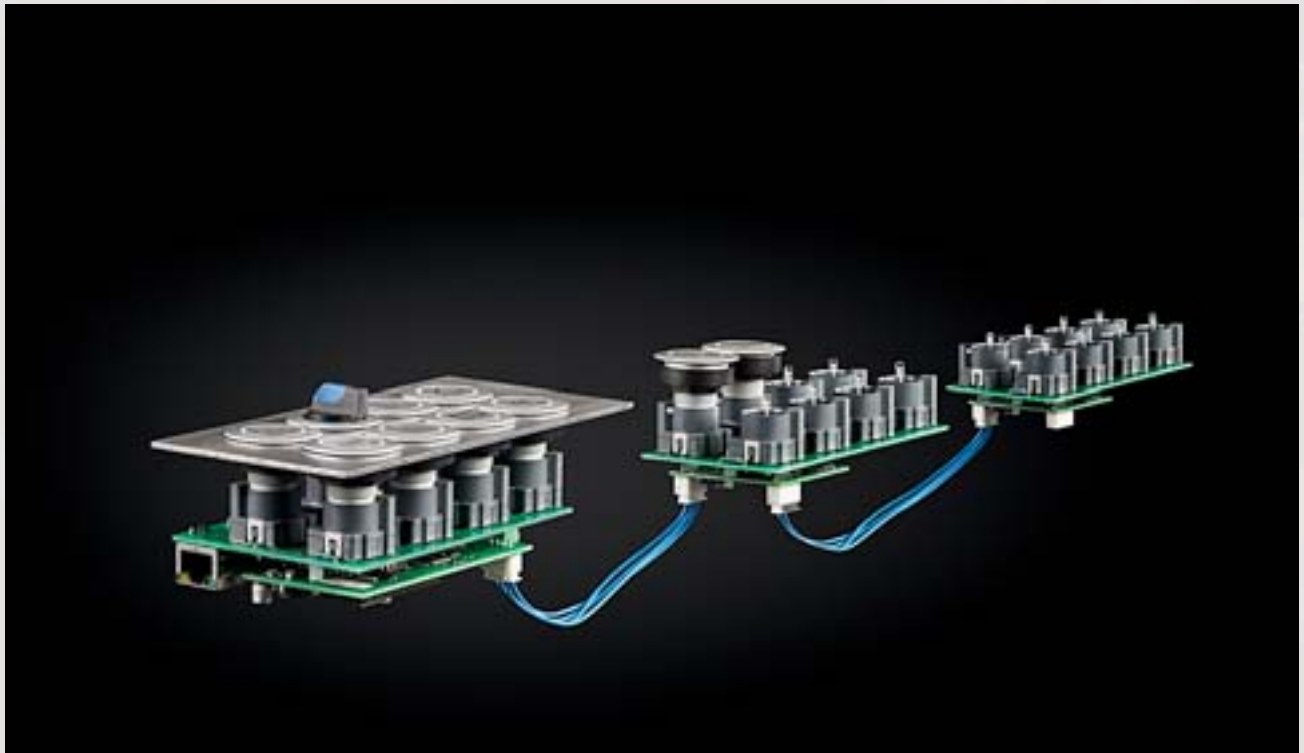


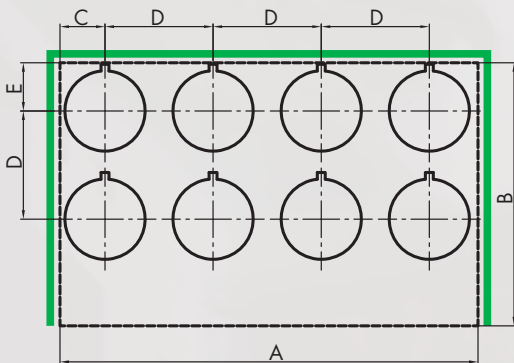


➔ **Modular bus operating concept**

| | | |
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| - Profibus | page | 642 |
| - EtherCAT | page | 643 |
| - Profinet I/O | page | 643 |
| - Ethernet IP | page | 644 |
| - IO-Link | page | 644 |
| - Powerlink | page | 645 |
| - AS-Interface | page | 647 |

