

Analogue extension XA04 Part number 88970241



- Direct connection of analogue 0-10 V or 0-20 mA or Pt100 inputs (10 bit) can be configured using the M3 Soft software
- 2 analogue 0-10 V or PWM outputs (10 bit) can be configured using the M3 Soft software
 Ramp can be parameterised for outputs used as 0-10 V outputs
- Power supply via the controller

Part numbers			
Туре	Inputs	Outputs	Supply
88970241 XA04	1 analogue (0-10 V / 0-20 mA),1 analogue (0-10 V / 0-20 mA / Pt100)	2 analogue (0-10 V / PWM)	Via the 24 V DC controller

Specifications

Certifications	CE, UL, CSA, GL	
Conformity to standards (with the low voltage directive and EMC directive)		
Earthing	None	
Protection rating	In accordance with IEC/EN 60529 : IP40 on front panel IP20 on terminal block	
Overvoltage category	3 in accordance with IEC/EN 60664-1	
Pollution	Degree : 2 in accordance with IEC/EN 61131-2	
Max operating Altitude	Operation : 2000 m Transport : 3,048 m	
Mechanical resistance	Immunity to vibrations IEC/EN 60068-2-6, Fc test Immunity to shock IEC/EN 60068-2-27, Fa 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, 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 Voltage dips and breaks (AC) IEC/EN 61000-4-11 Immunity to damped oscillatory waves IEC/EN 61000-4-12	
Conducted and radiated emissions	Class B (*) in accordance with EN 55022, EN 55011 (CISPR22, CISPR11) group 1 (*) Except configuration (88 970 1.1 or 88 970 1.2) + (88 970 250 or 88 970 270) + 88 970 241 class A (class B in metallic cabinet)	
Operating temperature	-20 →+55 °C (+40 °C in a non-ventilated enclosure) in accordance with IEC/EN 60068-2-1 and IEC/EN 60068-2-2	
Storage temperature	-40 →+70 °C in accordance with IEC/EN 60068-2-1 and IEC/EN 60068-2-2	
Relative humidity	95 % max. (no condensation or dripping water) in accordance with IEC/EN 60068-2-30	
Mounting	On symmetrical DIN profile, 35 x 7.5 mm and 35 mm x 15 or panel (2 x 4 mm Ø)	
Screw terminals connection capacity	Flexible wire with ferrule = 1 conductor : 0.25 to 2.5 mm ² (AWG 24AWG 14) 2 conductors 0.25 to 0.75 mm ² (AWG 24AWG 18) Semi-rigid wire = 1 conductor : 0.2 to 2.5 mm ² (AWG 25AWG 14) Rigid wire = 1 conductor : 0.2 to 2.5 mm ² (AWG 25AWG 14) 2 conductors 0.2 to 1.5 mm ² (AWG 25AWG 14) 2 conductors 0.2 to 1.5 mm ² (AWG 25AWG 16) Tightening torque = 0.5 N.m (4.5 lb-in) (tighten using screwdriver diam. 3.5 mm)	

Characteristics of analogue extension 88970241

General characteristics			
Certifications	IEC/EN 60751		
Earthing	Yes, refer to the quick reference guide supplied with the product		
Analogue input			

