FEATURES

- Power and energy estimation: up to 3 circuits

- Water consumption estimation: up to 4 channels

- Estimation of heat consumption: up to 2 energy modules

- 3 registers for data storage

- Possibility of synchronizing to a KNX system clock

- 5 analog/digital inputs

- 10 logic functions

- Total data saving on KNX bus failure

- Integrated KNX BCU (TP1-256)

- Dimensions 67 x 90 x 79 mm (4.5 DIN units)

- DIN rail mounting according to IEC 60715 TH35, with fixing clamp

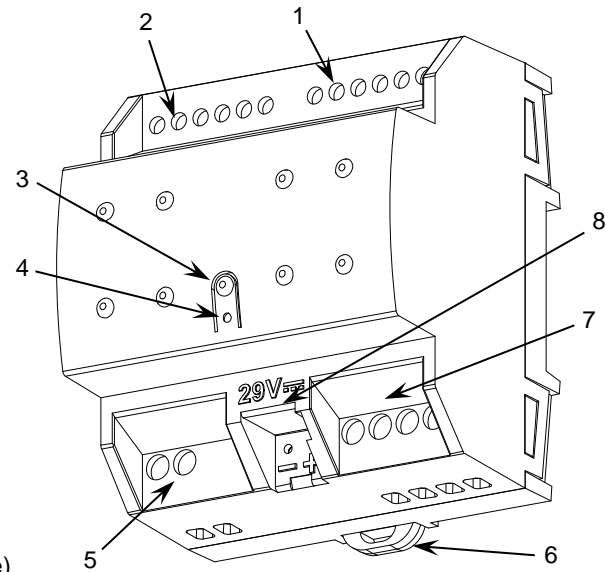- Conformity with the CE, UKCA, RCM directives (marks on the right side)

Figure 1: KEM

1. Analog/digital inputs	2. Current transformer connections	3. Programming button	4. Programming LED
5. Flow sensor power output	6. Fixing clamp	7. Flow meter sensor inputs	8. KNX connector

Programming button: short press to set programming mode. If this button is held while plugging the device into the KNX bus, it enters the safe mode.

Programming LED: programming mode indicator (red). When the device enters the safe mode, it blinks (red) every half second. During the start-up (reset or after KNX bus failure) and if the device is not in safe mode, it emits a red flash.

GENERAL SPECIFICATIONS

CONCEPT			DESCRIPTION	
Type of device			Electric operation control device	
KNX supply	Voltage (typical)		29 VDC SELV	
	Voltage range		21-31 VDC	
	Maximum consumption	Voltage	mA	mW
		29 VDC (typical)	23	667
		24 VDC[1]	30	720
	Connection type		Typical TP1 bus connector for 0.8 mm Ø rigid cable	
External power supply			Not required	
Operation temperature			0 .. +55 °C	
Storage temperature			-20 .. +55 °C	
Operation humidity			5 .. 95%	
Storage humidity			5 .. 95%	
Complementary characteristics			Class B	
Protection class			III	
Operation type			Continuous operation	
Device action type			Type 1	
Electrical stress period			Long	
Degree of protection			IP20, clean environment	
Installation			Independent device to be mounted inside electrical panels with DIN rail (IEC 60715)	
Minimum clearances			Not required	
Response on KNX bus failure			Data saving according to parameterization	
Response on KNX bus restart			Data recovery according to parameterization	
Operation indicator			The programming LED indicates programming mode (red).	
Weight			158 g	
PCB CTI index			175 V	
Housing material			PC FR V0 halogen free	

[1] Maximum consumption in the worst-case scenario (KNX Fan-In model).

CURRENT PROBE SPECIFICATIONS AND CONNECTIONS

CONCEPT	DESCRIPTION
Number of phases or lines	3
Measurement method	Current transformer (Np:Ns=1:3000)
Zennio Current Transformer (Accesory reference)	ZN1AC-CST60
Measurement range	20 mA-20 A
Accuracy [1]	5%
Connection method	Screw terminal block (0.5 Nm max.)
Cable cross-section	0.5-2.5 mm² (IEC) / 26-12 AWG (UL)

[1] Maximum accuracy value on active power with Zennio current transformers. Accuracy may vary depending on the connected load and the power factor entered by parameter. Other current transformers are allowed as long as they meet the same characteristics as the Zennio transformers and comply with the IEC 61010-X safety standards.

