

Controlling the Z-Systems z-16.16r Digital Detangler Pro Routers

Inputs to are designated as sources and outputs are designated as destinations. The routers have a 9-pin connector for RS422 control input and a 9-pin connector for looping the control through to multiple units. The only pins used are RXD+, RXD-, TXD+, TXD-, and GND; no ACK signals are used. The communication rate is 9600 baud, no parity, 8 data bits, 1 stop bit.

Protocol for z-8.8r and z-16.16r

Unless otherwise noted, all values are hexadecimal.

R = 4-bit router number (up to 16 routers may be controlled from a single controller. It is important to note that routers are numbered internally from 0 to 15. If you purchased a single router, its router number is 00)

X = 4-bit source address

Y = 4-bit destination address

Each router's configuration is defined by 16 pairs of settings (X and Y pairs). Settings are changed a single pair at a time. Therefore, changing a router's settings consists of sending it X and Y pairs. Querying the router as to its settings consists of sending it Y and asking for X. It is important to note that channels are numbered internally from 0 to 15. Input 1 is addressed as input 0, 2 as 1, etc.

A5h: Controller begins sequence of commands

5Ah: Controller ends sequence of commands

RRh: Controller tells router #R it will be receiving commands

10h: Controller is about to send a new X,Y pair

0Yh: Controller sends Y value

0Xh: Controller sends X value

20h: Controller is about to query router for setting

0Yh: Controller gives router Y address

0Xh: Router gives back X address

40h: Controller asks router if it is alive

FFh: Router responds it is alive

When sending command 20h, router should respond with 0Xh within 2 milliseconds after receiving 0Yh data from controller. When sending command 40h, router should respond within 1 millisecond.

Here is an example communications transaction:

Suppose we wish to tell router #3 to send source #6 to destination #8 and source #10 to destination #3. This is the chain of events.

```
A5h    ; begin communication
22h    ; talk to router #3
10h    ; controller is about to send a new X,Y pair
07h    ; destination address is sent first
05h    ; source address is sent next
10h    ; controller is about to send a new X,Y pair
02h    ; destination address is sent first
09h    ; source address is sent next
5Ah    ; end communication
```

Notice that A5h and 5Ah "bracket" the communications and must be issued by the controller before addressing a different router. For example, suppose we wish to tell router #1 to send source #9 to destination #11 and then ask router #2 which source is connected to destination #4:

```
A5h
00h
10h
0Ah
08h
5Ah
A5h
11h
20h
03h
router #2 sends back result as 0Xh
5Ah
```