2026 Water circuit breakers -ENCLOSURE "M3" - 1 Water

- RESIDENTIAL MODELS (Apartments, houses, villas, etc.)
- COMMERCIAL/INDUSTRIAL MODELS (Offices, Warehouses, Buildings, Industry, etc.)

FEATURES

-LEAK MONITORING on 1 water network
Residential: Leak flow rate monitoring from 1 L/h (DN15), 2 L/h (DN20-25)
Commercial: Leak flow rate monitoring from 10 L/h (DN15-40), 25 L/h (DN50-80), 40 L/h (DN100)

• Connection of 1 water meter (DN15-DN100)
• Connection of 1 motorized valve (Option)
• Connection of 1 Timer (Option) for automatic network opening/closing at programmed times and days (52 programs / 7 days)

-BUZZER high-power integrated (adjustable duration)

-PIPE BURST DETECTION, rapid shut-off

-DAILY CONSUMPTION MONITORING
Shut-off on Consumption Alert (enable/disable)
Adjustable alert thresholds

-PULSE EMITTER MONITORING
Shut-off on Emitter Alert (enable/disable)
Adjustable parameters
-AUTOMATIC LEAK THRESHOLD ADJUSTMENT (adapts to building consumption)

CONNECTIONS

1 FIRE ALARM INPUT - opens the water network instantly in case of alarm.

1 REMOTE BUTTON INPUT ON/OFF
(Open / Close / Reset)

1 FLOOD SENSOR INPUT

1 TIMER INPUT (opens or closes the network at programmed times and days)

1 BYPASS INPUT (disables monitoring for 2 hours)

2 VALVE OUTPUTS (Open + Close)

1 SORTIE Contact sec Alert relay (NO or NC)

1 OUTPUT 24VDC Remote Siren/Indicator

OPTIONS: Bluetooth smartphone connection, etc.
- MODBUS RS 485 / MODBUS TPC/IP
- Remote 24Vdc 100dB siren, remote alert indicator
- Gateway (SMS transmission)
- Electronic clock (automatic open/close) Bluetooth KEY (time programming via smartphone)

COMPOSITION

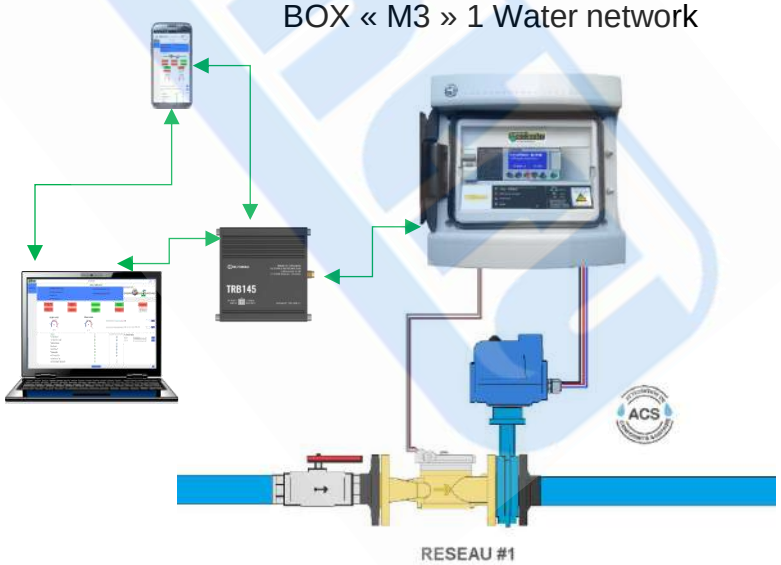
1 Polycarbonate enclosure
dimensions L215xH210xP105mm + watertight door

IP65 IK09 750° RoHS Sans Halogène

- Circuit breaker
- Custom 24Vdc PLC M3
- 230Vac/30VA 24Vdc Power supply + Buzzer
- Terminal block
- Water meter DN15 to DN100

EASY INSTALLATION

BOX « M3 » 1 Water network



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Technical specifications for water leak detectors

1 water network Residential-Commercial (Option: Modbus RS485)

