



ITEC NET

SPIDER 44/03 / SPIDER 04/03

MANUAL



Designed and Manufactured by
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Industrieelektronik GesmbH
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 **ITEC**
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Dear Customer,

The main focus of our research work is and always has been the development of practical devices that are flexible, versatile, reliable, future-proof but still easy to handle. In close cooperation with electrical consultants, system architects and operators of public address systems the ITECNET Spider44 / Spider04 has emerged and grown. In addition, all our know-how from many years of experience in the field of audio and digital technology has been integrated into this product.

Unlike any other known device, it offers the possibility of building the largest and most complex audio systems, with relatively simple and well arranged operation and configuration.

This manual describes the hardware of the Spider 44 / Spider04, shows the construction and the wiring of the various audio and logic I/Os and thus serves the audio system designer / integrator in the conceptual design phase respectively during the set-up process of audio networks. Numerous examples illustrate the optimum usage and the professional installation of controls and other devices.

For knowing the entire system, all its possibilities and for executing the necessary configuration tasks the software manual is required in addition. Please observe during the installation / operation of the ITEC Spider 44 / Spider04 all listed safety instructions in this manual; furthermore data and examples provided ensuring the optimum usage of the device.

Lots of joy and success - The ITEC Acoustics Team

Safety instructions

When installing the device, the local connecting conditions, the required protective measures and all relevant standards have to be observed. The installation and configuration of the ITEC Spider 44 / Spider04 must be performed by trained personnel only. For the configuration the original software ITEC NetDesign has to be used exclusively.

The power connection is carried out via the original power supply unit or directly to any existing 24 V DC power supply (emergency current).

The power supply has on its primary side a rubber connector and is linked with an appropriate cable to the national standard AC outlet (115 - 230 volts). Please note that the ground connector of the device (audio ground and ground of all digital audio interfaces) is electrically not connected to the negative pole of the DC supply. Please observe during the installation, that no multiple connections between the ground connector of the device and the 24 V negative pole are put in place (see also chapter „power“).

When installed in switch cabinets, pre-cautions need to be taken to ensure sufficient air exchange to avoid overheating of the device.

When connecting to other devices (e.g.: sound sources, computers), the exact pin configuration and the specifications of inputs and outputs need to be observed.

Only a connection to networks, which are compliant to IEEE 802.3 (Ethernet), is possible. Never try to open the device by force or by unscrewing. The product does not contain parts that can be repaired by amateurs. Please contact the manufacturer or a local distributor.

Do not apply temperatures above 50 °C, humidity larger than 95% or rain to the device.

Caution: Before carrying out any modifications on the device (only by qualified personnel) the power supply has to be disconnected. The device is designed for installations in 19" cabinets / rack / frame / housing. Improper installations in furniture, cabinets or distribution systems, as well as free installation have to be avoided.

The audio network ITECNET

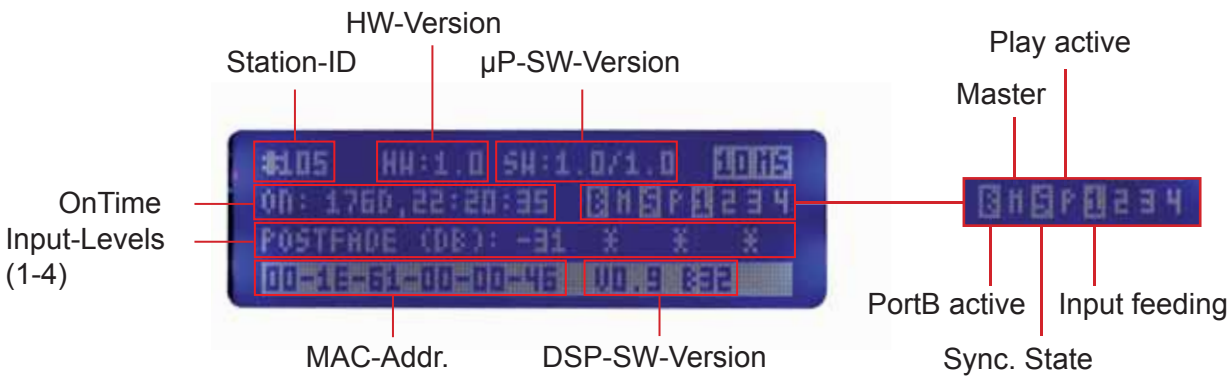
ITECNET is a decentralized, Ethernet-based audio network for the simultaneous transmission of up to 64 audio channels with the highest audio quality. At the same time, a huge number of system data, measurement data and IOs are controlled and transmitted. With four audio inputs, four audio outputs, serial ports and I/Os the Spider44 / Spider04 is one of the most important system components.