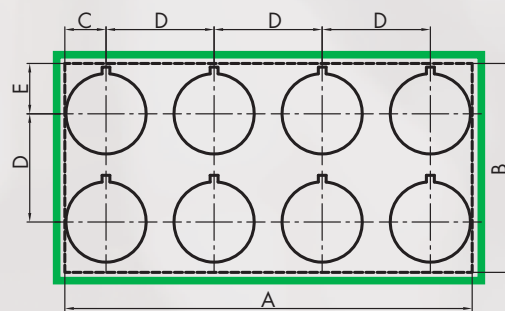


Dimensions/grid



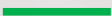
Basic module

| spacing | 25x25 | 27x27 | 30x30 |
|----------|---------|----------|----------|
| A | 98.0 mm | 105.0 mm | 116.0 mm |
| B | 65.0 mm | 70.0 mm | 73.0 mm |
| C | 11.5 mm | 10.8 mm | 12.5 mm |
| D | 25.0 mm | 27.0 mm | 30.0 mm |
| E | 11.5 mm | 13.4 mm | 13.4 mm |



Expansion module

| spacing | 25x25 | 27x27 | 30x30 |
|----------|---------|----------|----------|
| A | 97.0 mm | 104.0 mm | 113.0 mm |
| B | 47.0 mm | 53.0 mm | 58.0 mm |
| C | 11.5 mm | 10.8 mm | 11.0 mm |
| D | 25.0 mm | 27.0 mm | 30.0 mm |
| E | 11.5 mm | 13.3 mm | 14.0 mm |

 Further expansion modules can be arranged in the same spacing at three outer edges of the basic module.

Modular Bus Operating Concept

The basic idea was to develop an operating concept that makes us flexible enough to provide low-cost up to high-end solutions. The result is a future-proof and dynamic system to integrate contemporary design and state-of-the-art technology in modern machine concepts and panel layouts. The modular operating concept provides for project planning either standardised modules in a fixed grid spacing or the possibility to respond individually to customer-specific designs. The modular operating concept consists of two basic modules, the bus-specific basic module and the bus-independent expansion module. The basic module includes the typical bus connection as well as the bus node for communication with the corresponding bus system. The expansion module serves as a bus-independent I/O expansion in conjunction with the basic module, which enables us to integrate up to 128 command positions with 128 indicator lamps. The system power supply of the expansion modules is effected via the basic module, thus, reducing handling to a minimum. Each module is constructed with 8 inputs for contact blocks and 8 outputs for the LED indicator lamps. We distinguish in this modular operating concept two basic applications, control panel construction in which all command points are summarised on one area, and plant engineering & construction with several command points, which are distributed in the system.

Customised - Fast - Cost-effective

If your design plans cannot be implemented with the standardised modules, we can respond to your special design requirements anyway. For customised designs we resort to sub-modules of the modular operating concept while adapting the carrier card with the command points (PCB with individual contact blocks) according to your design proposal, consequently, the cost-optimised concept also taking effect here.

Technical Description - Control Panel Construction / Plant Engineering & Construction

Control Panel Construction

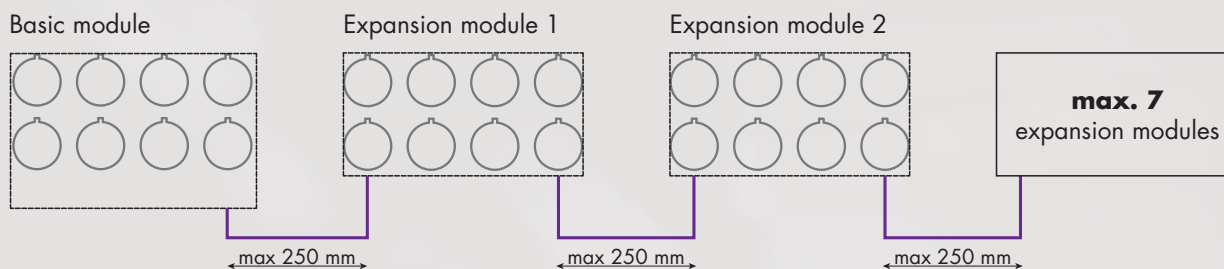
For the control panel construction, we consider the arrangement of the command points on one control unit, on which we can set up max. 64 command points with 64 indicator lamps. The 8 modules are then connected through with a ribbon cable. The individual modules can be arranged in a max. distance of 250mm to each other.

