MODBUS

MODBUS Protocol

Modicon Communication Bus (MODBUS) is an application layer protocol for client-server communication between a switch (server) and a device in the network running MODBUS client software (client). You can use MODBUS over a serial line to connect a computer to a remote terminal unit (RTU) in supervisory control and data acquisition (SCADA) systems.

MODBUS also runs on Ethernet TCP/IP networks. Use MODBUS TCP over an Ethernet network when connecting the switch to devices such as intelligent electronic devices (IEDs), distributed controllers, substation routers, IP phones, Wireless Access Points, and other network devices such as redundant substation switches.

The client can be an IED or a human machine interface (HMI) application that remotely configures and manages devices running MODBUS TCP. The switch functions as the server.

The switch encapsulates a request or response message in a MODBUS TCP application data unit (ADU). A client sends a message to a TCP port on the switch.

MODBUS TCP Registers

This document lists the read-only registers for switches. MODBUS clients use them to communicate with a MODBUS server (the switch). There are no writable registers.

System Information Registers

Address spaces 0x0800 through 0x0FFF are system information read-only registers. These 2048 registers are accessible by MODBUS function code 0x03 `Read Multiple Registers`.

Table 1: System Information Registers

Address	Number of Registers	Description	R/W	Format	Value
0x0800	64	Product ID	R	Text	
0x0840	64	Software image name	R	Text	
0x0880	64	Software image version	R	Text	
0x08C0	64	Host Name	R	Text	
0x0900	1	Number of Gigabit Ethernet ports	R	Uint 16	
0x0901	1	Number of 10 Gigabit Ethernet ports	R	Uint 16	
0x0902	1	Number of mgig Ethernet ports	R	Uint 16	
0x0903	1	Number of power supplies	R	Uint 16	
0x0904	1	Power supply 1 status	R	Uint 16	0 – Not present 1 – Present
0x0905	1	Power supply 2 status	R	Uint 16	0 – Not present 1 – Present
0x0906	1	System or sensor ID 0 temperature	R	Uint 16	
0x0907	1	Alarm 1 – Description	R	Uint 16	
0x0947	2	Alarm 2 Description	R	Uint 16	
0x0987	1	Number of Alarms	R	Uint 16	
0x0988	1	Alarm 1 Status	R	Uint 16	0 – Alarm off 1 – Alarm on
0x0989	2	Alarm 2 Status	R	Uint 16	0 – Alarm off 1 – Alarm on

Address	Number of Registers	Description	R/W	Format	Value
0x098A	64	Alarm 3 Description	R	Text	
0x09CA	64	Alarm 4 Description	R	Text	
0x0A0A	1	Alarm 3 Status	R	Uint16	0 – Alarm off 1 – Alarm on
0x0A0B	1	Alarm 4 Status	R	Uint16	0 – Alarm off 1 – Alarm on

Port Information Registers

Address spaces 0x1000 through 0x3FFF are port information read-only registers. These 12,000 registers are accessible by MODBUS function code 0x03 `Read Multiple Registers`. They are updated every time upon receiving a read request to the register(s).

The following table shows the memory map for all interface registers, with 64-bit counters (Address space 0x1000 through 0x2FFF, 8,000 registers).

Table 2: 11 Port Registers

Address	Number of Registers	Description	R/W	Format
1000	64	Port 1 Name	R	Text
1040	64	Port 2 Name	R	Text
1080	64	Port 3 Name	R	Text
10C0	64	Port 4 Name	R	Text
1100	64	Port 5 Name	R	Text
1140	64	Port 6 Name	R	Text
1180	64	Port 7 Name	R	Text
11C0	64	Port 8 Name	R	Text
1200	64	Port 9 Name	R	Text
1240	64	Port 10 Name	R	Text
1280	64	Port 11 Name	R	Text
12C0	1	Port 1 State	R	Uint16
12C1	1	Port 2 State	R	Uint16
12C2	1	Port 3 State	R	Uint16
12C3	1	Port 4 State	R	Uint16

Address	Number of Registers	Description	R/W	Format
12C4	1	Port 5 State	R	Uint16
12C5	1	Port 6 State	R	Uint16
12C6	1	Port 7 State	R	Uint16
12C7	1	Port 8 State	R	Uint16
12C8	1	Port 9 State	R	Uint16
12C9	1	Port 10 State	R	Uint16
12CA	1	Port 11 State	R	Uint16
12CB	4	Port 1 Statistics – Number of packets received	R	Uint64
12CF	4	Port 2 Statistics – Number of packets received	R	Uint64
12D3	4	Port 3 Statistics – Number of packets received	R	Uint64
12D7	4	Port 4 Statistics – Number of packets received	R	Uint64
12DB	4	Port 5 Statistics – Number of packets received	R	Uint64
12DF	4	Port 6 Statistics – Number of packets received	R	Uint64
12E3	4	Port 7 Statistics – Number of packets received	R	Uint64
12E7	4	Port 8 Statistics – Number of packets received	R	Uint64
12EB	4	Port 9 Statistics – Number of packets received	R	Uint64
12EF	4	Port 10 Statistics – Number of packets received	R	Uint64

