

# Modbus Map: Conext MPPT 80 600 Device

503-0252-01-01  
Revision A.4

## WARNING

### UNINTENDED OPERATION

The use of this product with Modbus communications requires expertise in the design, operation, and programming of the device. Only qualified persons should program, install, alter, and commission this product.

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.**

## 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.**

## Overview

This document describes the structure of the Modbus register address map, which is used to configure, control, and monitor the Conext MPPT 80 600 Solar Charge Controller. The information in this document is intended for use only by qualified persons 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.

## Document Applicability

The Conext MPPT 80 600 Device Modbus map applies to the following products, as listed in Table 1.

**Table 1** Applicable Products

Product ID	Product Description
865-1032	Conext MPPT 80 600 Solar Charge Controller

## Supported Modbus Data Types

Table 2 lists the supported data types.

**Table 2** Modbus Data Types

Data Type	Description
uint16	unsigned 16-bit integer [0,65535]
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)

## 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 user manual (975-0560-01-01).

## Section 1: Conext MPPT 80 600 Device Modbus Map

**Table 3** Configuration and Status Registers

Modbus Address	Name	Type	read/write (r/w)	Units	Scale	Offset	Notes
0x0000	Device Name	str16	rw				
0x000A	FGA Number	str20	r				
0x0014	Unique ID Number	str20	r				
0x001E	Firmware Version	str20	r				
0x0028	Modbus Address	uint16	rw		1.0	0.0	
0x0029	Device Number	uint16	rw		1.0	0.0	

**Table 3** Configuration and Status Registers

Modbus Address	Name	Type	read/write (r/w)	Units	Scale	Offset	Notes
0x002A	System Instance	uint16	rw		1.0	0.0	
0x002B	Hardware Serial Number	str20	r				
0x0035	Configuration Status	uint16	r		1.0	0.0	0=Refreshing 1=Done
0x0036	Configuration Refresh Counter	uint32	r		1.0	0.0	
0x0040	Device State	uint16	r		1.0	0.0	See section 2
0x0041	Charger Enabled	uint16	r		1.0	0.0	0=Disabled 1=Enabled
0x0042	Device Present	uint16	r		1.0	0.0	0=Inactive
0x0043	Charge Mode Status	uint16	r		1.0	0.0	0=Stand alone 1=Primary 2=Secondary
0x0044	Active Faults Flag	uint16	r		1.0	0.0	0=No Active Faults 1=Has Active Faults
0x0045	Active Warnings Flag	uint16	r		1.0	0.0	0=No Active Warnings 1=Has Active Warnings
0x0046	Fault Bitmap 0	uint16	r		1.0	0.0	See section 3
0x0047	Fault Bitmap 1	uint16	r		1.0	0.0	See section 4
0x0048	Warning Bitmap 0	uint16	r		1.0	0.0	See section 5
0x0049	Charger Status	uint16	r		1.0	0.0	See section 6
0x004A	Configuration Errors	uint32	r		1.0	0.0	
0x004C	Input DC Voltage	uint32	r	V	0.001	0.0	
0x004E	Input DC Current	uint32	r	A	0.001	0.0	
0x0050	Input DC Power	uint32	r	W	1.0	0.0	
0x0056	Battery Temperature	uint16	r	deg C	0.01	-273.0	
0x0058	Output DC Voltage	sint32	r	V	0.001	0.0	
0x005A	Output DC Current	sint32	r	A	0.001	0.0	
0x005C	Output DC Power	uint32	r	W	1.0	0.0	
0x005E	DC Power Output Percentage	uint16	r	%	1.0	0.0	
0x005F	Auxiliary Output Status	uint16	r		1.0	0.0	See section 7
0x0064	Auxiliary Output On Reason	uint16	r		1.0	0.0	See section 8
0x0065	Auxiliary Output Off Reason	uint16	r		1.0	0.0	See section 9
0x0070	Energy From PV This Hour	uint32	r	kWh	0.001	0.0	
0x0072	PV Input Active This Hour	uint32	r	s	1.0	0.0	

**Table 3** Configuration and Status Registers

Modbus Address	Name	Type	read/write (r/w)	Units	Scale	Offset	Notes
0x0074	Energy From PV Today	uint32	r	kWh	0.001	0.0	
0x0076	PV Input Active Today	uint32	r	s	1.0	0.0	
0x0078	Energy From PV This Week	uint32	r	kWh	0.001	0.0	
0x007A	PV Input Active This Week	uint32	r	s	1.0	0.0	
0x007C	Energy From PV This Month	uint32	r	kWh	0.001	0.0	
0x007E	PV Input Active This Month	uint32	r	s	1.0	0.0	
0x0080	Energy From PV This Year	uint32	r	kWh	0.001	0.0	
0x0082	PV Input Active This Year	uint32	r	s	1.0	0.0	
0x0084	Energy From PV Lifetime	uint32	r	kWh	0.001	0.0	
0x0086	PV Input Active Lifetime	uint32	r	s	1.0	0.0	
0x0088	Energy To Battery This Hour	uint32	r	kWh	0.001	0.0	
0x008A	Battery Charge Active This Hour	uint32	r	s	1.0	0.0	
0x008C	Energy To Battery Today	uint32	r	kWh	0.001	0.0	
0x008E	Battery Charge Active Today	uint32	r	s	1.0	0.0	
0x0090	Energy To Battery This Week	uint32	r	kWh	0.001	0.0	
0x0092	Battery Charge Active This Week	uint32	r	s	1.0	0.0	
0x0094	Energy To Battery This Month	uint32	r	kWh	0.001	0.0	
0x0096	Battery Charge Active This Month	uint32	r	s	1.0	0.0	
0x0098	Energy To Battery This Year	uint32	r	kWh	0.001	0.0	
0x009A	Battery Charge Active This Year	uint32	r	s	1.0	0.0	
0x009C	Energy To Battery Lifetime	uint32	r	kWh	0.001	0.0	
0x009E	Battery Charge Active Lifetime	uint32	r	s	1.0	0.0	
0x00A0	HVMPPT Enable	uint16	rw		1.0	0.0	0=Disable 1=Enable

