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Link Boards and Panels

Objective

Several different link boards and link panels are available to connect expansion boxes, for example, to your host PC.

Where to go from here

Information in this section

You can connect an expansion box to your host PC via a bus interface. dSPACE offers several link boards to establish different link types (ISA bus, PCI bus, PCI Express bus, PCMCIA, ExpressCard/54).

DS815 Link Board (PC) 230
Provides a PCMCIA interface.

DS817 Link Board (PC) 233
Provides a PCI interface.

DS819 Link Board (PC) 236
Provides a PCI Express interface.

DS821 Link Board (PC) 239
Provides an ExpressCard/54 interface.

DS814 Link Board (Box) 228
Provides the ISA bus interface required for expansion boxes.

You can connect up to 16 dSPACE boxes (expansion boxes or MicroAutoBoxes) to one host PC with the DS830 MultiLink Panel. In this case you need to install only one link board in the host PC.

DS830 MultiLink Panel 242

DS814 Link Board (Box)

Objective

The DS814 (to be installed in an expansion box) is an *ISA bus interface* and provides the connection to the link boards installed in the host PC (DS815, DS817, DS819, or DS821) or a DS830 Multilink Panel.

Where to go from here

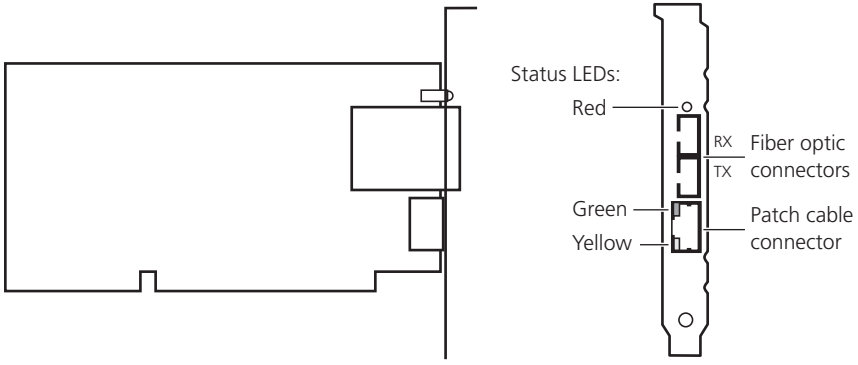
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DS814 Board Overview

Overview illustration

The illustration shows the location of connectors and LEDs on the board. The illustration is not to scale.



Components

The DS814 contains the following board elements:

- *Status LEDs* display the current status of the connection. These LEDs can be used for troubleshooting purposes:
  - A lit *yellow* LEDindicates that the connection between the box and the host PC (or DS830) is ready for communication.
  - A lit *red* LED indicates that the active connection between the box and the host PC (or DS830) uses a fiber-optic cable.
  - A lit *green* LED indicates that data is being sent or received.
- *Fiber optic connectors* are used for the optical link to the link board installed in the host PC or to a DS830 Multilink Panel. The DS814 provides one receiver port (RX) and one transmitter port (TX).
- *Patch cable connector* is an RJ45 connector. It is used for the link via crossed-over patch cable to the link board installed in the host PC or to a DS830 Multilink Panel.

Link cables

Matching link cables (fiber optic or crossed-over patch cable) are delivered with the hardware package. Use only these cables.

DS814 Data Sheet

Technical data

The following table provides the technical characteristics of the DS814 Link Board (Box):

Parameter	Specification
Slave interface	16-bit ISA slot in dSPACE expansion box
Supported link interfaces	DS815, DS817, DS819, DS821, DS830
Physical connection	■ Crossed-over patch cable: twisted pair (CAT5 STP) ■ Fiber-optic cable: multimode (62.5/125 µm)
Cable length per connection	■ Max. 10 m (crossed-over patch cable) ■ Max. 100 m (fiber-optic cable)
Protocol	High-speed serial link (proprietary)
Max. transfer rate	100 MBit/s [1)]
Power supply	+5 V ±5%, 1.0 A
Physical size	158 x 80 x 18 mm (6.3 x 3.1 x 0.7 in.)
Ambient temperature	0 … 70 °C (32 … 158 °F)

[1)] The transfer rate describes the capabilities of the hardware components and circuits of dSPACE products. Depending on the software complexity the attainable overall performance can deviate significantly from the hardware specification.

