⊗ E·T·A® Power distribution system SVS16-EN

Description

The new power distribution and remote output system type SVS16-EN-xx offers selective overcurrent protection, power distribution of load circuits and switching, protection and diagnosis of digital outputs up to 10 A. An integral consistent communication of operating and failure conditions as well as switching and resetting of individual circuits of the DC 24 V level via Ethernet IP 2 PORT make the SVS16 an intelligent sub-system on the control level. The SVS16-EN for direct rail mounting mounting accommodates 8 (SVS16-EN-08-Cx3-P0x) or 16 (SVS16-EN-16-Cx3-P0x) electronic circuit protectors up to 10 A of type ESX10-(S)125 (with reset input) or ESX10-(S)115 (with control input). They ensure selective overcurrent protection of sensors and actuators, de-centralised peripheral sub-assemblies and their supply lines.

Alternatively the slots of the SVS16 also accommodate the solid state remote power controllers type E-1048-(S)7xx. Their well-proven features include activation, monitoring and diagnosis of hydraulic or pneumatic solenoids, magnetic valves, signal lamps etc. in a range of 0.5 A to 5 A with regard to short circuit, overload or wire breakage. Ethernet/IP makes all benefits of this approved system available for the protection of DC 24 V circuits. The SVS16 has a fully-fledged EtherNet/IP interface, supporting all specified Baud rates up to max. 10 Mbit/s. The SVS16 reduces wiring times and increases diagnostic capabilities and system availability in process control, chemical, petrochemical, pharmaceutical and foodstuffs industry, in steel production and car manufacturing.

Suitable for the following types:

Electronic circuit protector	**ESX10-(S)115..** (with control input and status output)
Electronic circuit protector	**ESX10-(S)125..** (with reset input and status output)
Solid state remote power controller	**E-1048-S7xx..** (with control input and status output)

Features

- Integral complete DC 24 V system for overcurrent protection, power distribution and remote input and output
- Systematic integration of protection and distribution functions
- Power distribution and selective protection of DC 24 V load circuits of a single source
- For electronic circuit protectors ESX10S115/-125 up to 10 A
- For solid state remote power controller E-1048-S7xx up to 5 A
- Fully-fledged EtherNet/IP interface
- Integral diagnostic functions for load circuits (overcurrent, wire breakage etc.)
- Profitability through considerably reduced wiring time
- Reduction of planning, design and installation time
- Ease of maintenance, diagnosis and system extension

Approvals

- CE

SVS16-EN

Technical data (T_{amb} = 25 °C, U_B = DC 24 V)

Application

Modular power distribution system for short circuit current limited DC 24 V applications

Line entry load module (X21)

Voltage ratings	DC 24 V (18 ... 32 V)
Total current	max. 40 A DC 24 V (+) = (X21) 1+ / 2+ (2-way) DC 24 V (-) = (X21) 1- / 2- (2-way) PE = (X21) PE, connected to DC 24 V (-) integral loop-through
Terminals	5-pole spring-loaded terminals, (1+/2+/1-/2-/PE) Cable cross section max. 10 mm²

Connection of line entry of BUS module (X31) is compulsory.

Voltage ratings:	DC 24 V (18 ... 32 V)
Current consumption:	max. 250 mA DC 24 V (+) = (X31) 1+ / 2+ (2-way) DC 24 V (-) = (X31) 1- / 2- (2-way) integral loop-through,
Terminal design:	2 x 2-pole PT terminals, (1+/2+) (1-/2-) cable cross section max. 1.5 mm²

F-slots

Number of slots for circuit breakers, prepared for circuit protector types ESX10-(S)115, ESX10-(S)125, E-1048-S7xx
SVS16-xx-08... F1...F8   = terminals X1...X8
SVS16-xx-16... F1...F16   = terminals X1...X16

Load outputs per way / slot

Voltage ratings: current:	DC 24 V (18 ... 32 V) max. 10 A per terminal block / slot 1) (L+) protected load output (+) (L-) negative return load (-) (PE)
Terminal design:	three-level screwless spring-loaded terminals (+X1 ... +Xn / -X1 ... –Xn / PE X1 ... PE Xn) Cable cross section max. 2.5 mm²

Bus terminal (X81/X82)

EtherNet/IP:	RJ45, 8-pole, connection sleeve, (X81/X82)

1) When mounted side-by-side, the circuit protectors ESX10 and the SSRPCs E-1048 rated 10 A the devices can only carry 80% of their rated load continuously.

