

16 channel T-switch multiplexer type RFS 5003B OEM module

product details v.1

Product description

The multiplexer is designed to provide channel switching in Electrical Impedance Tomography. One transmitting and one receiving electrode can be selected. Selected channel and its function is indicated by 32 LEDs placed on the front panel. The design on four layer printed circuit board ensures low crosstalk and fast switching time. The multiplexer is equipped with easy-to-use digital interface. Two RFS 5003B modules can be stacked to create 16:4 multiplexer for 4 wire Kelvin sensing measurements. Model RFS 5003B is designed to be mounted behind front panel of a 19" rack mounted enclosure.

Table 1: Product parameters

Number of channels	16
Selected channel indication	LED (separate for TR and RC section)
Supply voltages and current consumption	Analog positive: +15V typ. / $\leq 1\text{mA}$ Analog negative: -15V typ. / $\leq 1\text{mA}$ Digital: +5V typ. / $\leq 10\text{mA}$ all power lines polarity and overvoltage protected
Maximum supply voltages (non- destructive)	Analog positive: +20V Analog negative: -20V Digital: +5,5V
Switching time	$\leq 400\text{ns}$
Switched voltage range	$\pm 15\text{V}$ guaranteed
Capacitance of TR or RC node to GND	$\leq 250\text{pF}$ (@1MHz)
Capacitance of selected channel node to GND	$\leq 280\text{pF}$ (@1MHz)
Leakage capacitance between TR and RC nodes	$\leq 0,005\text{pF}$ (@1kHz) $\leq 0,007\text{pF}$ (@100kHz) measured with shielding metal box
On resistance (selected channel to TR or RC node)	90Ω typ. (between 80Ω and 130Ω depending on temperature, analog supply voltages, level of switched signal)
Digital interface	Binary, separate for TR and RC nodes
Connectors	16x SMB male (front panel) 2x SMB male (TR and RC) IDC10 (power supply) IDC14 (binary interface)
Temperature range	storage: $-20^{\circ}\text{C} \dots +80^{\circ}\text{C}$; operating: $0^{\circ}\text{C} \dots 60^{\circ}\text{C}$, non-condensing
Dimensions	355mm x 64mm x 18mm
Weight	ca. 0,1kg

