PDS200 Power over Ethernet Device Server User Manual

ABOUT

PDS200 is an external usage Power over Ethernet Device Server (Serial-to-Ethernet converter). It includes the function of GIGA-TMS's products- DS203 (Device Server) and PS200 (Power over Ethernet Splitter). It can connect existing serial device (RS232 or RS485) to Ethernet network and supplies DC12V or DC5V output for the serial device (RS232 or RS485). It has RS232 and RS485 serial ports. You can set the output signal to RS232 or RS485 by adjusting the DIP Switch that located at the bottom case of PDS200.

The product offers a compact disk which includes Tibbo Device Server Toolkit software and Virtual Serial Port driver for Windows and Linux. To manipulate Ethernet and serial's settings, please refer to <u>Tibbo Device Server Toolkit</u> <u>Documentation</u>.

APPLICATION

For those areas that AC power is not available, PDS200 provides the easiest way to power Ethernet device (supply DC12V or DC5V power). The hardware of PDS200 includes an Auto-MDIX* 10/100BaseT Ethernet port, a RS232 serial port, a RS485 serial port and an internal processor that "glues" network and serial sides together.

From the hardware standpoint, PDS200 can be regarded as a universal platform that is suitable to run a variety of network and serial communication applications.

Most functions of PSD200 are provided by Application Firmware. PDS200 runs in Application Firmware ("Serial-to-Ethernet" mode) that turns the PDS200 into a ready-to-work serial-to-Ethernet converter that can connect almost any kind of serial device to Ethernet (TCP/IP) network.

Application Firmware has fixed function. If you want to adjust the behavior of PDS200, you can specify the values of programmable parameters (settings) defined in this firmware. In addition, Application Firmware of PDS200 can be upgraded and firmware upgrade is via serial port or Ethernet port. Serial upgrade is facilitated by a so-called Monitor- a fixed "service" firmware inside the PDS200. Network upgrade relies on the Application Firmware itself - there is a self upgrade algorithm with Tibbo Device Server Toolkit software.

* Auto-MDIX means automatic detection of "straight" and "cross" cables.

FUNCTIONALITY

- DC12V or DC5V output for RS232 or RS485 device
- Full- and half-duplex serial port modes.
- Server, Client, and Server/Client network ("routing") modes.
- Numerous options for connection, serial port, etc.
- 8KB data buffers (one in each direction).
- Configuration stored in EEPROM.
- Setup through the serial port or network (UDP, Telnet).
- Remote control of RTS, CTS, DTR, and DSR lines.
- "On-the-fly" commands for immediate serial port configuration.

- Serial-side "modem" commands for network connection control.
- Direct control of ADSL modem.
- Support UDP, TCP, ARP, ICMP (ping), DHCP, PPPoE, LCP.

SPECIFICATIONS

Product	IEEE 802.3af Power over Ethernet Device Server (Serial-to-Ethernet Converter)
Model	PDS200
IEEE802.3af Compliant	Compliant to all IEEE 802.3af specifications. Present class 0 PD to PSE.
2 Pair/4 Pair Power Extraction	Extract power from data pair (1,2,3,6), spare pair (4,5,7,8) or both pairs. PoE signature on any one pair.
Ethernet Connector	RJ-45 (PoE in), 10/100BaseT, auto-MDIX Ethernet port
RS232 Connector	RS232 mode: RX, TX, RTS, CTS, DTR, DSR lines Default settings: 19200-N-8-1 (DIP Switch all OFF)
RS485 Connector	RS485 mode: RX+/-, TX+/-, automatic direction control; Default settings: 19200-N-8-1 (DIP Switch all ON)
DC 12V Output (DC Jack) DC 5V Output (4P connector)	12VDC, 660mA (Max.); 5VDC, 240mA (Max.), *internal circuit used partial power
Number of Device Can be Powered	1
Ethernet Cable	TIA/EIA-568, Category 5/5e cable
LED Indicator	Yellow - PoE working normally and 12VDC ready. Red - DS operation under the error mode. Green - Network working normally.
Dimensions	100(L) * 98 (W) * 21(H) mm
Weight	150g
Operating Environment	0~50 Degree C, 5%~90% RH
Storage Environment	-10~70 Degree C, 5%~90% RH

