Portfolio Enertex KNX

Inhaltsverzeichnis

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® ENA – electronic net defense

1.2.1 Tender text

The ENA enables secure access from the Internet to the home network.

Device features:

- Configuration with web browser

- High security through encryption standards: AES-256, 2048 bit RSA keys, Perfect Forward Secrecy

- Dynamic DNS (DDNS): Access to the home network without having to know the IP address

- Access via host names, such as "goethestrasse-12.no-ip.com"

- Management of up to four DDNS hostnames

- Connection establishment with web server from the Internet to the home network using four so-called reverse proxies: encryption of unsecure web servers, e.g. a camera for secure connection and access from outside and provision of password protection

- Establishing a secure connection to all devices in the home network using OpenVPN

- Authentication takes place via username/password combination or an encrypted PKCS#12 file

- Monitoring of the connection status of individual users and activation/deactivation of the OpenVPN server using KNX group addresses

- Automatic connection establishment (OpenVPN "on demand") parameterizable for Apple iOS devices

Housing:

- DIN-rail housing with 6 TE

Power supply/connections:

- Max. 1.7 W from external DC power supply (20 - 30 V)

Display and operation:

- green INFO-LED

1.2.2 Image

Figure 2: Enertex® ENA – electronic net defense

2 system actuators

2.1 Enertex® KNXnet/IP Router

2.1.1 Tender text

The KNXnet/IP Router (3 TE) supports up to five KNXnet/IP tunnel connections and can be used as a line or area coupler.

Device features:

- Up to 48 telegrams/second routing performance

- Up to 35 telegrams/second tunnelling performance

- Configuration of the IP address manually via ETS or automatically via DHCP or Zeroconf

- Integrated display shows device parameters and open tunnels

- Integrated battery-buffered real-time clock

- Provision of an SNTP server in the LAN

- Integrated Telnet server for accessing statistics and adjusting settings

Housing:

- DIN-rail housing with 3 TE

Power supply/connections:

- Power-over-Ethernet or through an external 16-24 AC or 20-30V DC power supply

Display and operation:

- LCD display

- LEDs for programming mode, BUS activity and LAN activity

- Programming button

2.1.2 Image

Figure 3: Enertex® KNXnet/IP Router

2.2 Enertex® KNXnet/IP Interface

2.2.1 Tender text

The KNXnet/IP Interface (3 TE) supports up to five KNXnet/IP tunnel connections.

Device features:

- Up to 35 telegrams/second tunnelling performance

- Configuration of the IP address manually via ETS or automatically via DHCP or Zeroconf

- Integrated Telnet server for accessing statistics and adjusting settings

Housing:

- DIN-rail housing with 3 TE

Power supply/connections:

- Power-over-Ethernet or through an external 16-24 AC or 20-30V DC power supply

Display and operation:

- LEDs for programming mode, BUS activity and LAN activity

- Programming button

2.2.2 Image

Figure 4: Enertex® KNXnet/IP Interface

2.3 Enertex® KNX IP Secure Router

2.3.1 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

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

2.3.2 Image

Figure 5: Enertex® KNX IP Secure Router

2.4 Enertex® KNX IP Secure Interface

2.4.1 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

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

2.4.2 Image

Figure 6: Enertex® KNX IP Secure Interface

2.5 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 Secure.

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)

2.5.1 Image

Figure 7: Enertex® KNX TP Secure Coupler

2.6 Enertex® KNX 4Kanal LED Dimmsequencer 5A

2.6.1 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

2.6.2   Image

Figure 8: Enertex® KNX 4Kanal LED Dimmsequenzer 5A – DK-Version

Figure 9: Enertex® KNX 4Kanal LED Dimmsequenzer 5A – REG-Version

2.7   Enertex® PowerSupply 960²

2.7.1   Tender text

The power supply unit KNX PowerSupply960² (6 TE) with integrated choke supplies the bus with a DC voltage of 30 V DC at a current of 960 mA.

