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Monico CCM Translator Ethernet Version 7.03

Installation and Operation Guide



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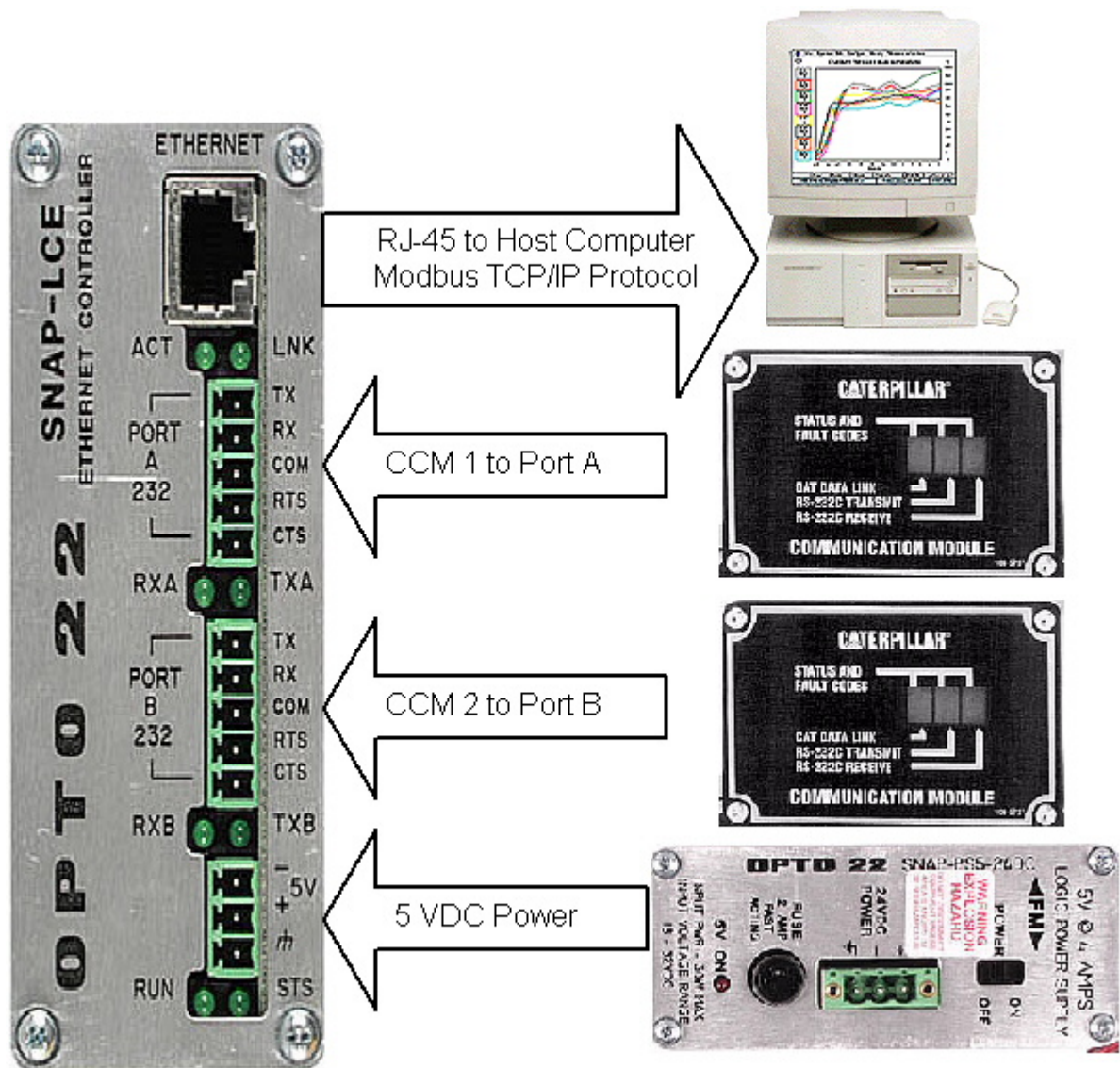
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Introduction

The CCM Translator is a multitasking controller designed to interface with a CCM and translate the information contained in that engine controller to Modbus TCP/IP format through an RJ-45 Ethernet port.

Each Translator can accommodate up to two engine's CCMs simultaneously. However, only one engine is supported for each CCM. The plug and play feature allows simple connection to a CCM from Port A and/or Port B. Once the Translator is connected and powered up, it automatically queries the engine and seeks out its controller type and available PID parameters. When the query is complete, it automatically begins scanning the engine controls and presents all PIDs in Modbus addresses through the Ethernet port.

Each Translator may be mounted on a back plane or ordered with DIN Rail mounting. See drawings in Appendices 1 and 2.



Power Supply

The Translator requires regulated 5 Vdc power at 500 ma. A companion Translator power supply is available in 120 Vdc/5 Vdc or 24 Vdc/5 Vdc configurations with the capability to supply multiple Translators.



With the power supply off or unplugged, connect it to the controller. The controller does not have a power switch; to turn it off, switch off the power supply.

CAUTION

Reversing wire polarity may cause damage to your controller. This damage is not covered by warranty. If in doubt about which wire is which on your power supply, check with a meter.

With the power supply off or unplugged, connect the +5V lead from the power supply (normally red) to the +5V terminal on the face of the SNAP-LCE.

Connect the COM wire from the power supply (normally black) to the COM terminal on the face of the SNAP-LCE.



Section 1: CCM Translator Communication Connections

Translator to Host PC or PLC Communication Connections

The Host device (PC, PLC, Building Management System, or SCADA System) is connected to the RJ-45 Ethernet port using a *Crossover* Cat5 or Cat6 cable. If using an Ethernet Switch or Router, a normal Cat5 or Cat6 cable may be used. The Host device acts as a Modbus TCP/IP master and will poll the translator using a specific IP address installed at the factory. The default *IP address is 192.168.0.201*. This IP address may be changed in the field using the appropriate utility. If your installation uses a firewall for security, make sure to *enable PORT 502 for MODBUS communications*. Version 7.01 (or higher) was updated to communicate with up to three Modbus TCP/IP masters simultaneously. *The maximum number of 16-bit registers that can be polled during one request is 32. If polling 32-bit registers, do not poll more than 16 registers per command. The Modbus TCP/IP setting for TIMEOUT must be set equal to or greater than the POLL TIME or POLL FREQUENCY. Otherwise, TCP/IP error will result.*

Translator to CCM Communication Connections

The Translator uses Port A and/or Port B to communicate with one or two CCM's. The Translator communicates with one engine through each CCM. Currently, multiple engines are not supported through a single CCM. The Translator will communicate with up to three controllers on each engine network.

Port A and Port B are configured as RS-232 and should *not be changed from factory default*. These ports are setup to connect to the RS-232C port on the back of the CCM. The CCM must be configured with a baud rate of 9600, 8 data bits, 1 stop bit and no parity. These settings are normally the factory default settings.

This connection requires three wires. Do not forget to include the jumper connection between pins four and five on the Port 2 and/or the Port 3 connector. *Monico offers an optional cable with the DB-25 connector preassembled and tested.* Refer to Figure 2-2 below.

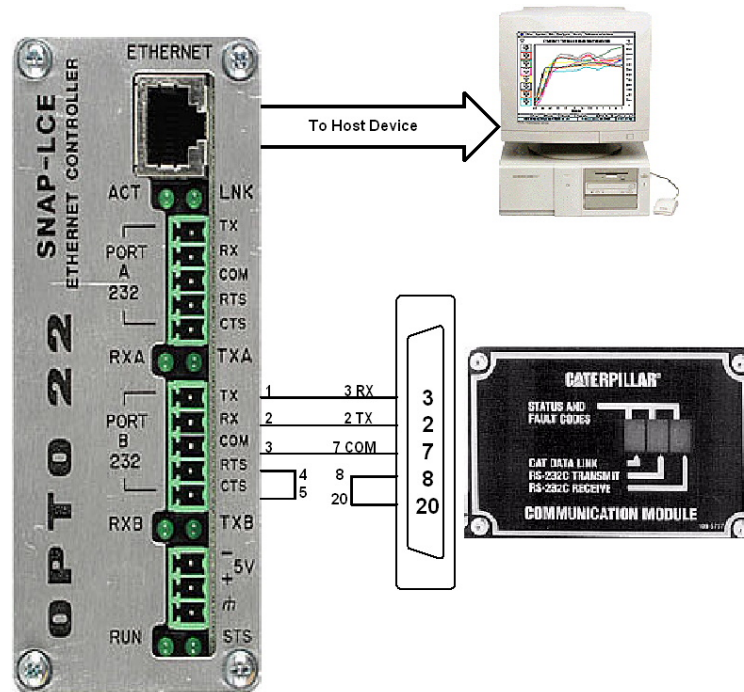


Figure 1.1 CCM to Translator Wiring Diagram

Section 2: Modbus Address Description

This version of the Translator has been designed to accommodate one CCM on each of Port A or Port B. Each port can process data for one (1) base controller and two (2) sub-controllers on the engine network. In most cases only the base controller will be present. In the case of generator sets, an EMCP II panel may be present as a second controller on the engine network. When interfacing with the G3520 gas engine, you may see up to three controllers or more on the engine network due to the presence of the ITSM module or the ICSM module.

