**Screw terminal boards, Relay output boards, connection cables**

**EMC-compliant selection of electromechanical components: A complete range of products for safety!**

In automation systems in which a PC has to undertake important controlling and regulating tasks, it must be guaranteed that data transfer is reliable. The interaction between all components determines the function safety of the whole system. The selection of each single component is therefore an important part of the interface structuring. Provided the PC enables data exchange with external devices through addition of plug-in boards, it can function as the central switching unit of a production process. Through the connection cables, interference is emitted and coupled, which largely influences the electronic properties of the extension boards and as a consequence the properties of the PC.

An interface board with a low-emission design and an adequate protection circuitry of the interface is a basic condition for the interaction of components. ADDI-DATA offers a large product range of EMC-compliant boards. However, it also depends on the data transfer lines, whether the data exchange with external devices is disturbed and meets the requirements of the EMC specifications and EU directives or not.

**Selecting the right cable**

The connection cable as a mechanical device is not submitted to the EMC specifications, though it can affect the emission immunity of the devices to which it is connected. Therefore a thought-out conception requires connection cables with a braid shielding. The selected connectors are to be connected to the cable shielding at low impedance to create earthing on both connector ends; This earthing is indispensable for shielding against electromagnetic fields. To this end the cable braid shielding has to be connected on both sides with the metalised plastic hoods of the connector.

Noise immunity of the board is additionally increased through the adapted pin assignment of the cables because the way the cable leads are twisted in pairs corresponds to the pin assignment of the boards.

**Using pin-compatible screw terminals**

Screw terminal boards are indispensable in most of the industrial applications. They dispatch to the sensors, tracers or control modules the numerous signals which are to be processed. If screw terminal boards are used to transmit the signals from the PC board, several conditions are to be considered: to avoid any connection errors, the screw terminal board should be pin-compatible with the PC board. The terminal board can thus lead the control signals in increasing order from the PC to the screw terminal which also corresponds to the bit set in the board. Besides the pin compatibility, the ADDI-DATA screw terminal boards have other advantages:

- Adaptability to the signal form: the screw terminal boards used for processing digital signals are equipped with status indicator LEDs. For the analog signals, diodes for overvoltage protection are mounted on the screw terminal board.
- Separate fuse protection: the digital 24 V extension boards require an external 24 V supply. To this end a separate 4-pin screw terminal is mounted on the terminal board for connecting the external supply voltage without additional installation. Varistors and diodes for overvoltage protection are connected to the screw terminals to prevent emissions from the external supply voltage.
- Earth connection terminal: the cable cannot be earthed on the SUB-D connector of the terminal board. Yet, a connection between housing and shield can be built through the ground connection terminal. An earthing on both sides is then created, reducing interference emissions and increasing noise immunity against electromagnetic radiation.

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### Screw terminal boards and relay output boards

<table>
<thead>
<tr>
<th>Description</th>
<th>Function display with LEDs</th>
<th>Overvoltage protection of the 24 V supply voltage</th>
<th>Available functions</th>
<th>Connection to</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PX 901</td>
<td>PX 901-D: yes through varistors and transorb diodes</td>
<td>PX 901-D: For digital boards with 32 LEDs for status display of the data lines</td>
<td>PX 901-D: For digital boards with 32 LEDs for status display of the data lines</td>
<td>ADDI-DATA digital, analog or counter, boards</td>
<td>125</td>
</tr>
<tr>
<td>PX 9000</td>
<td>Through varistors and transorb diodes for 24 V and sensor supply</td>
<td>PX 901-DQ: Same as PX901-D with housing for DIN rail</td>
<td>PX 901-A: For analog boards with transorb diodes for protecting the analog I/O against overvoltage</td>
<td>All ADDI-DATA digital boards</td>
<td>126</td>
</tr>
<tr>
<td>PX 9200</td>
<td>Through varistors and transorb diodes for 24 V and sensor supply for 22 signal lines and 4 analog channels</td>
<td>PX 901-AG: Same as PX901-A with housing for DIN rail</td>
<td>PX 901-ZG: For counter boards with housing for DIN rail</td>
<td>For multifunction board APCI-3122, and for analog board APCI-3504</td>
<td>127</td>
</tr>
<tr>
<td>PX 8500</td>
<td>Through varistors and transorb diodes for the relays and 24 V supply</td>
<td>PX 8500: Without varistors and with housing for DIN rail</td>
<td>PX 8500-G: With housing for DIN rail</td>
<td>APCI-1500, APCI-1516, APCI-1644, APCI-2016, APCI-2032, PA 1500, PA 2000, APCI-1500</td>
<td>128</td>
</tr>
</tbody>
</table>
The screw terminal board PX 901-xx is used for the connection of maximum 32 signal or signal-reference lines. ADDI-DATA boards can be connected through 37-pin SUB-D female connector with our standard cables of the STxxx series. The housing of the female connector is connected with two ground terminals so that the board is additionally earthing for more security. All components of the board are enclosed in an earthing strip also connected to the ground terminals. Each terminal is directly connected to one pin of the 37-pin SUB-D female connector. The designations on the terminals indicate the respective connections for the 37-pin SUB-D female connector.

