BOX ''M3'' - 1 Water network

Water circuit breakers

2025

RESIDENTIAL MODELS (Apartments, villas, etc...)
TERTIARY MODELS (Offices, Warehouses, Buildings, Industry, etc...)

LEAK MONITORING on 1 water network
Residential: Leak flow monitoring from 1 L/h (DN15), 2 L/h (DN20-25)
Tertiary: Leak flow 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 (Optional)
Connection of 1 timer (Optional) for automatic opening and closing of the network at programmed times and days (52 programs / 7 days)

Integrated high-power BUZZER (adjustable duration)

Pipe burst detection, rapid shutoffs

DAILY CONSUMPTION MONITORING
Shutoff upon consumption alert
(Enabled/Disabled)Adjustable alert thresholds

PULSE TRANSMITTER MONITORING
Transmitter alert cutoff (enabled/disabled)
Adjustable parameters

Self-adjustment of leak thresholds (adapts to building consumption)

SELF-ADJUSTING LEAK THRESHOLDS for the network

1 FIRE ALARM INPUT allows the second water network to be opened instantly in the event of an alert being triggered.
1 REMOTE ON/OFF BUTTON INPUT
(Open/Close/Reset)

1 Flood Detector INPUT1 TIMER INPUT (allows the network to be opened or closed on programmed days and times)

1 UNSUPERVISED INPUT (unsupervised for a period of time determined by the programmer)

2 VALVE OUTPUTS (Open/Close)

1 Dry Contact OUTPUT for alert reporting (NO or NC)

1 24VDC OUTPUT for remote siren/indicator light

OPTIONS: Bluetooth smartphone connection, etc
- MODBUS RS 485 / MODBUS TPC/IP
-Remote 24VDC 100dB siren, remote warning light
-Telephone transmitter
-Electronic clock (automatic opening/closing)
-Bluetooth KEY (time programming from smartphone)

COMPOSITION

1 Polycarbonate BOX
Dimensions: L215 x H210 x D105 mm + waterproof Door

IP65 IK09 750° RoHS Sans Halogène

-Circuit breaker
-PLC Custom 24Vdc M3
-Power supply 230Vac/30VA 24Vdc + buzzer
-Connection terminal bloc
-Water meter DN15 to DN100

INSTALLATION SIMPLE

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Technical data sheet WATER LEAK DETECTORS

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

RESIDENTIAL	**VERSION RT9.42/ RT9.42 MODBUS**
TERTIARY	**VERSION CT9.42 / CT9.42 MODBUS**

② During the SELF-ADJUSTMENT period, the leak thresholds (maximum volume at the various flow rate levels) are automatically set to the maximum volumes observed; these thresholds are increased by 80%.

③ The break flow rate is manually adjusted based on the size (Dn) of the water meter.

