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Portfolio Enertex KNX

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1 Control / visualization

1.1 Enertex® EibPC²

1.1.1 Tender text

Logic machine and Web-visualization for the KNX Bus

Device properties:

- integrated KNX TP interface with free KNXnet/IP tunnel for ETS
- up to 65,000 configurable functions
- Scenes, timers, schedules, logic, presence simulation, device watchdog
- long-term recording of KNX bus traffic
- export telegrams on FTP server

- OpenVPN server, send/receive TCP/UDP packets, send e-mails
- Modbus TCP Master, Slave
- functions for http(s) Web-APIs (REST)
- Free configuration tool

Housing:

DIN rail mount, 4 SU

Power supply/connections:

- powered by integrated KNX TP bus interface
- power consumption 1.8 W (typical workload)
- two RJ45 Ethernet interfaces with internal switch

Display and operation:

- OLED display showing device parameters and status
- green power LED
- yellow info LED
- red alarm LED
- button to control display

1.1.2 Image



Figure 1: Enertex EibPC²

1.2 Enertex® ENA² – electronic net defense

1.2.1 Tender text

Secure remote access for your local network, works with any internet provider (IPv4, IPv6, DS-Lite) and telegram logger into internal database, graphical visualization and configuration error analy-

sis

Device properties:

- end-to-end encrypted connection between device and end-user device
- optional data relay, no local router configuration required
- guided configuration on device
- easy-to-use user management
- integrated free DynDNS service
- OpenVPN server, free client software for common OS (Windows, Linux, MacOS, Android, iOS)
- control users access via KNX group telegrams
- protects internal network by integrated firewall , DHCP server and routing
- recent security standards and well-known and trusted VPN software
- KNX telegram logger for ~100.000.000 tel., depending on data type
- ETS project import for data types, topology and device addresses
- easy to read and analyze telegrams from database with integrated webserver
- graphical time-value-charts with configurable time intervals, e.g., hours, days
- configuration error analysis, e.g., read requests without response telegram

Housing:

- DIN rail mount, 4 SU

Power supply/connections:

- powered by integrated KNX TP bus interface
- power consumption 1.8 W (typical workload)
- two RJ45 Ethernet interfaces with internal switch or configured as firewall

Display and operation:

- OLED display showing device parameters and status
- green power LED
- yellow info LED
- red alarm LED
- button to control display

1.2.2 Image



Figure 2: Enertex® ENA²

2 system actuators

2.1 Enertex® KNX IP Secure Router

2.1.1 Tender text

The KNX IP Secure Router (2 TE) is the central component for KNX installations in order to couple them via the IP backbone.

Device features:

- Use as repeater, line, area or world coupler
- Authentication and encryption of KNX and IP telegrams
- KNX IP Secure Routing, max. performance 49 telegrams per second
- KNX IP Secure Tunnelling, max. performance 49 telegrams per second
- Up to eight encrypted or unencrypted KNX UDP and TCP tunnel connections
- Integrated OLED display to show important device parameters
- Telegram rate limitation
- Support of telegram lengths up to 248 bytes (TP)
- Blocking of own programming via TP
- Support of UDP connections with long response time (1 to 8 s)
- Routing Counter 7: Switchable between new and old standard
- Temporary filter switch-off for commissioning diagnosis
- Topology error detection
- Up to 62 group address filters
- Buffered real-time clock and SNTP server

- Time server for the KNX bus with 36 hours power reserve
- Parameterization and diagnostic functions via Telnet
- Output of the bus voltage on the display and Telnet
- Mapper for bidirectional translation from secure to plain group communication

Housing:

- DIN-rail housing with 2 TE

Power supply/connections:

- Power supply via KNX bus
- Ethernet 10/100 Mbit

Display and operation:

- LEDs for operation, bus activity, programming mode, LAN link and LAN activity
- Button for programming mode and display switching

2.1.2 Image



Figure 3: Enertex® KNX IP Secure Router

2.2 Enertex® KNX IP Secure Interface

2.2.1 Tender text

The KNX IP Secure Interface (2 TE) is the central component for KNX installations and provides up to eight encrypted or unencrypted tunnel connections.

