

FEATURES

- Measurement of main electrical parameters
- Suitable for 3-phase installations with neutral, or for three single-phase installations
- Power measurement (W or kW) and Energy with 3 registers
- Currency and CO2 emissions estimation registers
- KNX system clock synchronization is allowed
- Up to 6-tariff cost counters
- Total data saving on KNX bus failure
- Integrated KNX BCU (TP1-256)
- Dimensions 67 x 90 x 36 mm (2 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)

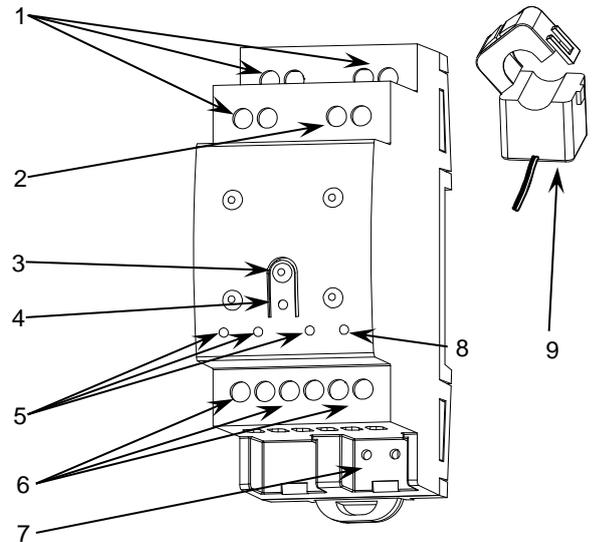


Figure 1: KES Plus

1. Phase	2. Neutral (voltage)	3. Programming button	4. Programming LED	5. Live status LED
6. Current transformer connection	7. KNX connector	8. Three-phase status LED	9. Current transformer*	

* Sold separately

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)	14.25	413.25
24 VDC ¹	17.5	420		
Connection type		Typical TP1 bus connector for 0.8 mm Ø rigid cable		
Voltage measurement range		230 V~ / 400 V 3~		
Operation temperature		0 .. +55 °C		
Storage temperature		-20 .. +55 °C		
Operation humidity		5 .. 95%		
Storage humidity		5 .. 95%		
Complementary characteristics		Class B		
Protection class / Overvoltage category		II / III		
Operation type		Continuous operation		
Device action type		Type 1		
Electrical stress period		Long		
Degree of protection / Degree of pollution		IP20 / 2 (clean environment)		
Installation		Independent device to be mounted inside electrical panels with DIN rail (IEC 60715). Installation at altitudes over 2000m above mean sea level is not recommended.		
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). Live and three-phase status LEDs indicate the presence of consumption (yellow blinking) or generation (green blinking). The switch-on time during the blinking is proportional to the power that is flowing.		
Weight		101 g		
PCB CTI index		175 V		
Housing material		PC FR V0 halogen free		

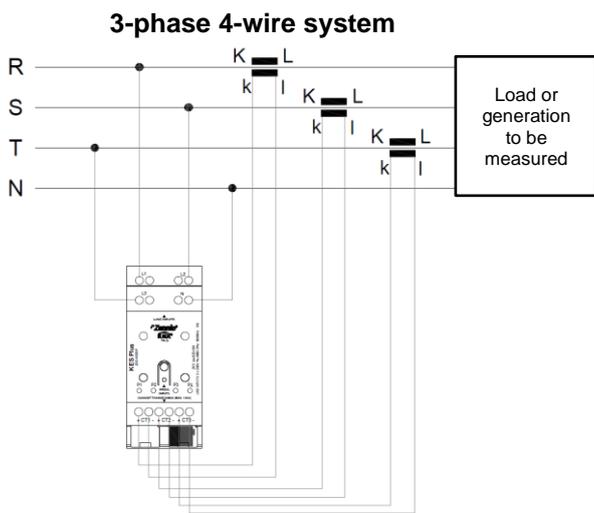
¹ Maximum consumption in the worst-case scenario (KNX Fan-In model).

