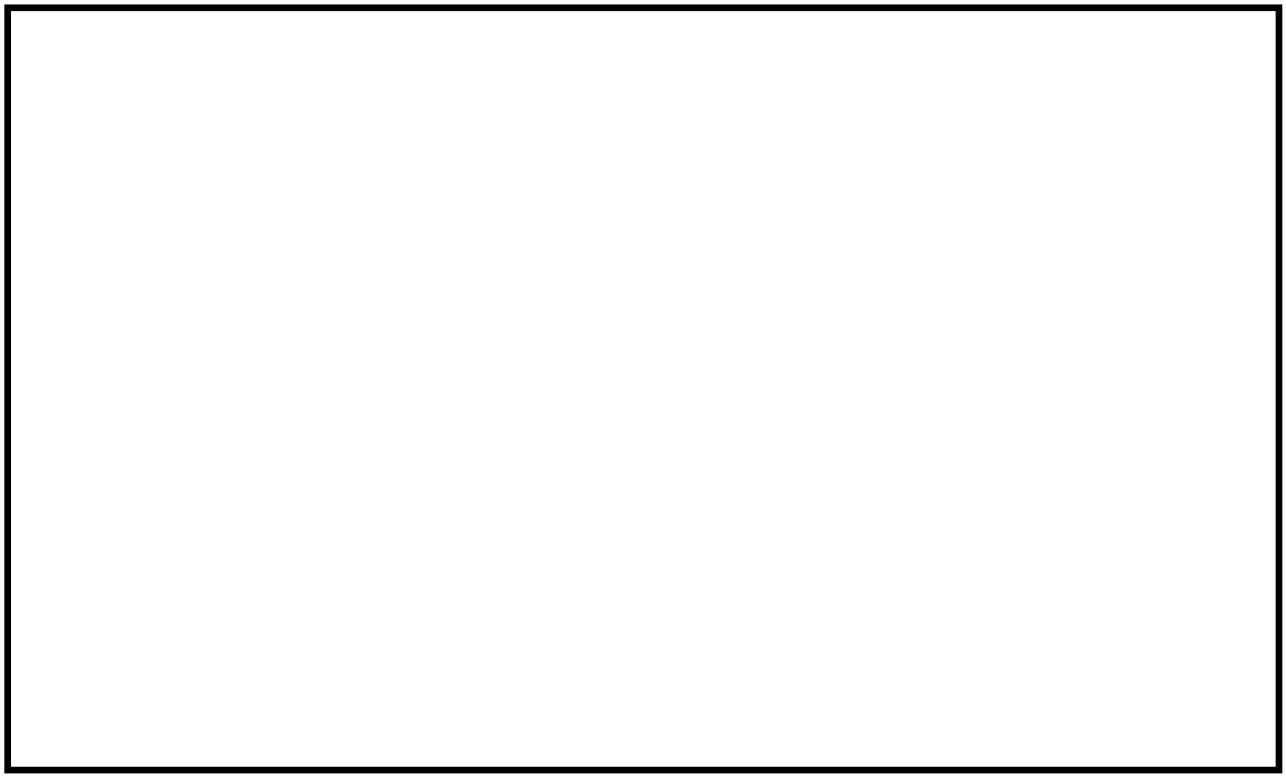
PEPPERL+FUCHS
PROTECTING YOUR PROCESS



Technical Manual

Ex i Power supply ENT-DC-30

Table of Content

PEPPERL+FUCHS

1 Important Information

1.1 General instructions

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1.2 Safety instructions

⇒ These devices are only allowed to be installed and operated by trained and qualified personnel who have received suitable instruction in their use.

⇒ These devices represent state-of-art technology. They are only allowed to be connected to systems that have been approved by Pepperl+Fuchs GmbH.

⇒ Never open the devices yourself. They are only allowed to be opened by authorized Pepperl+Fuchs GmbH personnel.
Pepperl+Fuchs GmbH is not liable for any resulting damages.

⇒ The devices are not allowed to be modified or otherwise altered in any way.
Pepperl+Fuchs GmbH is not liable for any resulting damages.

⇒ Please study the *"Technical Manual"* carefully prior to starting up the devices.

⇒ The most recent version of the *"Technical Manual"* is always valid. It is available on the Support page of our web site (Internet address: **http://www.pepperl-fuchs.com**).

⇒ The operating voltage of the devices **must not exceed the limits** indicated in the ***"Technical Manual"*** under **Technical data**.
In the event of failure to comply, **Pepperl+Fuchs GmbH is not liable for any resulting damages**.

⇒ The **relevant specifications for hazardous areas** (e.g. EN 50178, EN 60079, EN 50014 - 50039) and **accident prevention regulations** (e.g. UVV) must be observed.

⇒ Only connect circuits to the device when the voltage of these circuits does not exceed the values of a safety extra-low voltage (SELV) or a protective extra-low voltage (PELV).

⇒ The device must be installed and operated only in surrounding enclosures that
- comply with the requirements for surrounding enclosures according to IEC/EN 60079-0,
- are rated with the degree of protection IP54 according to IEC/EN 60529

Alternatively, it is permitted to install and operate the device in a monitored environment that ensures a pollution degree 2 according to IEC/EN 60664-1.

⇒ The installation instructions in accordance with IEC/EN 60079-14 must be observed.

⇒ Close all unused connections with the corresponding covers to ensure the degree of protection

⇒ The technical data specified for the hazardous area corresponds to the certified values for the European EEx approval. The user is responsible for ensuring that the devices are suitable for their intended application and for the prevailing ambient conditions. No warranty can be given by Pepperl+Fuchs GmbH in this connection.

⇒ The external power supply used for ENT-DC-30 supply must meet the overvoltage category II. (This is given for instance, if the external power supply complies with the requirements of IEC 60950 series, IEC 61010-1 or a technically equivalent standard.)

Data subject to change without notice

1.3 Symbols used in this manual

Warning:

The indicated specifications may not be modified. Non-compliance may result in dangerous situations and damages.

Caution:

Careful installation: do not replace electrical fuses with fuses from different manufacturers. Non-compliance may result in dangerous situations and damages.

Danger:

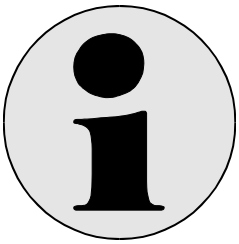
The product may possibly be negatively impacted or damaged by foreign influences.

Non-hazardous area:

Assembly and installation only in **non-hazardous areas**.
Power supply cables for the hazardous areas **zone 1** and **zone 2** only with cable type **DATL-A**.

Danger:
Hazardous area
(Zone 1+2)

All safety regulations as well as **compliance certificates for hazardous areas** must be observed. In addition, all regulations (VDE) published by the respective authorities for the application of the devices in **hazardous areas** (**zone 1** and **2**) **must** be complied with at all times.



Additional Info:

Information and notices that must be observed **additionally**.

Pressure load:

Significant mechanical **pressure** or **impact loads** may result in damages.

2 Initial Operation

This description for initial operation refers to those issues that must be considered with respect to the power supply ENT-DC. Information with respect to operation of the peripherals connected to the ENT-DC power supply can be found in the appropriate manual.

For operation proceed as follows:

- Switch off system or machine.
- Make sure that the assembly area is non-hazardous during the initial operation in case voltages are wired or devices will be opened that are not intrinsically safe.
- Connect Exi power supply ENT-DC. Refer to the chapter “Wiring” for the appropriate connections.
- Connect protective ground wire to the power supply ENT-DC.

Warning

The protective ground wire runs along the housing. The housing itself must be grounded. The wire for connecting to ground must have a cross section of at least 2.5 mm² and should be as short as possible.

- Connect power supply.
- Verify all functions.
- Switch on system or machine.
- Verify functions of the entire system or machine.

Warning

In case the ENT-DC has not been connected correctly or its configuration is incorrect, malfunctioning of your system/machine is possible.

Warning

The power supply ENT-DC is exclusively designed to be integrated into a different machine. Operation may not be initiated until conformity of the final product with regulation 89/336/EC and 89/392/EC has been established and the unit has been approved by a specialist according to EN 60079 and EN 50014 respectively.

3 ENT-DC Power Supply

The Exi power supply ENT-DC can be used in safe areas as a power supply for components in zone 1 and zone 2. The ENT-DC provides up to 3 feed circuits and one 20 mA CL-interface. The ENT-DC can used to feed all hazardous components which meet the interface specifications of the ENT-DC.

The most important data in brief:

Approval	[EEx ib] IIC
Classification in accordance	II (2) G [EEx ib] IIC
with ATEX 95 RL94/9 EG:	DMT 03 ATEX E 011 X
Housing	Full, top hat rail, and 19" flush type housing
Material	aluminum
Protection type	IP 20
Number of feed circuits	1 - 3 feed circuits
Exi voltage Ua_{max}	7 V .. 9 V (according to configuration)
Exi current Ik_{max}	220 mA ..350 mA (according to configuration)
Exi power Pa_{max}	1.1 W .. 1.4 W (according to configuration)
Connections	connectors / terminal screws

3.1 Operation

To warrant sufficient ventilation, the ENT-DC must be set up as described under “Assembly” in chapter 3.6. The slots for ventilation on the unit may not be covered so that heat dissipation is warranted.

3.2 Specifications

Approval:

Protection type	[EEx ib] IIC
Approval	DMT 03 ATEX E 011 X
Protection category:	IP 20

Housing:

Material	Aluminum
Dimensions	refer to chapter “Housing”
Weight	app. 1.0 kg

Environmental conditions during operation:

Temperature range	0 °C - + 50 °C
Humidity	max. 85 % non-condensating (48 h stress test)

Warning

The ENT-DC may only be set up and operated in a non-hazardous area.

Environmental conditions storage:

Temperature range	-20 °C - +70 °C

X1 data interface:

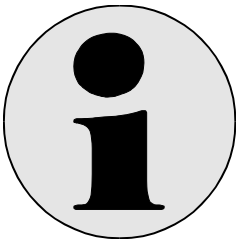
Data	20 mA CL active/passive, zero potential RS232
Baudrate	19.200 Baud (38.000 Baud on request)
Connector	9-pin D-Sub integrated jack, pin contacts
Voltage U_n	≤ |±15| V DC

X2 interface power supply:

Voltage U_n	24 V DC ±10%
Drawing of current	1 feed circuit: app. 380 mA continuous current 2 feed circuits: appear. 550 mA continuous current 3 feed circuits: appear. 720 mA continuous current
Fuse SI 1	is safety relevant. Always use the correct fuse type. 2A slow blowing (type H 1500 A)
Connector	2 x 2-pin integrated jack / pin contacts, for CONNECTOR-K02-381-O

X3 Exi interface:

Data	20 mA CL active/active switched to plus			
Voltage supply	Version	Ua [V]	Ia [mA]	Pa [W]
	...-1..-...	8	280	1.2
	...-2..-...	8.5	280	1.2
	...-3..-...	9	280	1.2
	...-4..-...	9	290	1.3
	...-5..-...	9	300	1.4
	...-6..-...	8,5	240	1,2
Connector	2 x 4-pin integrated jack / pin contacts, for CONNECTOR-K04-508-S			



Note

Additional output according to the approval described in the appendix can be provided upon request.