Device features:

- Authentication and encryption of KNX and IP telegrams
- KNX IP Secure Tunnelling, max. performance 49 telegrams per second
- Up to eight encrypted or unencrypted KNX UDP and TCP tunnel connections

- Integrated OLED display to show important device parameters
- Telegram rate limitation
- Support of telegram lengths up to 248 bytes (TP)
- Support of UDP connections with long response time (1 to 8 s)
- Buffered real-time clock and SNTP server
- Time server for the KNX bus with 36 hours power reserve
- Parameterization and diagnostic functions via Telnet
- Output of the bus voltage on the display and Telnet
- Mapper for bidirectional translation from secure to plain group communication

Housing:

- DIN-rail housing with 2 TE

Power supply/connections:

- Power supply via KNX bus
- Ethernet 10/100 Mbit

Display and operation:

- LEDs for operation, bus activity, programming mode, LAN link and LAN act
- Button for programming mode and display switching

2.2.2 Image



Figure 4: Enertex® KNX IP Secure Interface

2.3 Enertex® KNX TP Secure Coupler

A KNX Secure Coupler (2 TE) for coupling standard and Secure TP lines via a TP backbone. The setup is done either via standard KNX data communication or secure commissioning via Data Secu-

re.

Device properties:

- Telegram rate limitation, max. telegram lengths up to 248 bytes
- Bus performance up to 49 telegrams per second
- Topology error detection
- temporary filter deactivation

Housing:

- DIN top-hat rail housing with 2 TE

Power supply/connections:

- Typ. 7.5 mA current consumption from line (Sub), 1 mA from main line

Display and operation:

- OLED display for indication of device parameters and status
- red LED for programming
- green operation LED
- Yellow LED bus activity
- Programming key and display key (control of the display)

2.3.1 Image



Figure 5: Enertex® KNX TP Secure Coupler

2.4 Enertex® KNX 4Kanal LED Dimmsequencer 5A

2.4.1 Tender text

The KNX 4-channel LED dimming sequencer 5A is a pulse width modulating dimmer for 12 - 24 V LED modules. The device is available for installation for ceiling mounting with furniture labelling (DK variant) or as a REG device (REG variant).

Device features:

- Four dimming channels, pulse width modulated, max. 5 A per channel
- Load balancing of the switching channels within one switching period allows efficient operation of Tunable White lamps and reduces switching load of connected LED power supplies
- Variable voltage input and output: 12 - 24 V
- PWM switchable between 488 and 600 Hz
- Operating modes: cold/warm white, RGB(W) or single channels
- Four different dimming characteristics to choose from with integrated soft dimming function
- Free definition of sequences or selection from 16 predefined sequences possible
- Scenes and bit scenes
- Control via RGB or HSV colour values possible
- Integrated mains relay (bistable, 230 VAC, 16 A, Inrush 165A@20ms, 800A@200μs) for switching the LED power supply on/off as required
- Timer for time-controlled blocking of the relay switch-off function
- Integrated protective functions that switch off the connected LED modules and switch them on again automatically after correction: overvoltage, overcurrent, undervoltage and overtemperature
- Diagnosis/message of protection functions via KNX group addresses
- Input-side reverse polarity protection to prevent damage during commissioning
- Commissioning button for quick testing of the wiring

Housing:

- DIN rail housing with 4TE (REG version) or transformer housing (196 x 40 x 32 mm) (DK version)

Power supply/connections:

- Power supply via KNX bus
- Connector for the 12 - 24 VDC output of the LED power supply unit DC
- Connector for LED lights (4 channels)
- Connector for Phase of the LED power supply

Display and operation:

- LEDs for programming mode, LED power supply voltage and test mode A, B, C, D
- Button for programming mode and test mode

2.4.2 Image



Figure 6: Enertex® KNX 4Kanal LED Dimmsequenzer 5A – DK-Version



Figure 7: Enertex® KNX 4Kanal LED Dimmsequenzer 5A – REG-Version

2.5 Enertex® KNX LED Dimmsequencer 20A/5x

2.5.1 Tender text

A pulse width modulating dimmer for 5 - 48 V LED modules with 5 dimming channels. The device is suitable for any LED light source that is suitable for DC constant voltage and is available in two variants: For installation for ceiling mounting with double furniture marking (DK) or as a REG device (4TE).