Operating and display elements on the front-panel



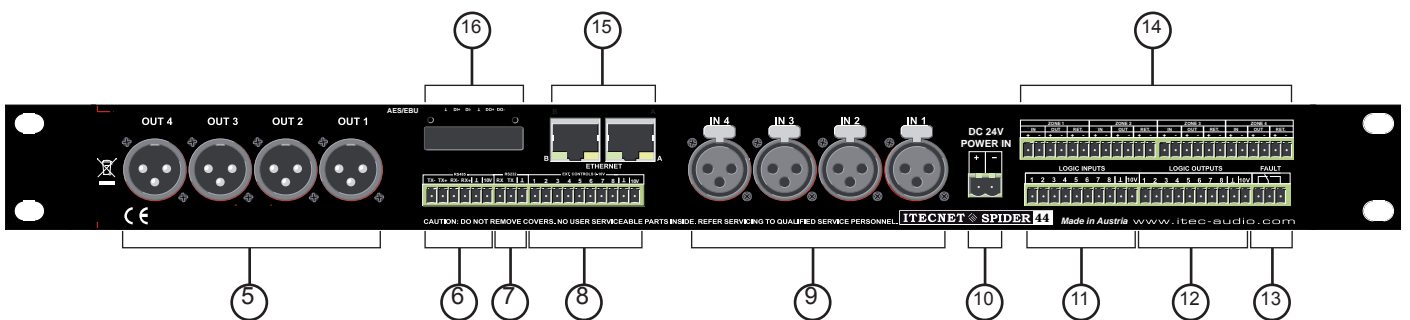
- 1 Power LED: green = yellow = fault
- 2 4-line graphic display for important device information
- 3 Infrared receiver (function not supported)
- 4 Rotary knob for operation of the display (only SPIDER 44)



- Station-ID:** Identification number of the device
- HW-Version:** Hardware version
- µP-SW-Version:** Version of the microprocessor software
- MAC-Addr:** MAC address of the device
- DSP-SW-Version:** DSP version of the software
- OnTime:** Total running time of the device
- Input-Levels:** Show the 4 Input Level in dB (* <-60 dB)
- PortB active:** If the field is bright, the Ethernet port B is active

