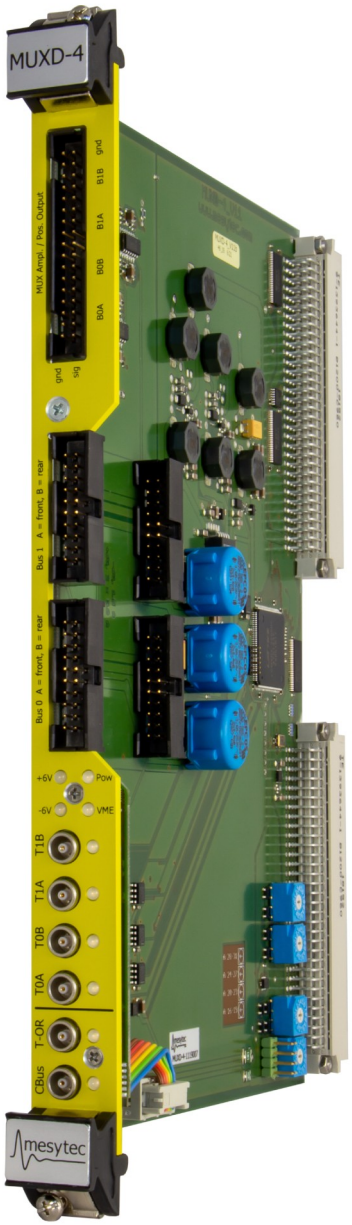
Features:



Power supply

- single wide VME module, compatible with VME64 and VME64x crates.
  only uses VME power supply of +5V (max 4.5A) and +12V (max 1.5A).
- Supplies up to 16 MUX-16 devices on up to 4 MUX-buses (up to 40W total).

MUX-bus

- Bus length up to 3 m.
- 4 MUX-buses, two of them on the motherboard behind the front connectors.
- 1 mesytec control bus can control up to 16 devices on 4 buses.
- 4 Lemo IOs for trigger signals / control bus.
  Every two share half of the Cbus address space.

MADC-32 interface

- Ored trigger output from 4 buses to start MADC-32.
- 4 bus outputs with two amplitudes and two positions are available on MADC-32 compatible 32pin header connector.
- Output voltage for 4V MADC-32 range.

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Bus rules:

1) Bus 0: buses joined to connector A and B (sub buses) must not have MUX-16 devices with the same address, set at address coders.
2) Maximum 8 MUX-16 devices may be added to one Bus (distribution to sub bus A/B may be unequal).

Note that amplitude coding for position, is shifted with address coder setting.

Required power:

No load:

+ 5V + 150 mA
+ 12V + 80 mA
- 12V + 40 mA

With 16x MUX-16-devices connected:

+ 5V + 4.5A
+ 12V + 1.5A
- 12V - 40 mA

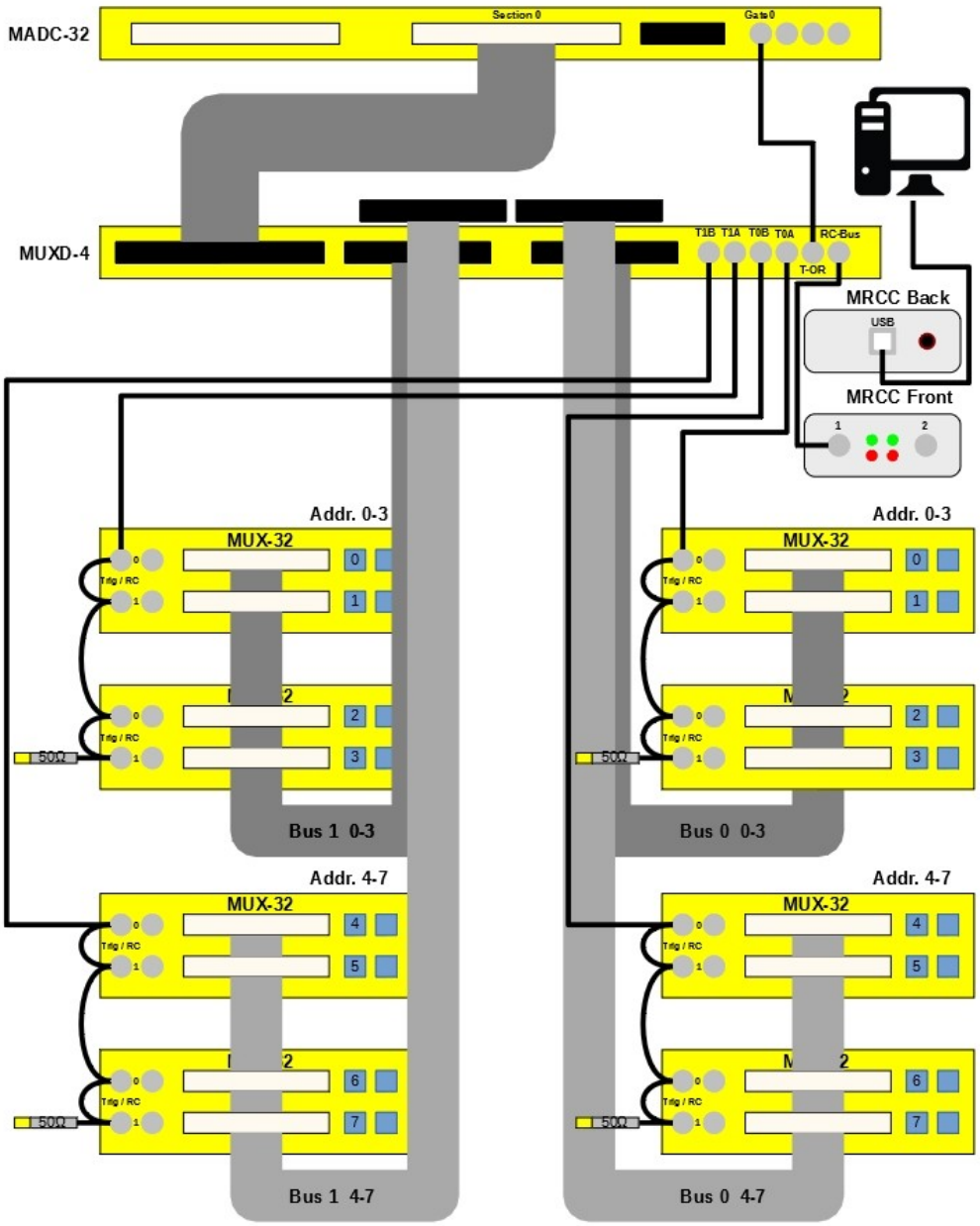
Maximum load for a crate with 192 MUX-16 devices supplied

VME-Crate filled with 12 MUXD drivers with 16x MUX-16 on each + 6x MADC-32

+ 5V + 55A
+ 12V + 20A
- 12V - 1A

Example

Setup for 16 MUX-16 devices, 1x MUXD-4 and one bank (16 channels) of MADC-32



At the Cbus Connection an MRC-1 remote controller module is connected. Bus 0 (A/B) show the addresses set at the MUX dial. For bus 1 the addresses are shifted up by 8, resulting in an address range for both buses of 0 to 15.

A second way to control the MUX devices is via VME-bus.

Mesytec control bus

MRC	Module RC				
0x00	rc_busno	2	RW	0	Always = 0 is external bus. Can not be changed
0x02	rc_modnum	4	RW	0	0...15 (module ID set with hex coder at external module) (0...7 at low bus, 8...15 at high bus)
0x04	rc_opcode	7	RW		3 = RC_on, 4 = RC_off, 6 = read_id, 16 = write_data, 18 = read_data
0x06	rc_adr	8	RW		module internal address, see box below
0x08	rc_dat	16	RW		data (send or receive),write starts sending
0x0A	send return status	4	R		bit 0 = active bit 1 = address collision bit 2 = no response from bus (no valid address)

Send time is 400 us. Wait that fixed time before reading response or sending new data.
Also polling at 0x0A for bit 0 = 0 is possible

The LEDs on Trigger IOs show traffic ont the control bus lines.

Example for controlling MUX modules

MUX internal Address	Function
0	Deactivate trigger: 1= deactivated, 0= normal operation
1	Set Polarity: 0= positive charge at input, 1= negative charge.
2	Set Range: 0= lowest gain, 7 = highest gain.
3	Set Threshold; 0...4095 (4095 corresponds to 80% of selected full range)
Intrinsic bus commands are RC on/off and read ID	

Initialise and read out a MUX-16 module.
MUX-16 on bus 0, ID-coder set to 7
Connected bus lines must be terminated at the MUX device. Unconnected ones may be left open.

```
Write(16)    addr 0x02 data 7       // address module 7
Write(16)    addr 0x04 data 16      // send code “write”
Write(16)    addr 0x08 data 3       // module internal address: 3=threshold.
Write(16)    addr 0x08 data 1024    // threshold value = 1024 (20% full range)
```

Activate RC in module

All set data will get active. This can also be done before setting the values.

```
Write(16)    addr 0x02 data 7      // address module 7
Write(16)    addr 0x04 data 3      // send code "RC_on"
Write(16)    addr 0x08 data 0      // initialise send request. Data has no effect
```