02/11/2015

Inputs used as analogue input

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1996/100/100194/0194/00	Inputs used as analogue inputs				
Independence14bD200 D		IP and IQ	IP and IQ		IQ
Non-standard00'000'A	Input range	$0 \rightarrow 10 \text{ V DC}$	0 →20 mA		-25 →125 °C
Sharb <th< th=""><th>Input impedance</th><th>≥ 18 kΩ</th><th>246 Ω</th><th></th><th>-</th></th<>	Input impedance	≥ 18 kΩ	246 Ω		-
NameStand		30 V	30 mA		-
National BandOmmune </th <th>· · · · · · · · · · · · · · · · · · ·</th> <th>9.8 mV</th> <th></th> <th></th> <th>0.15 °C</th>	· · · · · · · · · · · · · · · · · · ·	9.8 mV			0.15 °C
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Clock driftDrift < 12 min/year (at 25 °C) 6 s/month (at 25 °C with user-definable correction of drift)Timer block accuracy1 % ± 2 cycle timesStart up time on power up< 1.2 sCharacteristics of products with AC power suppliedSupply24 V AC (88970.4)100 ->240 V AC (88970.3)Nominal voltage24 V AC (88970.4)100 ->240 V AC (88970.3)Operating limits-15 % +20 % or 20.4 VAC ->28.8 VAC or 85 VAC ->264 VACSupply frequency range50/60 Hz (+4 % / -6 %) or 47 ->53 Hz/57 < 63 HzImmunity from micro power cuts10 ms (repetition 20 times)Max. absorbed powerCB12-CD12-XD10-XB10 : 4 VA CB20-CD20 : 6 VA XD10-XB10 with extension : 7,5 VA XD26-XB26 : 12 VA XD26-XB26 : 12 VA XD26-XB26 with extension : 10 VAIsolation voltage1780 V AC (88970.4)Inputs24 V AC (88970.4)	Response time	Input acquisition time : 1 to 2 cycle times			
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Image: block accuracy 6 s/month (at 25 °C with user-definable correction of drift) Timer block accuracy 1 % ± 2 cycle times Start up time on power up <1,2 s Characteristics of products with AC power supply Supply 24 V AC (889703) 100 →240 V AC Operating limits -15 % / +20 % or 20.4 V AC 100 →240 V AC Operating limits -15 % / +20 % or 20.4 V AC or 85 VAC → 264 VAC Supply frequency range 50/60 Hz (+4 % / -6 %) or 47 →53 Hz/57 < 63 Hz 50/60 Hz (+4 % / -6 %) or 47 →53 Hz/57 < 63 Hz Immunity from micro power cuts 10 ms (repetition 20 times) 10 ms (repetition 20 times) Max. absorbed power CB12-CD12-XD10-XB10 : 4 VA CB12-CD12-XD10-XB10 : 7 VA CB20-CD20 : 6 VA CB20-CD20 : 11 VA XD10-XB10 with extension : 12 VA XD26-XB26 : 7.5 VA XD26-XB26 : 12 VA XD26-XB26 : 12 VA XD26-XB26 if be VAC 1780 V AC (89703)	Clock drift	Drift < 12 min/year (at 25 °C)			
Timer block accuracy $1 \% \pm 2 \text{ cycle times}$ Start up time on power up<1,2 s			ection of drift)		
Start up time on power up< 1.2 s	Timer block accuracy				
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Max. absorbed power CB12-CD12-XD10-XB10 : 4 VA CB12-CD12-XD10-XB10 : 7 VA CB20-CD20 : 6 VA CB20-CD20 : 11 VA CB20-CD20 : 11 VA XD10-XB10 with extension : 7,5 VA XD10-XB10 with extension : 12 VA XD26-XB26 : 7.5 VA XD26-XB26 : 12 VA XD26-XB26 with extension : 10 VA XD26-XB26 : with extension : 17 VA Isolation voltage 1780 V AC 1780 V AC Inputs 24 V AC (889704) 100 →240 V AC (889703)					
$ \begin{array}{c} CB20-CD20:6 \ VA & CB20-CD20:11 \ VA \\ XD10-XB10 \ with extension:7,5 \ VA & XD10-XB10 \ with extension:12 \ VA \\ XD26-XB26:7.5 \ VA & XD26-XB26:12 \ VA \\ XD26-XB26 \ with extension:10 \ VA & XD26-XB26 \ with extension:17 \ VA \\ \hline Isolation voltage & 1780 \ VAC & 1780 \ VAC \\ \hline Inputs & 24 \ VAC \\ (889704) & 100 \ -240 \ VAC \\ (889703) \end{array} $					
XD10-XB10 with extension : 7,5 VA XD26-XB26 : 7.5 VA XD26-XB26 : 7.5 VA XD26-XB26 with extension : 10 VAXD10-XB10 with extension : 12 VA XD26-XB26 : 12 VA XD26-XB26 with extension : 17 VAIsolation voltage1780 V AC1780 V ACInputs24 V AC (889704)100 \rightarrow 240 V AC 	Max. absorbed power				
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Isolation voltage 1780 V AC 1780 V AC Inputs 24 V AC (889704) 100 →240 V AC (889703)					
Inputs 24 ∨ AC 100 → 240 ∨ AC (889704) (889703)					VA
(889704) (889703)			1780 V /		
	Inputs				
		· · · ·		, ,	
Input voltage 24 ∨ AC (-15 % / +20 %) 100 →240 ∨ AC (-15 % / +10 %)	Input voltage	24 V AC (-15 % / +20 %)		100 →240 V AC (-15	% / +10 %)

