Conext™ Gateway

Modbus Interface Specification (503)

Conext™ XW Inverter/Chargers

990-6268

Dec 5, 2019

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Revision History

Rev	Date	Description of Change
A	Dec 5, 2019	Initial Release

Document Applicability

This Modbus map applies to the following products:

Product ID	Product Description
865-1000	XW6048-120/240-60
865-1000-01	XW6048-120/240-60
865-1000-1	XW6048-120
865-1005	XW4548-120/240-60
865-1005-1	XW4548-120-60
865-1010	XW4024-120/240-60
865-1010-1	XW4024-120-60
865-1035	XW6048-230-50
865-1035-61	XW6048-230-50
865-1040	XW4548-230-50
865-1040-61	XW4548-230-50
865-1045	XW4024-230-50
865-1045-61	XW4024-230-50
865-4524-01	XW4524-120/240-60
865-4524-2	XW4524-120
865-5324-61	XW5324-230-50
865-5524-01	XW5524-120-60
865-5524-2	XW5524-120-60
865-5524-61	XW5524-230-50
865-5548-01	XW5548-120/240-60
865-5548-2	XW5548-120
865-5548-21	XWPRO5548-120/240-60
865-5548-22	XWPRO5548-120
865-5548-61	XWPRO5548-230-50
865-6848-01	XW6048-120/240-60
865-6848-2	XW6848-120
865-6848-21	XWPRO6848-120/240
865-6848-22	XWPRO6848-120
865-7048-01	XW7048-120/240-60
865-7048-2	XW7048-120-60
865-7048-55	XWPRO7048-230-50
865-7048-61	XW7048-230-50
865-8548-01	XW8548-120/240-60
865-8548-2	XW8548-120-60
865-8548-55	XWPRO8548-230-50
865-8548-61	XW8548-230-50

⚠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.

⚠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 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	[10 .. 29]

Modbus Cybersecurity Considerations

NOTICE

CYBERSECURITY RISK

Always secure the Local Area Network on which the Conext Gateway is connected. Modbus TCP must NEVER be routed over a public network.

Failure to follow these instructions can result in 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^{TM} XW Inverter/Chargers

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x0000	Device Name	str16	r				
0x000A	FGA Number	str20	r				
0x0014	Unique ID Number	uint32	r				
0x001E	Firmware Version	uint32	r				
0x0028	Modbus Slave Address (Port 502)	uint16	r		1.0	0.0	
0x0029	Device Number	uint16	r		1.0	0.0	
0x002A	System Instance	uint16	r		1.0	0.0	
0x002B	Hardware Serial Number	str32	r				
0x003B	Configuration Status	uint16	r		1.0	0.0	0=Refreshing 1=Done
0x003C	Configuration Refresh Counter	uint32	r		1.0	0.0	
0x0040	Device State	uint16	r		1.0	0.0	See section 2.1
0x0041	Device Present	uint16	r		1.0	0.0	0=Inactive (data invalid) 1=Active (data valid)
0x0042	Fault Bitmap 0	uint16	r		1.0	0.0	See section 2.2
0x0043	Fault Bitmap 1	uint16	r		1.0	0.0	See section 2.3
0x0044	Fault Bitmap 2	uint16	r		1.0	0.0	See section 2.4
0x0045	Fault Bitmap 3	uint16	r		1.0	0.0	See section 2.5
0x0046	Warning Bitmap 0	uint16	r		1.0	0.0	See section 2.6
0x0047	Inverter Enabled Status	uint16	r		1.0	0.0	0=Disabled 1=Enabled
0x0048	Charger Enabled Status	uint16	r		1.0	0.0	0=Disabled 1=Enabled
0x0049	Sell Enabled Status	uint16	r		1.0	0.0	0=Disabled 1=Enabled

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x004A	Forced Sell	uint16	r		1.0	0.0	0=Disabled 1=Enabled 2=Unavailable
0x004B	Active Faults	uint16	r		1.0	0.0	0=No Faults 1=Active Faults
0x004C	Active Warnings	uint16	r		1.0	0.0	0=No Warnings 1=Active Warnings
0x004D	Charge Mode Status	uint16	r		1.0	0.0	0=Stand alone 1=Primary 2=Secondary
0x004E	Configuration Errors	uint32	r		1.0	0.0	
0x0050	DC Voltage	uint32	r	V	0.001	0.0	
0x0052	DC Current	sint32	r	A	0.001	0.0	
0x0054	DC Power	sint32	r	W	1.0	0.0	
0x0056	Battery Temperature	uint16	r	degC	0.01	-273.0	
0x0058	Invert DC Current	uint32	r	A	0.001	0.0	
0x005A	Invert DC Power	uint32	r	W	1.0	0.0	
0x005C	Charge DC Current	uint32	r	A	0.001	0.0	
0x005E	Charge DC Power	uint32	r	W	1.0	0.0	
0x0060	Charge DC Power Percentage	uint16	r	%	1.0	0.0	
0x0061	AC1 Frequency	uint16	r	Hz	0.01	0.0	
0x0062	AC1 Voltage	uint32	r	V	0.001	0.0	
0x0064	AC1 Current	sint32	r	A	0.001	0.0	
0x0066	AC1 Power	sint32	r	W	1.0	0.0	
0x0068	AC1 Input Power (VA)	uint32	r	VA	1.0	0.0	
0x006A	AC1 Input Current	uint32	r	A	0.001	0.0	
0x006C	AC1 Input Power (W)	uint32	r	W	1.0	0.0	
0x006E	AC1 L1 Voltage	uint32	r	V	0.001	0.0	
0x0070	AC1 L2 Current	sint32	r	A	0.001	0.0	
0x0072	AC1 L2 Voltage	uint32	r	V	0.001	0.0	
0x0074	AC1 L1 Current	sint32	r	A	0.001	0.0	
0x0076	AC1 Voltage Qualified	uint16	r		1.0	0.0	See section 2.7
0x0077	AC1 Frequency Qualified	uint16	r		1.0	0.0	See section 2.8
0x0078	AC1 Qualified Duration	uint32	r	s	1.0	0.0	
0x007A	Inverter Status	uint16	r		1.0	0.0	See section 2.9

