

# › Logic Controller Millenium Evo

- › Up to 44 I/Os - Base 16 DI (4 HighSpeed/8 AI) - 8 DO
- › Wireless programming & control with bluetooth Interface and Crouzet Virtual Display
- › Ethernet Modbus TCP/IP (Client/Server) and Modbus RTU Network via interface (Slave)
- › Event and Datalog Management via mail/FTP server or Locally
- › Up to 1000 programing blocks with intuitive Crouzet Soft to go from simple to complex applications



Product selection			
Type	LCD display	Ethernet network	Part number
XBP24	No	No	<b>88 975 001</b>
XBP24-E	No	Yes	<b>88 975 011</b>
XDP24	Yes	No	<b>88 975 101</b>
XDP24-E	Yes	Yes	<b>88 975 111</b>

Accessories	
Accessories Description	Part-number
USB Interface	<b>88 980 110</b>
USB cable 3m B type	<b>88 980 170</b>
Kit Description	Part-number
MilleniumEVO STARTER KIT, Logic Controller + Bluetooth interface	<b>88 975 901</b>
MilleniumEVO STARTER KIT, Logic Controller with embedded Ethernet + Bluetooth interface	<b>88 975 911</b>
MilleniumEVO KIT XDP24-E + Crouzet Touch CTP104-E Performance, Ethernet, USB Key	<b>88 970 558</b>
MilleniumEVO KIT XDP24-E + Crouzet Touch CTP107-E Performance, Ethernet, USB Key	<b>88 970 568</b>

	XBP24	XBP24-E	XDP24	XDP24-E
General features				
Ethernet Modbus TCP/IP (Client///Server)	-	Yes (16 IP range /// 16 words + 8bits)	-	Yes (16 IP range /// 16 words + 8bits)
Modbus RTU RS485 (Salve)	Yes via interface (16 words + 8 bits)			
Datalog via mail or FTP	-	Yes (16 data channel; 32 000 recording)	-	Yes (16 data channel; 32 000 recording)
Datalog local	Yes (16 data channel; 6 000 recording)	-	Yes (16 data channel; 6 000 recording)	-
Event mangement via mail	-	Yes (12 events)	-	Yes (12 events)
Bluetooth	Yes via interface			
General characteristics				
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)			

	XBP24	XBP24-E	XDP24	XDP24-E
Power supply 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 mm <sup>2</sup> (AWG 24-14) Flexible wire with ferrule: 2 conductors: 0.2 to 0.75 mm <sup>2</sup> (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 mm <sup>2</sup> (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			
Environnement	Reach, RoHS, 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: 270 g With packing: 320 g	Without packing: 300 g With packing: 350 g	Without packing: 330 g With packing: 380 g	
Dimensions	Without packing: 124.6 x 90 x 61.1 mm / 4.91 x 3.54 x 2.4 inch With packing: 148 x 103 x 65 mm / 5.83 x 4.06 x 2.56 inch		Without packing: 124.6 x 90 x 62 mm / 4.91 x 3.54 x 2.44 inch With packing: 148 x 103 x 65 mm / 5.83 x 4.06 x 2.56 inch	

Processing characteristics				
LCD display	Without		Display with 4 lines of 18 characters, yellow/green	
Programming method	FBD (Function Block Diagram), including SFC (Sequential Function Chart) (Grafcet)			
Program size	Function blocks: typically 512 blocks Macro blocks: 127 max. (255 blocks per macro)			
Program memory	Flash			
Removable memory	N.A			
Data memory	2 k octets			
Back-up time (in the event of power failure)	Program and settings in the controller: 10 years Data memory: 10 years			
Data back-up	Data backup in the flash memory is guaranteed if the product is powered on more than 10 seconds			
Cycle time	From 2 ms* to 90 ms, default value: 10 ms *: Depending on configuration			
Clock data retention	10 years (lithium battery) at 25 °C (77 °F)			
Clock drift	Drift < 12 min/year (at 25 °C (77 °F)) 6 s / month (at 25 °C (77 °F) with user-definable correction of drift). Synchronizable by network			

	XBP24	XBP24-E	XDP24	XDP24-E
Timer block accuracy	0.5 % ± 2 cycle time			
Start up time on power up	< 8 s base alone, < 5 s base + 2 expansions + 1 accessory (RS485)	< 10 s base alone, < 5 s base + 2 expansions + 1 accessory (RS485)	< 8 s base alone, < 5 s base + 2 expansions + 1 accessory (RS485)	< 10 s base alone, < 5 s base + 2 expansions + 1 accessory (RS485)
Self test	Test firmware integrity (checksum memory) Stability of the internal power supply Check the conformity of the em4 device configuration with the configuration in the application program.			