The PX 901-D version is equipped with LEDs which are ideal for status display when working with ADDI-DATA digital 24 V I/O boards. The PX901-A version is fitted with transorbs for analog signals, but without LEDs. An additional 4-pin terminal is available in order to be able to connect more than one 24 V operating voltage and ground line. The 24 V or the ground terminal can be connected very easily through wire wrap to the 4-pin terminal. The 24 V operating voltage lines are additionally protected against overvoltage through varistors and transil diodes.

**Features**

- Connection of up to 32 signal lines
- Separate ground connections
- Connection through screw terminals
- 2 rows of terminals
- Terminals can be labelled
- Additional 4-pin terminal for connecting the ground or the supply voltage
- With housing for mounting on a standard supporting rail
- All terminals intended for large conductor cross sections: up to 2.5 mm²

**Safety features**

- Overvoltage protection of the 24 V supply terminals through varistors and transil diodes

**Applications**

- Process control
- Industrial measuring
- Acquisition of sensor data
- Signal analysis

**Specifications**

<table>
<thead>
<tr>
<th>Signal line terminals:</th>
<th>32 for the connection of peripherals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional terminals:</td>
<td>- 4 for feeding the external operating voltage (digital I/O)</td>
</tr>
<tr>
<td></td>
<td>- 2 for the connection of ground lines</td>
</tr>
<tr>
<td>Status display:</td>
<td>32 LEDs for status display, 1 LED for the indicator status of the operating voltage (version D)</td>
</tr>
<tr>
<td>Safety features:</td>
<td>Varistors and transil diodes</td>
</tr>
<tr>
<td>Connector:</td>
<td>37-pin SUB-D female connector</td>
</tr>
<tr>
<td>Dimensions of the printed circuit:</td>
<td>130 x 70 x 35 mm</td>
</tr>
<tr>
<td>Dimensions with housing:</td>
<td>132 x 87 x 70 mm</td>
</tr>
<tr>
<td>Temperature range:</td>
<td>0-70°C</td>
</tr>
</tbody>
</table>

**Example**

Connection of a digital input board through screw terminal board PX 901-DG

**Versions**

- **PX 901-D:** For digital boards, with status display through LEDs
- **PX 901-DG:** same as PX 901-D, with housing for DIN rail mounting
- **PX 901-A:** For analog boards, with transorb diodes
- **PX 901-AG:** same as PX 901-A, for DIN rail mounting

**BESTELLINFORMATIONEN**

- **PX 901-ZG:** For the counting board PA1700-2 and for analog output boards with current outputs, and for connecting digital I/O on some ADDI-DATA boards. With housing for DIN rail mounting

**Connection**

- **Not included with the board, please order separately!**
  - **ST010:** Standard round cable, shielded, twisted pairs, 2 m
  - **ST011:** Standard round cable, shielded, twisted pairs, 5 m
The screw terminal board PX 9000 is intended for the connection of maximum 32 signal lines and the voltage supply for the external sensors/actuators. All components of the board are enclosed in an earthing strip which is also connected to the ground terminals. On the 3x39-pin terminal block, all 37 contacts of the 37-pin female connector are assigned a contact on a row of terminals. Each signal line (terminal 1-32) is assigned a status LED. Both other rows of terminals are intended for connecting the voltage supply for the sensors/actuators. These rows are protected against unintentional voltage reversal through a diode. A LED indicates when a voltage is applied. These rows of terminals are equipped with 2 additional terminals, one on the right and one on the left side, for the easy connection of the voltage supply to a further terminal board. 4 further screw terminals are at disposal for the supply voltage of ADDI-DATA digital I/O boards: two for the connection of the 24 V operating voltage and two for the operating ground. Both terminals for the operating voltage 24 V are in addition protected against overvoltages through varistors and transorb diodes.

