Objective

To describe a method of achieving communications between the AC10 drive and the TS8000 HMI with Modbus RTU via RS485. Up to 31 Drives can be used per 1 TS8000 HMI.

Scope

This will require an AC10 drive, a TS8000 HMI and the DSI8000 or DSI3 software and USB cable. You will also need a 124 ohm resistor.

There is also a pre-configured TS8008 configuration example which corresponds to this App Note labeled **8120 TS to AC10 Modbus 8 inch.dsi.** It is configured for 2, AC10 Drives communicating to a TS8008 HMI 8 inch screen.

Procedure

TS8000 to AC10 Wiring:

For RS485 2 wire connection, use an RJ45 connector from the RS485 terminal on the TS8000. Pins 1 or 7 connect to the A terminal on the AC10 and terminals 2 or 8 connect to the B terminals on the AC10.



Note: It is required to have a 124 ohm resistor across the A and B terminals of the last drive in the network. Terminals A&B on the AC10 are swapped per the cables markings. Thus the drawing is correct.

Configure the AC10 communication parameters

Example Settings F900 (inverter address): 13 for Drive1 and 14 for Drive2. F901 (Modbus mode selection): 2 (RTU mode) F903 (Parity Check): 1 (Odd) F904 (Baud Rate): 6 (57600)

Also;

F200 Source of Start Command = 3: Modbus or 4: Keypad + Terminal + Modbus F201 Source of Stop Command = 3: Modbus or 4: Keypad + Terminal + Modbus F203 Main Frequency Source = 10: Modbus

If you have questions, please call the Product Support Group at (704) 588-3246.

6-Mar-15 Issue 1

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Application Note		Product:	TS8000 & AC10	-Parker
Document Number:	8120	Keywords	: AC10 Modbus Comm	unications via the TS8000

Configure the TS8000

Open DSI8000 or DSI3 and select the Communications window. This example was done with DSI. Select the RS485 port by clicking on the icon in the left hand pane. Then click 'Edit' in the top right hand of the screen and select 'Modbus Master'.

Communications	×
Communications TS8000 Communications TS8000 Common Programming Port RS-232 Comms Port RS-485 Comms Port - Modbus Master Drive1 Drive2 Ethernet Frotocol 1 Frotocol 2 Frotocol 3	Driver Selection Driver: Modbus Universal Master Edit Driver Settings Protocol Type: Modbus RTU RTU Framing: Detect via Timing Shue Timeeute 600, are
 Protocol 4 Ethernet Auxiliary USB Host Ports Memory Stick Services Mail Manager OPC Server FTP Server Time Manager Sync Manager 	Port Settings Baud Rate: 57600 Data Bits: Eight Stop Bits: One Parity: Odd
	Port Mode: 2-Wire RS485 Port Sharing Share Port: No Clear Port Settings Restore Driver Defaults Add Additional Device

Set the Baud Rate and Parity to match the settings in the drive.

Click on PLC1.

Select the Drop Number box and enter the inverter address which matches the setting in parameter F900.

IMPORTANT. Click the **Extended** tab and select the **ping holding register** text box. The number in here must match a "parameter address" in the drive. Set the number in here to 262. This corresponds to parameter F105 Software Version "parameter address" location.

The 262 comes from converting 105 (hex) to 261 + 1.

Application Note

Document Number: 8120

Keywords: AC10 Modbus Communications via the TS8000

TS8000 & AC10

AC10 Parameter Access via the TS8000

The parameters in the AC10 have to be converted into numbers that can be used in the Modbus registers.

Product:

Example.

F111 (Max Frequency) the parameter number consists of 2 bytes.

01 + 11 Convert these into hexadecimal form to get $01 \ 0B$.

Convert this back to decimal and add 1. So 10B(h) = 267 + 1 = 268.

So the Modbus register = 400000 + 268 = 400268.

Set up the TS8000 Data Tags

Close the Communications window and double click on the Data Tags icon. Click on the data tags icon and create integer tags as shown. Name one as Speed and the other as Command. The speed tag will relate to the Target Frequency parameter F113.

F113 = 010Dh = 269 + 1 = 270.

Command is tag is F2000 = 8192 + 1 = 8193.

Data Tags X Drive1_spd_hz Drive2_spd_hz Drive2_cmnd Drive2_cmnd Drive2_op_freq Drive1_op_volts Drive1_op_volts Drive1_op_current Drive2_op_current Drive2_op_current Drive2_dc_link Drive2_dc_link	Create New Variable Flag Integer Multi Real String Create New Formula Flag Integer Multi Real String Create New Formula Flag Integer Multi Real String Create New Array Flag Integer Multi Real String Import and Export Export to File Import from File Utilities Utilities Validate All Tags Remap Retentive Tags Show Tag Viewer Copy Multiple Tags Delete Multiple Tags View Tags Online Sort Tags Sort Ascending Sort Descending
Close	



Document Number: 8120

Keywords: AC10 Modbus Communications via the TS8000

Set up the "User Interface"

Double click on the User Interface icon.

Once the tags are created you can create an integer text box and configure it to enter the speed. The AC10 refers to the Speed in Hertz rather than a percentage as most other Parker drives do.

ser Interface - Page1	
ſ	Integer Text Properties
	Properties Data Entry Format 13:23 06/03/15
	Value: Tag Drive1_spd_hz Pick Data Entry: Yes Flash on Alarm: No T
	Show Label: Yes Image: Text Colors Speed (Hz): 0.00
	Text Format Font: Swiss 12x16 Pick
	Foreground: Fixed White Pick Pick DRIVE OUTPUTS
	Justification /olts Current DC LINK
	Display State Show Item: General TRUE
	OK Cancel Sgt As Defaults
Close	

Product: TS8000 & AC10



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The value of the command tag sets the drive mode. Run Forward = 0001 Run Reverse = 0002 Ramp Stop = 0003 Coast Stop = 0004

Create A button for each mode and set the integer value to match the function of the button.

User Interface - Page1	Constant Street St.	n san di kasa di kasa di kasa di kasa di kasadi kasadi kasadi kasadi kasadi kasadi kasadi kasa 🗴
User Interface - Page1 Pages Page1 Page2		AC10 AC DRIVE 1 13:23 06/03/15 RUN MODE Speed Demand Run Fwd Properties Additional Images Action Action Mode Operation: Change Integer Value Action Details Write To: Tag Drive1_cmnd Pick Data: General 0001 Eatler Action Control Enable: General TRUE
		Speed Hz 0.00 Action Control Enable: General TRUE Remote: Enabled
Close	MENU	OK Cancel Set As Defaults

If you are connected to the AC10 you can download it into the drive by pressing F9. You should now be able to run the drive in both directions and Stop it with either a Ramped Stop or a Coast Stop. More parameters are listed in the AC10 product manual HA502320U001.

Note: If the AC10 drive is 'Faulted' communication to the TS8000 will be lost and dash lines will appear for the data values.