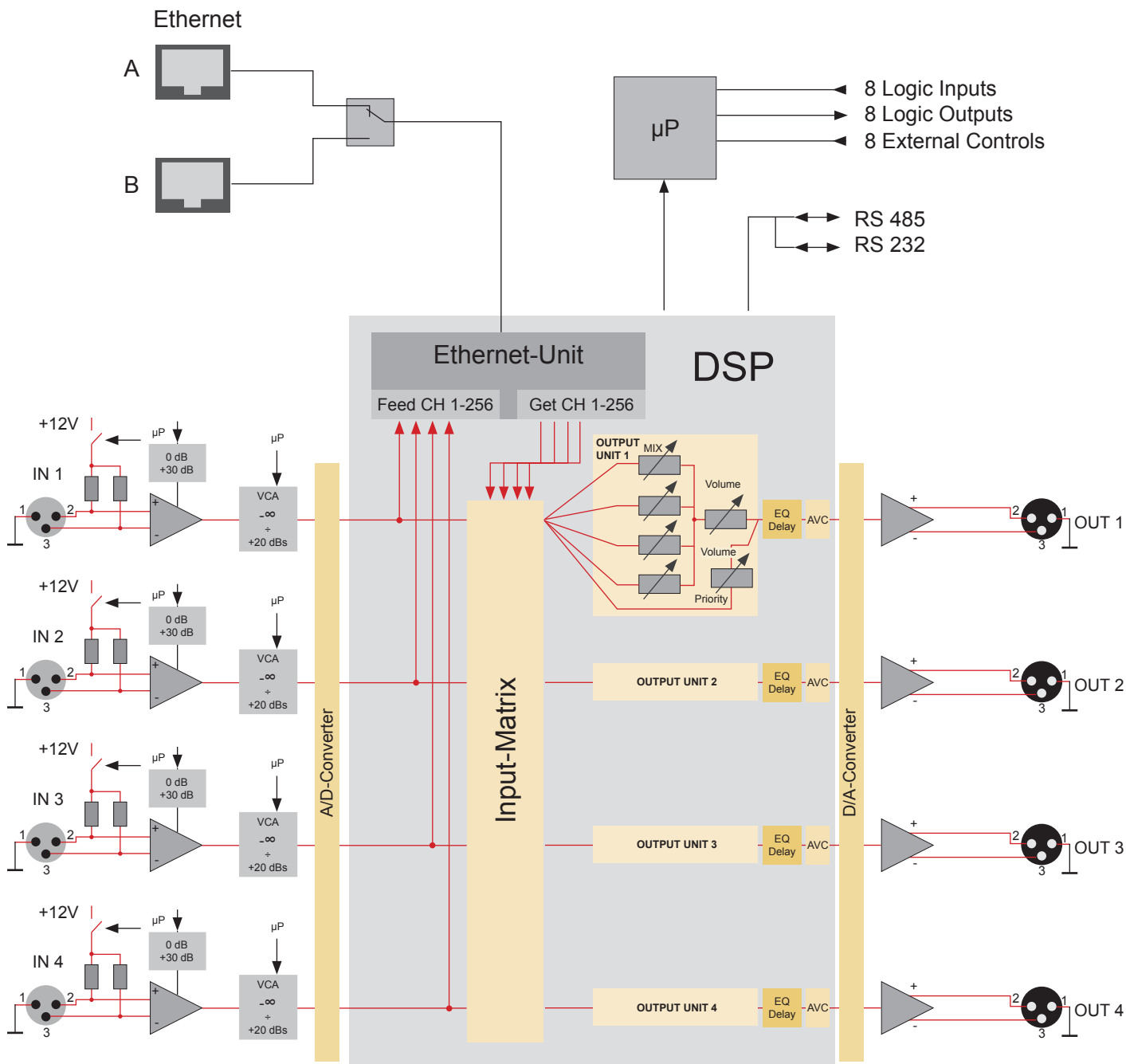
- Master:** If the light field is bright, the device is the system master
- Sync. State:** If the light field is bright, the device is synchronized with the master
- Play active:** If the field is bright, at least one output is active
- Input feeding:** If the field is bright, the respective input plays into the network

Connectors on the rear panel

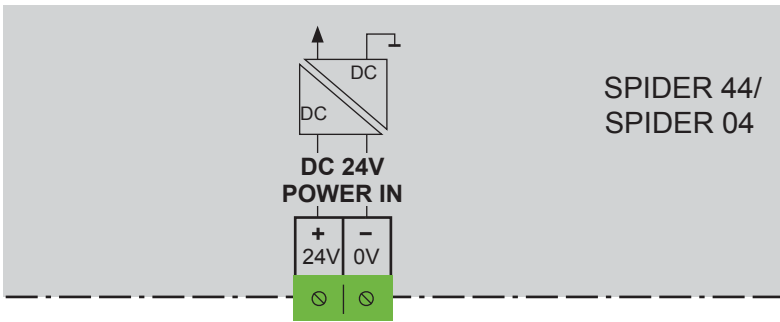


- 5 Audio outputs
- 6 RS 485 interface
- 7 RS 232 interface
- 8 External control inputs
- 9 Audio Inputs (only SPIDER 44)
- 10 Power supply 24 V DC
- 11 Digital Inputs
- 12 Digital Outputs
- 13 Fault relay
- 14 Speakers-line monitoring (optional)
- 15 Redundant Ethernet ports
- 16 AES / EBU Interface (optional, currently not available)

Block diagram



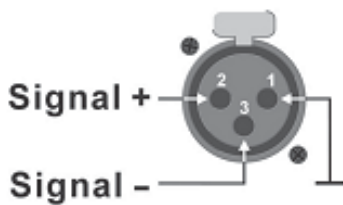
Power supply 24 V DC



Connection is made to the included power adapter or an existing 24 V DC emergency power supply. The ground connection of the device (audio ground and ground of all digital audio interfaces) is electrically **not** connected to the negative pole of the DC supply. This is especially of importance, when a connection to peripheral 24 V emergency supplies is made, as the audio grounds, linked to power amplifiers or playback devices on site, are connected to the ground wire of the according sub-station. Due to the galvanic separation, loops and shunts can effectively be prevented. A floating guidance of the 24 V supply voltage or to ground at one spot, usually at the emergency power supply, is recommended.