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x007B	Charger Status	uint16	r		1.0	0.0	See section 2.10
0x007E	AC1 Voltage	uint32	r	V	0.001	0.0	
0x0080	AC1 Current	uint32	r	A	0.001	0.0	
0x0082	AC1 Frequency	uint16	r	Hz	0.01	0.0	
0x0084	AC1 Output Power (W)	uint32	r	W	1.0	0.0	
0x008A	AC1 Output Power (VA)	uint32	r	VA	1.0	0.0	
0x008C	AC Load Voltage	uint32	r	V	0.001	0.0	
0x008E	AC Load L1 Voltage	uint32	r	V	0.001	0.0	
0x0090	AC Load L2 Voltage	uint32	r	V	0.001	0.0	
0x0092	AC Load L1 Current	sint32	r	A	0.001	0.0	
0x0094	AC Load L2 Current	sint32	r	A	0.001	0.0	
0x0096	AC Load Current	sint32	r	A	0.001	0.0	
0x0098	AC Load Frequency	uint16	r	Hz	0.01	0.0	
0x009A	AC Load Power	sint32	r	W	1.0	0.0	
0x00A0	AC Load Power (VA)	sint32	r	VA	1.0	0.0	
0x00A2	AC2 Voltage	uint32	r	V	0.001	0.0	
0x00A4	AC2 Current	uint32	r	A	0.001	0.0	
0x00A6	AC2 Frequency	uint16	r	Hz	0.01	0.0	
0x00A7	AC2 Voltage Qualified	uint16	r		1.0	0.0	See section 2.11
0x00A8	AC2 Frequency Qualified	uint16	r		1.0	0.0	See section 2.12
0x00AA	AC2 Qualified Duration	uint32	r	s	1.0	0.0	
0x00AC	AC2 Power	uint32	r	W	1.0	0.0	
0x00B2	AC2 L1 Voltage	uint32	r	V	0.001	0.0	
0x00B4	AC2 L1 Current	sint32	r	A	0.001	0.0	
0x00B6	AC2 L2 Voltage	uint32	r	V	0.001	0.0	
0x00B8	AC2 L2 Current	sint32	r	A	0.001	0.0	
0x00BA	AC2 Power - Apparent	uint32	r	VA	1.0	0.0	
0x00BC	Auxiliary Output Status	uint16	r		1.0	0.0	See section 2.13
0x00BD	Auxiliary Output On Reason	uint16	r		1.0	0.0	See section 2.14
0x00BE	Auxiliary Output Off Reason	uint16	r		1.0	0.0	See section 2.15
0x00BF	Grid Tie Sell Level	uint16	w		1.0	0.0	

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x00C0	Switch Operating State	uint16	r		1.0	0.0	800=Inactive 801=Input1 Active 802=Input2 Active 803=Input1 Delay 804=Input2 Delay
0x00C1	Switch Mode	uint16	r		1.0	0.0	0=unknown 1=Grid Priority 2=Generator Priority
0x00C2	Warning Bitmap 1	uint16	r		1.0	0.0	See section 2.16
0x00D0	Energy From Battery This Hour	uint32	r	kWh	0.001	0.0	
0x00D2	Battery Discharge Active This Hour	uint32	r	s	1.0	0.0	
0x00D4	Energy From Battery Today	uint32	r	kWh	0.001	0.0	
0x00D6	Battery Discharge Active Today	uint32	r	s	1.0	0.0	
0x00D8	Energy From Battery This Week	uint32	r	kWh	0.001	0.0	
0x00DA	Battery Discharge Active This Week	uint32	r	s	1.0	0.0	
0x00DC	Energy From Battery This Month	uint32	r	kWh	0.001	0.0	
0x00DE	Battery Discharge Active This Month	uint32	r	s	1.0	0.0	
0x00E0	Energy From Battery This Year	uint32	r	kWh	0.001	0.0	
0x00E2	Battery Discharge Active This Year	uint32	r	s	1.0	0.0	
0x00E4	Energy From Battery Lifetime	uint32	r	kWh	0.001	0.0	
0x00E6	Battery Discharge Active Lifetime	uint32	r	s	1.0	0.0	
0x00E8	Energy To Battery This Hour	uint32	r	kWh	0.001	0.0	
0x00EA	Battery Charge Active This Hour	uint32	r	s	1.0	0.0	
0x00EC	Energy To Battery Today	uint32	r	kWh	0.001	0.0	