Ethernet Port Pin Assignment & RS232/485 Port Pin Assignment

Po	DE IN	RS232/485 Port			t	
8	8		1 6 ••••• 9		영구구· 1 1 1 4	
#1	TX+	#1	No connection	#1	+5V	
#2	TX-	#2	RS-RX	#2	R+/T+	
#3	RX+	#3	RS-TX	#3	R-/T-	
#4	<u>ер</u> ,	#4	RS-DTR	#4	GND	
#5	364	#5	GND			
#6	RX-	#6	RS-DSR			
#7	SP-	#7	RS-RTS			
#8		#8	RS-CTS			
		#9	No connection			



**** The mark "DC12V Out" on the right figure is output Power Jack.**

Ethernet Port Pin Assignment



Ethernet port of PDS200 is 10/100BaseT type.

Connector is RJ45 type. The following is pin assignment:

#1	TX+
#2	TX-
#3	RX+
#4	<u>en</u> .
#5	SF+
#6	RX-
#7	S D
#8	or-

RS232 Port Pin Assignment

DB9M RS232 connector has the following pin assignment:



#1	<no connection=""></no>
#2	RX (input)
#3	TX (output)
#4	DTR (output)
#5	Ground
#6	DSR (input)
#7	RTS (output)
#8	CTS (input)
#9	<no connection=""></no>

RS485 Port Pin Assignment

RS485 connector has the following pin assignment: T+ pin (#2) is RS485 positive differential-signal (T+/R+), T- pin (#3) is RS485 negative differential-signal (T-/R-).



DC 5V Output (4P Connector)

The RS485 connector also supplies DC 5V power output:

Output (5V) pin (#1) correspond to ground (GND) pin (#4) is DC5V output port, this power can supply for RS232 or RS485 device which uses DC5V power source. The DC5V tolerance range is 4.75VDC ~ 5.25VDC, and maximum output current is 240mA.



GIGA-TMS supplies a power cable WAS-T0471. This cable originally is used for DC12V output. If RS232 or RS485 device does not use DC12V power source, you can use WAS-T0471 as DC5V output cable by cutting the B end of WAS-T0471 and then peeling the black cover of WAS-WT0471 around 2.0 cm and peeling the covers of inner red and white wires around 0.5 cm as the pictures below. Then connect the red wire to output (5V) pin (#1) and connect the white wire to the ground (GND) pin (#4). DC5V will be output from the A end of WAS-T0471 for Serial Device usage.



DC 12V Output (DC Jack)

The DC jack of PDS200 accepts "small" power connector with 3.5mm diameter. It outputs DC12V power for RS232 or RS485 device. Please use WAS-T0471 power cable that supplied by GIGA-TMS. Output power tolerance range is 11.4VDC ~ 12.6VDC and maximum output current is 660mA. On the DC jack, the ground is "the outside" circle, shown on the figure as below.



■ DIP Switch setting for RS485 communication

The DIP Switch is located at the bottom case of PDS200. All DIP Switch set to ON position indicates that data is routed through PDS200 via RS485 port.



■ DIP Switch setting for RS232 communication

The DIP Switch is located at the bottom case of PDS200. All DIP Switch set to OFF position indicates that data is routed through PDS200 via RS232 port.



PDS200 (PoE Device Server) features one Power Status LED (yellow LED) and two Status LEDs (red LED and green LED). Yellow LED means that PoE function works normally and 12VDC is ready. Red LED and green LED display various states of device operation. The states of PDS200 are indicated by way of playing "LED patterns". Patterns are represented by graphics in the following manner:

The pattern means that both red LED and green LED blink three times together. The pattern means that red LED makes one long blink and then two short ones.