DS815 Link Board (PC)

Objective

The DS815 (to be installed in the host PC) is a PC card and provides a *PCMCIA link* to the DS814 Link Board (Box), a DS830 Multilink Panel or MicroAutoBox. The DS815 always works in Plug & Play mode.

Where to go from here

Information in this section

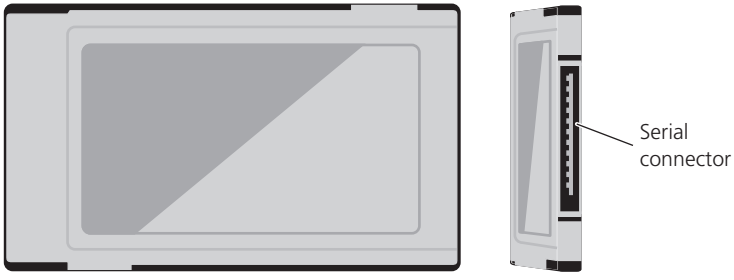
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DS815 Board Overview

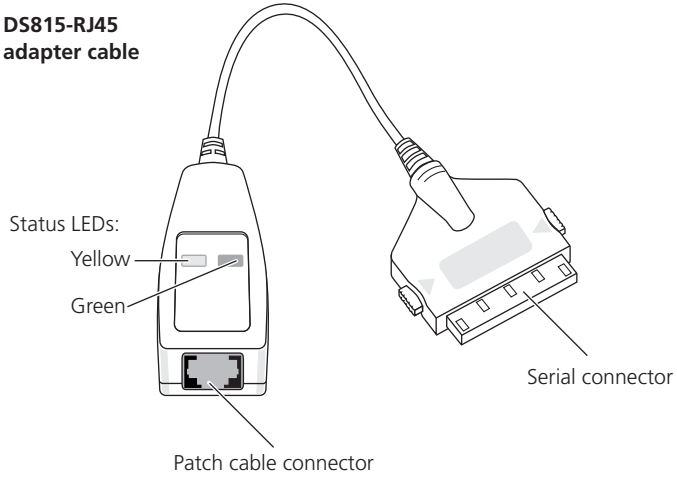
Overview illustration

The illustration shows the DS815 and the DS815-RJ45 adapter cable. The illustration is not to scale.

DS815



DS815-RJ45 adapter cable



DS815 components

The DS815 contains the following element:

- *Serial connector* is used for the serial link to the DS814 Link Board (Box), DS830 or MicroAutoBox. A matching link cable is delivered with the board.

  As of November 2001 the DS815 comes with a new serial connector. These boards have a red label or a blue label with "Vs.2.0". The link cables of DS815 boards delivered before November 2001 are not compatible with the new cables.

  For the DS815 delivered as of November 2001 an adapter cable is available:

  - To adapt the DS815 to a standard patch cable with an RJ45 connector.
  - To identify the current status of the connection by the two LEDs integrated in the shell of the RJ45 connector.

DS815-RJ45 adapter cable components

The adapter cable is labeled "DS815-RJ45 Vs 2.0". It contains the following elements:

- *Status LEDs* display the current status of the connection. These LEDs can be used for troubleshooting purposes:
  - A lit *yellow* LED indicates that the connection between the host PC and a dSPACE box (or DS830) is ready for communication.
  - A lit *green* LED indicates that data is being sent or received.
- *Serial connector* for connection of the DS815 to the host PC.
- *Patch cable connector* is an RJ45 connector. It is used for the link via crossed-over patch cable to the DS814 Link Board (Box), DS830 or MicroAutoBox.

  For the connection between the DS815-RJ45 adapter cable and the dSPACE boxes (or DS830) you must use a crossed-over patch cable.