**Supply**

Nominal voltage	24 V <sub>DC</sub> (-15% / +20%)			
Operating limits	20.4 - 28.8 V <sub>DC</sub>			
Immunity from micro power cuts	≤ 1 ms (repetition 20 times)			
Max. absorbed power	3.8 W @ 24 V <sub>DC</sub> , 5 W @ 28.8 V <sub>DC</sub> , 1.5 W @ 24 V <sub>DC</sub> I/O OFF	4.8W @ 24 V <sub>DC</sub> , 6.2 W @ 28.8 V <sub>DC</sub> , 1.5W @ 24 V <sub>DC</sub> I/O OFF	4W @ 24 V <sub>DC</sub> , 5.3 W @ 28.8 V <sub>DC</sub> , - 0.3 W backlight OFF 1.5W @ 24 V <sub>DC</sub> (I/O + backlight) OFF	5W @ 24 V <sub>DC</sub> , 6.5 W @ 28.8 V <sub>DC</sub> , - 0.3 W backlight OFF 1.5W @ 24 V <sub>DC</sub> (I/O + backlight) OFF
Protection against polarity inversions	Yes			
Power monitoring	Yes and value available through the application "FB Status", 1/10V, 5%.			

**Inputs**

**Digital and high speed digital inputs 24 V<sub>DC</sub> - 4 inputs from I1 to I4**

**Input used as digital input**

Input voltage	24 V <sub>DC</sub> (-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	≥ 15 V <sub>DC</sub>			
Making current at logic state 1	≥ 1.3 mA			
Logic 0 voltage threshold	≤ 10 V <sub>DC</sub>			
Release current at logic state 0	≤ 0.8 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	No		On LCD screen	On LCD screen
Cable length	≤ 30 m	≤ 30 m		

**Input used as high speed digital input**

Maximum counting frequency	3 channels encoder (I1, I2, I3): 5 kHz* 2 independent counters (I1, I2) (I3, I4) (Cumul, IND, DIR): 2 channels: 10 kHz*, 4 channels: 5 kHz*, 2 independent counters (I1, I2) (I3, I4) (PH, PH2): 2/4 channels: 5 kHz* 4 independent counters (I1, I2, I3, I4) (Up/Down): 1 channel: 15 kHz*, 2 channels: 10 kHz*, > 2 channels: 5 kHz* * with a time cycle ≤ 10 ms and a ton / toff = 50% ± 5%, level 0 < 2V and level 1 > 20.4V			
Other functions	4 tachometers (I1, I2, I3, I4 )			
Cable length	≤ 3 m with shielded twisted cable			

	XBP24	XBP24-E	XDP24	XDP24-E
<b>Digital 24 V<sub>DC</sub> and analog inputs 12 bits / 28.8 V - potentiometer - 8 inputs from I5 to IC</b>				
<b>Input used as digital input</b>				
Input voltage	24 V <sub>DC</sub> (-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 <sub>DC</sub>			
Making current at logic state 1	≥ 1 mA			
Logic 0 voltage threshold	≤ 9 V <sub>DC</sub>			
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	No		On LCD screen	On LCD screen
Cable length	≤ 30 m			
<b>Input used as analog input</b>				
Measuring range	0 → 10 V, 0 → V power supply or Voltmeter			
Input impedance	11.6 kΩ			
Maximum value without destruction	28.8 V <sub>DC</sub> 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	± 3.5 % of full scale at 25 °C (77 °F) ± 5 % of full scale at 55 °C (131 °F)			
Maximum error in 0-V power supply mode	± 5 % of full scale at 25 °C (77 °F) ± 6.2 % of full scale at 55 °C (131 °F)			
Repeat accuracy at 55 °C (131 °F)	± 2 %			
Voltmeter	From 0 to 30.5 V, 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)			
<b>Digital 24 V<sub>DC</sub> - 4 inputs from ID to IG</b>				
Input voltage	24 V <sub>DC</sub> (-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 V <sub>DC</sub>			
Making current at logic state 1	≥ 0.8 mA			
Logic 0 voltage threshold	≤ 8 V <sub>DC</sub>			
Release current at logic state 0	≤ 0.5 mA			
Response time	1 to 2 cycle times			
Sensor type	Contact or 3-wire PNP			