X4, X5 Exi interface (only for 19" versions -19K, -19E):

Signals according to X3 Exi-interface

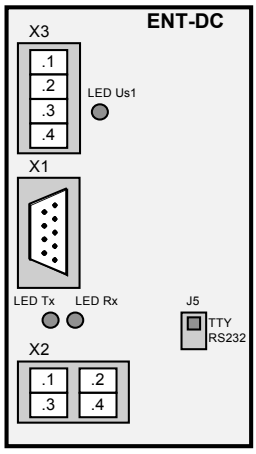
Connector: 96-pin spring contact strip DIN 41612 (not all springs equipped)

3.3 Pin Assignment

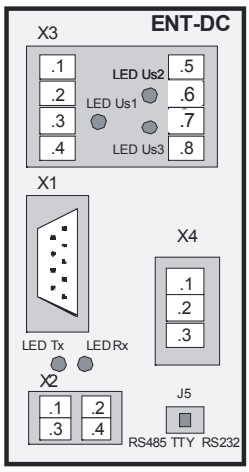
For the top hat rail and full housing version of the ENT-DC-2 all connections are made in the front. For the 19"-version connections can be made in the front and in the rear. All connections can be reached from the front and the back.
The connections X2, X3 and X4 are carried out as terminal screw-/plug-in terminals. The connection X1 constitutes a D-Sub jack. If the power supply operates with one feed circuit the connection X3 has four contacts. If 2 or 3 feed circuits are in use the connection X3 has 8 contacts.

Front elevation:

1 feed circuit:



2 or 3 feed circuits:



Interface X1 Data interface for safe area (PC)	
9-pin D-Sub jack with pins	X1.1 Tx- (20 mA CL interface) X1.2 Tx+ (20 mA CL interface) X1.3 Rx+ (20 mA CL interface) X1.4 Rx- (20 mA CL interface) X1.5 +12V (max. 50 mA) X1.6 TxD (RS232 interface) X1.7 RxD (RS232 interface) X1.8 nc X1.9 GND (RS232 interface)

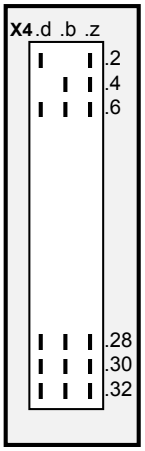
Interface X2 Supply interface (24 VDC)	
4-pin terminal block 0.5 mm² - 2.5 mm²	X2.1 PA X2.2 + 24V DC X2.3 PA X2.4 GND

Interface X3 Data- / supply interface hazardous area	
2 x 4-pin terminal screw-/plug-in terminal	X3.1 Rx X3.2 Tx X3.3 Us1 X3.4 GND X3.5 Us2 (only assigned if 2 feed circuits) X3.6 GND (only assigned if 2 feed circuits) X3.7 GND (only assigned if 2 feed circuits) X3.8 Us3 (only assigned if 2 feed circuits)

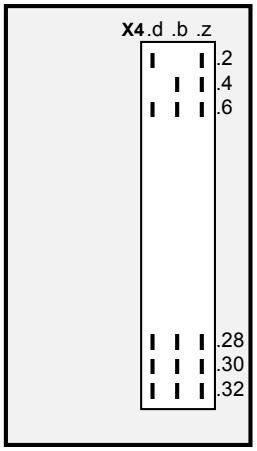
Interface X4 on front Optional data interface RS 485 to safe area	
3-pin termianl screw-/plug-in terminal	X4.1 GND X4.2 RS485 A X4.3 RS485 B

Rear elevation:

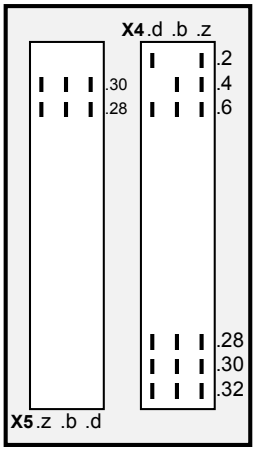
19E with 1 feed circuit:



19K with 1 or 2 feed circuits:

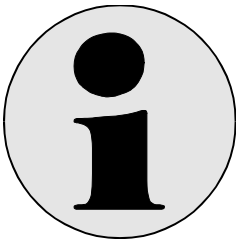


19K with 3 feed circuits:



Interface X4 DIN jack Combi-interface 1. and 2. feed circuit			
F-strip (96 pin, not all contacts equipped)	X4.d.2 Us2 (Exi) X4.d.6 Us1 (Exi) X4.d.28 Rx- X4.d.30 Rx+ X4.d.32 Vdd	 X4.b.4 GND (Exi) X4.b.6 Tx20 (Exi) X4.b.28 TxD X4.b.30 Tx+ X4.b.32 +24 V	X4.z.2 GND (Exi) X4.z.4 GND (Exi) X4.z.6 Rx20 (Exi) X4.z.28 RxD X4.z.30 Tx- X4.z.32 GND

Interface X5 Combi interface 3. feed circuit			
F-strip (96 pin, not all contacts equipped)	X5.z.30 GND (Exi) X5.z.28 GND (Exi)	X5.b.30 GND (Exi) X5.b.28 Us3 (Exi)	X5.d.30 GND (Exi) X5.d.28 Us3 (Exi)



Note

For the 19" installation and 3 feed circuits a second F-strip is located in the rear of the housing. The second F-strip is turned for installation purposes.

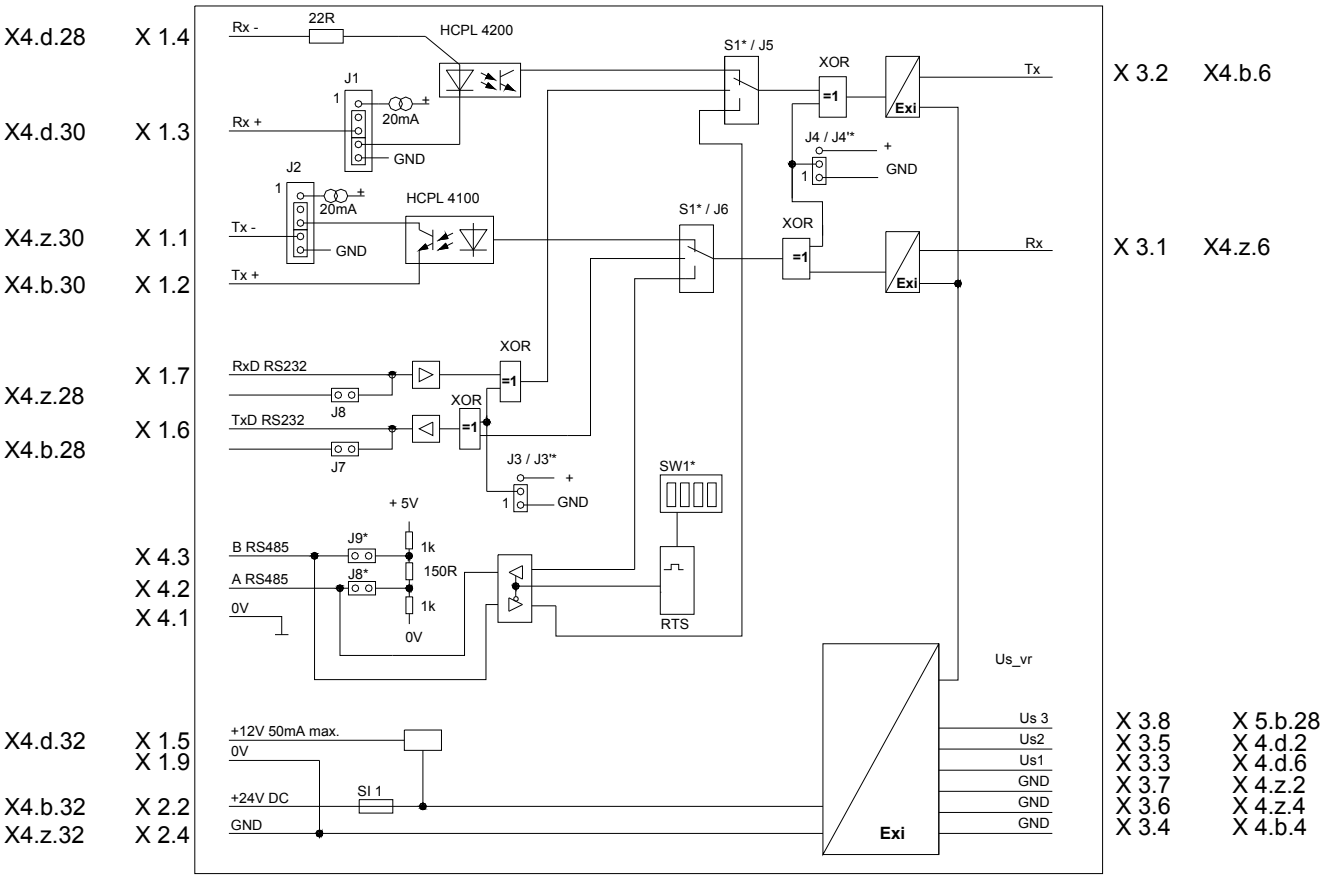
3.4 Wiring

All connections for the ENT-DC are made in the front.
All clamps are also directed to the 19” header for the 19" flush type version. Hence connections can be made in the rear or combined in front and rear.