M3 (1 Network) 2026

RESIDENTIAL	**VERSION RT9.44 / RT9.44 MODBUS**
COMMERCIAL	**VERSION CT9.44 / CT9.44 MODBUS**

② During AUTO-ADJUSTMENT, leak thresholds (max volume across different flow rate levels) are automatically set to the maximum observed volumes,
These thresholds are increased by 80%.
③ The burst flow rate is set manually according to the meter size (DN)

SPECIFICATIONS ① =Local setting and from BMS/BAS (with Modbus or Ethernet option)	M3 CT9.44 / RT9.44 MODBUS	M3 CT9.44 / RT9.44 ETHERNET
Polycarbonate enclosure 215x210x105mm + watertight door IP65	YES	YES
Circuit breaker (without Modbus Modbus, Ethernet)	NO	NO
LCD screen backlight 4 lines of 18 characters	YES	YES
Power consumption screen ON / screen OFF	1w / 0.3w	1w / 0.3w
Integrated buzzer (triggered on Alert) (adjustable duration, 10 min default)	YES	YES
Password 1 / COMMANDS access (changeable)	YES	YES
Password 2 / COMMANDS-SETTINGS access (changeable)	YES	YES
Backup on mains power failure (10-year data memory)	YES	YES
Leak flow rate monitoring from (L/h): Detection delay at activation (180 sec adjustable)	1 (dn15 - version RT9.43) 10 (dn15-40) 30 (dn50-80) 40 (dn100)	1 (dn15 - version RT9.43) 10 (dn15-40) 30 (dn50-80) 40 (dn100)
LEAK detected -> 1st Alert - SHUT-OFF (deactivatable)	YES	YES
Time before SHUT-OFF -> 2nd Alert	60 sec (adjustable)	60 sec (adjustable)
Pipe burst detection (rapid shut-off)	YES	YES
Flood detection (flood sensors as option)	YES	YES
AUTO-ADJUSTMENT COMMAND for leak thresholds (adjustable duration): ②	YES ①	YES ①
MANUAL COMMAND for burst flow rate: ③	YES	YES
TIMER: Automatic opening/closing of the network (option)	YES	YES
Network open/close command via Timer: External modular digital electronic TIMER (24h/7-day programs) 230V, 1 contact 16A, 56 program steps	YES (OPTION)	YES (OPTION)
ON/OFF COMMAND (open/close) (standard or gradual opening)	YES ①	YES ①
RESET COMMAND (open):	YES ①	YES ①
FORCED RUN COMMAND (2h)	YES ①	YES ①
Fault Acknowledgement (buzzer off)	YES	YES
Daily consumption monitoring:	YES	YES
-Manual setting of consumption alert threshold:	YES	YES
-Shut-off on Consumption Alert (on/off setting):	YES	YES
Pulse emitter monitoring (on/off setting):	YES	YES
-Max duration without pulses (96h, adjustable)	YES	YES
-Shut-off on Emitter Alert (on/off setting):	YES	YES
Shut-off device selection: (0=no device, 1=slow opening, 2=standard opening)	YES	YES
Configurable dry contact alert relay output (alert selection) (NO or NC)	YES	YES