Audio inputs (only SPIDER 44)

The device features 4 balanced inputs, which are XLR connectors on the rear cover. The maximum input gain is in line operation from -20 to +30 dB, in microphone operation from +10 to +60 dB for each channel selectable. Thus, all conventional microphones and media players can properly be adjusted. Phantom power is switchable per channel (12V). Optional 24V or 48V phantom power is possible with a plug-in module.

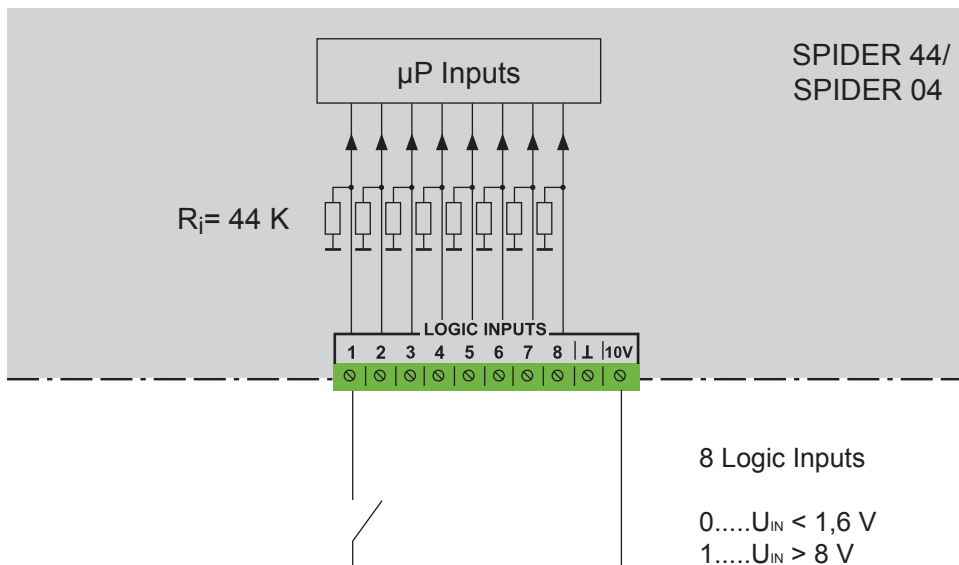


Audio outputs

The 4 outputs are balanced as well with XLR connectors on the rear cover. The maximum output level is +15 dB