	XBP24	XBP24-E	XDP24	XDP24-E
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	No		On LCD screen	On LCD screen
Cable length	≤ 30 m			

**Outputs**

**6 A relay output - 2 outputs from O1 to O2**

Breaking voltage	250 V $\sim$ max			
Breaking current	6 A Derating: UL: ≥ 45 °C (113 °F): 4A max			
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 $\text{---}$ 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	No		On LCD screen	On LCD screen
Cable length	≤ 30 m			

**8 A relay output - 6 outputs from O3 to O8**

Breaking voltage	250 V $\sim$ max			
Breaking current	8 A Derating: CEI ≥ 55 °C (131 °F) or UL: ≥ 45 °C (113 °F): 6A max			
Maximum breaking current in the common	IEC @ 25 °C (77 °F): C3, C6: 8A; C4, C5: 16 A IEC @ 60 °C (140 °F) or UL: C3, C6: 8 A; C4, C5: 10 A			
Mechanical life	20 000 000 operations (cycles)			
Electrical durability for 50 000 operating cycles	24 V $\text{---}$ 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			

	XBP24	XBP24-E	XDP24	XDP24-E
Status indicator	No		On LCD screen	On LCD screen
Cable length	≤ 30 m			

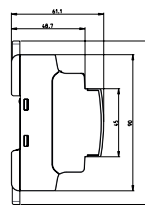
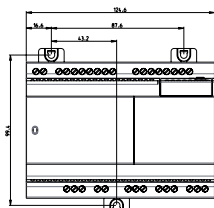
**Ethernet network**

Programming / exploitation	-	USB & Ethernet port / Ethernet port	-	USB & Ethernet port / Ethernet port
Ethernet connection	-	Type RJ45, 10/100 Mbit/s, MDI/ MDIX	-	Type RJ45, 10/100 Mbit/s, MDI/ MDIX
Adressage	-	Static or dynamic (DHCP server / Auto IP)	-	Static or dynamic (DHCP server / Auto IP)
Protocols	-	Modbus TCP (client / server), Discovery, UDP, TCP, SMTP, SSL (workshop communication via Ethernet)	-	Modbus TCP (client / server), Discovery, UDP, TCP, SMTP, SSL (workshop communication via Ethernet)
Cable length	-	Maximum length between 2 devices: 100 m / 3937 inch	-	Maximum length between 2 devices: 100 m / 3937 inch
Ethernet earthing	-	Yes, refer to the quick reference guide supplied with the product	-	Yes, refer to the quick reference guide supplied with the product

**Technical sketches**

**Dimensions (mm)**

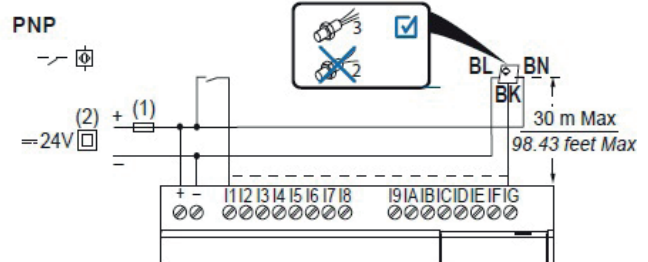
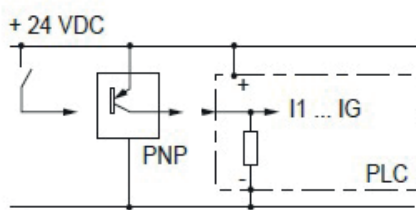
XBP24	XBP24-E	XDP24	XDP24-E
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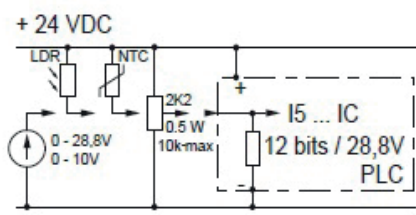
**Connections**