Address	Number of Registers	Description	R/W	Format
12F3	4	Port 11 Statistics – Number of packets received	R	Uint64
12F7	4	Port 1 Statistics – Number of packets sent	R	Uint64
12FB	4	Port 2 Statistics – Number of packets sent	R	Uint64
12FF	4	Port 3 Statistics – Number of packets sent	R	Uint64
1303	4	Port 4 Statistics – Number of packets sent	R	Uint64
1307	4	Port 5 Statistics – Number of packets sent	R	Uint64
130B	4	Port 6 Statistics – Number of packets sent	R	Uint64
130F	4	Port 7 Statistics – Number of packets sent	R	Uint64
1313	4	Port 8 Statistics – Number of packets sent	R	Uint64
1317	4	Port 9 Statistics – Number of packets sent	R	Uint64
131B	4	Port 10 Statistics – Number of packets sent	R	Uint64
131F	4	Port 11 Statistics – Number of packets sent	R	Uint64
1323	4	Port 1 Statistics – Number of packets received	R	Uint64

Address	Number of Registers	Description	R/W	Format
1327	4	Port 2 Statistics – Number of packets received	R	Uint64
132B	4	Port 3 Statistics – Number of packets received	R	Uint64
132F	4	Port 4 Statistics – Number of packets received	R	Uint64
1333	4	Port 5 Statistics – Number of packets received	R	Uint64
1337	4	Port 6 Statistics – Number of packets received	R	Uint64
133B	4	Port 7 Statistics – Number of packets received	R	Uint64
133F	4	Port 8 Statistics – Number of packets received	R	Uint64
1343	4	Port 9 Statistics – Number of packets received	R	Uint64
1347	4	Port 10 Statistics – Number of packets received	R	Uint64
134B	4	Port 11 Statistics – Number of packets received	R	Uint64
134F	1	Port 1 Statistics – Number of bytes sent	R	Uint64
1353	1	Port 2 Statistics – Number of bytes sent	R	Uint64
1357	1	Port 3 Statistics – Number of bytes sent	R	Uint64

Address	Number of Registers	Description	R/W	Format
135B	1	Port 4 Statistics – Number of bytes sent	R	Uint64
135F	1	Port 5 Statistics – Number of bytes sent	R	Uint64
1363	1	Port 6 Statistics – Number of bytes sent	R	Uint64
1367	1	Port 7 Statistics – Number of bytes sent	R	Uint64
136B	1	Port 8 Statistics – Number of bytes sent	R	Uint64
136F	1	Port 9 Statistics – Number of bytes sent	R	Uint64
1373	1	Port 10 Statistics – Number of bytes sent	R	Uint64
1377	1	Port 11 Statistics – Number of bytes sent	R	Uint64

Table 3: Values for Getting 15 Port Registers

Address	Number of Registers	Description	R/W	Format
1000	64	Port 1 Name	R	Text
1040	64	Port 2 Name	R	Text
1080	64	Port 3 Name	R	Text
10C0	64	Port 4 Name	R	Text
1100	64	Port 5 Name	R	Text
1140	64	Port 6 Name	R	Text
1180	64	Port 7 Name	R	Text
11C0	64	Port 8 Name	R	Text

Address	Number of Registers	Description	R/W	Format
1200	64	Port 9 Name	R	Text
1240	64	Port 10 Name	R	Text
1280	64	Port 11 Name	R	Text
12C0	64	Port 12 Name	R	Text
1300	64	Port 13 Name	R	Text
1340	64	Port 14 Name	R	Text
1380	64	Port 15 Name	R	Text
13C0	1	Port 1 Status	R	Text
13C1	1	Port 2 Status	R	Text
13C2	1	Port 3 Status	R	Text
13C3	1	Port 4 Status	R	Text
13C4	1	Port 5 Status	R	Uint16
13C5	1	Port 6 Status	R	Uint16
13C6	1	Port 7 Status	R	Uint16
13C7	1	Port 8 Status	R	Uint16
13C8	1	Port 9 Status	R	Uint16
13C9	1	Port 10 Status	R	Uint16
13CA	1	Port 11 Status	R	Uint16
13CB	1	Port 12 Status	R	Uint16
13CC	1	Port 13 Status	R	Uint16
13CD	1	Port 14 State	R	Uint16
13CE	1	Port 15 State	R	Uint16
13CF	4	Port 1 Statistics – Number of packets received	R	Uint16
13D3	4	Port 2 Statistics – Number of packets received	R	Uint16