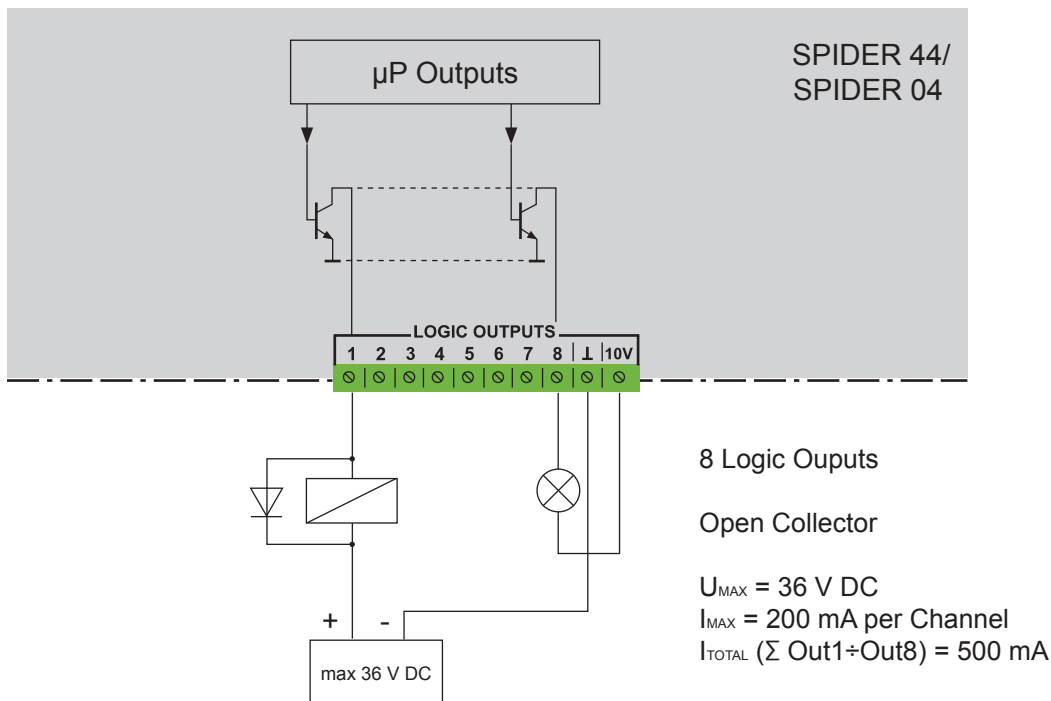


Digital inputs



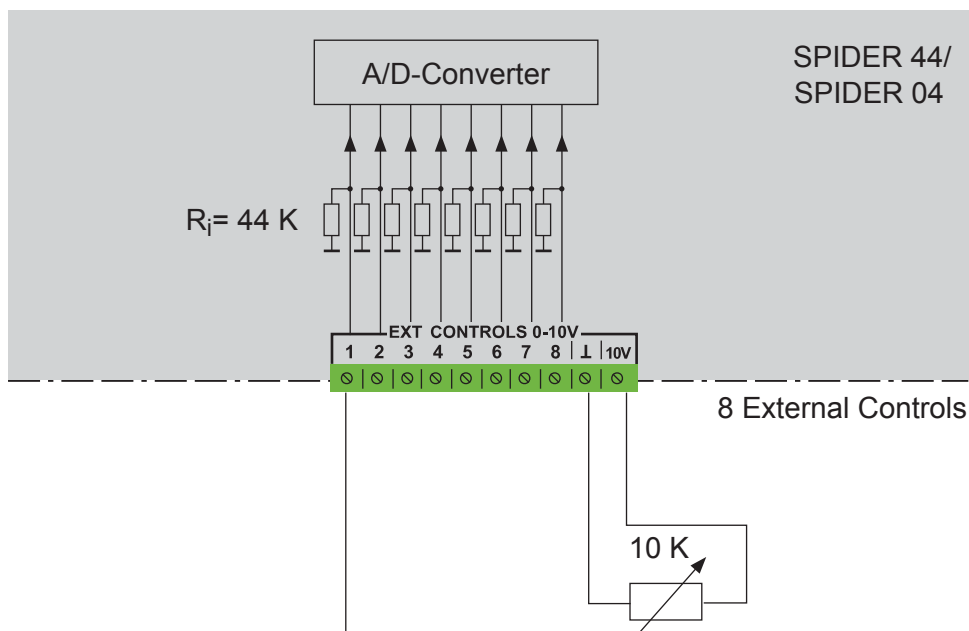
The device has 8 digital inputs, which are primarily designed for the detection of low-level operating and fault conditions. This includes the monitoring of fault signals of amplifiers, monitoring of cabinet temperature by thermostats, etc. A remote control, that is, an output follows at any point of the system the input is also possible. Each input state can be inverted for further processing by the software.

Digital outputs



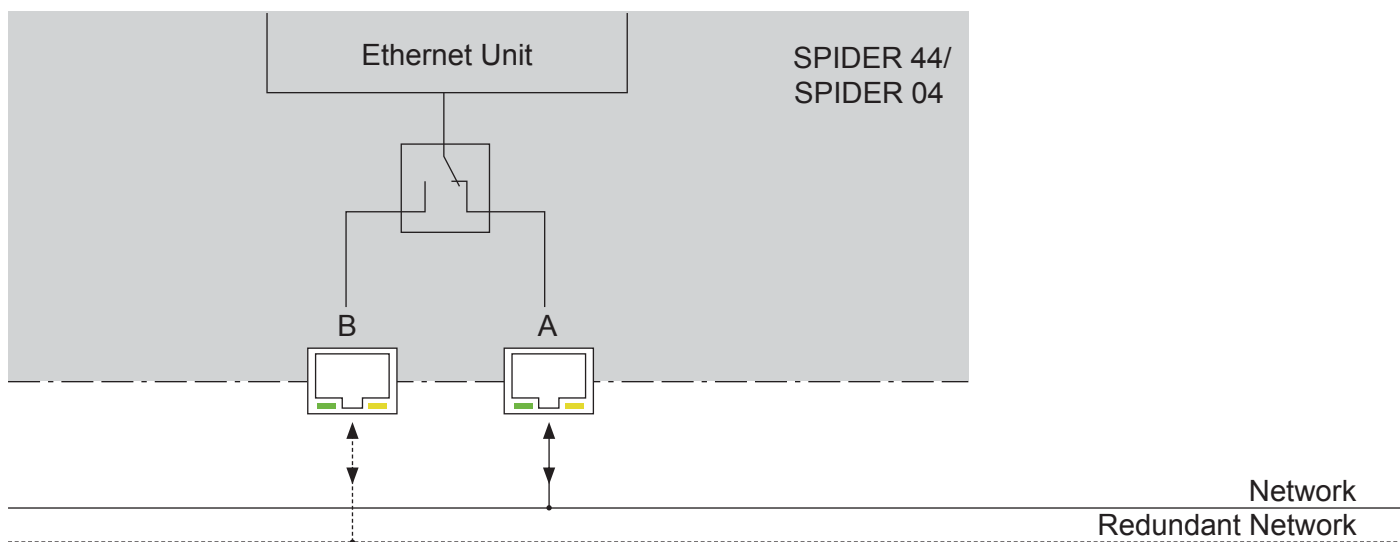
The device has 8 digital open collector transistor outputs. They are used for switching relays, lamps of lower power, etc. Typical applications are the display of faults, switching off other audio devices during an announcement and more.