Features
- Connection of up to 32 signal lines through screw terminals
- 3 rows of terminals, terminals can be labelled
- LED indicator status

Specifications
- Signal line terminals: 32 for the connection of peripherals
- Supply voltage terminals: 2 rows of 39 terminals
- Additional terminals: 4 terminals for the external voltage supply (digital I/O)
- Status display: 37 LEDs for status display, LEDs for the display of the operating voltage
- Safety features: Varistors and transil diodes, ground connection
- Connector: 37-pin SUB-D female connector
- Dimension of the board: (L x W x H) 244 x 68 x 35 mm
- Abmessungen with housing: (L x W x H) 248 x 87 x 78 mm
- Temperature range: 0-70°C

ADDIVARIOUS PX 9000
Three-row screw terminal board, with housing for DIN rail mounting. Incl. technical description

Connection please order separately!
ST010: Standard round cable, shielded, twisted pairs, 2 m
ST011: Standard round cable, shielded, twisted pairs, 5 m

ADDIVARIOUS PX 8000
Screw terminal board, with housing for DIN rail mounting.

Connection please order separately!
ST370-16: Standard round cable, shielded, twisted pairs, 2 m
ST8001: Cable for connecting APC1-8001 and OPMF 50-pin
Screw terminal board
for DIN rail

The terminal board PX 9200 combines the connection of analog and digital signals. It features 2 separate cable connectors between the digital and the analog signals. Both signal types are driven through one own layer board and are protected between each other.

The two terminals blocks for the digital signals allow to connect 22 lines distributed as follows: 12 lines for digital output signals and 10 lines for digital input signals. The cable ST3122-D is used for digital data transfer to the ADDI-DATA boards and is equipped with a 26-pin SUB-D high-density female connector.

The terminal block for the analog signals allow to connect 4 analog channels with a separated ground line. The cable ST3122-D is used for analog data transfer to the ADDI-DATA boards and is equipped with a 15-pin SUB-D high-density female connector.

All components of the layer board are included in an earthing strip which is itself connected to the earthing terminal. The screw terminals are labelled to differentiate the different signals (analog/digital).

The PX 9200 is supplied with LEDs for status display of the digital signals. The analog signals are protected against fast transients and the mechanical layout allows the separation from the digital signals. The voltage supply for the analog or digital functions are driven separately.

Features
- Max. connection of 22 digital signal lines and 4 analog channels with separated ground line
- Separate ground connection
- Connection through screw terminals
- Separated connection blocks for analog and digital channels
- Terminals can be labelled
- With housing for DIN rail mounting
- All terminals for screw terminals for large conductor cross sections: up to 2.5 mm²

Specifications
- Signal line terminals: for connecting the peripheral
- Status display: 22 LEDs for digital status display, incl.:
  - 12 yellow LEDs for digital outputs
  - 10 orange LEDs for digital inputs
  One additional LED (green) for each voltage supply (analog and digital channels)
- Safety features: Varistors and transil diodes
- Connector: 26-pin SUB-D female connector, high-density (digital)
  15-pin SUB-D female connector, high-density (analog)
- Dimensions: (L x B x H) 132 x 87 x 65 mm
- Temperature range: 0-70 °C

ST3122, high-density round cable, 2m

ORDERING INFORMATION

ADDIVARIOUS PX 9200
Screw terminal board, incl. technical description

Version
PX 9200: for multifunction board APCI-3122 and analog output board APCI-3504 with status display through LEDs

Connection
Please order separately!
ST3122-D: High-density round cable, 2 m, shielded, twisted pairs, for digital inputs/outputs
ST3122-A: High-density round cable, 2 m, shielded, twisted pairs, for analog outputs
The ADDIVARIOUS PX 8500 is an external 8-channel relay board for the connection of digital output boards. It can be cascaded in 16, 24 and 32 relays and is intended for mounting on DIN supporting rails. The board provides a convenient interface between an industrial process and the SUB-D connectors on ADDI-DATA boards. The change-over contacts of the relay are controlled through 24 V signals. The 24 V voltage supply is protected through varistors and transil diodes. The board is intended for the use with 220 V supply. The creeping distance (acc. to DIN VDE01 10) and the connector cross sections allows high-power switching (up to 2,500 VA).

The board has a female SUB-D connector for connecting an ADDI-DATA digital 24 V output board through a standard I/O cable ST010. The red LEDs display the state of the relays (open/closed). A green LED displays the ON/OFF of the operating voltage. The 37-pin cable shielded can be grounded on both sides for the protection against high-frequency EMI.