This version is designed to support polling either Modbus Input registers (3xxx) or Modbus Holding Registers (4xxx). Therefore, throughout this manual you see reference to “x” which can be either a “3” for Input Registers or “4” for Holding registers. In Modbus convention, only Holding registers can be written to.

The Modbus Data Map provides modbus addresses for data provided by the Port A Base Controller. For the Port B Base Controller data, add 1000 to the modbus address value. More detailed addressing information is available below.

The Modbus Data Map is available on the Downloads page of the Monico, Inc. web site (www.monicoinc.com). This spreadsheet provides detailed information about all Translator data that can be read. This section includes all gains, offsets, signed information and also remarks indicating the binary (or Hex) map for packed digital status bits.



Translator Modbus Addresses – Port A

The Translator modbus addresses $x0001$ through $x0999$ (*Where x is either 3-input register or 4-holding register*) contain data that it receives from the CCM base controller connected to Port A. The modbus address ranges for the Port A base controller and sub-controllers are as follows:

Description	Modbus Address Range
Port A Base Controller	$x0001$ - $x0999$
Port A Sub-Controller A	$x2001$ - $x2999$
Port A Sub-Controller B	$x4001$ - $x4999$

The Translator modbus addresses $x0001$ through $x0999$ contain the base controller data for Port A. Add 2000 to the base controller addresses to access the corresponding data for Port A Sub-Controller A. Add 4000 to the base controller addresses to access the corresponding data for Port A Sub-Controller B.

Example:

Engine Cylinder #1 Exhaust Temperature for Port A base controller is at address $x0245$, therefore...

Cylinder #1 Exhaust Temp. for Port A Sub-Controller A would be located at $x0245+2000= x2245$

Cylinder #1 Exhaust Temp. for Port A Sub-Controller B would be located at $x0245+4000= x4245$

Translator Modbus Addresses – Port B

The Translator modbus addresses $x1001$ through $x1999$ contain data that it receives from the CCM base controller connected to Port B. The modbus address ranges for the Port B base controller and sub-controllers are as follows:

Description	Modbus Address Range
Port B Base Controller	$x1001$ - $x1999$
Port B Sub-Controller A	$x3001$ - $x3999$
Port B Sub-Controller B	$x5001$ - $x5999$

The Translator modbus addresses $x1001$ through $x1999$ contain the base controller data for Port B. Add 2000 to the base controller addresses to access the corresponding data for Port B Sub-Controller A. Add 4000 to the base controller addresses to access the corresponding data for Port B Sub-Controller B.

Example:

Engine Cylinder #1 Exhaust Temperature for Port B base controller is at address $x0245 +1000= x 1245$, therefore...

Cylinder #1 Exhaust Temp. for Port B Sub-Controller A would be located at $x1245+2000= x3245$

Cylinder #1 Exhaust Temp. for Port B Sub-Controller B would be located at $x1245+4000= x5245$



Fault Code Addressing

Fault codes are available for many of the data values supplied by Engine controllers. The first 500 addresses of the respective modbus address range are used to return data values from the controller. The next 500 addresses are used to return fault codes for the respective values (if available). The following example illustrates the relationship between data addresses and fault codes:

Examples:

For a data value at address $x0121$ (this would be from the Port B Base Controller), the corresponding fault code would be located at $x0121+500=x0621$

For a data value at address $x1121$ (this would be from the Port B Base Controller), the corresponding fault code would be located at $x1121+500= x1621$

For a data value at address $x3121$ (this would be from Port B Sub-Controller A), the corresponding fault code would be located at $x3121+500= x3621$

The following table provides a quick reference for fault codes returned by the Translator:

Description	Fault Code
Data erratic, intermittent or incorrect	2
Shorted high or open circuit	3
Shorted low	4
Open circuit or current below normal	5
Current above normal or grounded circuit	6
Abnormal frequency, pulse width or period	8
Abnormal update	9
Failure mode not identified	11
Bad device or component	12
Parameter not available	16
Module not responding	17
Sensor supply fault	18

Section 4: Status & Activation Settings

A variety of Modbus registers are reserved for Status and Error Code information as shown below. In addition, writing to the CCM is enabled utilizing the register marked as “Writes Enabled”.

CCM Status Codes

CCM Translator Status

Description	Modbus Address	Read/Write
Program Version #	$x9201$	Read
Software Revision	$x9202$	Read
Modbus Error Code (-1=OK)	$x9203$	Read
	$x9204$	Reserved



	x9205	Reserved
	x9206	Reserved
	x9207	Reserved
	x9208	Reserved
	x9209	Reserved
	x9210	Reserved

Port A Driver Status Variables

Description (Base Controller)	Modbus Address	Read/Write
CCM Driver Status	x9301	Read
Error Code	x9302	Read
CCM Access Level	x9303	Read
Engine Base Controller Type	x9304	Read
Poll Time	x9305	Read
PIDS Scanned	x9306	Read
Writes Enabled	x9307	Read/Write
# of Engine Controllers Found	x9308	Read
Current Controller	x9309	Read
Desired Engine Base Controller Type	x9310	Read/Write



Description (Sub-Controller A)	Modbus Address	Read/Write
Engine Sub Controller Type	x9311	Read
PID's Scanned	x9312	Read
Desired Engine Sub Controller Type	x9320	Read/Write

Description (Sub-Controller B)	Modbus Address	Read/Write
Engine Sub Controller Type	x9321	Read
PID's Scanned	x9322	Read
Desired Engine Sub Controller Type	x9330	Read/Write

Description (Engine Reads)	Modbus Address	Read/Write
Enable Block Reads	x9331	Read/Write
Active Broadcast Lists	x 9332	Read
List 1 Status	x9333	Read
List 2 Status	x9334	Read
List 3 Status	x9335	Read
List 4 Status	x9336	Read
List 5 Status	x9337	Read
List 6 Status	x9338	Read
List 7 Status	x9339	Read
List 8 Status	x9340	Read
List 9 Status	x9341	Read
List 10 Status	x9342	Read
List 11 Status	x9343	Read
List 12 Status	x9344	Read
List 13 Status	x9345	Read
List 14 Status	x9346	Read
List 15 Status	x9347	Read
List 16 Status	x9348	Read
<u>Note:</u> -1 Setup, -2 Activated, -3 Data Received		

Port B Driver Status Variables

Description (Base Controller)	Modbus Address	Read/Write
CCM Driver Status	x9401	Read
Error Code	x9402	Read
CCM Access Level	x9403	Read
Engine Base Controller Type	x9404	Read
Poll Time	x9405	Read
PIDS Scanned	x9406	Read
Writes Enabled	x9407	Read/Write
# of Engine Controllers Found	x9408	Read
Current Controller	x9409	Read
Desired Engine Base Controller Type	x9410	Read/Write



Description (Sub-Controller A)	Modbus Address	Read/Write
Engine Sub Controller Type	x9411	Read
PID's Scanned	x9412	Read
Desired Engine Sub Controller Type	x9420	Read/Write

Description (Sub-Controller B)	Modbus Address	Read/Write
Engine Sub Controller Type	x9421	Read
PID's Scanned	x9422	Read
Desired Engine Sub Controller Type	x9430	Read/Write

Description (Engine Reads)	Modbus Address	Read/Write
Enable Block Reads	x9431	Read/Write
Active Broadcast Lists	x9432	Read
List 1 Status	x9433	Read
List 2 Status	x9434	Read
List 3 Status	x9435	Read
List 4 Status	x9436	Read
List 5 Status	x9437	Read
List 6 Status	x9438	Read
List 7 Status	x9439	Read
List 8 Status	x9440	Read
List 9 Status	x9441	Read
List 10 Status	x9442	Read
List 11 Status	x9443	Read
List 12 Status	x9444	Read
List 13 Status	x9445	Read
List 14 Status	x9446	Read
List 15 Status	x9447	Read
List 16 Status	x9448	Read
Note: -1 Setup, -2 Activated, -3 Data Received		

User Engine Selection

When the Translator is connected to the CCM and powered up it will, by default, search for an engine controllers automatically. The translator supports a maximum of three engine controllers per communication port. The user can select the engine controller position manually by writing the modbus value for a specific engine controller (See Table in Section 5 “Engine Type”) to the desired engine controller type addresses. For example, the Port A base engine controller can be selected by writing to the modbus address 49310. The next two engine controllers would be selected by writing to modbus address 49320 and 49330 respectively.