Device features:

- Five dimming channels, pulse-width modulated, max. 20 A per channel
- Max. Dimming power 480 W
- Variable voltage input and output: 5 - 48 V

- PWM frequency adjustable in steps between 211 and 1200 Hz
- Operating modes: cool white/warm white, RGB(CCT/W) or single channels
- RGB(CCT/W): Extended white balance by means of white channels (RGB-Extended) or extension of tunable white color temperatures by automatic admixture of R/G/B (TW-Extended)
- Control optionally via RGB or HSV color values
- Four different dimming characteristics to choose from with integrated soft dimming function
- Free definition of sequences or selection from predefined sequences
- Scenes, bit scenes and lock functions
- Time-controlled dimming / HCL and astro function
- Staircase lighting function
- Integrated protection functions that selectively switch off the connected LED modules and automatically switch them on again after removal: Overvoltage, undervoltage, overcurrent and overtemperature
- Diagnostics / indication of the protection functions via KNX group addresses
- Reverse polarity protection on the input side to prevent damage during commissioning
- Extended protection functions for lamps and LED power supply unit
- Measurement of current, voltage, power, temperature and telegram rate
- Energy and cost counter - Commissioning functions by means of display and pushbutton for quick testing of wiring
- Control of an external KNX switch contact for switching off the LED power supply unit
- KNX TP Secure

Housing:

- DIN rail housing with 4 SU (REG variant) or electronics housing for ceiling installation (157.0 x 45.0 x 25.5 mm (L x W x H)) (DK variant)

Power supply/connections:

- Power supply via KNX bus
- Connection LED power supply DC 5 - 48 V
- Connection LED lamps (5 channels)

Display and operation:

- LEDs for programming mode, LED power supply voltage and operation
- Button for programming mode and menu navigation

2.5.2 Image



Figure 8: Enertex® KNX LED Dimmsequenzer 20A/5 – DK-Version



Figure 9: Enertex® KNX LED Dimmsequenzer 20A/5 – REG-Version

2.6 Enertex® Dual PowerSupply 960³

2.6.1 Tender text

A KNX power supply with one output for supplying a KNX line with 960 mA and two additional 30 V auxiliary voltage outputs with 320 mA each.

Device properties:

- Independent current limitation for each output to protect against overload and short circuit
- Integrated bus coupler with measurement and diagnostic functions
- Bus coupler with support of the KNX Data Secure protocol
- Triggering a bus reset via communication object on the bus
- Triggering a voltage reset for an auxiliary voltage output via communication object on the bus
- Integrated time switch

Housing:

- DIN-rail housing with 6 SU

Power supply / connections:

- Power supply: 230 - 240 VAC / 50 Hz, max. 680 mA
- KNX connection: 30 VDC / 960 mA
- Auxiliary voltage connection 1: 30 VDC / 320 mA (100% overload capacity)
- Auxiliary voltage connection 2: 30 VDC / 320 mA (100% overload capacity)

Display and operation:

- Display for indication of bus currents, bus voltages and device parameters
- LED for programming and reset
- Programming, reset and display buttons (display control)

2.6.2 Image



Figure 10: Enertex® PowerSupply 960³

2.7 Enertex® PowerSupply 1280

2.7.1 Tender text

A KNX power supply with a output to supply a KNX line with 1280 mA, another KNX line with 320 mA and an additional 30 V auxiliary power supply with 320 mA.

Device properties:

- Independent current limitation for each output to protect against overload and short circuit
- Integrated bus coupler with measurement and diagnostic functions
- Bus coupler with support of the KNX Data Secure protocol
- Triggering a bus reset via communication object on the bus

- Integrated timer

Housing:

- DIN-rail housing with 6 SU

Power supply / connections:

- Power supply: 230 - 240 VAC / 50 Hz, max. 750 mA
- KNX connection: 30 VDC / 1280 mA
- Additional KNX connection: 30 VDC / 320 mA
- Auxiliary voltage connection: 30 VDC / 320 mA

Display and operation:

- Display for indication of bus currents, bus voltages and device parameters
- LED for programming and reset
- Programming, reset and display buttons (display control)

2.7.2 Image



Figure 11: Enertex® PowerSupply 960³

3 measuring instruments

3.1 Enertex® SmartMeter

3.1.1 Tender text - Enertex® KNX SmartMeter 85A

The KNX SmartMeter 85A RT (DIN-rail) is a bidirectional meter for measuring active and reactive energy or power, as well as for analysing the net quality. The measurement is carried out either in a three-phase system or in three independent single-phase systems with accuracy class 1 (1%).

