LSB	10 µA

Conversion time	Controller cycle time
Maximum error at 25°C (77°F)	± 2 % of full scale
Maximum error at 55°C (131°F)	± 3 % of full scale
Repeat accuracy at 55°C (131°F)	± 1 %
Isolation between analogue channel and power supply	None
Protection against polarity inversions	Yes
Overvoltage protection	Yes. If the input voltage is > 7 V, this one is automatically switched on 0-10V configuration.
Cable length	≤ 30 m with shielded twisted cable (sensor not isolated)
Outputs	
Digital / PWM solid state output - 2 solid state outputs from O1 to O2	
Output used as digital output	
Breaking voltage	10 → 28.8 VDC
Nominal voltage	12 / 24 VDC
Nominal current	0.5 A on resistive load @ 25°C (77°F)
Max. breaking current	0.625 A
Non repetitive overload current	1 A
Maximum breaking current in the common	1 A
Voltage drop	< 1 V for I = 0.5 A
Response time	Make = 1 cycle time + 30 µs typical Release = 1 cycle time + 40 µs typical
Built-in protections	Against overloads and short-circuits: Yes Against over voltages (*): Yes Against inversions of power supply: Yes (*) In the absence of a potential free contact between the output of the programmable logic controller and the load
Min. load	1 mA
Galvanic isolation	No
Cable length	≤ 10 m

Truth table of the default

Command	Output	Fault	
Normal condition	0	0	No
	1	1	No
Overheating	0	0	No
	1	0	Yes
Underpowered	0	0	X
	1	0	X
Short circuit (current limit)	0	0	No
	1	0	Yes

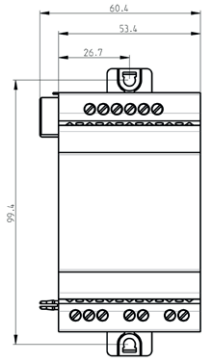
Output used as PWM output	
PWM frequency	14.11 Hz ; 56.45 Hz ; 112.90 Hz ; 225.80 Hz ; 451.59 Hz ; 1758.24 Hz
PWM cyclic ratio	0 → 100 % 100 steps
PWM Max. error	≤ 2 % (from 10 % → 90 %)
Status indicator	On LCD screen
Cable length	≤ 10 m with shielded twisted cable
Distance between the power source and the static outputs	≤ 30 m
Analog output - 2 outputs from O3 to O4	
Output range	0 → 10 VDC
Load type	Resistive (≥ 1 KΩ)
Load Max.	≤ 10 mA
Non repetitive Max. load	20 mA
Resolution	10 bits (normalized at 0 – 1000)
Valeur du LSB	10 mV
Conversion time	Controller cycle time

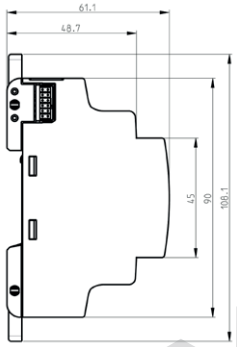
Response time	≤ 300 ms
Maximum error at 25°C (77°F)	± 1 % of full scale
Maximum error at 55°C (131°F)	± 1.5 % of full scale
Built-in protections	Against overloads and short-circuits: Yes Against over voltages (*): Yes Against inversions of power supply: Yes (*) In the absence of a volt-free contact between the output of the logic controller and the load
Galvanic isolation	No
Cable length	≤ 10 m with shielded twisted cable

Technical sketches

Dimensions (mm)

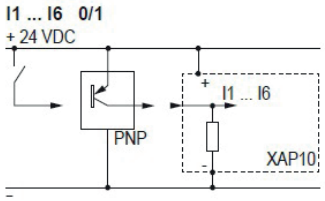
XAP10

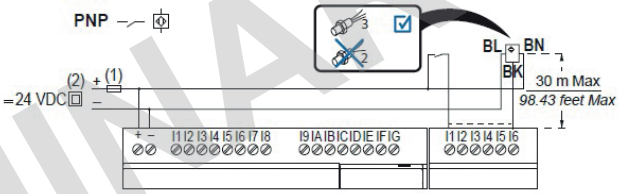


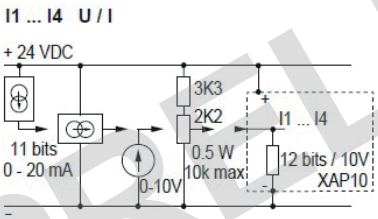


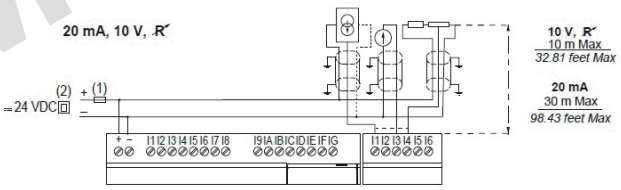
Connections

INPUTS

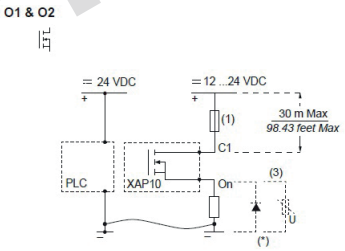


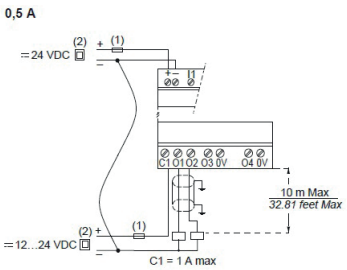




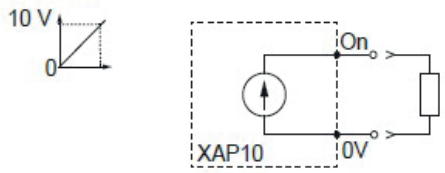


OUTPUTS





O3 & O4



0-10 V