UWP 3.0 Driver Notes for ATyS p M with Integrated Communication

Using this manual

Safety Precautions

Authorised Personnel Only

The product or system described in this documentation must be installed, operated, and maintained by qualified personnel only. NHP accept no responsibility for the consequences of the use of this equipment by unqualified personnel.

A qualified person is one with the necessary skills and knowledge of the construction and operation of the installation of electrical equipment and has been trained to identify and avoid risks.

Appropriate use of NHP, Carlo Gavazzi / SOCOMEC products

NHP, Carlo Gavazzi or SOCOMEC products are intended to be used only for the applications described in the catalogue and technical documentation, which is dedicated to them. If products and components from other manufacturers are used, they must be recommended or approved by NHP, Carlo Gavazzi or SOCOMEC.

Appropriate use of NHP, Carlo Gavazzi or SOCOMEC products during transport, storage, installation, assembly, commissioning, operation, and maintenance is necessary to ensure safe operation and without any problems.

The permissible ambient conditions must be met. The information contained in the technical documentation must be observed.

Publication of responsibility

The contents of this document have been reviewed to ensure that the reliability of the information is correct at time of publication.

NHP, Carlo Gavazzi or SOCOMEC are not responsible for printing or damage resulting from errors. NHP, Carlo Gavazzi or SOCOMEC reserve the right to make corrections and changes needed in subsequent edition.

Firmware Notice

The firmware of the products at the creation of the driver is listed below. Errors experienced while using this document may be due to miss matched firmware version. If errors are experienced after a firmware upgrade has been completed, please contact NHP for the latest version of the driver.

This manual has been developed with UWP Firmware V8.4.0.3.

Summary of Changes

This section highlights the details of changes made since the previous issue of this document.

The versioning convention used to track changes in this document follows the structure V**x.y.z** where:

x: Major revision, where extensive changes are made which is generally incompatible with the previous version. Such changes may include new firmware upgrade and/or features, or removal of information which is no longer relevant or applicable to the previous version.

y: Minor revision, where changes made do not change the overall scope of the previous version but may include additional information which complements or corrects the previous version or provides additional clarity on an existing topic.

z: Patch version, where small changes are made to correct minor errors or adjust existing text, charts, figures and/or images, and which do not add or remove information from the previous version. Example changes may include spelling corrections, image re-sizing and adjustments, updated images, etc.

Version	Publication date	Changes	By
V 1.0.0		Initial release	F.G.

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Introduction

The UWP 3.0 has the capability to centralise multiple meters and power components with Modbus RTU or TCP capability. It can act as a central point of information or a gateway to a larger building management or energy management system. To reduce UWP 3.0 commissioning time, drivers have been created for NHP's meters and power components.

This user manual outlines the variables included in the ATyS p M driver and their respective placement within the Modbus address map. The driver has been created for monitoring purposes only, no write functions have been included in this version. To obtain the write functionality offered by the ATyS p M, alternate products must be used.

Variables for the extra I/O modules, control functions, LED indications and communication settings of the ATyS p M have been excluded from this version of the driver.

Who Should Use This Manual?

This manual aims to provide users, electricians, panel builders and maintenance personnel, with the technical information required for commissioning and operation of the NHP/Carlo Gavazzi UWP3.0 and NHP/SOCOMEC ATyS p M automatic transfer switch together.

Users of this document must have at minimum a basic understanding of the following:

- Modbus RTU communication
- Serial RS-485 wiring practices
- Electrical circuit protection

Applicable Products

- UWP 3.0
  - Product ID: UWP30RSEXXX
- ATyS p M Auto Transfer Switch with COMMS, part numbers:

93844004	18844006
93844006	18844008
93844008	18844010
93844010	18844012
93844012	18844016
93844016	

Wiring and installation instruction of these products can be found in the respective product's user manual. Please see additional resources section for links.

Additional resources

The following resources contain additional information which should be read in conjunction with this document.

Resource	Description
ATyS p M Instruction Manual	Information on installing, mounting, wiring, and Modbus map for ATyS p M Communication Module.
UWP 3.0 Installation Manual	Information on installing, mounting, wiring the UWP 3.0 Module.
UWP 3.0 Tool User Manual	Information on configuring and commission the UWP 3.0 Module.
UWP 3.0 WebApp User Manual	Information on setting up the monitoring page, reoccurring reports, and alarms UWP 3.0 Module.