Plant Engineering & Construction

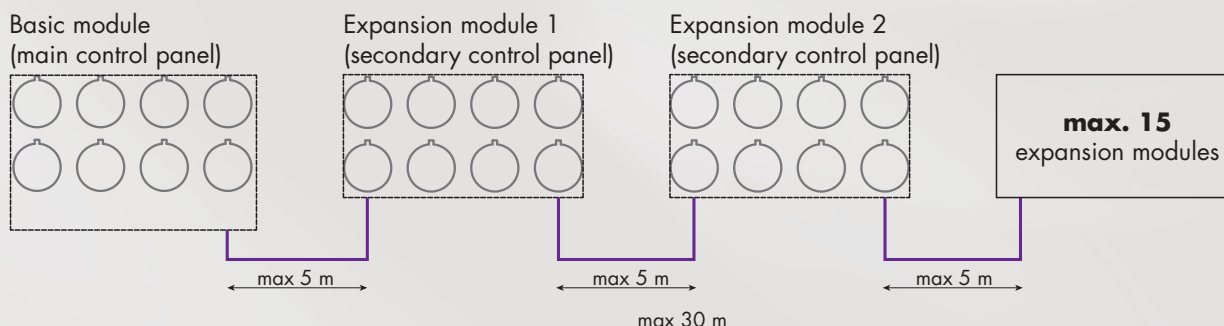
In the plant engineering & construction we consider the complete plant, which usually has a main control panel and several secondary control panels. In this case, the main control panel is equipped with the basic module and according to your operating concept, with additional expansion modules. The bus node with the typical bus connection is also arranged in the main control panel. It is then possible to equip more secondary control panels with expansion modules and to operate them via the main control panels using the bus data. In this application you can operate max. 128 command positions with 128 pilot lamps, and this at a cable length of 5m between the command positions and a total length of 30m within the plant.

Mounting of Standard Modules We offer the standardised modules in fixed grid spacings of 25 x 25mm, 27 x 27mm or 30 x 30mm. The modules are plugged on the actuators in the front panel and secured to the contact blocks by means of a locking bolt. Therefore, no additional spacers are needed in the front panel to mount the modules. The basic module is supplied with a supply voltage of +24V/DC and the bus signal. The expansion modules are connected to each other by means of a connecting cable, thus, there is no need for an additional wiring by what the wiring outlay reduces enormously. The individual modules can be attached in the same spacing.

Control Panel Construction



Plant Engineering & Construction





CANopen basic module

CANopen Bus System ISO11898
CiA Standard DS401 version 2.0

Addressing: DIP switch
Baud rate: 10kbit up to 1Mbit are automatically detected by the bus
I/Os: 8 I/Os, 8 inputs and 8 outputs, expandable to max. 64 I/Os for control panel construction and 128 I/Os for plant engineering and construction

Bus connection: 3-pole screw terminal
Bus termination: can be activated via sliding switch

Please download the EDS file and data sheet with pin configuration from www.schlegel.biz

| Control Panel Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
|---|--------------------|--------------------|--------------------|
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | CO_BTK25_01 | CO_BTK27_01 | CO_BTK30_01 |
| 8 contact blocks with snap action (CTLP) for 8 pluggable LEDs type L5,5K LEDs to be ordered separately | CO_BTK25_02 | CO_BTK27_02 | CO_BTK30_02 |

| Plant Engineering and Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
|---|--------------------|--------------------|--------------------|
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | CO_BTK25_03 | CO_BTK27_03 | CO_BTK30_03 |
| 8 contact blocks with snap action (CTLP) for 8 pluggable LEDs type L5,5K LEDs to be ordered separately | CO_BTK25_04 | CO_BTK27_04 | CO_BTK30_04 |

| | | | | | | | | | | | |
|--------------------|--|--|--|--|--|--|--|--|--|--|--|
| suitable actuators | | | | | | | | | | | |
|--------------------|--|--|--|--|--|--|--|--|--|--|--|