SPECIFICATIONS ❶=Local visualization and visualization from BMS (with Modbus or Ethernet option)	M3 CT9.44 / RT9.44 MODBUS	M3 CT9.4 / RT9.44 ETHERNET
Total Daily Consumption (m3 and LITRES)	YES	YES
Total Annual Consumption (m3) (M3)	YES	YES
Meter INDEX (Synchronization adjustable via PLC)	YES ❶	YES ❶
Minimum recorded flow rate for the day (L/h) (from midnight):	YES ❶	YES ❶
Flow rate (L/h):	YES ❶	YES ❶
Recorded leak flow rate (L/h):	YES ❶	YES ❶
Log of the last 8 recorded leaks (leak flow rate)	YES	YES
LEAK Alert on main network:	YES ❶	YES ❶
Pipe burst Alert:	YES ❶	YES ❶
CONSUMPTION Alert:	YES ❶	YES ❶
General network SHUT-OFF / / (Reset COMMAND from BMS)	YES ❶	YES ❶
EMITTER Alert:	YES ❶	YES ❶
FIRE ALARM Alert:	YES ❶	YES ❶
FLOOD ALERT:	YES ❶	YES ❶
Auto-adjustment of leak thresholds (On/Off status) // (COMMAND from BMS) (Thresholds automatically adapt to the set pulse weight)	YES ❶	YES ❶
On/Off status (valve open/valve closed) / (COMMAND from BMS)	YES ❶	YES ❶
Forced Run (On/Off status):	YES ❶	YES ❶
TIMER (On/Off status): (automatic network open/close via Timer, as option)	YES ❶	YES ❶
Shut-off on Consumption Alert (on/off status):	YES ❶	YES ❶
Shut-off on Emitter Alert (on/off status):	YES ❶	YES ❶
Pulse emitter monitoring (on/off status):	YES ❶	YES ❶
Date, Time (adjustable)	YES ❶	YES ❶
Stop monitoring ON/OFF (via Timer or push button, as option)	YES ❶	YES ❶
Software version	YES	YES
Program error / Error number	YES	YES
INPUTS / OUTPUTS	**M3 CT9.44 / RT9.44 MODBUS**	**M3 CT9.44 / RT9.44 ETHERNET**
Main Emitter Input (E1)	YES	YES
Temporary monitoring stop input (2h) (via clock or push button as options)	YES -OPTION	YES -OPTION
Flood sensor input (sensor as option)	YES -OPTION	YES -OPTION
Fire alarm input (loop break)	YES	YES
Timer input (Option, network opening and closing at programmed times)	YES -OPTION	YES -OPTION
Input for open/close/reset via remote push button or radio remote control	YES -OPTION	YES -OPTION
Open/close outputs (motorized valve / solenoid valve)	YES	YES
24Vdc output (max 5W) External siren, indicator, GSM transmitter	YES	YES
Dry contact output (alert relay) (NO or NC)	YES	YES
MODBUS RS485 or TCP/IP	YES	YES
BLUETOOTH as option (control / configuration from smartphone)	YES	YES