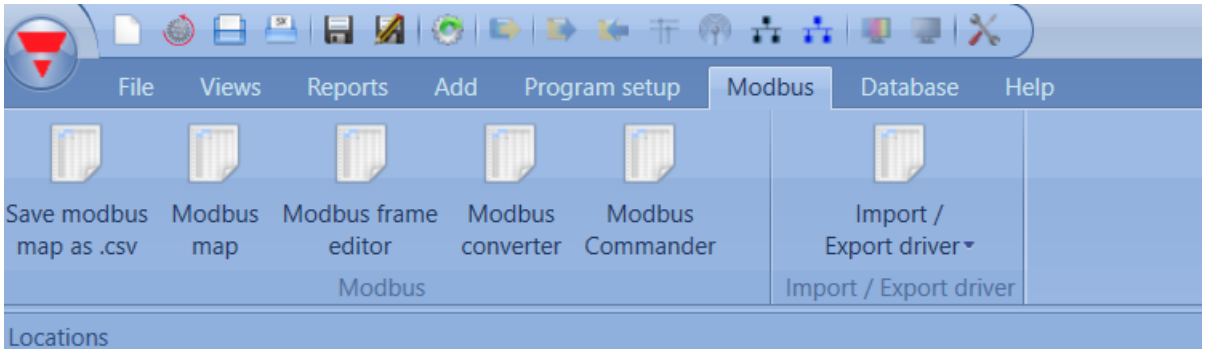
Terminology and Abbreviations

Abbreviation	Description	Abbreviation	Description
0DT	Dead Timer	**MOD AUT**	Automatic mode
AL	Alarm	**NBL**	Network Balance
AT	Available Timer	**OP FCT**	Operating Factor (Duty Cycle)
BET	Motor	**OT**	Return to Zero Timer
CAP	Return to Zero Capacitor	**POS**	Position Fault
CT	Cool Down Timer	**PRIO EON**	Priority External on Load
E1T	On Load External Operation (Start)	**PRIO NET**	Priority Network
E2T	On Load External Operation (Duration)	**PRIO TON**	Priority On Load Test
E3T	On Load External Operation (End)	**PWR**	Insufficient Switchover Power
E5T	Off Load External Operation (Start)	**ROT**	Phase Rotation
E6T	Off Load External Operation (Duration)	**RT**	Return Timer
E7T	Off Load External Operation (End)	**RTE**	Back Transfer
EET	Programming Genset Starting Time Delay	**ST**	Start Timer
EOF	External Off Load	**TFT**	Test Off Load Timer
EON	External On Load	**THD**	Total Harmonic Distortion
FT/ FLT	Fault Time	**TOF**	Off Load Test
Hz and F	Frequency	**TON**	On Load Test
LCD	Liquid Crystal Display (LCD)	**TOT**	Test On Load Timer
LED	Light Emitting Diode	**TON**	On Load Test
LST	Load Shedding Timer		

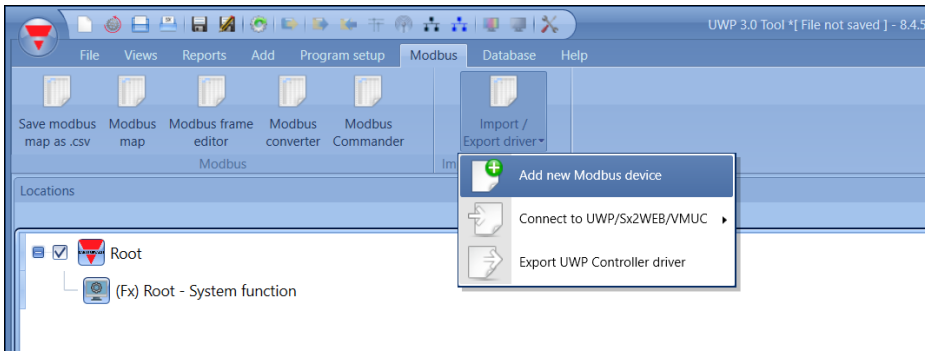
Adding the Driver to UWP 3.0 Software

1. Download G_SOCOMEC_ATyS_pM_Vx_x.xml file from the NHP Energy management website.

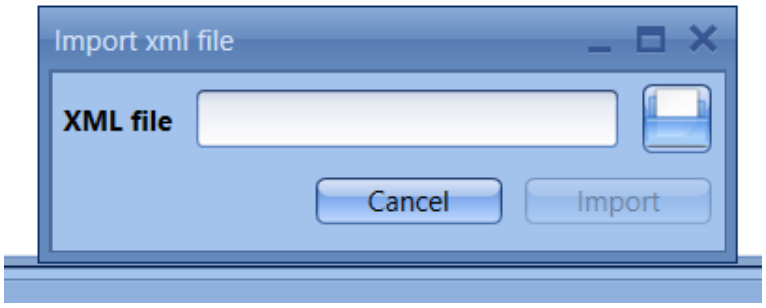
2. In the UWP Tool, go to the Modbus tab, then Import/Export Driver.