DS815 Data Sheet

Technical data

The following table provides the technical characteristics of the DS815 Link Board (PC):

Parameter	Specification
Host interface	Type II PCMCIA in host PC (16-bit interface)
Supported link interfaces	DS814, DS830, MicroAutoBox
Physical connection	Crossed-over patch cable: twisted pair (CAT5 STP)
Cable length per connection	Max. 10 m
Protocol	High-speed serial link (proprietary)
Max. transfer rate	100 MBit/s [1)]
Power supply	+5 V ±5%, 150 mA from PC
Physical size	Type II PCMCIA card
Ambient temperature	0 … 70 °C (32 … 158 °F)

[1)] The transfer rate describes the capabilities of the hardware components and circuits of dSPACE products. Depending on the software complexity the attainable overall performance can deviate significantly from the hardware specification.

DS817 Link Board (PC)

Objective

The DS817 (to be installed in the host PC) is a *PCI interface* and provides the link to the DS814 Link Board (Box), a DS830 Multilink Panel or MicroAutoBox.

Where to go from here

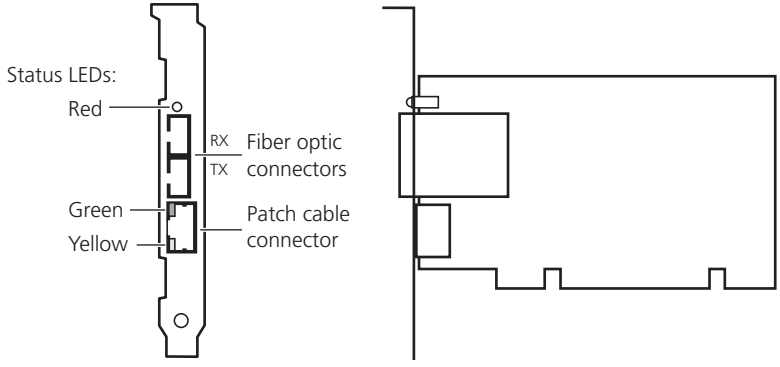
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DS817 Board Overview

Overview illustration

The illustration shows the location of connectors and LEDs on the board (DS817-04 equipped with the standard bracket). The illustration is not to scale.



Components

The DS817 contains the following board elements:

- *Status LEDs* display the current status of the connection. These LEDs can be used for troubleshooting purposes:
  - A lit *yellow* LED indicates that the connection between the host PC and a dSPACE box (or DS830) is ready for communication.
  - A lit *red* LED indicates that the active connection between the host PC and a dSPACE box (or DS830) uses a fiber-optic cable.
  - A lit *green* LED indicates that data is being sent or received.

    Directly after power-up the green LED lights up three times shortly, followed by a longer break. This indicates that the host interface is providing the required 33 MHz PCI clock frequency.
- *Fiber optic connectors* are used for the optical link to the DS814 Link Board (Box) or DS830. The DS817 provides one receiver port (RX) and one transmitter port (TX).
- *Patch cable connector* is an RJ45 connector. It is used for the link via patch cable to the DS814 Link Board (Box), DS830 or MicroAutoBox.

Link cables

Matching link cables (fiber optic or crossed-over patch cable) are delivered with the hardware package. Use only these cables.

Optional bracket

The DS817 comes with an optional bracket for installation in low-profile PCs.

You can use this bracket to install the DS817 in host PCs which support only low-profile cards. Remove the standard bracket and mount the optional low-profile bracket on the link board.



dSPACE does not guarantee that the bracket fits to all low-profile PCs which are available on the market.

