# Conext™ Gateway

Modbus Interface Specification (503)
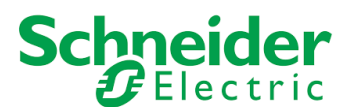
Conext™ MPPT 60 150 Solar Charge Controllers

990-6269A

Feb 13, 2020

Conext MPPT 60 150

**Schneider Electric**

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# Revision History

| Rev | Date | Description of Change |
|---|---|---|
| A | Feb 13, 2020 | v1.06 Firmware Release |

# Document Applicability

This Modbus map applies to the following products:

| Product ID | Product Description |
|---|---|
| 865-1030 | MPPT60-150 |
| 865-1030-02 | MPPT 60-150 |
| 865-1030-1 | MPPT 60-150 |

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## ⚠WARNING

**UNINTENDED OPERATION**

The use of this product with Modbus communications requires expertise in the design, operation, and programming of the device. Only qualified personnel should program, install, alter, and commission this product. Unless specified, information on safety, specifications, installation and operation is as shown in the primary documentation received with the product. Qualified personnel must be familiar with that information before proceeding. When writing values to the device, you must ensure other persons are not working with the device.

**Failure to follow these instructions can result in death or serious injury, and/or equipment damage.**

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## ⚠WARNING

**LOSS OF CONTROL**

Do not assign the same address to two Modbus devices. The entire serial bus may behave unexpectedly if the master device cannot communicate with all the slave devices on the bus.

**Failure to follow these instructions can result in death or serious injury, and/or equipment damage.**

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## Overview

This document describes the structure of the Modbus register address map, which is used to configure, control, and monitor the device. Use this document in conjunction with the device Owner's Guide. The information in this document is intended for use only by qualified personnel who have a detailed technical understanding of the Modbus protocol. The Modbus map is divided into rows of Modbus registers. Each row indicates the Modbus register address, its name, data type, access type, units, scale, offset, and applicable notes as required. External Modbus master devices, such as the Schneider Electric M340 PLC, can read and write the Modbus registers to configure, control, or monitor the device remotely.

## Writing Modbus Registers

Modbus does not provide an error response when data written to a Modbus register is out of range or invalid. To confirm that a Modbus register is correctly written, you should read it back and compare it with the expected value. For descriptions of settings and their valid values, refer to the product's Owner's Guide.

## Supported Modbus Data Types

| Data Type | Description |
|---|---|
| uint16 | unsigned 16-bit integer [0,65535] |
| sint16 | signed 16-bit integer [-32768,32767] |
| uint32 | unsigned 32-bit integer [0,4294967295] |
| sint32 | signed 32-bit integer [-2147483648,2147483647] |
| str<nn> | packed 8-bit character string, where <nn>is the length of characters in the string. Two characters are packed into each Modbus register. Example: str20 = 20-character string (packed into 10 Modbus registers) str16 = 16-character string (packed into 8 Modbus registers) |

## Modbus Device Addressing

The Modbus slave address registers are automatically assigned on a first come, first served basis. The first detected device is assigned to the start of the address range. Subsequently added devices are assigned the next available address in the range.

Once assigned, the modbus slave address is associated to the serial number of the device, ensuring the consistency of the modbus address for the lifetime of the installation.

If Modbus slave addresses need to be changed, the Conext Gateway can be reset to its factory defaults and devices added one by one to establish the desired modbus address mapping.

| | |
|---|---|
| ModbusTCP port | 503 |
| Modbus Slave Address Range | [ 30 .. 49 ] |

## Modbus Register Addressing

The Register Number is the 1-based register identifier. Some 3rd party Modbus tools require 1-based register addressing.

The Register Address is the zero-based register address representing the register address as it is transmitted on-the-wire inside the Modbus data frame.

# Modbus Error Response

The Modbus Server will respond with a 02 ILLEGAL DATA ADDRESS error if an attempt is made to read/write registers which don't exist or if a request is made to read only part of a 32-bit register. This error will also be thrown if a read/write address range contains a data point which does not exist, or if the read/write address range starts or ends halfway through a 32-bit word.

A blank row in the Modbus Register map indicates a boundary between sets of contiguous registers. Multi-register reads/writes across these boundaries will result in a 02 ILLEGAL DATA ADDRESS error

# Modbus Cybersecurity Considerations

⚠**WARNING**

**CYBERSECURITY RISK: POTENTIAL COMPROMISE OF SYSTEM AVAILABILITY, INTEGRITY, AND CONFIDENTIALITY**

Always secure the Local Area Network on which the Conext Gateway is connected. Modbus TCP must NEVER be routed over a public network. Use cybersecurity best practices to help prevent unauthorized access.