**Table 3** Configuration and Status Registers

Modbus Address	Name	Type	read/write (r/w)	Units	Scale	Offset	Notes
0x00A2	HVMPPT Reference Voltage	uint32	rw	V	0.001	0.0	
0x00A5	Battery Type	uint16	rw		1.0	0.0	See section 10
0x00A6	Nominal Battery Voltage	uint32	rw	V	0.001	0.0	24000=24V 48000=48V
0x00A8	Battery Bank Capacity	uint16	rw	Ah	1.0	0.0	
0x00A9	Battery Temperature Coefficient	uint16	rw	mV/deg C	-1.0	0.0	
0x00AA	Force Charger State	uint16	rw		1.0	0.0	1=Bulk 2=Float 3=No Float
0x00AB	Reset	uint16	rw		1.0	0.0	0=Reboot 2=Reset to Factory
0x00AC	Operating Mode	uint16	rw		1.0	0.0	2=Standby 3=Operating
0x00AD	Clear	uint16	rw		1.0	0.0	See section 11
0x00AE	Equalize Voltage Set Point	uint32	rw	V	0.001	0.0	
0x00B0	Bulk/Boost Voltage Set Point	uint32	rw	V	0.001	0.0	
0x00B2	Float Voltage Set Point	uint32	rw	V	0.001	0.0	
0x00B4	Recharge Voltage	uint32	rw	V	0.001	0.0	
0x00B6	Absorption Voltage Set Point	uint32	rw	V	0.001	0.0	
0x00B8	Absorption Time	uint16	rw	min	0.016667	0.0	
0x00B9	Charge Cycle	uint16	rw		1.0	0.0	1=3 Stage 2=2 Stage (No Float)
0x00BA	Maximum Charge Rate	uint16	rw	%	1.0	0.0	
0x00BB	Equalize Now	uint16	rw		1.0	0.0	0=Disable 1=Enable
0x00BE	Charge Mode	uint16	rw		1.0	0.0	See section 12
0x00BF	Default Battery Temperature	uint16	rw		1.0	0.0	0=Cold 1=Warm 2=Hot
0x00C0	Identify Enable	uint16	rw		1.0	0.0	0=Disable 1=Enable
0x00C2	Manual Aux	uint16	rw		1.0	0.0	0=Manual Off 1=Manual On 2=Automatic
0x00C4	Auxiliary Output Trigger Source	uint32	rw		1.0	0.0	See section 13
0x00C6	Network Power Night time Disable	uint16	rw		1.0	0.0	0=Disable 1=Enable
0x00C7	Low Power at Night time Enable	uint16	rw		1.0	0.0	0=Disable 1=Enable

**Table 3** Configuration and Status Registers

Modbus Address	Name	Type	read/write (r/w)	Units	Scale	Offset	Notes
0x00C8	Low Battery Voltage Trigger Set	uint32	rw	V	0.001	0.0	
0x00CA	Low Battery Voltage Trigger Set Delay	uint16	rw	s	0.01	0.0	
0x00CC	Low Battery Voltage Trigger Clear	uint32	rw	V	0.001	0.0	
0x00CE	Low Battery Voltage Trigger Clear Delay	uint16	rw	s	0.01	0.0	
0x00D0	Low Array Voltage Trigger Set	uint32	rw	V	0.001	0.0	
0x00D2	Low Array Voltage Trigger Set Delay	uint16	rw	s	0.01	0.0	
0x00D4	Low Array Voltage Trigger Clear	uint32	rw	V	0.001	0.0	
0x00D6	Low Array Voltage Trigger Clear Delay	uint16	rw	s	0.01	0.0	
0x00D8	High Battery Voltage Trigger Set	uint32	rw	V	0.001	0.0	
0x00DA	High Battery Voltage Trigger Set Delay	uint16	rw	s	0.01	0.0	
0x00DC	High Battery Voltage Trigger Clear	uint32	rw	V	0.001	0.0	
0x00DE	High Battery Voltage Trigger Clear Delay	uint16	rw	s	0.01	0.0	
0x00E0	High Array Voltage Trigger Set	uint32	rw	V	0.001	0.0	
0x00E2	High Array Voltage Trigger Set Delay	uint16	rw	s	0.01	0.0	
0x00E4	High Array Voltage Trigger Clear	uint32	rw	V	0.001	0.0	
0x00E6	High Array Voltage Trigger Clear Delay	uint16	rw	s	0.01	0.0	
0x00E8	Low Battery Temperature Trigger Set	uint32	rw	deg C	0.001	-273.0	
0x00EA	Low Battery Temperature Trigger Set Delay	uint16	rw	s	0.01	0.0	