Writing a zero to a desired engine controller address allows the driver to find the engine controller automatically (default). To disable the translator’s ability to auto select one or any of the engine controllers write a value of 999 to the desired engine controller type address.



The following is a summary of the engine controller selection addresses:

For CCM's connected to Port A:

Modbus Address	Engine Selection
49310	Base controller
49320	Sub-Controller A
49330	Sub-Controller B

For CCM's connected to Port B:

Modbus Address	Engine Selection
49410	Base controller
49420	Sub-Controller A
49430	Sub-Controller B

Enabling and Disabling CCM Writes

The Translator default WRITE Enable/Disable Codes are disabled or set to "0" (see previous tables labeled "Port A Driver Status Variables" and "Port B Driver Status Variables") restricting writing of values to the CCM. In order to change the WRITE codes to Enable (1) a write of "1" must be made to the associated Modbus address (Port A=49307, Port B=49407). **Do not enable the write codes unless there are other safety methods created to ensure an engine is not started or stopped accidentally.** After the writes have been enabled, the registers that have an access level of read/write can be used to send commands to the CCM. Appendix 3 contains a table of command values to send to writable registers. *The translator must be power cycled after any values are written.*

Enabling and Disabling Individual Data Registers

The Translator allows the user to enable and disable communication to any of the data registers denoted in the following table. Each data register is enabled or disabled by setting (1) or clearing (0) the associated register bit. The tables titled "Port A PID Enable/Disable Codes" and "Port B PID Enable/Disable Codes" provide the bit map for each of the corresponding data registers. Use the Monico Id and the Modbus Data Map (see Appendix 3) to select the data registers to enable or disable. We have also provided a binary to decimal conversion macro at the bottom of the Modbus Data Map to automate this process. After making changes in the column labeled "Default Enabled", go to the bottom of the spreadsheet to record the enable codes. Write these decimal values to the appropriate registers and *power cycle the Translator*. Upon restart, the enabled registers will be available. *Please note the startup process can take up to 5 minutes.*

The following table lists the descriptions and information that must be written to the listed modbus addresses to enable/disable translator data registers. Refer to appendix 3 to convert the Monico ID to the CCM data register.



Port A PID Enable/Disable Codes

Description (Port A Base Controller)	Modbus Address	Read/Write
Enable Data at Monico ID 1 - 16	49501	Read/Write
Enable Data at Monico ID 17 - 32	49502	Read/Write
Enable Data at Monico ID 33 - 48	49503	Read/Write
Enable Data at Monico ID 49 - 64	49504	Read/Write
Enable Data at Monico ID 65 - 80	49505	Read/Write
Enable Data at Monico ID 81 - 96	49506	Read/Write
Enable Data at Monico ID 97 - 112	49507	Read/Write
Enable Data at Monico ID 113 - 128	49508	Read/Write
Enable Data at Monico ID 129 - 144	49509	Read/Write
Enable Data at Monico ID 145 - 160	49510	Read/Write
Enable Data at Monico ID 161 - 176	49511	Read/Write
Enable Data at Monico ID 177 - 192	49512	Read/Write
Enable Data at Monico ID 193 - 208	49513	Read/Write
Enable Data at Monico ID 209 - 224	49514	Read/Write
Enable Data at Monico ID 225 - 240	49515	Read/Write
Enable Data at Monico ID 241 - 256	49516	Read/Write
Enable Data at Monico ID 257 - 272	49517	Read/Write
Enable Data at Monico ID 273 - 288	49518	Read/Write
Enable Data at Monico ID 289 - 304	49519	Read/Write
Enable Data at Monico ID 305 - 320	49520	Read/Write
Enable Data at Monico ID 321 - 336	49521	Read/Write
Enable Data at Monico ID 337 - 352	49522	Read/Write
Enable Data at Monico ID 353 - 368	49523	Read/Write
Enable Data at Monico ID 369 - 384	49524	Read/Write
Enable Data at Monico ID 385 - 400	49525	Read/Write
Enable Data at Monico ID 401 - 416	49526	Read/Write
Enable Data at Monico ID 417 - 432	49527	Read/Write
Enable Data at Monico ID 433 - 448	49528	Read/Write
Enable Data at Monico ID 449 - 464	49529	Read/Write
Enable Data at Monico ID 465 - 480	49530	Read/Write
Enable Data at Monico ID 481 - 496	49531	Read/Write

Description (Port A Sub-Controller A)	Modbus Address	Read/Write
Enable Data at Monico ID 1 - 16	49532	Read/Write
Enable Data at Monico ID 17 - 32	49533	Read/Write
Enable Data at Monico ID 33 - 48	49534	Read/Write
Enable Data at Monico ID 49 - 64	49535	Read/Write
Enable Data at Monico ID 65 - 80	49536	Read/Write
Enable Data at Monico ID 81 - 96	49537	Read/Write
Enable Data at Monico ID 97 - 112	49538	Read/Write
Enable Data at Monico ID 113 - 128	49539	Read/Write
Enable Data at Monico ID 129 - 144	49540	Read/Write
Enable Data at Monico ID 145 - 160	49541	Read/Write
Enable Data at Monico ID 161 - 176	49542	Read/Write



Enable Data at Monico ID 177 - 192	49543	Read/Write
Enable Data at Monico ID 193 - 208	49544	Read/Write
Enable Data at Monico ID 209 - 224	49545	Read/Write
Enable Data at Monico ID 225 - 240	49546	Read/Write
Enable Data at Monico ID 241 - 256	49547	Read/Write
Enable Data at Monico ID 257 - 272	49548	Read/Write
Enable Data at Monico ID 273 - 288	49549	Read/Write
Enable Data at Monico ID 289 - 304	49550	Read/Write
Enable Data at Monico ID 305 - 320	49551	Read/Write
Enable Data at Monico ID 321 - 336	49552	Read/Write
Enable Data at Monico ID 337 - 352	49553	Read/Write
Enable Data at Monico ID 353 - 368	49554	Read/Write
Enable Data at Monico ID 369 - 384	49555	Read/Write
Enable Data at Monico ID 385 - 400	49556	Read/Write
Enable Data at Monico ID 401 - 416	49557	Read/Write
Enable Data at Monico ID 417 - 432	49558	Read/Write
Enable Data at Monico ID 433 - 448	49559	Read/Write
Enable Data at Monico ID 449 - 464	49560	Read/Write
Enable Data at Monico ID 465 - 480	49561	Read/Write
Enable Data at Monico ID 481 - 496	49562	Read/Write

Description (Port A Sub-Controller B)	Modbus Address	Read/Write
Enable Data at Monico ID 1 - 16	49563	Read/Write
Enable Data at Monico ID 17 - 32	49564	Read/Write
Enable Data at Monico ID 33 - 48	49565	Read/Write
Enable Data at Monico ID 49 - 64	49566	Read/Write
Enable Data at Monico ID 65 - 80	49567	Read/Write
Enable Data at Monico ID 81 - 96	49568	Read/Write
Enable Data at Monico ID 97 - 112	49569	Read/Write
Enable Data at Monico ID 113 - 128	49570	Read/Write
Enable Data at Monico ID 129 - 144	49571	Read/Write
Enable Data at Monico ID 145 - 160	49572	Read/Write
Enable Data at Monico ID 161 - 176	49573	Read/Write
Enable Data at Monico ID 177 - 192	49574	Read/Write
Enable Data at Monico ID 193 - 208	49575	Read/Write
Enable Data at Monico ID 209 - 224	49576	Read/Write

Description (Sub-Controller B cont'd)	Modbus Address	Read/Write
Enable Data at Monico ID 225 - 240	49577	Read/Write
Enable Data at Monico ID 241 - 256	49578	Read/Write
Enable Data at Monico ID 257 - 272	49579	Read/Write
Enable Data at Monico ID 273 - 288	49580	Read/Write



