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# Modbus Map: Conext Automatic Generator Start (AGS) Device

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503-0247-01-01  
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 AGS.

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 AGS Modbus map applies to the following products, as listed in Table 1.

**Table 1** Applicable Products

Product ID	Product Description
865-1060	Conext AGS

## 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 (975-0307-01-01).

## Section 1: Conext AGS 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	
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

**Table 3** Configuration and Status Registers

Modbus Address	Name	Type	read/write (r/w)	Units	Scale	Offset	Notes
0x0036	Configuration Refresh Counter	uint32	r		1.0	0.0	
0x0040	Device State	uint16	r		1.0	0.0	See section 2
0x0041	Device Present	uint16	r		1.0	0.0	0=Inactive (all
0x0042	Auto Generator State	uint16	r		1.0	0.0	See section 3
0x0043	Auto Generator Action	uint16	r		1.0	0.0	See section 4
0x0044	Generator On Reason	uint16	r		1.0	0.0	See section 5
0x0045	Generator Off Reason	uint16	r		1.0	0.0	See section 6
0x0046	Active Faults Flag	uint16	r		1.0	0.0	0=No Active Faults 1=Has Active Faults
0x0047	Active Warnings Flag	uint16	r		1.0	0.0	0=No Active Warnings 1=Has Active Warnings
0x0048	Fault Bitmap 0	uint16	r		1.0	0.0	See section 7
0x0049	Warning Bitmap 0	uint16	r		1.0	0.0	See section 8
0x004A	Configuration Errors	uint32	r		1.0	0.0	
0x004C	Operating Mode	uint16	rw		1.0	0.0	2=Standby 3=Operating
0x004D	Generator Mode	uint16	rw		1.0	0.0	0=Off 1=On 2=Automatic
0x004E	Reset	uint16	rw		1.0	0.0	0=Reboot 2=Reset to Factory
0x004F	Clear	uint16	rw		1.0	0.0	See section 9
0x0050	Generator Quiet Time Start	uint16	rw	min	1.0	0.0	
0x0051	Generator Quiet Time Stop	uint16	rw	min	1.0	0.0	
0x0052	Generator Quiet Time Enable / Disable	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0053	Generator Auto Start On DC V	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0054	Generator Auto Stop On DC V	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0055	Generator Auto Start On Battery SOC	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0056	Generator Auto Stop On Battery SOC	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0057	Inverter Load Start/Stop Triggers	uint16	rw		1.0	0.0	0=Disabled 1=Enabled

**Table 3** Configuration and Status Registers

Modbus Address	Name	Type	read/write (r/w)	Units	Scale	Offset	Notes
0x0058	Generator Auto Stop On AC I	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0059	Generator Stop At Absorption Stage	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x005A	Generator Stop At Float Stage	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x005B	Maximum Automatic Cycles with No User Intervention	uint16	rw		1.0	0.0	
0x005F	Thermostat 1	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0060	Thermostat 2	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0061	Generator Type	uint16	rw		1.0	0.0	Only Generator types 1 through 14 are supported.
0x0063	Generator Preheat Time	uint16	rw	s	1.0	0.0	
0x0064	Generator Crank Start Delay	uint16	rw	s	1.0	0.0	
0x0065	Generator Crank Time	uint16	rw	s	1.0	0.0	
0x0066	Shutdown Bypass Time	uint16	rw	s	1.0	0.0	
0x0067	Starter Cool Down Time	uint16	rw	s	1.0	0.0	
0x0068	Generator Crank Retry Time	uint16	rw	s	1.0	0.0	
0x0069	Generator Warmup Time	uint16	rw	s	1.0	0.0	
0x006A	Maximum Generator Run Time	uint16	rw	hours	0.016667	0.0	
0x006B	Generator Cool Down Time	uint16	rw	s	1.0	0.0	
0x006C	Generator Spin Down Time	uint16	rw	s	1.0	0.0	
0x006D	Generator Stop Timeout	uint16	rw	s	1.0	0.0	
0x006E	Generator Start Tries	uint16	rw		1.0	1.0	
0x006F	Generator Exercise Period	uint16	rw	days	1.0	0.0	
0x0070	Generator Exercise Duration	uint16	rw	min	1.0	0.0	
0x0071	Generator Exercise Start Time	uint16	rw	min	1.0	0.0	