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Input current	4,4 mA @ 20,4 V AC 5,2 mA @ 24,0 V AC 6,3 mA @ 28,8 V AC	0,24 mA @ 85 V AC 0,75 mA @ 264 V AC
Input impedance	4.6 kΩ	350 kΩ
Logic 1 voltage threshold	≥ 14 V AC	≥ 79 V AC
Making current at logic state 1	>2 mA	>0.17 mA
Logic 0 voltage threshold	≤5 V AC	≤ 20 V AC (≤ 28 V AC : XE10, XR06, XR10, XR14)
Release current at logic state 0	<0.5 mA	<0.5 mA
Response time with LADDER programming	50 ms State 0 →1 (50/60 Hz)	50 ms State 0 < 1 (50/60 Hz)
Response time with function blocks programming	Configurable in increments of 10 ms 50 ms min. up to 255 ms State $0 \rightarrow 1$ (50/60 Hz)	Configurable in increments of 10 ms 50 ms min. up to 255 ms State 0 →1 (50/60 Hz)
Maximum counting frequency	In accordance with cycle time (Tc) and input response time (Tr) : 1/ ((2 x Tc) + Tr)	In accordance with cycle time (Tc) and input response time (Tr) : 1/ ((2 x Tc) + Tr)
Sensor type	Contact or 3-wire PNP	Contact or 3-wire PNP
Input type	Resistive	Resistive
Isolation between power supply and inputs	None	None
Isolation between inputs	None	None
Protection against polarity inversions	Yes	Yes
Status indicator	On LCD screen for CD and XD	On LCD screen for CD and XD

Characteristics of relay outputs common to the entire range

Max. breaking voltage	5 →30 V DC 24 →250 V AC
Breaking current	CB-CD-XB10-XD10-XR06-XR10 : 8 A XD26-XB26 : 8 x 8 A relays, 2 x 5 A relays XE10 : 4 x 5 A relays XR14 : 4 x 8 A relays, 2 x 5 A relays
Electrical durability for 500 000 operating cycles	Usage category DC-12 : 24 V, 1.5 A Usage category DC-13 : 24 V (L/R = 10 ms), 0.6 A Usage category AC-12 : 230 V, 1.5 A Usage category AC-15 : 230 V, 0.9 A
Max. Output Common Current	12A for O8,O9,OA
Minimum switching capacity	10 mA (at minimum voltage of 12 V)
Minimum load	12 V, 10 mA
Maximum rate	Off load : 10 Hz At operating current : 0.1 Hz
Mechanical life	10,000,000 operations (cycles)
Voltage for withstanding shocks	In accordance with IEC/EN 60947-1 and IEC/EN 60664-1 : 4 kV
Off-cycle response time	Make 10 ms Release 5 ms
Built-in protections	Against short-circuits : None Against overvoltages and overloads : None
Status indicator	On LCD screen for CD and XD

