
# MODBUS TCP Registers

This appendix lists the CGR 2010 ESM-specific read-only registers. MODBUS clients use them to communicate with a MODBUS server (i.e., the switch module). There are no writable registers. For configuration information about MODBUS TCP, see Chapter 16, "MODBUS TCP Configuration."

## System Information Registers

Memory address spaces 0x0800 through 0x0FFF are system information registers. Clients use the 0x03 Read Multiple Registers MODBUS function code. The system-information register mapping is as follows:

*Table C-1 System Information Registers*

| Address | # of Registers | Description | R/W | Format | Example/Note for SKU 1 | Example/Note for SKU 2 |
|---|---|---|---|---|---|---|
| 0x0800 | 64 | Product ID | R | Text | "IE9" | "IEA" |
| 0x0840 | 64 | Software image name | R | Text | "grwicdes-ipservicesk9-m" | "grwicdes-ipservicesk9-m" |
| 0x0880 | 64 | Software image version | R | Text | "12.2(58)EY" | "12.2(58)EY" |
| 0x08C0 | 64 | Host name | R | Text | "Switch" | "Switch" |
| 0x0900 | 1 | Number of 10/100 Ethernet ports | R | Uint16 | 0x4 | 0x8 |
| 0x0901 | 1 | Number of Gigabit Ethernet ports | R | Uint16 | 0x2 | 0x2 |
| 0x0902 | 1 | CPU board temperature (in Celsius) | R | Uint16 | Reads temperature on the switch module CPU board. | Reads temperature on the switch module CPU board. |
| 0x0903 | 1 | Ethernet Switch Module board temperature (in Celsius) | R | Uint16 | Reads temperature on the switch module SFP board. | Reads temperature on the switch module SFP board. |

## Port Information Registers

The port information registers are documented as follows:

- Table C-2 below provides the port information register mapping for the CGR 2010 ESM SFP model (GRWIC-D-ES-6S)
- Table C-3 on page C-4 provides the port information register mapping for the switch's Copper model (GRWIC-D-ES-2S-8PC)
- Table C-4 on page C-7 describes how to interpret the port state values for the switch's SFP model
- Table C-5 on page C-8 describes how to interpret the port state values for the switch's Copper model
- Table C-6 on page C-8 describes the interface-to-LPN mapping for the switch's SFP model
- Table C-7 on page C-8 describes the interface-to-LPN mapping for the switch's Copper model

# Port Information Register Mapping for SFP Model (GRWIC-D-ES-6S)

This section provides the port information register mapping for the CGR 2010 ESM SFP model (GRWIC-D-ES-6S).

Memory address spaces 0x1000 through 0x2FFF are interface registers. Clients use the 0x03 Read Multiple Registers MODBUS function code to access the registers.

*Table C-2 Port Information Registers, SFP Model*

| Address in Hex | # 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 | 1 | Port 1 state | R | Uint16 |
| 1181 | 1 | Port 2 state | R | Uint16 |
| 1182 | 1 | Port 3 state | R | Uint16 |
| 1183 | 1 | Port 4 state | R | Uint16 |
| 1184 | 1 | Port 5 state | R | Uint16 |
| 1185 | 1 | Port 6 state | R | Uint16 |
| **Values for 64-Bit Counters** | | | | |
| 1186 | 4 | Port 1 Statistics – Number of packets received | R | Uint64 |
| 118A | 4 | Port 2 Statistics – Number of packets received | R | Uint64 |
| 118E | 4 | Port 3 Statistics – Number of packets received | R | Uint64 |
| 1192 | 4 | Port 4 Statistics – Number of packets received | R | Uint64 |
| 1196 | 4 | Port 5 Statistics – Number of packets received | R | Uint64 |
| 119A | 4 | Port 6 Statistics – Number of packets received | R | Uint64 |
| 119E | 4 | Port 1 Statistics – Number of packets sent | R | Uint64 |
| 11A2 | 4 | Port 2 Statistics – Number of packets sent | R | Uint64 |