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x00EE	Battery Charge Active Today	uint32	r	s	1.0	0.0	
0x00F0	Energy To Battery This Week	uint32	r	kWh	0.001	0.0	
0x00F2	Battery Charge Active This Week	uint32	r	s	1.0	0.0	
0x00F4	Energy To Battery This Month	uint32	r	kWh	0.001	0.0	
0x00F6	Battery Charge Active This Month	uint32	r	s	1.0	0.0	
0x00F8	Energy To Battery This Year	uint32	r	kWh	0.001	0.0	
0x00FA	Battery Charge Active This Year	uint32	r	s	1.0	0.0	
0x00FC	Energy To Battery Lifetime	uint32	r	kWh	0.001	0.0	
0x00FE	Battery Charge Active Lifetime	uint32	r	s	1.0	0.0	
0x0100	Grid Input Energy This Hour	uint32	r	kWh	0.001	0.0	
0x0102	Grid Input Active This Hour	uint32	r	s	1.0	0.0	
0x0104	Grid Input Energy Today	uint32	r	kWh	0.001	0.0	
0x0106	Grid Input Active Today	uint32	r	s	1.0	0.0	
0x0108	Grid Input Energy This Week	uint32	r	kWh	0.001	0.0	
0x010A	Grid Input Active This Week	uint32	r	s	1.0	0.0	
0x010C	Grid Input Energy This Month	uint32	r	kWh	0.001	0.0	
0x010E	Grid Input Active This Month	uint32	r	s	1.0	0.0	
0x0110	Grid Input Energy This Year	uint32	r	kWh	0.001	0.0	
0x0112	Grid Input Active This Year	uint32	r	s	1.0	0.0	
0x0114	Grid Input Energy Lifetime	uint32	r	kWh	0.001	0.0	
0x0116	Grid Input Active Lifetime	uint32	r	s	1.0	0.0	

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x0118	Grid Output Energy This Hour	uint32	r	kWh	0.001	0.0	
0x011A	Grid Output Active This Hour	uint32	r	s	1.0	0.0	
0x011C	Grid Output Energy Today	uint32	r	kWh	0.001	0.0	
0x011E	Grid Output Active Today	uint32	r	s	1.0	0.0	
0x0120	Grid Output Energy This Week	uint32	r	kWh	0.001	0.0	
0x0122	Grid Output Active This Week	uint32	r	s	1.0	0.0	
0x0124	Grid Output Energy This Month	uint32	r	kWh	0.001	0.0	
0x0126	Grid Output Active This Month	uint32	r	s	1.0	0.0	
0x0128	Grid Output Energy This Year	uint32	r	kWh	0.001	0.0	
0x012A	Grid Output Active This Year	uint32	r	s	1.0	0.0	
0x012C	Grid Output Energy Lifetime	uint32	r	kWh	0.001	0.0	
0x012E	Grid Output Active Lifetime	uint32	r	s	1.0	0.0	
0x0130	Load Output Energy This Hour	uint32	r	kWh	0.001	0.0	
0x0132	Load Output Active This Hour	uint32	r	s	1.0	0.0	
0x0134	Load Output Energy Today	uint32	r	kWh	0.001	0.0	
0x0136	Load Output Active Today	uint32	r	s	1.0	0.0	
0x0138	Load Output Energy This Week	uint32	r	kWh	0.001	0.0	
0x013A	Load Output Active This Week	uint32	r	s	1.0	0.0	
0x013C	Load Output Energy This Month	uint32	r	kWh	0.001	0.0	
0x013E	Load Output Active This Month	uint32	r	s	1.0	0.0	
0x0140	Load Output Energy This Year	uint32	r	kWh	0.001	0.0	

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x0142	Load Output Active This Year	uint32	r	s	1.0	0.0	
0x0144	Load Output Energy Lifetime	uint32	r	kWh	0.001	0.0	
0x0146	Load Output Active Lifetime	uint32	r	s	1.0	0.0	
0x0148	Generator Input Energy This Hour	uint32	r	kWh	0.001	0.0	
0x014A	Generator Input Active This Hour	uint32	r	s	1.0	0.0	
0x014C	Generator Input Energy Today	uint32	r	kWh	0.001	0.0	
0x014E	Generator Input Active Today	uint32	r	s	1.0	0.0	
0x0150	Generator Input Energy This Week	uint32	r	kWh	0.001	0.0	
0x0152	Generator Input Active This Week	uint32	r	s	1.0	0.0	
0x0154	Generator Input Energy This Month	uint32	r	kWh	0.001	0.0	
0x0156	Generator Input Active This Month	uint32	r	s	1.0	0.0	
0x0158	Generator Input Energy This Year	uint32	r	kWh	0.001	0.0	
0x015A	Generator Input Active This Year	uint32	r	s	1.0	0.0	
0x015C	Generator Input Energy Lifetime	uint32	r	kWh	0.001	0.0	
0x015E	Generator Input Active Lifetime	uint32	r	s	1.0	0.0	
0x0160	Identify Enable	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0161	Inverter Enable/Disable	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0162	Grid Support Sell Enable/Disable	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0163	Force Sell	uint16	rw		1.0	0.0	0=Disabled 1=Enabled