Device features:

- Nominal current KNX: 960 mA

- Aux output: 30V, 600 mA

- Output of internally measured voltage, current and power values of the KNX bus and the Aux connection on the KNX bus and indication on the integrated display

- Monitoring: Telegrams on exceeding or falling below parameterized limit values

- Configurable C14 text messages for bus status

- Measurement of the internal housing temperature

- Integrated real-time clock buffered against power failure (power reserve approx. 2.5 days)

- Timer function

- Timer application with 32 switching times for max. 32 group addresses, including logic functions, holiday calendar and astro function

- Automatic calculation of public holidays through Easter calculation

- Control of common group addresses by the timer: switching, dimming, blinds, scene, colour RGB, colour HSV, operating mode heating controller

- Remote bus reset via communication object

- "USB Garage" as storage place for customer-specific project data on the supplied USB stick

Housing:

- DIN-rail housing with 6 TE

Power supply/connections:

- Input: 230 V AC (50 Hz)

- Outputs: KNX bus (choked, 30 V, 960 mA) and AUX (unchoked, 30 V, 600 mA)

Display and operation:

- LCD display

- LEDs for power, bus reset and programming mode

- Programming button

2.7.2 Image

Figure 10: Enertex® PowerSupply 960

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 completly 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 11: 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:

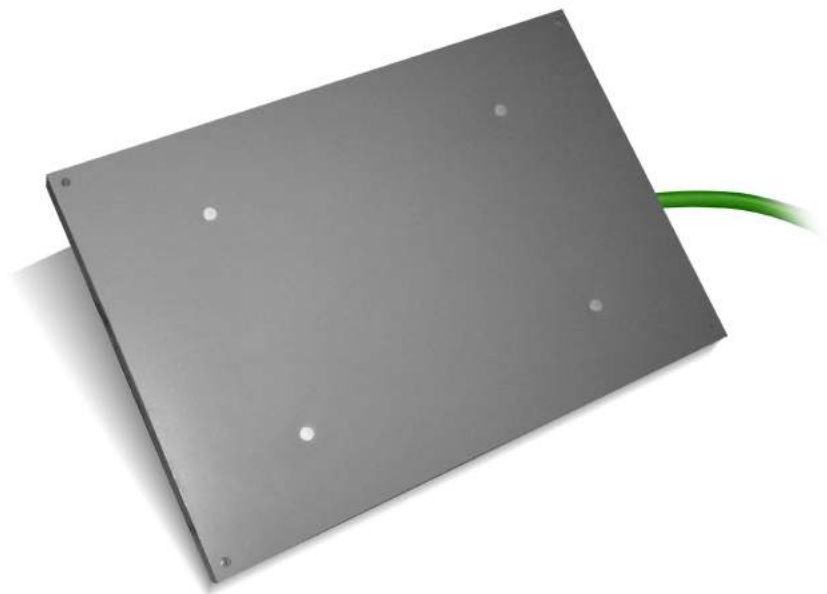- Splash-proof plastic housing with the size 210 x 140 x11 mm

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 12: 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 Play WAV files from SD card	yes
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 13: Enertex® SynOhr MultiSense KNX - silver anodized version

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

Figure 15: 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 16: Enertex® MeTa® KNX PREMIUM (starting from left):Brushed aluminum, black anodized aluminum

Figure 17: Enertex® MeTa® KNX PREMIUM (starting from left):glossy white powder-coated (RAL9010), brass shiny gold plated

Abbildung 18: Enertex® MeTa® KNX STANDARD/STARTER (v.l.): Brushed aluminum, black anodized aluminum

Abbildung 19: 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 20: Enertex® AluRa 1-times, black anodized aluminum (right) with white insert JUNG (AS 500)

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

Figure 22: Enertex® AluRa 1-times,brushed aluminum, black anodized and glossy white powder-coated (RAL9010)

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)

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 25: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 illuminants 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 26: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 27:Enertex® PowerSupply 160-48

