

April 27, 2014

Simple ASCII Protocol:

The Simple ASCII Protocol (SAP) makes it possible to control ECC products from a terminal program, or from one of the [free utility](#) programs available for download.

Note: If RS232/RS485 com ports are being used, [disable the USART FIFO](#) buffers for better communications.

Note: The Simple ASCII Protocol is not the same as the Modbus ASCII Protocol. The default protocol for all of ECC's controls is Modbus RTU. The Modbus ASCII Protocol uses a check sum to verify transmitted data validity.

The Simple ASCII Protocol does not use a check sum or CRC.

There are two commands that can be used regardless of the device operating mode. To enter these commands, the unit must be powered down and back up, or given a RESET command.

Symbol: <key stroke>

Change device address: RESET <ESC><aH><aL><E>

Note: Excluded addresses are 27 (<ESC>) and 69 (E).

Allowable addresses 01 – 26, 28 – 68, and 70 – 99.

<KEY> key to push.

<Esc> First key after reset places unit in mode to receive single characters.

<aH> Address high digit

<aL> Address low digit

<E> Key for End of data

A unit receiving this command, stores the address, and does a self reset to make the new address active.

This command does not change the protocol.

Change to Simple ASCII Mode: RESET <ESC><A><n><E>

<n> = 1 for 9600; 2 for 19,200 baud.

Both baud rates use 1, 8, N, 1 i.e. one start, eight data bits, no parity, and one stop bit.

A unit receiving this command, stores the command, and does a self reset to make the new mode active.

Note: The Modbus default settings are 19.2k baud and 1, 8, N, 2. However, if the ASCII mode is entered from a terminal program set for 1, 8, N, 1, the delay between key strokes will provide the second stop bit. Once in the SAP mode, the unit will switch to one stop bit and the selected baud rate.

If a unit is configured for SAP, in order to return to Modbus RTU, the factory defaults must be restored. To restore defaults to a programmed device, jumper pins 2 and 5 on the program header and use the RESET command, or cycle power. The “MOD” command will also restore factory defaults.

Once a unit has been configured for ASCII mode, it is ready to start obeying the protocol below.

There is no time out in the ASCII mode. The unit accumulates characters until <E> is received. It then attempts to process the received string. Note: the string can be sent one character at a time from a keyboard VIA terminal program, or sent as a string from a control program.

<E> followed by <ESC> will cancel a partial entry and prepare the addressed unit to receive a new string of characters.

Note: If sending the commands as a complete string, <ESC> is decimal 27 or Hex 0x1b.

Excluding addresses 27 (<ESC>) and 69 (E),The unit address is a two digit value from 01 to 99, i.e. <0><1> to <9><9>, or “01” to “99”.

The format is: |Unit addr.|Command|E|

Command	END	Meaning
CA##	E	Change unit address to ## i.e. 01 – 99
CB#	E	Change Baud Rate to: # - 1 = 9600; 2 = 19.2K
R1	E	Read the ADC count.
R	E	Reset addressed unit.
CH1#	E	Change ADC count Hold feature. # = 1 to hold highest ADC reading until read by master. # = 0 for no hold, but send the latest conversion when polled.
CRLFON	E	CR LF attached to return data.
CRLFOFF	E	No CR LF attached to return data – A space will be attached.
MOD	E	Reset factory defaults and return to Modbus.

Table 1: Commands for 4 – 20 MA Unit: MOD4-20

Example: Read the ADC count for unit address 7. The complete keyboard entry is: <0><7><R><1><E> If sent as a string, it is: “07R1E”

Command	END	Meaning
CA##	E	Change unit address to ## i.e. 01 – 99
CB#	E	Change Baud Rate to: # - 1 = 9600; 2 = 19.2K
R2	E	Read the ADC count at TP2. *1
R3	E	Read the ADC count at TP3. *1
R4	E	Read the ADC count at TP4. *1
R5	E	Read the ADC count at TP5. *1
R6	E	Read the ADC count at TP6. *1
R	E	Reset addressed unit.
CH6#	E	Change ADC count Hold feature. # = 1 to hold highest ADC reading until read by master. # = 0 for no hold, but send the latest conversion when polled.
CRLFON	E	CR LF attached to return data.
CRLFOFF	E	No CR LF attached to return data – A space will be attached.
MOD	E	Reset factory defaults and return to Modbus.

Table 2: Commands for Current Sense Unit: AMPWTX-MOD

*1 TP2 through TP5 can be read to calibrate the circuit instead of using a voltmeter. TP6 is the filtered results used when making control decisions.