Enable Data at Monico ID 289 - 304	49581	Read/Write
Enable Data at Monico ID 305 - 320	49582	Read/Write
Enable Data at Monico ID 321 - 336	49583	Read/Write
Enable Data at Monico ID 337 - 352	49584	Read/Write
Enable Data at Monico ID 353 - 368	49585	Read/Write
Enable Data at Monico ID 369 - 384	49586	Read/Write
Enable Data at Monico ID 385 - 400	49587	Read/Write
Enable Data at Monico ID 401 - 416	49588	Read/Write
Enable Data at Monico ID 417 - 432	49589	Read/Write
Enable Data at Monico ID 433 - 448	49590	Read/Write
Enable Data at Monico ID 449 - 464	49591	Read/Write
Enable Data at Monico ID 465 - 480	49592	Read/Write
Enable Data at Monico ID 481 - 496	49593	Read/Write

Port B PID Enable/Disable Codes

Description (Port B Base Controller)	Modbus Address	Read/Write
Enable Data at Monico ID 1 – 16	49601	Read/Write
Enable Data at Monico ID 17 - 32	49602	Read/Write
Enable Data at Monico ID 33 - 48	49603	Read/Write
Enable Data at Monico ID 49 - 64	49604	Read/Write
Enable Data at Monico ID 65 - 80	49605	Read/Write
Enable Data at Monico ID 81 - 96	49606	Read/Write
Enable Data at Monico ID 97 - 112	49607	Read/Write
Enable Data at Monico ID 113 - 128	49608	Read/Write
Enable Data at Monico ID 129 - 144	49609	Read/Write
Enable Data at Monico ID 145 - 160	49610	Read/Write
Enable Data at Monico ID 161 - 176	49611	Read/Write
Enable Data at Monico ID 177 - 192	49612	Read/Write
Enable Data at Monico ID 193 - 208	49613	Read/Write
Enable Data at Monico ID 209 - 224	49614	Read/Write
Enable Data at Monico ID 225 - 240	49615	Read/Write
Enable Data at Monico ID 241 - 256	49616	Read/Write
Enable Data at Monico ID 257 - 272	49617	Read/Write
Enable Data at Monico ID 273 - 288	49618	Read/Write
Enable Data at Monico ID 289 - 304	49619	Read/Write
Enable Data at Monico ID 305 - 320	49620	Read/Write
Enable Data at Monico ID 321 - 336	49621	Read/Write
Enable Data at Monico ID 337 - 352	49622	Read/Write
Enable Data at Monico ID 353 - 368	49623	Read/Write
Enable Data at Monico ID 369 - 384	49624	Read/Write
Enable Data at Monico ID 385 - 400	49625	Read/Write
Enable Data at Monico ID 401 - 416	49626	Read/Write



Description (Port B Base Controller) cont'd	Modbus Address	Read/Write
Enable Data at Monico ID 417 - 432	49627	Read/Write
Enable Data at Monico ID 433 - 448	49628	Read/Write
Enable Data at Monico ID 449 - 464	49629	Read/Write
Enable Data at Monico ID 465 - 480	49630	Read/Write
Enable Data at Monico ID 481 - 496	49631	Read/Write

Description (Port B Sub-Controller A)	Modbus Address	Read/Write
Enable Data at Monico ID 1 - 16	49632	Read/Write
Enable Data at Monico ID 17 - 32	49633	Read/Write
Enable Data at Monico ID 33 - 48	49634	Read/Write
Enable Data at Monico ID 49 - 64	49635	Read/Write
Enable Data at Monico ID 65 - 80	49636	Read/Write
Enable Data at Monico ID 81 - 96	49637	Read/Write
Enable Data at Monico ID 97 - 112	49638	Read/Write
Enable Data at Monico ID 113 - 128	49639	Read/Write
Enable Data at Monico ID 129 - 144	49640	Read/Write
Enable Data at Monico ID 145 - 160	49641	Read/Write
Enable Data at Monico ID 161 - 176	49642	Read/Write
Enable Data at Monico ID 177 - 192	49643	Read/Write
Enable Data at Monico ID 193 - 208	49644	Read/Write
Enable Data at Monico ID 209 - 224	49645	Read/Write
Enable Data at Monico ID 225 - 240	49646	Read/Write
Enable Data at Monico ID 241 - 256	49647	Read/Write
Enable Data at Monico ID 257 - 272	49648	Read/Write
Enable Data at Monico ID 273 - 288	49649	Read/Write
Enable Data at Monico ID 289 - 304	49650	Read/Write
Enable Data at Monico ID 305 - 320	49651	Read/Write
Enable Data at Monico ID 321 - 336	49652	Read/Write
Enable Data at Monico ID 337 - 352	49653	Read/Write
Enable Data at Monico ID 353 - 368	49654	Read/Write
Enable Data at Monico ID 369 - 384	49655	Read/Write
Enable Data at Monico ID 385 - 400	49656	Read/Write
Enable Data at Monico ID 401 - 416	49657	Read/Write
Enable Data at Monico ID 417 - 432	49658	Read/Write
Enable Data at Monico ID 433 - 448	49659	Read/Write
Enable Data at Monico ID 449 - 464	49660	Read/Write
Enable Data at Monico ID 465 - 480	49661	Read/Write
Enable Data at Monico ID 481 - 496	49662	Read/Write



Description (Port B Sub-Controller B)	Modbus Address	Read/Write
Enable Data at Monico ID 1 - 16	49663	Read/Write
Enable Data at Monico ID 17 - 32	49664	Read/Write
Enable Data at Monico ID 33 - 48	49665	Read/Write
Enable Data at Monico ID 49 - 64	49666	Read/Write
Enable Data at Monico ID 65 - 80	49667	Read/Write
Enable Data at Monico ID 81 - 96	49668	Read/Write
Enable Data at Monico ID 97 - 112	49669	Read/Write
Enable Data at Monico ID 113 - 128	49670	Read/Write
Enable Data at Monico ID 129 - 144	49671	Read/Write
Enable Data at Monico ID 145 - 160	49672	Read/Write
Enable Data at Monico ID 161 - 176	49673	Read/Write
Enable Data at Monico ID 177 - 192	49674	Read/Write
Enable Data at Monico ID 193 - 208	49675	Read/Write
Enable Data at Monico ID 209 - 224	49676	Read/Write
Enable Data at Monico ID 225 - 240	49677	Read/Write
Enable Data at Monico ID 241 - 256	49678	Read/Write
Enable Data at Monico ID 257 - 272	49679	Read/Write
Enable Data at Monico ID 273 - 288	49680	Read/Write
Enable Data at Monico ID 289 - 304	49681	Read/Write
Enable Data at Monico ID 305 - 320	49682	Read/Write
Enable Data at Monico ID 321 - 336	49683	Read/Write
Enable Data at Monico ID 337 - 352	49684	Read/Write
Enable Data at Monico ID 353 - 368	49685	Read/Write
Enable Data at Monico ID 369 - 384	49686	Read/Write
Enable Data at Monico ID 385 - 400	49687	Read/Write
Enable Data at Monico ID 401 - 416	49688	Read/Write
Enable Data at Monico ID 417 - 432	49689	Read/Write
Enable Data at Monico ID 433 - 448	49690	Read/Write
Enable Data at Monico ID 449 - 464	49691	Read/Write
Enable Data at Monico ID 465 - 480	49692	Read/Write
Enable Data at Monico ID 481 - 496	49693	Read/Write



Section 3: Engine Type, Driver Status & Driver Error Codes

Engine Types

The Translator currently supports the engine types shown in the table below. The engine type code is returned by the driver in the register shown in the tables titled “Port A Driver Status Variables” and “Port B Driver Status Variables” (shown on page 10). The status returned by the driver is represented by the value labeled below as “Modbus Value”.