Profibus basic module

Profibus specification: DPVO

Data length: 96 byte I/O

Module name: 8 byte input 8 byte output

Addressing: DIP switch

I/Os: 8 I/Os, 8 inputs and 8 outputs, expandable to max. 64 I/Os for control panel construction and 128 I/Os for plant engineering and construction

Bus connection: 3-pole screw terminal
Bus termination: can be activated via sliding switch

Please download the GSD file and data sheet with pin configuration from www.schlegel.biz



| Control Panel Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
|---|--------------------|--------------------|--------------------|
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | DP_BTK25_01 | DP_BTK27_01 | DP_BTK30_01 |
| 8 contact blocks with snap action (CTLP) for 8 pluggable LEDs type L5,5K LEDs to be ordered separately | DP_BTK25_02 | DP_BTK27_02 | DP_BTK30_02 |

| Plant Engineering and Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
|---|--------------------|--------------------|--------------------|
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | DP_BTK25_03 | DP_BTK27_03 | DP_BTK30_03 |
| 8 contact blocks with snap action (CTLP) for 8 pluggable LEDs type L5,5K LEDs to be ordered separately | DP_BTK25_04 | DP_BTK27_04 | DP_BTK30_04 |

| | | | | | | | | | | | |
|--------------------|--|--|--|--|--|--|--|--|--|--|--|
| suitable actuators | | | | | | | | | | | |
|--------------------|--|--|--|--|--|--|--|--|--|--|--|



EtherCAT

EtherCAT basic module

Transmission: 100 Mbit/s
 I/O data length: 8 byte input 8 byte output
 I/Os: 8 byte input 8 byte output
 Addressing: DIP switch
 I/Os: 8 I/Os, 8 inputs and 8 outputs, expandable to max. 64 I/Os for control panel construction and 128 I/Os for plant engineering and construction
 Bus connection: 2 x RJ45 plug connectors 8P4C

Please download the XML file and data sheet with pin configuration from www.schlegel.biz

| Control Panel Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
|--|--------------------|--------------------|--------------------|
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | EC_BTK25_01 | EC_BTK27_01 | EC_BTK30_01 |
| 8 contact blocks with snap action (CTLP) for 8 pluggable LEDs type L5,5K LEDs to be ordered separately | EC_BTK25_02 | EC_BTK27_02 | EC_BTK30_02 |
| Plant Engineering and Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | EC_BTK25_03 | EC_BTK27_03 | EC_BTK30_03 |
| 8 contact blocks with snap action (CTLP) for 8 pluggable LEDs type L5,5K LEDs to be ordered separately | EC_BTK25_04 | EC_BTK27_04 | EC_BTK30_04 |
| suitable actuators | | | |



PROFI
INDUSTRIAL ETHERNET
NET

Profinet I/O basic module

ProfiNET I/O specification: 2 ports with transformer
 Fieldbus Baud rates: up to 100 MBaud
 IP address: assignment via bus
 Fieldbus functions: TCP/IP
 I/Os: 8 I/Os, 8 inputs and 8 outputs, expandable to max. 64 I/Os for control panel construction and 128 I/Os for plant engineering and construction.
 Bus connection: 2 x RJ45 plug connectors 8P4C

Please download the GSDML file and the data sheet with pin configuration from www.schlegel.biz

| Control Panel Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
|--|--------------------|--------------------|--------------------|
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | PN_BTK25_01 | PN_BTK27_01 | PN_BTK30_01 |
| 8 contact blocks with snap action (CTLP) for 8 pluggable LEDs type L5,5K LEDs to be ordered separately | PN_BTK25_02 | PN_BTK27_02 | PN_BTK30_02 |
| Plant Engineering and Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | PN_BTK25_03 | PN_BTK27_03 | PN_BTK30_03 |
| 8 contact blocks with snap action (CTLP) for 8 pluggable LEDs type L5,5K LEDs to be ordered separately | PN_BTK25_04 | PN_BTK27_04 | PN_BTK30_04 |
| suitable actuators | | | |



