## Millenium Evo expansion XAP10

## Analog expansion 10 I/O

- > Analog Expansion with 6 DI (4AI) and 4 DO (2PWM)
- > 12 bits for 0-10V & 11 bits for 4-20mA
- > Programmable PWM outputs from 0-100%
- Can be used twice to reach 44 I/Os configuration
- > Power supply by the controller
- XAP10



XAP10 Analog expansion 10 I/O

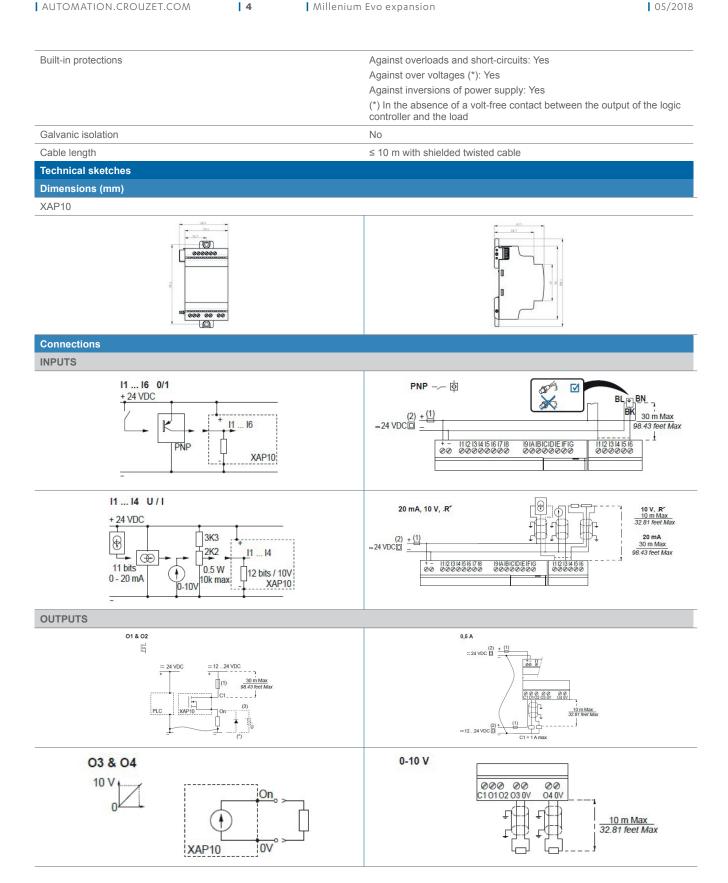
General characteristics			
Reference	88 975 303		
Products certification	CE, cULus Listed		
Conformity with the low voltage directive (in accordance with 2014/35/EU)	IEC/EN 61131-2 (Open equipment)		
Conformity with the EMC directive (in accordance with 2014/30/EU)	IEC/EN 61000-6-1 (Residential, commercial and light-industrial envir ments)		
	IEC/EN 61000-6-2 (Industrial)		
	IEC/EN 61000-6-3 (Residential, commercial and light-industrial enviror ments)		
	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 to radiated electrostatic fields IEC/EN 61000-4-3, level 3		
(Immunity)	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) $\rightarrow$ +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) $\rightarrow$ +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 mm <sup>2</sup> , 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	IP 40 on front panel		
(in accordance with IEC/EN 60529)	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 / 0-2	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	2 30 111		
Measuring range	$0 \rightarrow 10 \text{ V}$		
Input impedance	13.9 kΩ		
Maximum value without destruction	28.8 VDC max		
	Common mode		
Input type			
Resolution Value of LOD	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 k $\Omega$ / 0.5 W (recommended), 10 K $\Omega$ max.		
Cable length	≤ 10 m with shielded twisted cable (sensor not isolated)		
Input used as 0-20 mA analogue input			
Measuring range	$0 \rightarrow 20$ mA (4 $\rightarrow$ 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 μΑ		
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 > 0-10V configuration.	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 O	1 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 @ 2	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 μ	s tynical				
Trooponed anno	Release = 1 cycle time + 4	71				
Built-in protections	Against over voltages (*): Y Against inversions of powe (*) In the absence of a pote	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	Normal condition	Command 0 1	Output 0 1	Fault No No		
	Overheating	0	0	No Yes		
	Underpowered	0	0	X X		
	Short circuit (current limit)	0	0	No Yes		
Output used as PWM output						
		14.11 Hz ; 56.45 Hz ; 112.90 Hz ; 225.80 Hz ; 451.59 Hz ; 1758.24 Hz				
PWM frequency	14.11 Hz ; 56.45 Hz ; 112.9	0 Hz ; 225.80 H	Hz ; 451.59 H	z ; 1758.24 Hz		
PWM frequency PWM cyclic ratio	14.11 Hz ; 56.45 Hz ; 112.9 0 → 100 % 100 steps	0 Hz ; 225.80 H	Hz ; 451.59 H	z ; 1758.24 Hz		
		0 Hz ; 225.80 H	Hz ; 451.59 H.	z ; 1758.24 Hz		
PWM cyclic ratio	0 → 100 % 100 steps	0 Hz ; 225.80 F	Hz ; 451.59 H.	z ; 1758.24 Hz		
PWM cyclic ratio PWM Max. error	0 → 100 % 100 steps ≤ 2 % (from 10 % → 90 %)	·	Hz ; 451.59 H	z ; 1758.24 Hz		
PWM cyclic ratio PWM Max. error Status indicator	0 → 100 % 100 steps ≤ 2 % (from 10 % → 90 %) On LCD screen	·	Hz ; 451.59 H.	z ; 1758.24 Hz		
PWM cyclic ratio PWM Max. error Status indicator Cable length	0 → 100 % 100 steps ≤ 2 % (from 10 % → 90 %) On LCD screen ≤ 10 m with shielded twiste	·	Hz ; 451.59 H.	z ; 1758.24 Hz		
PWM cyclic ratio  PWM Max. error  Status indicator  Cable length  Distance between the power source and the static outputs  Analog output - 2 outputs from O3 to O4	0 → 100 % 100 steps ≤ 2 % (from 10 % → 90 %) On LCD screen ≤ 10 m with shielded twiste	·	Hz ; 451.59 H.	z ; 1758.24 Hz		