Device features:

- Plug-through current sensors for the measuring range from 2 mA to 85 A per phase and power between 0.5 W and 58 kW
- Energy meters of accuracy class 1 (1% for active and reactive energy)
- Use of high-precision current sensors (Rogowski coils), which are calibrated to the device in the factory
- Precise measurements of very low currents down to 0.002% of the nominal current (= 2 mA)
- Low-loss current measurement (< 2 mW loss)
- The supplied current sensors are suitable for push-through mounting and may be installed directly at the mains supply point
- Since it is supplied exclusively via the KNX bus, the device can measure currents and voltages even if there is no 230 V mains voltage at the voltage measurement inputs or if the voltage has been enabled
- The measuring range of the active power extends from 0.5 W to 19,550 W or 58,650 W (three-phase)
- All measured values (current, voltage, active power, reactive power, active energy, reactive energy, power factor, THD-U, THD-I, network harmonics, unbalanced load, zero current, network frequency) are displayed on the KNX bus
- All meter values and measured variables are also recorded in text form (standard csv format) with timestamp on an SD card for further data processing
- In addition to specialized functions for performance-based load control, optimization of the own energy demand with PV systems, calculation of the user or feed-in tariff with tariff switching and for the avoidance of load peaks, the ETS application also provides various monitoring functions
- Condition monitoring: Exceeding of limit values, events such as voltage failures, high voltage peaks, high mains distortion, high reactive energy consumption, highly uneven load of the 3 phases (unbalanced load) or high neutral conductor load can be reported via KNX telegram
- Measurement of harmonics up to the 50th harmonic of current and voltage to assess the power quality
- Time-precise analysis of network-related failures, faults and damage to electrical equipment
- Special energy meters for monitoring PV systems (balance, generation and consumption meters)

Housing:

- DIN-rail housing with 4 TE

Power supply/connections:

- The smartmeter is completely knx bus-powered

Display and operation:

- LEDs for energy measurement 1 to 3, Power/SD-Write and programming mode
- Programming button

3.1.2 Tender text - Enertex® KNX SmartMeter 85A RT

The KNX SmartMeter 85A RT (DIN-rail) is a bidirectional meter for measuring active and reactive energy or power, as well as for analysing the net quality. The measurement is carried out either in a three-phase system or in three independent single-phase systems with accuracy class 1 (1%). Due to a battery-buffered real-time clock, operation is also possible without KNX bus.

Device features:

- Integrated battery-buffered real-time clock for operation without KNX bus
- Measured data are stored on SD card every minute
- Plug-through current sensors for the measuring range from 2 mA to 85 A per phase and power between 0.5 W and 58 kW
- Energy meters of accuracy class 1 (1% for active and reactive energy)
- Use of high-precision current sensors (Rogowski coils), which are calibrated to the device in the factory
- Precise measurements of very low currents down to 0.002% of the nominal current (= 2 mA)
- Low-loss current measurement (< 2 mW loss)
- The supplied current sensors are suitable for push-through mounting and may be installed directly at the mains supply point
- Since it is supplied exclusively via the KNX bus, the device can measure currents and voltages even if there is no 230 V mains voltage at the voltage measurement inputs or if the voltage has been enabled
- The measuring range of the active power extends from 0.5 W to 19,550 W or 58,650 W (three-phase)
- All measured values (current, voltage, active power, reactive power, active energy, reactive energy, power factor, THD-U, THD-I, network harmonics, unbalanced load, zero current, network frequency) are displayed on the KNX bus
- All meter values and measured variables are also recorded in text form (standard csv format) with timestamp on an SD card for further data processing
- In addition to specialized functions for performance-based load control, optimization of the own energy demand with PV systems, calculation of the user or feed-in tariff with tariff switching and for the avoidance of load peaks, the ETS application also provides various monitoring functions
- Condition monitoring: Exceeding of limit values, events such as voltage failures, high voltage peaks, high mains distortion, high reactive energy consumption, highly uneven load of the 3 phases

(unbalanced load) or high neutral conductor load can be reported via KNX telegram

- Measurement of harmonics up to the 50th harmonic of current and voltage to assess the power quality
- Time-precise analysis of network-related failures, faults and damage to electrical equipment
- Special energy meters for monitoring PV systems (balance, generation and consumption meters)

Housing:

- DIN-rail housing with 4 TE

Power supply/connections:

- Supply via external 24V DC power supply unit

Display and operation:

- LEDs for energy measurement 1 to 3, Power/SD-Write and programming mode
- Programming button

3.2 Tender text - Enertex® KNX SmartMeter 630A (with RT)

The KNX SmartMeter 630A (DIN-rail 4TE) is a bidirectional meter for measuring active and reactive energy or power, as well as for analysing the net quality. The measurement is carried out either in a three-phase system or in three independent single-phase systems with accuracy class 1 (1%). Due to a battery-buffered real-time clock, operation is also possible without KNX bus.