FEATURES **1 =Local and BMS/GTS control (with Modbus or Ethernet option)**	**M3 CT9.42 / RT9.42 MODBUS**	**M3 CT9.42 / RT9.42 ETHERNET**
Polycarbonate box dimensions 215x210x105mm+ waterproof IP65 door	YES	YES
Protective circuit breaker (without Modbus, Ethernet option)	NO	NO
4-line, 18-character LCD screen lighting	YES	YES
Screen on consumption / screen off consumption	1w / 0.3w	1w / 0.3w
Integrated buzzer (triggered on Alert) (adjustable duration 10 min by default)	YES	YES
Password 1/ ORDERS access (editable)	YES	YES
Password 2/ access COMMANDS-SETTINGS (editable)	YES	YES
Sauvegarde en cas de coupure secteur (Mémoire données 10ans)	YES	YES
Leak flow monitoring from (L/h): Detection delay when monitoring is activated (180 sec adjustable)	1 (dn15-version RT9.42) 10 (dn15-40) 25 (dn50-80) 40 (dn100)	1 (dn15-version RT9.42) 10 (dn15-40) 25 (dn50-80) 40 (dn100)
LEAK detected ->1st Alert	YES	YES
Time before CUT-OFF -> 2nd Alert	60sec (Adjustable)	60sec (Adjustable)
Minimum leak detection flow rate (10L/h - default, adjustable) (1L/h version RT9.42)	YES	YES
Pipeline rupture detection (quick cut-off)	YES	YES
Flood detection (Optional flood sensors)	YES	YES
SELF-ADJUSTMENT command for leak thresholds (adjustable duration): ②	YES 1	YES 1
MANUAL adjustment of the Break flow rate: ③	YES	YES
TIMER: Automatic opening/closing of the network (option)	YES	YES
Network opening/closing control via timer: External modular digital electronic timer (24/7 programs) 230V voltage. 1 x 16A contact. 56 program steps	YES (OPTION)	YES (OPTION)
ON/OFF control (opening/closing) (Standard or progressive opening)	YES 1	YES 1
REARM command (opening):	YES 1	YES 1
FORCED ON command (2h)	YES 1	YES 1
Default Acknowledgement (ringer off)	YES	YES
Daily consumption monitoring:	YES	YES
-Manual adjustment of the consumption alert threshold:	YES	YES
-Cut off on Consumption alert (on/off setting):	YES	YES
Pulse transmitter monitoring (on/off setting):	YES	YES
-Maximum duration without pulses (96h, adjustable)	YES	YES
-Cut off on Transmitter Alert (on/off setting):	YES	YES
Selection of the cut-off device: (0=no device, 1=Slow opening, 2=Standard opening)	YES	YES
Dry contact output for reporting alerts (choice of alerts) configurable (NO or NC)	YES	YES

FEATURES ❶ =Local and BMS/GTS control (with Modbus or Ethernet option)	M3 CT9.42 /RT9.42 MODBUS	M3 CT9.42 / RT9.42 ETHERNET
Cumulative General Daily Consumption (M3 and LITERS)	YES	YES
Cumulative General Consumption for the Year (M3)	YES	YES
INDEX counter (Synchronization adjustable on PLC)	YES❶	YES ❶
Minimum flow rate recorded during the day (L/h) (since 0:00 a.m.):	YES❶	YES ❶
Flow rate (L/h):	YES❶	YES ❶
Recorded leak rate (L/h):	YES❶	YES ❶
Log of the last 8 recorded leaks (Leak rate)	YES	YES
LEAK alert on main network:	YES❶	YES ❶
Pipeline rupture alert:	YES❶	YES ❶
CONSUMPTION alert:	YES❶	YES ❶
General network cut-off / / (Reset command from BMS)	YES❶	YES ❶
TRANSMITTER Alert:	YES❶	YES ❶
FIRE Alert:	YES❶	YES ❶
FLOOD Alert	YES❶	YES ❶
Self-adjusting leak thresholds (On/Off status) / / (COMMAND from BMS)(The thresholds automatically adapt to the set pulse weight)	YES❶	YES ❶
On or Off State (valve open/valve closed) / (CONTROL from BMS)	YES❶	YES ❶
Forced Operation (On/Off State):	YES❶	YES ❶
TIMER (On/Off State): (Optional automatic network opening/closing timer)	YES❶	YES ❶
Cut-off on Consumption Alert (on/off status):	YES❶	YES ❶
Cut-off on Transmitter Alert (On/Off State):	YES❶	YES ❶
Pulse transmitter monitoring (on/off state):	YES❶	YES ❶
Date, Time (adjustable)	YES❶	YES ❶
Stop monitoring ON/OFF (stop monitoring by Timer or optional BP)	YES❶	YES ❶
Soft version of the program	YES	YES
Program Error / Error No.	YES	YES
INPUTS / OUTPUTS	**M3 CT9.42 / RT9.42 MODBUS**	**M3 CT9.42 /RT9.42 ETHERNET**
Main Transmitter Input (E1)	YES	YES
Temporary monitoring stop input (2hours) (clock or switch optional)	YES -OPTION	YES -OPTION
Flood Sensor Input (optional sensor)	YES -OPTION	YES -OPTION
Fire Alarm Input (Loop Break)	YES	YES
Timer Input (Option, Opening and Closing the network at scheduled times)	YES -OPTION	YES -OPTION
Input for opening/closing/resetting by remote BP or radio remote control	YES -OPTION	YES -OPTION
Opening/closing outputs (valve/solenoid valve)	YES	YES
24VDC output (max 5W) Outdoor siren, indicator light, GSM transmitter	YES	YES
Dry contact output (alert report) (NO or NC)	YES	YES
MODBUS RS485 or TPC/IP	YES	YES
BLUETOOTH optional (control/configuration from smartphone)	YES	YES