Address	Number of Registers	Description	R/W	Format
13D7	4	Port 3 Statistics – Number of packets received	R	Uint16
13DB	4	Port 4 Statistics – Number of packets received	R	Uint16
13DF	4	Port 5 Statistics – Number of packets received	R	Uint16
13E 3	4	Port 6 Statistics – Number of packets received	R	Uint16
13E 7	4	Port 7 Statistics – Number of packets received	R	Uint16
13E B	4	Port 8 Statistics – Number of packets received	R	Uint16
13E F	4	Port 9 Statistics – Number of packets received	R	Uint64
13F3	4	Port 10 Statistics – Number of packets received	R	Uint64
13F7	4	Port 11 Statistics – Number of packets received	R	Uint64
13FB	4	Port 12 Statistics – Number of packets received	R	Uint64
13FF	4	Port 13 Statistics – Number of packets received	R	Uint64
1403	4	Port 14 Statistics – Number of packets received	R	Uint64
1407	4	Port 15 Statistics – Number of packets received	R	Uint64

Address	Number of Registers	Description	R/W	Format
140B	4	Port 1 Statistics – Number of packets sent	R	Uint64
140F	4	Port 2 Statistics – Number of packets sent	R	Uint64
1413	4	Port 3 Statistics – Number of packets sent	R	Uint64
1417	4	Port 4 Statistics – Number of packets sent	R	Uint64
141B	4	Port 5 Statistics – Number of packets sent	R	Uint64
141F	4	Port 6 Statistics – Number of packets sent	R	Uint64
1423	4	Port 7 Statistics – Number of packets sent	R	Uint64
1427	4	Port 8 Statistics – Number of packets sent	R	Uint64
142B	4	Port 9 Statistics – Number of packets sent	R	Uint64
142F	4	Port 10 Statistics – Number of packets sent	R	Uint64
1433	4	Port 11 Statistics – Number of packets sent	R	Uint64
1437	4	Port 12 Statistics – Number of packets sent	R	Uint64
143B	4	Port 13 Statistics – Number of packets sent	R	Uint64

Address	Number of Registers	Description	R/W	Format
143F	4	Port 14 Statistics – Number of packets sent	R	Uint64
1443	4	Port 15 Statistics – Number of packets sent	R	Uint64
1447	4	Port 1 Statistics – Number of bytes received	R	Uint64
144B	4	Port 2 Statistics – Number of bytes received	R	Uint64
144F	4	Port 3 Statistics – Number of bytes received	R	Uint64
1453	4	Port 4 Statistics – Number of bytes received	R	Uint64
1457	4	Port 5 Statistics – Number of bytes received	R	Uint64
145B	4	Port 6 Statistics – Number of bytes received	R	Uint64
145F	4	Port 7 Statistics – Number of bytes received	R	Uint64
1463	4	Port 8 Statistics – Number of bytes received	R	Uint64
1467	4	Port 9 Statistics – Number of bytes received	R	Uint64
146B	4	Port 10 Statistics – Number of bytes received	R	Uint64
146F	4	Port 11 Statistics – Number of bytes received	R	Uint64

Address	Number of Registers	Description	R/W	Format
1473	4	Port 12 Statistics – Number of bytes received	R	Uint64
1477	4	Port 13 Statistics – Number of bytes received	R	Uint64
147B	4	Port 14 Statistics – Number of bytes received	R	Uint64
147F	4	Port 15 Statistics – Number of bytes received	R	Uint64
1483	4	Port 1 Statistics – Number of bytes sent	R	Uint64
1487	4	Port 2 Statistics – Number of bytes sent	R	Uint64
148B	4	Port 3 Statistics – Number of bytes sent	R	Uint64
148F	4	Port 4 Statistics – Number of bytes sent	R	Uint64
1493	4	Port 5 Statistics – Number of bytes sent	R	Uint64
1497	4	Port 6 Statistics – Number of bytes sent	R	Uint64
149B	4	Port 7 Statistics – Number of bytes sent	R	Uint64
149F	4	Port 8 Statistics – Number of bytes sent	R	Uint64
14A3	4	Port 9 Statistics – Number of bytes sent	R	Uint64

