

## Regulations Concerning the Setting up of Installations

Apart from the basic "Regulations for the Setting up of Power Installations" DIN VDE\* 0100 and for "The Rating of Creepage Distances and Clearances" DIN VDE 0110 Part 1 and Part 2 the regulations "The Equipment of Power Installations with Electrical Components" DIN VDE 0160 in conjunction with DIN VDE 0660 Part 500 have to be taken into due consideration.

Further attention has to be paid to DIN VDE 0113 Part 1 and Part 200 in case of the control of working and processing machines. If operating elements are to be mounted near parts with dangerous contact voltage DIN VDE 0106 Part 100 is additionally relevant.

If the protection against direct contact according to DIN VDE 0160 is required, this has to be ensured by the user (e.g. by incorporating the elements in a switch-gear cabinet). The devices are designed for pollution severity 2 in accordance with DIN VDE 0110 Part 1. If higher pollution is expected, the devices must be installed in appropriate housings.

The user has to guarantee that the devices and the components belonging to them are mounted following these regulations. For operating the machines and installations, other national and international relevant regulations, concerning prevention of accidents and using technical working means, also have to be met.

The ABB Procontic devices are designed according to IEC 1131 Part 2. Meeting this regulation, they are classified in overvoltage category II which is in conformance with DIN VDE 0110 Part 2.

For the direct connection of ABB Procontic devices, which are powered with or coupled to AC line voltages of overvoltage category III, appropriate protection measures corresponding to overvoltage category II according to IEC-Report 664/1980 and DIN VDE 0110 Part 1 are to install.

Equivalent standards:

DIN VDE 0110 Part 1  $\triangleq$  IEC 664

DIN VDE 0113 Part 1  $\triangleq$  EN 60204 Part 1

DIN VDE 0660 Part 500  $\triangleq$  EN 60439-1  $\triangleq$  IEC 439-1

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\* VDE stands for "Association of German Electrical Engineers".

ABB Schalt- und Steuerungstechnik GmbH Heidelberg

# 1 Communication module 07 KP 92 R101

## Connecting external units

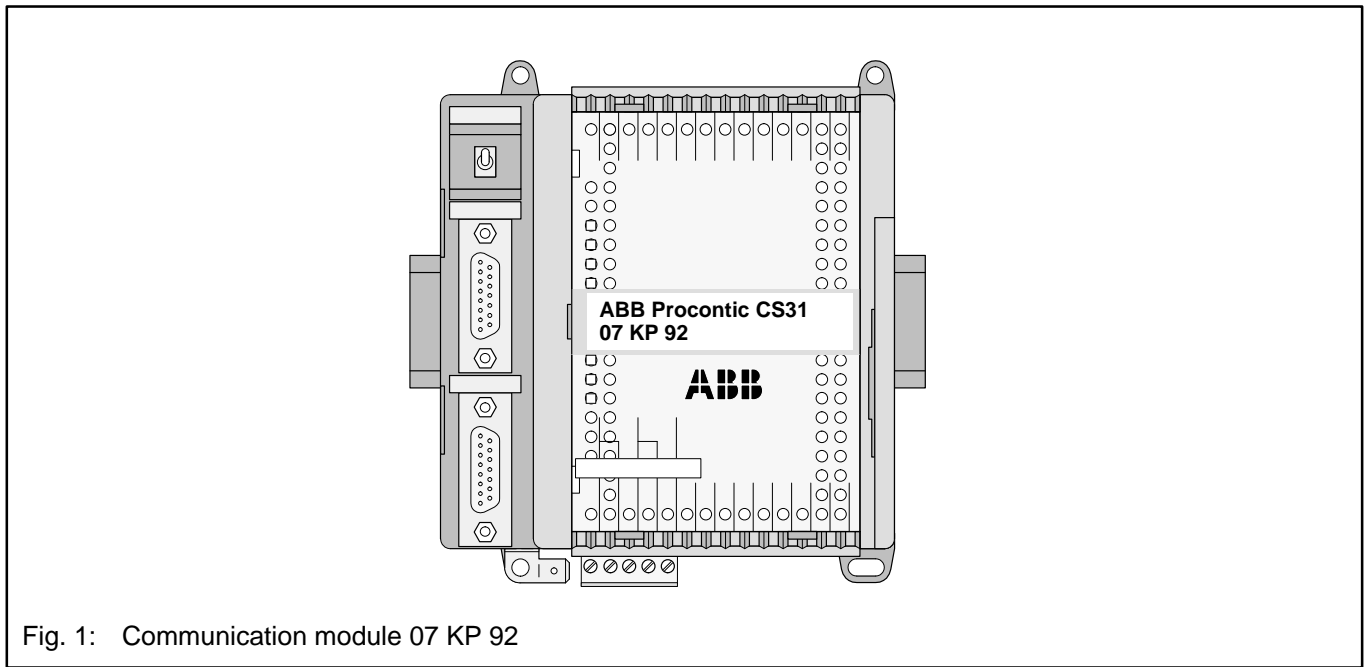


Fig. 1: Communication module 07 KP 92

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### 1.1 Brief description

The 07 KP 92 R101 communication module is a freely programmable interface module with 2 serial interfaces.

The communication module allows external units to be connected to the ABB Procontic CS31 system via a serial interface.

The communications protocols and transmission types can be freely defined by the user.

Programming is performed on a PC with the programming and test software 907 KP 92.

The communication module is connected to ABB Procontic CS31 central units via the networking interface, e.g. 07 KR 91 (index h onwards), 07 KR 91 R252, 07 KT 92 (index i onwards) or 07 KT 93.

The most important features of the communication module are:

- 2 serial interfaces, optionally configurable in accordance with EIA RS-232 or EIA RS-422 or EIA RS-485 (COM3, COM4)
- Freely programmable with a comprehensive function library
- Communication with ABB Procontic CS31 central unit via connection elements
- Configurable LEDs for diagnosis
- Programming and testing on a PC via COM3 or COM4
- Saving applications in a Flash EPROM

Processing of the serial interfaces and the networking interface is provided for in an applications program.

Programming is in a language similar to the standard language "C". It provides elements for structuring and a comprehensive library for using the interfaces.

The exchange of data between the serial communication module and the ABB Procontic CS31 central unit is realized by connection elements in the central unit.

