

› Millenium 3 PLC

Smart "Expandable" range XD26/XB26

With/without display

- › Highly visible blue LCD with 4 lines of 18 characters and configurable backlighting
- › Allow the use of the entire library of specific functions blocks of the software workshop
- › Wide temperature range (-20 °C → +70 °C)
- › Analog inputs 0-10 V_{DC}, potentiometer, NTC, (0-20mA/Pt100 with converters)
- › Open to XN network communication extensions, digital I/O, analog, Pt100 extensions



XD26 with display



XB26 without display

Selection guide				
Power supply	Inputs	Outputs	XD26	XB26
12 V _{DC}	16 digital (including 6 analog)	10 relays (8 x 8 A relay and 2 x 5 A relay)	88974165	-
24 V _{DC}			88974161	88974151
		10 solid state 0.5 A (including 4 PWM)	88974162	88974152
24 V _{AC}	16 digital	10 relays (8 x 8 A relay and 2 x 5 A relay)	88974164	-
100 → 240 V _{AC}			88974163	88974153

Accessories, Kit & Expansion Modules		
Accessories Types	Description	Code
M3 Soft	Programming Software containing a complete dedicated function library	88970111
Physical accessories	EEPROM memory cartridge	88970108
	3m serial cable: PC → Millenium 3	88970102
	3m USB cable: PC → Millenium 3	88970109
	Millenium 3 → Bluetooth® interface (class A 10m)	88970104

Our Part-Number System

Expandable Version

X B 26

Version
C: Compact
X: Expandable

Inputs
10: 6 inputs + 4 outputs
12: 8 inputs + 4 outputs
26: 16 inputs + 10 outputs

Expansion Modules

X R 06

Version
X: Expansion

Inputs/Output
03: 3 Pt100
04: 1 analog / 2 analog
05: Ethernet
06: 4 digital / 2 relay
10: 6 digital / 4 relay
14: 8 digital / 6 relay

See page 2

X N 06

Type
E: Digital sandwich extensions
R: Digital termination extensions
A: Analog termination extensions

Type
N: Sandwich communication extensions

Version
X: Expansion

Communication
05: Ethernet
06: Modbus

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Description:

Millenium 3: The reference for more than 15 years

The Millenium3 is a versatile, powerful logic controller designed to meet the needs of a wide range of industrial applications. Its ease of use and flexibility make it ideal for automation professionals.

It offers high reliability and accuracy, making it a trusted choice for your automation needs.

For more information about **Millenium 3**: please visit www.crouzet.com

Accessories, Kit & Expansion Modules		
Kit Types	Description	Code
Kit XD26	16 digital (including 6 analog), 10 relays (8 x 8 A relay and 2 x 5 A relay), 24 V ---	88974084
	16 digital, 10 relays (8 x 8 A relay and 2 x 5 A relay), 100 \rightarrow 240 V \sim	88974085
	XD26 Smart - 24 V --- (Ref. 88974161) + M3 Soft (Ref. 88970111) + Power supply PS24-30W (Ref. 88950307) +USB programming cable (Ref. 88970109)	88970094
Expansion Modules	Description	Code
Sandwich communication extensions		
XN06	Modbus	88972250
XN05	Ethernet	88970270
Digital sandwich extension		
XE10	24 V --- controller	88970321
	100 \rightarrow 240 V \sim	88970323
	24 V \sim	88970324
Digital extensions		
XR06	4 digital, 24 V ---	88970211
	4 digital, 100 \rightarrow 240 V \sim	88970213
	4 digital, 24 V \sim	88970214
	4 digital, 12 V ---	88970215
XR10	6 digital, 24 V ---	88970221
	6 digital, 100 \rightarrow 240 V \sim	88970223
	6 digital, 24 V \sim	88970224
	6 digital, 12 V ---	88970225
XR14	8 digital, 24 V ---	88970231
	8 digital, 100 \rightarrow 240 V \sim	88970233
	8 digital, 24 V \sim	88970234
	8 digital, 12 V ---	88970235
Analog extensions		
XA03	Analog extension: 3 temperature input	88970800
XA04	Analog extension: 2 inputs/2 outputs	88970241