Command	END	Meaning
		CONFIGURATION COMMANDS
CA##	E	Change unit address to ## i.e. 01 – 99. Reset required after change.
CB#	E	Change Baud Rate to: # - 1 = 9600; 2 = 19.2K. Reset required after change.
CH1#	E	HDR1 - Change ADC count Hold feature. # = 1 to hold highest ADC reading until read by master. # = 0 for no hold, but send the latest conversion when polled. **
CH2#	E	HDR2 - Change ADC count Hold feature. # = 1 to hold highest ADC reading until read by master. # = 0 for no hold, but send the latest conversion when polled. **
CH3#	E	HDR3 - Change ADC count Hold feature. # = 1 to hold highest ADC reading until read by master. # = 0 for no hold, but send the latest conversion when polled. **
CH4#	E	HDR4 - Change ADC count Hold feature. # = 1 to hold highest ADC reading until read by master. # = 0 for no hold, but send the latest conversion when polled. **
		For allowed analog/digital, See Mix for DCB2620
Command for HDR1 – HDR4 Configuration.		HDR1 – HDR4 configuration: CH1xy,xy,xy,xyE where xy are as following: If x = A, Y=I for (10 bit ADC) input. If x = D, Y = I for input, or O for output. Example: Unit 9, HDR1 is an output, HDR2 and HDR3 are digital inputs, and HDR4 is an ADC input. 09CH1DO, DI,DI,AIE **
Command to configure OPTO Inputs as AC filtered, or DC.		I1x,x,x,xE where x = A for AC filtering, or D for DC input. **
CRLFON	E	CR LF attached to return data. RESET not required for change.
CRLFOFF	E	No CR LF attached to return data – A space will be attached. RESET not required.
MOD	E	Reset factory defaults and return to Modbus Protocol.
		CONTROL COMMANDS
R1	E	Read the port/ADC count at HDR1. *2
R2	E	Read the port/ADC count at HDR2. *2
R3	E	Read the port/ADC count at HDR3. *2
R4	E	Read the port/ADC count at HDR4. *2
K1ON	E	Turn relay K1 ON.
K1OFF	E	Turn relay K1 OFF.
K2ON	E	Turn relay K2 ON.
K2OFF	E	Turn relay K2 OFF.
RO	E	Read OPTO Inputs. Return value is IN1x,x,x,x *3
S1x	E	Set HDR1 to x = L or H for low level or high level. This command is only valid if the port has been configured as an output.
S2x	E	Set HDR2 to x = L or H for low level or high level. This command is only valid if the port has been configured as an output.
S3x	E	Set HDR3 to x = L or H for low level or high level. This command is only valid if the port has been configured as an output.
S4x	E	Set HDR4 to x = L or H for low level or high level. This command is only valid if the port has been configured as an output.
R	E	Reset addressed unit.

Table 3: Commands for DCB1320 and DCB2620

** No reset required for this command.

*2 If the port is configured as digital, HD#Ln or HD#Hn will indicate the level on the port pin. n is the port configuration i.e. I for Input, or O for Output. If ports are to be configured as Digital, configure before connecting I/O circuits the first time. If an input is configured as analog, HD#nnnn will be returned where nnnn is a four digit number between 0000 and 1023 which is the ADC count converted to decimal digits.

*3 The sequence is IN1x,x,x,x where x = T or F for True or False. Example: IN1 is True and IN2, 3, and 4 are false. The return is: IN1T,F,F,F

Command	END	Meaning
Time Set, TS		TShh:mm:ss,d The DCB2620 is a 24 hour clock i.e. 00 – 23 hours. Example: The day of the week is Tuesday, day 3. The time is 09:45:30, and the unit address is 12. Format: 12TS09:45:30,3E
Time Read, TR		AATRE command returns unit address AA hh:mm:ss,x where x is 1 – 7 .

Table 4: Commands for DCB2620 Only.

Command	END	Meaning
CA##	E	Change unit address to ## i.e. 01 – 99
CB#	E	Change Baud Rate to: # - 1 = 9600; 2 = 19.2K
TS	E	Time Set. hh:mm:ss:/ Day/mo/date/yr *4
TR	E	Time Read . Return: hh:mm:ss
RD	E	Read date. Return: SUN – SAT mo/date/Year
TMPF	E	Read temperature. Return: 0 – 257°F or 0 – (-67°F).
TMPC	E	Read temperature. Return: 0 – 125°C or 0 – (-55°C).
R	E	Reset addressed unit.
CRLFON	E	CR LF attached to return data.
CRLFOFF	E	No CR LF attached to return data – A space will be attached.
MOD	E	Reset factory defaults and return to Modbus.

Table 5: Commands for RTC-TI2C, RTC with Temperature Sensor

*4 Clock is 24 hour (00-23), day is 1 – 7 and year is two digits. Example: 12:35 PM, Monday, November 6, 2013 format is: 12:35:00/1/11/06/13

Response to Commands:

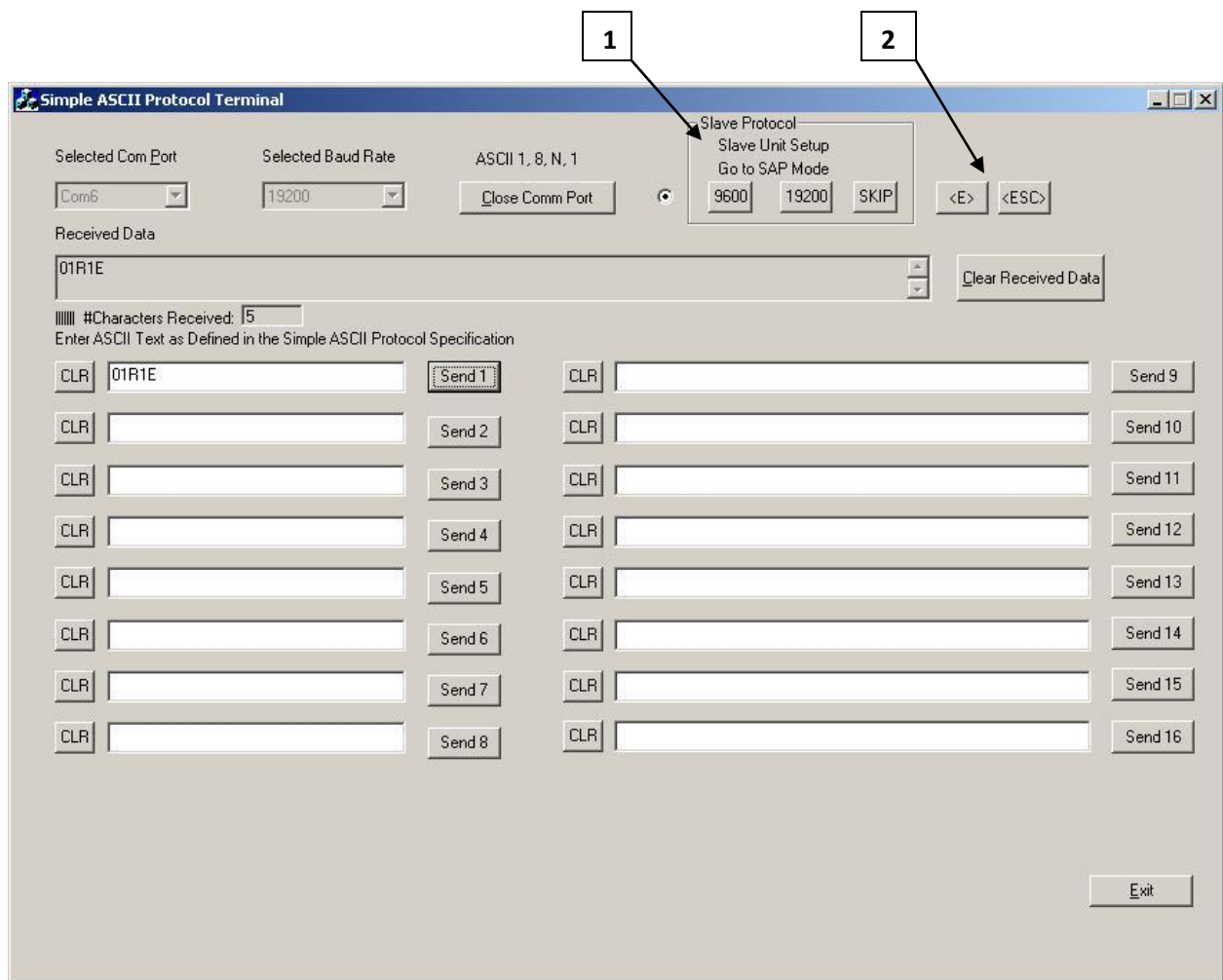
Once a unit processes a command, it will respond with:

- ACK if successful.
- Return of requested data.
- No response. If no response, send <ESC>

Allowable mix of analog and digital Inputs for DCB2620 MTA100 headers HDR1 through HDR4.

HDR4	HDR3	HDR2	HDR1
Digital	Digital	Digital	Digital
Analog	Digital	Digital	Digital
Analog	Analog	Digital	Digital
Analog	Analog	Analog	Digital
Analog	Analog	Analog	Analog

There are no restrictions for DCB1320.



Simple ASCII Protocol Terminal Screen – See Free Downloads.

The SAP Terminal Program provides for up to sixteen different commands to be entered and remembered. The command is sent each time the corresponding Send# button is clicked. The commands can be for the same network slave, or for different slaves on the same network.

The format is: Address Command E as defined in the tables above.

Reference 1 above is used as follows:

- 9600 places a slave unit in the simple ASCII mode to operate at 9600 baud.
- 19200 places a slave unit in the simple ASCII mode to operate at 19200 baud.
- SKIP is used to skip the configuration if the unit has previously been configured for SAP.

Note: To place a unit in the SAP mode, the configuration command must be the first command sent after a power up reset, or a RESET command. Once placed in the SAP mode, a unit will stay in that mode until configured for a different mode.

Reference 2 above, sends a single character to the network. If a unit doesn't receive a complete valid command string, click <E > and then <ESC> to get it back in sync.

Disable FIFO buffers:

Procedure for Windows XP system:

1. Click Start and select My Computer.
2. Click View System Information.
3. Select Hardware.
4. Select Device Manager.
5. Open Ports menu.
6. Right click com port to be used.
7. Select Properties.
8. Select FIFOs.
9. Remove check from Use FIFO buffers.

[GO TO TOP](#)