**Failure to follow these instructions can result in unintended access to sensitive or secure customer data, permanent loss of data, and equipment damage.**

Modbus TCP is a legacy protocol in widespread use within the Solar industry. It is appreciated by system operators due to its simplicity and ease of use in control and monitoring applications. However, Modbus TCP is an insecure protocol which does not provide any data security, encryption, or authentication.

Anyone with access to the local area network on which the Conext Gateway is connected can monitor and control the power conversion devices attached to the Conext Gateway.

Modbus TCP should only be used on trusted, private, and highly secure local area networks for local control and monitoring applications only. Failure to properly secure the Local Area Network on which the Conext Gateway is connected can allow a remote attacker to compromise your power system installation.

# 1   Register Map for Conext<sup>TM</sup> MPPT 60 150 Solar Charge Controllers

| Reg. No. | Reg. Addr. | Name | Type | R/W | Units | Scale | Offset | Notes |
|---|---|---|---|---|---|---|---|---|
| 1 | 0x0000 | Device Name | str16 | r | | | | |
| 9 | 0x0008 | reserved | uint16 | r | | | | |
| 10 | 0x0009 | reserved | uint16 | r | | | | |
| 11 | 0x000A | FGA Number | str20 | r | | | | |
| 21 | 0x0014 | Unique ID Number | uint32 | r | | | | |
| 31 | 0x001E | Firmware Version | uint32 | r | | | | |
| 41 | 0x0028 | Modbus Slave Address (Port 503) | uint16 | rw | | 1.0 | 0.0 | |
| 42 | 0x0029 | Device Number | uint16 | r | | 1.0 | 0.0 | |
| 43 | 0x002A | System Instance | uint16 | r | | 1.0 | 0.0 | |
| 44 | 0x002B | Hardware Serial Number | str20 | r | | | | |
| 54 | 0x0035 | Configuration Status | uint16 | r | | 1.0 | 0.0 | 0=Refreshing 1=Done |
| 55 | 0x0036 | Configuration Refresh Counter | uint32 | r | | 1.0 | 0.0 | |
| 65 | 0x0040 | Device State | uint16 | r | | 1.0 | 0.0 | See section 2.1 |
| 66 | 0x0041 | Charger Enabled Status | uint16 | r | | 1.0 | 0.0 | 0=Disabled 1=Enabled |
| 67 | 0x0042 | Device Present | uint16 | r | | 1.0 | 0.0 | 0=Inactive (all data invalid) 1=Active (data valid) |
| 68 | 0x0043 | Charge Mode Status | uint16 | r | | 1.0 | 0.0 | 0=Stand alone 1=Primary 2=Secondary |
| 69 | 0x0044 | Active Faults | uint16 | r | | 1.0 | 0.0 | 0=No Active Faults 1=Has Active Faults |
| 70 | 0x0045 | Active Warnings | uint16 | r | | 1.0 | 0.0 | 0=No Active Warnings 1=Has Active Warnings |
| 71 | 0x0046 | Fault Bitmap 0 | uint16 | r | | 1.0 | 0.0 | See section 2.2 |

