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**Valtek RS-232 to
RS-485 Converter**

Valtek RS-232 to RS-485 Converter

Components, Features

Introduction

The Valtek RS-232 to RS-485 Converter is an easily configurable interface unit designed to provide a communication interface from RS-485 field devices to a serial RS-232 port. The converter supports a broad range of communication protocols, but is optimized for communication to Valtek's StarPac Intelligent Systems via Modbus®. The converter offers adjustable baud rates (300 - 57.6K), parity, data and stop bit selection, and 120 Ω termination resistor. Its RTS (request-to-send) control signal can be enabled or disabled as needed for the application.

The converter comes with a universal input (100 to 240VAC, 47-63 Hz) power supply for the converter that is also capable of powering one or two connected StarPac Systems. The unit can also be externally powered through screw terminals on the converter.

Features

- Supplies 24 VDC power.
- Allows the use of notebook-type computer without RS-485 port to configure StarPac system.
- Can address multiple StarPac systems.
- Can be used to connect Hayes-compatible modems to StarPac system.
- Indicates transmit and receive status by LED.
- Includes full one-year warranty
- DIN rail or panel mounting.



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Configuration, Connections, Operation

Ordering Information

- P/N 188979.999.000
- Operating temperature of converter –40° to 185° F (–40° to 85° C).

Power supply

- Voltage 100 to 240 VAC, 47 - 63 Hz
- Operating temperature of power supply 32° to 104° F (0° to 40° C).
- Current capacity 750 mA
- Short circuit protected with auto-recovery

Factory Configuration

The Valtek converter is shipped from the factory configured as follows:

- RTS signal disabled
- Odd parity
- RTU mode
- 1 stop bit
- 19200 baud communication rate
- 120 Ω termination enabled

Table I: DIP Switch Assignments:

DIP Switch Number										Function
1	2	3	4	5	6	7	8	9	10	
0										RTS*
1										No RTS
	1	1								Odd Parity*
	1	0								No Parity
	0	1								Even parity
	0	0								No Parity
			0							RTU Mode*
			1							ASCII Mode
				0						2 Stop Bits
				1						1Stop Bit*
					1	1	1			300 Baud
					1	1	0			1200 Baud
					1	0	1			2400 Baud
					1	0	0			4800 Baud
					0	1	1			9600 Baud
					0	1	0			19.2K Baud*
					0	0	1			38.4K Baud
					0	0	0			57.6K Baud
								0	0	No Term.
								1	1	120 Ω Termination*

*Factory default settings

Field Connections

The StarPac system is connected to the converter via the four-screw terminal block located on the side of the converter. The terminals will accept size 12-28 AWG wire. These wires are run from the StarPac system in the field to the converter. The RS-485 wires should be Belden 9841, or equivalent. Wires for the 24 VDC power should be sized to minimize power loss.

A universal input (100 to 240VAC, 47-63 Hz) power supply is included with the converter that is also capable of powering one or two connected StarPac Systems. A (US) standard grounded power cable is included with each unit. The unit can also be externally powered through the screw terminals on the converter. The 24 VDC terminals on the converter are output terminals when the included power supply is plugged in the top of the converter. Those same terminals can be used as input terminals if desired and the supplied power supply is not used. The RS-232 connection uses a standard female DB-9 receptacle. A six-foot cable is included to connect the computer to the converter.

Operation

Operation of the Valtek RS-232 to RS-485 converter is simple. With the converter properly configured and all connections securely made and checked, connect the power converter to the plug on the top of the unit, or connect 24 VDC to the terminals labeled 24 VDC. The POWER LED will light indicating the unit is properly powered. Configure the computers communication software to access the RS-232 serial port to which the converter is connected.

When properly configured, the TRANSMIT and RECEIVE LEDs will flash as the data moves back and forth along the line. Typically, both LEDs will appear to flash at the same time. Slower communication rates will cause a slower rate of flashing. The LEDs will only flash when actual communication is taking place between the computer and the field device.

Termination

The factory default setting has the 120 Ω termination load enabled for communications. The electrical device farthest from the converter box should also have the termination jumper installed. All units in between should have the termination disabled.

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RS-232 to RS-485 Converter Troubleshooting*

Failure	Probable Cause	Corrective Action
No power indication	<ul style="list-style-type: none"> Power not connected Bad power supply to converter 	<ul style="list-style-type: none"> Check for proper power cable connection. Check power supply for shorts and adequate supply voltage. Check for shorts in field devices as well because that could pull down the 24 VDC supply as well.
Power LED flashes when communications are attempted	<ul style="list-style-type: none"> DIP switch settings do not match software settings in PC 	<ul style="list-style-type: none"> Check PC and field devices for matching communication configuration to converter settings.
No communications	<ul style="list-style-type: none"> LED lights don't flash Computer serial port not working 	<ul style="list-style-type: none"> Check software configuration. Check DIP switch and jumper settings. Check RS-232 connection. Verify that other serial devices can communicate.
Only yellow transmit LED flashes	<ul style="list-style-type: none"> Improper field wiring 	<ul style="list-style-type: none"> Check field wiring for proper polarity. Check field device for proper operation. If applicable, check field device address settings and make sure that they are in the search range of the PC software.
Receive and transmit lights flash, but data not displayed in PC	<ul style="list-style-type: none"> PC communication buffer not set properly 	<ul style="list-style-type: none"> Check power monitors, sleep modes, or other devices that shut down the COM port. Usually you must reboot the PC to clear.
Intermittent communications	<ul style="list-style-type: none"> Loose field connections Possible conflict with computer's EMS memory driver Termination resistors set wrong Too fast for hardware 	<ul style="list-style-type: none"> Check wiring connections. Disable driver and test communications; refer to computer manufacturer for assistance. Check that termination resistors on intermediate field devices have been disabled so only converter and last device in the communication line have termination resistors set. Slow down communication; use lower baud rate.
Windows program (e.g., STWin) can't communicate	<ul style="list-style-type: none"> RTS is enabled 	<ul style="list-style-type: none"> Set DIP switch to disable RTS

*WARNING: Electrical hazard; use proper handling and test procedures when opening converter box.

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For more information, contact:

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