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x0164	Charger Enable/Disable	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0165	Force Charger State	uint16	rw		1.0	0.0	1=Bulk 2=Float 3=No Float
0x0166	Operating Mode	uint16	rw		1.0	0.0	2=Standby 3=Operating
0x0167	Reset	uint16	rw		1.0	0.0	0=Reboot 2=Reset to Factory
0x0168	Clear	uint16	rw		1.0	0.0	See section 2.17
0x0169	Search Mode	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x016A	Inverter Mode	uint16	rw		1.0	0.0	See section 2.18
0x016B	Remote Power Off	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x016C	Power Save	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x016D	Sell Delay 40 Sec	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x016E	Charge Cycle	uint16	rw		1.0	0.0	1=3 Stage 2=2 Stage 3=CVCC
0x016F	Maximum Charge Rate	uint16	rw	%	1.0	0.0	
0x0170	Equalize Now	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0171	Default Battery Temperature	uint16	rw		1.0	0.0	0=Cold 1=Warm 2=Hot
0x0172	GFS Enable	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0173	Battery Type	uint16	rw		1.0	0.0	See section 2.19

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x0174	Nominal Battery Voltage	uint32	r	V	0.001	0.0	24000=24V 48000=48V
0x0176	Battery Bank Capacity	uint16	rw	Ah	1.0	0.0	
0x0177	Battery Temperature Coefficient	uint16	rw	mV/degC	-1.0	0.0	
0x0178	Grid Support Voltage	uint32	rw	V	0.001	0.0	
0x017A	Recharge Voltage	uint32	rw	V	0.001	0.0	
0x017C	Low Battery Cut Out	uint32	rw	V	0.001	0.0	
0x017E	Low Battery Cut Out Delay	uint16	rw	s	0.01	0.0	
0x0180	Low Battery Trigger Set	uint32	rw	V	0.001	0.0	
0x0182	Low Battery Trigger Set Delay	uint16	rw	s	0.01	0.0	
0x0184	Low Battery Trigger Clear	uint32	rw	V	0.001	0.0	
0x0186	Low Battery Trigger Clear Delay	uint16	rw	s	0.01	0.0	
0x0187	AC Priority	uint16	rw		1.0	0.0	0=Force AC Disqualify 1=Grid Priority (AC1) 2=Generator Priority (AC2)
0x0188	AC1 Breaker Size	uint16	rw	A	0.01	0.0	
0x0189	AC2 Breaker Size	uint16	rw	A	0.01	0.0	
0x018A	High Battery Cut Out	uint32	rw	V	0.001	0.0	
0x018C	High Battery Trigger Set	uint32	rw	V	0.001	0.0	
0x018E	High Battery Trigger Set Delay	uint16	rw	s	0.01	0.0	
0x0190	High Battery Trigger Clear	uint32	rw	V	0.001	0.0	
0x0192	High Battery Trigger Clear Delay	uint16	rw	s	0.01	0.0	
0x0193	Maximum Search Watts	uint16	rw	W	1.0	0.0	
0x0194	Search Delay	uint16	rw	s	0.01	0.0	
0x0196	Equalize Voltage Set Point	uint32	rw	V	0.001	0.0	

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x0198	Equalize Support	uint16	rw		1.0	0.0	0=No Equalization 1=Equalization Allowed
0x019A	Bulk/Boost Voltage Set Point	uint32	rw	V	0.001	0.0	
0x019C	Absorption Voltage Set Point	uint32	rw	V	0.001	0.0	
0x019E	Absorption Time	uint16	rw	s	1.0	0.0	
0x01A0	Float Voltage Set Point	uint32	rw	V	0.001	0.0	
0x01A2	AC1 Low Voltage	uint32	rw	V	0.001	0.0	
0x01A4	AC2 Low Voltage	uint32	rw	V	0.001	0.0	
0x01A6	AC1 High Voltage	uint32	rw	V	0.001	0.0	
0x01A8	AC2 High Voltage	uint32	rw	V	0.001	0.0	
0x01AA	Charge Block Start	uint16	rw	min	1.0	0.0	
0x01AB	Charge Block Stop	uint16	rw	min	1.0	0.0	
0x01AC	Load Shave Stop	uint16	rw	min	1.0	0.0	
0x01AD	Load Shave Start	uint16	rw	min	1.0	0.0	
0x01AE	AC1 Low Frequency	uint16	rw	Hz	0.01	0.0	
0x01AF	AC2 Low Frequency	uint16	rw	Hz	0.01	0.0	
0x01B0	AC1 High Frequency	uint16	rw	Hz	0.01	0.0	
0x01B1	AC2 High Frequency	uint16	rw	Hz	0.01	0.0	
0x01B2	Load Shave	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x01B3	Grid Support	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x01B4	Maximum Sell Amps	uint32	rw	A	0.001	0.0	
0x01B6	Load Shave Amps	uint32	rw	A	0.001	0.0	
0x01B8	Generator Support Enable	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x01BA	Generator Support Amps	uint32	rw	A	0.001	0.0	
0x01BC	Manual Aux	uint16	rw		1.0	0.0	0=Manual Off 1=Manual On 2=Automatic
0x01BE	Auxiliary Output Active Level	uint16	rw		1.0	0.0	0=Active Low 1=Active High