*Table C-2 Port Information Registers, SFP Model (continued)*

| Address in Hex | # of Registers | Description | R/W | Format |
|---|---|---|---|---|
| 11A6 | 4 | Port 3 Statistics – Number of packets sent | R | Uint64 |
| 11AA | 4 | Port 4 Statistics – Number of packets sent | R | Uint64 |
| 11AE | 4 | Port 5 Statistics – Number of packets sent | R | Uint64 |
| 11B2 | 4 | Port 6 Statistics – Number of packets sent | R | Uint64 |
| 11B6 | 4 | Port 1 Statistics – Number of bytes received | R | Uint64 |
| 11BA | 4 | Port 2 Statistics – Number of bytes received | R | Uint64 |
| 11BE | 4 | Port 3 Statistics – Number of bytes received | R | Uint64 |
| 11C2 | 4 | Port 4 Statistics – Number of bytes received | R | Uint64 |
| 11C6 | 4 | Port 5 Statistics – Number of bytes received | R | Uint64 |
| 11CA | 4 | Port 6 Statistics – Number of bytes received | R | Uint64 |
| 11CE | 4 | Port 1 Statistics – Number of bytes sent | R | Uint64 |
| 11D2 | 4 | Port 2 Statistics – Number of bytes sent | R | Uint64 |
| 11D6 | 4 | Port 3 Statistics – Number of bytes sent | R | Uint64 |
| 11DA | 4 | Port 4 Statistics – Number of bytes sent | R | Uint64 |
| 11DE | 4 | Port 5 Statistics – Number of bytes sent | R | Uint64 |
| 11E2 | 4 | Port 6 Statistics – Number of bytes sent | R | Uint64 |
| **Values for 32-Bit Counters** | | | | |
| 11E6 | 2 | Port 1 Statistics – Number of packets received | R | Uint32 |
| 11E8 | 2 | Port 2 Statistics – Number of packets received | R | Uint32 |
| 11EA | 2 | Port 3 Statistics – Number of packets received | R | Uint32 |
| 11EC | 2 | Port 4 Statistics – Number of packets received | R | Uint32 |
| 11EE | 2 | Port 5 Statistics – Number of packets received | R | Uint32 |
| 11F0 | 2 | Port 6 Statistics – Number of packets received | R | Uint32 |
| 11F2 | 2 | Port 1 Statistics – Number of packets sent | R | Uint32 |
| 11F4 | 2 | Port 2 Statistics – Number of packets sent | R | Uint32 |
| 11F6 | 2 | Port 3 Statistics – Number of packets sent | R | Uint32 |
| 11F8 | 2 | Port 4 Statistics – Number of packets sent | R | Uint32 |
| 11FA | 2 | Port 5 Statistics – Number of packets sent | R | Uint32 |
| 11FC | 2 | Port 6 Statistics – Number of packets sent | R | Uint32 |
| 11FE | 2 | Port 1 Statistics – Number of bytes received | R | Uint32 |
| 1200 | 2 | Port 2 Statistics – Number of bytes received | R | Uint32 |
| 1202 | 2 | Port 3 Statistics – Number of bytes received | R | Uint32 |
| 1204 | 2 | Port 4 Statistics – Number of bytes received | R | Uint32 |
| 1206 | 2 | Port 5 Statistics – Number of bytes received | R | Uint32 |
| 1208 | 2 | Port 6 Statistics – Number of bytes received | R | Uint32 |

*Table C-2 Port Information Registers, SFP Model (continued)*

| Address in Hex | # of Registers | Description | R/W | Format |
|---|---|---|---|---|
| 120A | 2 | Port 1 Statistics – Number of bytes sent | R | Uint32 |
| 120C | 2 | Port 2 Statistics – Number of bytes sent | R | Uint32 |
| 120E | 2 | Port 3 Statistics – Number of bytes sent | R | Uint32 |
| 1210 | 2 | Port 4 Statistics – Number of bytes sent | R | Uint32 |
| 1212 | 2 | Port 5 Statistics – Number of bytes sent | R | Uint32 |
| 1214 | 2 | Port 6 Statistics – Number of bytes sent | R | Uint32 |

# Port Information Register Mapping for Copper Model (GRWIC-D-ES-2S-8PC)

This section provides the port information register mapping for the CGR 2010 ESM Copper model (GRWIC-D-ES-2S-8PC).