FLOW METERS SPECIFICATIONS AND CONNECTIONS

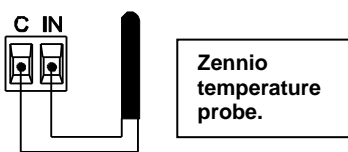| CONCEPT	DESCRIPTION
Flow meter type / Voltage	Turbine with Hall sensor / 5 VDC
Maximum consumption	1,5 mA
Zennio Flow Meter (Accesory reference)	½": 9900027 ¾": 9900028
Connection method	Screw terminal block (0.5 Nm max.)
Maximum cable length	30 m
Cable cross-section	1.5-4 mm² (IEC) / 26-10 AWG (UL)

INPUTS SPECIFICATIONS AND CONNECTIONS

CONCEPT	DESCRIPTION
Number of inputs	5
Inputs per common	5
Operation voltage	+3.3 VDC in the common
Operation current	1 mA @ 3.3 VDC (per input)
Switching type	Dry voltage contacts between input and common
Connection method	Screw terminal block (0.5 Nm max.)
Cable cross-section	0.5-2.5 mm² (IEC)/26-12 AWG (UL)
Maximum cable length	30 m
NTC probe length	0.5 m (extensible up to 30 m)
NTC accuracy (@ 25 °C) [3]	±0.5 °C
Temperature resolution	0.1 °C
Maximum response time	10 ms

[3] For Zennio temperature probes.

WIRING DIAGRAMS

Figure 2: Wiring diagram (from left to right): Current transformer, hall-sensor flow meter.

⚠ **Note:** although other models can be parameterised, the flow meter function is only guaranteed for the water flow sensors provided by Zennio.

Attaching KEM to DIN rail:

Removing KEM from DIN rail:

INPUTS CONNECTION

Any combination of the following accessories is allowed in the inputs:

Temperature Probe**

Zennio temperature probe.

Motion Sensor

Up to two motion sensors can be plugged into the same device input (parallel wiring)

Screw terminal for connecting Zennio motion sensors*
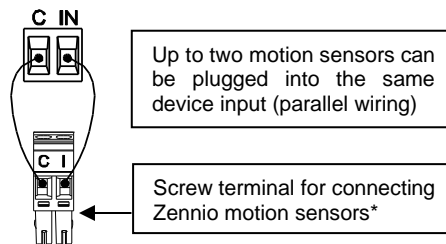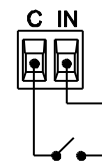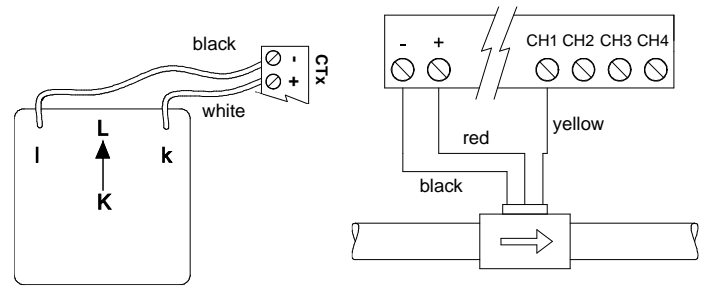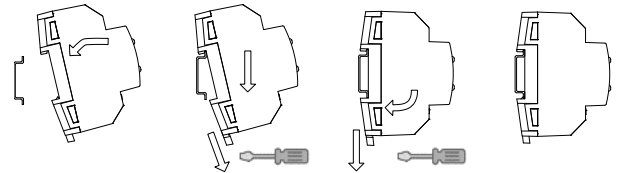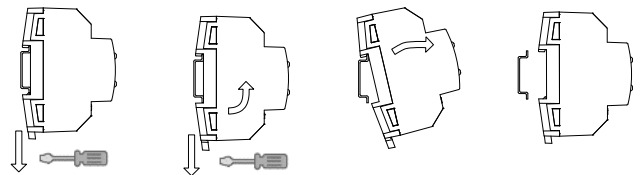
Switch/Sensor/ Push button

⚠ Commons of different devices must not be connected together.

* In case of using ZN1IO-DETEC-P sensor, its micro switch number 2 must be in **Type B position**.
** Zennio temperature probe or any NTC with known resistance values at three points in the range [-55, 150 ºC].

⚠ SAFETY INSTRUCTIONS AND ADDITIONAL NOTES

- Installation should only be performed by qualified professionals according to the laws and regulations applicable in each country.
- Do not connect the mains voltage nor any other external voltage to any point of the KNX bus; it would represent a risk for the entire KNX system. The facility must have enough insulation between the mains (or auxiliary) voltage and the KNX bus or the wires of other accessories, in case of being installed.
- Once the device is installed (in the panel or box), it must not be accessible from outside.
- Keep the device away from water (condensation over the device included) and do not cover it with clothes, paper or any other material while in use.
- The WEEE logo means that this device contains electronic parts and it must be properly disposed of by following the instructions at https://www.zennio.com/en/legal/weee-regulation.
- This device contains software subject to specific licences. For details, please refer to http://zennio.com/licenses.