## 1.2 Structure of the front panel elements

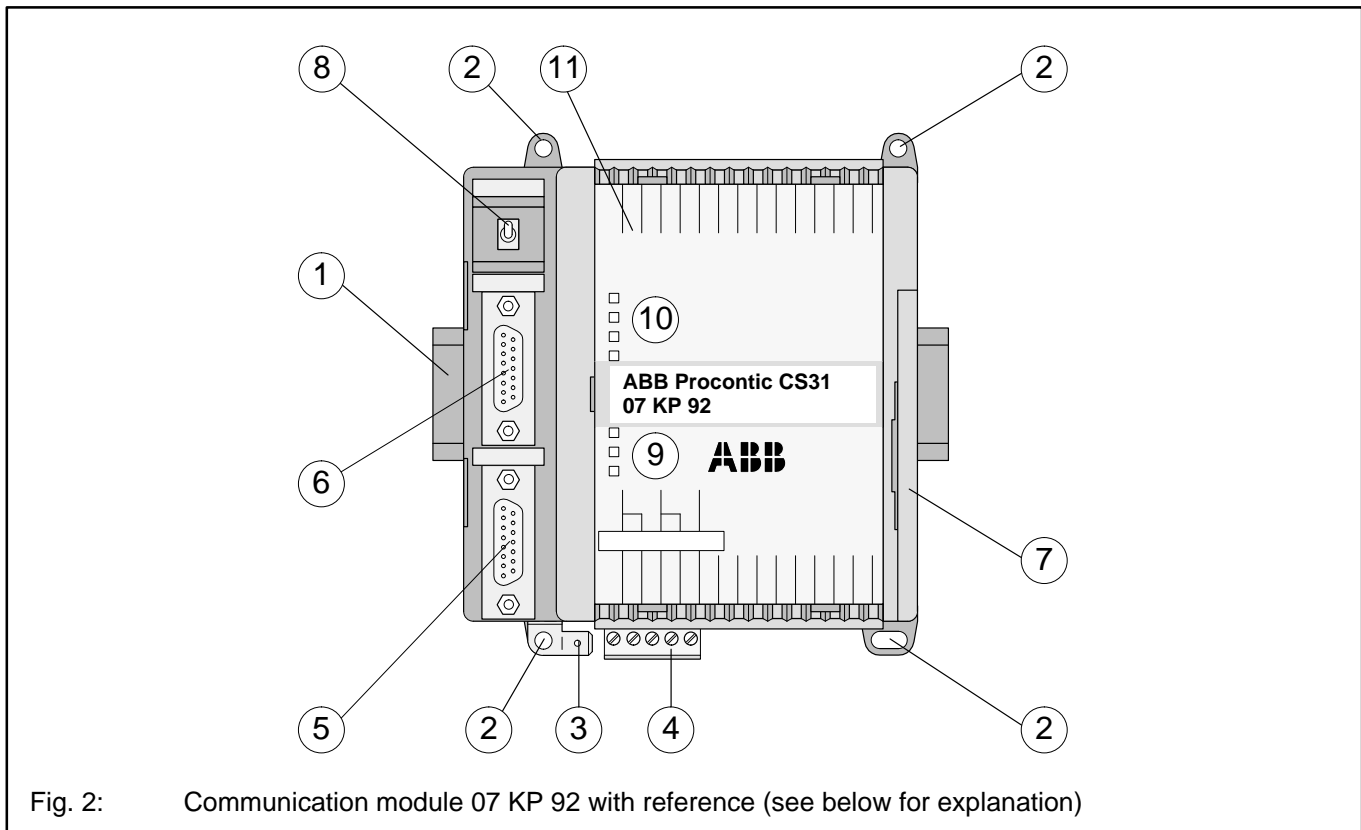
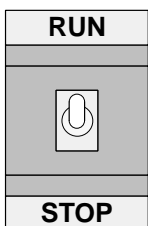


Fig. 2: Communication module 07 KP 92 with reference (see below for explanation)

- 1 **Mounting the unit on a DIN rail**
- 2 **Mounting the unit with screws**
- 3 **6.3 mm Faston earthing terminal**
- 4 **24 V DC supply voltage**
- 5 **Configurable serial interface COM3**
- 6 **Configurable serial interface COM4**
- 7 **Networking interface for the ABB Procontic CS31 central unit**
- 8 **Switch for RUN/STOP operation**



The RUN/STOP switch controls the processing of the user application.

### STOP → RUN

If the switch is switched from STOP to RUN, the user application is loaded into the main memory and processing of the application program is started.

The status of the application program is indicated by the LED RUN: The LED RUN lights up while the program is being pro-

cessed. If an error occurred during loading (e.g. program not present), the LED RUN remains OFF.

### RUN → STOP

If the switch is switched from RUN to STOP, the program processing is aborted. The LED RUN goes out.

- 9 **LED displays for system messages**

- 10 **LED displays freely configurable**

⑩

yellow  LED1  
 yellow  LED2  
 yellow  LED3  
 yellow  LED4

⑨

green  RUN Application program is running  
 red  ERR Fatal or serious error  
 green  Supply Supply voltage present