Features
- Relay output board with 8 relays, cascadable in 16, 24 and 32 relays
- Max. switching voltage: 30 VDC/277 VAC
- Max. switching current: 10 A
- All terminals intended for large conductor cross sections up to 2.5 mm²
- Operating voltage display through green LED
- Relay state display through red LED
- Relays mounted on sockets
- High switching capacity
- Long-lasting life

Safety features
- Overvoltage protection of the 24 V supply voltage through varistors and transil diodes
- Contact protection of the relays through varistors (Option Vt)
- 4 mm creeping distance between change-over, closer and opening contact
- 6 mm creeping distance between change-over contact and closer of adjoining relay
- Free-wheeling diode in the coil circuit
- With housing for mounting on a standard DIN rail, (option G)
- Operating safety tested according to the low-voltage directive: 73/23/EEC

Applications
- Industrial digital I/O control
- Automatic test equipment
- External high power relay control
- Alarm monitoring
- Test automation
- Alarm monitoring
- Digital monitoring
- ON/OFF monitoring of motors, lights ...
- ...

Function principle of the relays

<table>
<thead>
<tr>
<th>CO</th>
<th>CC</th>
<th>OC</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC: Change-over contact</td>
<td>CC: Closing contact</td>
<td>OC: Opening contact</td>
</tr>
</tbody>
</table>

Rest state (open)
- CO: 0 mA

Work state (closed)
- CO: +Nominal

PX 8500
Cascadable to 16/24/32 relays
8 relays on sockets
DIN-rail mounting
30 VDC - 277 VAC
300 W - 2500 VA
10 A
8-channel relay output board

Specifications

Noise immunity test level
- Electric strength of the relays
  - At open contact: 1000 Veff
  - Contact coil: 5000 Veff
- Isolation structure of the board according to VDE0110: Group C/250VAC/300VAC

Contact side
- Type of contacts: 8 change-over contacts
- Max. switching voltage: 30 VDC - 277 VAC
- Max. switching capacity: 300 W - 2500 VA
- Max. switching current: 10 A
- Contact resistance: <100 mW
- Response time: 15 ms
- Release time: 5 ms
- Mechanical life: 5,000,000 operations
- Operating time at max. switching capacity: 100,000 operations

Control side
- Switching behaviour: Monostable
- Operating voltage: 24 VAC
- Operating efficiency: 533 mW
- Switching freq. at max. load: 20 switchings/minute
- Threshold voltage at +20°C: 16.8 V
- Release voltage at +20°C: 2.4 V

Physical and environmental conditions
- Operating voltage: + 24 V
- Current consumption: 210 mA typ.
- Dimensions (L x W x H): 210 x 68 x 42 mm
- Dimensions (L x W x H): With housing 212 x 87 x 72 mm
- Connector:
  - X1: 2 x 37-pin SUB-D female connector
  - X2: For the connection to the PC
  - For cascading the PX 8500 in max. 32 relays, for example for the digital output board PA 2000. In this case digital output signal 1 corresponds to the 24 V control signal of the relay 1, output 2 to relay 2, etc...
- Temperature range: 0-70°C
- Humidity: 30-95 %

ADDIVARIOUS PX 8500
8-channel relay output board. Incl. technical description

ADDIVARIOUS PX 8500

ORDERING INFORMATION

PX 8500: Basic board with 8 relays
PX 8500-G: with housing for mounting on DIN rail
PX 8500-V: PX 8500 with varistors
PX 8500-VG: PX 8500 with varistors and housing for mounting on DIN rail

Connection
- ST8500: Ribbon cable for cascading the board to 16, 24 or 32 relays
- ST021: Standard round cable, shielded, for connecting the APCI-1500, PA 1500, APCI-1516
- ST022: Standard round cable, shielded, for cascading two PX 8500
- ST010: Standard round cable, shielded, twisted pairs, 2 m, for connecting the PA 2000, APCI-2032, APCI-1564
- ST011: Same as ST010, 5 m
Shielded cables for industrial applications

Standard round cables, shielded

**ST010, ST011**
- Standard round cable, shielded, 2 or 5 m for digital, analog and counter boards
- Twisted pairs
- 37-pin SUB-D female connection to 37-pin SUB-D male connector
- Metallized hoods
- Other length on request