Note

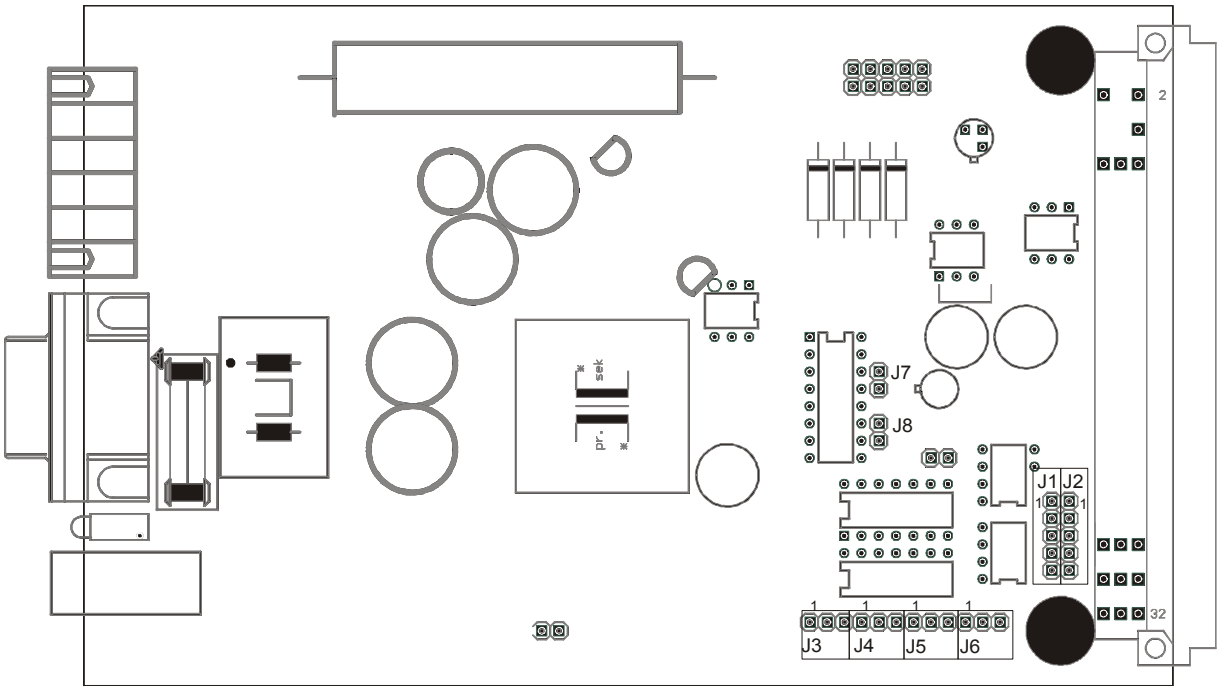
If connections are made in the front and rear the same signals should not be assigned in the front and rear at the same time. Proper operation of the ENT-DC may be endangered in this case. (Issues with respect to safety are not impacted).

3.4.1 Block Diagram



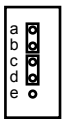
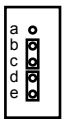
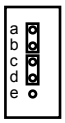
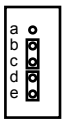
The jumper settings shown in the diagram reflect delivery status!

3.4.2 Jumpers main circuit board

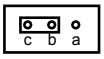
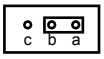
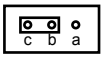
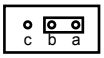


Note

The jumpers J5 and J6 are designed as wiper switches on the front panel for the ENT-DC-30 versions -19K, -HS, and -AB.
On the -19E version the jumpers must be placed on the circuit board.

J1 20 mA CL interface to PC / PLC		receiving branch passive		receiving branch active [1])
J2 20 mA CL interface to PC / PLC		sending branch passive		sending branch active [1])

For ENTDC-30-100-xx2**
1 feed circuit without RS 485

J3 logic level (X1) RS232		normal [1])		negated
J4 logic level (X1) RS232 and 20 mA CL		normal [1])		negated

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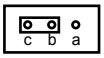
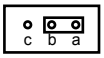
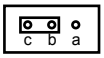
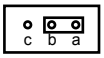
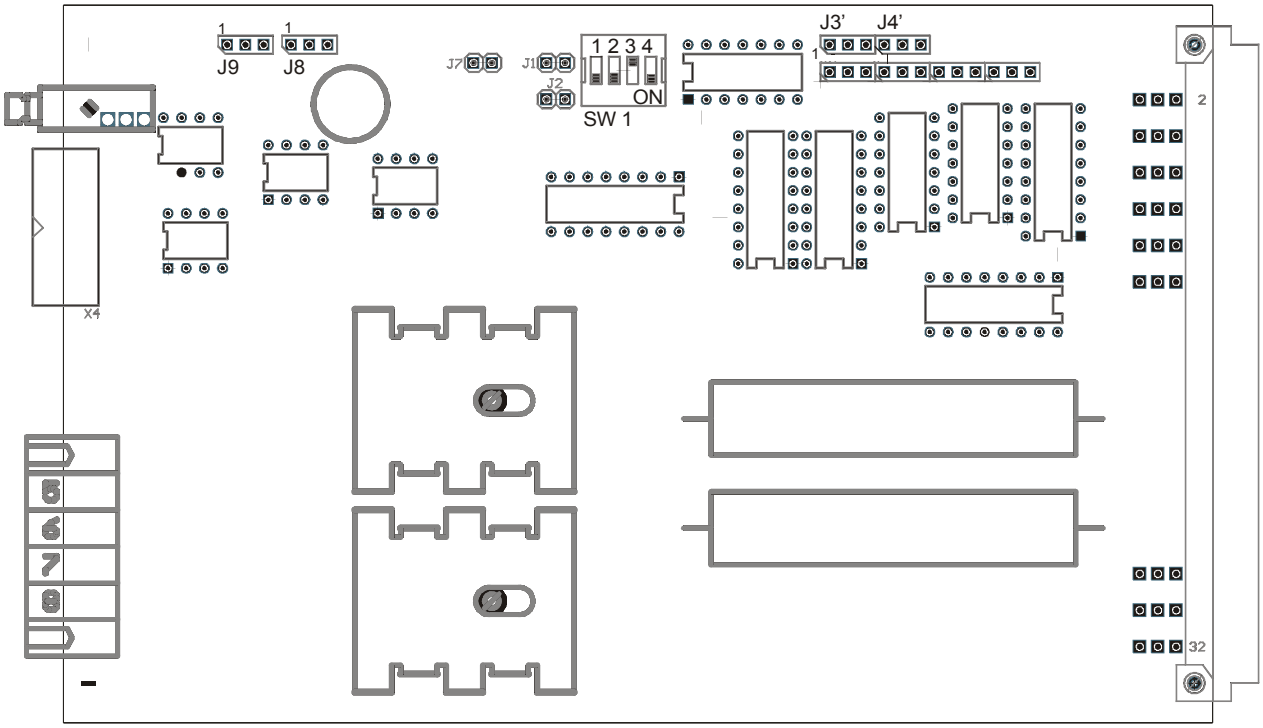
J5 (switch front panel) Rx (X1) RS232 or 20 mA CL		RS232 [1])		20 mA CL
J6 (switch front panel) Tx (X1) RS232 or 20 mA CL		RS232 [1])		20 mA CL
J7 TxD RS232 via 19" header		sending branch activated [1])		sending branch not activated
J8 RxD RS232 via 19" header		receiving branch activated [1])		receiving branch not activated

[1]) reflect factory status!

** with all other versions placed on the additional circuit board.

3.4.3 Jumpers additional circuit board

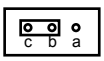


SW1 prolongation of sender activation

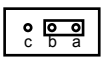
DIP 1	DIP 2	DIP 3	Prolongation time
ON	**ON**	**ON**	0,06 ms (153600 Baud)
OFF	**ON**	**ON**	0,12 ms (76800 Baud)
ON	OFF	**ON**	0,25 ms (38400 Baud)
OFF	OFF	**ON**	0,49 ms (19200 Baud)
ON	**ON**	OFF	0,97 ms (9600 Baud) *)
OFF	**ON**	OFF	1,95 ms (4800 Baud)
ON	OFF	OFF	3,90 ms (2400 Baud)
OFF	OFF	OFF	7,81 ms (1200 Baud)

*) factory status

J3'
logic level (X1) RS232

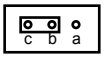


normal [1])

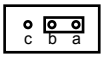


negated

J4'
logic level (X1) RS232 and 20 mA CL



normal [1])