EtherNet IP basic module

Transmission: 100 Mbit/s
 I/O data length: 8 byte input 8 byte output
 I/Os: 8 I/Os, 8 inputs and 8 outputs, expandable to max. 64 I/Os for control panel construction and 128 I/Os for plant engineering and construction
 Bus connection: 2 x RJ45 plug connectors 8P4C

| Control Panel Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
|---|-------------|-------------|-------------|
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | EN_BTK25_01 | EN_BTK27_01 | EN_BTK30_01 |
| 8 contact blocks with snap action (CTLP) for 8 pluggable LEDs type L5,5K LEDs to be ordered separately | EN_BTK25_02 | EN_BTK27_02 | EN_BTK30_02 |
| Plant Engineering and Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | EN_BTK25_03 | EN_BTK27_03 | EN_BTK30_03 |
| 8 contact blocks with snap action (CTLP) for 8 pluggable LEDs type L5,5K LEDs to be ordered separately | EN_BTK25_04 | EN_BTK27_04 | EN_BTK30_04 |
| suitable pushbuttons and switches | | | |



IO-Link basic module

IO-Link device specification: V1.2
 Class: A
 Bit rate: COM 2 / 38.4 Kbps
 Data width: 18 byte in/out (for 127 I/Os)
 Min. cycle time: 5000µs
 Vendor ID: 0x0545
 IODD device description file: is stored in the IODD finder via IO-Link
 Diagnosis: LED monitoring, hardware monitoring, operating hours meter, monitoring of switching cycles, 1 x AD conversion integrated



| Control Panel Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
|--|-------------|-------------|-------------|
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | IL_BTK25_01 | IL_BTK27_01 | IL_BTK30_01 |
| 8 contact blocks with snap action (CTLP) for 8 pluggable LEDs L5,5K. LEDs to be ordered separately. | IL_BTK25_02 | IL_BTK27_02 | IL_BTK30_02 |
| Plant Engineering and Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | IL_BTK25_03 | IL_BTK27_03 | IL_BTK30_03 |
| 8 contact blocks with snap action (CTLP) for 8 pluggable LEDs L5,5K. LEDs to be ordered separately. | IL_BTK25_04 | IL_BTK27_04 | IL_BTK30_04 |
| suitable pushbuttons and switches | | | |

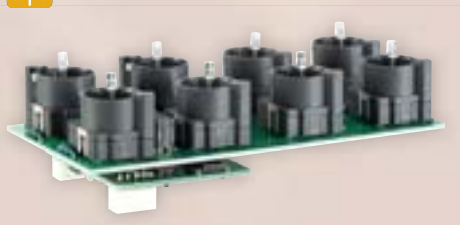


Powerlink basic module

Powerlink specification: V2, 800 byte cyclic
 Baud rate: 100 Mbit/s, half-duplex
 Supported protocols: SDO via ASND and UDP
 Bus connection: galvanically isolated via RJ45
 XDD file: 00000044_NIC52-REPLS_Schlegel_1

| Control Panel Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
|--|--------------------|--------------------|--------------------|
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | PL_BTK25_01 | PL_BTK27_01 | PL_BTK30_01 |
| 8 contact blocks with snap action (CTLTP) for 8 pluggable LEDs L5,5K. LEDs to be ordered separately. | PL_BTK25_02 | PL_BTK27_02 | PL_BTK30_02 |
| Plant Engineering and Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | PL_BTK25_03 | PL_BTK27_03 | PL_BTK30_03 |
| 8 contact blocks with snap action (CTLTP) for 8 pluggable LEDs L5,5K. LEDs to be ordered separately. | PL_BTK25_04 | PL_BTK27_04 | PL_BTK30_04 |
| suitable pushbuttons and switches | | | |