Memory address spaces 0x1000 through 0x2FFF are interface registers. Clients use the 0x03 Read Multiple Registers MODBUS function code to access the registers.

*Table C-3 Port Information Registers, Copper Model*

| Address in Hex | # 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 | 1 | Port 1 state | R | Uint16 |
| 1281 | 1 | Port 2 state | R | Uint16 |
| 1282 | 1 | Port 3 state | R | Uint16 |
| 1283 | 1 | Port 4 state | R | Uint16 |
| 1284 | 1 | Port 5 state | R | Uint16 |
| 1285 | 1 | Port 6 state | R | Uint16 |
| 1286 | 1 | Port 7 state | R | Uint16 |
| 1287 | 1 | Port 8 state | R | Uint16 |
| 1288 | 1 | Port 9 state | R | Uint16 |

*Table C-3 Port Information Registers, Copper Model (continued)*

| Address in Hex | # of Registers | Description | R/W | Format |
|---|---|---|---|---|
| 1289 | 1 | Port 10 state | R | Uint16 |
| **Values for 64-Bit Counters** | | | | |
| 128A | 4 | Port 1 Statistics – Number of packets received | R | Uint64 |
| 128E | 4 | Port 2 Statistics – Number of packets received | R | Uint64 |
| 1292 | 4 | Port 3 Statistics – Number of packets received | R | Uint64 |
| 1296 | 4 | Port 4 Statistics – Number of packets received | R | Uint64 |
| 129A | 4 | Port 5 Statistics – Number of packets received | R | Uint64 |
| 129E | 4 | Port 6 Statistics – Number of packets received | R | Uint64 |
| 12A2 | 4 | Port 7 Statistics – Number of packets received | R | Uint64 |
| 12A6 | 4 | Port 8 Statistics – Number of packets received | R | Uint64 |
| 12AA | 4 | Port 9 Statistics – Number of packets received | R | Uint64 |
| 12AE | 4 | Port 10 Statistics – Number of packets received | R | Uint64 |
| 12B2 | 4 | Port 1 Statistics – Number of packets sent | R | Uint64 |
| 12B6 | 4 | Port 2 Statistics – Number of packets sent | R | Uint64 |
| 12BA | 4 | Port 3 Statistics – Number of packets sent | R | Uint64 |
| 12BE | 4 | Port 4 Statistics – Number of packets sent | R | Uint64 |
| 12C2 | 4 | Port 5 Statistics – Number of packets sent | R | Uint64 |
| 12C6 | 4 | Port 6 Statistics – Number of packets sent | R | Uint64 |
| 12CA | 4 | Port 7 Statistics – Number of packets sent | R | Uint64 |
| 12CE | 4 | Port 8 Statistics – Number of packets sent | R | Uint64 |
| 12D2 | 4 | Port 9 Statistics – Number of packets sent | R | Uint64 |
| 12D6 | 4 | Port 10 Statistics – Number of packets sent | R | Uint64 |
| 12DA | 4 | Port 1 Statistics – Number of bytes received | R | Uint64 |
| 12DE | 4 | Port 2 Statistics – Number of bytes received | R | Uint64 |
| 12E2 | 4 | Port 3 Statistics – Number of bytes received | R | Uint64 |
| 12E6 | 4 | Port 4 Statistics – Number of bytes received | R | Uint64 |
| 12EA | 4 | Port 5 Statistics – Number of bytes received | R | Uint64 |
| 12EE | 4 | Port 6 Statistics – Number of bytes received | R | Uint64 |
| 12F2 | 4 | Port 7 Statistics – Number of bytes received | R | Uint64 |
| 12F6 | 4 | Port 8 Statistics – Number of bytes received | R | Uint64 |
| 12FA | 4 | Port 9 Statistics – Number of bytes received | R | Uint64 |