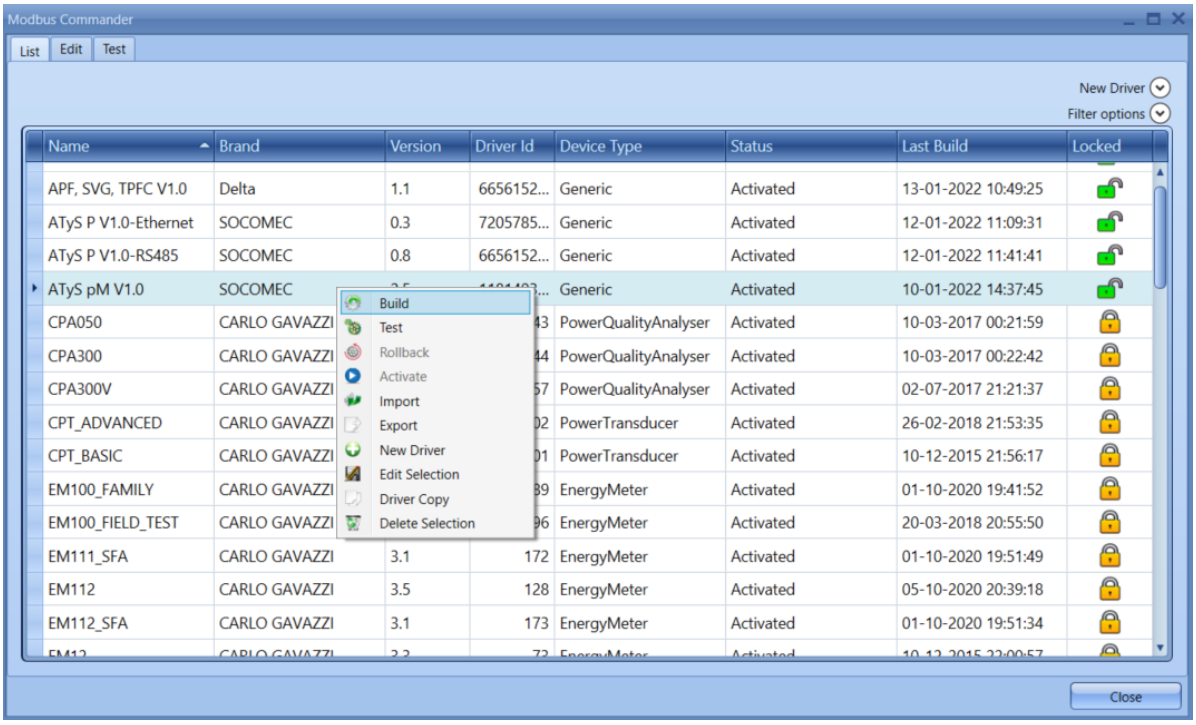
3. Select, Add new ModBus device.



4. Select the folder to browse your documents for the downloaded file. Then click import.



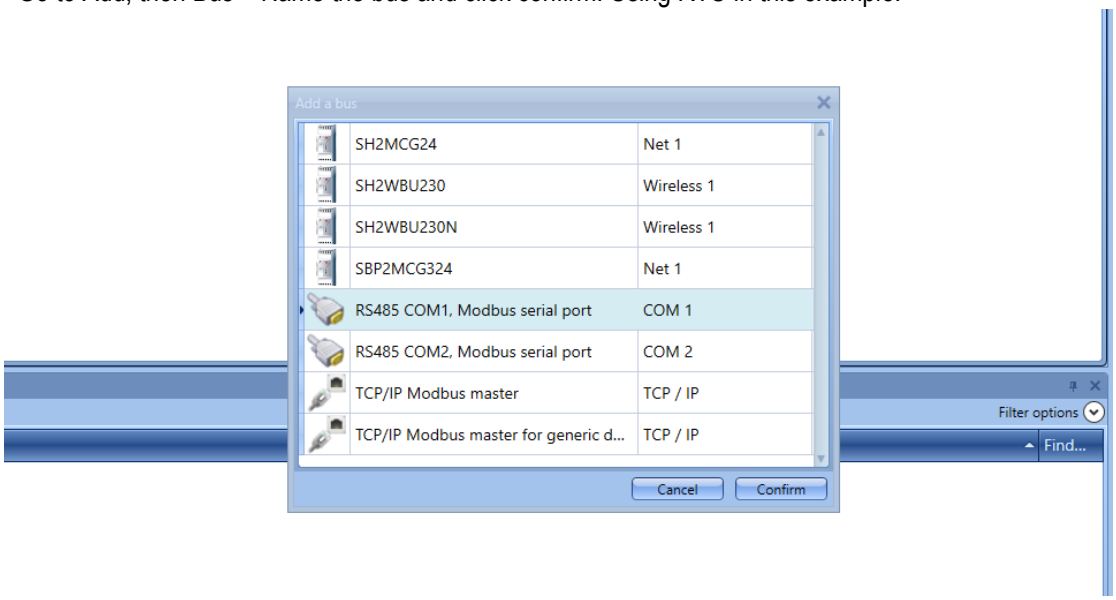
5. Open the Modbus Commander. Select the newly imported driver from the list. Right-click to Build and Activate.