Accessories



Expansion module

I/O's: 8 I/Os (8 inputs and 8 outputs)
 Control panel construction: up to max. 64 I/Os using 7 additional modules and a cable length of 250 mm between the modules
 Plant engineering and construction: up to max. 128 I/Os using 15 additional modules and a cable length of 5 m between the modules, total length 30 m
 System connection: via the connecting cables VK_BTK_.... (please order separately, see next page)

| Control Panel Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
|--|-------------------|-------------------|-------------------|
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | E_BTK25_01 | E_BTK27_01 | E_BTK30_01 |
| 8 contact blocks with snap action (CTLTP) for 8 pluggable LEDs type L5,5K. LEDs to be ordered separately | E_BTK25_02 | E_BTK27_02 | E_BTK30_02 |
| Plant Engineering and Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | E_BTK25_03 | E_BTK27_03 | E_BTK30_03 |
| 8 contact blocks with snap action (CTLTP) for 8 pluggable LEDs type L5,5K. LEDs to be ordered separately | E_BTK25_04 | E_BTK27_04 | E_BTK30_04 |



External IO expansion module

General: expansion module for 8 external inputs & outputs for DIN rail mounting

Connection: designed for command and signaling devices

Cross section flexible: min. 0.25 mm², max. 1.00 mm²

Mounting type: on DIN rail

Electrical data

Voltage supply: The unit must not be operated with an external voltage supply. The voltage supply is provided from the basic unit.

Input: via external switching contact: wiring acc. to the connection diagram.

Maximum cable length 3 m, minimum cross section 0.25 mm².

No external voltage must be applied to the input, otherwise it will be destroyed.

Output via an external signaling device with maximum current carrying capacity of 20 mA

Wiring acc. to the connection diagram.

Attention: The output is not short-circuit proof.



Ultra-bright LED, T5,5K socket, 24V

with integrated series resistor and half-wave rectifier, for 24 V AC/DC (7/14 mA)

when connecting to DC, the correct polarity must be observed:

+ ... X1/- ... X2

storage temperature:

-25°C ... +80°C

ambient temperature:

-20°C ... +60°C

voltage tolerance:

+ 10 %

colour white  L5,5K24UW



Connecting cable for control panel construction

cable length 50 mm VK_BTK_001_50

cable length 100 mm VK_BTK_001_100

cable length 220 mm VK_BTK_001_220



Connecting cable for plant engineering & construction

cable length 90 mm VK_BTK_002_90

cable length 140 mm VK_BTK_002_140

cable length 300 mm VK_BTK_002_300



AS-Interface module

I/Os: 8 I/Os, 8 inputs and 8 outputs
 AS-Interface specification: V3.0
 AS-Interface profile: S-7.A.7.A
 Communication protocol: CTT3 for Master M4
 Diagnostics: data communication error signaling unit S5 protocol or peripheral error signaling unit S6
 Power supply: 26.5...31.6 V, from AS-Interface line
 Total power consumption: 220 mA
 Input: supply through AS-Interface line
 Voltage range: 19 ... 26V DC
 Input filter: < 5 ms
 Output: supply through AS-Interface line
 Total current limitation: > 150 mA / with peripheral error message to the master
 Output load current: max. 50mA DC per output
 Outputs: dimmable in 4 steps via P0...P2
 Rated voltage: 24 V DC (+10%)

| Control Panel Construction /Plant Engineering and Construction | 25 x 25 mm | 27 x 27 mm | 30 x 30 mm |
|--|---------------------|---------------------|---------------------|
| 8 contact blocks with snap action (CTP) and 8 soldered in white LEDs. | ASI_BTK25_01 | ASI_BTK27_01 | ASI_BTK30_01 |
| 8 contact blocks with snap-action function (CTLP) to accept 8 pluggable LEDs L5,5K Please order the LEDs separately | ASI_BTK25_02 | ASI_BTK27_02 | ASI_BTK30_02 |

suitable pushbuttons and switches



Accessories



Ultra-bright LED, T5,5K socket, 24V

with integrated series resistor and half-wave rectifier, for 24 V AC/DC (7/14 mA)
 when connecting to DC, the correct polarity must be observed:
 + ... X1/- ... X2
 storage temperature: -25°C ... +80°C
 ambient temperature: -20°C ... +60°C
 voltage tolerance: + 10 %

colour white **L5,5K24UW**

About Us

Pushbuttons/Switches

Panel Mount Jacks

Emergency-Stop Buttons

→ Bus Technology

RFID

Enclosures

Pedal Switches

Terminal Blocks

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