12 V --- 24 V --- 24 V \sim 100 \rightarrow 240 V \sim

General environment characteristics	
Certifications	CE, UL, CSA, GL
Conformity to standards (with the low voltage directive and EMC directive)	IEC/EN 61131-2 (Open equipment) IEC/EN 61131-2 (Zone B) IEC/EN 61000-6-2 IEC/EN 61000-6-3 (*) IEC/EN 61000-6-4 (*) Except configuration (88 970 1X1 or 88 970 1X2) + (88 970 250 or 88 970 270) + 88 970 241 class A (class B in a metal enclosure)
Earthing	Not included
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

	12 V _{DC}	24 V _{DC}	24 V _{AC}	100 → 240 V _{AC}
Max operating Altitude	Operation: 2000 m Transport: 3048 m			
Mechanical resistance	Immunity to vibrations IEC/EN 60068-2-6, test Fc Immunity to shock IEC/EN 60068-2-27, test Ea			
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 (a) 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 1X1 or 88 970 1X2) + (88 970 250 or 88 970 270) + 88 970 241 class A (class B in a metal enclosure)			
Operating temperature Millenium 3 Essential and extensions	-20 → +55 °C (+40 °C in a non-ventilated enclosure) in accordance with IEC/EN 60068-2-1 and IEC/EN 60068-2-2			
Operating temperature Millenium 3 Smart	-20 +70 °C except CB and XB versions in VDC: -30 → +70 °C (+40 °C in a nonventilated enclosure) in accordance with IEC/EN 60068-2-1 and IEC/EN 60068-2-2			
Storage temperature Millenium 3 Essential and extensions	-40 → +70 °C in accordance with IEC/EN 60068-2-1 and IEC/EN 60068-2-2			
Storage temperature Millenium 3 Smart	-40 → +80 °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 rail, 35 x 7.5 mm and 35 x 15 mm, or on panel (2 x Ø 4 mm)			
Screw terminals connection capacity	Flexible wire with ferrule = conductor: 0.25 to 2.5 mm ² (AWG 24 → AWG 14) conductors 0.25 to 0.75 mm ² (AWG 24 → AWG 18) Semi-rigid wire = 1 conductor: 0.2 to 2.5 mm ² (AWG 25 → AWG 14) Rigid wire = conductor: 0.2 to 2.5 mm ² (AWG 25 → AWG 14) conductors 0.2 to 1.5 mm ² (AWG 25 → AWG 16) Tightening torque = 0.5 N.m (4.5 lb-in) (tighten using screwdriver diam. 3.5 mm)			

Processing characteristics, XD & XB product types

Program size function blocks (FBD)	350 typical bloc 64 macros maximum 256 blocks maximum per macro
Memory size function blocks (FBD)	8 K
Number of lines in Ladder	120 lines
LCD display	XD: Display with 4 lines of 18 characters
Programming method	Function blocks / SCF (Grafcet) or Ladder
Program memory	Flash EEPROM
Removable memory	EEPROM
Data memory	368 bit / 200 words
Back-up time in the event of power failure	Program and settings in the controller: 10 years Program and settings in the plug-in memory: 10 years Data memory: 10 years
Cycle time	FBD: 6 → 90 ms (typically 20 ms) Ladder: typically 20 ms
Response time	Input acquisition time: + 1 to 2 cycle times
Clock data retention	10 years (lithium battery) at 25 °C
Clock drift	Drift < 12 min/year (at 25 °C) 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