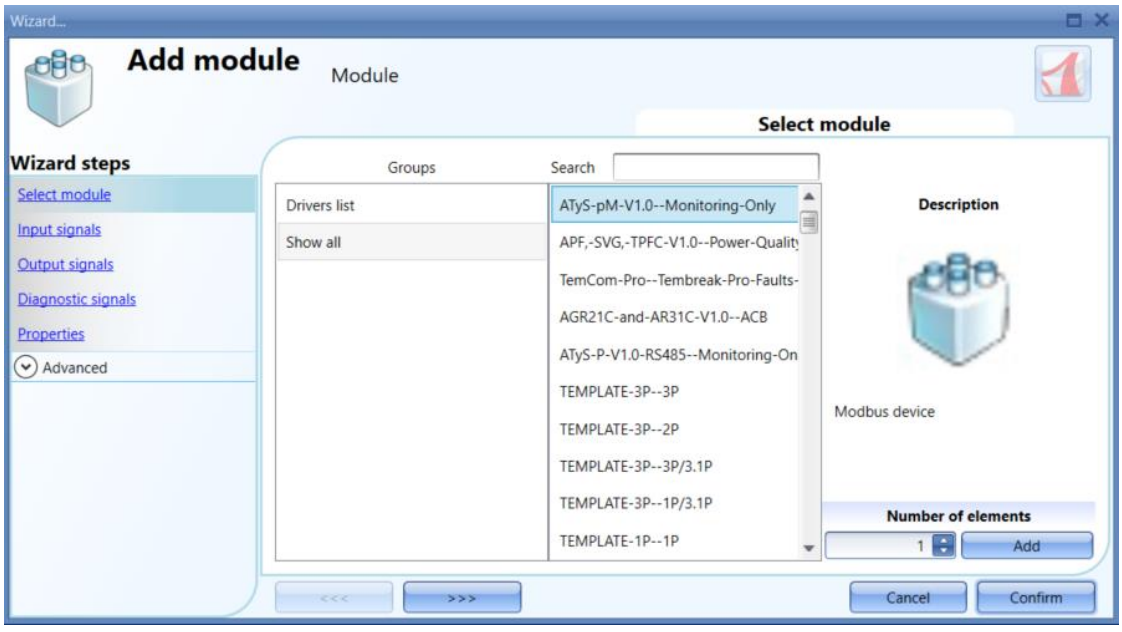
It is now available to be added as a Modbus RTU module into the project.

Adding ATyS p M as a Module to your project

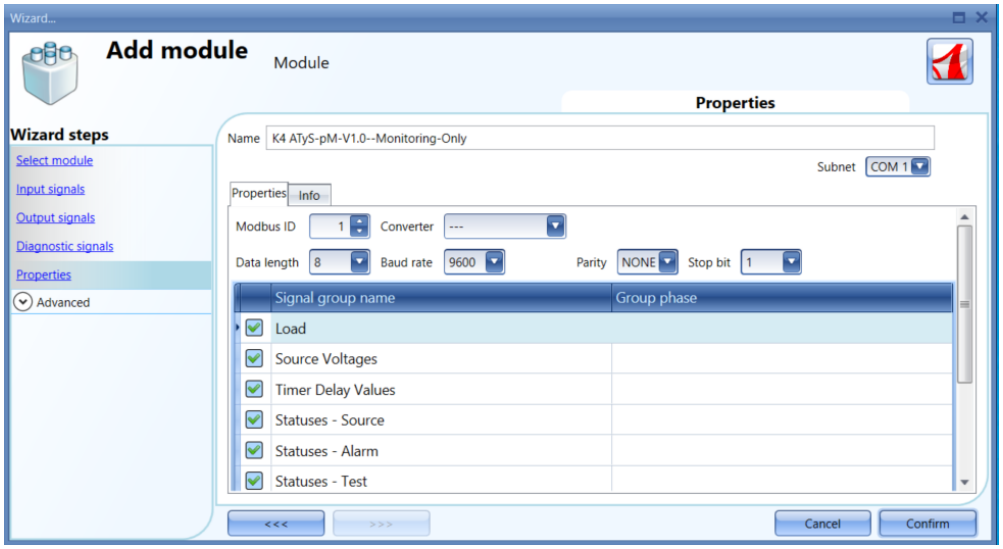
6. Go to Add, then Bus – Name the bus and click confirm. Using RTU in this example:



7. Select the new bus and click Module. Select the ATyS p M driver

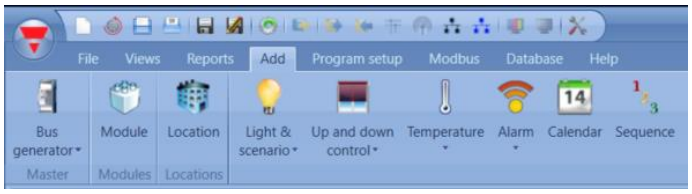


8. Before clicking on confirm go to properties and check the Modbus ID matches that of the ATyS p M module (please refer to Section 13.9 on page 65 of the ATyS p M instruction manual for communication address and designation details.) Click confirm.



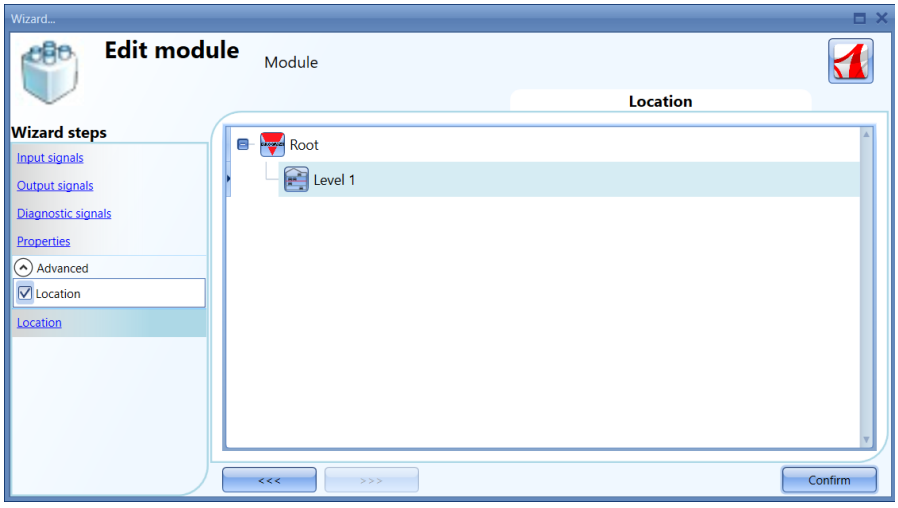
9. For ease of monitoring and future maintenance, the location and naming conventions of the module can be changed at this stage.

    a. To add a location, click Location. Name and select the location type - you can choose room or building names. Here we have chosen to represent the module by levels. Click confirm.



    b. Once the location is added, click on the module icon.

    c. Go to advanced -> tick location -> select the location for the module to be assigned to. Click confirm.

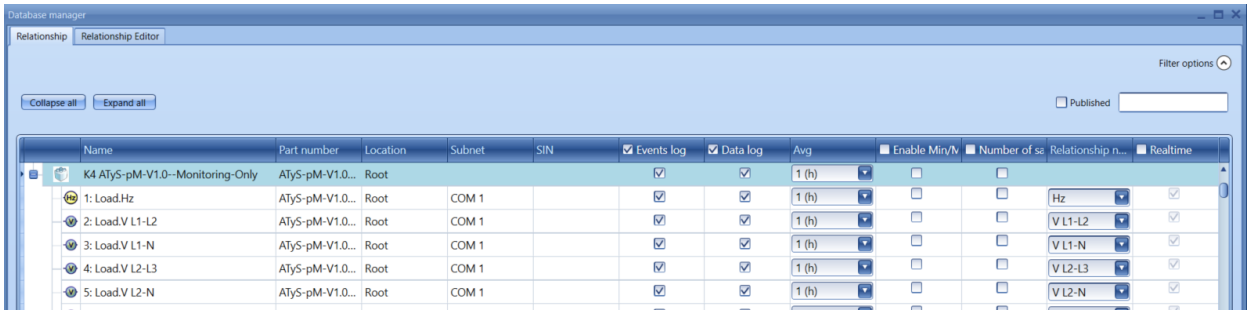


10. Before the setup can be compiled and sent to the controller, you will need to choose how often the data needs to be read.

    a. Under the Database tab, go to Database Management

    b. Tick events and data log for the variables to be read and pick a sampling time (1 hour)

    c. Confirm



11. Under the File menu, compile the project and download to controller.

Modbus Communication Address Map

The grouping of the variables has been changed from the original map for the ease of monitoring and grouping on the UWP WebApp. The descriptions in this document are more detailed than the driver as this can be used as a reference.