Device features:

- Integrated battery-buffered real-time clock for operation without KNX bus
- Measured data are stored on SD card every minute
- Current sensors for a measurement range from 10 mA to 630 A per phase and power between 7.5 W and 293 kW
- Energy meters of accuracy class 1 (1% for active and reactive energy)
- Use of high-precision current sensors (Rogowski coils), which are calibrated to the device in the factory
- Precise measurements of very low currents down to 10 mA
- Low-loss current measurement (< 2 mW loss)
- The supplied current sensors are suitable for push-through mounting and may be installed directly at the mains supply point
- Since it is supplied exclusively via the KNX bus, the device can measure currents and voltages even if there is no 230 V mains voltage at the voltage measurement inputs or if the voltage has been enabled
- The measuring range of the active power extends from 7.5 W to 293 kW
- All measured values (current, voltage, active power, reactive power, active energy, reactive energy,

power factor, THD-U, THD-I, network harmonics, unbalanced load, zero current, network frequency) are displayed on the KNX bus

- All meter values and measured variables are also recorded in text form (standard csv format) with timestamp on an SD card for further data processing
- In addition to specialized functions for performance-based load control, optimization of the own energy demand with PV systems, calculation of the user or feed-in tariff with tariff switching and for the avoidance of load peaks, the ETS application also provides various monitoring functions
- Condition monitoring: Exceeding of limit values, events such as voltage failures, high voltage peaks, high mains distortion, high reactive energy consumption, highly uneven load of the 3 phases (unbalanced load) or high neutral conductor load can be reported via KNX telegram
- Measurement of harmonics up to the 50th harmonic of current and voltage to assess the power quality
- Time-precise analysis of network-related failures, faults and damage to electrical equipment
- Special energy meters for monitoring PV systems (balance, generation and consumption meters)

Housing:

- DIN-rail housing with 4 TE

Power supply/connections:

- KNX bus-powered or external 24 VDC power supply

Display and operation:

- LEDs for energy measurement 1 to 3, Power/SD-Write and programming mode
- Programming button

3.2.1 Image



Figure 12: Enertex® SmartMeter

4 Taster

4.1 Enertex® ProxyTouch KNX

4.1.1 Tender text

The ProxyTouch KNX is a capacitive touch sensor which can be installed behind surfaces such as ceramic, wood and glass.

Device features:

- 3 sensor fields (A, B and C)
- Sensors can be combined, addressed individually or by wiping gesture
- Additional double click parameterizable
- Acoustic feedback parameterizable, with different tone pitches for the three sensor fields
- In programming mode, a red LED lights up and a buzzer is emitted
- "Cleaning operation" can be triggered by group address, blocks the operation and can also be signalled by a continuous tone
- Blocking time adjustable via time switch
- Range through the surface material under which the device is installed is maximum 25 mm for ceramic or glass and maximum 20 mm for wood

Housing:

- Splash-proof plastic housing with the size 210 x 140 x11 mm

Power supply/connections:

- The ProxyTouch KNX is exclusively powered by the KNX bus

Display and operation:

- LEDs for activation and programming mode
- Magnetic switch for programming mode

4.1.2 Image

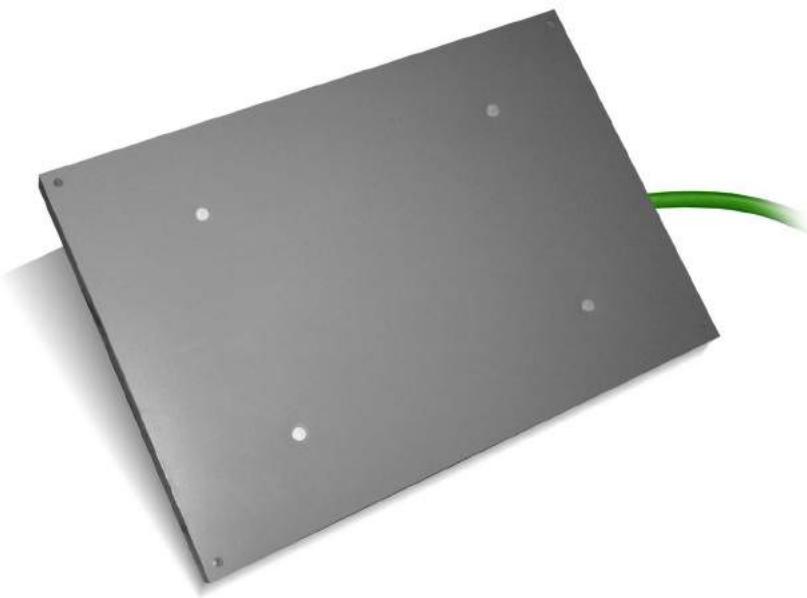


Figure 13: Enertex® ProxyTouch KNX

5 Room controller

5.1 Enertex® SynOhr MultiSense KNX

5.1.1 Tender Text

SynOhr® MultiSense KNX is a room controller with integrated speech recognition. The room controller measures temperature, humidity and colour intensity.

