

Description

ekinex® EK-ME1-...-TP is a 3-phase MID meter with KNX communication interface for measuring active (kWh) and reactive (kVAh) energy with bi-directional counting for imported and exported energy, current (A), voltage (V), active power (kW), reactive power (kVar) and apparent power (kVA), power factor (cosφ), mains frequency (Hz), minimum and maximum values of U, I and P, maximum active power (kW) over 15 minutes, number of power interruptions.

Four S0 pulse outputs for import and export of active and reactive energy; alternatively usable for load control function or maximum value monitoring. Dual tariff system management (day / night) with active tariff switching via 230 VAC signal. Integrated KNX TP communication module. Manipulation protection with service button and sealable terminal covers. DIN rail mounting on profile rail according to EN 60715 (5 modular units).

Versions

The meter is available in two versions: for direct connection (Art. no. EK-ME1-75D-TP) or for connection via 1A and 5A current transformers (Art. no. EK-ME1-5TA-TP). For the latter version the transformation ratio is adjustable on the meter up to 4000/1A and 20'000/5A).

Main characteristics

- Display: 60x30 mm backlit graphic LCD
- D0 optical interface: according to EN 62056-21
- Communication interface: KNX TP
- KNX configuration: via ETS software
- Metrological LED: 10 impulses / Wh
- Impulsive output: Opto Power MOSFET S0 for heavy-duty applications, 5-230 Vac or Vdc, max. 90 mA
- Impulse setting:
 - frequency: 0.001, 0.01, 1, 10, 100, 1000 or 10'000
 - length: from 4 to 250 ms, adjustable in steps of 2 ms
- Connections
 - power supply and voltage: from 0,5 to 16 mm², 2 Nm
 - communication interface: KNX terminal block
- Accuracy class: B (1%)
- Approval: MID (B+D)
- Device housing: modular 5 MU (1 MU = 18 mm)
- Dimensions (LxHxD): 90 x 90 x 67 mm
- Weight: 300 g (EK-ME1-5TA-TP), 330 g (EK-ME1-75D-TP)

Technical data

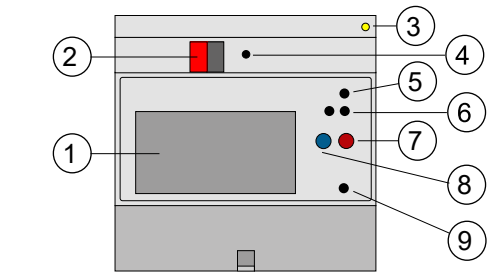
- Rated voltage Un: 3x230/400V (+/- 20%)
- Rated frequency fn: 50Hz, 60 Hz on request
- Degree of protection: IP51 (housing), IP20 (terminals)
- Environmental class: mechanic: M1, electromagnetic: E1
- Safety class: 2
- EC Type Examination: CH-MI003-13022

Current

- Direct connection:
(Ist, Imin, Itr, Iref, Imax)
0.02 A / 0.25 A / 0.5 A / 5 A / 75 A (5(75))
- Current transformer /5 and /1A:
/5A (Ist, Imin, Itr, Iref, Imax)
0.01 A / 0.05 A / 0.25 A / 5 A / 6 A (5(6))
/1A (Ist, Imin, Itr, Iref, Imax)
0.002 A / 0.01 A / 0.05 A / 1 A / 1.2 A (1(1.2))

Environmental conditions

- Operating temperature: -25° C...+55° C
- Storage temperature: -30° C...+70° C
- Maximum air humidity: annual average 75%, short period 95%, non condensing



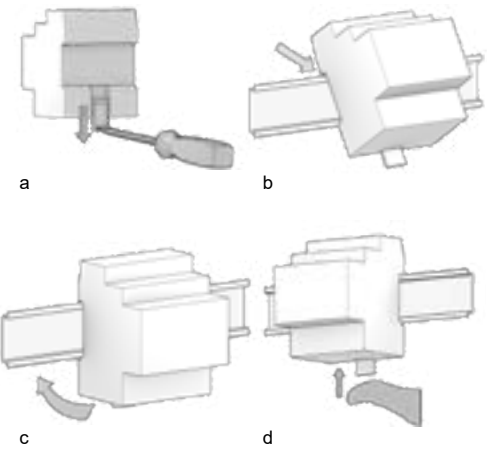
- 1) LCD display
- 2) KNX bus terminal
- 3) Service button
- 4) Programming button and LED
- 5) Metrological LED (10 impulses / Wh)
- 6) S0 interface
- 7) Selection/menu button (red)
- 8) Confirmation button (blue) or sub-item
- 9) Reactive power LED (10 impulses / varh)

Mounting

The device has an IP51 housing for rail mounting according to EN 60715 in boards or cabinets for electrical distribution. The correct mounting is when the KNX bus terminal is located at the top. When installing be sure to leave accessible only the front panel; all other sides must not be accessible. For the mounting proceed as follows:

- with the aid of a tool bring the locking device in the fully lowered position (a);
- place the upper edge of the rear inner profile on the upper edge of the rail (b);
- rotate the device towards the rail (c);
- push the locking device upward until it stops (d).

