

The mesytec MRC-1 is the central controlling module for all remote controllable mesytec devices. The 1/12 NIM module provides a serial (RS-232) data input and two event bus branches for up to 16 remote controlled devices each, resulting in max. 32 devices per controller. A LINUX program is available which allows to send text files containing a complete set of experiment parameters for all connected devices.

Features:

- Easy connection to any computer type via RS-232
- Script memory for standalone operation
- Up to 32 devices on two event bus branches



Connecting the bus:

The bus is a linear BNC line which connects the devices with the main module MRC-1. Only short branches should be used to connect the modules. The BNC bus must be terminated at the end with a 500hm terminator. Maximum length for the total bus is about 35m. The type of BNC cable is not critical, thin lines with LEMO connectors and "T"-pieces (to connect modules) work very well. In case of bad bus termination or if two devices connectet to the bus have the same address, the collision LED lights up during bus transmission.



Send Commands to bus devices

A command to a device is transmitted within 400us (excluding RS232 transmission). All bus devices are internally organised as a memory array with up to 256 memory cells which can be read or written via event bus. In addition some modules which need a full check of transmitted data before making them active (for example HV-supplies) have a mirror memory of the same size as the main memory. For those modules the data can be written to the miror memory, then can be checked, and if ok can be copied by a command (CP) to the main memory.

When a SE (set) command is transmitted, it is simultaneously read back from the device memory to check if transmission errors have occured. So the command answer is the content of the written memory and can be used for transmission check. In addition a read command (RE) is available.

For easy use of the MRC-1 module, a script feature is implemented. When script recording is activated, the commands are recorded in a non volatile memory. With hardware reset or on power up the MRC-1 module transmits the script to the buses. This feature ensures an easy restart of an experiment after a power failure.

In addition the MRC-1 will has two 12bit DAC outputs, two 12bit ADC inputs, two TTL outputs and two TTL inputs for universal use. For example analog signals can be created by DAC to set up two HV supplies which can be controled by external voltage. With digital outputs, trigger sources or other experiment parameters can be set at experiment start. The ADCs could be used for teperature- airpressure- vacuum or voltage measurement).

For documentation, the text output from MRC-1 which includes the mirrored set parameters for bus devices, error messages and ADC values, can be included into the run file header at experiment start.

Command List MRC-1:

cmd	= command	mnemonic

- bus = bus number [0...1]
- dev = device number [0...15]
- par = parameter number [0...255]
- val = 16 bit value [0...65535]

Mnemonic

PS

LI

Description

standard commands SC bus	scan bus for connected devices
ON bus dev OFF bus dev	activate r/c for given device deactivate r/c for given device
SE bus dev par val RE bus dev par	set device parameter to given value read given parameter from device
RST bus dev	reset connected device
extended commands (useful for some special devices -> see data shee CMD cmd bus dev par val write complete cmd set	
SM bus dev par val RM bus dev par CP	set mirror parameter to given value read given mirror cell from device copy mirror to active memory
MRC-1 script commands R1 R0 CL	switch script recording on switch script recording off clear script file

send stored script to bus

list script file