Description	Controller	Engine Type	Modbus Value
Electronic Engine Controller (Marine - Port)	3500B	21	33
Electronic Engine Controller (Marine - Starboard)	3500B	22	34
Electronic Engine Controller (Generator Set, Marine - Single or Center)	3500B	24	36
CCM	ALL	61	97
Electronic Engine Controller 1	3500B	21	33
Electronic Engine Controller 2	3500B	22	34
Electronic Engine Controller 3	3500B	23	35
Electronic Engine Controller 4 / G3600A+ ADEM III	3500B/3600A+	24	36
Electronic Engine Controller 5	3500B	25	37
Electronic Engine Controller 6	3500B	26	38
Electronic Engine Controller 7	3500B	28	40
Electronic Engine Controller 8	3500B	29	41
GSC Number 1	EMCPH	58	88
GSC Number 2	EMCPH	59	89
GSC Number 3	EMCPH	5A	90
GSC Number 4	EMCPH	5B	91
GSC Number 5	EMCPH	5C	92
GSC Number 6	EMCPH	5D	93
GSC Number 7	EMCPH	5E	94
GSC Number 8	EMCPH	5F	95
G3600 ESS System	3400,3500,3600 Gas	12	18
G3500 Air to Fuel Ration System	3400,3500,3600 Gas	13	19
EIS system	3400,3500,3600 Gas	0E	14
G3600A+ ICSM Odd Bank	ICSM+	6D	109
G3600A+ ICSM Even Bank	ICSM+	6E	110
G3520C	ITSM	6F	111



CCM Driver Status Codes

Status codes can be used to diagnose problems with the Translator. A status code is returned by the driver in the register shown in the tables titled “Port A Driver Status Variables” and “Port B Driver Status Variables” (shown on page 10). The status returned by the driver is represented by the value labeled in the table shown below as “Status Code”.

Description	Status Code
Startup	
Initializing port and starting driver	0
Login	
Transmit login	1
Login response received from CCM	2
Request login level from CCM	3
Login level response received from CCM	4
Scan for Engine Types	
Scanning engine types	10
Transmitting engine type request	11
Response from engine received	12
Engine type found	13
Proceeding to read/write loop	14
Read Data	
Starting data read loop	20
Transmitting data requests	21
Response received from data request	22
Valid Data received	23
Write Data	
Starting data write loop	30
Write data request was sent	31
Write data request was received	32
Valid response was received	33
Create Broadcast List	
Start Creating Lists	50
Transmitting Create Broadcast List	51
Response Received	52
Valid Status Response List Setup	53
Activate Lists	
Starting Activate Lists	60
Transmitting Activate Lists	61
Response Read	62
Response Valid	63
Deactivate Lists	
Starting Deactivate Lists	70
Transmitting Deactivate Lists	71
Response Read	72
Response Valid	73



Broadcast Response	
Waiting for Response	80
Data Received	81
Data Valid	82
End of Loop	
	40
(Return to 20)	

CCM Driver Error Codes

Error codes can be used to diagnose errors in the Translator. An error code is returned by the driver in the register shown in the tables titled “Port A Driver Status Variables” and “Port B Driver Status Variables” (shown on page 10). The code returned by the driver is represented by the value labeled in the table shown below as “Error Block”.

Description	Error Block
Startup	
Port initialization error	0
Login	
Login transmit error	1
No response to login	2
Invalid response to login	3
Security level transmit request failed	4
Security level response receive error	5
Scan for Engine Types	
Engine type request transmit error	10
Read Data	
Data request transmit error	20
Enabled PID dip not responding to data request	21
Invalid data request response	22
Write Data	
Data write transmit error	30
Data write response error	31
Data write invalid response	32
Write command did not pass validation	33
Create Broadcast Lists	
Maximum Lists Exceeded	50
Create List Transmit Error	51
Create List Response Error	52
Invalid Response	53
Activate Lists	
Transmit Error	60
Receive Error	61



Invalid Response	62
Deactivate Lists	
Transmit Error	70
Receive Error	71
Invalid Response	72
Broadcast Response	
Receive Error	80
Data Invalid	81
Timeout	82
Other Codes	
Communication Timeout	-42

Section 4: CCM Conversion Details

Some of the raw values from the modbus registers will require calculations to convert them into actual engine data. The following information provides a list of the conversion types and the calculations necessary to provide actual engine measurement values.

Hex to Integer

For signed values: Value should be read from the modbus registers as a signed integer. After being read, multiply by the gain and add the offset.

For unsigned values: Value should be read from the modbus registers as an unsigned integer. After being read, multiply by the gain and add the offset.

Hex to Integer w/ Fault Codes

For signed values: Value should be read from the modbus registers as a signed integer. After being read, multiply by the gain and add the offset.

For unsigned values: Value should be read from the modbus registers as an unsigned integer. After being read, multiply by the gain and add the offset.

Fault codes are stored at the modbus address + 300. See next page for a table of fault code values.

Engine Type Code as 3 Digit Integer

Format is *XYZ* where *X* is the engine family and *YZ* is the number of cylinders.

Negative=Active, Positive=Inactive

A value of 0 indicates that the status is inactive, disabled or off.

A value of 1 indicates that the status is active, enabled or on.

Diagnostic Codes

Not supported



0=False (OFF), NonZero =True (ON) w/Fault Codes

A value of 0 indicates that the status is inactive, disabled or off.
A value of 1 indicates that the status is active, enabled or on.

0=Stop (OFF), NonZero=Start (ON)

A value of 0 indicates that the status is inactive, disabled or off.
A value of 1 indicates that the status is active, enabled or on.

Multistate w/ Fault Codes

Read from modbus register as unsigned integer. The value is composed of more than one status condition. This is accomplished by setting the appropriate bits for each status condition. See details below:

Monico Id	PID Description	Modbus Address	Manual Remarks
19	Engine Control Switch Position	x0019	0=Off/reset, 2=Start, 3=Stop, 4=Auto
20	Shutdown Notify Relay Status	x0020	0=Relay is OFF, 1=Relay is ON
23	Start-up Mode Status	x0023	0=Starter is OFF, 1=Starter is ON, 2=Overcrank, 3=Startup Successful, 224-255 are Fault Identifiers*
31	Engine Prelube Status	x0031	Starting at 0: Prelube=OFF, ON, DISABLED, COMPLETED. 4-255 are Fault Identifiers*
34	Remote Throttle Override (Generator Set Only)	x0034	0= Normal throttle setting, 1=Low idle setting, 224-255 are Fault Identifiers*
36	Low Idle Switch Position	x0036	0=Switch is OFF, 1=Switch is ON, 224-255 are Fault Identifiers*
65	Generator Phase A Power Factor Lead/Lag Status	x0065	0=Current lags voltage, 1=Current leads voltage, 224-255 Fault Identifiers*
66	Generator Phase B Power Factor Lead/Lag Status	x0066	0=Current lags voltage, 1=Current leads voltage, 224-255 Fault Identifiers*
67	Generator Phase C Power Factor Lead/Lag Status	x0067	0=Current lags voltage, 1=Current leads voltage, 224-255 Fault Identifiers*
68	Generator Average Power Factor Lead/Lag Status	x0068	0=Current lags voltage, 1=Current leads voltage, 224-255 Fault Identifiers*
73	EPG Circuit Breaker Status (GSP+P only)	x0073	0=Breaker open, 1=Breaker closed, 228=Breaker sensor input shorted low
262	Engine Coolant Pump Pressure Status	x0290	0=coolant pressure OK, 1=coolant pressure too high, 2=Too Low. 0-223 is Valid Range, 224-255 are Fault Identifiers
334	Hydrax Oil Pressure Switch Status	x0362	22=Open, 23=Closed. 65504-65535 are Fault Identifiers
336	Emissions Feedback Mode	x0364	394=Combustion Time Feedback, 395=Exhaust Temperature Feedback, 397=Calibration Feedback, 398=No Feedback, 65504-65535 are Fault Identifiers

Multistate

Read from modbus register as unsigned integer. The value indicates different status conditions depending on the value being read. See details below:

Monico Id	PID Description	Modbus Address	Manual Remarks
26	Generator Phase Select	x0026	0=Phase A-B Volts A current, 1=Phase B-C Volts B current, 2=Phase C-A Volts C current