Before removing the device, be sure that all circuits, inputs and outputs have been disconnected and the bus terminal has been extracted from its slot. Use a screwdriver to slide down the locking device and remove the device from the rail.

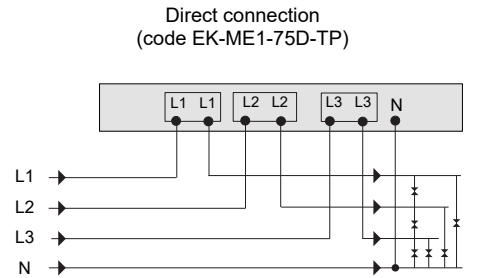


Electrical connections

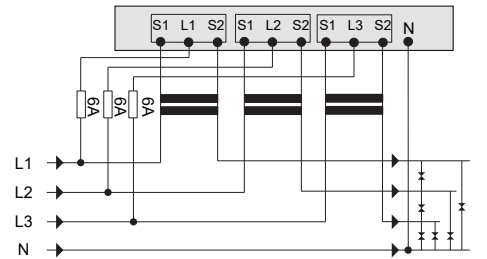
Circuits (L1, L2, L3, N)

The connection to the measuring circuits is made via the screw terminals on the front of the device at the bottom (under the blue cover).

Wire	Direct connection (max. section 35 mm²)	Current transformer (max. section 6 mm²)
L1 / L2 / L3 phase	2-3 Nm	1.3 - 1.6 Nm
Neutral	2-3 Nm	1.3 - 1.6 Nm



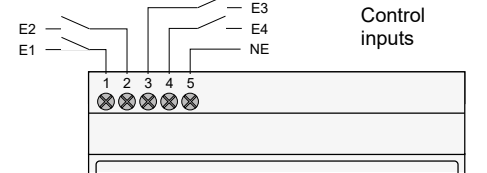
Connection via current transformers (CT)
(code EK-ME1-5TA-TP)



Control inputs

Connection to the control inputs is made via the screw terminals located on the front of the device at the top (under the red cover).

Wire	Max. section [mm2]	Max. tightening torque [Nm]
S0 pulse output	2,5	0,4
Control input	2,5	0,4



Use of E3 and E4 inputs for tariff changes

The tariff change takes place when mains voltage (230 Vac) is present at the corresponding terminal according to the two tables below (0 = no voltage, 1 = voltage present).

2-tariff system	E4 input
Tariff 1	0
Tariff 2	1

4-tariff System	E4 input	E3 input
Tariff1	0	0
Tariff 2	1	0
Tariff 3	0	1
Tariff 4	1	1

Use of E1 and E2 inputs to start measure

Independently from the ETS configuration, the measurement period can be activated via a mains voltage control signal (230 Vac).

Condition	E1 input	E2 input
Normal operation	1	0
Start of the measuring	0	1

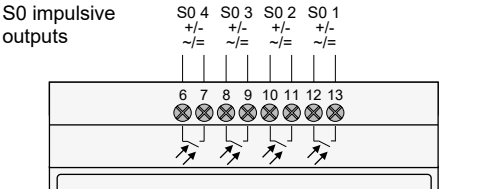
Outputs

Connection to the outputs is made via the screw terminals located on the front of the device at the top (under the red cover). The 4 outputs can be used as:

- S0 pulse outputs (EN 62053-21) configured via device buttons
- KNX switching outputs configured with ETS
- threshold switching outputs configured with ETS / device buttons

The 4 outputs are factory-configured as follows:

S0 1 (12, 13): imported active energy (kWh)
S0 2 (10, 11): imported reactive energy (kvarh)
S0 3 (8, 9): exported active energy (kWh)
S0 4 (6, 7): exported reactive energy (kvarh)



KNX bus

The connection of the KNX bus line is made with the terminal block included in delivery and inserted into the slot at the top part of the front.

Characteristics of the KNX terminal block

- spring clamping of conductors
- 4 seats for conductors for each polarity
- terminal suitable for KNX bus cable with single-wire conductors and diameter between 0.6 and 0.8 mm
- recommended wire stripping approx. 5 mm
- color codification: red = + (positive) bus conductor, black = - (negative) bus conductor

Configuration and commissioning

Configuration and commissioning of the device require the use of the ETS® (Engineering Tool Software) program V4 or later releases. These activities must be carried out according to the design of the building automation system done by a qualified planner.