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x01C0	Low Temperature Trigger Set	uint32	rw	degC	0.001	-273.0	
0x01C2	Low Temperature Trigger Set Delay	uint16	rw	s	0.01	0.0	
0x01C4	Low Temperature Trigger Clear	uint32	rw	degC	0.001	-273.0	
0x01C6	Low Temperature Trigger Clear Delay	uint16	rw	s	0.01	0.0	
0x01C8	High Temperature Trigger Set	uint32	rw	degC	0.001	-273.0	
0x01CA	High Temperature Trigger Set Delay	uint16	rw	s	0.01	0.0	
0x01CC	High Temperature Trigger Clear	uint32	rw	degC	0.001	-273.0	
0x01CE	High Temperature Trigger Clear Delay	uint16	rw	s	0.01	0.0	
0x01CF	Refresh Configuration Data	uint16	rw		1.0	0.0	1=Refresh
0x01D0	AC Output Association (Loads)	uint16	rw		1.0	0.0	See section 2.20
0x01D1	AC2 Association (Generator)	uint16	rw		1.0	0.0	See section 2.21
0x01D2	AC1 Association (Grid)	uint16	rw		1.0	0.0	See section 2.22
0x01D3	Battery Association	uint16	rw		1.0	0.0	See section 2.23
0x01D4	Maximum Discharge Current	uint16	rw	A	1.0	0.0	
0x01D5	Maximum Discharge Time Interval	uint16	rw	s	0.01	0.0	
0x01D6	GVS Enable/Disable	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x01D7	Maximum Reactive Capacitive Power	uint16	rw	%	0.01	0.0	
0x01D8	Maximum Reactive Inductive Power	uint16	rw	%	0.01	0.0	
0x01D9	Maximum Reactive Power Grid Voltage	uint16	rw	V	0.01	0.0	
0x01DA	Minimum Reactive Power Grid Voltage	uint16	rw	V	0.01	0.0	
0x01DB	Inductive Voltage Set Point	uint16	rw	V	0.01	0.0	

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x01DC	Capacitive Voltage Set Point	uint16	rw	V	0.01	0.0	
0x01DD	Voltage Threshold to start/stop excitation	uint16	rw	V	0.01	0.0	
0x01DE	Excitation Control Delay Time	uint16	rw	s	0.01	0.0	
0x01E0	API Frequency Start Level	uint16	rw	Hz	0.01	0.0	
0x01E1	API Frequency Stop Level	uint16	rw	Hz	0.01	0.0	
0x01E2	API Frequency Recover Level	uint16	rw	Hz	0.01	0.0	
0x01E3	API Gradient with Time	uint16	rw	%	1.0	0.0	
0x01E4	APR Frequency Start Level	uint16	rw	Hz	0.01	0.0	
0x01E5	APR Frequency Stop Level	uint16	rw	Hz	0.01	0.0	
0x01E6	APR Frequency Recover Level	uint16	rw	Hz	0.01	0.0	
0x01E7	APR Gradient with Frequency	uint16	rw	%	1.0	0.0	
0x01E8	APR Gradient with Time	uint16	rw	%	1.0	0.0	
0x01EA	State of Charge Level to Stop	uint16	rw	%	1.0	0.0	
0x01EB	State of Charge Stop Delay	uint16	rw	s	0.01	0.0	
0x01EC	State of Charge Level to Start	uint16	rw	%	1.0	0.0	
0x01ED	State of Charge Start Delay	uint16	rw	s	0.01	0.0	
0x01EE	Generator Support Plus	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x01EF	AC Coupling	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x01F0	Battery Energy Balance	uint16	rw		1.0	0.0	0=Disabled 1=Enabled

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x01F1	Peak Load Shaving Delay	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x01F2	Low Battery Cut Out Hysteresis	uint32	rw	V	0.001	0.0	
0x01F5	AC1 Transfer Switch Delay	uint16	rw	s	0.01	0.0	
0x01F6	AC2 Transfer Switch Delay	uint16	rw	s	0.01	0.0	
0x01F7	Sell Block Start	uint16	rw	min	1.0	0.0	
0x01F8	Sell Block End	uint16	rw	min	1.0	0.0	
0x01F9	Auxiliary Output Trigger Block Start	uint16	rw	min	1.0	0.0	
0x01FA	Auxiliary Output Trigger Block End	uint16	rw	min	1.0	0.0	
0x01FC	Heat Sink High Temperature Trigger Set	uint32	rw	degC	0.001	-273.0	
0x01FE	Heat Sink High Temperature Trigger Set Delay	uint16	rw	s	0.01	0.0	
0x01FF	Maximum Sell Scale Percentage	uint16	rw	%	1.0	0.0	
0x0200	Heat Sink High Temperature Trigger Clear	uint32	rw	degC	0.001	-273.0	
0x0202	Heat Sink High Temperature Trigger Clear Delay	uint16	rw	s	0.01	0.0	
0x0204	Auxiliary Output Trigger Source	uint32	rw		1.0	0.0	See section 2.24
0x0206	Remote Sell	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0207	External Transfer Contactor	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0208	AC Transient Over Voltage Disconnect	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0209	External Load Switch	uint16	rw		1.0	0.0	0=Disabled 1=Enabled