Refer to Section 1.4 Diagnosis for further information

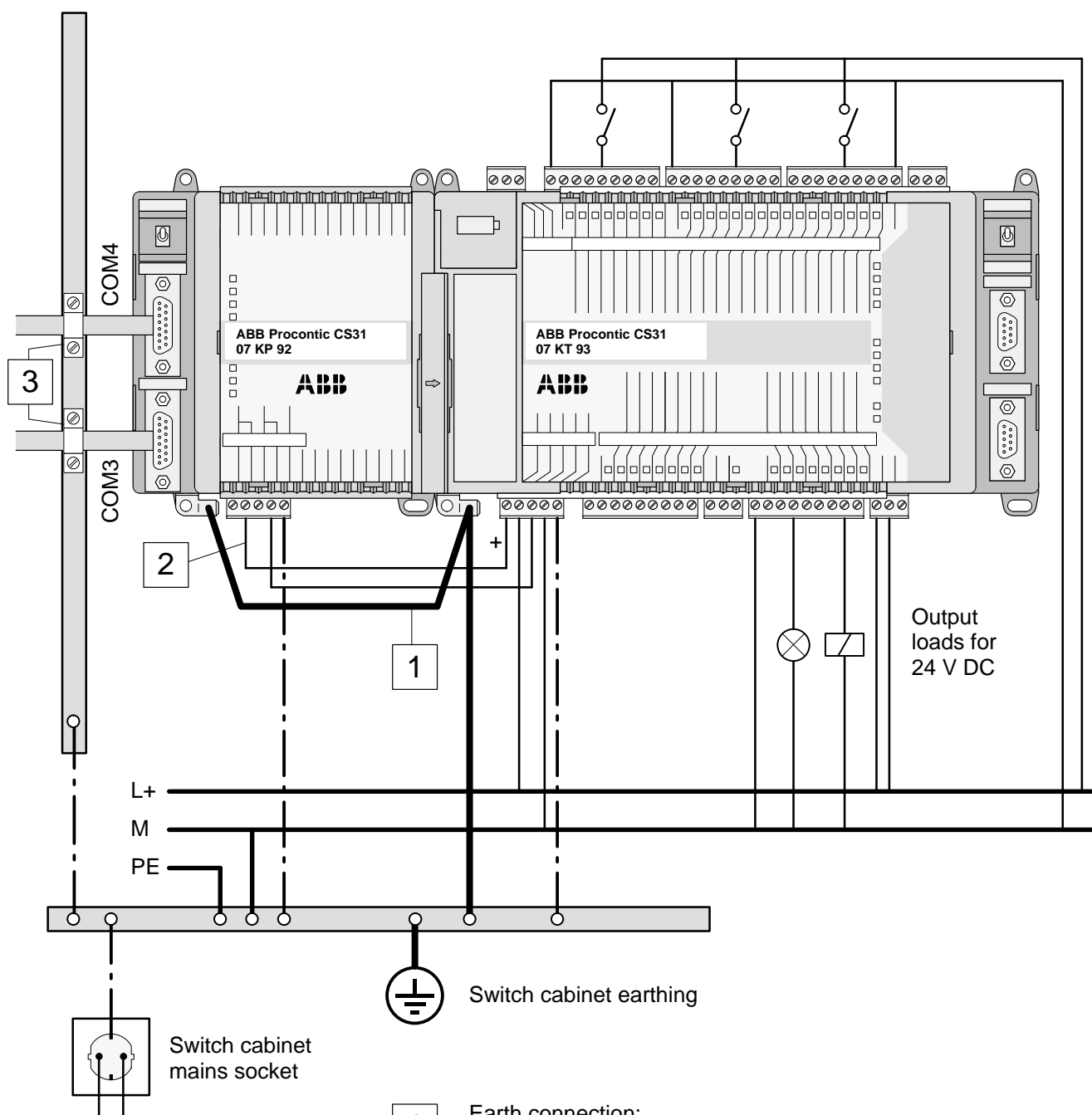
- 11 **Plastic sheet (detachable for labelling)**

## 1.3 Electrical connection

### 1.3.1 Application example for connecting the inputs and outputs

The following illustration shows an application example with the 07 KT 93 which utilizes various possibilities for connecting inputs and outputs. Attention must be paid to the following in detail:

- The earthing measures
- Connection of the 07 KP 92 communication module
- Looping through the supply voltage (24 V DC) from the 07 KT 93 to the 07 KP 92
- Earthing the switch cabinet mains socket
- Handling serial interfaces



- 1 Earth connection:  
Use supplied parts (see Figure 6)
- 2 Supply voltage:  
Short, direct connection between the modules,  
wires 15 cm, 2.5 mm<sup>2</sup> (see Figure 6)
- 3 Cable shields:  
In the case of permanent wiring at the switchgear cabinet  
inlet, earth via clamps and do not put shield in the plug.  
Otherwise, lay the cable shield in the plug to PGND.

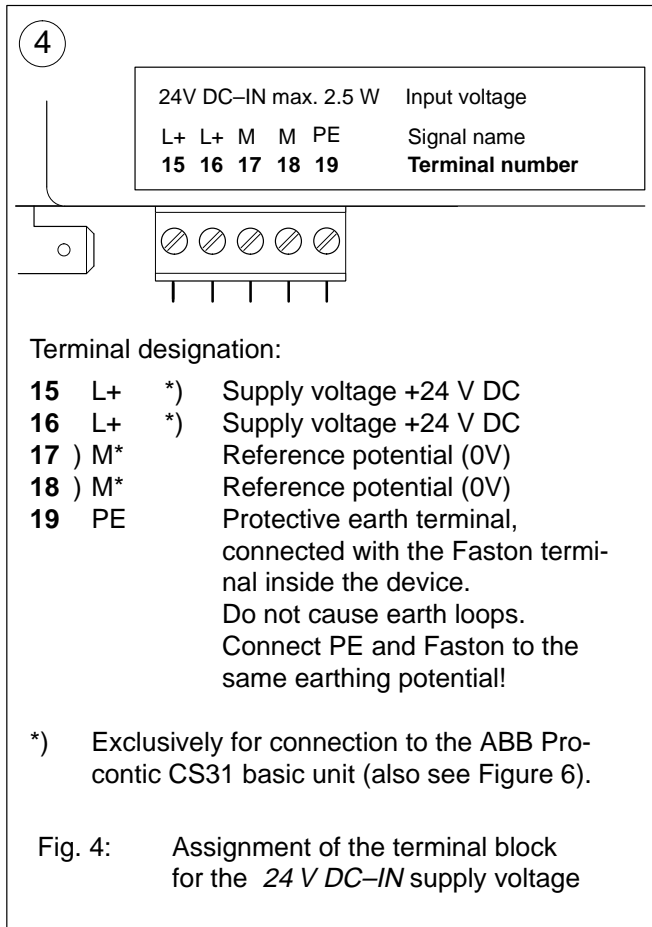
Fig. 3: Application example:  
Communication module 07 KP 92 at central unit 07 KT 93  
(Section 1.3 Electrical connection applies similarly to 07 KR 91 and 07 KT 92.)

### 1.3.2 Connecting the 24 V DC supply voltage

The supply voltage is fed in via a 5-pole detachable terminal block.

**Important:**

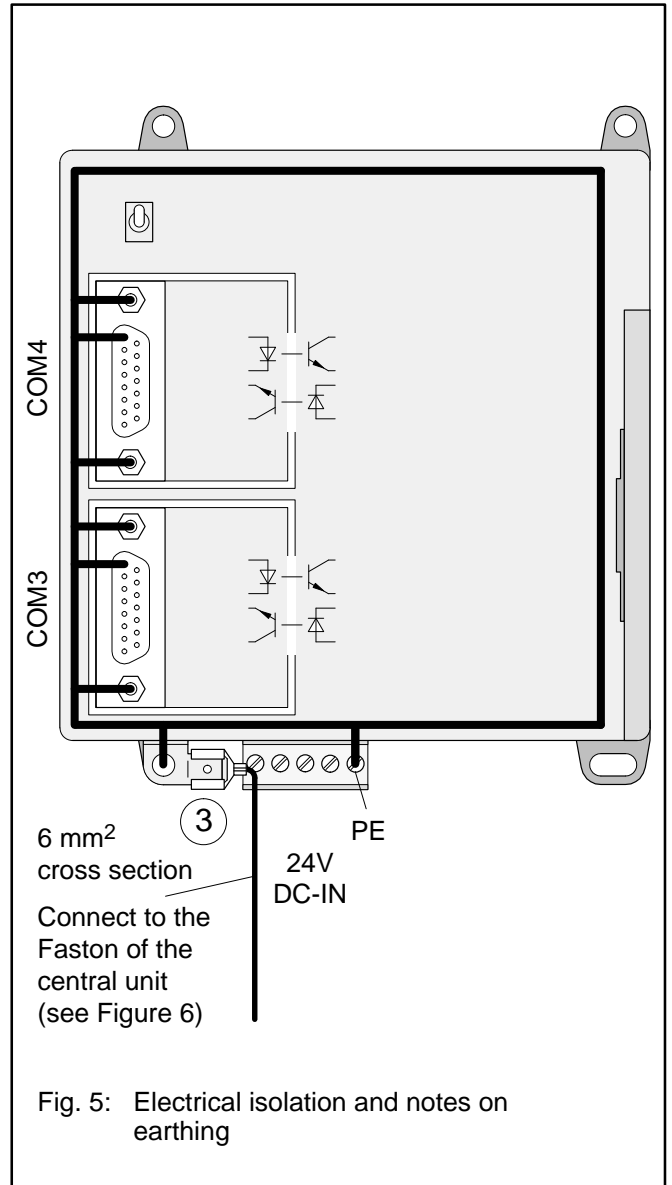
**Plug and unplug terminal block only with power is off!**