DS817 Data Sheet

Technical data

The following table provides the technical characteristics of the DS817 Link Board (PC):

Parameter	Specification	
	Up to board revision DS817-03	**Board revision DS817-04 and later**
Host interface	■ 32-bit PCI host interface ■ 5 V PCI slot ■ 33 MHz ±5 %	■ 32-bit PCI host interface ■ 3.3 V / 5 V Universal PCI slot ■ 33 MHz ±5 %
Supported link interfaces	DS814, DS830, MicroAutoBox	
Physical connection	■ Crossed-over patch cable: twisted pair (CAT5 STP) ■ Fiber-optic cable: multimode (62.5/125 µm)	■ Crossed-over patch cable: twisted pair (CAT5 STP) ■ Standard patch cable ■ Fiber-optic cable: multimode (62.5/125 µm)
Cable length per connection	■ Max. 10 m (patch cable) ■ Max. 100 m (fiber-optic cable)	
Protocol	High-speed serial link (proprietary)	
Max. transfer rate	100 MBit/s [1)]	
Power supply	+5 V ±5%, 1.0 A from PC	+3.3 V ±5%, 1.0 A from PC
Physical size	122 x 72 x 18 mm (4.8 x 2.8 x 0.7 in.)	122 x 64 x 18 mm (4.8 x 2.5 x 0.7 in.)

Parameter	Specification	
	Up to board revision DS817-03	**Board revision DS817-04 and later**
Bracket	■ Standard bracket ■ One optional bracket for installation in low-profile PCs comes with the DS817	
Ambient temperature	0 … 70 °C (32 … 158 °F)	

[1] The transfer rate describes the capabilities of the hardware components and circuits of dSPACE products. Depending on the software complexity the attainable overall performance can deviate significantly from the hardware specification.

DS819 Link Board (PC)

Objective

The DS819 (to be installed in the host PC) is a *PCI Express interface* and provides the link to the DS814 Link Board (Box), a DS830 Multilink Panel or MicroAutoBox.

Where to go from here

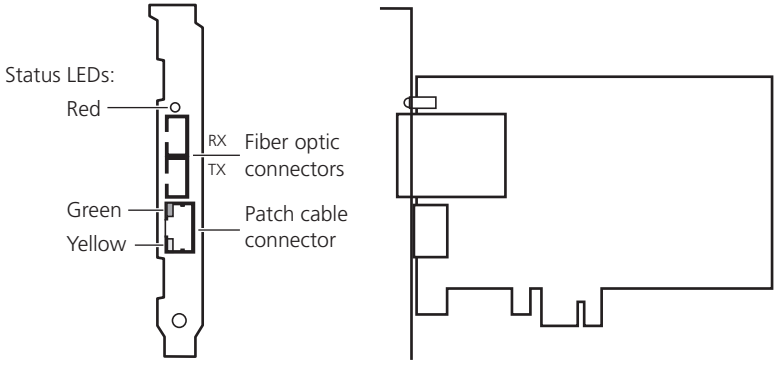
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DS819 Board Overview

Overview illustration

The illustration shows the location of connectors and LEDs on the board. The illustration is not to scale.



Components

The DS819 contains the following board elements:

- *Status LEDs* display the current status of the connection. These LEDs can be used for troubleshooting purposes:
  - A lit *yellow* LED indicates that the connection between the host PC and a dSPACE box (or DS830) is ready for communication.
  - A lit *red* LED indicates that the active connection between the host PC and a dSPACE box (or DS830) uses a fiber-optic cable.
  - A lit *green* LED indicates that data is being sent or received.
- *Fiber optic connectors* are used for the optical link to the DS814 Link Board (Box) or DS830. The DS819 provides one receiver port (RX) and one transmitter port (TX).
- *Patch cable connector* is an RJ45 connector. It is used for the link via crossed-over patch cable to the DS814 Link Board (Box), DS830 or MicroAutoBox.

Link cables

Matching link cables (fiber optic or crossed-over patch cable) are delivered with the hardware package. Use only these cables.

Optional bracket

The DS819 comes with an optional bracket for installation in low-profile PCs.

You can use this bracket to install the DS819 in host PCs which support only low-profile cards. Remove the standard bracket and mount the optional low-profile bracket on the link board.



dSPACE does not guarantee that the bracket fits to all low-profile PCs which are available on the market.