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x020A	Maximum Bulk Charge Current	uint32	rw	A	0.001	0.0	
0x020C	Maximum Absorption Charge Current	uint32	rw	A	0.001	0.0	
0x020E	Maximum Float Charge Current	uint32	rw	A	0.001	0.0	
0x0240	Generator (1) AC Voltage	uint32	r	V	0.001	0.0	
0x0242	Generator (1) AC Current	uint32	r	A	0.001	0.0	
0x0244	Generator (1) AC Frequency	uint32	r	Hz	0.01	0.0	
0x0246	Generator (1) AC Voltage Qualified	uint32	r			0.0	See section 2.25
0x0248	Generator (1) AC Frequency Qualified	uint32	r			0.0	See section 2.26
0x024A	Generator (1) AC Qualified Duration	uint32	r			0.0	
0x024C	Generator (1) AC Power	uint32	r	W	1.0	0.0	
0x024E	Generator (1) AC L1 Voltage	uint32	r	V	0.001	0.0	
0x0250	Generator (1) AC L1 Current	uint32	r	A	0.001	0.0	
0x0252	Generator (1) AC L2 Voltage	uint32	r	V	0.001	0.0	
0x0254	Generator (1) AC L2 Current	uint32	r	A	0.001	0.0	
0x0256	Generator (1) AC Power - Apparent	uint32	r	VA		0.0	
0x0258	Generator (2) AC Voltage	uint32	r	V	0.001	0.0	
0x025A	Generator (2) AC Current	uint32	r	A	0.001	0.0	
0x025C	Generator (2) AC Frequency	uint32	r	Hz	0.01	0.0	
0x025E	Generator (2) AC Voltage Qualified	uint32	r			0.0	See section 2.27
0x0260	Generator (2) AC Frequency Qualified	uint32	r			0.0	See section 2.28
0x0262	Generator (2) AC Qualified Duration	uint32	r			0.0	

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x0264	Generator (2) AC Power	uint32	r	W	1.0	0.0	
0x0266	Generator (2) AC L1 Voltage	uint32	r	V	0.001	0.0	
0x0268	Generator (2) AC L1 Current	uint32	r	A	0.001	0.0	
0x026A	Generator (2) AC L2 Voltage	uint32	r	V	0.001	0.0	
0x026C	Generator (2) AC L2 Current	uint32	r	A	0.001	0.0	
0x026E	Generator (2) AC Power - Apparent	uint32	r	VA		0.0	
0x0280	Generator (1) Input Energy This Hour	uint32	r	kWh	0.001	0.0	
0x0282	Generator (1) Input Active This Hour	uint32	r	s	1.0	0.0	
0x0284	Generator (1) Input Energy Today	uint32	r	kWh	0.001	0.0	
0x0286	Generator (1) Input Active Today	uint32	r	s	1.0	0.0	
0x0288	Generator (1) Input Energy This Week	uint32	r	kWh	0.001	0.0	
0x028A	Generator (1) Input Active This Week	uint32	r	s	1.0	0.0	
0x028C	Generator (1) Input Energy This Month	uint32	r	kWh	0.001	0.0	
0x028E	Generator (1) Input Active This Month	uint32	r	s	1.0	0.0	
0x0290	Generator (1) Input Energy This Year	uint32	r	kWh	0.001	0.0	
0x0292	Generator (1) Input Active This Year	uint32	r	s	1.0	0.0	
0x0294	Generator (1) Input Energy Lifetime	uint32	r	kWh	0.001	0.0	
0x0296	Generator (1) Input Active Lifetime	uint32	r	s	1.0	0.0	
0x0298	Generator (2) Input Energy This Hour	uint32	r	kWh	0.001	0.0	
0x029A	Generator (2) Input Active This Hour	uint32	r	s	1.0	0.0	
0x029C	Generator (2) Input Energy Today	uint32	r	kWh	0.001	0.0	

Modbus Address	Name	Type	R/W	Units	Scale	Offset	Notes
0x029E	Generator (2) Input Active Today	uint32	r	s	1.0	0.0	
0x02A0	Generator (2) Input Energy This Week	uint32	r	kWh	0.001	0.0	
0x02A2	Generator (2) Input Active This Week	uint32	r	s	1.0	0.0	
0x02A4	Generator (2) Input Energy This Month	uint32	r	kWh	0.001	0.0	
0x02A6	Generator (2) Input Active This Month	uint32	r	s	1.0	0.0	
0x02A8	Generator (2) Input Energy This Year	uint32	r	kWh	0.001	0.0	
0x02AA	Generator (2) Input Active This Year	uint32	r	s	1.0	0.0	
0x02AC	Generator (2) Input Energy Lifetime	uint32	r	kWh	0.001	0.0	
0x02AE	Generator (2) Input Active Lifetime	uint32	r	s	1.0	0.0	
0x02B0	XW Power Factor	sint16	w		0.01	0.0	