### 1.3.3 Electrical isolation and notes on earthing

The following illustration shows which circuit parts of the unit are electrically isolated from each other and which internal connections exist. Here, both the clearances and creepage distances and also the test voltages used correspond to DIN/VDE 0160.

The unit is connected via the 6.3 mm Faston terminal (bottom left) to the functional earth (switch cabinet earth) via a wire with a cross section of 6 mm<sup>2</sup> (also see Figure 6).



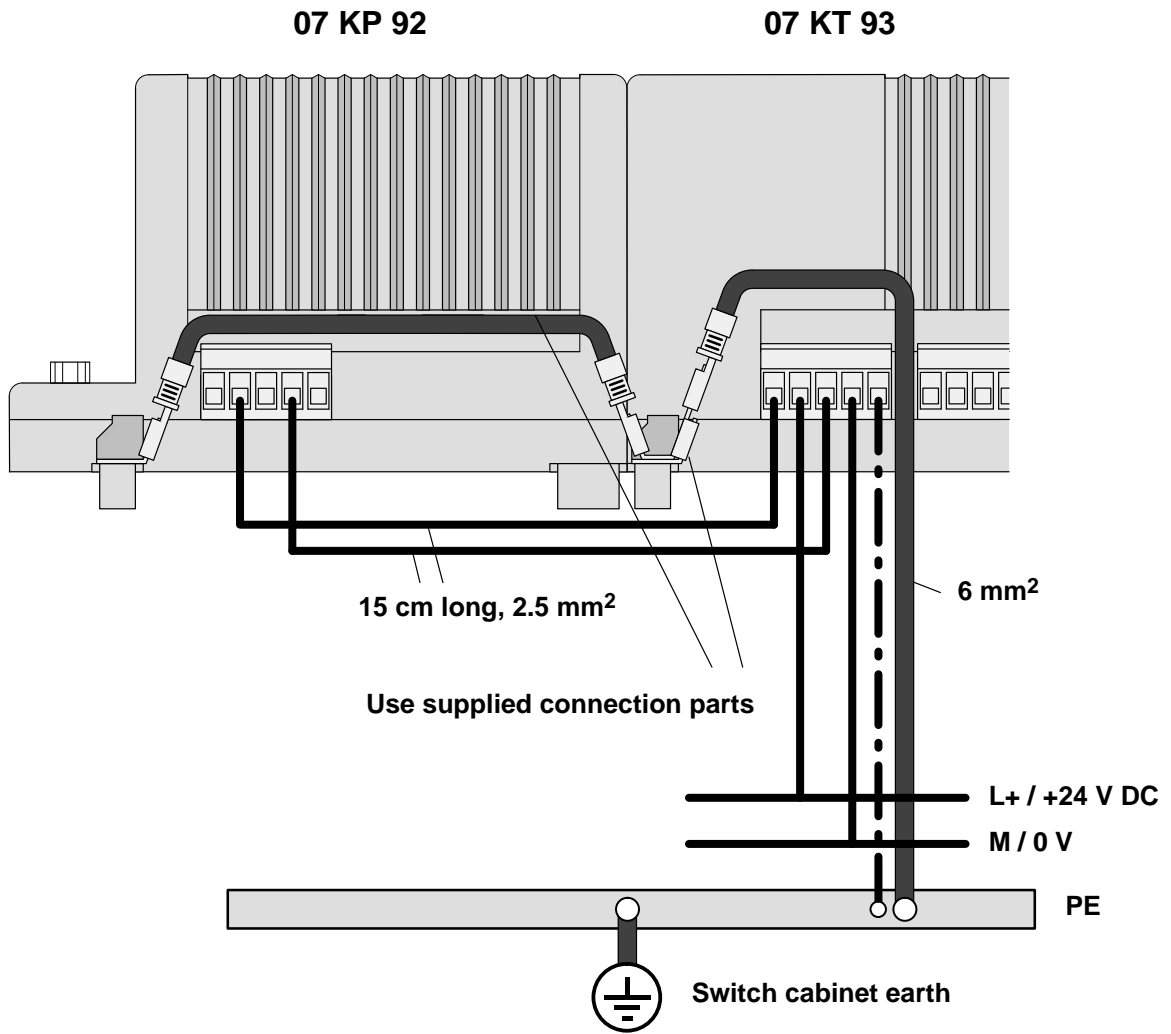


Fig. 6: Earthing connections and voltage supply for 07 KP 92

#### Use

External units can be connected to the ABB Procontic CS31 system via the serial interfaces. The interfaces are independent of each other. They can be managed via freely definable protocols.

#### Scope of functions

The two serial interfaces can be configured independently of each other in the following scope of functions:

- Data format 7 or 8 bit
- Even, odd or no parity
- Discrete baud rates  
from 300 Bd to 19200 Bd
- Automatic processing of the SW handshake (XON/XOFF)
- Automatic processing of the HW handshake (RTS/CTS)
- Error detection  
(Parity, framing, overrun, break)

#### Interface standard

- EIA RS–232 or
- EIA RS–422 or
- EIA RS–485

Both interfaces can be run independently of each other in one of the interface standards each. Selection is by choosing the corresponding interface signals.

#### Mode

- Programming and test mode
- Application mode

In each case, one of the two interfaces can be used as a programming and test interface. This involves the mode being set at pin 6 of the interface connector by the signal status.