External control inputs



On the external control inputs a voltage of 0 to 10V is measured. These values can be used as a local gain control for the audio inputs of the device or as a control variable for the output volume of any device in the network.

Ethernet interfaces

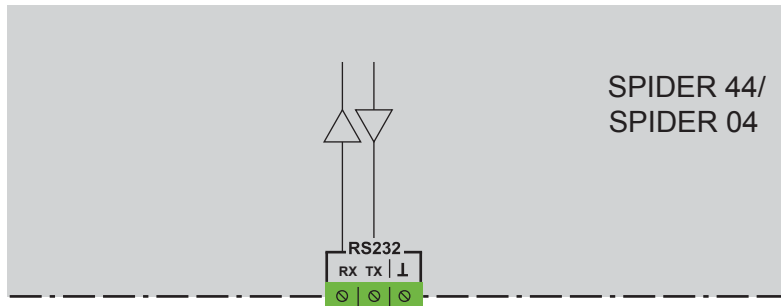


The network connection is carried out via socket A by default. If a link to second redundant network is planned, socket B is used. The LEDs on the RJ45 connector show the operating status of the network connection:

- Green LED on: Connected
- Green LED flashing: Connected and network activity
- Yellow LED on: valid connection (100Mbps full duplex)

The Serial interface

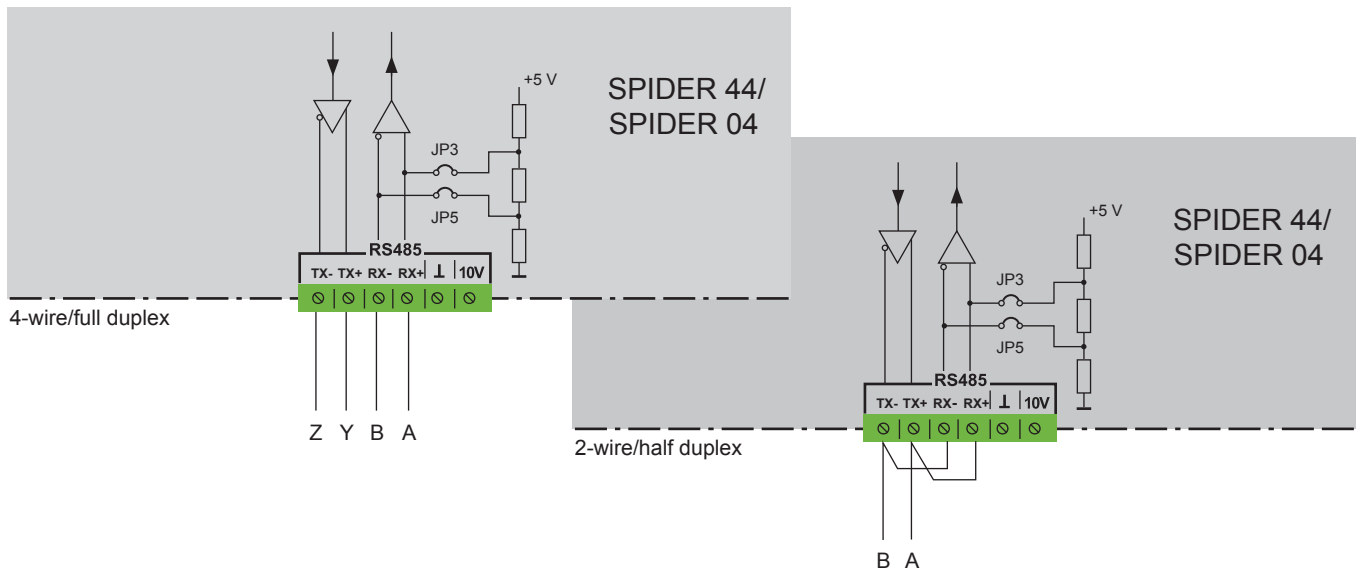
RS 232



Used

- For connecting to control units
- As an interface for control stations or fault reporting systems
- For logging and output of data via serial data cable for short distances