Monico Id	PID Description	Modbus Address	Manual Remarks
29	Generator AC Voltage Full Scale and External PT Setpoint	x0029	0=700v, 1=150v, 2=300, 3=500, 4=600, 5=750, 6=3k, 7=4.5k, 8=5.25k, 9=9k, 10=15k, 11=18k, 12=30k
30	Generator AC Current Full Scale Setpoint (Read)	x0030	starting at 0: 75,100,150,200,300,400,600,800,1k,1.2k,1.5k,2k,2.5k,3k,4k Amps
35	ECM in Control (Marine Only)	x0035	0=Primary ECM is controlling, 1=Backup ECM is controlling
63	Generator AC Voltage Full Scale Transformer Setpoint	x0063	0=700v, 1=150v, 2=300, 3=500, 4=600, 5=750, 6=3k, 7=4.5k, 8=5.25k, 9=9k, 10=15k, 11=18k, 12=30k
64	Generator AC Current Full Scale Setpoint	x0064	starting at 0: 75,100,150,200,300,400,600,800,1k,1.2k,1.5k,2k,2.5k,3k,4k Amps
74	Remote Generator Synchronizer Control (GSP+P only)	x0074	(This can be written to) 0=Off, 1=Remote synchronization test, 2=Automatic synchronization
76	Remote Synchronization Control Readiness (GSP+P only)	x0076	0=Not installed, 1=ready for remote command, 2=Synchronizing switch not in auto, 3=Engine control switch not in auto, 4 Engine was not started remotely, 5 Engine not running
77	Generator Synchronizer Control Status (GSP+P only)	x0077	Starting at 0: Not installed, Inactive, Semiautomatic paralleling, Permissive paralleling, Remote synchronization testing, Synchronizing, Synchronization system alarm or diag., Remote synchronization testing passed, Dead bus time delay, Closing to dead bus.
335	Normal Stop Input Status	x0363	113=Run, 174=Stop

Multiple Status Bits

Read from modbus register as unsigned integer. The value is composed of more than one status condition. This is accomplished by setting the appropriate bits for each status condition. See details below:

Monico Id	PID Description	Modbus Address	Manual Remarks
6	Oxygen Sensor Status	x0006	Bits set to 1 indicate Status: 8=start cal. 7= cal in progress, 6=sensor on, 5= command sensor on
8	Ignition Timing Calibration	x0008	Bits set to 1 indicate Status: 8=cal good else cal bad, 7= enable cal else disable cal
44	Status	x0044	Bit8: 0=idle,1=rated. Bit7: 0=off grid, 1=on grid. Bit6-5: 00=running, 01=coasting, 10=shutdown, 11=not used
45	Engine Operation	x0045	Bit8: 0=genset,1=industrial. Bit6: 0=isochronous governor, 1=droop governor
50	Status	x0050	Mode Control Switch Bit8-7: 11=start, 10=auto, 01=stop, 00=off/reset. E-Stop Bit6: 1=stop, 0=run. Driven Equipment Bit5: 1=Ready, 0=Not Ready. Prelube Slave Relay Bit4: 1=ON, 2=OFF. Prelube Relay Bit3: 1=ON, 2=OFF. Prelube Switch Bit2: 1=Not Ready, 0=Ready. Initiate Contact Bit1: 1=Stop, 0=Run.
57	EIS Special Test Status	x0057	Inactive (Tests should only be done on-site) bit 8: 1=Enable special test, 0=disable. Bit7: 0=proceed to test B. Bit5-1 0=test passed. Non zero=# of tests failed
62	Diagnostic Status Summary	x0062	Bits 2-1: 0=None, 1=Level 1 Warning, 2=Level2 Warning, 3=Level 3 Warning. Bit 3&4 not used. Bit 5: 0=No logged events, 1=At least 1 logged event. Bit 6 not used. Bit7: 0=No logged diag., 1=At least 1 logged diag. Bit8: 0=No active diag. 1=At least 1 active diag.



Monico Id	PID Description	Modbus Address	Manual Remarks
71	General Alarm Output Status/Override (Marine Only)	x0071	(This can be written to) Bit 8: 1=Override, 0=Normal. Bit 1: 0=Output is OFF, 1=Output is ON
102	Engine Status	x0102	Bit 4: 1=Fuel injection disabled, 0=No injection disabled. Bit 5: 1=E-stop shutdown, 0=No E-stop shutdown. Bit 1: 1=No Engine Speed, 0=Engine Speed
119	GSC Relay Status	x0119	Organized by bit pairs where for each pair 0=Off/de-energized, 1=On/energized, 3=Relay not installed: Bits 2,1=Air Shutoff Relay. Bits 4,3=Fuel Control Relay. Bits 6,5=Crank Terminate Relay. Bits 8,7=Starter Motor Relay. Bits 10,9=Genset Fault Relay. Bits 12,11=Run Relay. Bits 14,13=Program Spare Relay. Bits 16,15=Electronic Governor Relay.
120	GSC Relay Control	x0120	(only bits 16-13 are write able) Organized by bit pairs where for each pair 0=Off/de-energized, 1=On/energized, 3=Relay not installed, keep same state: Bits 2,1=Air Shutoff Relay. Bits 4,3=Fuel Control Relay. Bits 6,5=Crank Terminate Relay. Bits 8,7=Starter Motor Relay. Bits 10,9=Genset Fault Relay. Bits 12,11=Run Relay. Bits 14,13=Program Spare Relay. Bits 16,15=Electronic Governor Relay.
124	GSC Alarm Status	x0124	Organized by bit pairs where for each pair 0=Alarm Off, 1=Alarm On, 3=Not Available: Bits 2,1=High Coolant Temp. Bits 4,3=Low Coolant Temp. Bits 6,5=Low Oil Psi. Bits 8,7=Eng Control Switch not in Auto or Manual. Bits 10,9=High Oil Temp. Bits 12,11=Eng Control Alarm. Bits 14,13=Not used. Bits 16,15=Undefined.
125	GSC Shutdown Status	x0125	Organized by bit pairs where for each pair 0=Shutdown Inactive, 1=Shutdown Active, 3=Not Available: Bits 2,1=Diag Code. Bits 4,3=Coolant Loss. Bits 6,5=Emg Stop. Bits 8,7=Spare Fault. Bits 10,9=High Coolant Temp. Bits 12,11=Low Oil Psi. Bits 14,13=Overcrank. Bits 16,15=Overspeed.
126	GSC Spare Fault Alarm Status	x0126	Organized by bit pairs where for each pair 0=Alarm Off, 1=Alarm On, 3=Not Available: Bits 2,1=Spare Fault 1. Bits 4,3=Spare Fault 2. Bits 6,5=Spare Fault 3. Bits 8,7=Spare Fault 4. 16-9=Undefined.
127	GSC Spare Fault Shutdown Status	x0127	Organized by bit pairs where for each pair 0=Shutdown Inactive, 1=Shutdown Active, 3=Not Available: Bits 2,1=Spare Fault 1. Bits 4,3=Spare Fault 2. Bits 6,5=Spare Fault 3. Bits 8,7=Spare Fault 4. 16-9=Undefined.
149	Generator Set Control Output Status (GSC+ only)	x0149	Organized by bit pairs where for each pair 0=Off/de-energized, 1=On/energized, 2=Output Fault, 3=Output not installed: Bits 2,1=Close Breaker Output. Bits 4,3=Kilowatt Relay Control Output
150	Generator Set Shutdown Status - Extension #1	x0150	Organized by bit pairs where for each pair 0=Shutdown Inactive, 1=Shutdown Active, 3=Not Available: Bits 13,14=Engine Control Shutdown. Bits 15,16=High Engine Oil Temp.
259	Active Warning Summary Status	x0285	Bit 16=Warning Level 1, Bit 15=Warning Level 2, Bit 14=Warning Level 3 (bit value: 0=INACTIVE, 1=ACTIVE)

0=Enabled, NonZero=Disabled

A value of 0 indicates that the status is inactive, disabled or off.

A value of 1 indicates that the status is active, enabled or on.



0=Inactive, Nonzero=Active

A value of 0 indicates that the status is inactive, disabled or off.
A value of 1 indicates that the status is active, enabled or on.

Hex to Long Integer

The value is contained in 2 consecutive modbus registers. For example, if the first value is at address x0001 the value at x0002 will also need to be read.

Read each register as an unsigned integer. Take the first value and multiply by 65536. Then add the second value. Multiply the result by the gain and add the offset.

Hex to Long Integer w/ Fault Codes

The value is contained in 2 consecutive modbus registers. For example, if the first value is at address x0001 the value at x0002 will also need to be read.

Read each register as an unsigned integer. Take the first value and multiply by 65536. Then add the second value. Multiply the result by the gain and add the offset.

Fault codes are stored at the modbus address + 500. See section for a table of fault code values.

Long Multiple Status Bits

The value is contained in 2 consecutive modbus registers. For example, if the first value is at address x0001 the value at x0002 will also need to be read.

Read each register as an unsigned integer. Take the first value and multiply by 65536. Then add the second value.