Block diagram

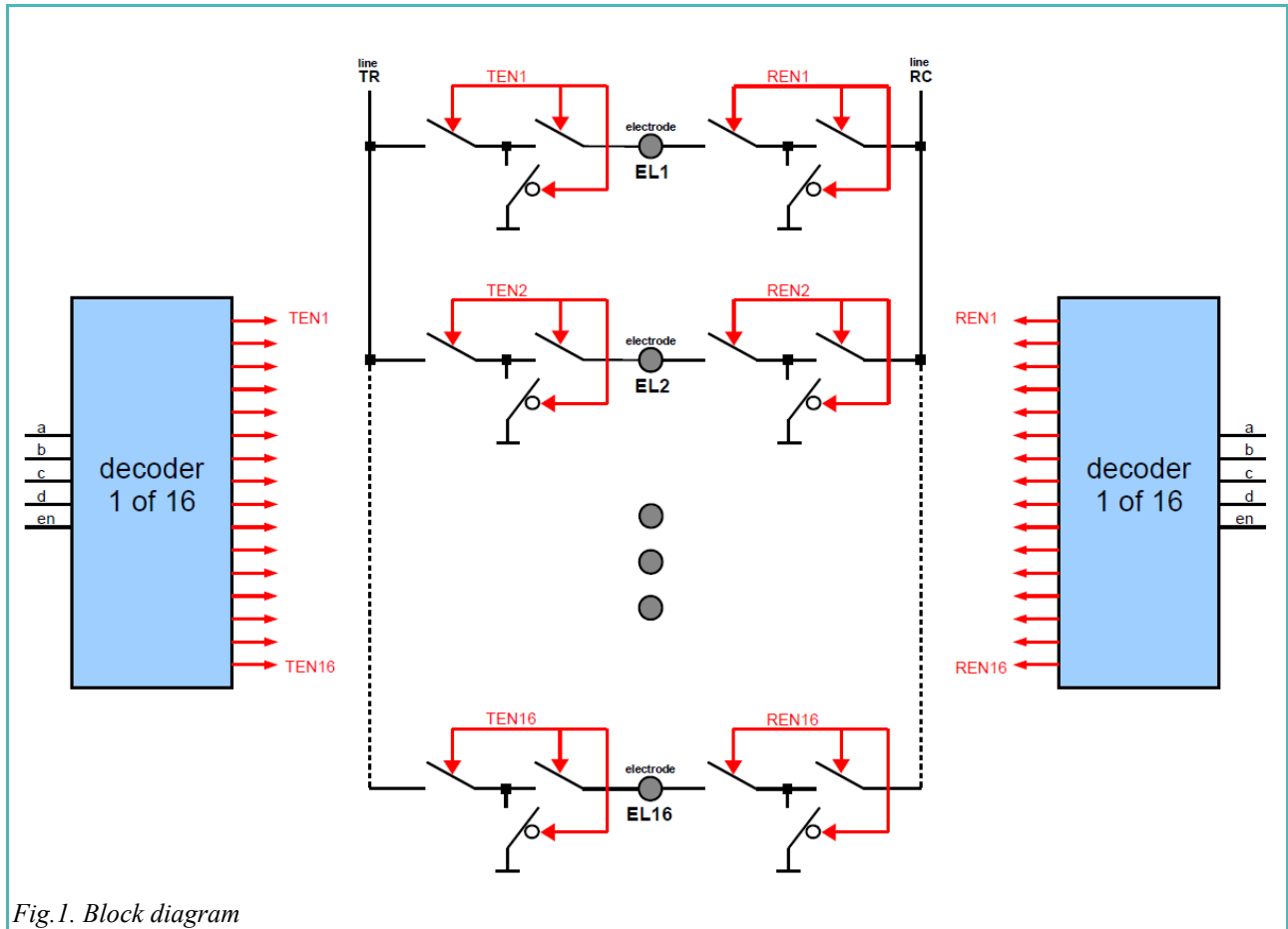


Fig.1. Block diagram

Digital interface

The RFS 5003B multiplexer uses simple and transparent binary interface. Schematic of the digital interface is presented on Fig.1. The circuit is based on 74HC154 CMOS circuit. Logic levels are compatible with 5V and 3,3V CMOS circuits. Each TR and RC sections can be controlled independently by 5-wire binary interface (4 binary lines + 1 Enable). If there is a need of switching off all channels, two separate Enable inputs are provided. It is up to user to eliminate possibility of selecting the same channel for receiving and transmitting at same time. The interface connector is IDC14. The digital interface is compatible with Altera UP-3 FPGA Education Kit (J2 connector).