**INPUTS**

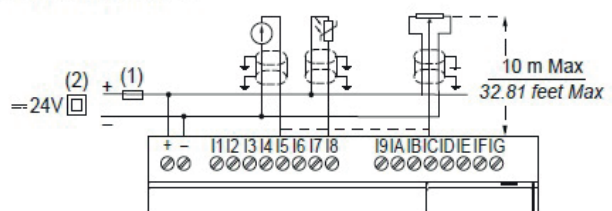
**I1 ... IG 0/1**



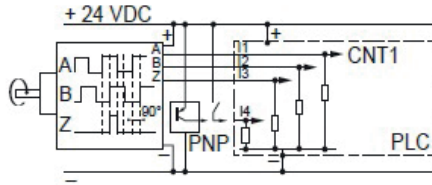
**I5 ... IC U**



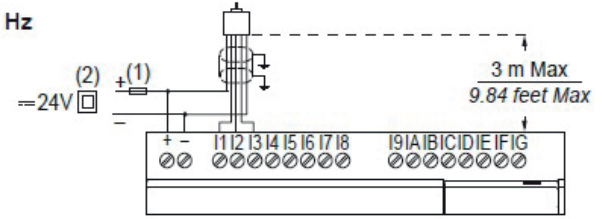
**30 V, NTC, LDR, R'**



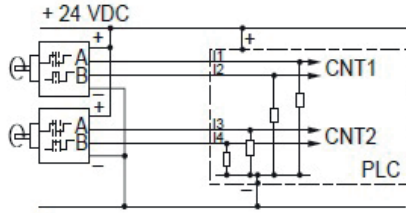
I1 ... I4



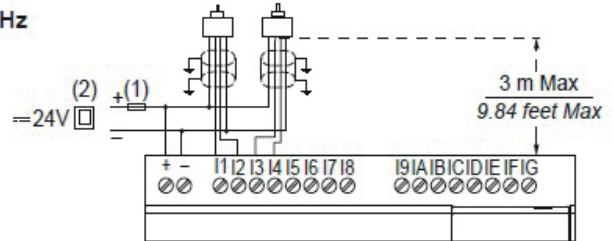
Hz



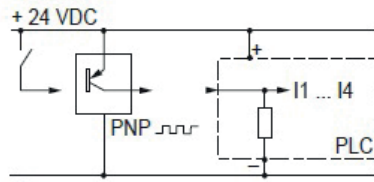
I1 ... I4



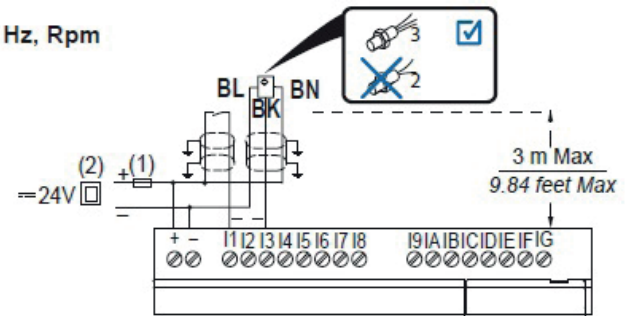
Hz



I1 ... I4



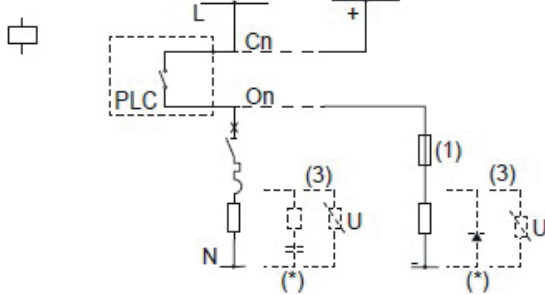
Hz, Rpm



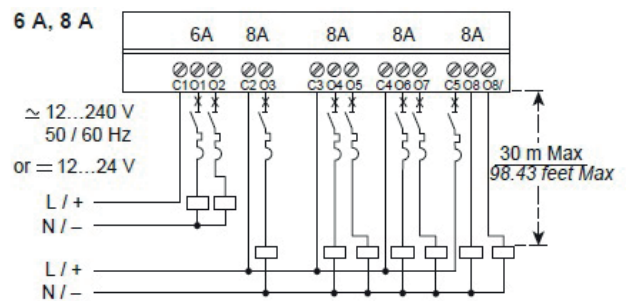
OUTPUTS

O1 ... O8

≈ 12...240V 50/60Hz = 12...24V



6 A, 8 A



Warning:

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