Address	Number of Registers	Description	R/W	Format
14A7	4	Port 10 Statistics – Number of bytes sent	R	Uint64
14AB	4	Port 11 Statistics – Number of bytes sent	R	Uint64
14AF	4	Port 12 Statistics – Number of bytes sent	R	Uint64
14B3	4	Port 13 Statistics – Number of bytes sent	R	Uint64
14B7	4	Port 14 Statistics – Number of bytes sent	R	Uint64
14BB	4	Port 15 Statistics – Number of bytes sent	R	Uint64

Table 4: Values for Getting 19 Port Information

Address	Number of Registers	Description	R/W	Format
1000	64	Port 1 Name	R	Text
1040	64	Port 2 Name	R	Text
1080	64	Port 3 Name	R	Text
10C0	64	Port 4 Name	R	Text
1100	64	Port 5 Name	R	Text
1140	64	Port 6 Name	R	Text
1180	64	Port 7 Name	R	Text
11C0	64	Port 8 Name	R	Text
1200	64	Port 9 Name	R	Text
1240	64	Port 10 Name	R	Text
1280	64	Port 11 Name	R	Text
12C0	64	Port 12 Name	R	Text
1300	64	Port 13 Name	R	Text

Address	Number of Registers	Description	R/W	Format
1340	64	Port 14 Name	R	Text
1380	64	Port 15 Name	R	Text
13C0	64	Port 16 Name	R	Text
1400	64	Port 17 Name	R	Text
1440	64	Port 18 Name	R	Text
1480	64	Port 19 Name	R	Text
14C0	1	Port 1 State	R	Uint16
14C1	1	Port 2 State	R	Uint16
14C2	1	Port 3 State	R	Uint16
14C3	1	Port 4 State	R	Uint16
14C4	1	Port 5 State	R	Uint16
14C5	1	Port 6 State	R	Uint16
14C6	1	Port 7 State	R	Uint16
14C7	1	Port 8 State	R	Uint16
14C8	1	Port 9 State	R	Uint16
14C9	1	Port 10 State	R	Uint16
14CA	1	Port 11 State	R	Uint16
14CB	1	Port 12 State	R	Uint16
14CC	1	Port 13 State	R	Uint16
14CD	1	Port 14 State	R	Uint16
14CE	1	Port 15 State	R	Uint16
14CF	1	Port 16 State	R	Uint16
14D0	1	Port 17 State	R	Uint16
14D1	1	Port 18 State	R	Uint16
14D2	1	Port 19 State	R	Uint16
14D3	4	Port 1 Statistics – Number of packets received	R	Uint64

Address	Number of Registers	Description	R/W	Format
14D7	4	Port 2 Statistics – Number of packets received	R	Uint64
14DB	4	Port 3 Statistics – Number of packets received	R	Uint64
14DF	4	Port 4 Statistics – Number of packets received	R	Uint64
14E3	4	Port 5 Statistics – Number of packets received	R	Uint64
14E7	4	Port 6 Statistics – Number of packets received	R	Uint64
14EB	4	Port 7 Statistics – Number of packets received	R	Uint64
14EF	4	Port 8 Statistics – Number of packets received	R	Uint64
14F3	4	Port 9 Statistics – Number of packets received	R	Uint64
14F7	4	Port 10 Statistics – Number of packets received	R	Uint64
14FB	4	Port 11 Statistics – Number of packets received	R	Uint64
14FF	4	Port 12 Statistics – Number of packets received	R	Uint64
1503	4	Port 13 Statistics – Number of packets received	R	Uint64
1507	4	Port 14 Statistics – Number of packets received	R	Uint64

Address	Number of Registers	Description	R/W	Format
150B	4	Port 15 Statistics – Number of packets received	R	Uint64
150F	4	Port 16 Statistics – Number of packets received	R	Uint64
1513	4	Port 17 Statistics – Number of packets received	R	Uint64
1517	4	Port 18 Statistics – Number of packets received	R	Uint64
151B	4	Port 19 Statistics – Number of packets received	R	Uint64
151F	4	Port 1 Statistics – Number of packets sent	R	Uint64
1523	4	Port 2 Statistics – Number of packets sent	R	Uint64
1527	4	Port 3 Statistics – Number of packets sent	R	Uint64
152B	4	Port 4 Statistics – Number of packets sent	R	Uint64
152F	4	Port 5 Statistics – Number of packets sent	R	Uint64
1533	4	Port 6 Statistics – Number of packets sent	R	Uint64
1537	4	Port 7 Statistics – Number of packets sent	R	Uint64
153B	4	Port 8 Statistics – Number of packets sent	R	Uint64