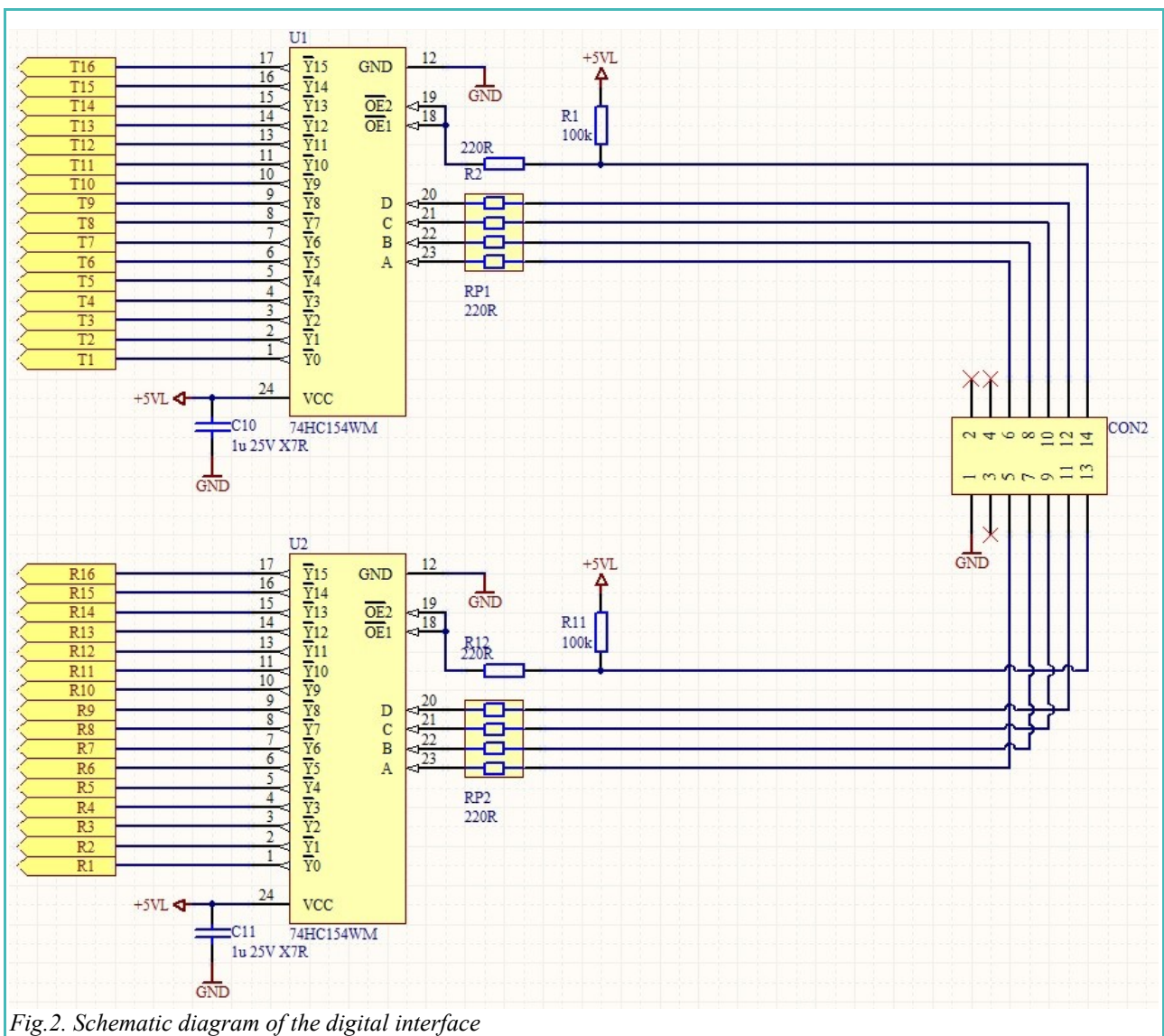


Fig.2. Schematic diagram of the digital interface

Power supply section

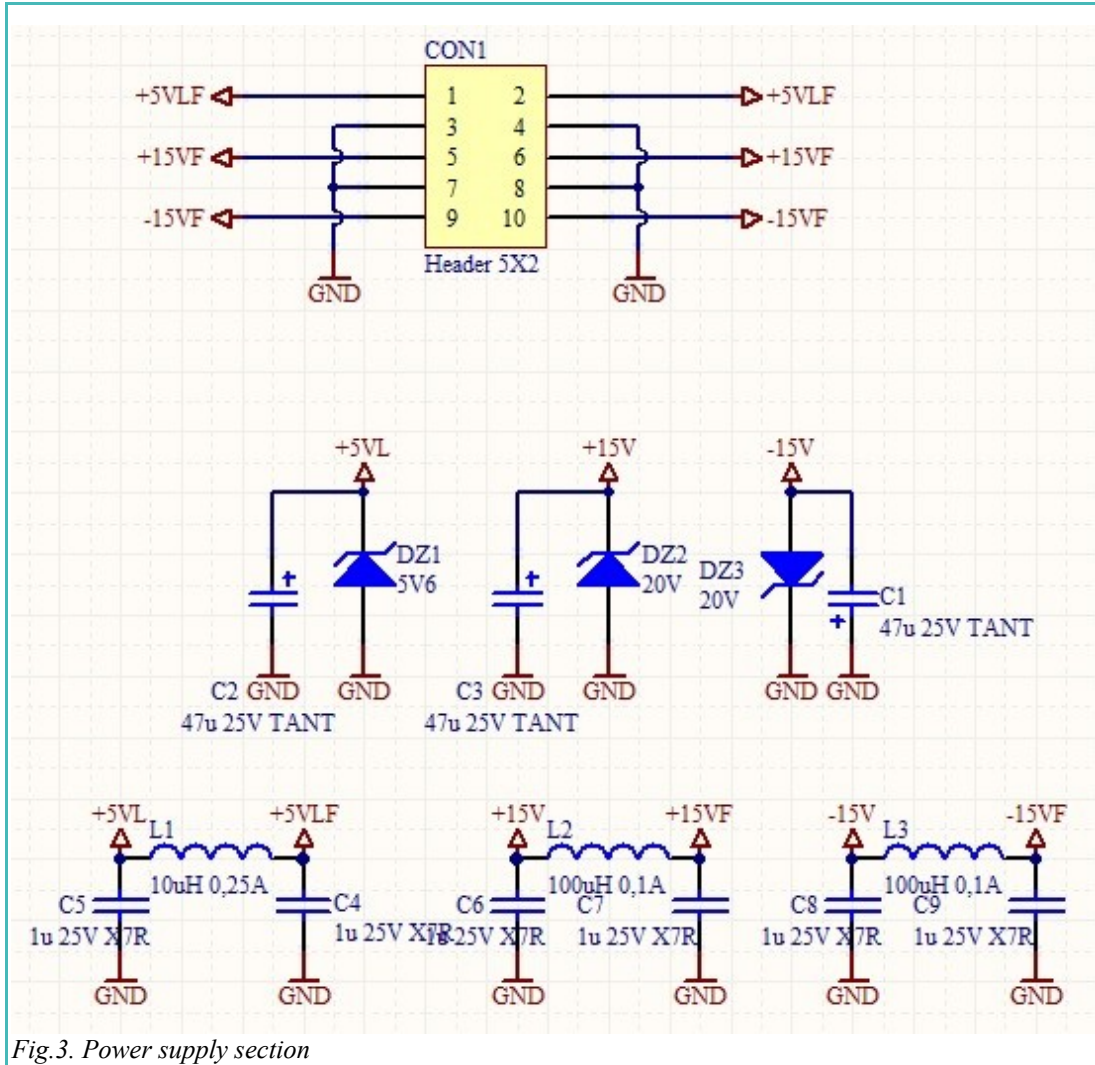


Fig.3. Power supply section

Mechanical drawing

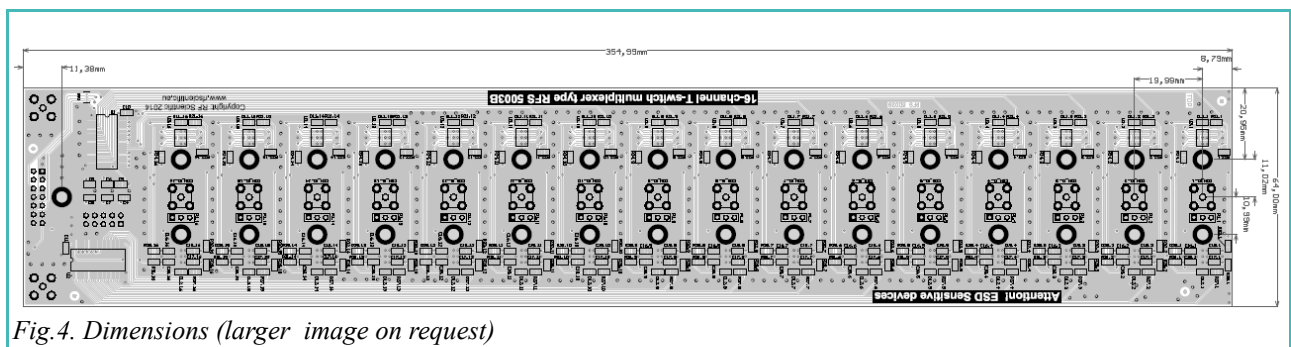


Fig.4. Dimensions (larger image on request)

Warranty

The manufacturer's limited warranty for defects to RFS5003B device with accessories is valid for one year from the date of purchase. In case of problems and failures the user should first contact with manufacturer. The manufacturer's limited warranty does not cover defects or damage caused by improper installation and use.

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