PWM cyclic ratio  PWM Max. error  Status indicator  Cable length  Distance between the power source and the static outputs  Analog output - 2 outputs from O3 to O4  Output range	$0 \rightarrow 100 \% 100 \text{ steps}$ $\leq 2 \% \text{ (from } 10 \% \rightarrow 90 \%)$ On LCD screen $\leq 10 \text{ m with shielded twiste}$ $\leq 30 \text{ m}$	·	Hz ; 451.59 H	z ; 1758.24 Hz		
PWM cyclic ratio  PWM Max. error  Status indicator  Cable length  Distance between the power source and the static outputs  Analog output - 2 outputs from O3 to O4  Output range  Load type	$0 \rightarrow 100 \% 100 \text{ steps}$ $\leq 2 \% \text{ (from } 10 \% \rightarrow 90 \%)$ On LCD screen $\leq 10 \text{ m with shielded twiste}$ $\leq 30 \text{ m}$	·	Hz ; 451.59 H.	z ; 1758.24 Hz		
PWM cyclic ratio  PWM Max. error  Status indicator  Cable length  Distance between the power source and the static outputs  Analog output - 2 outputs from O3 to O4  Output range  Load type  Load Max.	$0 \rightarrow 100 \% 100 \text{ steps}$ ≤ 2 % (from 10 % → 90 %) On LCD screen ≤ 10 m with shielded twiste ≤ 30 m $0 \rightarrow 10 \text{ VDC}$ Resistive (≥ 1 KΩ)	·	Hz ; 451.59 H.	z ; 1758.24 Hz		
PWM cyclic ratio  PWM Max. error  Status indicator  Cable length  Distance between the power source and the static outputs  Analog output - 2 outputs from O3 to O4  Output range  Load type  Load Max.  Non repetitive Max. load	$0 \rightarrow 100 \% 100 \text{ steps}$ $\leq 2 \% \text{ (from } 10 \% \rightarrow 90 \%)$ On LCD screen $\leq 10 \text{ m}$ with shielded twiste} $\leq 30 \text{ m}$ $0 \rightarrow 10 \text{ VDC}$ Resistive ( $\geq 1 \text{ K}\Omega$ ) $\leq 10 \text{ mA}$	d cable	Hz ; 451.59 H.	z ; 1758.24 Hz		
PWM cyclic ratio PWM Max. error Status indicator Cable length Distance between the power source and the static outputs Analog output - 2 outputs from 03 to 04 Output range Load type Load Max. Non repetitive Max. load Resolution	$0 \rightarrow 100 \% 100 \text{ steps}$ ≤ 2 % (from 10 % → 90 %)  On LCD screen ≤ 10 m with shielded twiste ≤ 30 m $0 \rightarrow 10 \text{ VDC}$ Resistive (≥ 1 KΩ) ≤ 10 mA $20 \text{ mA}$	d cable	Hz ; 451.59 H	z ; 1758.24 Hz		
PWM cyclic ratio PWM Max. error Status indicator Cable length Distance between the power source and the static outputs Analog output - 2 outputs from O3 to O4 Output range Load type Load Max. Non repetitive Max. load Resolution Valeur du LSB	$0 \rightarrow 100 \% 100 \text{ steps}$ ≤ 2 % (from 10 % → 90 %)  On LCD screen ≤ 10 m with shielded twiste ≤ 30 m $0 \rightarrow 10 \text{ VDC}$ Resistive (≥ 1 KΩ) ≤ 10 mA  20 mA  10 bits (normalized at 0 − 1) 10 mV	d cable	Hz ; 451.59 H	z ; 1758.24 Hz		
PWM cyclic ratio PWM Max. error Status indicator Cable length Distance between the power source and the static outputs Analog output - 2 outputs from O3 to O4 Output range Load type Load Max. Non repetitive Max. load Resolution Valeur du LSB Conversion time	$0 \rightarrow 100 \% 100 \text{ steps}$ ≤ 2 % (from 10 % → 90 %)  On LCD screen ≤ 10 m with shielded twiste ≤ 30 m $0 \rightarrow 10 \text{ VDC}$ Resistive (≥ 1 KΩ) ≤ 10 mA  20 mA  10 bits (normalized at 0 − 1) 10 mV  Controller cycle time	d cable	Hz ; 451.59 H	z ; 1758.24 Hz		
PWM cyclic ratio  PWM Max. error  Status indicator  Cable length  Distance between the power source and the static outputs  Analog output - 2 outputs from O3 to O4  Output range  Load type  Load Max.  Non repetitive Max. load  Resolution  Valeur du LSB	$0 \rightarrow 100 \% 100 \text{ steps}$ ≤ 2 % (from 10 % → 90 %)  On LCD screen ≤ 10 m with shielded twiste ≤ 30 m $0 \rightarrow 10 \text{ VDC}$ Resistive (≥ 1 KΩ) ≤ 10 mA  20 mA  10 bits (normalized at 0 − 1) 10 mV	d cable	Hz ; 451.59 H	z ; 1758.24 Hz		



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