Address	Number of Registers	Description	R/W	Format
153F	4	Port 9 Statistics – Number of packets sent	R	Uint64
1543	4	Port 10 Statistics – Number of packets sent	R	Uint64
1547	4	Port 11 Statistics – Number of packets sent	R	Uint64
154B	4	Port 12 Statistics – Number of packets sent	R	Uint64
154F	4	Port 13 Statistics – Number of packets sent	R	Uint64
1553	4	Port 14 Statistics – Number of packets sent	R	Uint64
1557	4	Port 15 Statistics – Number of packets sent	R	Uint64
155B	4	Port 16 Statistics – Number of packets sent	R	Uint64
155F	4	Port 17 Statistics – Number of packets sent	R	Uint64
1563	4	Port 18 Statistics – Number of packets sent	R	Uint64
1567	4	Port 19 Statistics – Number of packets sent	R	Uint64
156B	4	Port 1 Statistics – Number of bytes received	R	Uint64
156F	4	Port 2 Statistics – Number of bytes received	R	Uint64

Address	Number of Registers	Description	R/W	Format
1573	4	Port 3 Statistics – Number of bytes received	R	Uint64
1577	4	Port 4 Statistics – Number of bytes received	R	Uint64
157B	4	Port 5 Statistics – Number of bytes received	R	Uint64
157F	4	Port 6 Statistics – Number of bytes received	R	Uint64
1583	4	Port 7 Statistics – Number of bytes received	R	Uint64
1587	4	Port 8 Statistics – Number of bytes received	R	Uint64
158B	4	Port 9 Statistics – Number of bytes received	R	Uint64
158F	4	Port 10 Statistics – Number of bytes received	R	Uint64
1593	4	Port 11 Statistics – Number of bytes received	R	Uint64
1597	4	Port 12 Statistics – Number of bytes received	R	Uint64
159B	4	Port 13 Statistics – Number of bytes received	R	Uint64
159F	4	Port 14 Statistics – Number of bytes received	R	Uint64
15A3	4	Port 15 Statistics – Number of bytes received	R	Uint64

Address	Number of Registers	Description	R/W	Format
15A7	4	Port 16 Statistics – Number of bytes received	R	Uint64
15AB	4	Port 17 Statistics – Number of bytes received	R	Uint64
15AF	4	Port 18 Statistics – Number of bytes received	R	Uint64
15B3	4	Port 19 Statistics – Number of bytes received	R	Uint64
15B7	4	Port 1 Statistics – Number of bytes sent	R	Uint64
15BB	4	Port 2 Statistics – Number of bytes sent	R	Uint64
15BF	4	Port 3 Statistics – Number of bytes sent	R	Uint64
15C3	4	Port 4 Statistics – Number of bytes sent	R	Uint64
15C7	4	Port 5 Statistics – Number of bytes sent	R	Uint64
15CB	4	Port 6 Statistics – Number of bytes sent	R	Uint64
15CF	4	Port 7 Statistics – Number of bytes sent	R	Uint64
15D3	4	Port 8 Statistics – Number of bytes sent	R	Uint64
15D7	4	Port 9 Statistics – Number of bytes sent	R	Uint64

Address	Number of Registers	Description	R/W	Format
15DB	4	Port 10 Statistics – Number of bytes sent	R	Uint64
15DF	4	Port 11 Statistics – Number of bytes sent	R	Uint64
15E3	4	Port 12 Statistics – Number of bytes sent	R	Uint64
15E7	4	Port 13 Statistics – Number of bytes sent	R	Uint64
15EB	4	Port 14 Statistics – Number of bytes sent	R	Uint64
15EF	4	Port 15 Statistics – Number of bytes sent	R	Uint64
15F3	4	Port 16 Statistics – Number of bytes sent	R	Uint64
15F7	4	Port 17 Statistics – Number of bytes sent	R	Uint64
15FB	4	Port 18 Statistics – Number of bytes sent	R	Uint64

Table 5: Values for Getting Port 27 Information

Address	Number of Registers	Description	R/W	Format
1000	64	Port 1 Name	R	Text
1040	64	Port 2 Name	R	Text
1080	64	Port 3 Name	R	Text
10C0	64	Port 4 Name	R	Text
1100	64	Port 5 Name	R	Text
1140	64	Port 6 Name	R	Text