Characteristics of product with DC power supplied

Characteristics of product with DC power supplie	a			
Supply	12 V DC (889705 & 8970814 & 88970840) (889701 et 88970		2)	
Nominal voltage	12 V DC	24 V DC		
Operating limits	-13 % / +20 % or 10.4 V DC < 14.4 V DC (including ripple)	-20 % / +25 % or 19.2 V DC < 30 V	DC (including ripple)	
Immunity from micro power cuts	≤ 1 ms (repetition 20 times)	≤ 1 ms (repetition 20	times)	
Max. absorbed power	CB12 with solid state outputs : 1.5 W CD12 : 1.5 W CD20 : 2.5 W XD26-XB26 : 3 W XD26-XB26 with extension : 5 W XD26 with solid state outputs : 2.5 W	CB12-CD12-CD20 with solid state outputs - XD10-XB10 with solid state outputs : 3 W XD10-XB10 with relay outputs : 4 W XD26-XB26 with solid state outputs : 5 W CB20-CD20 with relay outputs : 6 W XD26 with relay outputs : 6 W XD10-XB10 with extension : 8 W XD26-XB26 with extension : 10 W		
Protection against polarity inversions	Yes	Yes		
Digital inputs (I1 to IA and IH to IY)			24 V DC (889701 and 889702)	
Input voltage	12 V DC (-13 % / +20 %)		24 V DC (-20 % / +25 %)	
Input current	3,9 mA @ 10,44 V DC 4,4 mA @ 12,0 V DC 5,3 mA @ 14,4 VDC		2,6 mA @ 19,2 V DC 3,2 mA @ 24 V DC 4,0 mA @ 30,0 VDC	
Input impedance	2.7 kΩ		7.4 kΩ	
Logic 1 voltage threshold	≥7 V DC		≥ 15 V DC	
Making current at logic state 1	≥2 mA		≥2.2 mA	
Logic 0 voltage threshold	≤ 3 V DC		≤5VDC	
Release current at logic state 0	<0.9 mA		<0.75 mA	
Response time	$1 \rightarrow 2$ cycle times + 6 ms		$1 \rightarrow 2$ cycle times + 6 ms	
Maximum counting frequency	I1 & I2 : FBD (Up to 6 k Hz) & Ladder (1 k Hz) I3 to IA & IH to IY : in accordance with cycle time (Tc) and response time (Tr) : 1/ ((2 x Tc) + Tr)		I1 & I2 : FBD (Up to 6 k Hz) & Ladder (1 k Hz) I3 to IA & IH to IY : in accordance with cycle time (Tc) and input response time (Tr) : 1/ ((2 x Tc) + Tr)	
Sensor type	Contact or 3-wire PNP		Contact or 3-wire PNP	
Conforming to IEC/EN 61131-2	Туре 1		Туре 1	
Input type	Resistive		Resistive	
Isolation between power supply and inputs	None		None	
Isolation between inputs	None		None	
Protection against polarity inversions	Yes		Yes	
Status indicator	On LCD screen for CD and XD		On LCD screen for CD and XD	