DS819 Data Sheet

Technical data

The following table provides the technical characteristics of the DS819 Link Board (PC):

Parameter	Specification
Host interface	■ PCI Express x1 interface ■ PCI Express slot (x1 ... x32)
Required software	dSPACE Release 5.2 or later
Supported link interfaces	DS814, DS830, MicroAutoBox
Physical connection	■ Crossed-over patch cable: twisted pair (CAT5 STP) ■ Fiber-optic cable: multimode (62.5/125 µm)
Cable length per connection	■ Max. 10 m (crossed-over patch cable) ■ Max. 100 m (fiber-optic cable)
Protocol	High-speed serial link (proprietary)
Max. transfer rate	100 MBit/s [1)]
Power supply	From PC: ■ +3.3 V ±5%, 0.5 A ■ +12 V ±5%, 0.2 A
Physical size	120 x 75 x 18 mm (4.7 x 3.0 x 0.7 in.)
Ambient temperature	0 … 70 °C (32 … 158 °F)

[1)] The transfer rate describes the capabilities of the hardware components and circuits of dSPACE products. Depending on the software complexity the attainable overall performance can deviate significantly from the hardware specification.

DS821 Link Board (PC)

Objective

The DS821 (to be installed in the host PC) is an interface card and provides an *ExpressCard/54 link* to the DS814 Link Board (Box), a DS830 Multilink Panel or MicroAutoBox.

Where to go from here

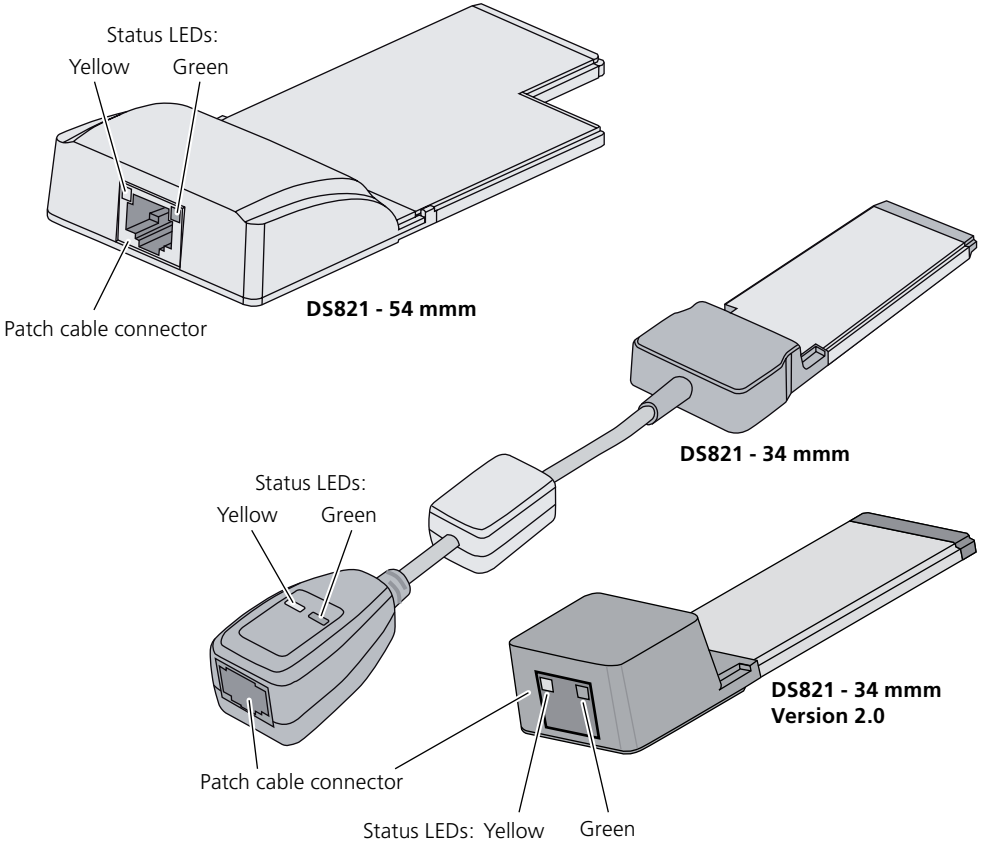
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DS821 Board Overview

Overview illustration

The illustration shows the DS821-54 mm (for ExpressCard/54 notebook slots) and the DS821-34 mm (for ExpressCard/34 notebook slots). The illustration is not to scale.