Counter Values

Function 3 Code (read only)

Hex. Address	Word count	Description	Unit	Place in ATyS p M Modbus Map
500A	1	Position I Switches (Operations)		13.9.4 Status
500B	1	Position II Switches (Operations)		13.9.4 Status
5009	1	Total Cycles counter		13.9.4 Status

Load

Function 3 Code (read only)

Hex. Address	Word count	Description	Unit	Place in ATyS p M Modbus Map
5106	1	Hz (Frequency Fr)	Hz	13.9.4 Load
5100	1	V L1 – L2 (Phase to phase Voltage U12)	V	13.9.4 Load
5103	1	V L1 – N (Phase 1 to neutral voltage, V1)	V	13.9.4 Load
5101	1	V L2 – L3 (Phase to phase Voltage U23)	V	13.9.4 Load
5104	1	V L2 – N (Phase 2 to neutral voltage, V2)	V	13.9.4 Load
5102	1	V L3 – L1 (Phase to phase Voltage U31)	V	13.9.4 Load
5105	1	V L3 – N (Phase 3 to neutral voltage, V3)	V	13.9.4 Load

Source Voltages

Function 3 Code (read only)

Hex. Address	Word count	Description	Unit	Place on ATyS p M Modbus Map
510D	1	1 – F (Source I: Frequency)	Hz	13.9.4 Source
5107	1	1 – V L1-L2 (Source I: Phase to phase voltage U12)	V	13.9.4 Source
510A	1	1 – V L1-LN (Source I: Phase 1 to neutral voltage V1)	V	13.9.4 Source
5108	1	1 – V L2-L3 (Source I: Phase to phase voltage U23)	V	13.9.4 Source
510B	1	1 – V L2-LN (Source I: Phase 2 to neutral voltage V2)	V	13.9.4 Source
5109	1	1 – V L3-L1 (Source I: Phase to phase voltage U31)	V	13.9.4 Source
510C	1	1 – V L3-LN (Source I: Phase 3 to neutral voltage V3)	V	13.9.4 Source
5114	1	2 – F (Source II: Frequency)	Hz	13.9.4 Source
510E	1	2 – V L1-L2 (Source II: Phase to phase voltage U12)	V	13.9.4 Source
5111	1	2 – V L1-LN (Source II: Phase 1 to neutral voltage V1)	V	13.9.4 Source
510F	1	2 – V L2-L3 (Source II: Phase to phase voltage U23)	V	13.9.4 Source
5112	1	2 – V L2-LN (Source II: Phase 1 to neutral voltage V2)	V	13.9.4 Source
5110	1	2 – V L3-L1 (Source II: Phase to phase voltage U31)	V	13.9.4 Source
5113	1	2 – V L3-LN (Source II: Phase 1-neutral voltage V3)	V	13.9.4 Source

Status – Alarms

Function 3 Code (read only)

Hex. Address	Word count	Description	Unit	Place on ATyS p M Modbus Map
500D	1	**Alarm/Fault Code** *0: None* *1: F00 OP FCT - Operating Factor - Duty Cycle* *2: F03 NEUTRAL - Neutral Wiring Mismatch* *3: F11 FLT-1 - Source 1 Fault* *4: F21 FLT-2 - Source 2 Fault* *5: F12 ALR-1 - Source 1 Alarm* *6: F22 ALR-2 - Source 2 Alarm* *7: F13 ROT-1 - Priority Source 1 Phase Rotation Fault* *8: F23 ROT-2 - Priority Source 2 Phase Rotation Fault* *9: F14 CAP-1 - Source 1 Return to Zero Capacitor Fault* *10: F24 CAP-2 - Source 1 Return to Zero Capacitor Fault* *11: F15 PWR-1 - Source 1 Insufficient Switchover Power* *12: F25 PWR-2 - Source 1 Insufficient Switchover Power* *13: F16 POS-1 - Position I Fault* *14: F26 POS-2 - Position II Fault* *15: F06 POS-0 - Position 0 Fault*		13.9.4 Status
500C	1	**Fault summary (Fault signal)** *0: None* *1: Alarm* *2: Fault*		13.9.4 Status
500E	1	**Last Switch over cause (Cause of last switchover)** *0: None* *1: Manual* *2: Under voltage source 1* *3: Under voltage source 2* *4: Over voltage source 1* *5: Over voltage source 2* *6: Under Frequency source 1* *7: Under Frequency source 2* *8: Over Frequency source 1* *9: Over Frequency source 2* *10: Unbalance Source 1* *11: Unbalance Source 2* *12: Rotation Source 1* *13: Rotation Source 2*		13.9.4 Status