#### Electrical isolation

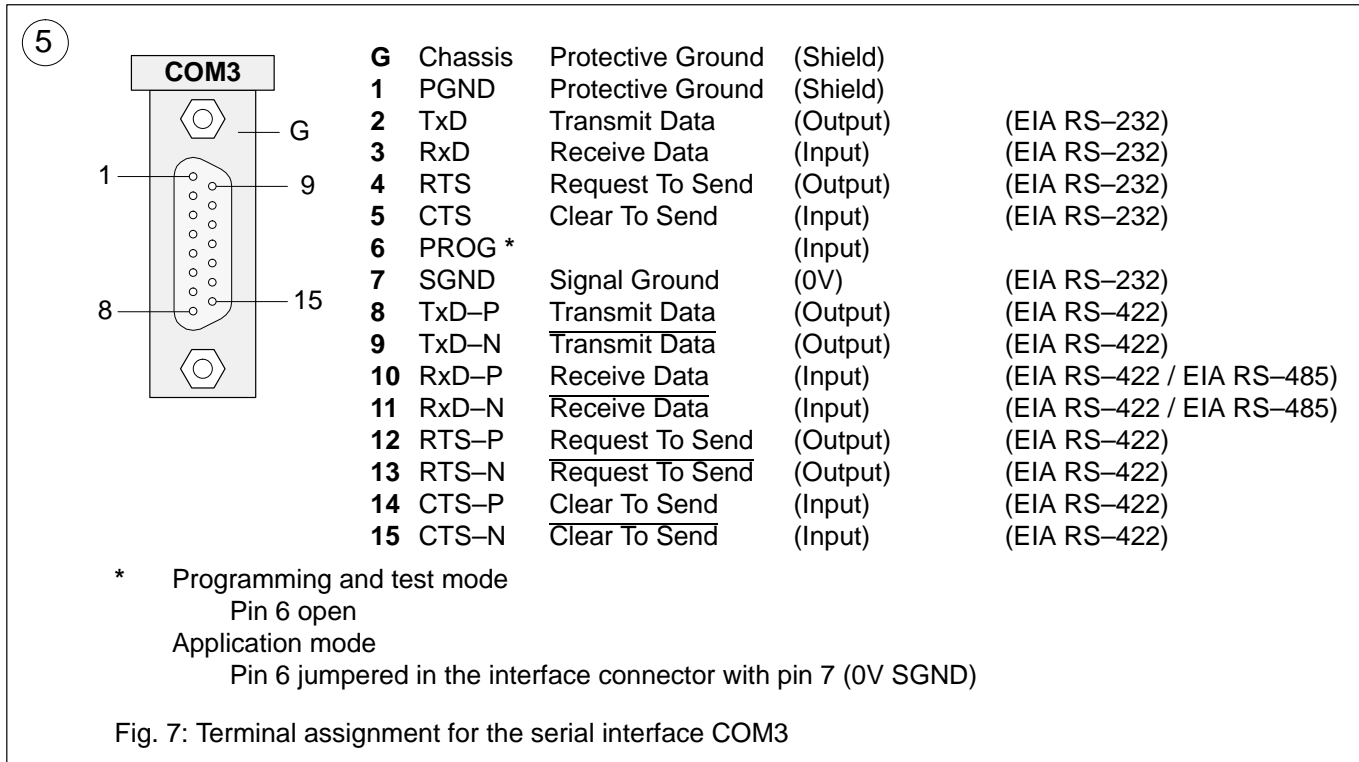
Both interfaces are electrically isolated.

#### Connection

Connection is via a 15–pole D–SUB connector (socket) in each case.

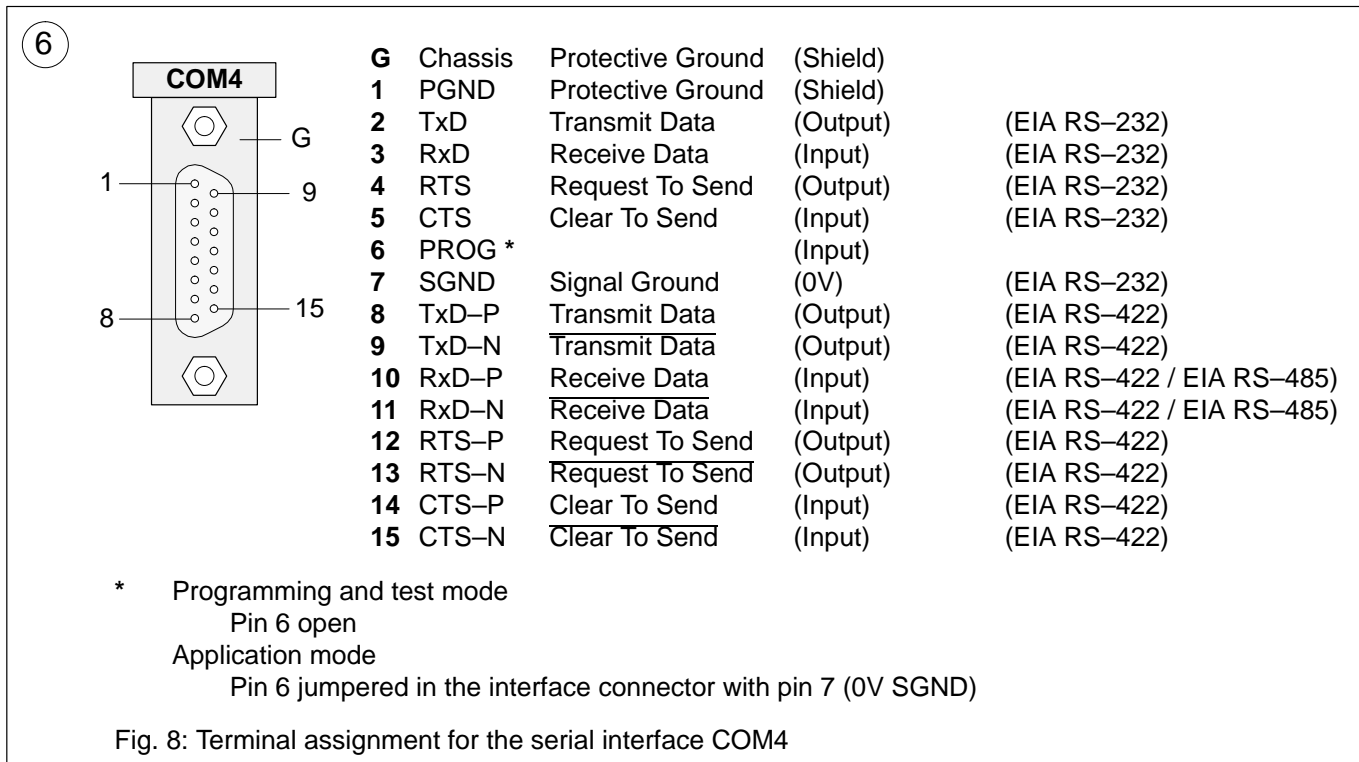
## Serial interface COM3: Terminal designation

Interface standard: EIA RS-232, EIA RS-422, EIA RS-485



## Serial interface COM4: Terminal designation

Interface standard: EIA RS-232, EIA RS-422, EIA RS-485



### 1.3.5 Networking interface 7

The networking interface, a special parallel interface, allows the 07 KP 92 communication module to be connected to ABB Procontic CS31 central units (such as 07 KR 91 R151, 07 KT 92, 07 KT 93). The housing of the

communication module is connected to the housing of the ABB Procontic CS31 basic unit by a snap-fit connection. The electrical connection is via a 40-pole ribbon cable with socket connector, soldered onto the 07 KP 92 side.