negated

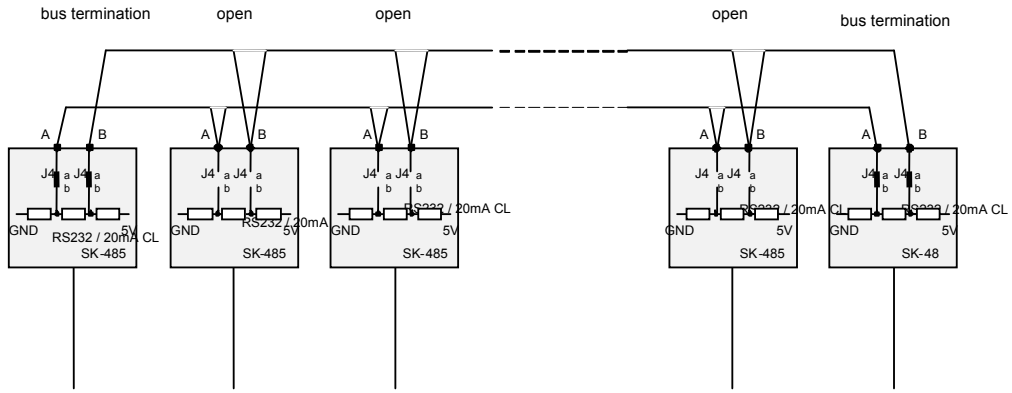
J8
Look at RS 485 bus termination

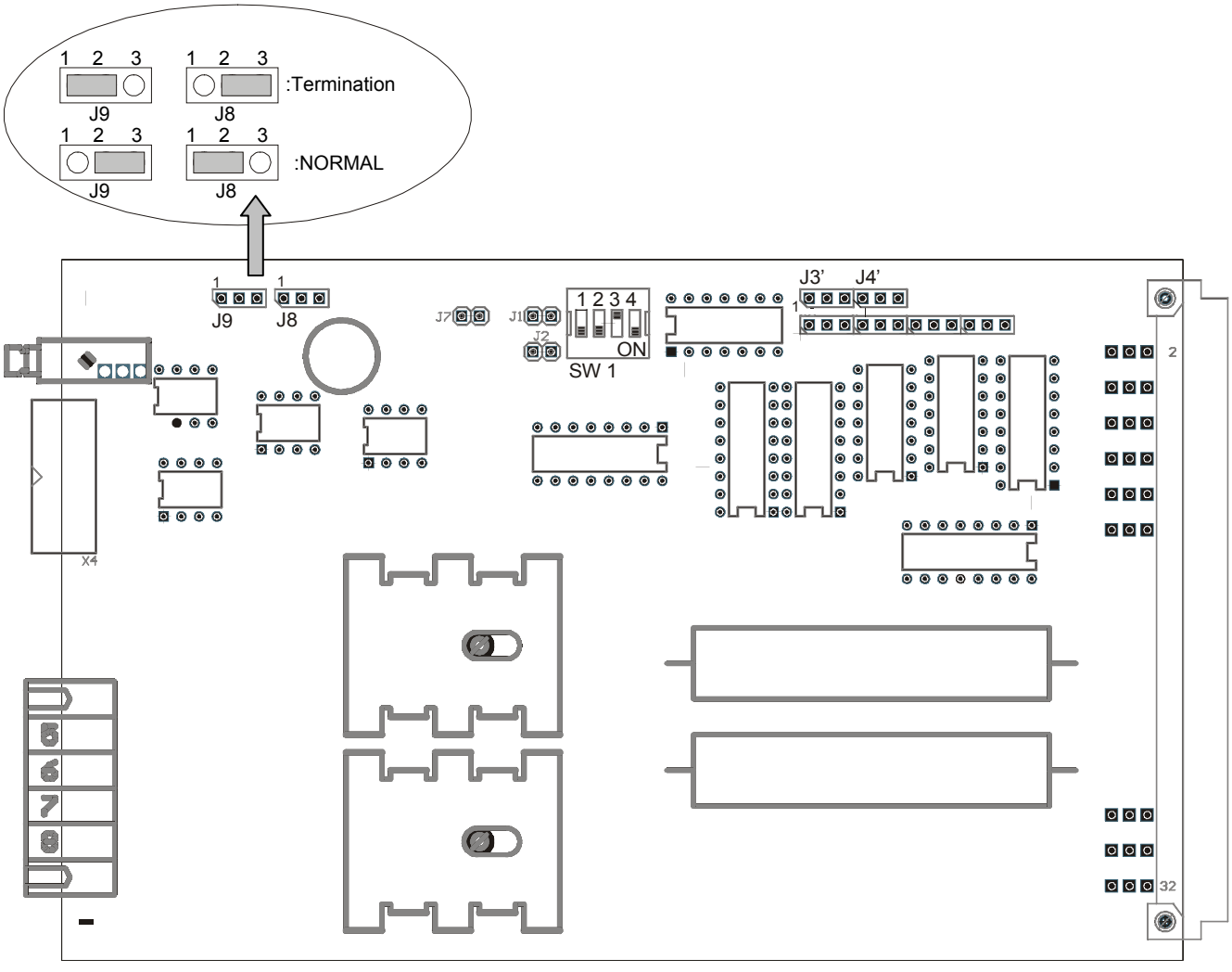
J9
Look at RS 485 bus termination

3.4.4 RS 485 bus termination

For the ENT-DC-30 is an active bus data fixing necessary. In every ENT-DC-30 there is the possibility for an appropiate termination. For this the jumper J8 has to be put on position 2-3 and J9 put on position 1-2. The ENT-DC-30 which are in the midth of the bus the termination has not to be done (J8 in position 1-2 and J9 in position 2-3 *)

* factory status





3.4.5 Fuses

SI 1 2 A slow blowing (type H 1500 A)

Warning

The fuse SI 1 is safety relevant. Always use the correct type fuse.

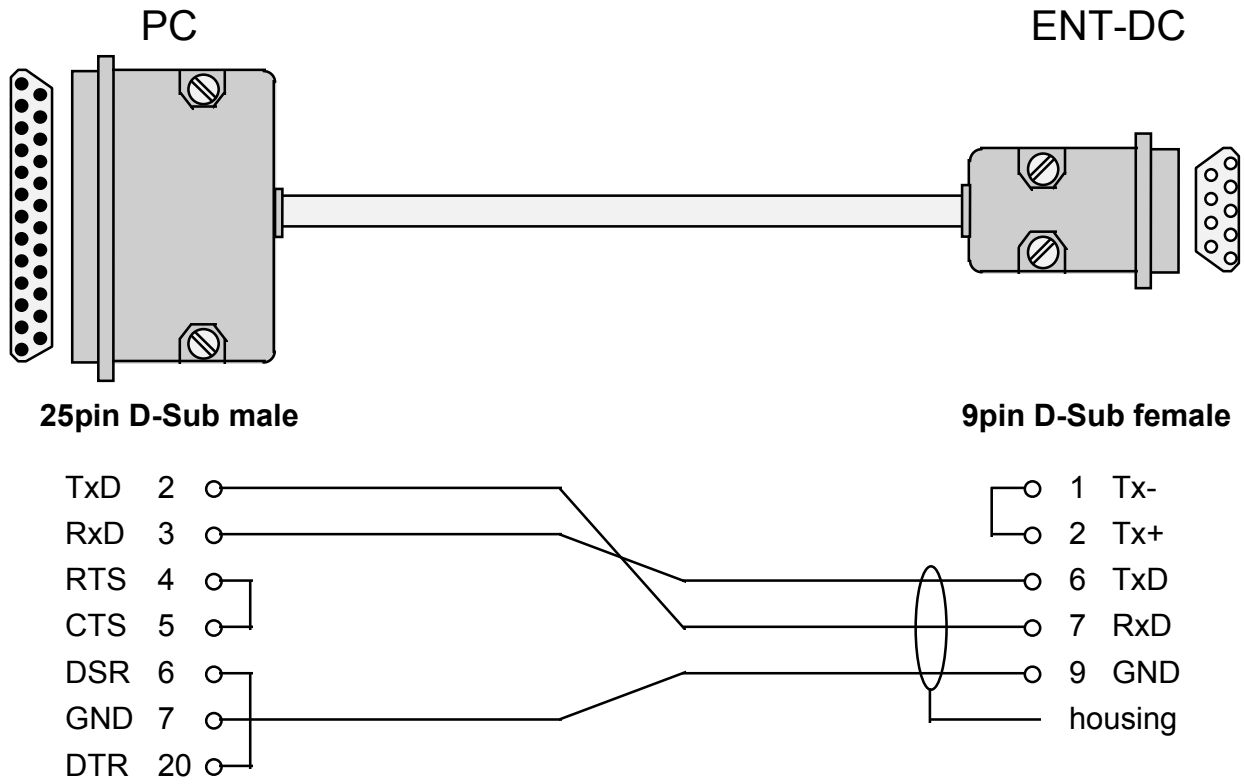
The fuse SI 1 is melted by an internal protection circuit of the ENT-DC if the supply voltage (24 VDC) increases to values above 32 V. This feature is safety relevant to protect the internal circuit from overloads.

Warning

The fuses SI 2 through SI 4 (round fine-wire fuses) may not be removed nor replaced.
A defect in these fuses is unlikely.

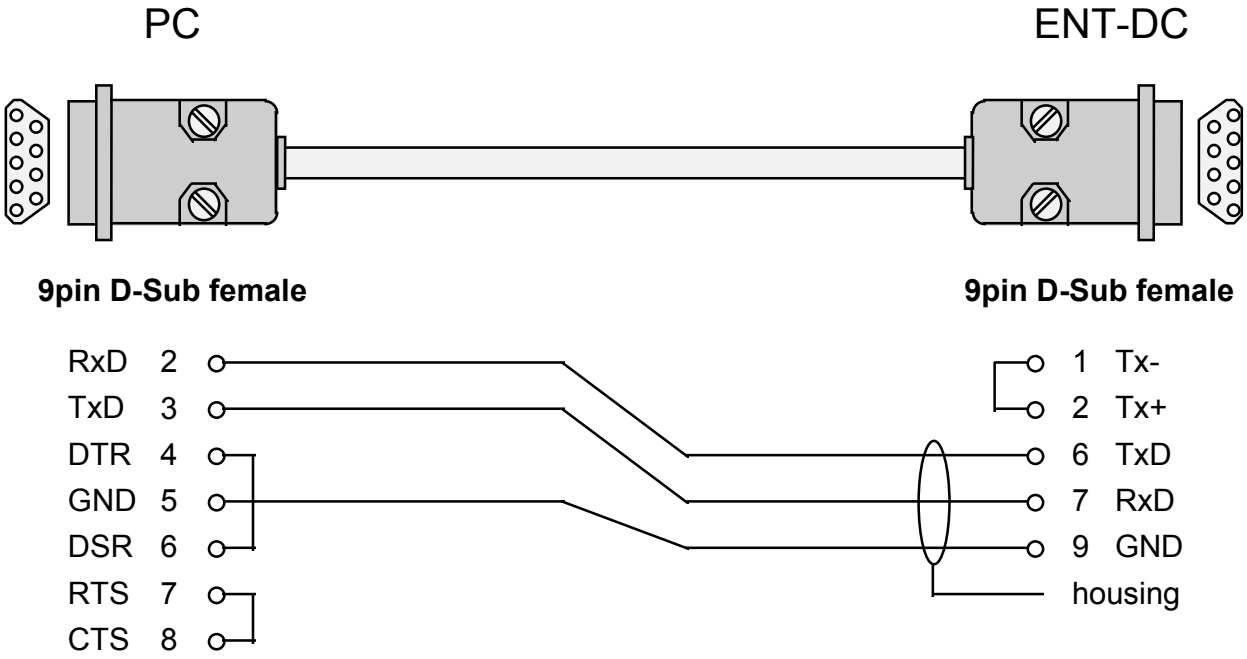
3.4.6 S-ENT/PC-25 Connecting Cable ENT-DC-2.0 to PC (25 pin D-Sub)

Cable for loading of projects from PC to a terminal (TERMEX) and for communication between TERMEX and PC.



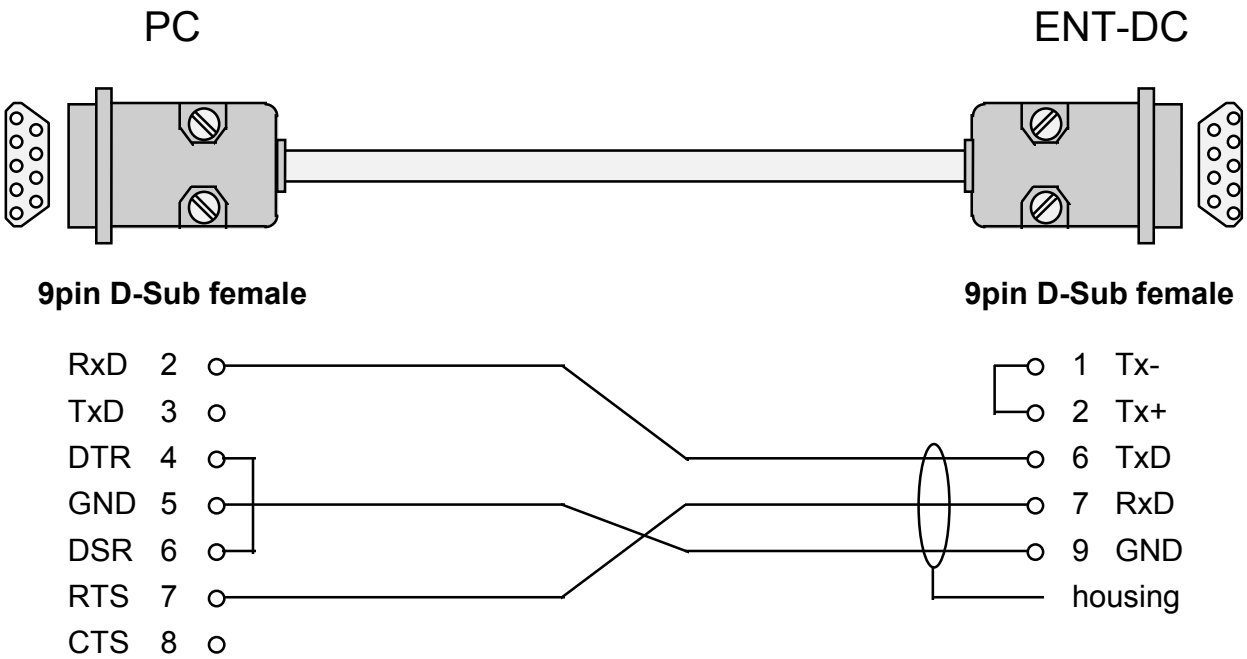
3.4.7 S-ENT/PC-9 Connecting Cable ENT-DC-30 to PC (9 pin D-Sub)

Cable for loading of projects from PC to a terminal (TERMEX) and for communication between TERMEX and PC.