The result is composed of more than one status condition. This is accomplished by setting the appropriate bits for each status condition. See details below:

Monico Id	PID Description	Modbus Address	Manual Remarks
197	Warning Status	x0203	Each of the first 24 bits represents warning status. 0 = Warning is NOT ACTIVE 1 = Warning is ACTIVE bit 1 = High exhaust temperature bit 2 = High altitude (atmospheric pressure) bit 3 = Air filter plugged bit 4 = Engine overspeed bit 5 = Low engine coolant temperature bit 6 = High engine coolant temperature bit 7 = Low engine oil pressure bit 8 = High system voltage bit 9 = High engine inlet air temperature bit 10 = High engine oil temperature bit 11 = High hydraulic oil temperature bit 12 = No coolant flow bit 13 = High aftercooler coolant temperature bit 14 = High crankcase pressure bit 15 = Fuel filter plugged bit 16 = Oil filter plugged bit 17 = Not used bit 18 = Not used

Monico Id	PID Description	Modbus Address	Manual Remarks
			bit 19 = Low coolant level bit 20 = Alternator NOT charging bit 21 = Low fuel level bit 22 = High transmission oil pressure bit 23 = Low transmission oil pressure bit 24 = High transmission oil temperature bit 25-32 = Not used
198	Shutdown Status	.x0205	Each of the first 24 bits represents Shutdown status. 0 = Engine Shutdown is NOT ACTIVE 1 = Engine Shutdown is ACTIVE bit 1 = High exhaust temperature bit 2 = High altitude (atmospheric pressure) bit 3 = Air filter plugged bit 4 = Engine overspeed bit 5 = Low engine coolant temperature bit 6 = High engine coolant temperature bit 7 = Low engine oil pressure bit 8 = High system voltage bit 9 = High engine inlet air temperature bit 10 = High engine oil temperature bit 11 = High hydraulic oil temperature bit 12 = No coolant flow bit 13 = High aftercooler coolant temperature bit 14 = High crankcase pressure bit 15 = Fuel filter plugged bit 16 = Oil filter plugged bit 17 = Not used bit 18 = Not used bit 19 = Low coolant level bit 20 = Alternator NOT charging bit 21 = Low fuel level bit 22 = High transmission oil pressure bit 23 = Low transmission oil pressure bit 24 = High transmission oil temperature bit 25-32 = Not used
199	Engine Derate Status	.x0207	Each of the first 24 bits represents Eng. Derate status. 0 = Engine Derate is NOT ACTIVE 1 = Engine Derate is ACTIVE bit 1 = High exhaust temperature bit 2 = High altitude (atmospheric pressure) bit 3 = Air filter plugged bit 4 = Engine overspeed bit 5 = Low engine coolant temperature bit 6 = High engine coolant temperature bit 7 = Low engine oil pressure bit 8 = High system voltage bit 9 = High engine inlet air temperature bit 10 = High engine oil temperature bit 11 = High hydraulic oil temperature bit 12 = No coolant flow bit 13 = High aftercooler coolant temperature bit 14 = High crankcase pressure bit 15 = Fuel filter plugged bit 16 = Oil filter plugged bit 17 = Not used bit 18 = Not used bit 19 = Low coolant level bit 20 = Alternator NOT charging bit 21 = Low fuel level bit 22 = High transmission oil pressure bit 23 = Low transmission oil pressure bit 24 = High transmission oil temperature



Monico Id	PID Description	Modbus Address	Manual Remarks
			bit 25-32 = Not used
200	Spare Outputs (GSC+ only)	.x0209	(writable) Bits 26-25 Spare Output, All other bit pairs are undefined. 0=OFF, 1=ON, 16=Output Fault, 17=Output not available
202	Relay Driver Module Relay State	.x0213	(writable) For each group of bits: 00 = OFF/DE-ENERGIZED; 01 = ON/ENERGIZED; 10 = Output fault; 11 = Output not available/ Don't change state. bits 1-2 = Undefined, future use bits 3-4 = Undefined, future use bits 5-6 = Undefined, future use bits 7-8 = Undefined, future use bits 9-10 = Output 9 bits 11-12 = Undefined, future use bits 13-14 = Undefined, future use bits 15-16 = Undefined, future use bits 17-18 = Output 5 bits 19-20 = Output 6 bits 21-22 = Output 7 bits 23-24 = Output 8 bits 25-26 = Output 1 bits 27-28 = Output 2 bits 29-30 = Output 3 bits 31-32 = Output 4
216	Generator Shutdown Status (GSC+ only)	.x0241	For each group of bits: 00 = Shutdown inactive; 01 = Shutdown active; 10 = Undefined; 11 = Not available, or not installed. bits 1-2 = Underfrequency bits 3-4 = Overfrequency bits 5-6 = Undervoltage bits 7-8 = Overvoltage bits 9-10 = Generator Frequency Sensing Fault bits 11-12 = Generator Total Overcurrent bits 13-14 = Single Phase Overcurrent bits 15-16 = Reverse Power bits 17-18 = Undefined, future use bits 19-20 = Undefined, future use bits 21-22 = Undefined, future use bits 23-24 = Generator Freq. Inconsistent w/Eng Speed bits 25-26 = Undefined, future use bits 27-28 = Undefined, future use bits 29-30 = Undefined, future use bits 31-32 = Undefined, future use
217	Generator Alarm Status (GSC+ only)	.x0243	For each group of bits: 00 = Alarm inactive; 01 = Alarm active; 10 = Undefined; 11 = Not available, or not installed. bits 1-2 = Underfrequency bits 3-4 = Overfrequency bits 5-6 = Undervoltage bits 7-8 = Overvoltage bits 9-10 = Generator Frequency Sensing Fault bits 11-12 = Generator Total Overcurrent bits 13-14 = Single Phase Overcurrent bits 15-16 = Reverse Power bits 17-18 = Undefined, future use bits 19-20 = Undefined, future use bits 21-22 = Undefined, future use bits 23-24 = Generator Freq. Inconsistent w/Eng Speed bits 25-26 = Undefined, future use bits 27-28 = Undefined, future use bits 29-30 = Undefined, future use bits 31-32 = Undefined, future use



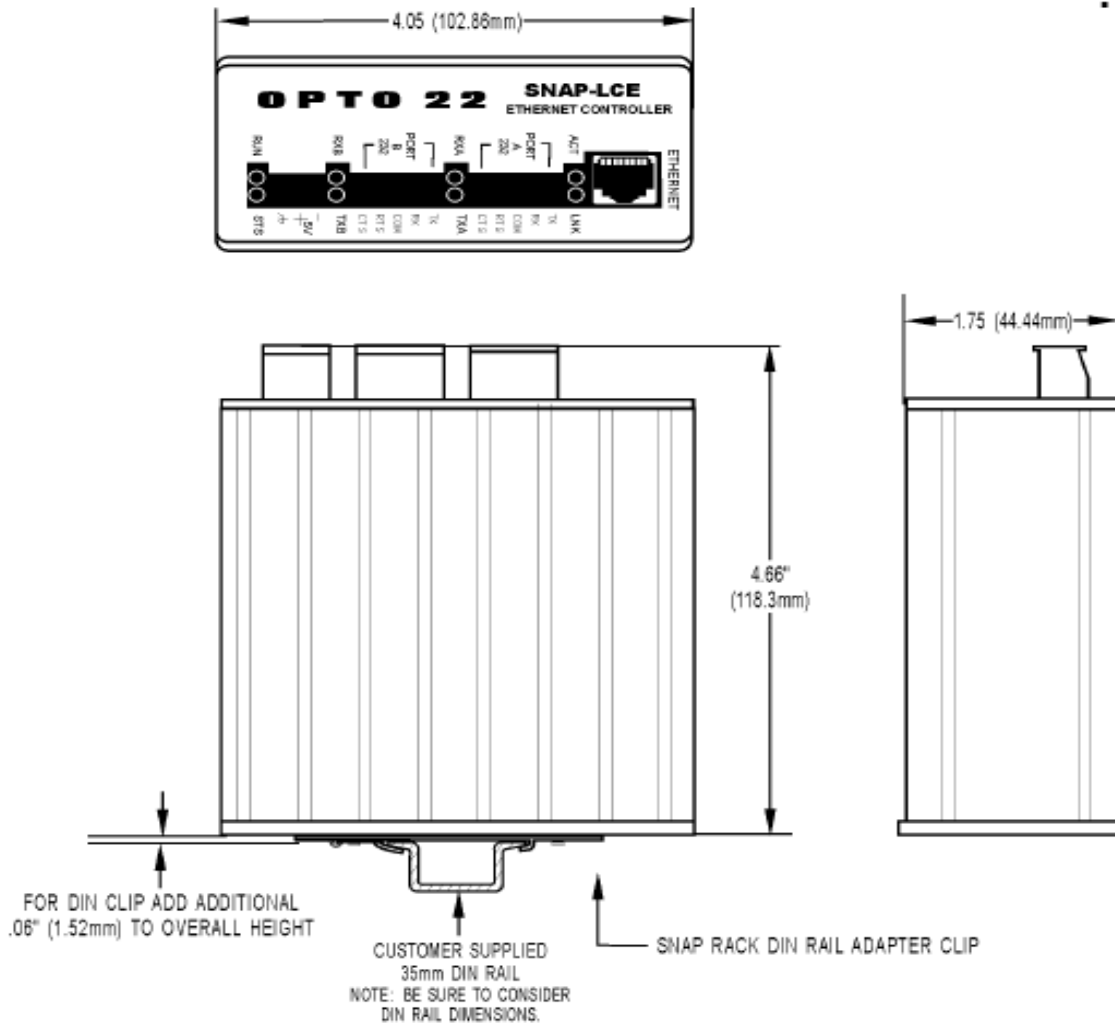
Monico Id	PID Description	Modbus Address	Manual Remarks
260	High Exhaust Port Temp Deviating Low Warning	x0286	Status indicated by bits. 0-4294967295 is Valid Range. Each of the first 24 bits represents warning status. 0 = Warning is NOT ACTIVE 1 = Warning is ACTIVE bit 1 = Exhaust Temperature Deviating Low bit 2 = Exhaust Temperature Deviating High
261	High Exhaust Port Temp Deviating Low Shutdown	x0288	Status indicated by bits. 0 = Shutdown is NOT ACTIVE 1 = Shutdown is ACTIVE bit 1 = Exhaust Temperature Deviating Low bit 2 = Exhaust Temperature Deviating High