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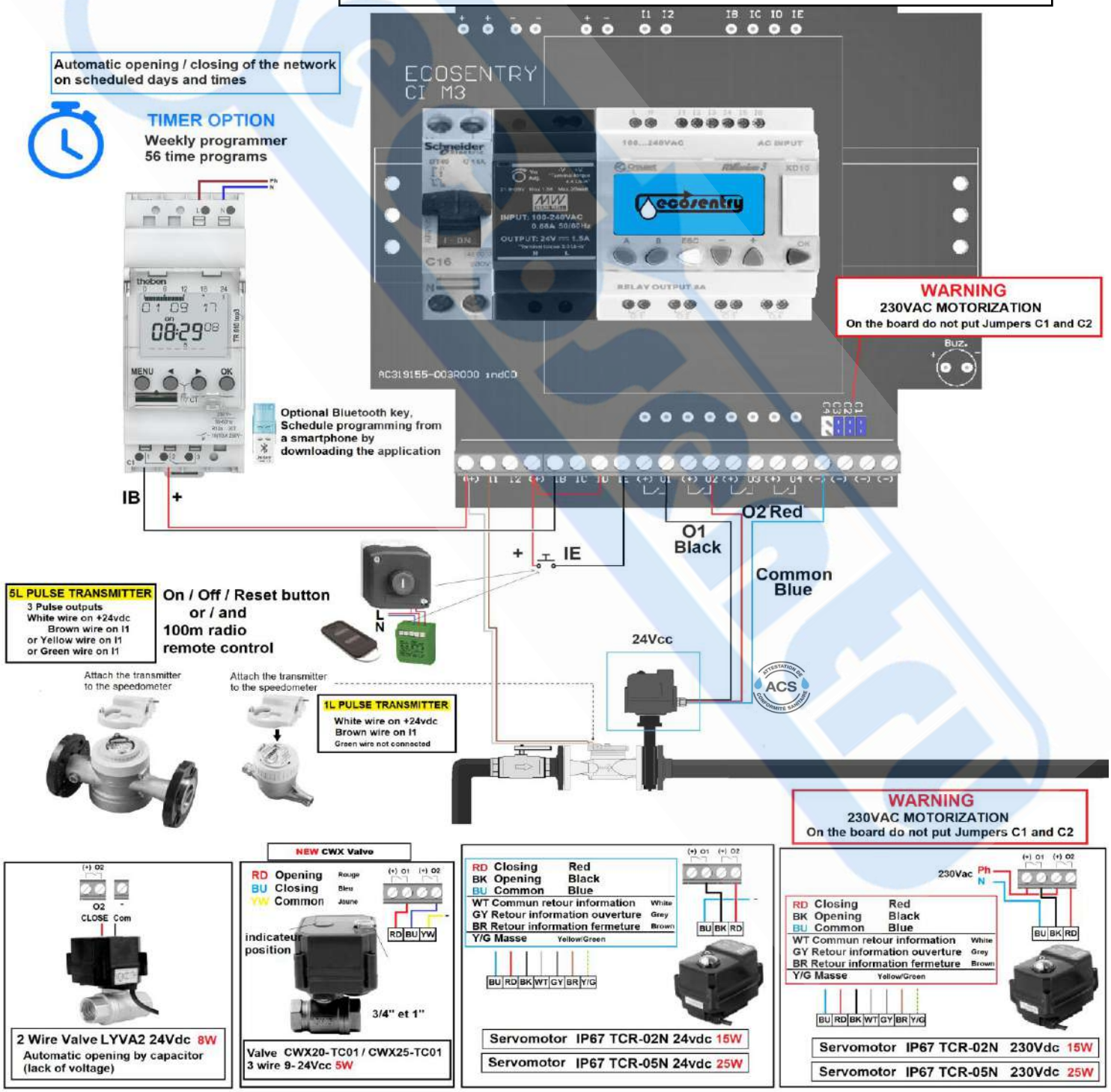
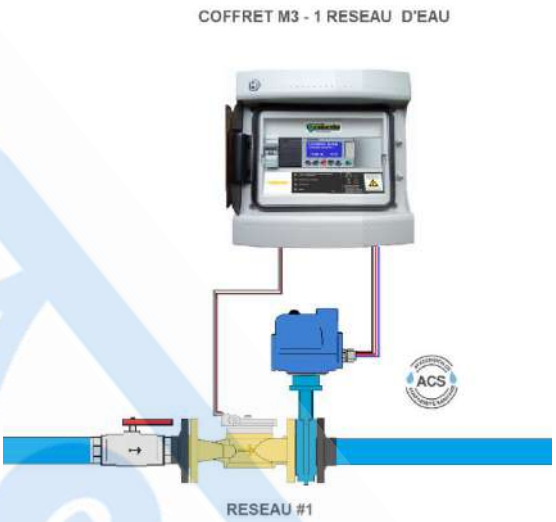
GATEWAY SUPERVISION	M3 CT9.44 / RT9.44 MODBUS	M3 CT9.44 / RT9.44 ETHERNET
With Gateway supervision (Modbus RS485)		
SMS ALERT sending	YES	-
Consumption / event archiving from BMS	YES	-
Display of network status	YES	-
Remote control of Commands (R1): On, Off, Reset, Leak threshold auto-adjustment, Forced Run	YES	-
Display of Alerts, Leak flow rates	YES	-

