white bream

Keytek ECAT VI Programming

1 Connect to the ECAT remote interface

You need a serial port to POF optical converter to connect a PC to the Keytek ECAT system. Obvious choice is the original Keytek adapter if you happen to have one. Alternatively, we used a Coptonix #980101 USB serial optical converter [1], although we had to reprogram it's EEPROM to invert the signal polarity. The 1505 - USB to fiber optic serial interface from Taylor Electronics [2] is probably a suitable alternative also.

Open the serial port with 2400 8N1 settings. Verify proper communication by sending the GPIB identification request. This should answer with the system identification:

```
*IDN?
[KeyTek Instrument,ECAT,9301444, 512g]
```

Next, find the applicable module. Modules are numbered right to left, top to bottom, starting at 0.

```
:BAY:NA? 0
[E501A]

:BAY:NA? 1
[E502B]

:BAY:NA? 2
[E505]
```

For the remainder of this document we assume that we're targeting the E502B module, which has been identified to reside in slot #1 (so top-left position).

[1] https://coptonix.com/en/products/usb-serial-optical-converter/
[2] https://www.shop-tes.com/1505-usb-to-fiber-optic-serial-interface/

2 Activate the VI option in the ECAT module's EEPROM

Note that it does not matter if the module has been installed or not. The system will work fine either way. Also note that this data is written to a simple I2C EEPROM inside the respective ECAT module. However, I never came around figuring out the CRC/checksum of the data in these EEPROMS. Simply changing the relevant bytes with a EEPROM programmer does not work.

Verify that you're looking at the correct module by requesting it's identification: “BAY:DU? n”. This could produce something like this:

```
BAY:DU? 1
[4535303242000000000000010000000014000000000009416D8]
```

The first bytes are hex representation of the module name, in this case 0x45, 0x35, 0x30, 0x32, 0x42 is “E502B”. The two underlined red characters #35, #36 represent the installed VI option. In this case “00” or hex 0x00, meaning VI option not installed.

We need to change this to “11” for a VI configuration of A-B, IMON1 (E501, E505, E514, ...) and to “23” for a VI configuration of A-B-C, IMON1, IMON2, IMON3 (E502, E551, …). Some modules have higher values, but those use different measurement module or have the measurement hardware integrated in the overall circuitry (eg E571 which has VI ”45”).

We do this with the BAY:ME command. Note that the parameter is a decimal value, so (0x)11 becomes 17 and (0x)23 becomes 35! Using the hex value results in a parameter error.

```
BAY:ME 1 17 or
BAY:ME 1 35
```

Query the EEPROM (BAY:DU n) once again, the values previously indicated as the red underlined 00s should now have changed to the intended value.

```
BAY:DU? 1
[4535303242000000000000010000000014230000000009416D8]
```

So far, this change exists only in RAM and will revert after a power cycle. So we need to save the changed EEPROM:

```
BAY:UP 1
```