| Reg. No. | Reg. Addr. | Name | Type | R/W | Units | Scale | Offset | Notes |
|---|---|---|---|---|---|---|---|---|
| 72 | 0x0047 | Fault Bitmap 1 | uint16 | r | | 1.0 | 0.0 | See section 2.3 |
| 73 | 0x0048 | Warning Bitmap 0 | uint16 | r | | 1.0 | 0.0 | See section 2.4 |
| 74 | 0x0049 | Charger Status | uint16 | r | | 1.0 | 0.0 | See section 2.5 |
| 75 | 0x004A | Configuration Errors | uint32 | r | | 1.0 | 0.0 | |
| 77 | 0x004C | PV Voltage | uint32 | r | V | 0.001 | 0.0 | |
| 79 | 0x004E | PV Current | uint32 | r | A | 0.001 | 0.0 | |
| 81 | 0x0050 | PV Power | uint32 | r | W | 1.0 | 0.0 | |
| | | | | | | | | |
| 87 | 0x0056 | Battery Temperature | uint16 | r | degC | 0.01 | -273.0 | |
| 88 | 0x0057 | reserved | uint16 | r | | | | |
| 89 | 0x0058 | DC Output Voltage | sint32 | r | V | 0.001 | 0.0 | |
| 91 | 0x005A | DC Output Current | sint32 | r | A | 0.001 | 0.0 | |
| 93 | 0x005C | DC Output Power | uint32 | r | W | 1.0 | 0.0 | |
| 95 | 0x005E | DC Power Output Percentage | uint16 | r | % | 1.0 | 0.0 | |
| 96 | 0x005F | Auxiliary Output Status | uint16 | r | | 1.0 | 0.0 | See section 2.6 |
| 97 | 0x0060 | Auxiliary Output Voltage | sint32 | r | V | 0.001 | 0.0 | |
| 99 | 0x0062 | reserved | uint16 | r | | | | |
| 100 | 0x0063 | reserved | uint16 | r | | | | |
| 101 | 0x0064 | Auxiliary Output On Reason | uint16 | r | | 1.0 | 0.0 | See section 2.7 |
| 102 | 0x0065 | Auxiliary Output Off Reason | uint16 | r | | 1.0 | 0.0 | See section 2.8 |
| 103 | 0x0066 | Energy From PV This Hour | uint32 | r | kWh | 0.001 | 0.0 | |
| 105 | 0x0068 | PV Input Active This Hour | uint32 | r | s | 1.0 | 0.0 | |
| 107 | 0x006A | Energy From PV Today | uint32 | r | kWh | 0.001 | 0.0 | |
| 109 | 0x006C | PV Input Active Today | uint32 | r | s | 1.0 | 0.0 | |
| 111 | 0x006E | Energy From PV This Week | uint32 | r | kWh | 0.001 | 0.0 | |
| 113 | 0x0070 | PV Input Active This Week | uint32 | r | s | 1.0 | 0.0 | |
| 115 | 0x0072 | Energy From PV This Month | uint32 | r | kWh | 0.001 | 0.0 | |
| 117 | 0x0074 | PV Input Active This Month | uint32 | r | s | 1.0 | 0.0 | |

| Reg. No. | Reg. Addr. | Name | Type | R/W | Units | Scale | Offset | Notes |
|----------|-----------|------|------|-----|-------|-------|--------|-------|
| 119 | 0x0076 | Energy From PV This Year | uint32 | r | kWh | 0.001 | 0.0 | |
| 121 | 0x0078 | PV Input Active This Year | uint32 | r | s | 1.0 | 0.0 | |
| 123 | 0x007A | Energy From PV Lifetime | uint32 | r | kWh | 0.001 | 0.0 | |
| 125 | 0x007C | PV Input Active Lifetime | uint32 | r | s | 1.0 | 0.0 | |
| 127 | 0x007E | Energy To Battery This Hour | uint32 | r | kWh | 0.001 | 0.0 | |
| 129 | 0x0080 | Battery Charge Active This Hour | uint32 | r | s | 1.0 | 0.0 | |
| 131 | 0x0082 | Energy To Battery Today | uint32 | r | kWh | 0.001 | 0.0 | |
| 133 | 0x0084 | Battery Charge Active Today | uint32 | r | s | 1.0 | 0.0 | |
| 135 | 0x0086 | Energy To Battery This Week | uint32 | r | kWh | 0.001 | 0.0 | |
| 137 | 0x0088 | Battery Charge Active This Week | uint32 | r | s | 1.0 | 0.0 | |
| 139 | 0x008A | Energy To Battery This Month | uint32 | r | kWh | 0.001 | 0.0 | |
| 141 | 0x008C | Battery Charge Active This Month | uint32 | r | s | 1.0 | 0.0 | |
| 143 | 0x008E | Energy To Battery This Year | uint32 | r | kWh | 0.001 | 0.0 | |
| 145 | 0x0090 | Battery Charge Active This Year | uint32 | r | s | 1.0 | 0.0 | |
| 147 | 0x0092 | Energy To Battery Lifetime | uint32 | r | kWh | 0.001 | 0.0 | |
| 149 | 0x0094 | Battery Charge Active Lifetime | uint32 | r | s | 1.0 | 0.0 | |
| | | | | | | | | |
| 161 | 0x00A0 | Maximum Power Point Tracking | uint16 | rw | | 1.0 | 0.0 | 0=Disabled 1=Enabled |
| 162 | 0x00A1 | reserved | uint16 | r | | | | |
| 163 | 0x00A2 | MPPT Reference Voltage | uint32 | rw | V | 0.001 | 0.0 | |
| 165 | 0x00A4 | reserved | uint16 | r | | | | |
| 166 | 0x00A5 | Battery Type | uint16 | rw | | 1.0 | 0.0 | See section 2.9 |