**ST010-S, ST011-S**
- Standard round cable, shielded, for high current, 2 or 5 m
- For digital output boards
- Twisted pairs
- 37-pin SUB-D female connector to 37-pin SUB-D male connector
- Metallized hoods
- Other length on request

Connection cable for serial interfaces, shielded

**ST074, ST075**
- Standard round cable, shielded, for 4-port serial interfaces.
- Twisted pairs
- 37-pin SUB-D female connector to 4 x 25-pin SUB-D male connector (ST074)
  or 25-pin SUB-D male connector to 4 x 9-pin (ST075)
- Metallized hoods
- Length 35 cm, other length on request

**ST7809, ST7825**
- Standard round cable, shielded, 35 cm, for 8-port serial interfaces.
- Twisted pairs
- 78-pin SUB-D male connector to 8 x 9-pin SUB-D male connector (ST7809)
  or to 9 x 25-pin SUB-D male connector (ST7825)
  (78-pin to board, 9-pin, 25-pin to peripheral)
- Metallized hoods

Specifications of the cable

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature range</td>
<td>-5°C to +80°C</td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>350 V</td>
</tr>
<tr>
<td>Test voltage</td>
<td>2000 V</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>± 20 MW/km</td>
</tr>
<tr>
<td>Inductance</td>
<td>Approx. 0.65 mH/km</td>
</tr>
<tr>
<td>Impedance</td>
<td>Approx. 78 W</td>
</tr>
<tr>
<td>Capacitive coupling</td>
<td>Approx. 300 pF/100m</td>
</tr>
<tr>
<td>Connector cross section</td>
<td>0.14 mm² (ST010-S and ST011-S with a connector cross section of 0.25 mm²)</td>
</tr>
<tr>
<td>Material and finish</td>
<td>ABS, flame-retardant to UL 94 V-O, plastic with nickel finish over Cu.</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-35°C to +95°C</td>
</tr>
<tr>
<td>Attenuation factor</td>
<td>&gt; 40 dB between 300 and 900 MHz</td>
</tr>
</tbody>
</table>

The cable screen is screwed low-impedance over strain relief on both sides of the housing hood with locking screws, the connections are crimped.

Application:
Suitable for use as control or signal cables in noisy environment, for indoor or outdoor applications.
The tight braid reduces the emissions. The copperbraid is used as “ground”. Twisted pairs provide protection against crosstalk and external interference.

Construction of the cable
- Plain copper conductor, fine-strand according to VDE 0295 class 5
- Special PVC conductor insulation
- Twisted-pair conductors
- Core identification according to DIN 47100
- Conductors laid up in layers
- Paper tape
- Tinned copper braid shielding
- Covering grade approx. 85%
- Special outer sheath, grey PVC
- Oil and petrol resistant according to VDE 0250 and 04772
- Self-extinguishing (SE) and flame-retardant, B test according to VDE 0472 part 804 and IEC 332-1

Specifications:
Special PVC data line for electronic control tasks according to VDE 0812 and 0814

Temperature range: -5°C to +80°C
Nominal voltage: 350 V
Test voltage: 2000 V
Insulation resistance: ± 20 MW/km
Inductance: Approx. 0.65 mH/km
Impedance: Approx. 78 W
Capacitive coupling: Approx. 300 pF/100m
Connector cross section: 0.14 mm² (ST010-S and ST011-S with a connector cross section of 0.25 mm²)
Material and finish: ABS, flame-retardant to UL 94 V-O, plastic with nickel finish over Cu.
Temperature range: -35°C to +95°C
Attenuation factor: > 40 dB between 300 and 900 MHz
Construction: The cable screen is screwed low-impedance over strain relief on both sides of the housing hood with locking screws, the connections are crimped.
## Shielded cables for industrial applications