Analogue or digital inputs (IB to IG) 24 V DC 12 V DC (88970..5 & 88970814 & 88970840) (88970..1 and 88970..2) CB12-CD12-XD10-XB10 4 inputs IB →IE 4 inputs IB \rightarrow IE CB20-CD20-XB26-XD26 6 inputs IB →IG 6 inputs IB →IG nputs used as analoque int Ma surement range $(0 \rightarrow 10 \text{ V}) \text{ or } (0 \rightarrow \text{V power supply})$ $(0 \rightarrow 10 \text{ V}) \text{ or } (0 \rightarrow \text{V power supply})$ Input impedance 12 kΩ 14 kΩ Input voltage 14.4 V DC max 30 V DC max Value of LSB 29 mV 14 mV Input type Common mode Common mode Resolution 10 bit at maximum input voltage 10 bit at maximum input voltage Controller cycle time Controller cycle time Accuracy at 25 °C ±5% ±5% Accuracy at 55 °C ± 6.2 % ± 6.2 % Repeat accuracy at 55 ±2% +2% Isolation between analogue channel and pow None None 10 m maximum, with shielded cable (sensor not isolated) 10 m maximum, with shielded cable (sensor not isolated) Cable length Protection against polarity inversions Yes Yes 2.2 kΩ/0.5 W (recommended) 2.2 kΩ/0.5 W (recommended) Potentiometer control 10 kΩ max. 10 kΩ max. Inputs used as digital inputs 12 V DC (-13 % / +20 %) 24 V DC (-20 % / +25 %) 0,7 mA @ 10,44 VDC 1,6 mA @ 19,2 VDC Input current 0,9 mA @ 12,0 VDC 2,0 mA @ 24,0 V DC 1,0 mA @ 14,4VDC 2.5 mA @ 30.0 VDC Input impedance 14 kΩ 12 kΩ Logic 1 voltage threshold ≥7VDC ≥ 15 VDC Making current at logic state ≥0.5 mA ≥1.2 mA Logic 0 voltage threshold ≤ 3 V DC ≤ 5 V DC Release current at logic state 0 ≤0.2 mA ≤0.5 mA $1 \rightarrow 2$ cycle times $1 \rightarrow 2$ cycle times Response time Maximum counting frequency in FBD In accordance with cycle time (Tc) and input response time (Tr) : In accordance with cycle time (Tc) and input response time (Tr) : $1/((2 \times Tc) + Tr)$ $1/((2 \times Tc) + Tr)$ Contact or 3-wire PNP Contact or 3-wire PNP Conforming to IEC/EN 61131-2 Type 1 Type 1 Resistive Resistive Input type None None ation between inputs None None Protection against polarity inversions Yes Yes On LCD screen for CD and XD On LCD screen for CD and XD Status indicator Characteristics of relay outputs common to the entire range Max. breaking voltage $5 \rightarrow 30 \text{ V DC}$ $24 \rightarrow \! 250 \text{ V AC}$ Max. Output Common Current 12A (10A UL) for O8,O9,OA CB-CD-XD10-XB10-XR06-XR10:8 A Breaking current XD26-XB26 : 8 x 8 A relays, 2 x 5 A relays XE10:4 x 5 A relays XR14:4x8A relays, 2x5A relays Electrical durability for 500 000 operating cycles Usage category DC-12 : 24 V, 1.5 A Usage category DC-13 : 24 V (L/R = 10 ms), 0.6 A Usage category AC-12 : 230 V, 1.5 A Usage category AC-15 : 230 V, 0.9 A Minimum switching capacity 10 mA (at minimum voltage of 12 V) Minimum load 12 V, 10 mA Maximum rate Off load : 10 Hz At operating current : 0.1 Hz Mechanical life 10,000,000 operations (cycles) Voltage for withstanding shocks In accordance with IEC/EN 60947-1 and IEC/EN 60664-1 : 4 kV Off-cycle response time Make 10 ms Release 5 ms Built-in protections Against short-circuits : None Against overvoltages and overloads : None On LCD screen for CD and XD Status indicate Digital / PWM solid state output 24 V DC 12 V DC (88970814 & 88970840) (88970..2) CD12-XD10-XB10 : O4 PWM solid state output* CB12 : O4 XD26 : O4 →O7 CD20-XD26-XB26 : O4 →O7 * Only available with "FBD" programming language * Only available with "FBD" programming language 10.4 →30 VDC 19.2 →30 VDC Breaking voltage 12-24 V DC 24 V DC Nominal voltage 0.5 A 0.5 A Nominal current Max. breaking current 0,625 A 0,625 A Voltage drop ≤ 2 V for I = 0.5 A (at state 1) \leq 2 V for I = 0.5 A (at state 1) Response time Make ≤ 1 ms Make ≤ 1 ms Release ≤ 1 ms Release ≤ 1 ms 1 Maximum on inductive load 1 Maximum on inductive load Built-in protections Against overloads and short-circuits : Yes Against overloads and short-circuits : Yes Against overvoltages (*) : Yes Against overvoltages (*) : Yes Against inversions of power supply : Yes Against inversions of power supply : Yes (*) In the absence of a volt-free contact between the output of the (*) In the absence of a volt-free contact between the output of the

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	logic controller and the load	logic controller and the load
Min. load	1 mA	1 mA
Maximum incandescent load	0,2 A / 12 V DC 0,1 A / 24 V DC	0,1 A / 24 V DC
Galvanic isolation	No	No
PWM frequency	14.11 Hz	14.11 Hz
	56.45 Hz	56.45 Hz
	112.90 Hz	112.90 Hz
	225.80 Hz	225.80 Hz
	451.59 Hz	451.59 Hz
	1806.37 Hz	1806.37 Hz
PWM cyclic ratio	$0 \rightarrow 100$ % (256 steps for CD, XD and 1024 for XA)	$0 \rightarrow 100$ % (256 steps for CD, XD and 1024 for XA)
PWM accuracy at 120 Hz	< 5 % (20 % →80 %) load at 10 mA	< 5 % (20 % →80 %) load at 10 mA
Max. Breaking current PWM	50 mA	50 mA
Max. cable length PWM	20 m	20 m
PWM accuracy at 500 Hz	< 10 % (20 % →80 %) load at 10 mA	< 10 % (20 % →80 %) load at 10 mA
Status indicator	On LCD screen for CD and XD	On LCD screen for CD and XD