Configuration

For the configuration of the device parameters the corresponding application program or the whole ekinex® product database must be loaded in the ETS program. For detailed information on configuration options, refer to the application manual of the device available on the website www.ekinex.com

Application software (## = release)	Communication objects (max nr.)	Group addresses (max nr.)
APEKME1EMUTP##.knxprod	106	106

Commissioning

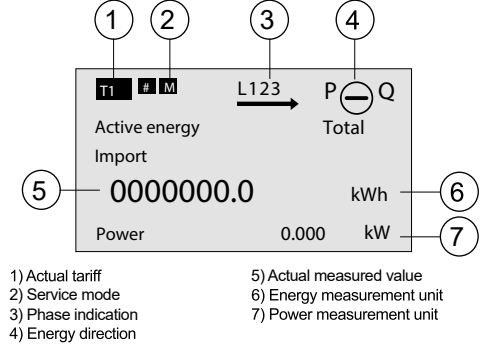
For commissioning the device the following activities are required:

- make the electrical connections as described above;
- turn on the bus power supply;
- switch the device operation to the programming mode by pressing the programming pushbutton located on the front side of the housing. In this mode of operation, the programming LED is turned on;
- download into the device the physical address and the configuration with the ETS® program.

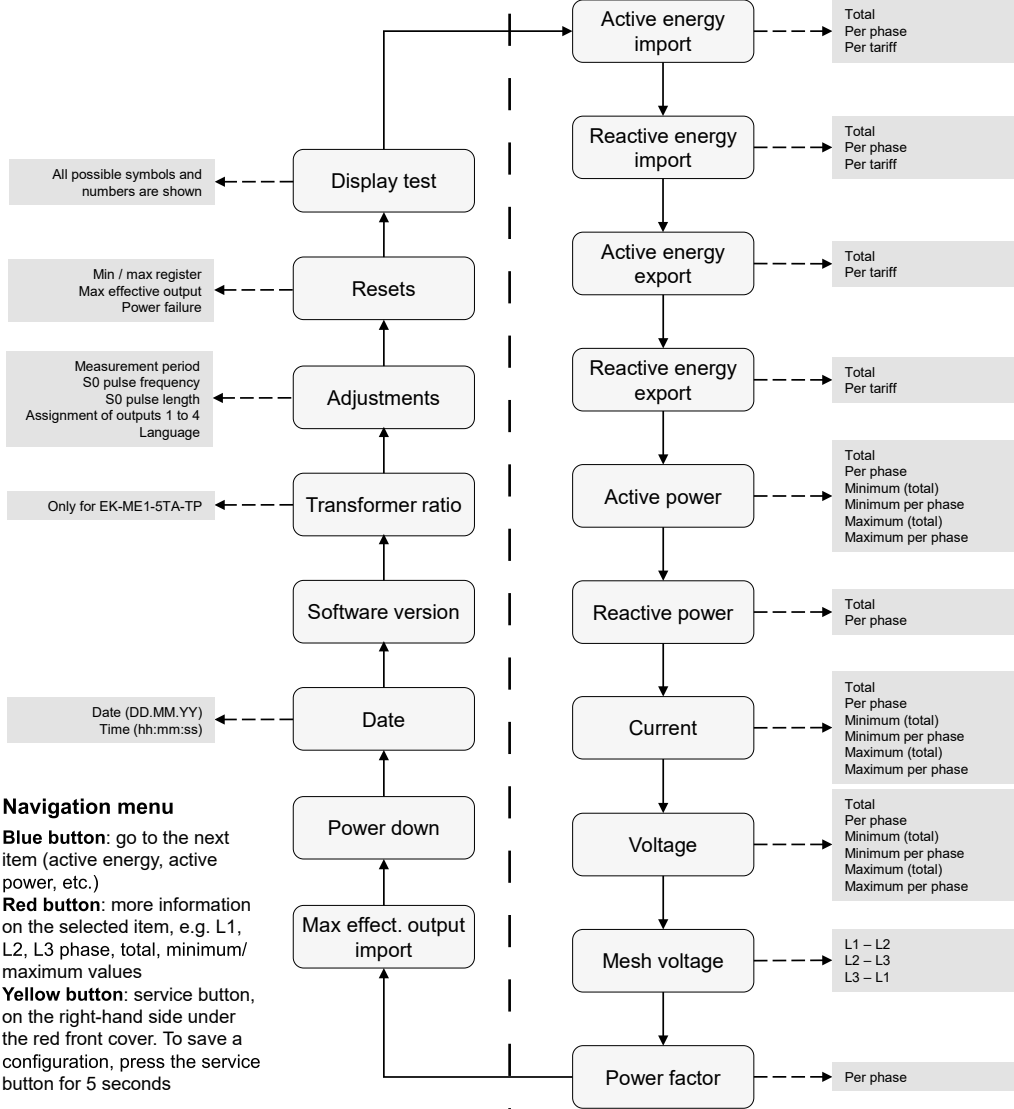
At the end of the download the operation of the device automatically returns to normal mode; in this mode the programming LED is turned off. Now the bus device is programmed and ready for use.