DS821 components

The DS821 contains the following element:

- *Status LEDs* display the current status of the connection. These LEDs can be used for troubleshooting purposes:
  - A lit *yellow* LED indicates that the connection between the host PC and a dSPACE box (or DS830) is ready for communication.
  - A lit *green* LED indicates that data is being sent or received.
- *Patch cable connector* is an RJ45 connector. It is used for the link via crossed-over patch cable to the DS814 Link Board (Box), DS830 or MicroAutoBox.

DS821 Data Sheet

Technical data

The following table provides the technical characteristics of the DS821 Link Board (PC):

Parameter		Specification
Host interface	DS821-34 mm	ExpressCard/34
	DS821-54 mm	ExpressCard/54
Required software		dSPACE Release 5.2 or later
Supported link interfaces		DS814, DS830, MicroAutoBox
Physical connection		Crossed-over patch cable: twisted pair (CAT5 STP)
Cable length per connection		Max. 10 m
Protocol		High-speed serial link (proprietary)
Max. transfer rate		100 MBit/s [1)]
Power supply		From PC: ■ +3.3 V ±5%, 1.0 A ■ +1.5 V ±5%, 0.5 A
Physical size	DS821-34 mm	112 x 34 x 12 mm (4.4 x 1.3 x 0.5 in.)
	DS821-34 mm (Ver. 2.0)	112 x 34 x 21,5 mm (4.4 x 1.3 x 0.85 in.)
	DS821-54 mm	120 x 54 x 22 mm (4.7 x 2.1 x 0.9 in.)
Ambient temperature		0 … 70 °C (32 … 158 °F)

[1)] The transfer rate describes the capabilities of the hardware components and circuits of dSPACE products. Depending on the software complexity the attainable overall performance can deviate significantly from the hardware specification.

DS830 MultiLink Panel

Objective

The DS830 MultiLink Panel allows you to connect several dSPACE boxes (expansion boxes/AutoBoxes and/or MicroAutoBoxes) to one host PC. The panel is available in three variants:

- DS830-4 for up to 4 connections
- DS830-8 for up to 8 connections
- DS830-16 for up to 16 connections

Where to go from here

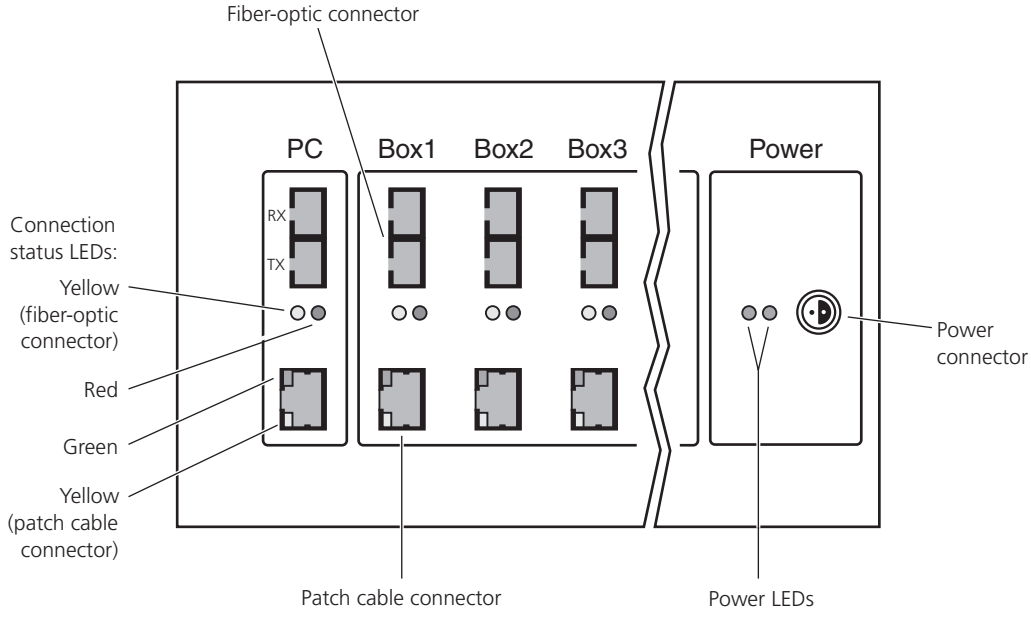
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DS830 Panel Overview

Overview illustration

The illustration shows the location of connectors and LEDs on the panel. The illustration is not to scale.



