



A33606-PCI Command Line Interface

Application Note

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This document describes the Command Line Interface on Astek's 36-port 6Gbit/s Serial-attached SCSI (SAS) expander products, A33606-PCI.

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Table of Contents

1	Introduction.....	4
2	Connecting to the Serial CLI Interface in Windows.....	5
	Serial Port (RJ-11).....	5
	Connecting to CLI.....	5
3	Using the CLI – Basic commands:.....	8
	HELP:	8
	PHYINFO:	8
	COUNTERS:	9
	SASADDR:	10
	REV:	10
	RESET:	11
	MEMSTAT:.....	11
	THREAD:.....	12
	MR32 and MW32:	13



1 Introduction

The CLI interface is a powerful interface that provides control and status information from the expander that sometimes is very difficult, if not impossible, with other interfaces and applications. It can be connected to easily using various interfaces and common software utilities in a number of operating systems. This document provides basic information and example usages of the CLI features.

The CLI interface is available on Astek's A33606-PCI products through the RJ-11 serial port.

2 Connecting to the Serial CLI Interface in Windows

Connecting to the Serial Port CLI interface on the Astek Expander can be performed easily using a terminal emulator program, such as HyperTerminal, and a RJ11 to 9 pin DSUB serial cable.

Serial Port (RJ-11)

A Serial interface is available through a right angle RJ-11 connector (J42) accessible from the front panel. This interface can be utilized for monitoring the CLI on the expander. The pinout of the RJ-11 is below.

Pin	Signal Name	Driver	DB9 Pin
1	NC		
2	NC		
3	Tx	A33606-AIC-01	2
4	Rx	PC	3
5	Ground		7
6	NC		

A compatible adapter for use with this interface is an Astek Corporation A40100-CBL-03. Other cables may be utilized as long as they conform to the above pinout.

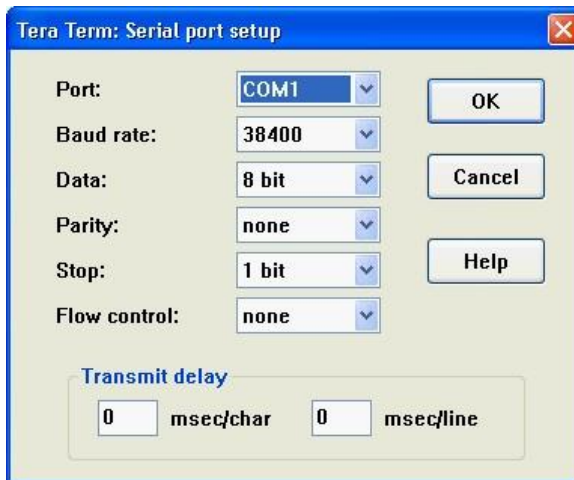
Connecting to CLI

Astek recommends using [Tera Term](#), if possible, for its extended features and macro capabilities. To connect to the Serial CLI Interface in Windows, perform the following steps:

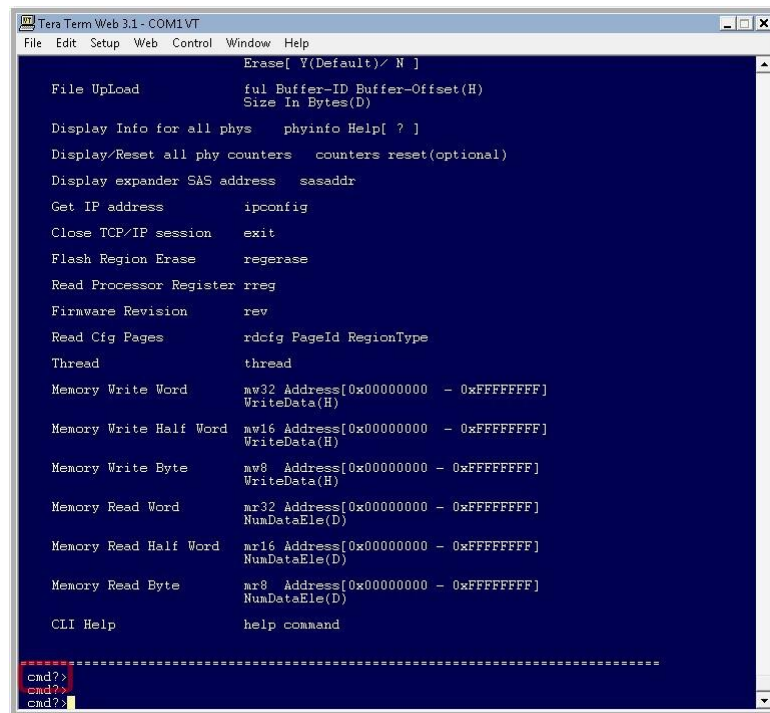
- Step 1. Verify Serial port select Jumpers are set to enable the Smart Serial port.