6

Technical data (T$_{amb}$ = 25 °C, U$_B$ = DC 24 V)

Termination

For supply lines and load outputs
C13 print spring-loaded terminals (standard)

Line entry load module DC 24 V on terminal block (X21)
5-pole spring-loaded terminals, (1+/2+/1-/2-/PE)
max. cable cross section
flexible with wire end ferrule w/wo

plastic sleeve	0.5 mm – 10 mm²
stripping length	12 mm

Line entry load BUS module DC 24 V on terminal block (X31)
2 x 2-pole PT terminals, (1+/2+) (1-/2-)
flexible with wire end ferrule

(with plastic sleeve)	0.25 – 1.5 mm²

flexible with wire end ferrule

(without plastic sleeve)	0.25 – 2.5 mm²
stripping length	8 mm

Load outputs on terminal block
8x (16x) double level screwless spring-loaded terminals
(+X1 ... +Xn / -X1 ... -Xn / PE X1 ... PE Xn)
max. cable cross section
flexible with wire end ferrule

(with plastic sleeve)	0.25 – 1.5 mm²
cable cross section	AWG 0.20 – 2.5 mm²
stripping length	7.5 mm

Order numbering code

Type

SVS16 Power distribution system for
ESX10-(S)115, ESX10-(S)125, E-1048-7xx
- Short-circuit limited DC 24 V applications
- Max. cont. load 40 A
- Max. cont. load per load output: 10 A
- BUS connection

Version: Bus system
EN EtherNet/IP (connection: 2 x RJ45, 8-pole, connector)

Version, max. number of circuit protectors on the distribution system
08 8 circuit protectors [F1 ... F8]
16 16 circuit protectors [F1 ... F16]

Fitting version
C13 standard: completely fitted with print spring-loaded terminals

Configuration parameter / behaviour at BUS error
P00 parameterisable in the device description file

SVS16 - EN - 08 - C13 - P00   ordering example

6

CAUTION

Caution:
Electrostatically sensitive sub-assemblies can be destroyed by voltages far below the human perception threshold. These voltages already occur if you touch a component or electrical terminals of a sub-assembly without being electrostatically discharged. The damage of a sub-assembly caused by an overvoltage is often not immediately recognised, but will be noticed only after a longer operating time.

Notes

- The max. total current of 40 A per way must not be exceeded
- It is only intended for use with safety extra-low voltage (=24 V DC).
- Connection to a higher or not reliably disconnected voltage can cause hazardous conditions or damages.
- The user has to ensure that the cable cross section of the load circuit in question complies with the current rating of the used load or circuit protector.
- The technical data of the used circuit protectors have to be observed.
- In addition special precautions must be taken in the system or machine (e.g. use of a safety PLC) which reliably prevent an automatic re-start of parts of the system (cf. Machinery Directive 2006/42/EG and EN 60204-1, Safety of Machinery). In the event of a failure (short circuit/overload) the load circuit will be disconnected by the circuit protector.
- The power distribution system must only be installed by qualified personnel.
- Only after expert installation must the device be supplied with power.
- After tripping of the circuit protector and before reset, the cause of the failure (short circuit or overload) must be remedied.
- The national standards (e.g. for Germany DIN VDE 0100) have to be observed for installation and selection of feed and return cables.
- 0 V optential load and control voltage connected
- For convenient adjustment and configuration by means of projecting software a master data file (ESD file) with the file name 057A000C079x01XXX.EDS will be made available for downloading on the E-T-A homepage.

Please observe the separate user manual for type SVS16-EN-xx.