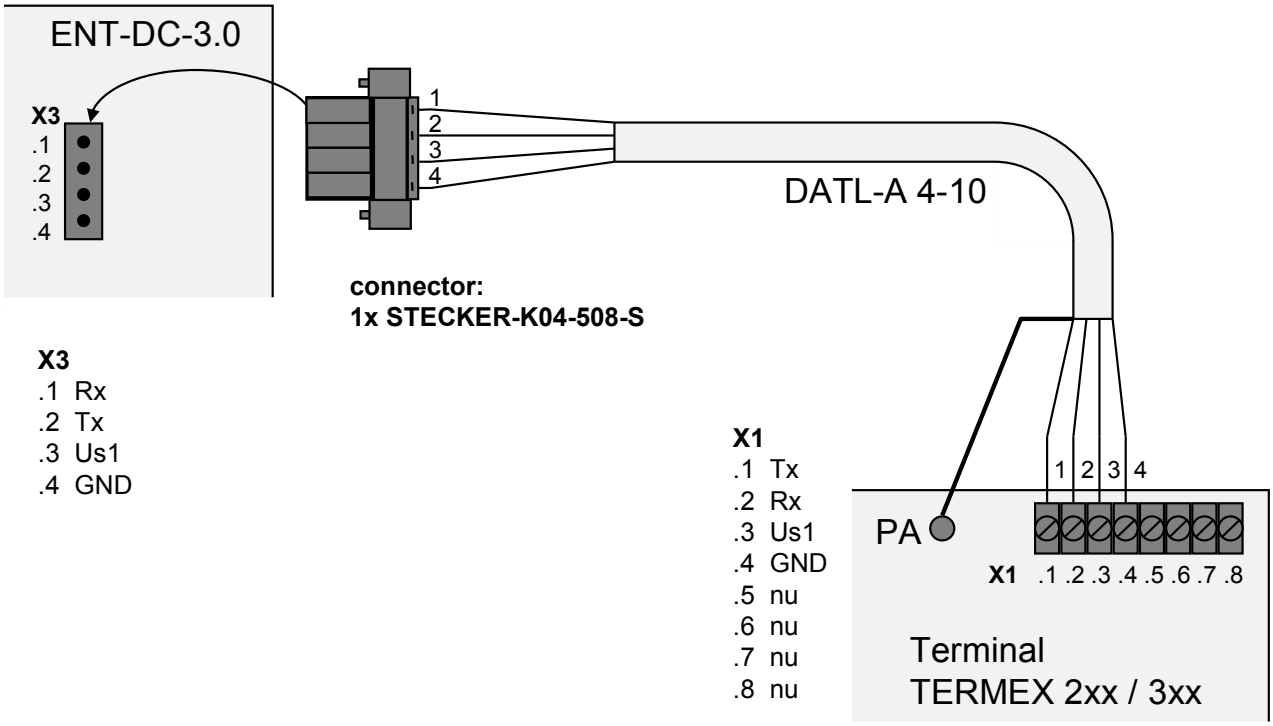


3.4.8 S-ENT/MOUSE-9 Connecting Cable for Mouse ENT-DC-30 to PC (9 pin D-Sub)

Cable required for mouse connection (EXTA-M.) to COM-port.

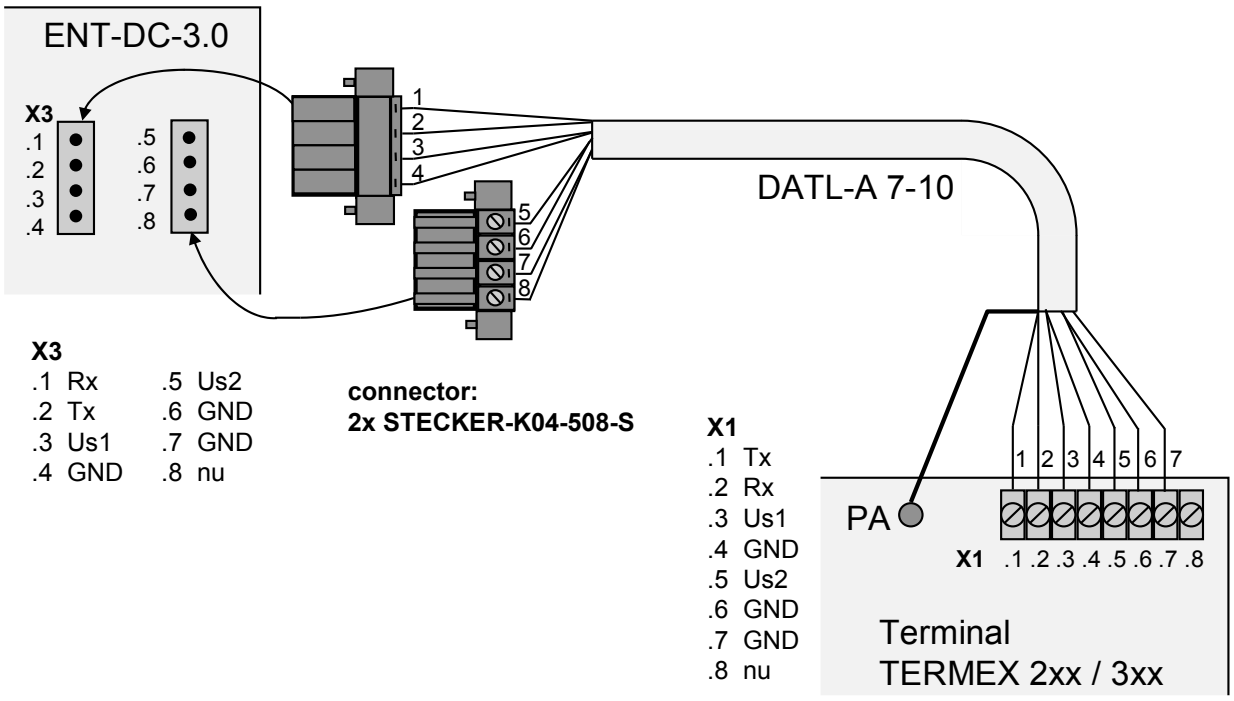


3.4.9 DATL-A 4-10 Terminal Connection (1 feed circuit)



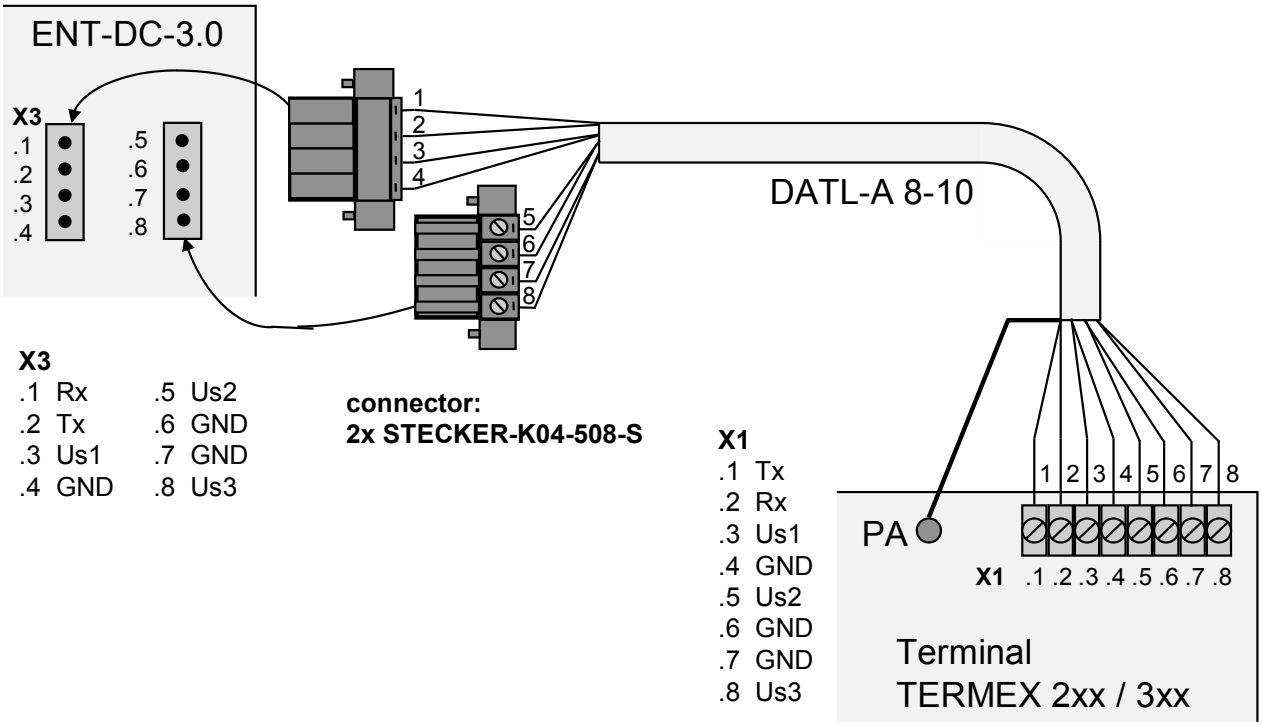
One connector (STECKER-K04-508-S) is part of the power supply. For this reason a DATL-A 4-0 can be used (without connector).

3.4.10 DATL-A 7-10 Terminal Connection (2 feed circuits)



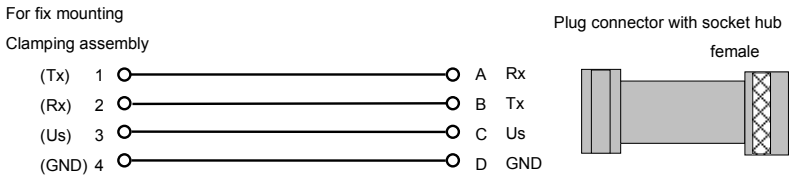
Two connectors (STECKER-K04-508-S) are part of the power supply. For this reason a DATL-A 7-0 can be used (without connector).

3.4.11 DATL-A 8-10 Terminal Connection (3 feed circuits)



Two connectors (STECKER-K04-508-S) are part of the power supply. For this reason a DATL-A 8-0 can be used (without connector).