- Step 2. Connect the serial cable between your PC and the expander card.
- Step 3. Open a session using your terminal emulator program. Set the serial port baud rate to 38400 and 8-N-1 (8 data bits, no parity, 1 stop bit).

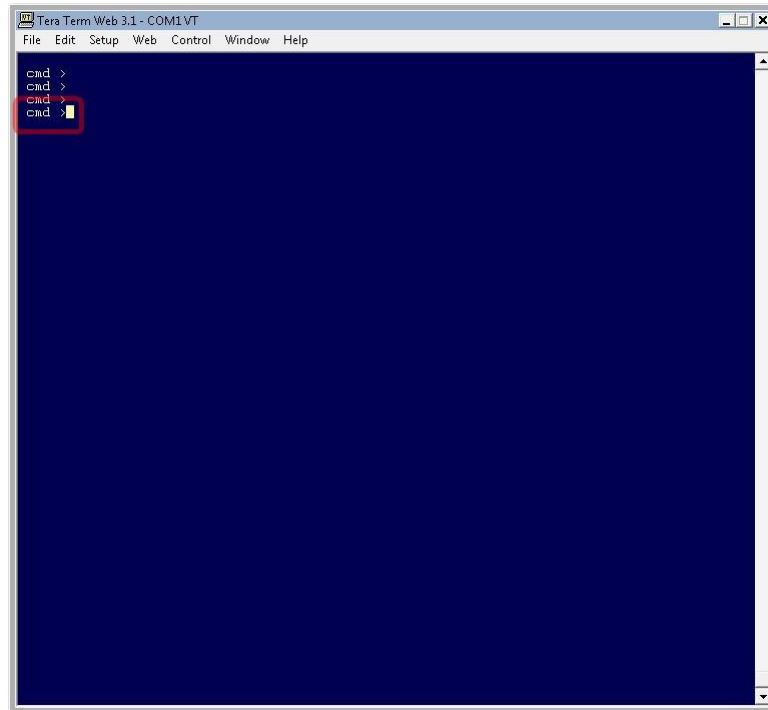


Step 4. Hit 'Enter' a few times and you should see a prompt with a question mark "cmd?>".



The question mark indicates that a password must be entered to access the CLI.

- Step 5. Type in your password and hit 'Enter' again. If you entered the correct password, the question mark should disappear and the prompt should be "**cmd >**".



The prompt without the question mark indicates that the CLI is now connected and unlocked for use.

3 Using the CLI – Basic commands:

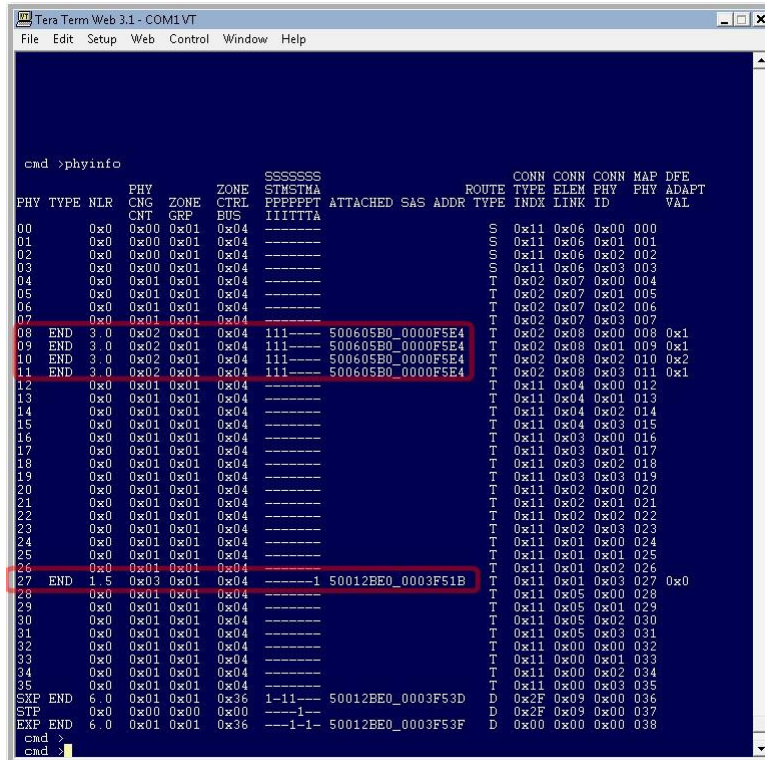
There are several commands that are available through the CLI. Some of these commands, if used improperly, may cause undesirable results. Do not perform commands unless you know the expected results and understand what you are doing. Please ask your Astek representative for assistance on commands that are not listed in this document. Here are a few of the most common commands and their usage:

HELP:

For a list of available commands and their syntax, type **help** at the prompt. Some commands are supported and some are not. To display the help of only a specific command, type **help** followed by the command. For instance, to display the help of the command **phyinfo**, enter **help phyinfo**.