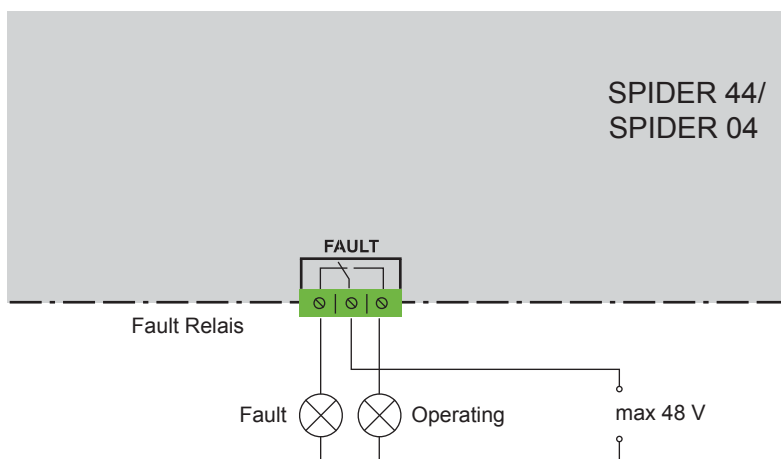
RS 485



Runs in parallel to the serial RS 232 interface and is used to connect the devices mentioned before at distances of up to 500 meters. In particular, the RS 485 interface is intended for the simultaneous connection of

- Multiple serial control panels
 - Expansion modules
- to a 2 or 4-wire bus system.

Fault relay



A potential-free relay contact used to display the operating status is available. In case the device is not operating or during a fault condition, the relay is released, during normal operation it is activated.

Speaker line monitoring (optional)