	12 V _{DC}	24 V _{DC}	24 V _{AC}	100 → 240 V _{AC}
Characteristics of products with AC power supplied				
Supply				
Nominal voltage	-		24 V _{AC}	100 → 240 V _{AC}
Operating limits	-		-15 % / +20 % or 20.4 → 28.8 V _{AC}	-15 % / +10 % or 85 → 264 V _{AC}
Supply frequency range	-		50/60 Hz (+4 % / -6 %) or 47 → 53 Hz / 57 → 63 Hz	
Immunity from micro power cuts	-		10 ms (repetition 20 times)	
Max. absorbed power	-		XD26-XB26: 7.5 VA XD26-XB26 with extension: 10 VA	
Isolation voltage	-		1780 V _{AC}	
Inputs				
Input voltage	-		24 V _{AC} (-15 % / +20 %)	100 → 240 V _{AC} (-15 % / +10 %)
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	
Response time with function blocks programming	-		Configurable in increments of 10 ms 50 ms min. up to 255 ms State 0 → 1 (50/60 Hz)	
Response time with Ladder programming	-		50 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	
Sensor type	-		Contact or 3-wire PNP	
Input type	-		Resistive	
Isolation between power supply and inputs	-		None	
Isolation between inputs	-		None	
Protection against polarity inversions	-		Yes	
Status indicator	-		On LCD screen for XD	
Characteristics of relay outputs common to the entire range				
Max. breaking voltage	5 → 30 V _{DC} 24 → 250 V _{AC}			
Breaking current	XD26-XB26: 8 x 8 A relay, 2 x 5 A relay			
Electrical durability for 500 000 operating cycles	Utilization category DC-12: 24 V, 1.5 A Utilization category DC-13: 24 V (L/R = 10 ms), 0.6 A Utilization category AC-12: 230 V, 1.5 A Utilization category AC-15: 230 V, 0.9 A			
Max. Output Common Current	12 A 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)			
Voltage for withstanding shocks	In accordance with IEC/EN 60947-1 and IEC/EN 60664-1: 4 kV			

	12 V _{DC}	24 V _{DC}	24 V _{AC}	100 → 240 V _{AC}
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 XD			

Characteristics of product with DC power supplied

Supply

Nominal voltage	12 V _{DC}	24 V _{DC}	-
Operating limits	-13 % / +20 % or 10.4 → 14.4 V _{DC} (including ripple)	-20 % / +25 % or 19.2 → 30 V _{DC} (including ripple)	-
Immunity from micro power cuts	≤ 1 ms (repetition 20 times)		-
Max. absorbed power	XD26-XB26: 3 A XD26-XB26 with extension: 5 W XD26 with solid state outputs: 2.5 W	XD26-XB26 with solid state outputs: 5 W XD26 with relay outputs: 6 W XD26-XB26 with extension: 10 W	-
Protection against polarity inversions	Yes		-

Digital inputs (I1 to IA and IH to IY)

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 V _{DC} 5.3 mA @ 14.4 V _{DC}	2.6 mA @ 19.2 V _{DC} 3.2 mA @ 24 V _{DC} 4.0 mA @ 30.0 V _{DC}	-
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}	≤ 5 V _{DC}	-
Release current at logic state 0	< 0.9 mA	< 0.75 mA	-
Response time	1 → 2 cycle times + 6 ms		-
Maximum counting frequency	Inputs I1 & I2: FBD (up to 6 kHz) & Ladder (1 kHz) Inputs I3 to IA & IH to IY: In accordance with cycle time (Tc) and input response time (Tr): $1 / (2 \times Tc + Tr)$		-
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 for XD		-

Analog or digital inputs (IB to IG)

XB26-XD26	6 inputs IB → IG	-
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Inputs used as analog inputs only in FBD

Measurement range	(0 → 10 V) ou (0 → V power supply)		-
Input impedance	14 kΩ	12 kΩ	-
Input voltage	14.4 V _{DC} max.	30 V _{DC} max.	-
Value of LSB	14 mV	29 mV	-
Input type	Common mode		-
Resolution	10 bit at max. input voltage		-

	12 V _{DC}	24 V _{DC}	24 V _{AC}	100 → 240 V _{AC}
Conversion time	Controller cycle time		-	
Accuracy at 25 °C	± 5 %		-	
Accuracy at 55 °C	± 6.2 %		-	
Repeat accuracy at 55 °C	± 2 %		-	
Isolation between analog channel and power supply	None		-	
Cable length	10 m maximum, with shielded cable (sensor not isolated)		-	
Protection against polarity inversions	Yes		-	
Potentiometer control	2.2 kΩ / 0.5 W (recommended) 10 kΩ max		-	