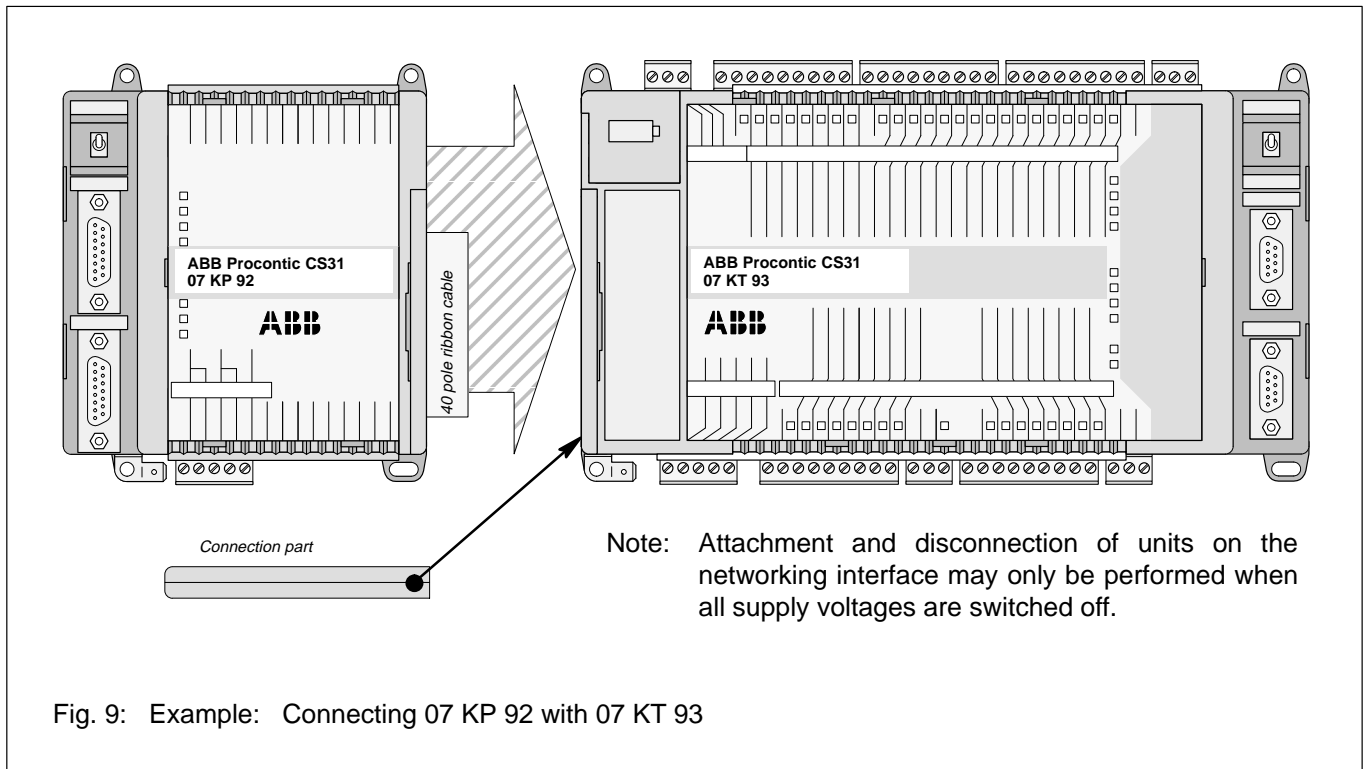


Fig. 9: Example: Connecting 07 KP 92 with 07 KT 93

#### Mounting the expansion housing

1. Detach the cover on unit 07 KT 93 from the networking interface.
2. Plug the socket strip of the 40-pole ribbon cable secured to the 07 KP 92 onto the networking connector of the 07 KT 93.
3. Place both units on a level surface and slide them together so that they engage.
4. Slide in the connection part to fix the housing in position.

**Note:** Mounting of the 07 KP 92 to 07 KR 91 / 07 KT 92 takes place in a similar way.

## 1.4 Diagnosis

### LED displays for system messages RUN, ERR, Supply

9

green	<input type="checkbox"/> RUN
red	<input type="checkbox"/> ERR
green	<input type="checkbox"/> Supply

The green LED "RUN" lights up when the user application is being processed.

The red LED "ERR" lights up when a fatal error (RAM error, DP-RAM error, EPROM error, Flash EPROM error) or a serious error is present.

The green LED "Supply" indicates the presence of the supply voltage.

Fig. 10: LED displays for system messages RUN, ERR, Supply

### Freely configurable LED displays

The yellow LEDs "LED1...LED4" are configurable. They can be controlled in the applications program.

10

yellow	<input type="checkbox"/> LED1
yellow	<input type="checkbox"/> LED2
yellow	<input type="checkbox"/> LED3
yellow	<input type="checkbox"/> LED4

Fig. 11: LED displays, freely configurable

### Operating states, error display

RUN ERR Supply	Meaning	Remedy
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Supply voltage not present.	<ul style="list-style-type: none"> <li>Switch on supply voltage.</li> <li>Check supply voltage.</li> </ul>
<input type="checkbox"/> <input type="checkbox"/> ☆	Supply voltage present. 07 KP 92 is ready to process the user application.	
☆ <input type="checkbox"/> ☆	The user application is running.	
X ☆ ☆	A serious error is present which caused the user application to abort automatically.	<ul style="list-style-type: none"> <li>Read out error and remedy if this is possible.</li> </ul>
☆ ☆ ☆	Initialization phase. Voltage ON.	

= LED off, ☆ = LED on, X = LED on or off, gn = green, rd = red

Fig. 12: Signalling operating states and error display

## 1.5 Programming and test software 907 KP 92

The communication module is programmed with the programming and test software 907 KP 92. This software can be run on an IBM-compatible PC. The PC can be

connected to either interface COM3 or COM4 of the communication module.