**Table 3** Configuration and Status Registers

Modbus Address	Name	Type	read/write (r/w)	Units	Scale	Offset	Notes
0x0072	Generator Run Signal Hold Time	uint16	rw	s	0.01	0.0	
0x0073	Relay 3 Function	uint16	rw		1.0	0.0	See section 10
0x0074	AC Current Level to Stop	uint32	rw	A	0.001	0.0	
0x0076	AC Current Level to Start	uint32	rw	A	0.001	0.0	
0x0078	Starting Battery Voltage (30 Seconds)	sint32	rw	V	0.001	0.0	
0x007A	Starting Battery Voltage (15 Minutes)	sint32	rw	V	0.001	0.0	
0x007C	Starting Battery Voltage (2 Hours)	sint32	rw	V	0.001	0.0	
0x007E	Starting Battery Voltage (24 Hours)	sint32	rw	V	0.001	0.0	
0x0080	Stop Voltage	sint32	rw	V	0.001	0.0	
0x0082	Refresh Configuration Data	uint16	rw		1.0	0.0	1=Refresh
0x0083	Generator Association	uint16	rw		1.0	0.0	See section 11
0x0084	AC Output Association	uint16	rw		1.0	0.0	See section 12
0x0085	AC Input Association	uint16	rw		1.0	0.0	See section 13
0x0086	DC Input Association	uint16	rw		1.0	0.0	See section 14
0x0087	State of Charge Level to Stop Generator	uint16	rw	%	1.0	0.0	
0x0088	State of Charge Level to Start Generator	uint16	rw	%	1.0	0.0	
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	
0x002A	System Instance	uint16	rw		1.0	0.0	
0x002B	Hardware Serial Number	str20	r				

**Table 3** Configuration and Status Registers

Modbus Address	Name	Type	read/write (r/w)	Units	Scale	Offset	Notes
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	Device Present	uint16	r		1.0	0.0	0=Inactive (all
0x0042	Auto Generator State	uint16	r		1.0	0.0	See section 3
0x0043	Auto Generator Action	uint16	r		1.0	0.0	See section 4
0x0044	Generator On Reason	uint16	r		1.0	0.0	See section 5
0x0045	Generator Off Reason	uint16	r		1.0	0.0	See section 6
0x0046	Active Faults Flag	uint16	r		1.0	0.0	0=No Active Faults 1=Has Active Faults
0x0047	Active Warnings Flag	uint16	r		1.0	0.0	0=No Active Warnings 1=Has Active Warnings
0x0048	Fault Bitmap 0	uint16	r		1.0	0.0	See section 7
0x0049	Warning Bitmap 0	uint16	r		1.0	0.0	See section 8
0x004A	Configuration Errors	uint32	r		1.0	0.0	
0x004C	Operating Mode	uint16	rw		1.0	0.0	2=Standby 3=Operating
0x004D	Generator Mode	uint16	rw		1.0	0.0	0=Off 1=On 2=Automatic
0x004E	Reset	uint16	rw		1.0	0.0	0=Reboot 2=Reset to Factory
0x004F	Clear	uint16	rw		1.0	0.0	See section 9
0x0050	Generator Quiet Time Start	uint16	rw	min	1.0	0.0	
0x0051	Generator Quiet Time Stop	uint16	rw	min	1.0	0.0	
0x0052	Generator Quiet Time Enable / Disable	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0053	Generator Auto Start On DC V	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0054	Generator Auto Stop On DC V	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0055	Generator Auto Start On Battery SOC	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0056	Generator Auto Stop On Battery SOC	uint16	rw		1.0	0.0	0=Disabled 1=Enabled

**Table 3** Configuration and Status Registers

Modbus Address	Name	Type	read/write (r/w)	Units	Scale	Offset	Notes
0x0057	Inverter Load Start/Stop Triggers	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0058	Generator Auto Stop On AC I	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0059	Generator Stop At Absorption Stage	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x005A	Generator Stop At Float Stage	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x005B	Maximum Automatic Cycles with No User Intervention	uint16	rw		1.0	0.0	
0x005F	Thermostat 1	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0060	Thermostat 2	uint16	rw		1.0	0.0	0=Disabled 1=Enabled
0x0061	Generator Type	uint16	rw		1.0	0.0	Only Generator types 1 through 14 are supported.
0x0063	Generator Preheat Time	uint16	rw	s	1.0	0.0	
0x0064	Generator Crank Start Delay	uint16	rw	s	1.0	0.0	
0x0065	Generator Crank Time	uint16	rw	s	1.0	0.0	
0x0066	Shutdown Bypass Time	uint16	rw	s	1.0	0.0	
0x0067	Starter Cool Down Time	uint16	rw	s	1.0	0.0	
0x0068	Generator Crank Retry Time	uint16	rw	s	1.0	0.0	
0x0069	Generator Warmup Time	uint16	rw	s	1.0	0.0	
0x006A	Maximum Generator Run Time	uint16	rw	hours	0.016667	0.0	
0x006B	Generator Cool Down Time	uint16	rw	s	1.0	0.0	
0x006C	Generator Spin Down Time	uint16	rw	s	1.0	0.0	
0x006D	Generator Stop Timeout	uint16	rw	s	1.0	0.0	
0x006E	Generator Start Tries	uint16	rw		1.0	1.0	
0x006F	Generator Exercise Period	uint16	rw	days	1.0	0.0	
0x0070	Generator Exercise Duration	uint16	rw	min	1.0	0.0	