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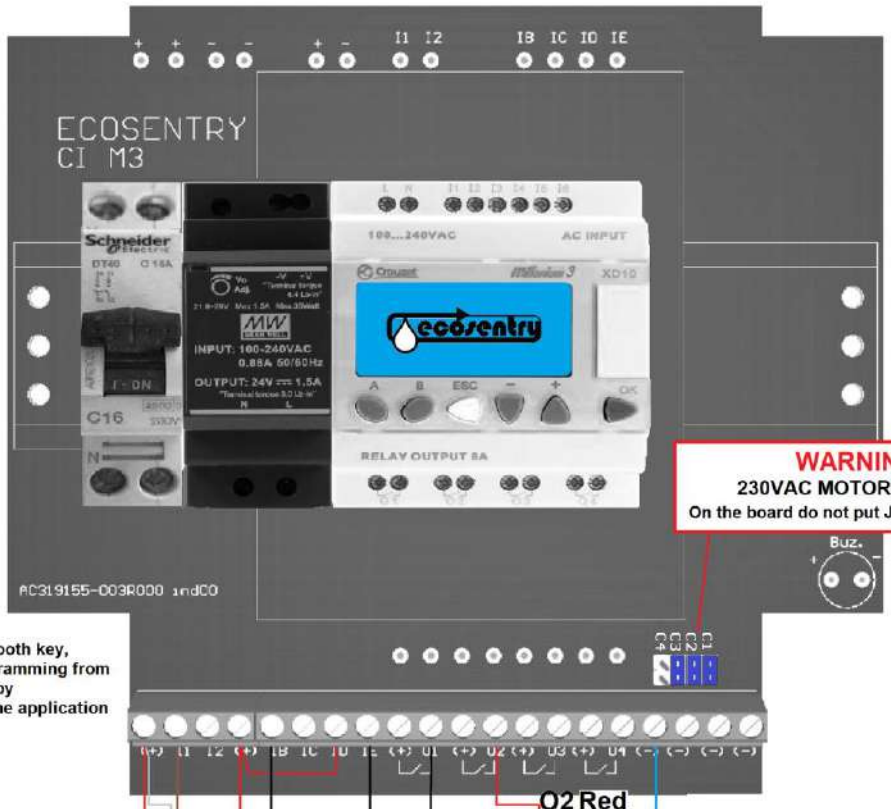
NOTE: Modbus versions do not have a protective circuit breaker

Automatic opening / closing of the network on scheduled days and times

TIMER OPTION
Weekly programmer
56 time programs

Optional Bluetooth key, Schedule programming from a smartphone by downloading the application



WARNING
230VAC MOTORIZATION
On the board do not put Jumpers C1 and C2

IB
+
+ IE
O2 Red
O1 Black
Common Blue
24Vcc

5L PULSE TRANSMITTER
3 Pulse outputs
White wire on +24vdc
Brown wire on I1
or Yellow wire on I1
or Green wire on I1