Device features:

- Room controller for heating and cooling
- Integrated sensors for temperature, humidity and RGBW brightness
- Dot matrix displays KNX-compliant 14-byte strings
- Speech recognizer with up to 40 freely configurable commands
- Speech recognizer with wildcard commands, e.g. DIMMER_PERCENT (Premium only)
- The vocabulary of speech recognition comprises approx. 250 words, does not have to be learned separately and can be parameterised via ETS.
- Playback of WAV files from SD card (only Premium and Standard)
- Monitoring of sound levels, e.g. for use as a "Babyfon" (Premium only)
- Master/slave operation, if several switching points are available in larger rooms (Enertex® EibPC required (only Premium))
- Display of 28 characters on dot matrix with Autoscrolling (Premium only)
- Built-in speaker outputs audio signals that are saved to the provided microSD card.

Housing:

- Anodized all-aluminum housing
- Suitable for standard flush-mounted box

Power supply/connections:

- Powered directly from the KNX bus using the supplied bus coupler

Display and operation:

- LCD display to show time, date, temperatures, humidity, controller mode, KNX text messages and symbols
- Two touch buttons and one push button
- Programming button

SynOhr® MultiSense KNX is available in the following variants:

	Premium
Room controller Heating and Cooling	yes
Measurement of temperature and humidity	yes
Measurement of the light color and the light incidence	yes
Two touch buttons and a push button	yes
14-byte KNX text message (dot matrix)	yes
Speech recognition with 40 commands	40
Freely definable colors of the lightened Ring	yes
Play WAV files from SD card	yes
Monitoring of noise levels, for example, for use as a "baby monitor"	yes
Display of 28 characters with auto-scrolling on the dot matrix	yes
Use of the dot matrix on the display of icons (in Q3/2014)	yes
Speech recognition wildcard commands: A command "DIMMER _percent" can fully control a KNX dimmer	yes
Play WAV files from SD card	
Freely definable colors of the lightened Ring	yes

Master / slave mode, if multiple switching points in larger rooms available
(Enertex® EibPC required)

yes

The variants are software options that are enabled on the serial number of the device and must be licensed for the device.

5.1.2 Image



Figure 14: Enertex® SynOhr MultiSense KNX - silver anodized version



Figure 15: Enertex® SynOhr MultiSense KNX - black anodized version



Figure 16: Enertex® SynOhr MultiSense KNX - white (RAL9010) powder-coated version

5.2 Meta Raumcontroller KNX

5.2.1 Tender Text

The MeTa KNX room controller is a push-button sensor with mechanical rockers whose electronic labelling field allows the action to be displayed.

Device features:

- Four or two electronically labelable mechanical rockers with a maximum of 32 or 16 switching functions (Premium or Standard/Starter)
- Menu button ("MeTa")
- LCD display to show time, date, temperatures, humidity, controller mode, KNX text messages and symbols (Premium only)
- Room controller heating and cooling with integrated temperature and humidity sensor (only Premium and Standard)
- Each rocker can either be used as two individual push-buttons for different functions (e.g. left ON/OFF, right VALUE SETTING), or assigned to a function group (e.g. dimming) as a control rocker
- Each rocker can be assigned four times (switch-over by menu button at the bottom of the housing)
- Rocker labeling for each level can be parameterized separately and can also be written to via GA, which allows e.g. language switching
- Status indications (feedback values) on rocker display possible
- Display brightness can be regulated automatically via integrated RGBW sensor
- External binary contact allows e.g. coupling of a conventional switch to the KNX bus.