PHYINFO:

This command displays information about all of the physical links on the expander.



```
cmd > phyinfo
```

PHY	TYPE	NLR	CNG	ZONE	CTRL	STMSTA	PPPPPT	ATTACHED	SAS	ADDR	ROUTE	TYPE	CONN	CONN	CONN	MAP	DFE	VAL
00	0x0	0x00	0x01	0x04	-----	-----	-----	-----	-----	-----	S	0x11	0x06	0x00	000			
01	0x0	0x00	0x01	0x04	-----	-----	-----	-----	-----	-----	S	0x11	0x06	0x01	001			
02	0x0	0x00	0x01	0x04	-----	-----	-----	-----	-----	-----	S	0x11	0x06	0x02	002			
03	0x0	0x00	0x01	0x04	-----	-----	-----	-----	-----	-----	S	0x11	0x06	0x03	003			
04	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x02	0x07	0x00	004			
05	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x02	0x07	0x01	005			
06	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x02	0x07	0x02	006			
07	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x02	0x07	0x03	007			
08	END	3.0	0x02	0x01	0x04	111----	500605B0_0000F5E4				T	0x02	0x08	0x00	008	0x1		
09	END	3.0	0x02	0x01	0x04	111----	500605B0_0000F5E4				T	0x02	0x08	0x01	009	0x1		
10	END	3.0	0x02	0x01	0x04	111----	500605B0_0000F5E4				T	0x02	0x08	0x02	010	0x2		
11	END	3.0	0x02	0x01	0x04	111----	500605B0_0000F5E4				T	0x02	0x08	0x03	011	0x1		
12	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x04	0x00	012			
13	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x04	0x01	013			
14	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x04	0x02	014			
15	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x04	0x03	015			
16	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x03	0x00	016			
17	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x03	0x01	017			
18	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x03	0x02	018			
19	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x03	0x03	019			
20	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x02	0x00	020			
21	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x02	0x01	021			
22	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x02	0x02	022			
23	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x02	0x03	023			
24	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x01	0x00	024			
25	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x01	0x01	025			
26	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x01	0x02	026			
27	END	1.5	0x03	0x01	0x04	-----1	50012BE0_0003F51B				T	0x11	0x01	0x03	027	0x0		
28	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x05	0x00	028			
29	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x05	0x01	029			
30	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x05	0x02	030			
31	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x05	0x03	031			
32	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x00	0x00	032			
33	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x00	0x01	033			
34	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x00	0x02	034			
35	0x0	0x01	0x01	0x04	-----	-----	-----	-----	-----	-----	T	0x11	0x00	0x03	035			
EXP	END	6.0	0x01	0x01	0x36	1-11----	50012BE0_0003F53D				D	0x2F	0x09	0x00	036			
STP	0x0	0x00	0x00	0x00	-----1	-----	-----	-----	-----	-----	D	0x2F	0x09	0x00	037			
EXP	END	6.0	0x01	0x01	0x36	1-1-1---	50012BE0_0003F53F				D	0x00	0x00	0x00	038			

```
cmd >
cmd >
```

In the example screenshot, the highlighted sections show that PHY 8-11 are connected to the HBA RAID card at 3.0 Gb/sec and that a single SATA drive is connected on PHY 27 at 1.5 Gb/sec.

COUNTERS:

This command displays the error counters of each physical link on the expander card.

```

Tera Term Web 3.1 - COM1VT
File Edit Setup Web Control Window Help
help counters
=====
Test                                Command
=====
Display/Reset all phy counters  counters reset(optional)
=====
cmd >counters
Phy Layer Error Counters=====
=====InvWrdCnt =====DispErrCnt =====LossSyncCnt =====RetSeqFailCnt=====
Phy 00 0x00000000 0x00000000 0x00000000 0x00000000
Phy 01 0x00000000 0x00000000 0x00000000 0x00000000
Phy 02 0x00000000 0x00000000 0x00000000 0x00000000
Phy 03 0x00000000 0x00000000 0x00000000 0x00000000
Phy 04 0x00000000 0x00000000 0x00000000 0x00000000
Phy 05 0x00000000 0x00000000 0x00000000 0x00000000
Phy 06 0x00000000 0x00000000 0x00000000 0x00000000
Phy 07 0x00000000 0x00000000 0x00000000 0x00000000
Phy 08 0x00000000 0x00000000 0x00000000 0x00000000
Phy 09 0x00000000 0x00000000 0x00000000 0x00000000
Phy 10 0x00000000 0x00000000 0x00000000 0x00000000
Phy 11 0x00000000 0x00000000 0x00000000 0x00000000
Phy 12 0x00000000 0x00000000 0x00000000 0x00000000
Phy 13 0x00000000 0x00000000 0x00000000 0x00000000
Phy 14 0x00000000 0x00000000 0x00000000 0x00000000
Phy 15 0x00000000 0x00000000 0x00000000 0x00000000
Phy 16 0x00000000 0x00000000 0x00000000 0x00000000
Phy 17 0x00000000 0x00000000 0x00000000 0x00000000
Phy 18 0x00000000 0x00000000 0x00000000 0x00000000
Phy 19 0x00000000 0x00000000 0x00000000 0x00000000
Phy 20 0x00000000 0x00000000 0x00000000 0x00000000
Phy 21 0x00000000 0x00000000 0x00000000 0x00000000
Phy 22 0x00000000 0x00000000 0x00000000 0x00000000
Phy 23 0x00000000 0x00000000 0x00000000 0x00000000
Phy 24 0x00000000 0x00000000 0x00000000 0x00000000
Phy 25 0x00000000 0x00000000 0x00000000 0x00000000
Phy 26 0x00000000 0x00000000 0x00000000 0x00000000
Phy 27 0x00000000 0x00000000 0x00000000 0x00000000
Phy 28 0x00000000 0x00000000 0x00000000 0x00000000
Phy 29 0x00000000 0x00000000 0x00000000 0x00000000
Phy 30 0x00000000 0x00000000 0x00000000 0x00000000
Phy 31 0x00000000 0x00000000 0x00000000 0x00000000
Phy 32 0x00000000 0x00000000 0x00000000 0x00000000
Phy 33 0x00000000 0x00000000 0x00000000 0x00000000
Phy 34 0x00000000 0x00000000 0x00000000 0x00000000
Phy 35 0x00000000 0x00000000 0x00000000 0x00000000
=====
Link Layer Event Counters=====
Phy Event Counter Not Configured.=====
Generic Broadcast Counter=====
Broadcast Counter Not Configured.=====
=====
cmd >

```

To clear the counters (reset all of them back to 0), type the command **counters reset**.

RESET:

This command resets the expander and reinitializes the firmware. This may be necessary for some static settings to take effect, or if you want to clear any dynamic settings and return to a freshly 'powered on' state. You will have to log back into the CLI interface if you reset the card.

MEMSTAT:

This command shows memory usage statistics of the expander processor.

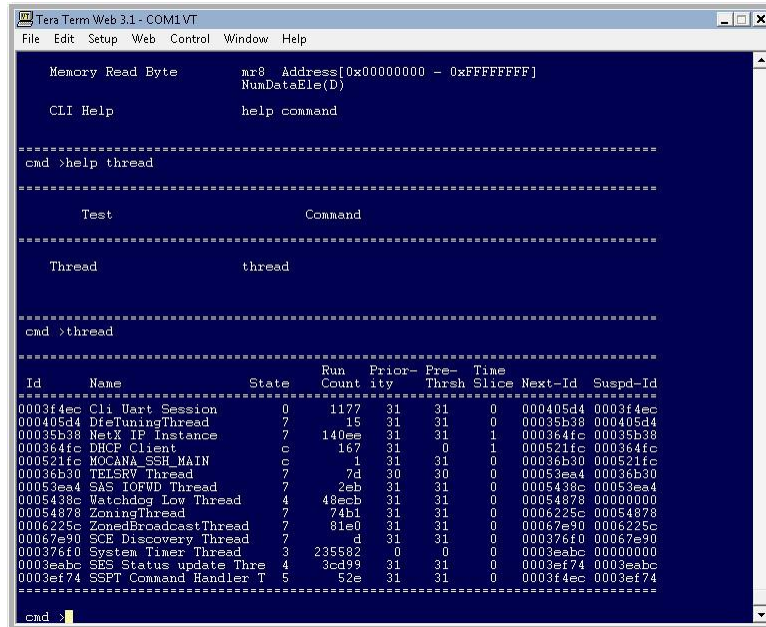
```

TeraTerm Web 3.1 - COM1\VT
File Edit Setup Web Control Window Help
cmd >help memstat
=====
Test                                Command
=====
Memory usage statistics memstat
[Handle1 Handle2 ... i=<refresh interval in ticks>]
=====
cmd >memstat
=====
Byte                                Free    Num
Pool ID Name                        Bytes   Fragments
=====
00034d90 I                           97072   431
=====
Thread                               Stack   Max Stack
ID    Name                           Size    usage
=====
0003f4ec Cli Uart Session             4092     804
000405d4 DieTuningThread              1020     220
00035b38 NetX IP Instance             2044     268
000364fc DHCP Client                  1020     356
000521fc MOCANA_SSH_MAIN              4092     260
00036b30 TELSRV Thread                1020     180
00053ea4 SAS IOFWD Thread             1020     204
0005438c Watchdog Low Thread         1020     224
00054878 ZoningThread                 1020     288
0006225c ZonedBroadcastThread         1020     264
00067e90 SCE Discovery Thread         1020     508
000376f0 System Timer Thread          1020     188
0003eabc SES Status update Thread    1020     460
0003ef74 SSPT Command Handler Thread 4092     524
=====
NetX Packet                          Total    Free
ID    Name                           Packets  Packets
=====
00035940 NetX Packet Pool             48       38
000360b0 BSD Packet Pool              0        0
00036a10 Telnet Packet Pool           7        7
00036a4c TFTP Packet Pool             2        2
00036148 NetX DHCP Client             1        0
00035728 macPacketPool               10       10
000351a8 SAS IOFWD Packet Pool        1        1
=====
cmd >
cmd >