*Table C-3 Port Information Registers, Copper Model (continued)*

| Address in Hex | # of Registers | Description | R/W | Format |
|---|---|---|---|---|
| 12FE | 4 | Port 10 Statistics – Number of bytes received | R | Uint64 |
| 1302 | 4 | Port 1 Statistics – Number of bytes sent | R | Uint64 |
| 1306 | 4 | Port 2 Statistics – Number of bytes sent | R | Uint64 |
| 130A | 4 | Port 3 Statistics – Number of bytes sent | R | Uint64 |
| 130E | 4 | Port 4 Statistics – Number of bytes sent | R | Uint64 |
| 1312 | 4 | Port 5 Statistics – Number of bytes sent | R | Uint64 |
| 1316 | 4 | Port 6 Statistics – Number of bytes sent | R | Uint64 |
| 131A | 4 | Port 7 Statistics – Number of bytes sent | R | Uint64 |
| 131E | 4 | Port 8 Statistics – Number of bytes sent | R | Uint64 |
| 1322 | 4 | Port 9 Statistics – Number of bytes sent | R | Uint64 |
| 1326 | 4 | Port 10 Statistics – Number of bytes sent | R | Uint64 |
| **Values for 32-Bit Counters** | | | | |
| 132A | 2 | Port 1 Statistics – Number of packets received | R | Uint32 |
| 132C | 2 | Port 2 Statistics – Number of packets received | R | Uint32 |
| 132E | 2 | Port 3 Statistics – Number of packets received | R | Uint32 |
| 1330 | 2 | Port 4 Statistics – Number of packets received | R | Uint32 |
| 1332 | 2 | Port 5 Statistics – Number of packets received | R | Uint32 |
| 1334 | 2 | Port 6 Statistics – Number of packets received | R | Uint32 |
| 1336 | 2 | Port 7 Statistics – Number of packets received | R | Uint32 |
| 1338 | 2 | Port 8 Statistics – Number of packets received | R | Uint32 |
| 133A | 2 | Port 9 Statistics – Number of packets received | R | Uint32 |
| 133C | 2 | Port 10 Statistics – Number of packets received | R | Uint32 |
| 133E | 2 | Port 1 Statistics – Number of packets sent | R | Uint32 |
| 1340 | 2 | Port 2 Statistics – Number of packets sent | R | Uint32 |
| 1342 | 2 | Port 3 Statistics – Number of packets sent | R | Uint32 |
| 1344 | 2 | Port 4 Statistics – Number of packets sent | R | Uint32 |
| 1346 | 2 | Port 5 Statistics – Number of packets sent | R | Uint32 |
| 1348 | 2 | Port 6 Statistics – Number of packets sent | R | Uint32 |
| 134A | 2 | Port 7 Statistics – Number of packets sent | R | Uint32 |
| 134C | 2 | Port 8 Statistics – Number of packets sent | R | Uint32 |
| 134E | 2 | Port 9 Statistics – Number of packets sent | R | Uint32 |
| 1350 | 2 | Port 10 Statistics – Number of packets sent | R | Uint32 |
| 1352 | 2 | Port 1 Statistics – Number of bytes received | R | Uint32 |
| 1354 | 2 | Port 2 Statistics – Number of bytes received | R | Uint32 |
| 1356 | 2 | Port 3 Statistics – Number of bytes received | R | Uint32 |