NOTE: Modbus versions do not have a protective circuit breaker





Crouzet Millennium M3 PLC

Certifications: CE, UL, CSA
Compliance with Low Voltage and EMC Directives: 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 1.1 or 88 970 1.2) + (88 970 250 or 88 970 270) + 88 970 241 class A (class B in metal enclosure)
Earthing: None
Degree of protection acc. IEC/EN 60529: IP40 front panel / IP20 terminal block
Overvoltage category 3 acc. IEC/EN 60664-1
Pollution level: 2 acc. IEC/EN 61131-2
Maximum operating altitude: Operation 2000 m / Transport 3048 m
Mechanical endurance - Vibration immunity: IEC/EN 60068-2-6, test Fc
Shock immunity: IEC/EN 60068-2-27, test Ea
Electrostatic discharge withstand - Electrostatic discharge immunity
IEC/EN 61000-4-2, level 3
HF interference withstand - Radiated field immunity IEC/EN 61000-4-3
Fast transient/burst immunity IEC/EN 61000-4-4, level 3
Surge immunity IEC/EN 61000-4-5
Common mode radio frequency IEC/EN 61000-4-6, level 3
Voltage dips and interruptions (a) IEC/EN 61000-4-11
Damped oscillatory wave immunity IEC/EN 61000-4-12
Conducted and radiated emissions Class B (*) acc. 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 metal enclosure)
Operating temperature - Millennium 3 Smart: -20 to +70°C (CB/XB dc: -30 to +70°C, +40°C unventilated) acc. IEC/EN 60068-2-1 and -2-2
Storage temperature - Millennium 3 Essential and extensions: -40 to +70°C acc. IEC/EN 60068-2-1 and -2-2
Storage temperature - Millennium 3 Smart: -40 to +80°C acc. IEC/EN 60068-2-1 and -2-2
Relative humidity: 95% max. (no condensation or dripping) acc. IEC/EN 60068-2-30
Mounting: Symmetrical DIN rail 35 x 7.5 mm and 35 x 15 mm, or panel (2 x Ø4 mm)
Screw terminal wiring capacity - Flexible wire with ferrule:
1 conductor: 0.25 to 2.5 mm² (AWG 24 to AWG 14) / 2 conductors: 0.25 to 0.75 mm² (AWG 24 to AWG 18)
Semi-rigid wire: 1 conductor: 0.2 to 2.5 mm² (AWG 25 to AWG 14)
Rigid wire: 1 conductor: 0.2 to 2.5 mm² (AWG 25 to AWG 14) / 2 conductors: 0.2 to 1.5 mm² (AWG 25 to AWG 16)
Tightening torque: 0.5 N.m (4.5 lb-in) (tighten with 3.5 mm diameter screwdriver)

Processing characteristics for Millennium 3 Smart XD products

Program size in FBD: 350 typical blocks
64 macros max.
256 blocks max. per macro
180 typical blocks
FBD memory size: 8 KB
Number of rows in Ladder: 120 rows
LCD display - Millennium XD: 4-line 18-character display
Programming method: Function blocks/SFC (Grafcet) or Ladder
Program memory: Flash EEPROM
Removable memory: EEPROM
Data memory: 368 bits / 200 words
Backup time on power failure - Program and settings in controller: 10 years
Program and settings in removable memory: 10 years
Data memory: 10 years
Cycle time: Function blocks 6 to 90 ms (20 ms typical)
Ladder: 20 ms typical
Response time Input acquisition time: 1 to 2 cycle times
Clock backup autonomy: 10 years (lithium battery) at 25°C
Clock drift: < 12 min/year (at 25°C) / 6 s/month (at 25°C with calibration)
Timer block accuracy: 1% ± 2 cycle times
Availability at power-up: < 1.2 s

Specifications for 24Vdc powered products

Nominal voltage: 24 VDC
Operating limits: -20%/+25%, i.e. 19.2 to 30 VDC
(ripple included)
Immunity to micro-cuts: ≤ 1 ms (repeated 20 times)
Maximum power consumption - XD10/XB10 with relay outputs: 4 W
Polarity reversal protection: Yes

Digital inputs (I1 to IA): 24 VDC

Input voltage: 24 VDC (-20%/+25%)
Input current: 3.2 mA @ 24 VDC
Input impedance: 7.4 kΩ
Turn-on voltage at logic state 1: >= 15 V c
Turn-on current at logic state 1: >= 2,2 mA
Release voltage at logic state 0: <= 5 Vcc
Release current at logic state 0: < 0,75 mA
Response time: 1 to 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: acc.
cycle time (Tc) and input response time (Tr): 1/((2×Tc)+Tr)
Sensor type Contact or PNP 3-wire
Compliance: IEC/EN 61131-2 Type 1
Input type: Resistive
Isolation between supply and inputs: None
Isolation between inputs: None
Polarity reversal protection Yes
Status indicator: On LCD screen

