RST INSTRUMENTS LTD.

RS232 to RS485 Adaptor
Instruction Manual

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Product: RS232 to RS485 Adaptor
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Document number: ELM0051C RS232 to RS485 Instruction Manual.doc
Revision: C
Date: April 2, 2012

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1 INTRODUCTION

RST RS232 to RS485 Adaptor has been developed to interface instrumentation utilizing RS485 communication to monitoring equipment via RS232 port.

2 ADAPTOR SET-UP

The adapter requires 7 – 15 DC power.

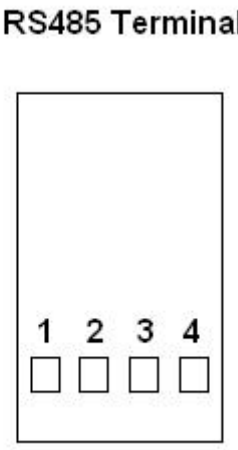

Figure 1 – RS485 Terminal Connections

1. Power
2. A
3. B
4. Ground

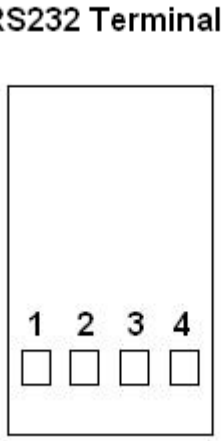

Figure 2 – RS232 Terminal Connections

The RS232 terminal can be connected to a PC computer or a logger.

The wiring is as follows.

1. Power (7 – 15 Volts)
2. RX (RS232 9-pin D-Sub pin 2)
3. TX (RS232 9-pin D-Sub pin 3)
4. Ground (RS232 9-pin D-Sub pin 5) & Power Ground

3 COMMUNICATION PORT SETTINGS

3.1 RS232 PORT

The RS232 COM port settings are as follows:

Baud 115200, 8 data bits, no parity, 1 stop bit.

The RS232 port baud can be changed if needed, see section 4.4.2 for details.

3.2 RS485 PORT

The RS485 port baud is factory fixed at 9600.

4 ADVANCED COMMANDS

When the RS232 to RS485 Adapter is connected to PC computer running communication software (HyperTerminal), various commands can be used to retrieve information from connected instruments. Following is a list of commands supported by RST Digital Tilt Meter.

4.1 COMMAND FORMAT

All commands have the following format: @@#####_ComandString**CR**

@@	= Address detect mode character string
#####	= Address in decimal format, 0-9
_	= Character to terminate address, char not in 0-9
ComandString	= Command to be processed
CR	= Carriage return, hex 0x0D. Command termination character.

Note

In the case only one device is connected, the special address **65535** can be used to access the device.

4.2 COMMANDS

There are two commands required to retrieve a set of readings from the Digital Tilt Bus.
TR = Take a set of readings
SR = Send the last set of readings
Reading set = reading from tilt sensor A, tilt sensor B and temperature.

4.2.1 TR

The TR command causes the Digital Tilt Bus to take a set of sensors reading and store the set in memory. Only the most current reading set is stored. The stored reading set is maintained until power is removed from the Digital Tilt Bus or a new reading set is taken.

TR	= Take a single reading set then enter low power mode.
TR 1	= Put sensors in continuous reading mode. Sensors do not power down
TR 0	= Take a single reading then enter low power mode. Terminate continuous mode.

Sample Command: @@12345 TR 1**CR**
Return String: TR 1**CR**

4.2.2 SR

The SR command causes the Digital Tilt Bus to send the latest reading set. The reading set will not be updated unless continuous reading mode has been entered. If the TR has not been processed, the entries in the returned reading set defaults to 0. The entries are comma separated.

Sample Command: @@12345 SR**CR**
Return String: SR,ReadingA,ReadingB,Temperature CR
ReadingA Format: #.######
ReadingA Format: #.######
Temp Format: #.##
Default Reading SR,0.00000,0.00000,0.00

Error Response:
If an invalid address is entered, there will no response. If an invalid command is entered, the echoed command followed by a '?' will be sent.

4.3 TYPICAL READING SEQUENCE

- Power on
- Wait 600ms
- Send TR command: Wait for CR after echo.
- Uni-Axial: Wait 1300 ms; Bi-Axial: Wait 2100 ms.
- Send SR command: Wait for CR after echo and data.

Update rate in continuous mode
Uni-Axial = 750 ms
Bi-Axial = 1650 ms

4.4 SPECIAL COMMANDS

4.4.1 MODE

The MODE command is used to switch the functionality of the adapter. For RS232 to RS485 use the following to ensure the correct configuration:

MODE 0**CR**

Since the commands are passed through the adaptor, typed commands are not echoed back.

To verify the communication, type the following command to switch to another mode:

MODE 1**CR**

The adaptor should respond with "RST Thermarray" to indicate proper communication. Lack of response indicates communication problem. See chapter 2 to verify connections and chapter 3 for communication settings.

Ensure that the adapter is in RS232 to RS485 mode by typing:

MODE 0**CR**

4.4.2 BAUD

The BAUD command will change the RS232 COM port baud. In order to use the BAUD command, adapter needs to be switched into different mode. Follow the sequence below to change baud:

MODE 1**CR**

BAUD <baud rate>**CR**

The supported <baud rate> is either 115200 or 9600.

After changing baud rate, send the MODE command again to switch the adapter to RS232 to RS485.

MODE 0**CR**

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