| Reg. No. | Reg. Addr. | Name | Type | R/W | Units | Scale | Offset | Notes |
|---|---|---|---|---|---|---|---|---|
| 167 | 0x00A6 | Nominal Battery Voltage | uint32 | rw | V | 0.001 | 0.0 | See section 2.10 |
| 169 | 0x00A8 | Battery Bank Capacity | uint16 | rw | Ah | 1.0 | 0.0 | |
| 170 | 0x00A9 | Battery Temperature Coefficient | uint16 | rw | mV/degC | 1.0 | 0.0 | |
| 171 | 0x00AA | Force Charger State | uint16 | rw | | 1.0 | 0.0 | 1=Bulk<br>2=Float<br>3=No Float |
| 172 | 0x00AB | Reset | uint16 | rw | | 1.0 | 0.0 | 0=Reboot<br>2=Reset to Factory |
| 173 | 0x00AC | Operating Mode | uint16 | rw | | 1.0 | 0.0 | 2=Standby<br>3=Operating |
| 174 | 0x00AD | Clear | uint16 | rw | | 1.0 | 0.0 | See section 2.11 |
| 175 | 0x00AE | Equalize Voltage Set Point | uint32 | rw | V | 0.001 | 0.0 | |
| 177 | 0x00B0 | Bulk/Boost Voltage Set Point | uint32 | rw | V | 0.001 | 0.0 | |
| 179 | 0x00B2 | Float Voltage Set Point | uint32 | rw | V | 0.001 | 0.0 | |
| 181 | 0x00B4 | Recharge Voltage | uint32 | rw | V | 0.001 | 0.0 | |
| 183 | 0x00B6 | Absorption Voltage Set Point | uint32 | rw | V | 0.001 | 0.0 | |
| 185 | 0x00B8 | Absorption Time | uint16 | rw | min | 0.016667 | 0.0 | |
| 186 | 0x00B9 | Charge Cycle | uint16 | rw | | 1.0 | 0.0 | 1=3 Stage<br>2=2 Stage (No Float) |
| 187 | 0x00BA | Maximum Charge Rate | uint16 | rw | % | 1.0 | 0.0 | |
| 188 | 0x00BB | Equalize Now | uint16 | rw | | 1.0 | 0.0 | 0=Disabled<br>1=Enabled |
| 189 | 0x00BC | reserved | uint16 | r | | | | |
| 190 | 0x00BD | reserved | uint16 | r | | | | |
| 191 | 0x00BE | Charge Mode | uint16 | rw | | 1.0 | 0.0 | See section 2.12 |
| 192 | 0x00BF | Default Battery Temperature | uint16 | rw | | 1.0 | 0.0 | 0=Cold<br>1=Warm<br>2=Hot |
| 193 | 0x00C0 | Identify Enable | uint16 | rw | | 1.0 | 0.0 | 0=Disabled<br>1=Enabled |

| Reg. No. | Reg. Addr. | Name | Type | R/W | Units | Scale | Offset | Notes |
|---|---|---|---|---|---|---|---|---|
| 194 | 0x00C1 | Auxiliary Output Active Level | uint16 | rw | | 1.0 | 0.0 | 0=Active Low 1=Active High |
| 195 | 0x00C2 | Auxiliary Output Voltage | uint32 | rw | V | 0.001 | 0.0 | |
| 197 | 0x00C4 | Manual Aux | uint16 | rw | | 1.0 | 0.0 | 0=Manual Off 1=Manual On 2=Automatic |
| 198 | 0x00C5 | reserved | uint16 | r | | | | |
| 199 | 0x00C6 | Auxiliary Output Trigger Source | uint16 | rw | | 1.0 | 0.0 | See section 2.13 |
| 200 | 0x00C7 | reserved | uint16 | r | | | | |
| 201 | 0x00C8 | Low Battery Voltage Trigger Set | uint32 | rw | V | 0.001 | 0.0 | |
| 203 | 0x00CA | Low Battery Voltage Trigger Set Delay | uint16 | rw | s | 0.01 | 0.0 | |
| 204 | 0x00CB | reserved | uint16 | r | | | | |
| 205 | 0x00CC | Low Battery Voltage Trigger Clear | uint32 | rw | V | 0.001 | 0.0 | |
| 207 | 0x00CE | Low Battery Voltage Trigger Clear Delay | uint16 | rw | s | 0.01 | 0.0 | |
| 208 | 0x00CF | reserved | uint16 | r | | | | |
| 209 | 0x00D0 | High Battery Voltage Trigger Set | uint32 | rw | V | 0.001 | 0.0 | |
| 211 | 0x00D2 | High Battery Voltage Trigger Set Delay | uint16 | rw | s | 0.01 | 0.0 | |
| 212 | 0x00D3 | reserved | uint16 | r | | | | |
| 213 | 0x00D4 | High Battery Voltage Trigger Clear | uint32 | rw | V | 0.001 | 0.0 | |
| 215 | 0x00D6 | High Battery Voltage Trigger Clear Delay | uint16 | rw | s | 0.01 | 0.0 | |
| 216 | 0x00D7 | reserved | uint16 | r | | | | |
| 217 | 0x00D8 | High Array Voltage Trigger Set | uint32 | rw | V | 0.001 | 0.0 | |
| 219 | 0x00DA | High Array Voltage Trigger Set Delay | uint16 | rw | s | 0.01 | 0.0 | |
| 220 | 0x00DB | reserved | uint16 | r | | | | |
| 221 | 0x00DC | High Array Voltage Trigger Clear | uint32 | rw | V | 0.001 | 0.0 | |
| 223 | 0x00DE | High Array Voltage Trigger Clear Delay | uint16 | rw | s | 0.01 | 0.0 | |