Status – Network Configuration

Function 3 Code (read only)

Hex. Address	Word count	Description	Unit	Place on ATyS p M Modbus Map
565E	1	**2ND TRIP** *0: NO* *1: YES*		13.9.6. Network Configuration
5655		**Application Type** *0: M – M (Network – Network)* *1: M – G (Network – Genset)*		13.9.6. Network Configuration
5657	1	**Genset Starting Relay** *0: NO* *1: NC*		13.9.6. Network Configuration
565F	1	**MOD AUT** *0: No* *1: Yes*		13.9.6. Network Configuration
5651	1	**Neutral Placement** *0: Auto* *1: On the Left* *2: On the Right*		13.9.6. Network Configuration
5652	1	**Phase Direction** *0: Undefined* *1: ABC* *2: ACB*		13.9.6. Network Configuration
565A	1	**PRIO EON** *0: No* *1: Yes*		13.9.6. Network Configuration
5658	1	**PRIO NET** *0: None* *1: Source 1* *2: Source 2*		13.9.6. Network Configuration
5659	1	**PRIO TON** *0: No* *1: Yes*		13.9.6. Network Configuration
5654	1	**Rated Frequency** *0: 50Hz* *1: 60Hz*		13.9.6. Network Configuration
5653	1	Rated Voltage	V	13.9.6. Network Configuration
565B	1	**RETRANS** *0: No* *1: Yes*		13.9.6. Network Configuration
565C	1	**RETURN O** *0: No* *1: Yes*		13.9.6. Network Configuration
5650	1	**Type of network** *0: 4NBL (230/400V)* *1: 1BL (230/400V)* *2: 41NBL (230/400V)* *3: 42NBL (230/400V)* *4: 3NBL (230/400V)* *5: 4NBL (127/230V)* *6: 3NBL (127/230V)* *7: 2NBL (127/230V)* *8: 2BL (127/230V)* *9: 42NBL (127/230V)*		13.9.6. Network Configuration

Status – Sources

Function 3 Code (read only)

Hex. Address	Word count	Description	Unit	Place on ATyS p M Modbus Map
5001	1	**Operating Mode** *0x0000: Manual* *0x0010: Auto* *0x0020: Control* *0x0040: Inhibit*		13.9.4 Status
5005	1	**Priority** *0: Network* *1: Source 1* *2: Source 2*		13.9.4 Status
5006	1	**Source 1 State** *0: No Source* *1: Out of Threshold* *2: Available*		13.9.4 Status
5004	1	**Source 2 Start Generator relay State** *0: Not Active* *1: Active*		13.9.4 Status
5007	1	**Source 2 State** *0: No Source* *1: Out of Threshold* *2: Available*		13.9.4 Status
5002	1	**Switch Position** *0: Unknown* *1: Position 0* *2: Position I* *3: Position II*		13.9.4 Status

Source – Tests

Function 3 Code (read only)

Hex. Address	Word count	Description	Unit	Place on ATyS p M Modbus Map
5008	1	**Test in Progress** *0x0000: None* *0x0001: TOF* *0x0002: EOF* *0x0004: TON* *0x0008: EON*		13.9.4 Status

Status – Time Delay Configuration

Function 3 Code (read only)

Hex. Address	Word count	Description	Unit	Place on ATyS p M Modbus Map
550F	1	**External Order on Load Duration (E2T)** *0: Limited* *1: Unlimited*		13.9.6. Time delay configuration
550D	1	**Test Off Load Duration Timer (TFT)** *0: Limited* *1: Unlimited*		13.9.6. Time delay configuration
550B	1	**Test On Load Duration Timer (TOT)** *0: Limited* *1: Unlimited*		13.9.6. Time delay configuration

Threshold Configurations

Function 3 Code (read only)