On / Off / Reset button or / and 100m radio remote control

Attach the transmitter to the speedometer

Attach the transmitter to the speedometer

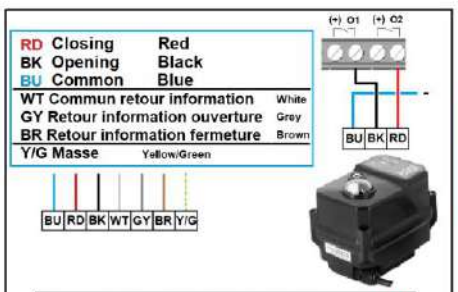
1L PULSE TRANSMITTER
White wire on +24vdc
Brown wire on I1
Green wire not connected

WARNING
230VAC MOTORIZATION
On the board do not put Jumpers C1 and C2

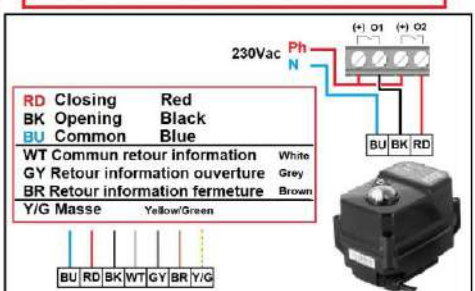
2 Wire Valve LYVA2 24Vdc 8W
Automatic opening by capacitor (lack of voltage)

NEW CWX Valve

Valve CWX20-TC01 / CWX25-TC01
3 wire 9-24Vcc 5W



Servomotor IP67 TCR-02N 24vdc 15W
Servomotor IP67 TCR-05N 24vdc 25W



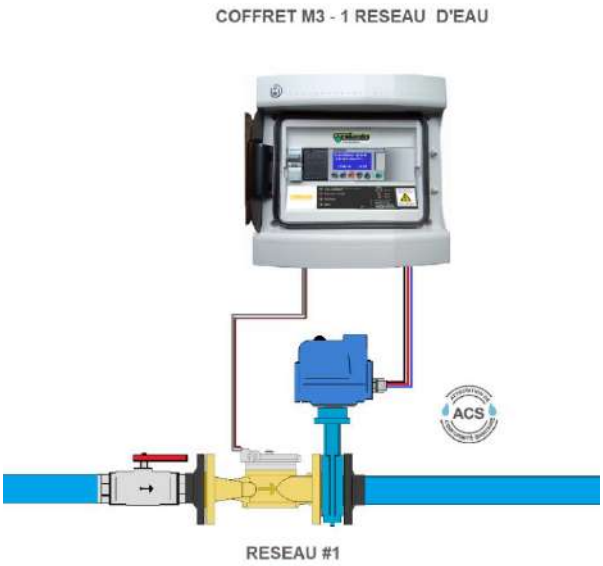
Servomotor IP67 TCR-02N 230Vdc 15W
Servomotor IP67 TCR-05N 230Vdc 25W

Water leak detectors meeting the requirements of the **HQE and BREEAM labels**

Translucent door detection box
210x215x105mm IP65IK09

IP65 IK09 750° RoHS Sans Halogène

Crouzet Millénium M3 Custom 24VDC PLC
MW power supply 230VAC/24VDC 30W
OPTIONS: Crouzet Modbus XN06 RS485 / XN05 TPC/IP



Crouzet Millennium M3 PLC

CE, UL, CSA Certifications

Compliance with standards (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)

Grounding: None

Degree of protection According to IEC/EN 60529: IP40 on front panel / IP20 on terminal block

Overvoltage category 3 according to IEC/EN 60664-1

Pollution Degree: 2 according to IEC/EN 61131-2

Maximum operating altitude For operation: 2000 m For transport: 3048 m

Mechanical resistance Vibration immunity IEC/EN 60068-2-6**,**

test FcShock immunity IEC/EN 60068-2-27,

test Electrostatic discharge resistance Electrostatic discharge immunity IEC/EN 61000-4-2**,**
level 3