3.4.12 DATL-A 4-3 Connecting cable ENT-DC to EXOM-DRAGON



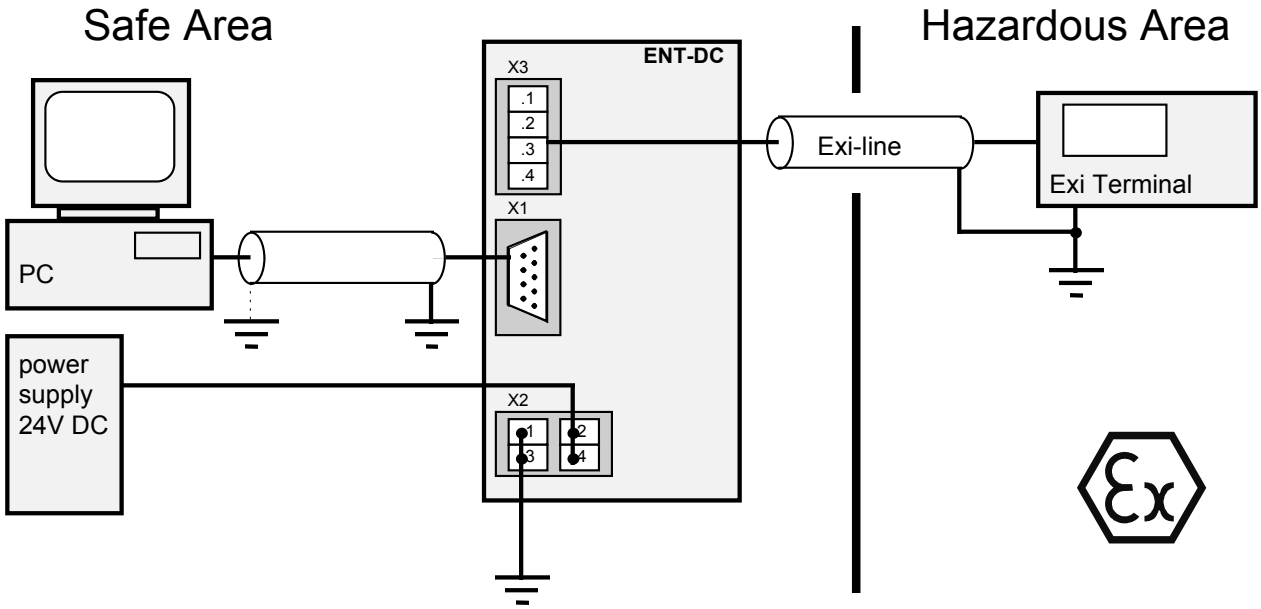
3.4.13 Potential Equalization / Grounding

The ENT-DC must be connected to a potential equalization at a PA-clamp (X2.1 X2.3). If 19" flush-type versions are used potential equalization is accomplished through a screw connection with the 19" rack. The 19" rack must be connected with PA.

The intrinsically safe interface X3 may not be connected to potential equalization in the safe area which means that the shield of the line from the hazardous area may not be applied in the safe area. Refer to regulation VDE 0165.

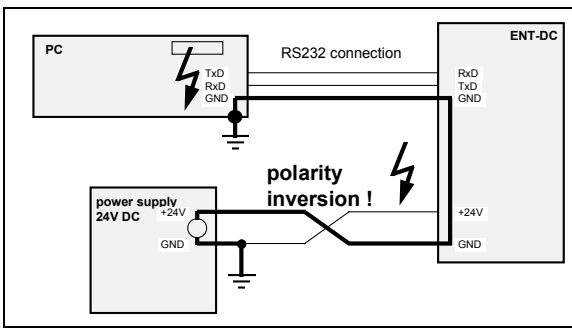
The data line to interface X1 must be shielded due to interference reasons. The shield must be applied on the ENT-DC side on PA. (PA via connector housing / jack).

It is not necessary to shield the supply line (24V) to interface X2. An optional shield can be placed onto PA via X2.1.



Warning

Compensating currents are generated by potential shifting which may cause electrical sparks.
For this reason the shield of the hazardous line must be put in place in the hazardous area and not in the safe area.

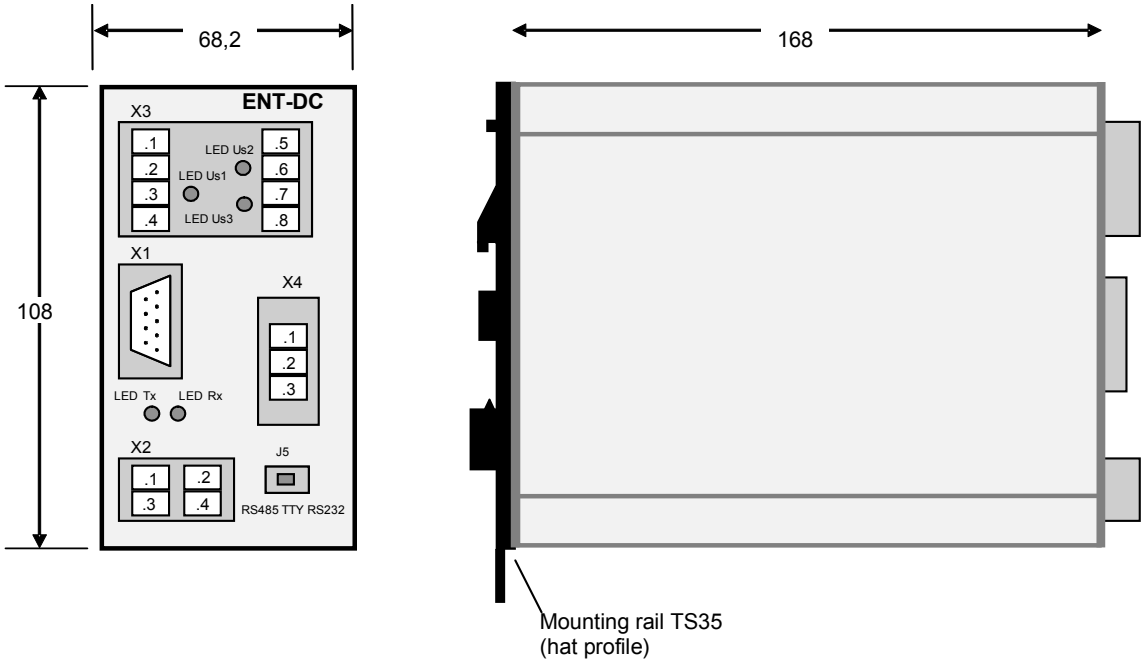


Warning

Polarity inversion of the supply voltage!
Normally GND is connected to the PC housing. If a power supply is grounded and polarity has been inverted a short circuit will occur on the data interface of the ENT-DC which can destroy PC and ENT-DC.

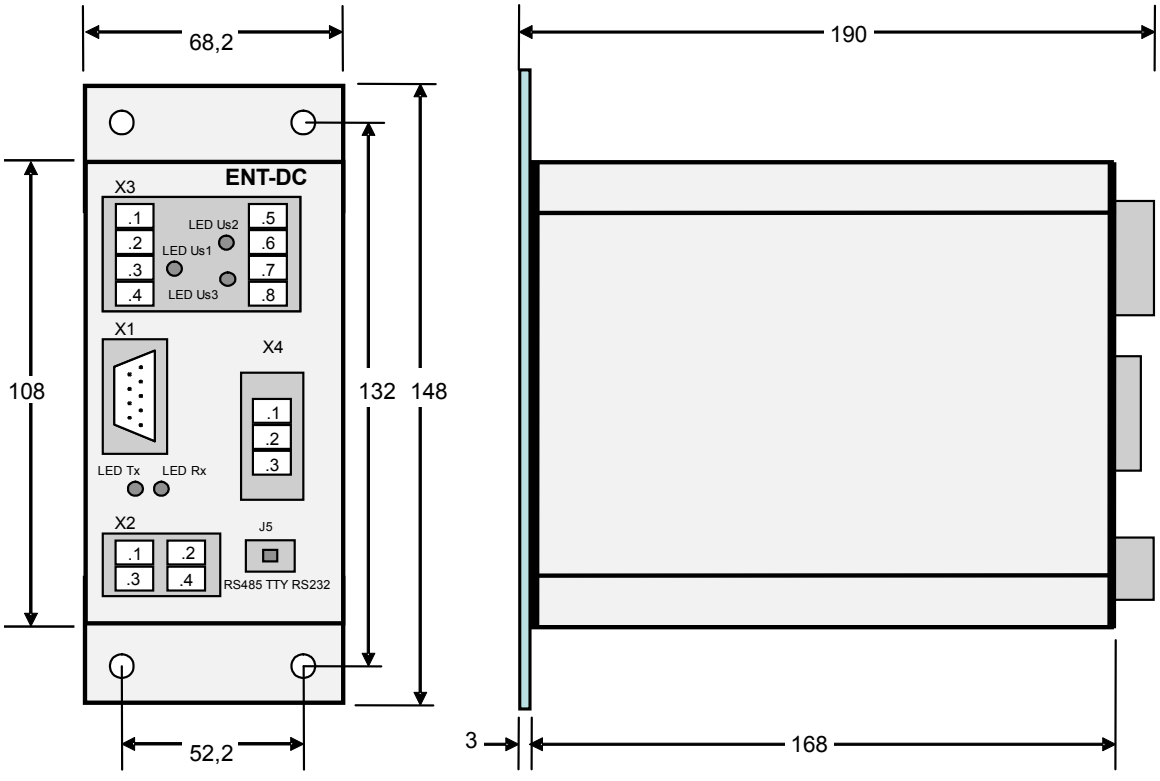
3.5 Housing

Top hat rail housing (1, 2, or 3 feed circuits)



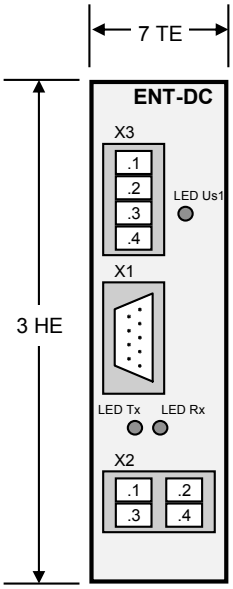
all measurements in mm

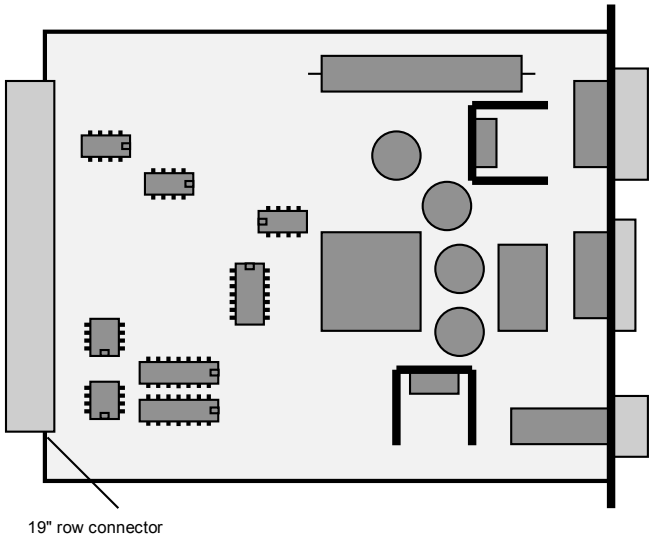
Full housing (1, 2, or 3 feed circuits)