Hex. Address	Word count	Description	Unit	Place on ATyS p M Modbus Map
555E	1	S1 Lower Frequency		13.9.6. Threshold configuration
555F	1	S1 Lower Frequency Hysteresis		13.9.6. Threshold configuration
5552	1	S1 Lower Voltage		13.9.6. Threshold configuration
5553	1	S1 Lower Voltage Hysteresis		13.9.6. Threshold configuration
5558	1	S1 Unbalanced Phase		13.9.6. Threshold configuration
5559	1	S1 Unbalanced Phase Hysteresis		13.9.6. Threshold configuration
555C	1	S1 Upper Frequency		13.9.6. Threshold configuration
555D	1	S1 Upper Frequency Hysteresis		13.9.6. Threshold configuration
5550	1	S1 Upper Voltage		13.9.6. Threshold configuration
5551	1	S1 Upper Voltage Hysteresis		13.9.6. Threshold configuration
5562	1	S2 Lower Frequency		13.9.6. Threshold configuration
5563	1	S2 Lower Frequency Hysteresis		13.9.6. Threshold configuration
5556	1	S2 Lower Voltage		13.9.6. Threshold configuration
5557	1	S2 Lower Voltage Hysteresis		13.9.6. Threshold configuration
555A	1	S2 Unbalanced Phase		13.9.6. Threshold configuration
555B	1	S2 Unbalanced Phase Hysteresis		13.9.6. Threshold configuration
5560	1	S2 Upper Frequency		13.9.6. Threshold configuration
5561	1	S2 Upper Frequency Hysteresis		13.9.6. Threshold configuration
5555	1	S2 Upper Voltage Hysteresis		13.9.6. Threshold configuration
5554	1	S2 Upper Voltage		13.9.6. Threshold configuration

Time Delay Configuration Values

Function 3 Code (read only)

Hex. Address	Word count	Description	Unit	Place on ATyS p M Modbus Map
5514	1	External Order Off Load Timer (End) - E7T		13.9.6. Time delay Configuration
5513	1	External Order Off Load Timer (Start) - E5T		13.9.6. Time delay Configuration
5512	1	External Order On Load Timer (Duration) - E2T		13.9.6. Time delay Configuration
5515	1	External Order On Load Timer (Duration) - E6T		13.9.6. Time delay Configuration
5511	1	External Order On Load Timer (End) - E3T		13.9.6. Time delay Configuration
5510	1	External Order On Load Timer (Start) - E1T		13.9.6. Time delay Configuration
5516	1	Load Shedding duration (LST)		13.9.6. Time delay Configuration
5500	1	S1 Loss - SFT Failure Timer (1FT)		13.9.6. Time delay Configuration
5503	1	S1 Return to 0 (1OT)		13.9.6. Time delay Configuration
5501	1	S1 SAT Return Time (1RT)		13.9.6. Time delay Configuration
5507	1	S2 LAT Cooldown Timer (2CT)		13.9.6. Time delay Configuration
5505	1	S2 loss - SFT Failure Timer (2FT)		13.9.6. Time delay Configuration
5508	1	S2 Return to 0 (2OT)		13.9.6. Time delay Configuration
5509	1	S2 Starting Timeout (2ST)		13.9.6. Time delay Configuration
5506	1	S2 2RT Or 2AT (Source II return: 2RT (App M-M) or Source II Stabilisation: 2AT (App M-G))		13.9.6. Time delay Configuration
550E	1	Test Off Load duration timer (TFT)		13.9.6. Time delay Configuration
550C	1	Test On Load Duration (TOT)		13.9.6. Time delay Configuration
550A	1	Time Without Power 0DT		13.9.6. Time delay Configuration

Timer Delay Values

Function 3 Code (read only)

Hex. Address	Word count	Description	Unit	Place on ATyS p M Modbus Map
5216	1	External Order Off Load Timer (Duration) - E7T		13.9.4. Time Delays
5215	1	External Order Off Load Timer (Start) - E5T		13.9.4. Time Delays
5214	1	External Order On Load Timer (Duration) - E2T		13.9.4. Time Delays
5217	1	External Order On Load Timer (Duration) - E6T		13.9.4. Time Delays
5213	1	External Order On Load Timer (End) - E3T		13.9.4. Time Delays
5212	1	External Order On Load Timer (Start) - E1T		13.9.4. Time Delays
520F	1	Load Shedding duration (LST)		13.9.4. Time Delays
520C	1	Programmed genset started following its last stop - EET		13.9.4. Time Delays
5200	1	S1 Loss - SFT Failure Timer (1FT)		13.9.4. Time Delays
5203	1	S1 Return to 0 (1OT)		13.9.4. Time Delays
5201	1	S1 SAT Return Time (1RT)		13.9.4. Time Delays
5208	1	S2 2RT Or 2AT (Source II return: 2RT (Appli M-M) or Source II Stabilisation: 2AT (Appli M-G))		13.9.4. Time Delays
520B	1	S2 FST Start Timeout Timer (2ST)		13.9.4. Time Delays
5209	1	S2 LAT Cooldown Timer (2CT)		13.9.4. Time Delays
5207	1	S2 loss - SFT Failure Timer (2FT)		13.9.4. Time Delays
520A	1	S2 Return to 0 (2OT)		13.9.4. Time Delays
5210	1	Test Off Load Duration (TFT)		13.9.4. Time Delays
5211	1	Test On Load Duration (TOT)		13.9.4. Time Delays
520E	1	Time Without Power 0DT		13.9.4. Time Delays