HF interference resistance Radiated electrostatic field immunity IEC/EN 61000-43
Fast transient/burst immunity IEC/EN 61000-4-4, level 3
Surge immunity IEC/EN 61000-4-5Radio frequency common mode IEC/EN 61000-4-6, Level 3
Voltage dips and interruptions (a) IEC/EN 61000-4-11
Immunity to damped oscillatory waves IEC/EN 61000-4-12

Conducted and radiated emissions Class B (*) according to 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 Box)

Operating temperature Millenium 3 Smart -20 -> +70 °C except CB, XB in DC: -30 -> +70 °C (+ 40 °C in non-ventilated cabinet) according to IEC/EN 60068-2-1 and IEC/EN 60068-2-2Storage

temperature Millenium 3 Essential and extensions -40 ->+70 °C according to IEC/EN 60068-2-1 and IEC/EN 60068-2-2

Storage temperature Millenium 3 Smart -40 ->+80 °C according to IEC/EN 60068-2-1 and IEC/EN 60068-2-2

Relative humidity 95% max. (without condensation or dripping) according to 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)

Connection capacity on screw terminal Flexible wire with ferrule =
1 conductor: 0.25 to 2.5 mm² (AWG 24 -> AWG 14) 2 conductors 0.25 to 0.75 mm² (AWG 24 -> AWG 18)Semi-rigid wire = 1 conductor: 0.2 to 2.5 mm² (AWG 25 -> AWG 14)Rigid wire = 1 conductor: 0.2 to 2.5 mm² (AWG 25 -> AWG 14) / 2 conductors 0.2 to 1.5 mm² (AWG 25 -> AWG 16)Tightening torque = 0.5 N.m (4.5 lb-in) (Tightening with a 3.5 mm diameter screwdriver)

Processing Features for Millenium 3 Smart XD Products

FBD program size: 350 typical blocks

64 macros max.

256 blocks max. per macro

180 typical blocks

Memory size in FBD 8 K

Number of lines in Ladder 120 lines

LCD display Millenium XD: 4-line display with 18 characters

Programming method Function blocks/SFC (Grafcet) or LadderProgram

memory Flash EEPROM

Removable memory EEPROM

Data memory 368 bits/200 words

Backup time in case of 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 -> 90 ms (20 ms typical)

Ladder: 20 ms typical

Response time Input acquisition time: 1 to 2 cycle times

Clock autonomy 10 years (lithium battery) at 25 °C

Drift Clock Drift < 12 min/year (at 25°C) / 6 s/month (at 25°C and calibration)

Timer block accuracy 1% ± 2 cycle

timePower-up availability < 1.2 s

Characteristics of products powered by 24VDC direct voltage

Nominal voltage: 24 Vdc
Operating limits: -20%/+25%, i.e., 19.2 Vdc -> 30 Vdc(
Ripple included)
Micro-cut immunity: <= 1 ms (repeated 20 times)
Maximum power consumption: XD10-XB10 with relay outputs: 4 W
Reverse polarity protection: Yes IH at

TOR inputs (I1 to IA)

Input voltage 24 V DC (-20%/+25%)
Input current 3.2 mA @ 24 V DC
Input impedance 7.4 kOhm
Logic 1-state voltage >= 15 V DC
Logic 1-state current >= 2.2 mA
Logic 0-state dropout voltage <= 5 V DC
Logic 0-state dropout current < 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: depending oncycle time (Tc) and input response time (Tr): 1 / ((2 x Tc)+ Tr)
Sensor Type: Contact or 3-wire PNP
Conformity: IEC/EN 61131-2 Type 1
Input Type: Resistive
Isolation between power supply and inputs: None
Isolation between inputs: None
Reverse polarity protection: Yes
Status indicator: On LCD screen for XD

Analog or digital inputs (IB to IG)

XD10 4 inputs from IB -> IE
Inputs used in analog in FBD only
Measurement range (0 -> 10 V) or (0 -> V power supply)
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 power supply isolation None
Cable length 10 m maximum, with shielded cable (sensor not isolated)
Reverse polarity protection Yes
Potentiometer control 2.2 kΩ/0.5 W (Recommended) / 10 kΩ max.