Address	Number of Registers	Description	R/W	Format
1180	64	Port 7 Name	R	Text
11C0	64	Port 8 Name	R	Text
1200	64	Port 9 Name	R	Text
1240	64	Port 10 Name	R	Text
1280	64	Port 11 Name	R	Text
12C0	64	Port 12 Name	R	Text
1300	64	Port 13 Name	R	Text
1340	64	Port 14 Name	R	Text
1380	64	Port 15 Name	R	Text
13C0	64	Port 16 Name	R	Text
1400	64	Port 17 Name	R	Text
1440	64	Port 18 Name	R	Text
1480	64	Port 19 Name	R	Text
14C0	64	Port 20 Name	R	Text
1500	64	Port 21 Name	R	Text
1540	64	Port 22 Name	R	Text
1580	64	Port 23 Name	R	Text
15C0	64	Port 24 Name	R	Text
1600	64	Port 25 Name	R	Text
1640	64	Port 26 Name	R	Text
1680	64	Port 27 Name	R	Text
16C0	1	Port 1 State	R	Uint16
16C1	1	Port 2 State	R	Uint16
16C2	1	Port 3 State	R	Uint16
16C3	1	Port 4 State	R	Uint16
16C4	1	Port 5 State	R	Uint16
16C5	1	Port 6 State	R	Uint16
16C6	1	Port 7 State	R	Uint16

Address	Number of Registers	Description	R/W	Format
16C7	1	Port 8 State	R	Uint16
16C8	1	Port 9 State	R	Uint16
16C9	1	Port 10 State	R	Uint16
16CA	1	Port 11 State	R	Uint16
16CB	1	Port 12 State	R	Uint16
16CC	1	Port 13 State	R	Uint16
16CD	1	Port 14 State	R	Uint16
16CE	1	Port 15 State	R	Uint16
16CF	1	Port 16 State	R	Uint16
16D0	1	Port 17 State	R	Uint16
16D1	1	Port 18 State	R	Uint16
16D2	1	Port 19 State	R	Uint16
16D3	1	Port 20 State	R	Uint16
16D4	1	Port 21 State	R	Uint16
16D5	1	Port 22 State	R	Uint16
16D6	1	Port 23 State	R	Uint16
16D7	1	Port 24 State	R	Uint16
16D8	1	Port 25 State	R	Uint16
16D9	1	Port 26 State	R	Uint16
16DA	1	Port 27 State	R	Uint16
16DB	4	Port 1 Statistics – Number of packets received	R	Uint64
16DF	4	Port 2 Statistics – Number of packets received	R	Uint64
16E3	4	Port 3 Statistics – Number of packets received	R	Uint64

Address	Number of Registers	Description	R/W	Format
16E7	4	Port 4 Statistics – Number of packets received	R	Uint64
16EB	4	Port 5 Statistics – Number of packets received	R	Uint64
16EF	4	Port 6 Statistics – Number of packets received	R	Uint64
16F3	4	Port 7 Statistics – Number of packets received	R	Uint64
16F7	4	Port 8 Statistics – Number of packets received	R	Uint64
16FB	4	Port 9 Statistics – Number of packets received	R	Uint64
16FF	4	Port 10 Statistics – Number of packets received	R	Uint64
1703	4	Port 11 Statistics – Number of packets received	R	Uint64
1707	4	Port 12 Statistics – Number of packets received	R	Uint64
170B	4	Port 13 Statistics – Number of packets received	R	Uint64
170F	4	Port 14 Statistics – Number of packets received	R	Uint64
1713	4	Port 15 Statistics – Number of packets received	R	Uint64
1717	4	Port 16 Statistics – Number of packets received	R	Uint64

Address	Number of Registers	Description	R/W	Format
171B	4	Port 17 Statistics – Number of packets received	R	Uint64
171F	4	Port 18 Statistics – Number of packets received	R	Uint64
1723	4	Port 19 Statistics – Number of packets received	R	Uint64
1727	4	Port 20 Statistics – Number of packets received	R	Uint64
172B	4	Port 21 Statistics – Number of packets received	R	Uint64
172F	4	Port 22 Statistics – Number of packets received	R	Uint64
1733	4	Port 23 Statistics – Number of packets received	R	Uint64
1737	4	Port 24 Statistics – Number of packets received	R	Uint64
173B	4	Port 25 Statistics – Number of packets received	R	Uint64
173F	4	Port 26 Statistics – Number of packets received	R	Uint64
1743	4	Port 27 Statistics – Number of packets received	R	Uint64
1747	4	Port 1 Statistics – Number of packets sent	R	Uint64
174B	4	Port 2 Statistics – Number of packets sent	R	Uint64

Address	Number of Registers	Description	R/W	Format
174F	4	Port 3 Statistics – Number of packets sent	R	Uint64
1753	4	Port 4 Statistics – Number of packets sent	R	Uint64
1757	4	Port 5 Statistics – Number of packets sent	R	Uint64
175B	4	Port 6 Statistics – Number of packets sent	R	Uint64
175F	4	Port 7 Statistics – Number of packets sent	R	Uint64
1763	4	Port 8 Statistics – Number of packets sent	R	Uint64
1767	4	Port 9 Statistics – Number of packets sent	R	Uint64
176B	4	Port 10 Statistics – Number of packets sent	R	Uint64
176F	4	Port 11 Statistics – Number of packets sent	R	Uint64
1773	4	Port 12 Statistics – Number of packets sent	R	Uint64
1777	4	Port 13 Statistics – Number of packets sent	R	Uint64
177B	4	Port 14 Statistics – Number of packets sent	R	Uint64
177F	4	Port 15 Statistics – Number of packets sent	R	Uint64