**Table 3** Configuration and Status Registers

Modbus Address	Name	Type	read/write (r/w)	Units	Scale	Offset	Notes
0x00EC	Low Battery Temperature Trigger Clear	uint32	rw	deg C	0.001	-273.0	
0x00EE	Low Battery Temperature Trigger Clear Delay	uint16	rw	s	0.01	0.0	
0x00F0	High Battery Temperature Trigger Set	uint32	rw	deg C	0.001	-273.0	
0x00F2	High Battery Temperature Trigger Set Delay	uint16	rw	s	0.01	0.0	
0x00F4	High Battery Temperature Trigger Clear	uint32	rw	deg C	0.001	-273.0	
0x00F6	High Battery Temperature Trigger Clear Delay	uint16	rw	s	0.01	0.0	
0x00F8	High Heatsink Temperature Trigger Set	uint32	rw	deg C	0.001	-273.0	
0x00FA	High Heatsink Temperature Trigger Set Delay	uint16	rw	s	0.01	0.0	
0x00FC	High Heatsink Temperature Trigger Clear	uint32	rw	deg C	0.001	-273.0	
0x00FE	High Heatsink Temperature Trigger Clear Delay	uint16	rw	s	0.01	0.0	
0x0100	Refresh Configuration Data	uint16	rw		1.0	0.0	1=Refresh
0x0101	DC Input Association (PV)	uint16	rw		1.0	0.0	See section 14
0x0102	DC Output Association (Battery)	uint16	rw		1.0	0.0	See section 15

## Section 2: Operating State

Device State can report one of the following values:

- 0=Hibernate
- 1=Power Save
- 2=Safe Mode

- 3=Operating
- 4=Diagnostic Mode
- 5=Remote Power Off
- 255=Data Not Available

## Section 3: Fault Bitmap 0 Values

Fault Bitmap 0 can report one or more of the following values:

- 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

## Section 4: Fault Bitmap 1 Values

Fault Bitmap 1 can report one or more of the following values:

- 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

## Section 5: Warning Bitmap 0 Values

Warning Bitmap 0 can report one or more of the following values:

- bit0=W4:Battery Over Temperature Warning



- bit1=W5:Ambient Over Temperature
- bit2=W9:Battery Temperature Sensor not present
- bit3=W11:DC Input (PV) Over Voltage Warning
- bit4=W12:DC Under Voltage Warning
- bit5=W34:DC Output Over Voltage Warning
- bit6=W35:Heatsink Over Temperature Warning

## Section 6: Charger Status

Charger Status can report one of the following values:

- 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

## Section 7: Auxiliary Output Status

Auxiliary Output can report one of the following values:

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

## Section 8: Auxiliary Output On Reason

Auxiliary Output On Reason can report one of the following values:

- 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

## Section 9: Auxiliary Output Off Reason

Auxiliary Output Off Reason can report one of the following values:

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

## Section 10: Battery Type

Configure Battery Type using one of the following values:

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

## Section 11: Clear Command

The Clear command clears the fault, warning, event, and communication logs. Configure Clear using one of the following values:

- 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

## Section 12: Charge Controller Operating Mode

Configure Charge Mode using one of the following values:

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

## Section 13: Auxiliary Output Trigger Source

Configure Auxiliary Output Trigger Source using one of the following values:

- 1=Low Battery Voltage
- 2=High Battery Voltage
- 4=Low Array Voltage
- 8=High Array Voltage
- 16=Low Battery Temperature
- 32=High Battery Temperature
- 64=High Heatsink Temperature
- 128=Fault
- 256=Ground Fault
- 512=Input Over Voltage Fault
- 1024=Input Over Voltage Error
- 2048=Input Over Voltage Warning
- 4096=Input Over Current Error
- 8192=Output Over Voltage Error
- 16384=Output Over Voltage Warning
- 32768=Output Under Voltage Error
- 65536=Output Under Voltage Warning
- 131072=Output Over Current Error
- 262144=Output Over Current Fault
- 524288=Battery Over Temperature Error
- 1048576=Battery Over Temperature Warning
- 2097152=Battery Under Temperature Warning
- 4194304=Heatsink Over Temperature Error
- 8388608=Heatsink Over Temperature Warning
- 16777216=Ambient Over Temperature Error
- 33554432=Ambient Over Temperature Warning
- 67108864=Capacitor Over Temperature Error
- 134217728=Fan Fault
- 268435456=Fan Error

- 536870912=Network Power Supply Fault

## Section 14: DC Input Association

Configure DC Input Association using one of the following values:

- 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

## Section 15: DC Output Association

Configure DC Output Association using one of the following values:

- 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

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