Inputs used in TOR

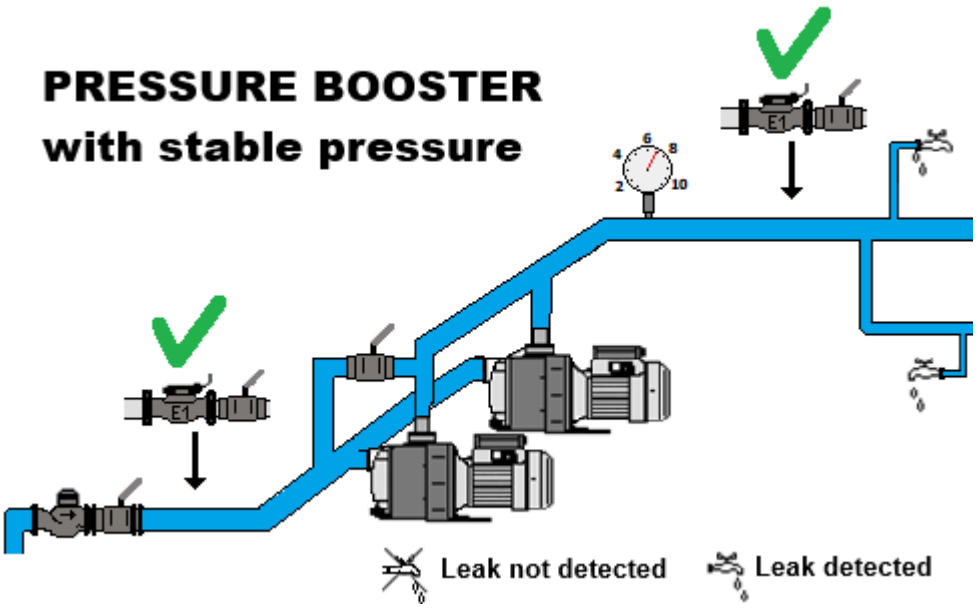
Input voltage 24 VDC (-20%/+25%)
Input current 1.6 mA @ 19.2 VDC / 2.0 mA @ 24.0 VDC / 2.5 mA @ 30.0 VDC
Input impedance 12 kΩ
Logic 1-state voltage >= 15 VDC
Logic 1-state current >= 1.2 mA
Logic 0-state voltage <= 5 VDC
Logic 0-state current <= 0.5 mA
Response time 1 -> 2 cycle times
Maximum FBD counting frequency According to cycle time (Tc) and input response time (Tr): 1 / ((2 x Tc) + Tr)
Sensor type Contact or 3-wire PNP
Compliance IEC/EN 61131-2 TYPE 1
Input Type Resistive
Resistive Isolation between power supply and inputs None
Isolation between inputs NoneReverse polarity protection Yes
Status indicator On LCD screen for XD