7 Price list

Valid from March 2020

Category	Product	Artikle No.	Price
Control / visualization			
	Enertex® EibPC² Option NP – Update	1159-03	223,53 €
	Enertex® EibPC² ohne Option NP	1159-02	418,49 €
	Enertex® EibPC² inkl. Option NP	1159-01	653,78 €
	Enertex® ENA	1156	544,54 €
system actuators			
	Enertex® KNXnet/IP Router	1147	184,03 €
	Enertex® KNXnet/IP Interface	1150	124,37 €
	Enertex® KNX IP Secure Router	1164	300,84 €
	Enertex® KNX IP Secure Interface	1168	158,82 €
	Enertex® KNX TP Secure Coupler	1171	174,79 €
	Enertex® KNX 4Kanal LED Dimmsequenzer 5A REG	1160-REG	175,63 €

Category	Product	Artikle No.	Price
	Enertex® KNX 4Kanal LED Dimmsequenzer 5A DK	1160-DK	180,67 €
	Enertex® KNX PowerSupply 960²	1152	242,02 €
measuring instruments			
	Enertex® KNX SmartMeter 85A	1149-85	342,86 €
	Enertex® KNX SmartMeter 85A RT	1149-85-RT	368,07 €
	Enertex® KNX SmartMeter 630A (RT)	1149-630	536,13 €
Taster			
	Enertex® ProxyTouch KNX	1155	238,66 €
Room controller			
	Enertex® Synohr MultiSense KNX Premium, Alu gebürstet	1144-01 -al	398,32 €
	Enertex® Synohr MultiSense KNX Premium, schwarz eloxiert	1144-01 -sw	398,32 €
	Enertex® Synohr MultiSense KNX Premium, weiß (RAL9010) pulverbeschichtet	1144-01 -ws	398,32 €
	Enertex® Synohr MultiSense KNX – Update Starter-Standard	-	124,37 €
	Enertex® Synohr MultiSense KNX – Update Starter-Premium	-	208,40 €
	Enertex® Synohr MultiSense KNX – Update Standard – Premium	-	107,56 €
MeTa KNX	MeTa® KNX Premium, Alu gebürstet	1157-01-al	477,31 €
	MeTa® KNX Premium, schwarz eloxiert	1157-01-sw	477,31 €
	MeTa® KNX Premium, weiß (RAL9010) pulverbeschichtet	1157-01-ws	477,31 €
	MeTa® KNX Premium, vergoldet	1157-01-gl	670,59 €
	MeTa® KNX Standard, Alu gebürstet	1157-02-al	309,24 €
	MeTa® KNX Standard, schwarz eloxiert	1157-02-sw	309,24 €
	MeTa® KNX Standard, weiß (RAL9010) pulverbeschichtet	1157-02-ws	309,24 €
	MeTa® KNX Standard, vergoldet	1157-02-gl	418,49 €
	MeTa® KNX Starter, Alu gebürstet	1157-03-al	275,63 €
	MeTa® KNX Starter, schwarz eloxiert	1157-03-sw	275,63 €
	MeTa® KNX Starter, weiß (RAL9010) pulverbeschichtet	1157-03-ws	275,63 €
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	Enertex® AluRa – einfach, Alu gebürstet	1162-1-al	31,09 €
	Enertex® AluRa – einfach, schwarz eloxiert	1162-1-sw	32,77 €

Category	Product	Artikle No.	Price
	Enertex® AluRa – einfach, weiß (RAL9010) pulverbeschichtet	1162-1-ws	34,45 €
	Enertex® AluRa – zweifach, Alu gebürstet	1162-2-al	37,82 €
	Enertex® AluRa – zweifach, schwarz eloxiert	1162-2-sw	39,50 €
	Enertex® AluRa – zweifach, weiß (RAL9010) pulverbeschichtet	1162-2-ws	41,18 €
	Enertex® AluRa – dreifach, Alu gebürstet	1162-3-al	53,78 €
	Enertex® AluRa – dreifach, schwarz eloxiert	1162-3-sw	57,14 €
	Enertex® AluRa – dreifach, weiß (RAL9010) pulverbeschichtet	1162-3-ws	59,66 €
general Electronics			
	Enertex® LED PowerSupply 160-12	1167-12	107,56 €
	Enertex® LED PowerSupply 160-24	1167-24	107,56 €
	Enertex® LED PowerSupply 160-48	1167-48	107,56 €

All prices without VAT without shipping