General data

Mounting method	Symmetrical rail to EN 60715-35 x 7.5	
Temperature range	0 ... 50 °C (without condensation)	
Storage temperature	-20 ... +70°	
Housing material	moulded	
Degree of protection	terminals	IP20 DIN 40050
	pcb	IP00 DIN 40050
Insulation voltage	DC 250V (pcb)	
Dimensions	see dimensional drawing (tolerances to DIN ISO 286 part 1 IT13)	
mass	SVS16-EN-08-C13-P00 approx. 511 g SVS16-EC-16-C13-P00 approx. 811 g	
NMC	• EN 61000-6-2: 2005 Electromagnetic compatibility (EMC) part 6-2: Basic standards - noise immunity for industrial areas	
	• EN 61000-6-4: 2007+A1: 2011 Electromagnetic compatibility (EMC) part 6-4: Basic standards - noise immunity for industrial areas	

Performance adjustable via DIP switch S1

Performance of the power distribution system SVS16-EN depends on the operating modes and switching status of hardware switch S1.
DIP switch 1 in ON position results in operating mode "FREEZE"
DIP switch 2 in ON position results in operating mode "GERÄTEADRESSIERUNG" – firm IP
DIP switches 2 and 3 in ON position results in operating mode "GERÄTEADRESSIERUNG" – Admin mode.
DIP switch 4 is available as a reserve.

Operating modes of the power distribution system SVS16

Operating mode SYSTEMINIT After applying supply voltage, the module is in the operating mode "SVS_SYSTEMINIT", there is no communication possible during this period. This operating mode lasts for a few seconds. The switching status of the hardware Switch S1 is also identified here. Signalling of the operating mode see table further down below.

Operating mode FREEZE Prerequisite: DIP switch 1 = ON The master controls the condition of the connected devices.
Or in the if the bus connection is interrupted, the devices are activated according to the EEPROM content. Signalling of the operating mode see table further down below.

Operating mode UNFREEZE Prerequisite: DIP switch 1 = OFF The master controls the condition of the connected devices.
If the bus connection is interrupted, the connected devices will be switched off. Signalling of the operating mode see table further down below.

Operating mode GERÄTEADRESSIERUNG **firm IP:** IP address is configured firmly on 192.168.0.1.
Condition: DIP switch 2 = ON and DIP switch 3 = OFF.
Admin mode: Condition: DIP switch 2 = ON and DIP switch 3 = ON. If the admin mode is active, the IP address parameters are changed by means of these services, then these will be filed in the non-volatile memory and will remain active even after switching the admin mode off.
Fieldbus-specific addressing: This function is permanently active and allows address assignment via the fieldbus-specific mechanisms.

EtherNet/IP bus system

EtherNet/IP is a realtime master-slave bus system.
Max. 16 participants can be operated on one bus segment.

More detailed information on the bus system, planning, mounting and operation of a system can be found in the official documents of the Open DeviceNet Vendors Association (ODVA).
The link www.odva.org will lead you to the following documents:

EtherNet/IP (Technical Directives)
EtherNet/IP (Planning Directives)
EtherNet/IP (Mounting Directives)
EtherNet/IP (Start-up Directives)

Status indication of the SVS16-EN-xx-xx

Status indication for the bus communication (EtherNet/IP)
Status of device or network is indicated on the device by means of external light emitting diodes.

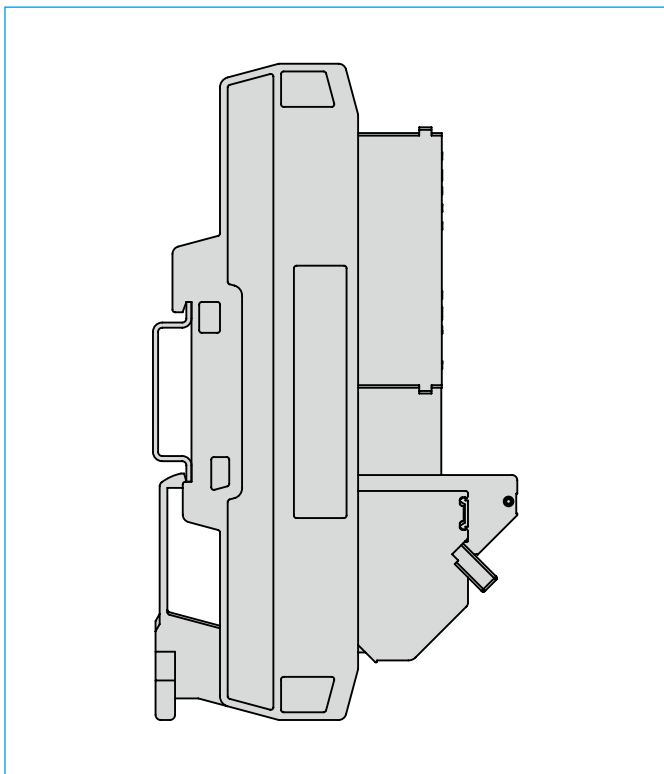The LEDs indicate the following information:

network status	LED RUN/NS	module status	LED ERR/MS
no power or no IP adress	OFF	no power	OFF
online, one or more connections established	green	controlled by a Scanner in Run state	green
online, no connections established	green blinking	not configured, or scanner in Idle state	green blinking
duplicate IP adress, FATAL error	red	major fault, FATAL error	red
one or more connections timed out	red blinking	recoverable fault(s) see EtherNet Spec.	red blinking

Signalling of different operating modes

Operating mode	Indication of operating mode		
	LED CM	LED CE	LED PWR
SVS_SYSTEMINIT	green/red/green colour change as LED test	green/red/green colour change as LED test	green/red/green colour change as LED test
SVS_ERROR_CRITICAL	yellow	red	green
SVS_ERROR_UNCRITICAL	yellow	red blinking	green
SVS_STANDALONE (FREEZE)	yellow	OFF	green
SVS_NORMAL_MODE	green	OFF	green

6

Mounting position

Accessories

**Jumper
SB-S11-P1-01-1-1A**

top view

⊘ E·T·A®
G E R M A N Y

Signal loop
SB-S11-P1-01-1-1A

Made in Germany
xxxx

⊘ E·T·A®
G E R M A N Y

Signal loop
Load disconnected

70
2.76

60
2.36

AC 240 V / DC 65 V, 1 A

13 ○   14 ○

1   2

10.3
.406

12.3
.484

terminals 13+14
bridged

blade terminals
DIN 46244-A 6.3-0.8

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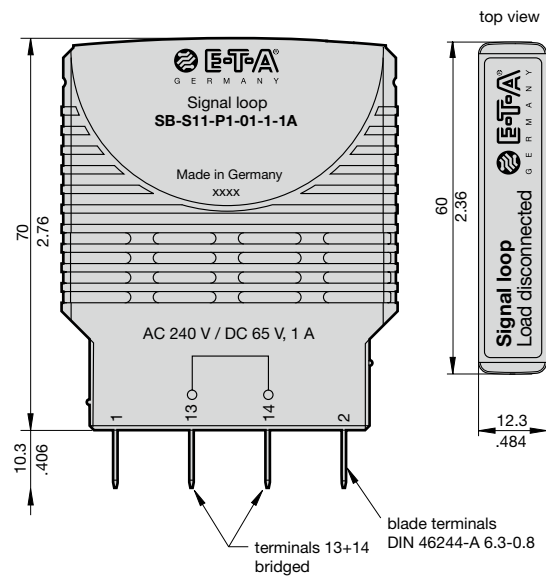
Schematic diagram SVS16-EN-08-...
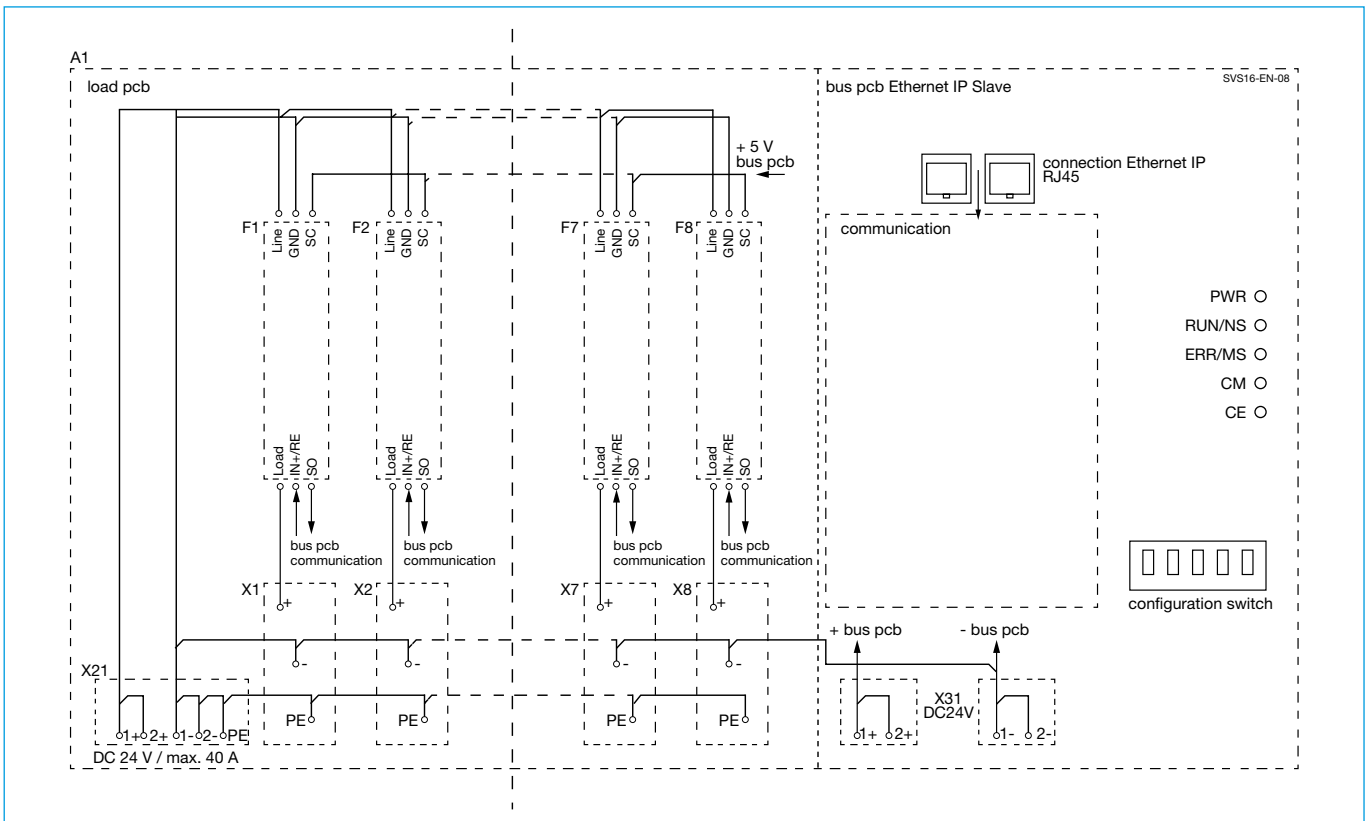
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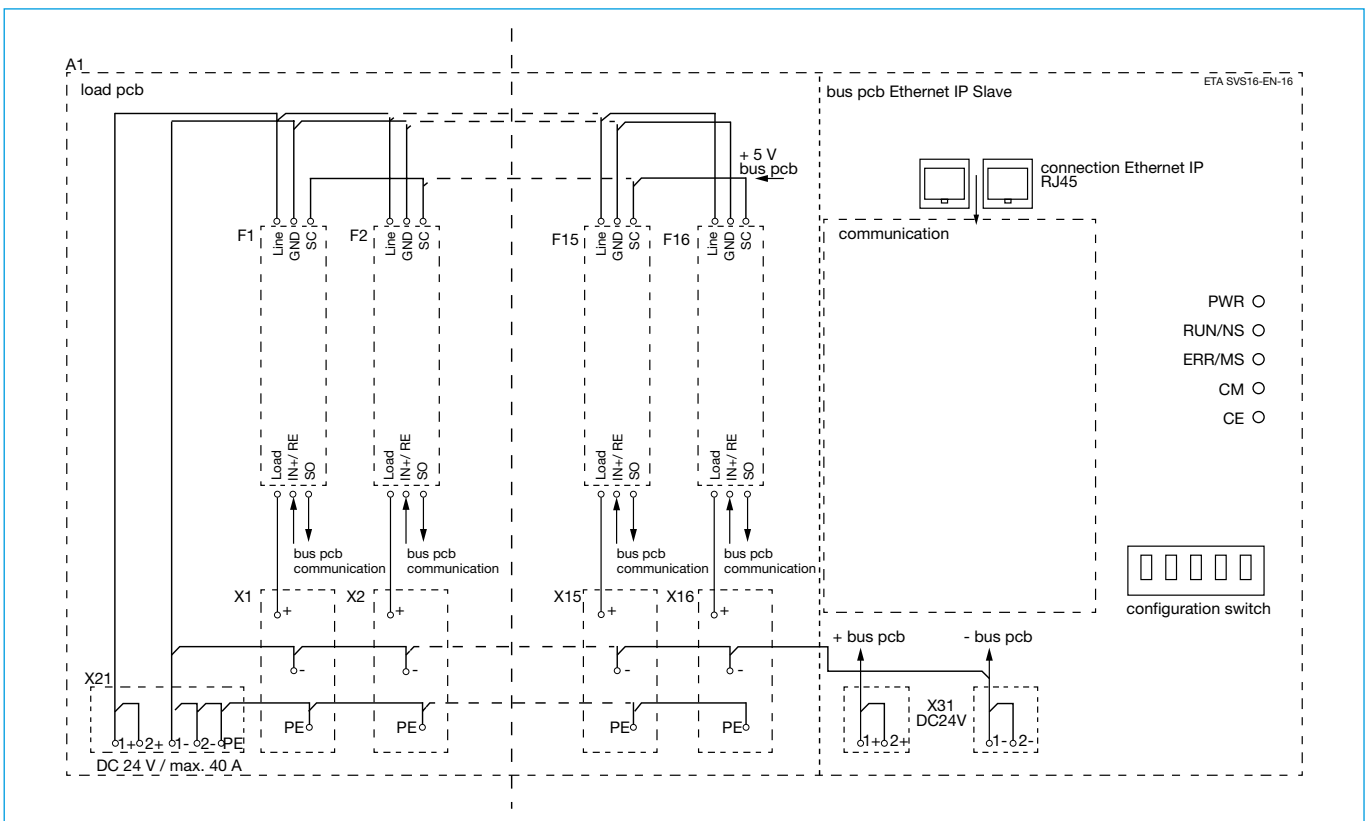
Dimensions SVS16-EN-08-C13-P00