In addition to the programming and test software, the package 907 KP 92 contains documentation of the communication module 07 KP 92, the CE library and configuration examples.

## 1.6 Technical data

In general, the details in Section 1 "System data and system structure" of volume 2 of the system description "ABB Procontic CS31" apply as technical data. Supplementary and deviating data is listed below.

### 1.6.1 General data

Number of serial interfaces	2
Number of parallel interfaces	1 networking interface for connecting to the ABB Procontic CS31 central unit
Built-in application software memory	Flash EPROM 32 kbytes
Diagnosis	4 configurable LEDs: LED1...4 (control led by the application program)
Operating and error displays	3 LEDs: RUN, ERR, Supply
Conductor cross section for the removable terminals	max. 2.5 mm <sup>2</sup>

### 1.6.2 Supply voltage for 07 KP 92 R101

Rated supply voltage	24 V DC
Power dissipation	typ. 2.5 W
max. current consumption	
with rated voltage	210 mA
with supply voltage 30 V	170 mA
Protection against reversed terminal connection	yes

### 1.6.3 Connection serial interface COM3, COM4

Interface standard	EIA RS-232 or EIA RS-422 or EIA RS-485
Programming with 907 KP 92	via IBM-PC (or compatible)
Man-machine communication	yes, e.g. via ABB Procontic operating station 35 BS 40
Electrical isolation	yes, interfaces with respect to each other and with respect to the rest of the unit (also see Figure 5)
Potential differences	So that no earthing potential differences arise between the 07 KP 92 and the peripheral units connected to COM3 and COM4, the latter are supplied from the switch cabinet mains socket (also see earthing connections in Figure 5).
Terminal assignment and description of the interfaces COM3, COM4	See Page 7 onwards

### 1.6.4 LED displays

LEDs for operating and error displays:	
– Supply voltage present (Supply)	1 green LED
– Fatal or serious error occurred (ERR)	1 red LED
– Application program processing running (RUN)	1 green LED
Configurable LEDs for diagnosis: LED1...LED4	4 yellow LEDs

### 1.6.5 Mechanical data

Mounting on DIN rail

in accordance with DIN EN 50022–35, 15 mm deep  
The DIN rail is located in the middle between the upper and the lower edges of the module.

Fastening by screws

using 4 M4 screws.

Width x height x depth

140 x 120 x 85 mm

Wiring method

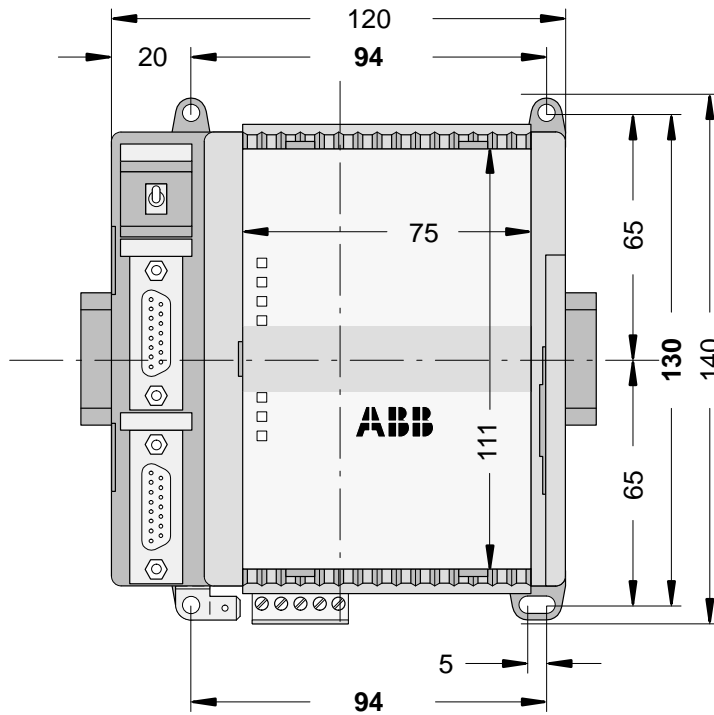
by removeable terminal blocks with screw–type terminals, max. 2.5 mm<sup>2</sup>

Weight

450 g

Dimensions for mounting

see the following drawing



All dimensions in mm.

**The device is 85 mm deep.** The interface connectors COM3 and COM4 are set deeper so that the mounting depth required does not become any larger even with detachable interface cables. If, however, a DIN rail is used, the mounting depth is increased by the overall depth of the rail.

Fig. 13: Dimensions of the Communications module 07 KP 92, front view, **the dimensions for assembly bore holes are printed in bold**

### 1.6.6 Mounting hints

Mounting position

vertical, terminals above and below

Cooling

The natural convection cooling must not hindered by cable ducts or other material mounted in the switch cabinet.

### 1.6.7 Ordering data

Communication module 07 KP 92 R101

Order No. GJR5 2515 00 R0101

Scope of delivery

Communication module 07 KP 92 R101  
1 5-pole terminal block (5.08 mm grid)  
Cable including terminals for making the  
earth connection  
Earthing instructions enclosed

#### Further literature

System description ABB Procontic CS31, English

Order No. FPTN 4400 04 R2001

System description ABB Procontic T200, English

Order No. GATS 1314 99 R2001

System description ABB Procontic T300, English

Order No. GATS 1315 99 R2002

Operating manual 07 KR 91, English

Order No. GATS 1316 01 R2001

Operating manual 07 KT 92, English

Order No. GATS 1316 02 R2001

Operating manual 07 KT 93 R101, English

Order No. GATS 1316 12 R2001

System description ABB Procontic CS31, German

Order No. GATS 1316 99 R1002

System description ABB Procontic T200, German

Order No. GATS 1314 99 R1001

System description ABB Procontic T300, German

Order No. GATS 1315 99 R1002

Operating manual 07 KR 91, German

Order No. GATS 1316 01 R1001

Operating manual 07 KT 92, German

Order No. GATS 1316 02 R1001

Operating manual 07 KT 93 R101, German

Order No. GATS 1316 12 R1001

#### Software

Programming and test software 907 KP 92,  
CE library and example programs,  
German documentation

