



UDC 3500 Application Note

Communications Set Up Group

Introduction

The Communications group lets you configure the controller to be connected to a host computer via Modbus[®] or Ethernet TCP/IP protocol.

Introduction

A controller with a communications option looks for messages from the host computer. If these messages are not received within the configured shed time, the controller will SHED from the communications link and return to stand-alone operation. You can also set the SHED output mode and setpoint recall, and communication units.

Up to 99 addresses can be configured over this link. The number of units that can be configured depends on the link length, with 31 being the maximum for short link lengths and 15 drops being the maximum at the maximum link length.

Function Prompts

Table 1 Communications Group Function Prompts

Function Prompt Lower Display	Selections or Range of Setting Upper Display	Parameter Definition
Com ADDR	1 to 99	COMMUNICATIONS STATION ADDRESS —This is a number that is assigned to a controller that is to be used with the communications option. This number will be its address. This value is also used for IR transactions.
ComSTATE	DISABLE MODBUS	RS-485 COMMUNICATIONS SELECTION —This prompt is not used for IR or Ethernet communications. DISABLE —Disables RS-485 communications option. MODBUS —Enables RS-485 Modbus RTU communication port.
IR ENABLE	DISABLE ENABLE	IR ENABLE —Disable/Enables IR communications port. ATTENTION If there are no IR communications transactions for four minutes, then the IR port automatically shuts down. It can be re-enabled by pressing any key on the front panel.



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BAUD	4800 9600 19200 38400	BAUD RATE —Communications transmission speed in bits per second. This value is used for both RS-485 and IR Communications, but for IR Communications, values below 19200 baud are interpreted as being 19200 baud. 4800 BAUD 9600 BAUD 19200 BAUD 38400 BAUD																								
TX DELAY	1 to 500 milliseconds	TX DELAY —Configurable response-delay timer allows you to force the instrument to delay its response for a time period of from 1 to 500 milliseconds compatible with the host system hardware/software.																								
WS FLOAT	FP_B FP_BB FP_L FP_LB	Defines word/byte order of floating point data for communications. Byte values: <table style="margin-left: 40px;"> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">seeeeeee</td> <td style="text-align: center;">emmmmmmm</td> <td style="text-align: center;">mmmmmmmm</td> <td style="text-align: center;">mmmmmmmm</td> </tr> </table> Where: s = sign, e = exponent, m = mantissa bit <table style="margin-left: 40px;"> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> </tr> </table>	0	1	2	3	seeeeeee	emmmmmmm	mmmmmmmm	mmmmmmmm	0	1	2	3	1	0	3	2	3	2	1	0	2	3	0	1
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2	3	0	1																							
SHED ENAB	DISABLE ENABLE	SHED ENABLE —Disables/enables shed functionality. Applies to Modbus protocol only.																								
SHEDTIME	0 to 255	SHED TIME —The number that represents how many sample periods there will be before the controller sheds from communications. A setting of 0 means No Shed, 1 means 1/3 seconds delay before shed and each increment adds an additional 1/3 seconds. ATTENTION If ComSTATE is set to MODBUS and if SHEDENAB is set to DISABLE, then Shed Time will not be configurable.																								
SHEDMODE		SHED CONTROLLER MODE AND OUTPUT LEVEL —Determines the mode of local control you want when the controller is shed from the communications link.																								



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	<p>LAST</p> <p>TO MAN</p> <p>FSAFE</p> <p>TO AUTO</p>	<p>LAST—SAME MODE AND OUTPUT—The controller will return to the same mode (manual or automatic) at the same output level that it had before shed.</p> <p>TO MAN—MANUAL MODE, SAME OUTPUT—The controller will return to manual mode at the same output level that it had before shed.</p> <p>FSAFE—MANUAL MODE, FAILSAFE OUTPUT—The controller will return to manual mode at the output value selected at Control prompt FAILSAFE.</p> <p>TO AUTO—AUTOMATIC MODE, LAST SP—The controller will return to the automatic mode and the last setpoint used before shed.</p>
SHED SP	<p>TO LSP</p> <p>TO CSP</p>	<p>SHED SETPOINT RECALL—The instrument will control to the selected Setpoint following a Shed.</p> <p>ATTENTION If SHEDENAB is configured for DISABLE, then this prompt will not be configurable.</p> <p>TO LSP—Controller will use last local or remote setpoint used.</p> <p>TO CSP—When in “slave” mode, the controller will store the last host computer setpoint and use it as the Local setpoint. When in “monitor” mode, the controller will shed to the last instrument Local or Remote setpoint used, and the LSP is unchanged.</p>
UNITS	<p>ENG</p> <p>PERCENT</p>	<p>COMPUTER SETPOINT UNITS</p> <p>ENG—Engineering units</p> <p>PERCENT—Percent of PV range</p>
CSP RATO	–20.0 to 20.0	COMPUTER SETPOINT RATIO —Computer setpoint ratio for Loop 1.
CSP BIAS	–999. to 9999. (engineering units)	COMPUTER SETPOINT BIAS —Computer setpoint bias in Engineering Units for Loop 1.
CSP2RATO	–20.0 to 20.0	LOOP 2 COMPUTER SETPOINT RATIO —Computer setpoint ratio for Loop 2.
CSP2BIAS	–999. to 9999. (engineering units)	LOOP 2 COMPUTER SETPOINT BIAS —Computer setpoint bias in Engineering Units for Loop 2.
LOOPBACK	<p>DISABLE</p>	<p>LOCAL LOOPBACK—Tests the RS-485 communications port. This feature is not used for any other communications port.</p> <p>DISABLE—Disables the Loopback test.</p>



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	ENABLE	<p>ENABLE—Allows RS-485 Loopback test. The instrument goes into Loopback mode in which it sends and receives its own message. The instrument displays PASS or FAIL status in the upper display and LOOPBACK in the lower display while the test is running. The instrument will go into manual mode when LOOPBACK is enabled with the output at the Failsafe value. The test will run until the operator disables it here or until power to the instrument is turned off and on.</p> <p>ATTENTION The instrument does not have to be connected to the external RS-485 communications link in order to perform this test. If it is connected, then only one instrument should run the Loopback test at a time, as the instrument running the Loopback test transmits on the RS-485 bus. The host computer should not be transmitting on the link while the Loopback test is active.</p>