| Reg. No. | Reg. Addr. | Name | Type | R/W | Units | Scale | Offset | Notes |
|---|---|---|---|---|---|---|---|---|
| 224 | 0x00DF | reserved | uint16 | r | | | | |
| 225 | 0x00E0 | Low Battery Temperature Trigger Set | uint32 | rw | degC | 0.001 | -273.0 | |
| 227 | 0x00E2 | Low Battery Temperature Trigger Set Delay | uint16 | rw | s | 0.01 | 0.0 | |
| 228 | 0x00E3 | reserved | uint16 | r | | | | |
| 229 | 0x00E4 | Low Battery Temperature Trigger Clear | uint32 | rw | degC | 0.001 | -273.0 | |
| 231 | 0x00E6 | Low Battery Temperature Trigger Clear Delay | uint16 | rw | s | 0.01 | 0.0 | |
| 232 | 0x00E7 | reserved | uint16 | r | | | | |
| 233 | 0x00E8 | High Battery Temperature Trigger Set | uint32 | rw | degC | 0.001 | -273.0 | |
| 235 | 0x00EA | High Battery Temperature Trigger Set Delay | uint16 | rw | s | 0.01 | 0.0 | |
| 236 | 0x00EB | reserved | uint16 | r | | | | |
| 237 | 0x00EC | High Battery Temperature Trigger Clear | uint32 | rw | degC | 0.001 | -273.0 | |
| 239 | 0x00EE | High Battery Temperature Trigger Clear Delay | uint16 | rw | s | 0.01 | 0.0 | |
| 240 | 0x00EF | reserved | uint16 | r | | | | |
| 241 | 0x00F0 | High Heatsink Temperature Trigger Set | uint32 | rw | degC | 0.001 | -273.0 | |
| 243 | 0x00F2 | High Heatsink Temperature Trigger Set Delay | uint16 | rw | s | 0.01 | 0.0 | |
| 244 | 0x00F3 | reserved | uint16 | r | | | | |
| 245 | 0x00F4 | High Heatsink Temperature Trigger Clear | uint32 | rw | degC | 0.001 | -273.0 | |
| 247 | 0x00F6 | High Heatsink Temperature Trigger Clear Delay | uint16 | rw | s | 0.01 | 0.0 | |

| Reg. No. | Reg. Addr. | Name | Type | R/W | Units | Scale | Offset | Notes |
|---|---|---|---|---|---|---|---|---|
| 248 | 0x00F7 | reserved | uint16 | r | | | | |
| 249 | 0x00F8 | Refresh Configuration Data | uint16 | rw | | 1.0 | 0.0 | 1=Refresh |
| 250 | 0x00F9 | DC Input Association (PV) | uint16 | rw | | 1.0 | 0.0 | See section 2.14 |
| 251 | 0x00FA | Battery Association | uint16 | rw | | 1.0 | 0.0 | See section 2.15 |

# 2   Data Point Enumerations

## 2.1   Charge Controller Operating State

The following operating states may be reported:

0=Hibernate
1=Power Save
2=Safe Mode
3=Operating
4=Diagnostic Mode
5=Remote Power Off
255=Data Not Available