2 Data Point Enumerations

2.1 Operating State

The following operating states are supported

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

2.2 Fault Bitmap 0

One or more of the following fault bits may be set:

bit0=F1:AC Output Undervoltage Shutdown
bit1=F2:AC Output Overvoltage Shutdown

bit2=F17:AC BackFeed Fault (AC1 L1)
bit3=F18:AC BackFeed Fault (AC1 L2)
bit4=F19:AC BackFeed Fault (AC2 L1)
bit5=F20:AC Backfeed Fault (AC2 L2)
bit6=F21:AC Backfeed Fault (L1L2 Weld)
bit7=F22:AC Backfeed Fault(Line 1 Weld)
bit8=F23:Anti-Islanding Fault (Over Freq)
bit9=F24:Anti-Islanding Fault (Under Freq)
bit10=F25:Anti-Islanding (Over Freq)
bit11=F26:Anti-Islanding (Under Freq)
bit12=F27:Anti-Islanding (Over Voltage Line 1)
bit13=F28:Anti-Islanding (Over Voltage Line 2)
bit14=F29:Anti-Islanding (Over Voltage)
bit15=F30:Anti-Islanding (Over voltage L1L2)

2.3 Fault Bitmap 1

One or more of the following fault bits may be set:

bit0=F31:Anti-Islanding (Over Voltage L1 Slow)
bit1=F32:Anti-Islanding (Over Voltage L2 Slow)
bit2=F33:Anti-Islanding (Over Voltage L1L2 Slow)
bit3=F34:Anti-Islanding (Under Voltage L1 Slow)
bit4=F35:Anti-Islanding (Under Voltage L2 Slow)
bit5=F36:Anti-Islanding (Under Voltage L1L2 Slow)
bit6=F37:Anti-Islanding (Under Voltage L1 Fast)
bit7=F38:Anti-Islanding (Under Voltage L2 Fast)
bit8=F39:Anti-Islanding (Under Voltage)
bit9=F40:Anti-Islanding (Under Voltage L1L2 Fast)
bit10=F41:APS Under Voltage
bit11=F42:APS Over Voltage
bit12=F44:Battery Over Temperature
bit13=F45:Capacitor Over Temperature
bit14=F46:Controller Error
bit15=F47:DC Under Voltage Immediate

2.4 Fault Bitmap 2

One or more of the following fault bits may be set:

bit0=F48:DC Under-Voltage Shutdown
bit1=F49:DC Over-Voltage Shutdown

bit2=F51:EEPROM Error
bit3=F52:EEPROM Error (Cal Fail)
bit4=F53:EEPROM Error (Config Fail)
bit5=F54:EEPROM Error (Default Fail)
bit6=F55:EEPROM Error (Log Fail)
bit7=F56:EEPROM Error (Strings Fail)
bit8=F57:FET1 Over-Temperature Shutdown
bit9=F58:FET2 Over-Temperature Shutdown
bit10=F59:Configuration Copy Error
bit11=F60:Invalid Fault
bit12=F61:Invalid Warning
bit13=F62:Invalid Interrupt
bit14=F63:AC Overload (Primary)
bit15=F64:AC Overload (Secondary 1s)

2.5 Fault Bitmap 3

One or more of the following fault bits may be set:

bit0=F65:AC Overload (2s)
bit1=F66:System Configuration Error
bit2=F67:Watchdog Reset
bit3=F68:Transformer Over-Temperature
bit4=F69:Synchronization Signal Fault
bit5=F70:Three Phase Configuration Fault
bit6=F90:External BMS Disconnected
bit7=F71:Battery Discharge Over Current
bit8=F72:External Contactor Malfunction
bit9=F73:Battery Charge Over Current
bit10=F74:Battery Under Voltage
bit11=F75:Battery Over Voltage
bit12=F91:SOC Level Lost
bit13=F92:Gateway Comms Lost
bit14=F93:SunSpec Controller Comms Lost

2.6 Warning Bitmap 0

One or more of the following warning bits may be set:

bit0=W44:Battery Over Temperature
bit1=W45:Capacitor Over Temperature
bit2=W48:DC Under Voltage

bit3=W49:DC Over Voltage
bit4=W57:FET1 Over Temperature
bit5=W58:FET2 Over Temperature
bit6=W63:AC Overload
bit7=W64:AC Overload
bit8=W68:Transformer Over Temperature
bit9=W70:Check Phase Configuration
bit10=W94:Remote Power Off
bit11=W95:Equalize Abort
bit12=W96:Cannot Equalize
bit13=W97:Battery Temperature Sensor Failure
bit14=W500:Lost Network Connection
bit15=W501:Non Volatile Memory Warning