ELECTRICAL SYSTEM SPECIFICATIONS AND CONNECTIONS	
CONCEPT	DESCRIPTION
Number of phases or lines	3
Voltage measurement range	230 V~ / 400 V 3~
Current measurement range	0.01-260 A (depending on the current transformer model)
Current measurement method	Electromagnetic induction
Connection method	Screw terminal block (0.4 Nm max.)
Cable cross-section	0.5-2.5 mm ² (IEC) / 26-12 AWG (UL)
Zennio current transformer (References)	ZN1AC-CST60 (Zennio accessory) ² ZN1AC-CST120 (Zennio accessory) ² 9900045 (Zennio accessory)
Transformer ratio (loops number)	Np:Ns=1:3000 (ZN1AC-CST60 / ZN1AC-CST120) Np:Ns=1:6000 (9900045)
Accuracy ³	1%

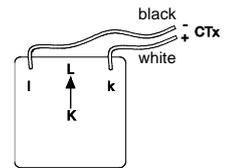
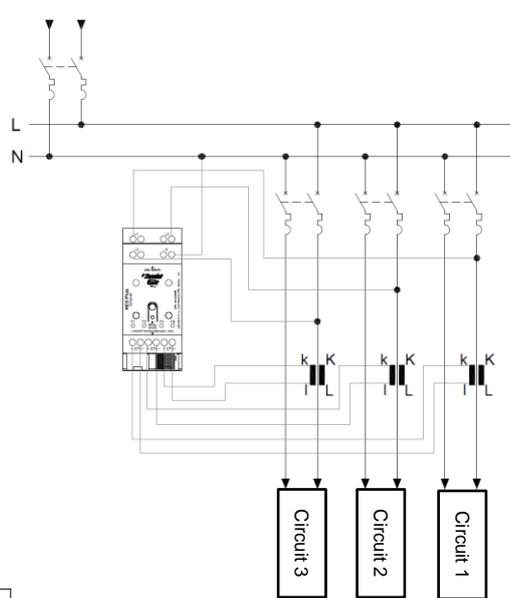
² It is not allowed to modify the cable length of the current transformer (Neither cutting nor splicing are allowed)

³ Accuracy on active power with a power factor between 0.75 and 1 with Zennio current transformer. 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.

CONNECTION DIAGRAMS*



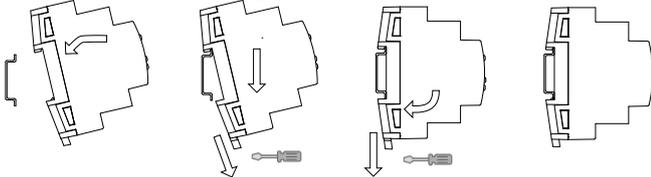
Single-phase system



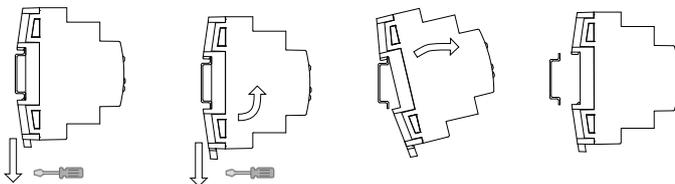
Current transformer detail (bottom view)

*In case of other connection type, please refer the manual.

Attaching KES Plus to DIN rail:



Removing KES Plus from DIN rail:



SYMBOLS LEGEND	
SYMBOL	MEANING
~	Alternating current.
3 ~	Three-phase current.
---	Direct current.
	Protection class II

SAFETY INSTRUCTIONS AND ADDITIONAL NOTES

- Installation should only be performed by qualified professionals according to the laws and regulations applicable in each country. Also, if the device is installed in a way not specified by the manufacturer, the protections of the device may be compromised.
- 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.
- The facility must be equipped with a device that ensures the omnipolar sectioning. Installation of a 10 A mini-circuit-breaker is recommended. To prevent accidents, it must remain open in case of manipulation of the device. Also, this device must be placed next to the KES Plus and duly marked as a disconnection element for KES Plus.
- Once the device is installed (in the panel or box), it must not be accessible from outside.
- For dust removal, please clean the device by means of a dry microfibre cloth.
- 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>.
- Manufacturer info for technical support: Zennio Avance y Tecnología S.L; C/Rio Jarama nº132 P-8.11; 45007; Toledo.