Symmetrical rail EN 60715-35 x 7.5
(not part of the product)

56.4

185

127.8

X81   X82

bus connection
RJ45. 8-pole

Typ: SVS16-EN-
☐ 08-   ☐ 16-
☐ C13- ☐ C23-
☐ P00

EtherNet/IP

PWR
RUN/NS
ERR/MS
CM
CE

D-90518 ALTDORF
Made in Germany

S1

F1 F2 F3 F4 F5 F6 F7 F8

DC24 V/40 A
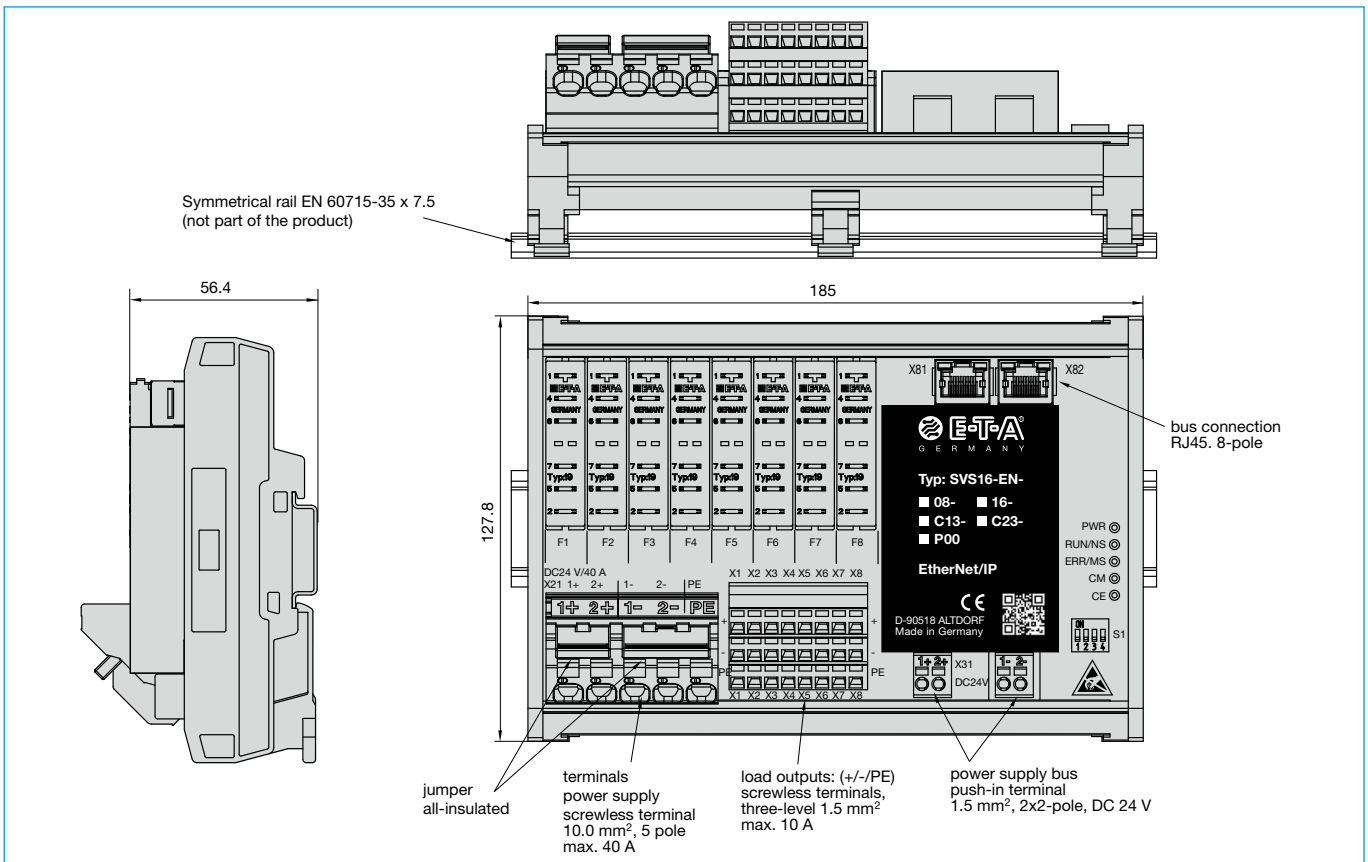X21 1+ 2+   1- 2- PE

X1 X2 X3 X4 X5 X6 X7 X8

X31
DC24V

jumper
all-insulated

terminals
power supply
screwless terminal
10.0 mm², 5 pole
max. 40 A

load outputs: (+/-/PE)
screwless terminals,
three-level 1.5 mm²
max. 10 A

power supply bus
push-in terminal
1.5 mm², 2x2-pole, DC 24 V

Dimensions SVS16-EN-16-C13-Pxx

Symmetrical rail EN 60715-35 x 7.5
(not part of the product)

56.4

285

127.8

bus connection
RJ45. 8-pole

X81   X82

Typ: SVS16-EN-
☐ 08-   ☐ 16-
☐ C13- ☐ C23-
☐ P00

EtherNet/IP

PWR
RUN/NS
ERR/MS
CM
CE

D-90518 ALTDORF
Made in Germany

S1

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F11 F12 F13 F14 F15 F16

DC24V/40A
X21 1+ 2+   1- 2- PE

X1 X2 X3 X4 X5 X6 X7 X8

X9 X10 X11 X12 X13 X14 X15X16

X31
DC24V

jumper
all-insulated

terminals
power supply
screwless terminal
10.0 mm², 5 pole
max. 40 A

load outputs: (+/-/PE)
screwless terminals,
three-level 1.5 mm²
max. 10 A

power supply bus
push-in terminal
1.5 mm², 2x2-pole, DC 24 V

6