Address	Number of Registers	Description	R/W	Format
1783	4	Port 16 Statistics – Number of packets sent	R	Uint64
1787	4	Port 17 Statistics – Number of packets sent	R	Uint64
178B	4	Port 18 Statistics – Number of packets sent	R	Uint64
178F	4	Port 19 Statistics – Number of packets sent	R	Uint64
1793	4	Port 20 Statistics – Number of packets sent	R	Uint64
1797	4	Port 21 Statistics – Number of packets sent	R	Uint64
179B	4	Port 22 Statistics – Number of packets sent	R	Uint64
179F	4	Port 23 Statistics – Number of packets sent	R	Uint64
17A3	4	Port 24 Statistics – Number of packets sent	R	Uint64
17A7	4	Port 25 Statistics – Number of packets sent	R	Uint64
17AB	4	Port 26 Statistics – Number of packets sent	R	Uint64
17AF	4	Port 27 Statistics – Number of packets sent	R	Uint64
17B3	4	Port 1 Statistics – Number of bytes received	R	Uint64

Address	Number of Registers	Description	R/W	Format
17B7	4	Port 2 Statistics – Number of bytes received	R	Uint64
17BB	4	Port 3 Statistics – Number of bytes received	R	Uint64
17BF	4	Port 4 Statistics – Number of bytes received	R	Uint64
17C3	4	Port 5 Statistics – Number of bytes received	R	Uint64
17C7	4	Port 6 Statistics – Number of bytes received	R	Uint64
17CB	4	Port 7 Statistics – Number of bytes received	R	Uint64
17CF	4	Port 8 Statistics – Number of bytes received	R	Uint64
17D3	4	Port 9 Statistics – Number of bytes received	R	Uint64
17D7	4	Port 10 Statistics – Number of bytes received	R	Uint64
17DB	4	Port 11 Statistics – Number of bytes received	R	Uint64
17DF	4	Port 12 Statistics – Number of bytes received	R	Uint64
17E3	4	Port 13 Statistics – Number of bytes received	R	Uint64
17E7	4	Port 14 Statistics – Number of bytes received	R	Uint64

Address	Number of Registers	Description	R/W	Format
17EB	4	Port 15 Statistics – Number of bytes received	R	Uint64
17EF	4	Port 16 Statistics – Number of bytes received	R	Uint64
17F3	4	Port 17 Statistics – Number of bytes received	R	Uint64
17F7	4	Port 18 Statistics – Number of bytes received	R	Uint64
17FB	4	Port 19 Statistics – Number of bytes received	R	Uint64
17FF	4	Port 20 Statistics – Number of bytes received	R	Uint64
1803	4	Port 21 Statistics – Number of bytes received	R	Uint64
1807	4	Port 22 Statistics – Number of bytes received	R	Uint64
180B	4	Port 23 Statistics – Number of bytes received	R	Uint64
180F	4	Port 24 Statistics – Number of bytes received	R	Uint64
1813	4	Port 25 Statistics – Number of bytes received	R	Uint64
1817	4	Port 26 Statistics – Number of bytes received	R	Uint64
181B	4	Port 27 Statistics – Number of bytes received	R	Uint64

Address	Number of Registers	Description	R/W	Format
181F	4	Port 1 Statistics – Number of bytes sent	R	Uint64
1823	4	Port 2 Statistics – Number of bytes sent	R	Uint64
1827	4	Port 3 Statistics – Number of bytes sent	R	Uint64
182B	4	Port 4 Statistics – Number of bytes sent	R	Uint64
182F	4	Port 5 Statistics – Number of bytes sent	R	Uint64
1833	4	Port 6 Statistics – Number of bytes sent	R	Uint64
1837	4	Port 7 Statistics – Number of bytes sent	R	Uint64
183B	4	Port 8 Statistics – Number of bytes sent	R	Uint64
183F	4	Port 9 Statistics – Number of bytes sent	R	Uint64
1843	4	Port 10 Statistics – Number of bytes sent	R	Uint64
1847	4	Port 11 Statistics – Number of bytes sent	R	Uint64
184B	4	Port 12 Statistics – Number of bytes sent	R	Uint64
184F	4	Port 13 Statistics – Number of bytes sent	R	Uint64