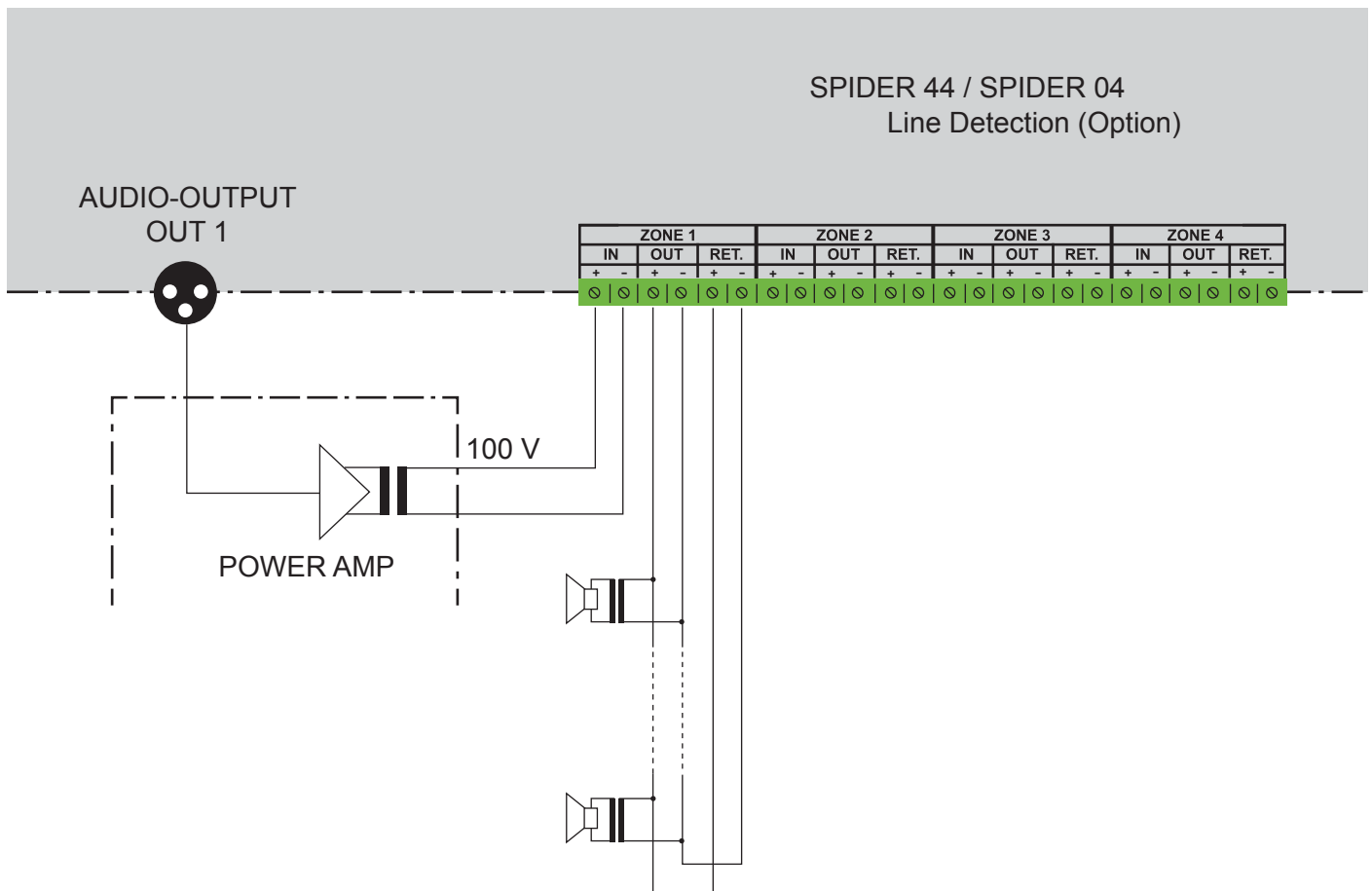


The speaker line monitoring is a plug-in board that can be optionally installed in the Spider44 / Spider04. The four zones of the line monitoring correspond to the respective audio outputs of the Spider44 / Spider04. It will short circuit, earth fault and the speaker line, but also break-down or change in level of the amplifier detected.

There are two ways of monitoring line available and therefore the wiring is different:

Line return: The end of a line speaker wire is guided back to the device. A break is detected when the transmitted signal cannot be detected at the end of the line. Accordingly, branches and branch lines must be avoided.

Impedance measurement: Using this method the impedance of the connected loudspeaker line is continuously measured in operation and compared with one, once defined as a reference impedance value. Deviations in the range 10 - 20% (adjustable) can reliably be detected. Using the impedance measurement, the return of the speaker wire to the terminals "RET" can be omitted.



SPIDER 44/03 / SPIDER 04/03 - TECHNICAL SPECIFICATIONS



General	
External power supply	switching power supply or 24 VDC (18 V < V < 32 V)
Current	300 mA (370 mA including line monitoring), measures without applied load on the 10 VDC Voltage
Operating temperature	-5°C - +40°C
Dimensions (W x H x D)	482 mm x 44 mm x 180 mm, 19" / 1 RU
Weight	3.1 kg
Audio	
Audio frequency response	40 Hz-20 kHz/-1 dB
Harmonic distortion	<0,005 %
General dynamics	103 dB
Balanced inputs	max. free selectable gain -20 dB to +60 dB (only SPIDER 44)
Phantom power	+12 V, optional +24 V alternatively +48 V
Input impedance	6,6 kOhm
Balanced outputs	max. output level +15 dB, output impedance 300 Ohm
Sound Processing	
Per input	2-band fully parametric equalizer ± 15 dB, Q=0,1-70 1 low/high pass 1st order
Per output	4-band fully parametric equalizer ± 15 dB, delay: 0.023 ms-24.5 s bandpassfilter: 1st – 4th order compressor/limiter
Filter quality	selectable from 0.1 to 70
Serial interfaces	
RS232/RS485	9600, 19200, 57600, 115.200 baud
Digital inputs	8 schmitt-trigger inputs on plug in-terminal strip
Input voltage	low < 1,6 V / high > 8 V
Max. allowable voltage	18 V
Input current (@10 V)	approx. 0.2 mA
Digital outputs	8 open-collector outputs on plug in-terminal strip
Max. voltage	36 V
Max. output current	200 mA per output / total 500 mA (sum of all outputs switched)
Analog inputs	8 analog inputs on plug in-terminal strip
Range	0-10 VDC
Resolution	8 bit
Input current (@10 V)	approx. 0.2 mA
Dry contact alarm relay	
Max. voltage / max. switching power	48 VAC/DC / 500 mA
Network	Ethernet 100 Base-TX, IEEE 802.3u

No responsibility is taken for the correctness of this information - Specifications subject to change



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