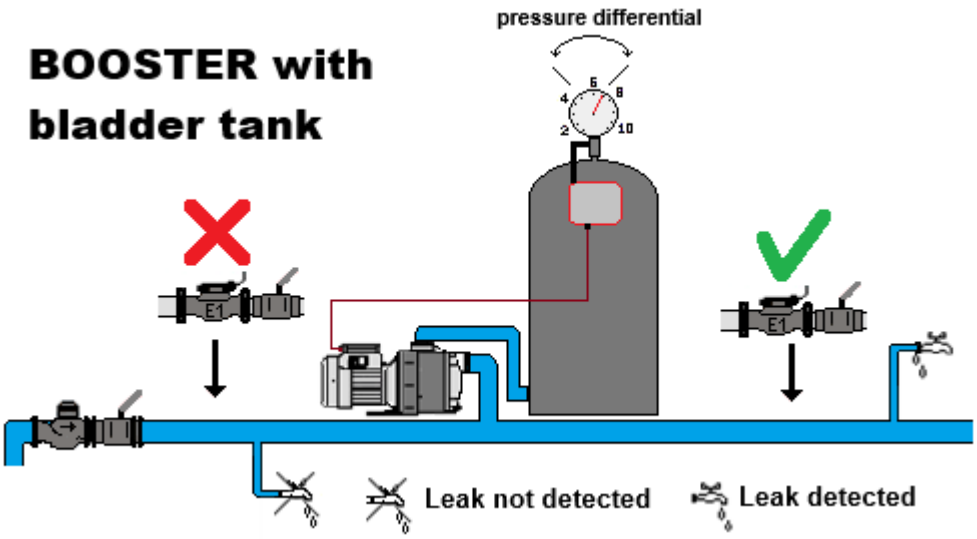
Relay output characteristics common to the entire range

Maximum switching voltage 5 -> 30 Vdc
Maximum output common current 12 A (10 A UL) for O8, O9, OAXD10
switching current: 4 relays 8 A
Electrical durability for 500,000 operations DC-12 utilization category: 24 V, 1.5 A
DC-13 utilization category: 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 frequency No-load: 10 Hz / At operating current: 0.1 Hz
Mechanical life 10,000,000 (operation cycles)
Rated impulse withstand voltage According to IEC/EN 60947-1 and IEC/EN 60664-1: 4 kV
Off-cycle response time: 10 ms on / 5 ms off
Built-in protection: Against short circuits: None / Against overvoltages and overloads: None
Status indicator: On LCD screen for XD

Millenium 3 Smart

Blue backlit display, white text
Power supply versions: 24 Vdc, 12 Vdc,
100 -> 240 Vac, 24 Va**c**
Operating temperature: -20 -> +70 °C (+40 °C in unventilated cabinet) according to IEC/EN 60068-2-1 and IEC/EN 60068-2-2-
Storage temperature: -40 -> +80 °C according to IEC/EN 60068-2-1 and IEC/EN 60068-2-2
More extensions: XN07 extension for inter-Millenium 3 communication (up to 7 Milleniums)- XA03 extension (3 Pt100 analog temperature inputs)
More sensors: Direct connection with NTC temperature sensorsMore functions: Additional application functions including self-adaptive PID controller, clock Astronomical (Twilight Function), Transfer Function y=f(x), 2-axis Solar Tracking, etc.
Number of function blocks in the library: 125





CAUTION

If suppressors with a bladder tank are installed in the network, do not install the main transmitter E1 upstream of them.
The high and low pressure differential adjustment of the suppressors must be as short as possible to avoid a drop in leak flow at low pressure.
Leaks occurring before the main transmitter E1 cannot be detected.