Inputs used as digital inputs				
Input voltage	12 V _{DC} (-13 % / +20 %)	24 V _{DC} (-20 % / +25 %)	-	
Input current	0.7 mA @ 10.44 V _{DC} 0.9 mA @ 12 V _{DC} 1 mA @ 14.4 V _{DC}	1.6 mA @ 19.2 V _{DC} 2.0 mA @ 24.0 V _{DC} 2.5 mA @ 30.0 V _{DC}	-	
Input impedance	14 kΩ	12 kΩ	-	
Logic 1 voltage threshold	≥ 7 V _{DC}	≥ 15 V _{DC}	-	
Making current at logic state 1	≥ 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	-	
Response time	1 → 2 cycle times		-	
Maximum counting frequency in FBD	In accordance with cycle time (Tc) and input response time (Tr): $1 / (2 \times Tc) + Tr$		-	
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 for XD		-	

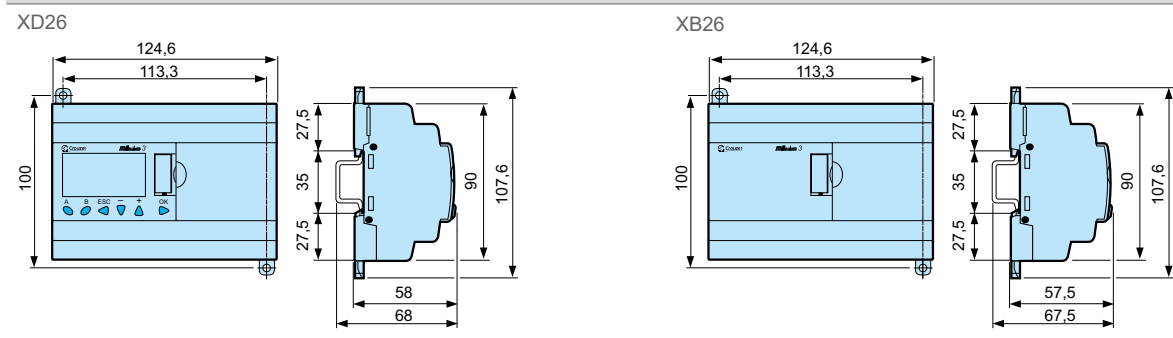
Characteristics of relay outputs common to the entire range				
Max. breaking voltage	5 → 30 V _{DC} 24 → 250 V _{AC}		-	
Max. Output Common Current	12 A (10 A UL) for O8, O9, OA		-	
Breaking current	XD26-XB26: 8 x 8 A relay, 2 x 5 A relay		-	
Electrical durability for 500 000 operating cycles	Utilization category DC-12: 24 V, 1.5 A Utilization category DC-13: 24 V (L/R = 10 ms), 0.6 A Utilization category AC-12: 230 V, 1.5 A Utilization 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)		-	
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		-	

	12 V _{DC}	24 V _{DC}	24 V _{AC}	100 → 240 V _{AC}
Digital / PWM solid state outputs				
PWM solid state outputs*	XD26: O4 → O7	XD26-XB26: O4 → O7	-	-
* Only available with "FBD" programming language				
Breaking voltage	10.4 → 30 V _{DC}	19.2 → 30 V _{DC}	-	-
Nominal voltage	12-24 V _{DC}	24 V _{DC}	-	-
Nominal current	0.5 A		-	-
Max. breaking current	0.625 A		-	-
Voltage drop	≤ 2 V for I = 0.5 A (at state 1)		-	-
Response time	Make ≤ 1 ms Release ≤ 1 ms		-	-
Frequency (Hz)	1 Maximum on inductive load		-	-
Built-in protections	Against overloads and short-circuits: Yes Against overvoltages (*): Yes Against inversions of power supply: Yes (* In the absence of a voltage free contact between the logic controller output and the load		-	-
Min. load	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		-	-
PWM frequency	14.11 Hz 56.45 Hz 112.90 Hz 225.80 Hz 451.59 Hz 1806.37 Hz		-	-
PWM cyclic ratio	0 → 100 % (256 steps for XD)		-	-
PWM accuracy at 120 Hz	< 5 % (20 % → 80 %) load at 10 mA		-	-
Max. Breaking current PWM	50 mA		-	-
Max. cable length PWM	20 m		-	-
PWM accuracy at 500 Hz	< 10 % (20 % → 80 %) load at 10 mA		-	-
Status indicator	On LCD screen for XD		-	-