**Table 3** Configuration and Status Registers

Modbus Address	Name	Type	read/write (r/w)	Units	Scale	Offset	Notes
0x0071	Generator Exercise Start Time	uint16	rw	min	1.0	0.0	
0x0072	Generator Run Signal Hold Time	uint16	rw	s	0.01	0.0	
0x0073	Relay 3 Function	uint16	rw		1.0	0.0	See section 10
0x0074	AC Current Level to Stop	uint32	rw	A	0.001	0.0	
0x0076	AC Current Level to Start	uint32	rw	A	0.001	0.0	
0x0078	Starting Battery Voltage (30 Seconds)	sint32	rw	V	0.001	0.0	
0x007A	Starting Battery Voltage (15 Minutes)	sint32	rw	V	0.001	0.0	
0x007C	Starting Battery Voltage (2 Hours)	sint32	rw	V	0.001	0.0	
0x007E	Starting Battery Voltage (24 Hours)	sint32	rw	V	0.001	0.0	
0x0080	Stop Voltage	sint32	rw	V	0.001	0.0	
0x0082	Refresh Configuration Data	uint16	rw		1.0	0.0	1=Refresh
0x0083	Generator Association	uint16	rw		1.0	0.0	See section 11
0x0084	AC Output Association	uint16	rw		1.0	0.0	See section 12
0x0085	AC Input Association	uint16	rw		1.0	0.0	See section 13
0x0086	DC Input Association	uint16	rw		1.0	0.0	See section 14
0x0087	State of Charge Level to Stop Generator	uint16	rw	%	1.0	0.0	
0x0088	State of Charge Level to Start Generator	uint16	rw	%	1.0	0.0	

## Section 2: Conext AGS 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: Generator State

Auto Generator State can report one of the following values:

- 0=Quiet Time
- 1=Auto On
- 2=Auto Off
- 3=Manual On
- 4=Manual Off
- 5=Gen Shutdown
- 6=Ext Shutdown
- 7=AGS Fault
- 8=Suspend
- 9=Not Operating

## Section 4: Generator Actions

Auto Generator Action can report one of the following values:

- 0=Preheating
- 1=Start Delay
- 2=Cranking
- 3=Starter Cooling
- 4=Warming Up
- 5=Cooling Down
- 6=Spinning Down
- 7=Shutdown Bypass
- 8=Stopping
- 9=Running
- 10=Stopped
- 11=Crank Delay

## Section 5: Generator On Reason

Generator On Reason can report one of the following values:

- 0=Not On
- 1=DC Voltage Low
- 2=Battery SOC Low
- 3=AC Current High
- 4=Contact Closed

- 5=Manual On
- 6=Exercise
- 7=Non Quiet Time
- 8=Ext On via AGS
- 9=Ext On via Gen
- 10=Unable To Stop
- 11=AC Power High
- 12=DC Current High

## Section 6: Generator Off Reasons

Generator Off Reason can report one of the following values:

- 0=Not Off
- 1=DC Voltage High
- 2=Battery SOC High
- 3=AC Current Low
- 4=Contact Opened
- 5=Reached Absorp
- 6=Reached Float
- 7=Manual Off
- 8=Max Run Time
- 9=Max Auto Cycle
- 10=Exercise Done
- 11=Quiet Time
- 12=Ext Off via AGS
- 13=Safe Mode
- 14=Ext Off via Gen
- 15=Ext Shutdown
- 16=Auto Off
- 17=Fault
- 18=Unable To Start
- 19=Power Low
- 20=DC Current Low
- 21=AC Good

## Section 7: Conext AGS Fault Status

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

- bit0=F69:Node Instance Duplicated
- bit1=F200:Exceeded max number of start tries
- bit2=F201:Unable to stop gen
- bit3=F203:Gen Stopped by ext sensor
- bit4=F500:Serial Number Failure

- bit5=F501:Memory Failure
- bit6=F505:Internal Failure

## Section 8: Conext AGS Warning Bits

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

- bit0=W200:Generator was stopped manually
- bit1=W201:Generator was started manually
- bit2=W202:Unable to start generator
- bit3=W203:Manual Off
- bit4=W204:Max Genset Cycle with no user intervention
- bit5=W205:Generator started by its switch
- bit6=W206:Mismatched triggers
- bit7=W207:Mismatched triggers
- bit8=W208:Automatic start and stop triggers not enabled
- bit9=W209:Generator external stop
- bit10=W250:Value failed to change
- bit11=W500:Network connection lost
- bit12=W501:Memory problem - cleared memory
- bit13=W599:Invalid Associations

## Section 9: Clear Command

The Clear command clears the fault, warning, event, and communication logs. Configure Clear using 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 10: Relay 3 Functions

Configure Relay 3 Function using one of the following values:

- 0=Not Used
- 1=Run
- 2=Glow and Stop
- 3=Glow stop with Shutdown bypass
- 4=Crank

- 5=Preheat
- 6=Warm Up and Cool Down
- 7=Start and Stop
- 8=Preheat with Shutdown Bypass
- 9=Momentary Run
- 10=Pulse Stop

## Section 11: Generator Association

Configure Generator Association using one of the following values:

- 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

## Section 12: AC Load Association

Configure AC Output Association using one of the following values:

- 1=None
- 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

## Section 13: AC Input Association

Configure AC Input Association using one of the following values:

- 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

## Section 14: DC Input Association

Configure DC Input Association using one of the following values:

- 1=None
- 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
- 252=All Battery Banks

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