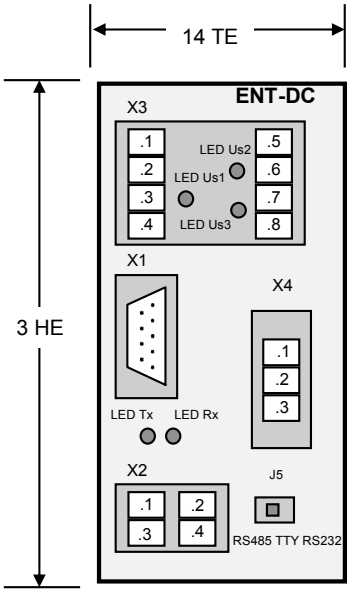
all measurements in mm

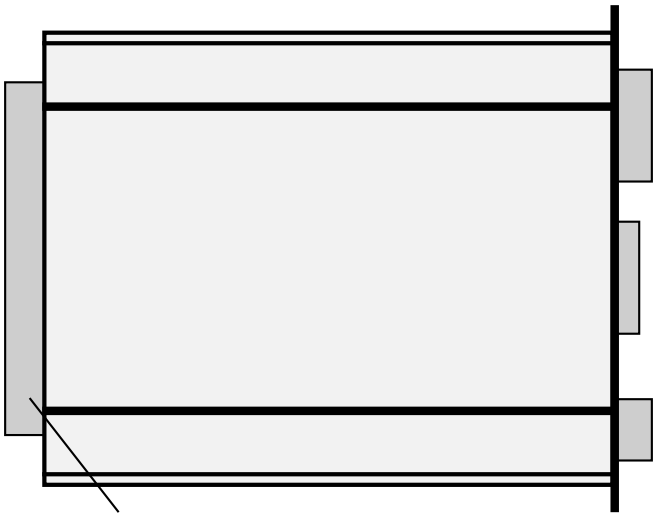
19E Slide-in card (1 feed circuit)





19K Slide-in cassette (1, 2, or 3 feed circuits)



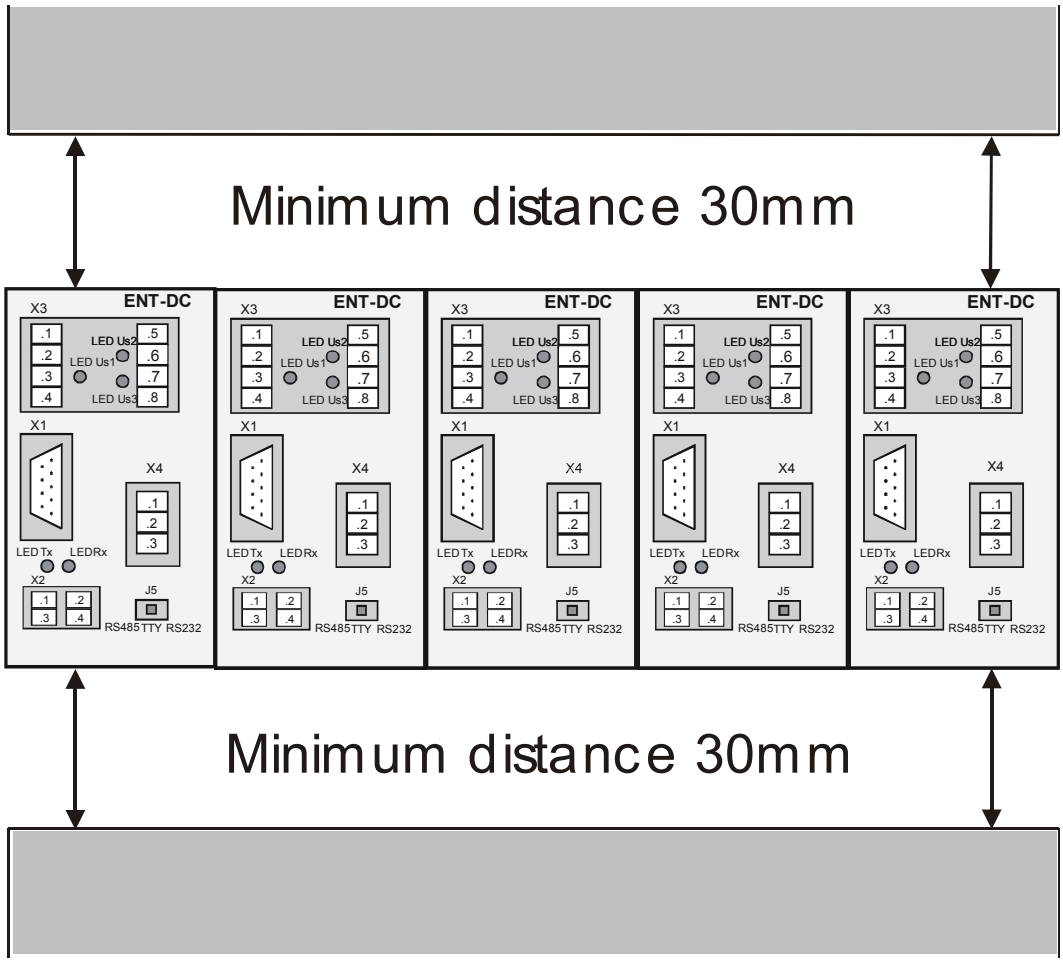


3.6 Instructions for Installation

Attention

To avoid heat traps in the ENT-DC-30 a minimum distance to other components is required.
The ENT-DC-30 must be installed so that the cooling fins either point up or down.

- Other components can be placed closely to the sides of the ENT-DC-30.
- A **minimum distance of ≥ 30 mm** to other components must be maintained above and below the ENT-DC.
- This minimum distance holds for all housing versions -19K, -19E, -HS, -AB



Attention

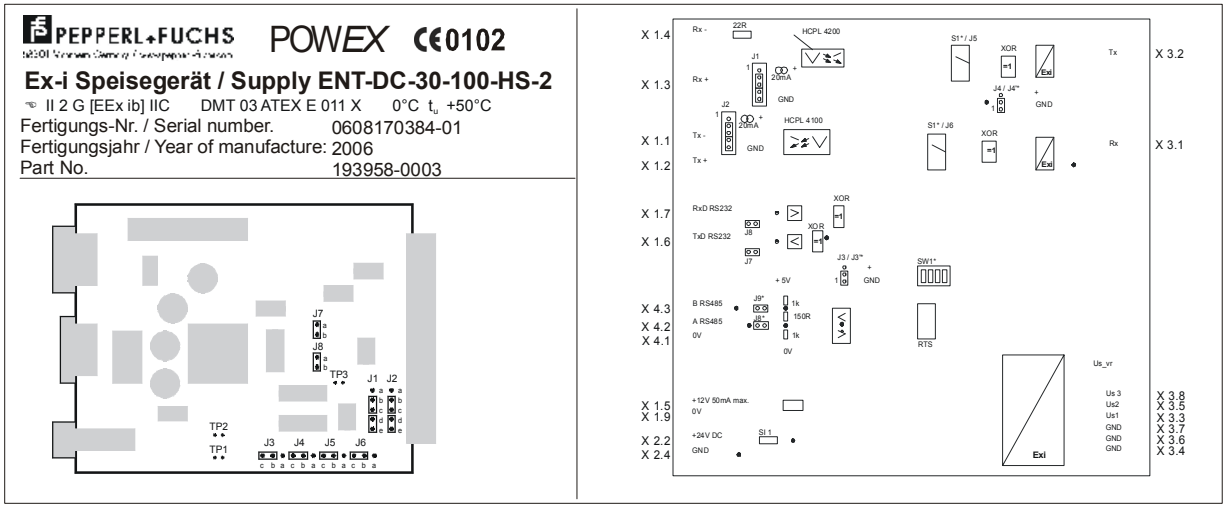
A minimum distance of 50 mm contour measure must be maintained between terminals in the safe and terminals in the hazardous area.
This restriction holds true for connections in front and back.

3.7 Rating plates

Warning

The information contained on the nameplate constitutes maximum values for hazardous areas. The electrical maximum values must be maintained otherwise the devices will not function properly. Refer to the chapter “Specifications”.

Example rating plate (depending upon variant):



4 Applied harmonized standards of the applicable directives

This is an addition to Pepperl+Fuchs Declaration of Conformity in accordance with EN 45014:1998 in the appendix.

Directives	**Applied harmonized standards**
EC-directives 94/9EC (ATEX)	EN 50014:1997 EN 50020:1994

5 Order designations

5.1 Exi Power supply ENT-DC

Type	1. Supply circuit	2. Supply circuit	3. Supply circuit	Housing ENT-DC	Interface

Type		
ENT-DC-30	IS Power Supply & Data Interface	
	1. Supply circuit	
	1	Ua = 8 Ia = 280 Pa = 1,2
	2	Ua = 8,5 Ia = 280 Pa = 1,2
	3	Ua = 9 Ia = 280 Pa = 1,2
	4	Ua = 9 Ia = 290 Pa = 1,3
	5	Ua = 9 Ia = 300 Pa = 1,4
	6	Ua= 8,5 Ia = 240 Pa = 1,2 Long Range
	7	Ua= 8,5 Ia = 240 Pa = 1,2

2. Supply circuit	
0	Not configured
1	Ua = 8 Ia = 280 Pa = 1,2
2	Ua = 8,5 Ia = 280 Pa = 1,2
3	Ua = 9 Ia = 280 Pa = 1,2
4	Ua = 9 Ia = 290 Pa = 1,3
5	Ua = 9 Ia = 300 Pa = 1,4
6	Ua= 8,5 Ia = 240 Pa = 1,2 Long Range
7	Ua= 8,5 Ia = 240 Pa = 1,2

3. Supply circuit	
0	Not configured
1	Ua = 8 Ia = 280 Pa = 1,2
2	Ua = 8,5 Ia = 280 Pa = 1,2
3	Ua = 9 Ia = 280 Pa = 1,2
4	Ua = 9 Ia = 290 Pa = 1,3
5	Ua = 9 Ia = 300 Pa = 1,4
6	Ua= 8,5 Ia = 240 Pa = 1,2 Long Range
7	Ua= 8,5 Ia = 240 Pa = 1,2

Housing ENT-DC	
HS	DIN rail mountable
AB	Separate housing
19K	19" slide in unit, IP 20 casing
19E	19" slide in unit, no casing

Interface	
2	TTY, RS232
3	TTY, RS232, RS485

Table Ex-values of feed circuits (X = 0 : not used)

X	Ua [V]	Ia [mA]	Pa [W]	Distance of the devices to ...
1	8	280	1,2	230 m
2	8,5	280	1,2	230 m
3	9	280	1,2	230 m
4	9	290	1,3	230 m
5	9	300	1,4	230 m
6	8,5	240	1,2	440 m
7	8,5	240	1,2	230 m

To the type code there may be attached further not safety-relevant markings.