Components

The DS830 contains the following elements (from left to right):

- *Connection status LEDs* display the current status of the connection. These LEDs can be used for troubleshooting purposes:
  - A lit *yellow* LED (fiber-optic connector) indicates that the connection between host PC and the corresponding dSPACE box is currently being used for communication.
  - A lit *yellow* LED (patch cable connector) indicates that the connection to the host PC or a connected dSPACE box is ready for communication.
  - A lit *red* LED indicates that the corresponding connection to the host PC or a connected dSPACE box uses a fiber-optic cable.
  - A lit *green* LED indicates that data is being sent or received on the corresponding connection.

- *Fiber optic connectors* are used for the optical link to the host PC or a dSPACE box. The panel provides one receiver port (RX) and one transmitter port (TX) for each connection.
- *Patch cable connectors* are RJ45 connectors. They are used for the link via crossed-over patch cable to the host PC or a dSPACE box.
- The *power LEDs* are both lit (green) when power is supplied correctly to the DS830.
- *Power connector* for connection to power supply unit or car battery.

Cables

The following cables are delivered with the DS830 hardware package:

- If ordered: Matching link cables (fiber-optic and crossed-over patch cable)
- The cables required to supply power to the DS830 via a mains socket or a car battery. The cable for the mains socket includes a power supply unit (15.0 V, 4.0 A).

DS830 Data Sheet

Technical data

The following table shows the technical characteristics of the DS830 Multilink Panel.

Parameter	Specification
Enclosure	Aluminium box (not waterproof)
Connectable boxes	Up to 4 (DS830-4), 8 (DS830-8) or 16 (DS830-16) expansion boxes and/or MicroAutoBoxes
Supported link interfaces	DS814, DS815, DS817, DS819, DS821, MicroAutoBox
Physical connection	In any combination: ■ Crossed-over patch cable: twisted pair (CAT5 STP) ■ Fiber-optic cable: multimode (62.5/125 µm)
Cable length per connection	■ Max. 10 m (crossed-over patch cable) ■ Max. 100 m (fiber-optic cable)
Protocol	High-speed serial link (proprietary)
Max. transfer rate	100 MBit/s [1)]
Status LEDs	Various LEDs displaying the current status of each connection and the power supply

Parameter		Specification
Power supply		■ +6 V … +58 V DC ■ Overvoltage protection and protection against reverse polarity (± 80 V) ■ Power supply via mains socket or a car battery (power supply cables are part of the hardware package) ■ Mains socket cable includes a power supply unit (15.0 V, 4.0 A)
Power consumption	DS830-4	16 W
	DS830-8	24 W
	DS830-16	40 W
Physical size (length x depth x height)	DS830-4	201.6 x 56.0 x 108.6 mm (7.9 x 2.2 x 4.3 in.)
	DS830-8	288.0 x 56.0 x 108.6 mm (11.3 x 2.2 x 4.3 in.)
	DS830-16	460.8 x 56.0 x 108.6 mm (18.1 x 2.2 x 4.3 in.)
Approx. weight	DS830-4	0.75 kg (1.65 lb.)
	DS830-8	1.10 kg (2.43 lb.)
	DS830-16	1.70 kg (3.75 lb.)
Ambient temperature		■ 0 … 50 °C (32 … 122 °F) ■ Active cooling (fan)

[1] The transfer rate describes the capabilities of the hardware components and circuits of dSPACE products. Depending on the software complexity the attainable overall performance can deviate significantly from the hardware specification.

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