Display

The device is equipped with a 60x30 mm backlit LCD graphic display that allows parameters and settings to be read. The display language can be chosen between English and German.



- 1) Actual tariff
- 2) Service mode
- 3) Phase indication
- 4) Energy direction
- 5) Actual measured value
- 6) Energy measurement unit
- 7) Power measurement unit



Navigation menu

Blue button: go to the next item (active energy, active power, etc.)

Red button: more information on the selected item, e.g. L1, L2, L3 phase, total, minimum/maximum values

Yellow button: service button, on the right-hand side under the red front cover. To save a configuration, press the service button for 5 seconds

Error messages

If an internal error occurs, an error message is displayed:

- F.F.0(00000000) = No error, meter ok
- F.F.0(xxxxxxx0) = Calibrated meter
- F.F.0(xxxxxxx1) = Meter not calibrated
- F.F.0(xxxxxxx8) = Release of calibration, the meter is calibrated and can be recalibrated
- F.F.0(xxxxxxx9) = Calibration release, the meter is not calibrated and can be calibrated now

Marks

- KNX
- CE: the product complies with the Low Voltage Directive (2014/35/EU) and the Electromagnetic Compatibility Directive (2014/30/EU)
- MID B+D certification (Measurement Instrument Directive), device suitable for energy cost allocation and energy management according to EN ISO 50001. EC Test Certificate Number: CH-MI003-13022. Notified body: METAS-Cert (Nr. 1259) Lindenweg 50, CH-3003 Bern-Wabern (Switzerland)

Maintenance

The device is maintenance-free. To clean it use a dry cloth. It must be avoided the use of solvents or other aggressive substances.

Disposal

At the end of its useful life the product described in this datasheet is classified as waste from electronic equipment in accordance with the European Directive 2012/19/EU (WEEE recast), and cannot be disposed together with the municipal undifferentiated solid waste.

Warning! Incorrect disposal of this product may cause serious damage to the environment and human health. Please be informed about the correct disposal procedures for waste collecting and processing provided by local authorities.



EN

KNX 3-phase MID electricity meter

Codes: EK-ME1-75D-TP (direct connection)
EK-ME1-5TA-TP (connection via CT)



Instructions



EKINEX S.p.A.

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info@ekinex.com
www.ekinex.com

FISPME1EMUTPIE0

Warning! The device should only be used for measuring electrical energy and cannot be operated outside the specified technical data.

When installing or replacing the meter, the conductors have to be dead (power / voltage off).

Touching live (voltage or power) components is dangerous! Therefore, the appropriate fuses are to remove and secure. Nobody shall be able to turn voltage / power on without prior notification.

Before opening / disconnect the terminals, short-circuit the secondary circuits of the current transformers. The resulting high voltage on the current transformer is extremely dangerous (dangerous to life) and could destroy the current transformer.

Warnings

- Installation, electrical connection, configuration and commissioning of the device can only be carried out by qualified personnel in compliance with the applicable technical standards and laws of the respective countries
- Before making the electrical connections, make sure the power supply has been turned off
- The power supply line to which the device is connected must be equipped with an easily accessible disconnecting device with minimum separation distance between contacts of 3 mm
- Opening the housing of the device causes the immediate end of the warranty period
- In case of tampering, the compliance with the essential requirements of the applicable directives, for which the device has been certified, is no longer guaranteed

Other information

- The meter EK-ME1-...-TP is a KNX device manufactured by EMU Electronic AG, Jöchlerweg 2, CH-6340 Baar (Switzerland)
- Defective devices must be returned to the following address: EKINEX S.p.A. Via Novara 37, I-28010 Vaprio d'Agogna (NO) Italy
- The instruction sheet must be delivered to the end customer with the project documentation
- Each ekinex® device has a unique serial number on the label. The serial number can be used by installers or system integrators for documentation purposes and has to be added in each communication addressed to the EKINEX technical support in case of malfunctioning of the device
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