```

THREAD:

This command shows thread usage information of the expander processor.



```

Tera Term Web 3.1 - COM1VT
File Edit Setup Web Control Window Help

Memory Read Byte      nr8 Address[0x00000000 - 0xFFFFFFFF]
                        NumDataEle(D)

CLI Help              help command

=====
cmd >help thread
=====

Test                  Command

=====

Thread               thread

=====
cmd >thread
=====

Id      Name                State  Run  Prior- Pre-  Time
Count  ity    Thrsh Slice Next-Id Suspd-Id
=====
0003f4ec Cli Uart Session      0     1177 31    31    0  000405d4 0003f4ec
000405d4 DfeTuningThread      7       15 31    31    0  00035b38 000405d4
00035b38 NetX IP Instance      7    140ee 31    31    1  000364fc 00035b38
000364fc DHCP Client         c     167 31    0    1  000521fc 000364fc
000521fc MOCMA SSH MAIN      c       1 31    31    0  00036b30 000521fc
00036b30 TELSRV Thread        7       7d 30    30    0  00053ea4 00036b30
00053ea4 SAS IOFWD Thread      7       2eb 31    31    0  0005438c 00053ea4
0005438c Watchdog Low Thread  4    48ecb 31    31    0  00054878 00000000
00054878 ZoningThread          7       74b1 31    31    0  0006225c 00054878
0006225c ZonedBroadcastThread  7      81e0 31    31    0  00067e90 0006225c
00067e90 SGE Discovery Thread  7       d 31    31    0  000376f0 00067e90
000376f0 System Timer Thread  3  235582 0     0    0  0003eabc 00000000
0003eabc SES Status update Thre 4    3cd99 31    31    0  0003ef74 0003eabc
0003ef74 SSPT Command Handler T 5       52e 31    31    0  0003f4ec 0003ef74
=====
cmd >

```

MR32 and MW32:

These commands perform 32 bit (word) read and write operations within the memory space on the expander card. There are other commands that perform other read and write operations that essentially are the same except for data size which are used under certain conditions. There are several uses for these commands; they are very powerful, yet dangerous.



```

=====
Address      0
=====
c0008000    0x0010b210
=====

cmd >help mr32

=====
Test          Command
=====

Memory Read Word  mr32 Address[0x00000000 - 0xFFFFFFFF]
                  NumDataEle(D)

=====
cmd >mr32 0xc0008000

=====
Address      0
=====
c0008000    0x0010b210
=====

cmd >help mw32

=====
Test          Command
=====

Memory Write Word  mw32 Address[0x00000000 - 0xFFFFFFFF]
                  WriteData(H)

=====
cmd >mw32 0xc0008000 0x0010b100

=====
cmd >mr32 0xc0008000

=====
Address      0
=====
c0008000    0x0010b100
=====

cmd >

```

reading contents of location 0xC0008000 shows a value of 0x0010B210

writing a value of 0x0010B100 to location 0xC0008000 and reading back the change

The example screenshot shows reading a location using the **mr32** command and then writing a new value using the **mw32** command.