Water savings

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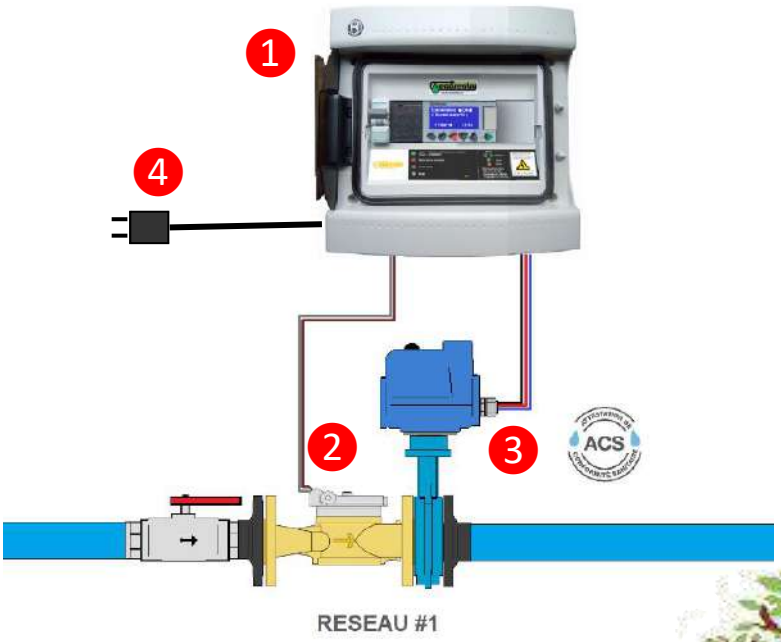
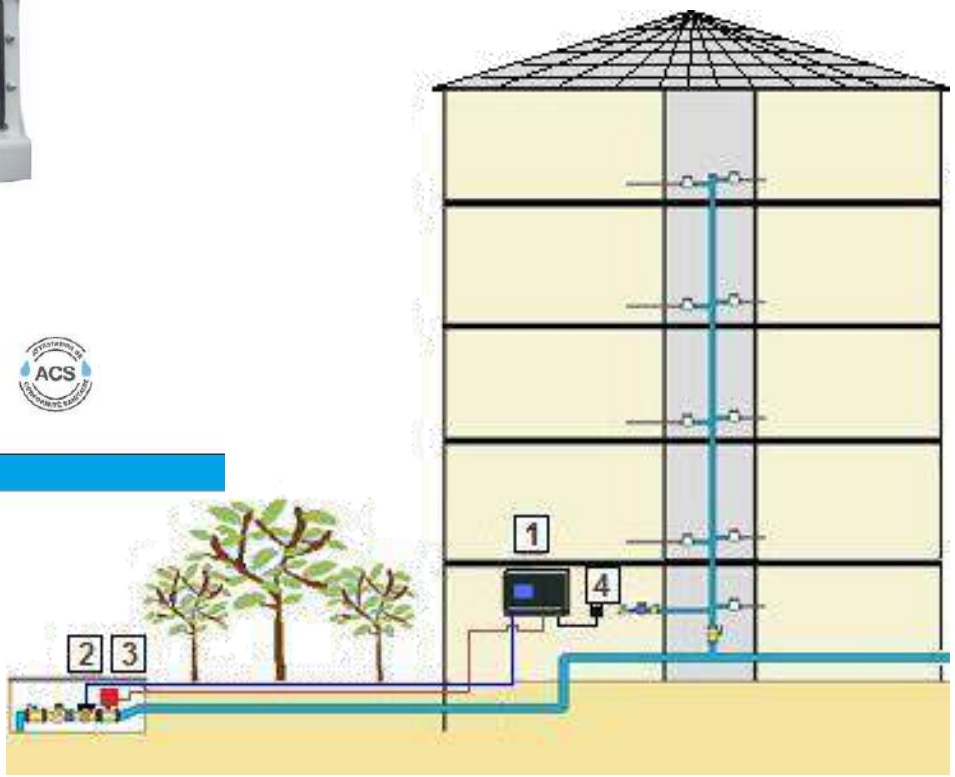
COFFRET M3 - 1 RESEAU D'EAU



INSTALLATION SIMPLE



Water meter size	2 Water meter	3 Cutoff
Dn 15	A	J E
Dn 20	B	J E
Dn 25	C	F
Dn 32	C	F
Dn 40	C	F
Dn 50 flanges	D	G
Dn 65 flanges	D	G
Dn 80 flanges	D	G
Dn 100 flanges	D	G

Progressive opening of the programmable valve
(except LYVA2)

A		J		LYVA2	2wires 8w
				**CWX-TC01**	3wires 5w
B		E		TCR02N IP67	7wires 15w Résistance 3w régulée
C		F		TCR05N IP67	7 wires 25w Résistance 3w régulée
D		G		TCR05N IP67	7wires 25w Résistance 3w régulée