*Table C-3 Port Information Registers, Copper Model (continued)*

| Address in Hex | # of Registers | Description | R/W | Format |
|---|---|---|---|---|
| 1358 | 2 | Port 4 Statistics – Number of bytes received | R | Uint32 |
| 135A | 2 | Port 5 Statistics – Number of bytes received | R | Uint32 |
| 135C | 2 | Port 6 Statistics – Number of bytes received | R | Uint32 |
| 135E | 2 | Port 7 Statistics – Number of bytes received | R | Uint32 |
| 1360 | 2 | Port 8 Statistics – Number of bytes received | R | Uint32 |
| 1362 | 2 | Port 9 Statistics – Number of bytes received | R | Uint32 |
| 1364 | 2 | Port 01 Statistics – Number of bytes received | R | Uint32 |
| 1366 | 2 | Port 1 Statistics – Number of bytes sent | R | Uint32 |
| 1368 | 2 | Port 2 Statistics – Number of bytes sent | R | Uint32 |
| 136A | 2 | Port 3 Statistics – Number of bytes sent | R | Uint32 |
| 136C | 2 | Port 4 Statistics – Number of bytes sent | R | Uint32 |
| 136E | 2 | Port 5 Statistics – Number of bytes sent | R | Uint32 |
| 1370 | 2 | Port 6 Statistics – Number of bytes sent | R | Uint32 |
| 1372 | 2 | Port 7 Statistics – Number of bytes sent | R | Uint32 |
| 1374 | 2 | Port 8 Statistics – Number of bytes sent | R | Uint32 |
| 1376 | 2 | Port 9 Statistics – Number of bytes sent | R | Uint32 |
| 1378 | 2 | Port 10 Statistics – Number of bytes sent | R | Uint32 |

# Interpreting the Port State for the Switch Module SFP Model

*Table C-4 Port Information: Interpreting the Port State for GRWIC-D-6S (SFP Model)*

| Address | Description | Value |
|---|---|---|
| 0x1180<br>to<br>0x1185 | Port 1 state<br>to<br>Port 6 state | The upper byte represents the interface state:<br>• 0x0: Interface is down<br>• 0x1: Interface is going down<br>• 0x2: Interface is in the initializing state<br>• 0x3: Interface is coming up<br>• 0x4: Interface is up and running<br>• 0x5: Interface is reset by the user<br>• 0x6: Interface is shut down by the user<br>• 0x7: Interface is being deleted<br>The lower byte represents the line protocol state:<br>• 0x1: Line protocol state is up<br>• 0x0: Line protocol state is down |

# Interpreting the Port State for the Switch Module Copper Model

*Table C-5 Port Information: Interpreting the Port State for GRWIC-D-2S-8PC (Copper Model)*

| Address | Description | Value |
|---|---|---|
| 0x1280<br>to<br>0x1289 | Port 1 state<br>to<br>Port 6 state | The upper byte represents the interface state:<br>• 0x0: Interface is down<br>• 0x1: Interface is going down<br>• 0x2: Interface is in the initializing state<br>• 0x3: Interface is coming up<br>• 0x4: Interface is up and running<br>• 0x5: Interface is reset by the user<br>• 0x6: Interface is shut down by the user<br>• 0x7: Interface is being deleted<br>The lower byte represents the line protocol state:<br>• 0x1: Line protocol state is up<br>• 0x0: Line protocol state is down |

# Interface-to-LPN Mapping for the Switch Module SFP Model

*Table C-6 Interface-to-LPN Mapping for GRWIC-D-6S (SFP Model)*

| Interface | LPN |
|---|---|
| Fast Ethernet 0/1 | 1 |
| Fast Ethernet 0/2 | 2 |
| Fast Ethernet 0/3 | 3 |
| Fast Ethernet 0/4 | 4 |
| Gigabit Ethernet 0/1 | 13 |
| Gigabit Ethernet 0/2 | 14 |

# Interface-to-LPN Mapping for the Switch Module Copper Model

*Table C-7 Interface-to-LPN Mapping for GRWIC-D-2S-8PC (Copper Model)*

| Interface | LPN |
|---|---|
| Fast Ethernet 0/1 | 1 |
| Fast Ethernet 0/2 | 2 |
| Fast Ethernet 0/3 | 3 |
| Fast Ethernet 0/4 | 4 |

*Table C-7 Interface-to-LPN Mapping for GRWIC-D-2S-8PC (Copper Model)*

| Interface | LPN |
|---|---|
| Fast Ethernet 0/5 | 5 |
| Fast Ethernet 0/6 | 6 |
| Fast Ethernet 0/7 | 7 |
| Fast Ethernet 0/8 | 8 |
| Gigabit Ethernet 0/1 | 17 |
| Gigabit Ethernet 0/2 | 18 |