Housing:

- Anodized all-aluminium housing

- Housing dimensions: 90 x 90 x 14.6 mm
- Suitable for standard flush-mounted box

Power supply/connections:

- Powered exclusively by the KNX bus using the supplied bus coupler

Display and operation:

- LCD Display (Premium only)
- Four (Premium) or two (Standard and Starter) electronically labelable, mechanical rocker switches
- Additional rocker switch for menu switching
- Magnetic switch for programming mode
- Programming LED

META room controller KNX is available in three versions

	Starter	Standard	Premium
Roomcontroller Heating and Coolung	-	yes	yes
Measurement Temperature and humidity	-	yes	yes
Measurement of light intensity and light color	yes	yes	yes
Rocker/Switch, one Menuswitch	2/4	2/4	4/8
Number of rockers/switches	8/16	8/16	16/32
Display-Label for each rocker	yes	yes	yes
LCD Display with symbols and dotmatrix for roomcontroller etc.	-	-	yes
Auto scroll with max. 28 character at dotmatrix	-	-	yes
Dotmatrix with graphical support	-	-	yes
External switch	yes	yes	yes
Bus powered	yes	yes	yes
Length/Width (mm)	90/90	90/90	180/90
Height (mm)	8,6	8,6	8,6

Enertex® MeTa® KNX is supplied in three color options - brushed aluminum, black anodized aluminum and glossy white powder-coated (RAL9010).

5.2.2 Image



Figure 17: Enertex® Meta® KNX PREMIUM (starting from left):Brushed aluminum, black anodized aluminum



Figure 18: Enertex® Meta® KNX PREMIUM (starting from left):glossy white powder-coated (RAL9010), brass shiny gold plated



Abbildung 19: Enertex® Meta® KNX STANDARD/STARTER (v.l.): Brushed aluminum, black anodized aluminum



Abbildung 20: Enertex® Meta® KNX STANDARD/STARTER (v.l.): glossy white powder-coated (RAL9010), brass shiny gold plated

6 frame

6.1 Enertex® AluRa

6.1.1 Tender Text

The AluRa is a switch and socket frame milled from the solid. It is suitable for
- 55 inserts from Jung Series AS

- 55 inserts from Gira Standard 55
- 55 inserts from Hager Central inserts WY

It visually complements the two Enertex room controllers MeTa® KNX and SynOhr® Multisense KNX.

The AluRa is available in three colour options:

- brushed aluminium
- Aluminium matt black anodized
- Aluminium glossy white powder-coated (RAL9010)

In addition, these colour variants are available as single, double or triple frames.

6.1.2 Image



Figure 21: Enertex® AluRa 1-times, black anodized aluminum (right) with white insert JUNG (AS 500)



Figure 22: Enertex® AluRa 1-times, brushed aluminum with black insert JUNG (AS 500)

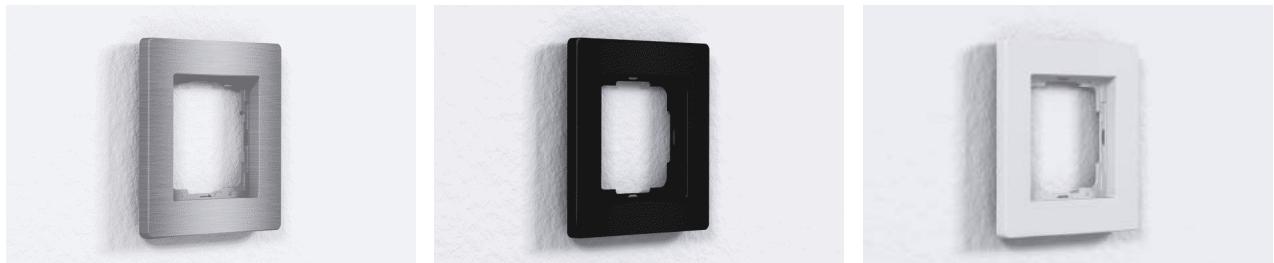


Figure 23: Enertex® AluRa 1-times, brushed aluminum, black anodized and glossy white powder-coated (RAL9010)

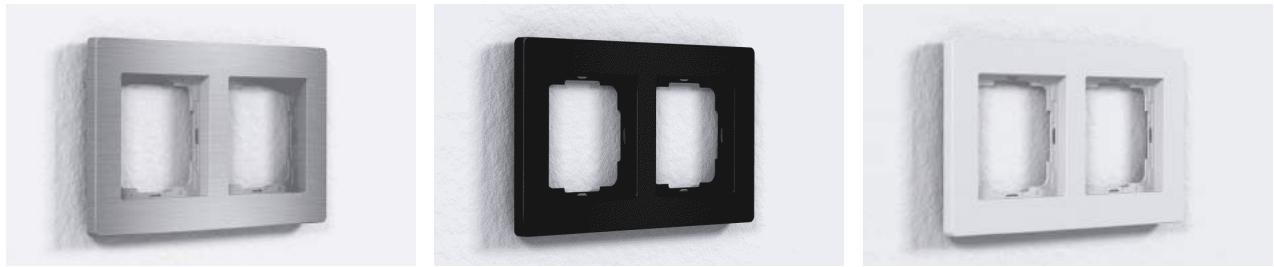


Figure 24: Enertex® AluRa 1-times, brushed aluminum, black anodized and glossy white powder-coated (RAL9010)