Analog or digital inputs (IB to IG) - 24 VDC

XD10: 4 inputs IB to IE
Used as analog in FBD only
Measurement range: (0 to 10 V) or (0 to supply voltage)
Input impedance: 12 kΩ
Input voltage: 30 VDC max.
LSB value: 29 mV
Input type: Common mode
Resolution: 10 bits at max input voltage
Conversion time: Controller cycle time
Accuracy at 25°C: ±5%
Accuracy at 55°C: ±6.2%
Repeatability at 55°C ± 2 %
Analog channel and supply isolation: None
Cable length: 10 m maximum, shielded cable (non-isolated sensor)
Polarity reversal protection Yes
Potentiometer control: 2.2 kΩ/0.5 W (recommended) / 10 kΩ max.

Inputs used as digital

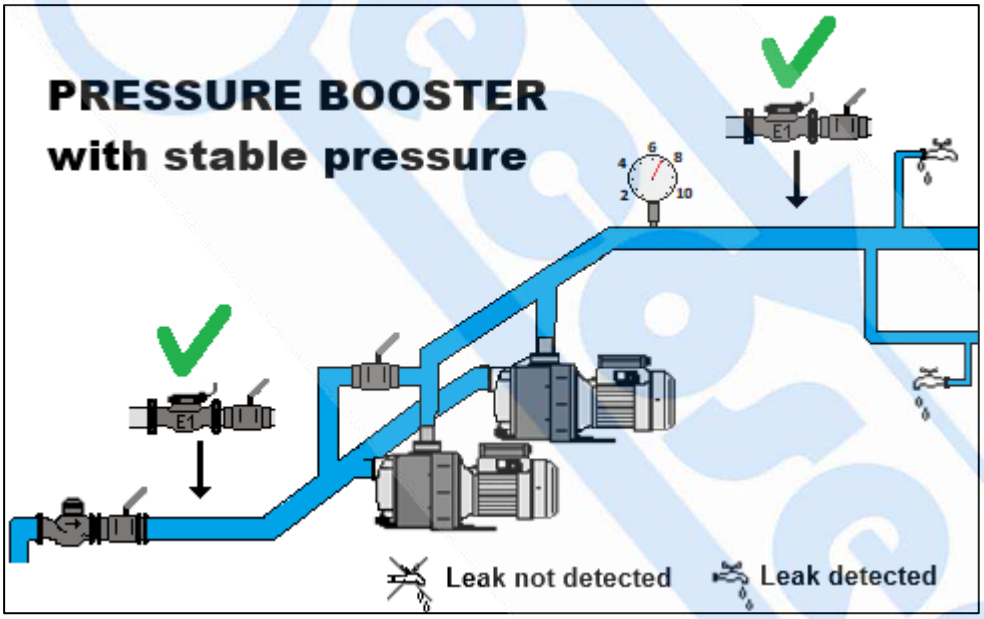
Input voltage: 24 VDC (-20%/+25%)
Input current: 1.6 mA @ 19.2 VDC / 2.0 mA @ 24.0 VDC / 2.5 mA @ 30.0 VDC
Input impedance: 12 kΩ
Turn-on voltage at logic state 1: >= 15 Vcc
Turn-on current at logic state 1: >= 1,2 mA
Release voltage at logic state 0: <= 5 Vcc
Release current at logic state 0: <= 0,5 mA
Response time: 1 to 2 cycle times
Maximum counting frequency in FBD: acc. cycle time (Tc) and input response time (Tr): 1/((2×Tc)+Tr)
Sensor type Contact or PNP 3-wire
Compliance: IEC/EN 61131-2 Type 1
Input type: Resistive
Isolation between supply and inputs: None
Isolation between inputs: None
Polarity reversal protection Yes
Status indicator: On LCD screen