Section 5: Modbus Viewer Program

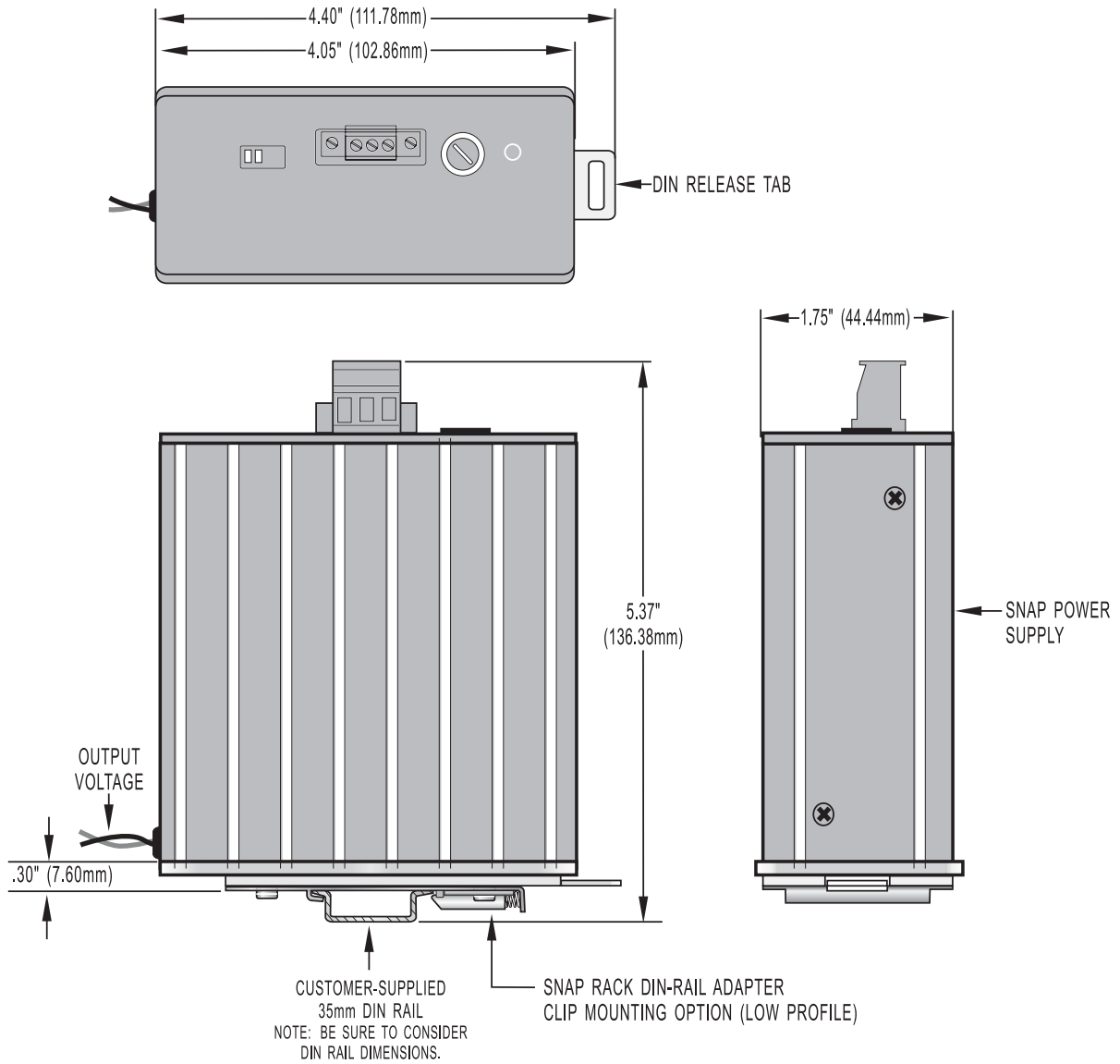
A Modbus Viewer Program is offered as an option to allow easy Reading and Writing of CCM data located in the Translator Modbus addresses. A Freeware version that only reads Modbus registers is available for download from www.monicoinc.com/downloads.

Note: Din-Rail adapters are optionally available, but show for dimensional information only. The same model adapter fits the Translator and the Power Supply.

Appendix 1: Translator Dimensions



Appendix 2: Power Supply Dimensions





Appendix 3: Changing the IP Address

This section describes how to use the software tools supplied with the translator to change the IP address to fit into any network. All Ethernet translators are shipped from the factory with the same IP address. That address is 192.168.0.201.

In order to change the IP address to fit in a certain network, you must first install ioManager. ioManager is part of the ioProject Software Suite contained on the mini-CD disk supplied with your translator. Make sure to close all programs running on your PC before installing the software. Insert the mini-CD in your CD drive and it will automatically boot. It will offer the option to install ioProject Professional (password required) or ioBasic. Choose ioBasic and go to the next step. The next screen will offer options for different routines. The only application you need is ioManager. Uncheck all other programs except ioManager. Finish the installation.

Before communicating with the translator, you will have to setup your computer with a fixed IP address. This address needs to begin with the same three numbers as the default IP address. If you are connecting through a router or switch, you may use a Cat 5 or CAT 6 patch cable. If you are connecting directly to the translator you will need a crossover Ethernet cable.

After establishing communications with the translator, go to START/RUN/OPTO22/ioManager. From this screen go to TOOLS/CHANGE IP SETTINGS. Enter the default IP address in the Current IP Address window and click on READ CURRENT SETTINGS. Enter the desired IP address in the NEW IP ADDRESS field, change any other settings as necessary. When you click CHANGE IP SETTINGS, you will get a return message asking if you are sure you want to perform this function. Click YES and another return message will pop up saying that the IP address was changed successfully and the translator will restart.



Appendix 4: Modbus Write Addresses

This section provides the data needed to read and write data to the translator registers associated with CCM data.

The first section provides details for writable registers. This section provides the user with the data format needed send commands to the translator. The user command will be translated and sent to the CCM. Commands that are sent with the incorrect value will not be sent to the CCM.

Monico Id	Modbus Address	PID List Description	Access Setting	Available Access Setting	Write Command Values
7	40007	Remote Fault Reset	Read and Write	Read and Write	0 = Inactive 1 = Reset Faults
27	40027	Remote Emergency Stop (Generator Set Only)	Read and Write	Read and Write	0 = Deactivate Remote Stop 1 = Activate Remote Stop
34	40034	Remote Throttle Override (Generator Set Only)	Read and Write	Read and Write	0 = Normal Throttle 1 = Low Idle
69	40069	Remote Start Initiate (Generator Set Only)	Read and Write	Read and Write	0 = Stop Engine 1 = Start Engine