Figure 25: Enertex® AluRa 1-times, brushed aluminum, black anodized and glossy white powder-coated (RAL9010)

6.2 Enertex® PowerSupply 160-12

6.2.1 Tender Text

The power supply unit LED PowerSupply 160-12 in DIN rail housing (4 TE) supplies your LED illuminants with a DC voltage of 12 V DC and a nominal power of 160 W.

Device features:

- Output voltage: Adjustable between 12 - 14.25 V (in 0.25 V steps) to compensate line losses
- Rated output power: 160 W
- Max. efficiency: 93 %; in all load cases > 25 % the efficiency exceeds 90 %
- Power consumption in standby typ. 0.1 W
- Active power factor correction (PFC)
- Parallel operation of up to three devices possible
- In parallel operation, the load is automatically distributed evenly among each other
- Protective functions: short circuit protection, overload protection, overtemperature protection
- All protective functions are self-healing, i.e. when the cause is eliminated, the power supply unit restarts and provides the output power
- Meets requirements for lamps and LED light sources according to EC 61347-1 and 61347-2-13

Housing:

- DIN-rail housing with 4 TE

Power supply/connections:

- Input: 230 V AC (50 HZ)
- Output: 12 - 14.25 V DC

Display and operation:

- LEDs for operation, normal load and full load
- Knob for setting the output voltage

6.2.2 Image



Figure 26:Enertex® PowerSupply 160-12

6.3 Enertex® PowerSupply 160-24

6.3.1 Tender Text

The power supply unit LED PowerSupply 160-24 in DIN rail housing (4 TE) supplies your LED luminants with a DC voltage of 24 V DC and a nominal power of 160 W.

Device features:

- Output voltage: Adjustable between 24 - 28.5 V (in 0.5 V steps) to compensate line losses
- Rated output power: 160 W
- Max. efficiency: 94.5 %; in all load cases > 25 % the efficiency exceeds 91 %
- Power consumption in standby typ. 0.1 W
- Active power factor correction (PFC)
- Parallel operation of up to three devices possible
- In parallel operation, the load is automatically distributed evenly among each other
- Protective functions: short circuit protection, overload protection, overtemperature protection
- All protective functions are self-healing, i.e. when the cause is eliminated, the power supply unit

restarts and provides the output power

- Meets requirements for lamps and LED light sources according to EC 61347-1 and 61347-2-13

Housing:

- DIN-rail housing with 4 TE

Power supply/connections:

- Input: 230 V AC (50 HZ)

- Output: 24 - 28.5 V DC

Display and operation:

- LEDs for operation, normal load and full load

- Knob for setting the output voltage

6.3.2 Image



Figure 27:Enertex® PowerSupply 160-24

6.4 Enertex® PowerSupply 160-48

6.4.1 Tender Text

The power supply unit LED PowerSupply 160-48 in DIN rail housing (4 TE) supplies your LED illuminants with a DC voltage of 48 V DC and a nominal power of 160 W.

Device features:

- Output voltage: Adjustable between 48 - 57 V (in 1 V steps) to compensate line losses
- Rated output power: 160 W
- Max. efficiency: 94.5 %; in all load cases > 25 % the efficiency exceeds 91 %
- Power consumption in standby typ. 0.3 W
- Active power factor correction (PFC)

- Parallel operation of up to three devices possible
- In parallel operation, the load is automatically distributed evenly among each other
- Protective functions: short circuit protection, overload protection, overtemperature protection
- All protective functions are self-healing, i.e. when the cause is eliminated, the power supply unit restarts and provides the output power
- Meets requirements for lamps and LED light sources according to EC 61347-1 and 61347-2-13

Housing:

- DIN-rail housing with 4 TE

Power supply/connections:

- Input: 230 V AC (50 HZ)
- Output: 48 – 57 V DC

Display and operation:

- LEDs for operation, normal load and full load
- Knob for setting the output voltage

6.4.2 Image



Figure 28:Enertex® PowerSupply 160-48