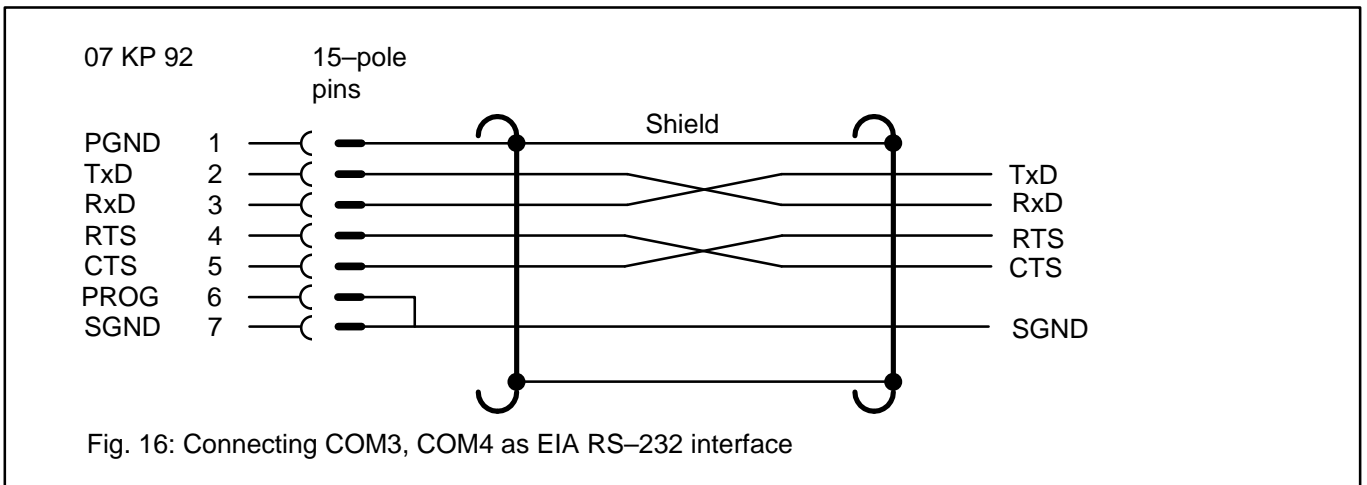
GJP5 2059 00 R0102

Programming and test software 907 KP 92,  
CE library and example programs,  
English documentation

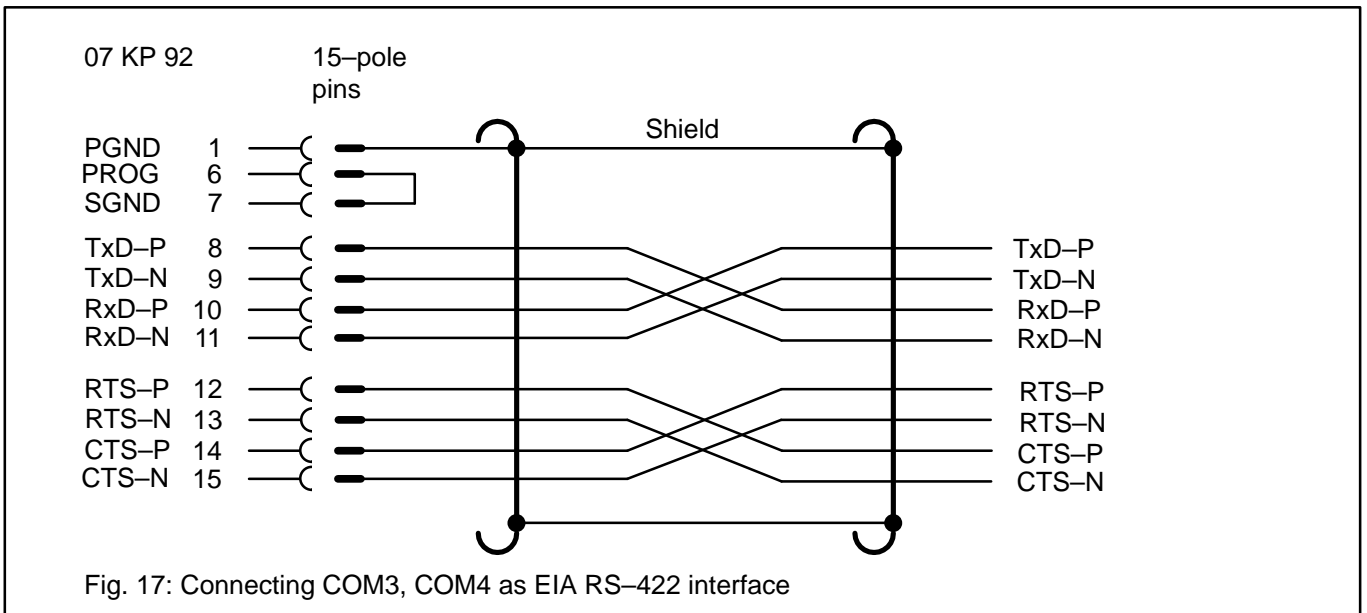
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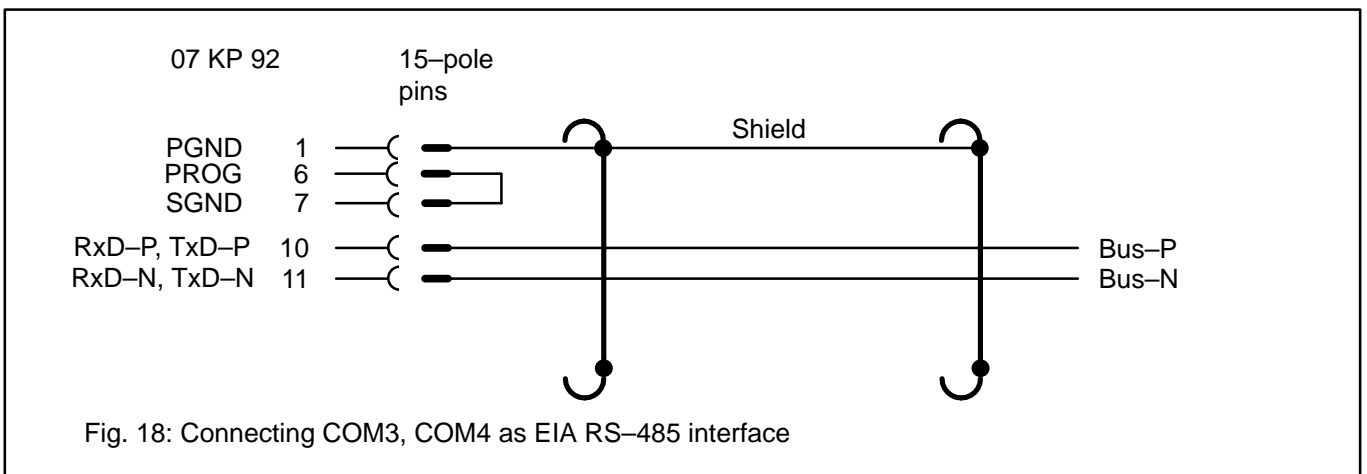
### 1.7.3 COM3, COM4 as EIA RS-232 interface



### 1.7.4 COM3, COM4 as EIA RS-422 interface



### 1.7.5 COM3, COM4 as EIA RS-485 interface







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