Status LEDs (red LED and green LED) display various status information depending on what firmware is running at the moment. Follow the descriptions below to learn more about the behavior of these LEDs under different conditions:

	Powerup pattern. This pattern is played once
	when the PDS200 is switched on.
	Buzz pattern. Both LEDs blink fast- this pattern
	is played when the PDS200 receives the Buzz
	(B) command. This is used to identify a
	particular PDS200.
	Status LEDs of the PDS200 are playing a serial
	programming mode pattern when the serial port
	of the PDS200 is in the serial programming
	mode.
	Status LEDs of the PDS200 are playing an
	error mode pattern when the PDS200 is in the
	error mode (unless the serial port of the
	PDS200 is in the serial programming mode).
	Ethernet Port failure. Indicates that the
	Ethernet port hardware is malfunctioning and
	network communications with the PDS200 is not
	possible.
	IP-address not obtained. Occurs at startup
	when DHCP (DH) setting is 1 (enabled) and
• •	the PDS200 has not vet obtained its IP-address
	from the DHCP server.
	PPPoE login failed. Occurs at startup and
	means that either PPPoE login name and
	password (defined by PPPoE Login Name
•	(PL) and PPPoE Login Password (PD)
	settings) are incorrect or PAP authentication
	protocol used by the PDS200 is not supported
	by Access Concentrator.
	Data connection is closed. This pattern
	means that no data connection (TCP or UDP)
	with any network host is currently established
	so the PDS200 is idle.
	Sending ARP. Displayed when the PDS200 is
	sending ARP requests to find out MAC-address
	of the destination network host with which the
	PDS200 is about to establish a connection.
	TCP connection is being opened. Indicates
	that TCP connection (either incoming or
	outgoing) is being established (i.e. SYN-SYN-
	ACK exchange is in progress).
	TCP connection reset (rejected) by the
	network host. Means that the TCP connection
•••	has been reset (using RST packet) by the
	network host to which the PDS200 has tried to
	connect.
	Link Server login in progress. Means that the
	PDS200 has already established TCP
	connection to the Link Server and is now
	attempting to login.
	Link Server login failed. Means that data
	connection to the Link Server could be

• Status LED behavior in Application Firmware

established but the server has rejected this PDS200 (because the data in the Owner Name (ON) , Device Name (DN) , or Password (PW) setting is incorrect or for some other reason).
Data connection is established or being closed. Means that data UDP "connection" or TCP connection is currently established or that TCP connection is being closed (i.e. FIN- ACK-FIN-ACK exchange is in progress).
Data is being routed, no overruns detected. This pattern is played when the data connection is established and the data is being routed through the PDS200.
Buffer overrun, no data routing. This pattern is displayed when the data connection is established and the routing buffer overrun has been detected (within the present data connection).
Buffer overrun + data routing. Data routing and overrun can be displayed at the same time.

• Status LED behavior in Monitor Firmware

	Fast-blinking pattern means that neither application firmware , nor the NetLoader can be found in the FLASH memory of the PDS200. The way out of this situation is to upload application firmware and the NetLoader into the device via its serial port.
	Slow-blinking Green Status LED means that
	Slow-blinking Red Status LED means that there was a timeout while waiting for the XMODEM data. If this happens right in the beginning of the serial upgrade then most probably this is caused by incorrect serial settings on the PC side, incorrect serial cable wiring, or incorrect XMODEM start procedure- XMODEM must be started on the PC first, and only then the DS is switched on (with he Setup button pressed; Note: Setup button is nearby EM203 module in the case).
— • — •	Communications error. This pattern means that an error was detected on the protocol level in XMODEM communications. Most often this means that incorrect communications parameters are set on the PC side.
	Firmware file is too big. This pattern means that the file you are trying to upload into the PDS200 is too big. Check if you have selected a correct file.
	FLASH failure. This pattern means that internal FLASH memory of the PDS200 is malfunctioning.

Note: Please refer to *Device Server Toolkit (DST)* software for Windows under item Software Manuals in HTML Help file- <u>sois manual</u> in CD for more detail description about software- *DS Manager, VSP Manager, and Connection Wizard*.