### Shielded standard round cable, twisted pairs and with metallized hoods

<table>
<thead>
<tr>
<th>Cable designation</th>
<th>Application</th>
<th>Connections</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ST010</strong></td>
<td>Connector cross section 0.14 mm² twisted pairs, shielded</td>
<td>Connection to digital, analog I/O boards, relay output boards, counter boards and screw terminal board</td>
<td>37-pin SUB-D female connector, 37-pin SUB-D male connector, Wiring: 1:1</td>
</tr>
<tr>
<td><strong>ST011</strong></td>
<td></td>
<td>Connection to digital, analog I/O boards, relay output boards, counter boards and screw terminal board</td>
<td>37-pin SUB-D female connector, 37-pin SUB-D male connector, Wiring: 1:1</td>
</tr>
<tr>
<td><strong>ST010-S and ST011-S</strong></td>
<td>Connector cross section 0.25 mm² for data line 0.752 mm² (for external supply)</td>
<td>Connection to digital boards intended for higher currents</td>
<td>same as ST010 and ST011, Wiring: 1:1</td>
</tr>
<tr>
<td><strong>ST021</strong></td>
<td></td>
<td>Connection cable between CPCI-1500, APIC-1500, APIC-1516, PA1500, PA 1508, PA 2000, and relay output board PX 8500</td>
<td>37-pin SUB-D male connector, 37-pin SUB-D female connector</td>
</tr>
<tr>
<td><strong>ST022</strong></td>
<td></td>
<td>Connection cable between - 2 relay output boards PX 8500 - PX 8500 and PX 901-D or PX 9000</td>
<td>2 x 37-pin SUB-D male connector, Wiring: 1:1</td>
</tr>
<tr>
<td><strong>ST3122-A</strong></td>
<td></td>
<td>Connection cable between APCI-3122/APCI-3504 and PX9200 analog outputs APCI-3122 and PX9200 digital inputs/outputs</td>
<td>2 x 26-pin SUB-D HD male connector, 2 x 15-pin SUB-D HD male connector</td>
</tr>
<tr>
<td><strong>ST3122-D</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ST3701</strong></td>
<td></td>
<td>Connection cable between APCI-3701 and PX 3701-8</td>
<td>50-pin SUB-D male connector, 50-pin SUB-D female connector</td>
</tr>
<tr>
<td><strong>ST370-8</strong></td>
<td></td>
<td>Connection cable between PA 370-8 and PX 371-8</td>
<td>50-pin SUB-D male connector, 50-pin SUB-D female connector</td>
</tr>
<tr>
<td><strong>ST370-16</strong></td>
<td></td>
<td>Connection cable between - PA 370-16 and PX 371-16 - PA 2200 and PX 8000 - APCI/CPCI-1710 and PX 8000</td>
<td>50-pin SUB-D male connector, 50-pin SUB-D female connector</td>
</tr>
<tr>
<td><strong>ST8001</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Connection cable, twisted pairs and with metallized hoods for the communication boards ADDICOM

<table>
<thead>
<tr>
<th>Cable designation</th>
<th>Application</th>
<th>Connections</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ST074</strong></td>
<td>Connection cable for 4-port serial interfaces (PA 7500, APIC-7500)</td>
<td>1 x 37-pin SUB-D female connector, 4 x 25-pin SUB-D male connector</td>
<td>35 cm</td>
</tr>
<tr>
<td><strong>ST075</strong></td>
<td>Connection cable for 4-port serial interfaces (PA 7500, APIC-7500)</td>
<td>1 x 37-pin SUB-D female connector, 4 x 9-pin SUB-D male connector</td>
<td>35 cm</td>
</tr>
<tr>
<td><strong>ST7809</strong></td>
<td>Connection cable for 8-port serial interfaces (APIC-7800)</td>
<td>1 x 78-pin SUB-D male connector, 8 x 9-pin SUB-D male connector</td>
<td>35 cm</td>
</tr>
<tr>
<td><strong>ST7825</strong></td>
<td>Connection cable for 8-port serial interfaces (APCI-7800)</td>
<td>1 x 78-pin SUB-D male connector, 8 x 25-pin SUB-D male connector</td>
<td>35 cm</td>
</tr>
</tbody>
</table>

### Ribbon cable

<table>
<thead>
<tr>
<th>Cable designation</th>
<th>Application</th>
<th>Connections</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FB2200-1/FB1700</strong></td>
<td>Ribbon cable for PA 2200-8-8 and PA 2200-16-8 or PA 1700-2</td>
<td>1 x 34-pin female connector, 1 x 37-pin SUB-D male connector, with bracket</td>
<td>20 cm</td>
</tr>
<tr>
<td><strong>FB3000</strong></td>
<td>Ribbon cable for PA 3000, PA 3500, APCI-3120, APCI-3501, APCI-3001</td>
<td>1 x 16-pin female connector, 1 x 37-pin SUB-D male connector, with bracket</td>
<td>25 cm</td>
</tr>
<tr>
<td><strong>FB311</strong></td>
<td>Ribbon cable for PA 311 oder PA 3100</td>
<td>1 x 26-pin female connector, 1 x 37-pin SUB-D male connector, with bracket</td>
<td>35 cm</td>
</tr>
</tbody>
</table>