2.7 AC1 Voltage Qualification

The following AC qualification states may be reported:

0=Not Qualifying
1=Qualifying
2=Missing
3=Too Low
4=Too High
5=Qualification Good

2.8 AC1 Frequency Qualification

The following AC qualification states may be reported:

0=Not Qualifying
1=Qualifying
2=Missing
3=Too Low
4=Too High
5=Qualification Good

2.9 Inverter Status

The Conext XW Inverter may operate in one of the following modes:

1024=Invert
1025=AC Pass Through
1026=APS Only
1027=Load Sense
1028=Inverter Disabled
1029=Load Sense Ready
1030=Engaging Inverter
1031=Invert Fault
1032=Inverter Standby
1033=Grid-Tied
1034=Grid Support
1035=Gen Support
1036=Sell-to-Grid
1037=Load Shaving
1038=Grid Frequency Stabilization
1039=AC Coupling
1040=Reverse Ibatt

2.10 Charger Status

The Conext XW Charger may operate in one of the following modes:

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

2.11 AC2 Voltage Qualification

The following AC qualification states may be reported:

0=Not Qualifying
1=Qualifying
2=Missing
3=Too Low
4=Too High
5=Qualification Good

2.12 AC2 Frequency Qualification

The following AC qualification states may be reported:

0=Not Qualifying
1=Qualifying
2=Missing
3=Too Low
4=Too High
5=Qualification Good

2.13 Auxiliary Output Trigger Mode

The XW Auxiliary Output may operate in one of the following modes:

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

2.14 Auxiliary Output On Reason

This field reports the reason the Conext XW Auxiliary Output is active

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

2.15 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

2.16 Warning Bitmap 1

One or more of the following warning bits may be set:

bit0=W93:DRM0 Enabled

2.17 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

2.18 Conext XW Inverter Configuration

The Conext XW may be configured as one of the following:

0=Invalid
1=Single Phase Stand Alone
11=Single Phase Master
12=Single Phase Slave
20=Split Phase Stand Alone
21=Split Phase Master
22=Split Phase Slave
23=Two Phase - Phase1-Master
24=Two Phase - Phase1-Slave
25=Two Phase - Phase2-Master
26=Two Phase - Phase2-Slave
30=Three Phase Stand Alone
31=Three Phase Master
32=Three Phase Slave
33=Three Phase - Phase1-Master
34=Three Phase - Phase1-Slave
35=Three Phase - Phase2-Master
36=Three Phase - Phase2-Slave
37=Three Phase - Phase3-Master
38=Three Phase - Phase3-Slave

2.19 Battery Type

The following battery types are supported:

0=Flooded
1=Gel
2=AGM
3=Custom
6=Li-Ion

2.20 AC Output Association

The following associations are supported:

51=AC Load 1
52=AC Load 2

53=AC Load 3
54=AC Load 4
55=AC Load 5
56=AC Load 6
57=AC Load 7
58=AC Load 8
59=AC Load 9
60=AC Load 10

2.21 AC Input Association

The following associations are supported:

1=None
19=Generator 1
20=Generator 2
21=Generator 3
22=Generator 4
23=Generator 5
24=Generator 6
25=Generator 7
26=Generator 8
27=Generator 9
28=Generator 10
67=Grid 1
68=Grid 2
69=Grid 3
70=Grid 4
71=Grid 5
72=Grid 6
73=Grid 7
74=Grid 8
75=Grid 9
76=Grid 10

2.22 AC Input/Output Association

The following associations are supported:

1=None
19=Generator 1
20=Generator 2

21=Generator 3
22=Generator 4
23=Generator 5
24=Generator 6
25=Generator 7
26=Generator 8
27=Generator 9
28=Generator 10
67=Grid 1
68=Grid 2
69=Grid 3
70=Grid 4
71=Grid 5
72=Grid 6
73=Grid 7
74=Grid 8
75=Grid 9
76=Grid 10

2.23 DC Input/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

2.24 Auxiliary Output Trigger Source

The Conext XW Auxiliary Output may be triggered from the following sources:

3=Low Battery Voltage
12=High Battery Voltage
48=Low Battery Temperature
192=High Battery Temperature
768=Fault
1024=Bulk Exit
2048=Absorption Exit
12288=Heat Sink Over Temperature

49152=Battery Low State of Charge
196608=Time of Day

2.25 Gen1 Voltage Qualification

The following AC qualification states may be reported:

0=Not Qualifying
1=Qualifying
2=Missing
3=Too Low
4=Too High
5=Qualification Good

2.26 Gen1 Frequency Qualification

The following AC qualification states may be reported:

0=Not Qualifying
1=Qualifying
2=Missing
3=Too Low
4=Too High
5=Qualification Good

2.27 Gen2 Voltage Qualification

The following AC qualification states may be reported:

0=Not Qualifying
1=Qualifying
2=Missing
3=Too Low
4=Too High
5=Qualification Good

2.28 Gen2 Frequency Qualification

The following AC qualification states may be reported:

0=Not Qualifying
1=Qualifying
2=Missing
3=Too Low
4=Too High
5=Qualification Good