Schematics

Footprint

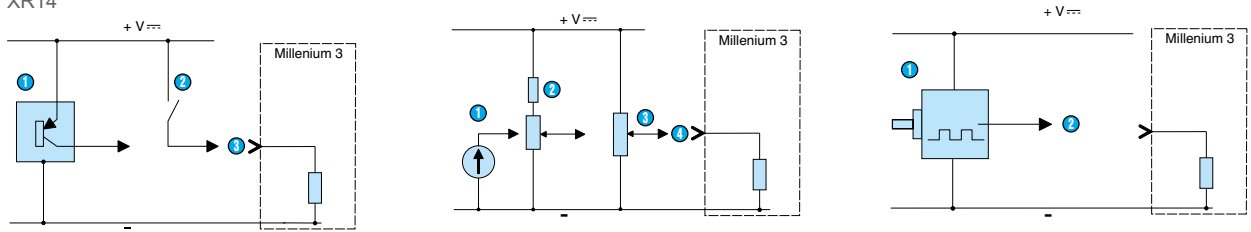
Version



Input/output wiring

Inputs 12 V_{DC}, 24 V_{DC}

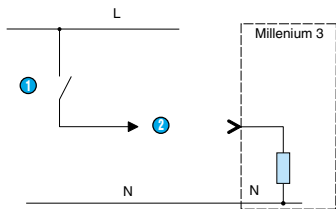
Extensions: XN06, XN05, XE10, XR06, XR10, XR14



1	3 wire PNP detector	0-10 V (input set to 0-10 V)	Encoder
2	Contact	Potentiometer attachment (input set to 0-10 V)	Fast digital input
3	Digital input	Potentiometer (input set to potentiometer)	-
4	-	Analogue input	-

Inputs 100-240 V_{AC}, 24 V_{AC}

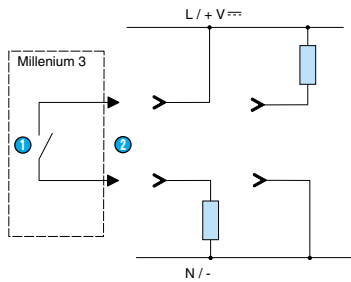
Extensions: XN06, XN05, XE10, XR06, XR10, XR14



1	Contact	-
2	Digital input	-

Relay outputs

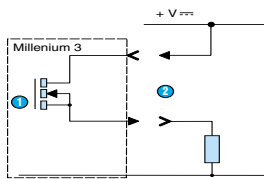
Extensions: XE10, XR06, XR10, XR14



1	Contact	-
2	Digital input	-

Solid state outputs

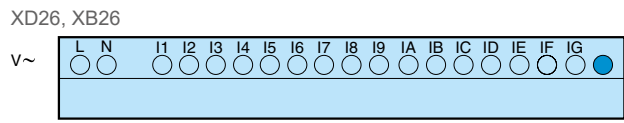
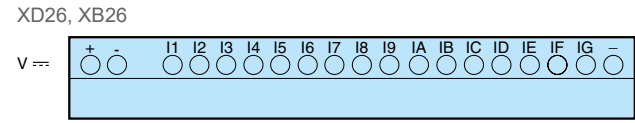
Extensions: XA04



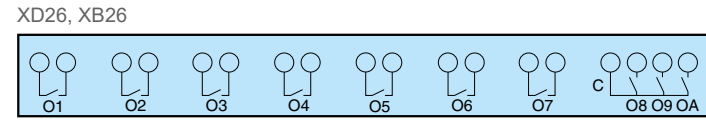
1	MOS transistor	-
2	Digital/PWM output	-

Input/output installations: Bases

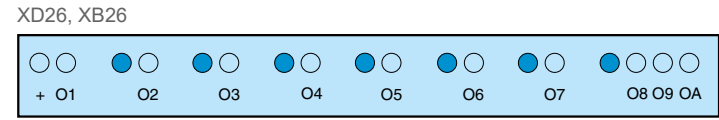
Inputs



Relay outputs



Solid state outputs



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