Address	Number of Registers	Description	R/W	Format
1853	4	Port 14 Statistics – Number of bytes sent	R	Uint64
1857	4	Port 15 Statistics – Number of bytes sent	R	Uint64
185B	4	Port 16 Statistics – Number of bytes sent	R	Uint64
185F	4	Port 17 Statistics – Number of bytes sent	R	Uint64
1863	4	Port 18 Statistics – Number of bytes sent	R	Uint64
1867	4	Port 19 Statistics – Number of bytes sent	R	Uint64
186B	4	Port 20 Statistics – Number of bytes sent	R	Uint64
186F	4	Port 21 Statistics – Number of bytes sent	R	Uint64
1873	4	Port 22 Statistics – Number of bytes sent	R	Uint64
1877	4	Port 23 Statistics – Number of bytes sent	R	Uint64
187B	4	Port 24 Statistics – Number of bytes sent	R	Uint64
187F	4	Port 25 Statistics – Number of bytes sent	R	Uint64
1883	4	Port 26 Statistics – Number of bytes sent	R	Uint64

Address	Number of Registers	Description	R/W	Format
1887	4	Port 27 Statistics – Number of bytes sent	R	Uint64

Interpreting the Port State Value

This section provides information for determining the port state.

In the following table, the upper byte repressents the interface state, and the lower byte represents the line protocol state.

Address	Description	Value
0x1700 to 0x171B	Port state information	Upper byte: • 0x0: Interface is down • 0x1: Interface is going down • 0x2: Interface is in the initializing state • 0x3: Interface is coming up • 0x4: Interface is up and running • 0x5: Interface is reset by the user • 0x6: Interface is shut down by the user • 0x7: Interface is being deleted
		The lower byte: • 0x0: Line protocol state is down • 0x1: Line protocol state is up

Configure MODBUS

The MODBUS TCP server listens for MODBUS client requests on TCP port 502 by default. Port 502 is enabled when MODBUS server is started unless you configure a different port for MODBUS communications. The MODBUS server is disabled by default.

Note MODBUS is supported only on standalone .

To configure MODBUS:

Before you begin

If a firewall or other security services are enabled, the switch TCP port might be blocked, and the switch and the client cannot communicate. If a firewall and other security services are disabled, a denial-of-service attack might occur on the switch. To add security when using MODBUS TCP, configure an ACL to permit traffic from specific clients or configure QoS to rate-limit traffic.

Procedure

Step 1 Enter global configuration mode:

configure terminal

Step 2 Enable MODBUS TCP on the switch:

scada modbus tcp server

To disable MODBUS on the switch and return to the default settings, enter the **no scada modbus tcp server** global configuration command.

The system displays a message to warn you that starting the MODBUS TCP server is a security risk:

WARNING: Starting Modbus TCP server is a security risk. Please understand the security issues involved before proceeding further. Do you still want to start the server? [yes/no]:

Step 3 Enter **yes** to confirm that you understand the security issues and to proceed with starting the server.

Step 4 (Optional) Set the TCP port to which clients send messages:

scada modbus tcp server port *tcp-port-number*

The range for *tcp-port-number* is 1 to 65535. The default is 502.

Step 5 (Optional) Set the number of simultaneous connection requests sent to the switch:

scada modbus tcp server connection *connection-requests*

The range for *connection-requests* is 1 to 5. The default is 1.

Step 6 Return to privileged EXEC mode:

end

Example

```
Switch# configure terminal
Switch(config)# scada modbus tcp server
WARNING: Starting Modbus TCP server is a security risk. Please understand the security
issues involved
before proceeding further. Do you still want to start the server? [yes/no]: y
Switch(config)# end
```

Displaying MODBUS Commands

Use the commands listed below to display information for MODBUS TCP.

Command	Purpose
show scada modbus tcp server	Displays the server information and statistics
show scada modbus tcp server connections	Shows information and statistics for each client connection
clear scada modbus tcp server statistics	Clears all the statistics for the Modbus server, including statistics for each client connection

The following is an example of the **show scada modbus tcp server** command and its output:

```
Switch# show scada modbus tcp server
Summary: enabled, running, process id 142
Conn Stats: listening on port 801, 4 max simultaneous connections
    0 current client connections
    0 total accepted connections, 0 accept connection errors
    0 closed connections, 0 close connection errors
Send Stats: 0 tcp msgs sent, 0 tcp bytes sent, 0 tcp errors
    0 responses sent, 0 exceptions sent, 0 send errors
Recv Stats: 0 tcp msgs received, 0 tcp bytes received, 0 tcp errors
    0 requests received, 0 receive errors
```