## 2.2   Fault Bitmap0 Values

The fault bitmap indicates one or more device faults. One or more of the following bits may be set:

bit0=F2:Capacitor Over-Temperature
bit1=F4:Battery Over-Temperature
bit2=F5:Ambient Over-Temperature
bit3=F9:DC Over-Voltage
bit4=F10:Output Under-Voltage Immediate
bit5=F11:Output Under-Voltage
bit6=F26:Auxiliary Power Supply
bit7=F30:Battery Under-Temperature
bit8=F54:Auxiliary Power Supply
bit9=F55:Heatsink Over-Temperature
bit10=F56:Ground Fault
bit11=F69:Configuration Fault
bit12=F70:DC Over-Voltage
bit13=F71:DC Over-current

bit14=F72:SPS Overload
bit15=F73:Slow Output Over-Current

## 2.3   Fault Bitmap1 Values

The fault bitmap indicates one or more device faults. One or more of the following bits may be set:

bit0=F74:Input Over-Voltage
bit1=F75:Fan Over-Voltage
bit2=F76:Fan Over-Current
bit3=F77:Input Over-Current
bit4=F78:Output Over-Current
bit5=F79:Fan Over-Current
bit6=F80:Fan Under-Voltage
bit7=F81:Fan Under-Current
bit8=F82:Network Power Supply Failure
bit9=F90:External BMS Disconnected

## 2.4   Warning Bitmap Values

The warning bitmap indicates one or more device warnings.

bit0=W11:DC Input Over Voltage Warning

## 2.5   Charge Controller Status

The Charge Controller Status register indicates the device's charge mode. Valid values are:

768=Not Charging
769=Bulk
770=Absorption
771=Overcharge
772=Equalize
773=Float
774=No Float
775=Constant VI
776=Charger Disabled
777=Qualifying AC
778=Qualifying APS
779=Engaging Charger

780=Charge Fault
781=Charger Suspend
782=AC Good
783=APS Good
784=AC Fault
785=Charge
786=Absorption Exit Pending
787=Ground Fault
788=AC Good Pending

## 2.6   Auxiliary Output Status

The Auxiliary Output Relay can be in one of the following operating states:

1=AutoOn
2=Auto Off
3=Manual On
4=Manual Off

## 2.7   Auxiliary Output On Reason

This status indicates the reason the auxiliary output is activated
or 0 if it is not activated. The following values are supported:

0=Not on
1=Manual on
2=Battery Voltage Low
3=Battery Voltage High
4=Array Voltage High
5=Battery Temp Low
6=Battery Temp High
7=Heat Sink Temp High
8=Fault

## 2.8   Auxiliary Output Off Reason

This status indicates the reason the auxiliary output is deactivated
or 0 if it is activated. The following values are supported:

0=Not off
1=Manual Off
2=No Active Trigger
3=Trigger Override
4=Fault
5=Bulk Exit
6=Absorption Exit

## 2.9  Supported Battery Types

The Charge Controller supports the following battery types:

0=Flooded
1=Gel
2=AGM
3=Custom

## 2.10  Nominal Battery Voltage

The Charge Controller supports the following input voltage configuration:

12000=12V
24000=24V
36000=36V
48000=48V
60000=60V

## 2.11  Clear Command

The Clear Command can be used to clear the fault; warning; event; and communication logs. The following values are supported:

1=Fault Log
2=Active Faults
4=Warning Log
8=Active Warnings
16=State Event Log
32=Communication Statistics
64=Statistics

128=User Statistics
255=All

## 2.12   Charge Controller Operating mode

The Charge Controller can be set to one of the following modes:

0=Stand-alone
1=Primary
2=Secondary
3=Echo

## 2.13   Auxiliary Output Trigger Source

1=Low Battery Voltage
2=High Battery Voltage
4=High Array Voltage
8=Low Battery Temperature
16=High Battery Temperature
32=High Heatsink Temperature
64=Fault

## 2.14   DC Input Association

The following associations are supported:

21=Solar Array 1
22=Solar Array 2
23=Solar Array 3
24=Solar Array 4
25=Solar Array 5
26=Solar Array 6
27=Solar Array 7
28=Solar Array 8
29=Solar Array 9
30=Solar Array 10
31=Solar Array 11

32=Solar Array 12
33=Solar Array 13
34=Solar Array 14
35=Solar Array 15
36=Solar Array 16

## 2.15   DC Output Association

The following associations are supported:

3=House Battery Bank 1
4=House Battery Bank 2
5=House Battery Bank 3
6=House Battery Bank 4
7=House Battery Bank 5