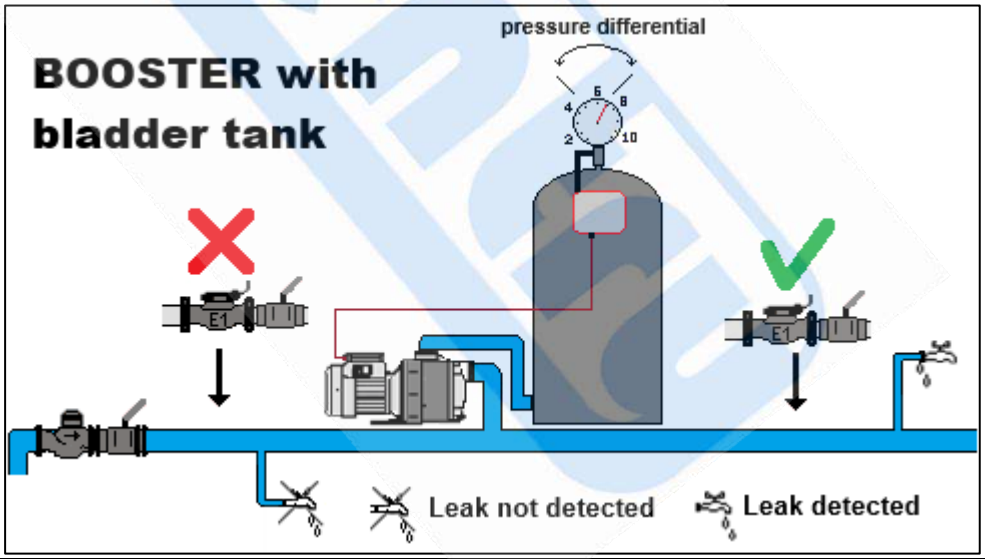
Relay output specifications common to the entire range

Maximum switching voltage: 5 to 30 VDC
Maximum common output current: 12 A (10 A UL) for O8, O9, OA
Switching current - XD10: 4 relays 8 A
Electrical durability for 500,000 operations / Utilization category DC-12: 24 V, 1.5 A
Utilization category DC-13: 24 V (L/R = 10 ms), 0.6 A
Minimum switching current: 10 mA (at minimum voltage of 12 V)
Low-level contact reliability: 12 V, 10 mA
Maximum operating rate: No-load 10 Hz / At rated current: 0.1 Hz
Mechanical lifetime: 10,000,000 operating cycles
Rated impulse withstand voltage: 4 kV acc. IEC/EN 60947-1 and IEC/EN 60664-1
Response time (outside cycle): Pick-up 10 ms / Drop-out 5 ms
Built-in protections: Against short-circuit: None / Against overvoltages and overloads: None
Status indicator: On LCD screen

Millennium 3 Smart

Blue backlit screen, white text
Power supply versions: 24 Vcc, 12 Vcc, 100 -> 240 Vac, 24 Vac
Operating temperature
Operating temperature: -20 to +70°C (+40°C in unventilated enclosure) acc. IEC/EN 60068-2-1 and -2-2
-Storage temperature
Storage temperature: -40 to +80°C acc. IEC/EN 60068-2-1 and -2-2
Additional extensions: - XN07 extension for inter-Millennium 3 communication (up to 7 Millenniums)
- XA03 extension (3 analog Pt100 temperature inputs)
Additional probes: Direct connection with NTC temperature probes
Additional functions: Further application functions including self-adaptive PID controller, Astronomical clock (Dusk function), Transfer function y=f(x), 2-axis solar tracking, ...
Number of function blocks in the library: 125





WARNING

Ef booster pumps with expansion vessels are installed on the network, do NOT install main emitter E1 upstream of them.
The high/low pressure differential of the booster pumps should be set as narrow as possible to avoid a leak flow rate drop at low pressure.

Leaks occurring before main emitter E1 **E1** cannot be detected.