5.2 Connectors

For interface X1:	CONNECTOR-SUB-D-09W	(2 ENT-DC required)
For interface X2:	CONNECTOR-K02-381-O	(2 ENT-DC required)
For interface X3	CONNECTOR-K03-508-S	(2 ENT-DC required)
For interface X4	JACK-F96	(only versions -19K, -19E)
For interface X5	JACK-F96	(only version -19K with 3 feed circuits)

6 Index

7 Appendix EEx Certification

CERTIFIED TRANSLATION

Ex **DMT**

(1) **EC Type Examination Certificate**

(2) **- Directive 94/9/EC -**
Equipment and protective systems for use to the intended purpose in potentially explosive atmospheres

(3) **DMT 03 ATEX E 011 X**

(4) **Equipment:** **Ex-i Power Supply Unit Type ENT-DC-30-***-***

(5) **Manufacturer:** **EXTEC Oesterle GmbH**

(6) **Address:** **D 73730 Esslingen**

(7) The design of this equipment and the various permissible variants are specified in the Appendix to this Type Examination Certificate.

(8) The certification body of Deutsche Montan Technologie GmbH, accredited as body no. 0158 in accordance with Article 9 of Directive 94/9/EC of the European Parliament and the Council dated March 23 1994, hereby certifies that the equipment conforms with the basic safety and health requirements relating to the design and construction of equipment and protective systems for use to the intended purpose in potentially explosive atmospheres in accordance with Annex II of the same Directive. The results of the test are recorded in Test Report No. BVS PP 03.2006 EG.

(9) The basic safety and health requirements are satisfied through conformance with:
EN 50014:1997 + A1 - A2 General requirements
EN 50020:1994 Intrinsic safety 'i'

(10) If the mark "X" appears after the certificate number, it means that this equipment is subject to the special conditions for safe usage specified in the Appendix to this certificate.

(11) This EC Type Examination Certificate only refers to the design of, and the type examination for, the equipment described here in conformance with Directive 94/9/EC.
The manufacture and introduction into circulation of the equipment are subject to other Directive requirements which are not covered by this certificate.

(12) The marking on the equipment must include the following information:

Ex II (2) G [EEx ib] IIC

Deutsche Montan Technologie GmbH
Essen, January 24, 2003

(signature illegible)
DMT certification body

(signature illegible)
Department head

Am Technologiepark 1, D-45307 Essen, Phone +49 (0)201/172-1416, Fax +49 (0)201/172-1716

LEGAL CERTIFICATION

I hereby certify that this is a complete and correct translation of the original document drawn up in the German language

Date: October 1, 2003

David Allison

Officially appointed and sworn document translator for the English language at the Regional Court of Stuttgart in Baden-Württemberg, Federal Republic of Germany.

CERTIFIED TRANSLATION

DMT

(13) Appendix to

(14) # EC Type Examination Certificate

DMT 03 ATEX E 011 X

(15) 15.1 Subject and type

Power Supply Unit Type ENT-DC-30-***-***
In the full designation the *** are replaced by letters and numbers which identify the different variants and have the following meanings:

Type ENT-DC-30-***-***

Letters and numbers for mechanical variant:
HS = Case for mounting on DIN rails
AB = Surface-mounting case
19K = 19" drawer
19E = 19" plug-in card

Code numbers for supply circuits 1, 2 and 3:
0 = No supply circuit
X = Value table on rating plate
Numbers for frequently manufactured ratings acc. to table below:

	Uo [V]	Io [mA]	Po [W]
1	8	280	1.2
2	8.5	280	1.2
3	9	280	1.2
4	9	290	1.3
5	9	300	1.4
X	Value table on rating plate	Value table on rating plate	Value table on rating plate

15.2 Description
The power supply unit is used outside potentially explosive atmospheres to supply up to three intrinsically safe equipment items with power as well as to transmit data between intrinsically safe and non-intrinsically safe circuits.

15.3 Parameters
15.3.1 Non-intrinsically safe supply circuit and non-intrinsically safe signal circuits (connector X4, terminals 28 - 32, and/or connectors X2 and X1)

Rated voltage		DC	24	V
Max. voltage for supply circuit	Um	AC	230	V
Max. voltage for signal circuits	Um	DC	32	V

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David Allison

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DAVID ALLISON
VVU
Öffentl. bestellter und beeidigter Urkundenübersetzer der englischen Sprache in Baden-Württemberg
72581 DETTINGEN

15.3.2 Intrinsically safe supply circuits with the EEx ib IIC type of protection
Supply circuit US1, connector X4, terminals d6 (US1) - z4 (GND2) and/or connector X3, terminals 3 (US1) - 4 (GND2)
Supply circuit US2, connector X4, terminals d2 (US2) - z2 (GND2) and/or connector X5, terminals d,b32 (US2) - z32 (GND2) and/or connector X3', terminals 5 (US2) - 6 (GND2)
Supply circuit US3, connector X5, terminals d,b28 (US3) - z28 (GND2) and/or connector X3', terminals 8 (US3) - 7 (GND2)
All supply circuits are connected to one another conductively (GND) and have trapezoidal output characteristics

15.3.2.1 Output voltage (can be set differently for each circuit) and max. external capacitance

Voltage Uo DC [V]	Max. external capacitance Co [µF]
7	15.7
8	8.4
8.5	6.5
9	4.9

15.3.2.2 Output current (can be set differently for each circuit) and max. external inductance

Current Io DC [mA]	Max. external inductance Lo [mH]
220	0.4
240	0.3
250	0.27
260	0.25
270	0.23
280	0.21
300	0.2
320	0.19
340	0.18
350	0.17

15.3.3 Signal circuits with the EEx ib IIC type of protection
Equipotential bonding connection to the supply circuits
Trapezoidal output characteristic
Signal circuit RX20 - GND2, connector X4, terminals z6-z4 and/or connector X3, terminals 1-4
Signal circuit TX20 - GND2, connector X4, terminals b6-z4 and/or connector X3, terminals 2-4

Voltage	Uo	DC	7.9	V
Current	Io		35	mA
Power	Po		190	mW
Max. external capacitance	Co		8.8	µF
Max. external inductance	Lo		0.3	mH

15.3.4 The total current for the US1, RX20 and TX20 circuits must not exceed 350 mA.

15.3.5 Ambient temperature range Ta -20 °C to +80 °C

(16) Test report
BVS PP 03.2006 EG, dated 24.01.2003

LEGAL CERTIFICATION

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David Allison
Officially appointed and sworn document translator for the English language at the Regional Court of Stuttgart in Baden-Württemberg, Federal Republic of Germany.

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VVU
Öffentl. bestellter und beeidigter Urkundenübersetzer der englischen Sprache in Baden-Württemberg
72581 DETTINGEN

CERTIFIED TRANSLATION

DMT

(17) Special conditions for safe usage

17.1 The power supply unit is to be installed so that the clearances in air between the uninsulated parts of intrinsically safe circuits and the metal parts of the housing are at least 1.5 mm. The clearances with respect to the uninsulated parts of non-intrinsically safe circuits must be at least 6 mm.

17.2 The connecting parts for the external, intrinsically safe circuits are to be arranged such that the uninsulated parts are at least 50 mm clear of the connecting parts or uninsulated conductors of non-intrinsically safe circuits. Alternatively, they may be isolated from such parts or conductors by means of a barrier as described in section 6.3.1 of EN 50 020:1994.

LEGAL CERTIFICATION

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Date: Oct. 1, 2003

David Allison D Allison
Officially appointed and sworn document translator for the English language at the Regional Court of Stuttgart in Baden-Württemberg, Federal Republic of Germany.

DAVID ALLISON
VVU
Öffentl. bestellter und beeidigter Urkundenübersetzer der englischen Sprache in Baden-Württemberg
72581 DETTINGEN

Ex **DEKRA**

Addendum 1
(Amendment in accordance with Directive 94/9/EU Annex III Clause 6)

to EC Type Examination Certificate
DMT 03 ATEX E 011 X

Equipment: **Power Supply Unit Type ENT-DC-30-***-***

Manufacturer: **Pepperl+Fuchs GmbH**

Address: **D – 68307 Mannheim**

Formerly **EXTEC Oesterle GmbH**
D – 73730 Esslingen

Description

The power supply unit can also be operated with modified Um values for the non-intrinsically safe supply circuit and the non-intrinsically safe signal circuits.

The basic safety and health requirements of the modified version are satisfied through conformance with

EN 50014:1997 + A1 – A2	General requirements
EN 50020:1994	Intrinsic safety 'i'

The power supply unit was manufactured in accordance with EN 50014:1997 + A1 – A2 General requirements, among other things, so this equipment continues to conform to the basic requirements of Directive 94/9/EU.

The marking on the device must contain the following information:

Ex II (2)G [EEx ib] IIC

Parameters
Non-intrinsically safe supply circuit and non-intrinsically safe signal circuits
(connector X4, terminals 28 - 32 as well as connectors X2 and X1)

Rated voltage		DC	24	V
Max. voltage	Um	AC	253	V

DEKRA EXAM GmbH, Dinnendahlstrasse 9, D-44809 Bochum, Phone +49 (0)234/3696-105, Fax +49 (0)234/3696-110, e-mail zs-exam@dekra.com
(Until May 31, 2003: Deutsche Montan Technologie GmbH, Am Technologiepark 1, D-45307 Essen)

LEGAL CERTIFICATION

I hereby certify that this is a complete and correct translation of the original document drawn up in the German language

Date: 25.03.08 D Allison

David Allison
Officially appointed and sworn document translator for the English language at the Regional Court of Stuttgart in Baden-Württemberg, Federal Republic of Germany.

Special conditions for safe usage / instructions for use
Unchanged

Test Report

BVS PP 03.2006 EU, dated February 21, 2008

DEKRA EXAM GmbH
Bochum, February 21, 2008

(Signature illegible)	(Signature illegible)
Certification body	Department

LEGAL CERTIFICATION

I hereby certify that this is a complete and correct translation of the original document drawn up in the German language

Date: 25.03.08 D Allison

David Allison
Officially appointed and sworn document translator for the English language at the Regional Court of Stuttgart in Baden-Württemberg, Federal Republic of Germany.

DAVID ALLISON
Öffentlich best. u. beeidigter Urkundenübersetzer der englischen Sprache in Baden-Württemberg
DETTINGEN / REUTLINGEN