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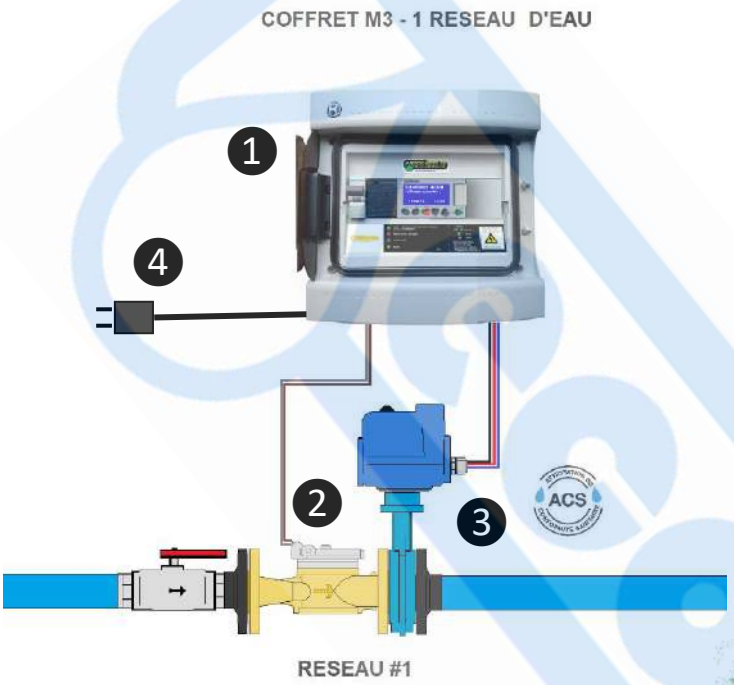
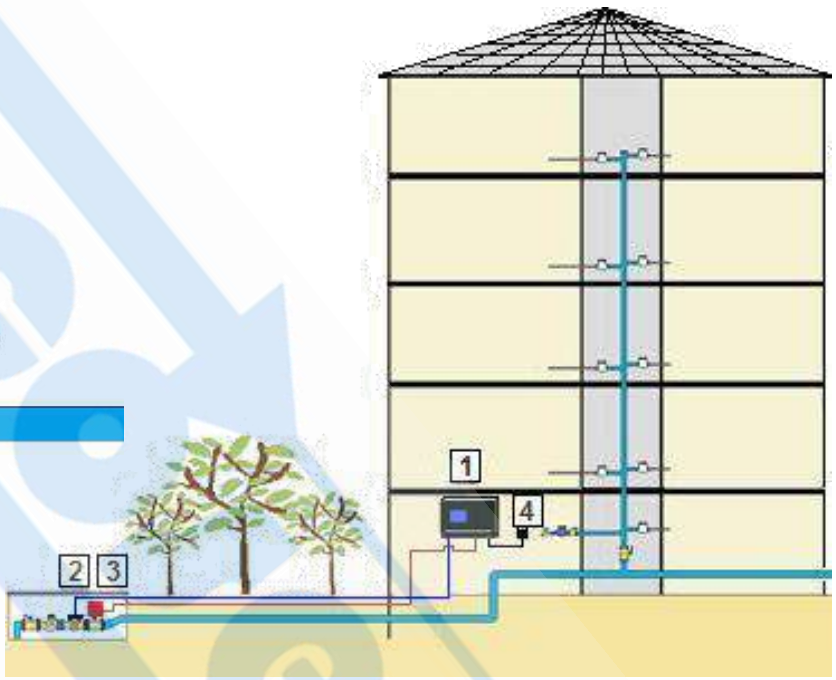


EASY INSTALLATION



METER SIZE	2 Meter	3 Shut-off
Dn 15	A	J E
Dn 20	B	J E
Dn 25	C	F
Dn 32	C	F
Dn 40	C	F
Dn 50 BRIDE	D	G
Dn 65 BRIDE	D	G
Dn 80 BRIDE	D	G
Dn 100 BRIDE	D	G

Gradual opening of the programmable valve
(except LYVA2)

A		J		LYVA2	2-wire 8W
				CWX-TC01	3-wire 5W
B		E		TCR02N IP67	7-wire 15W Regulated 3W resistance
C		F		TCR05N IP67	7-wire 25W Regulated 3W resistance
D		G		TCR05N IP67	7-wire 25W Regulated 3W resistance