

TRANS-AMF

AUTOMATIC MAINS FAILURE UNIT FOR GAS/DIESEL/GASOLINE GENERATORS WITH J1939 ECUs

User Manual

Introduction Manual. ENG TRANS-AMF 02 V66 09/26

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EMKO ELEKTRONİK A.Ş.

K-Q TSE-ISO-EN 9001

EU Declaration of Conformity

Manufacturer's Name : **EMKO ELEKTRONIK A.S.**
Manufacturer's Address : **Bursa Organize Sanayi Bölgesi, Fethiye OSB Mah. Turkuaz Cad. No:15 16215 Bursa, TÜRKİYE**

This declaration is issued under the sole responsibility of the manufacturer.

Product Name : **Automatic Mains Failure Unit**

Type Number : **TRANS-AMF**

Product Category : **Electrical equipment for measurement, control and laboratory use**

The product(s) that are stated above are fully in conformity with the essential requirements of Council Directives:

2014 / 35 / EU The Low Voltage Directive

2014 / 30 / EU The Electromagnetic Compatibility Directive

2011 / 65 / EU The Restriction of Hazardous Substances (RoHS 2) Directive

2015 / 863 / EU Amendment to Annex II of Directive 2011/65/EU

2017 / 2102 / EU Amendment to Annex II of Directive 2011/65/EU

This declaration is based on the full compliance of the products with the following European standards:

EN 61010-1:2010+A1:2019 Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use

EN 61326-1:2021 Electrical Equipment for Measurement, Control and Laboratory Use - EMC Requirements

EN 60947-6-1:2023 Low - Voltage Switchgear and Controlgear - Part 6-1: Multiple Function Equipment - Transfer Switching Equipment

EN 63000:2018 Technical Documentation for The Assessment of Electrical and Electronic Products With Respect to The Restriction of Hazardous Substances

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When and Where Issued

1 October 2025

BURSA - TÜRKİYE

Authorized Signature

Name : Ayhan Ispalar

Position : General Manager

1.Introduction

1.1 General Specifications

The unit provides for automatic transfer of a load from mains to generator in the event of a mains failure. It is able to detect failure of any phase of the mains and to start and switch over to a generator if the mains voltage goes outside pre-set limits. Both automatic and manual control is possible. A test mode is also available which allows the generator to be run without taking the load.

The unit has Dual Working feature. In the event of a mains failure, group with high priority starts and takes the load. If both groups has no priority, the group with less working hour will start and take the load. To use Dual Working feature Dual Set expansion module must be used.

The unit calculates engine RPM from Magnetic Pickup sensor (MPU) and/or generator voltage signal.

The unit monitors J1939 ECU messages and provides remote start/stop control via J1939 protocol

The unit monitors generator operation and gives warning of any faults that are detected.

The configurable input-3 can be used as the water level sensing input. **Note:** Only available at Trans-AMF_W unit.

The configurable input-7 can be used as the cabin temperature analog input. **Note:** Only available at Trans-AMF_C unit.

The unit has got the “Event Log” that will record last 500 events.

1.2 Warranty

EMKO Elektronik warrants that the equipment delivered is free from defects in material and workmanship. This warranty is provided for a period of two years. The warranty period starts from the delivery date. This warranty is in force if duty and responsibilities which are determined in warranty document and instruction manual performs by the customer completely.

1.3 Maintenance

Repairs should only be performed by trained and specialized personnel. Cut power to the device before accessing internal parts.
Do not clean the case with hydrocarbon-based solvents (Petrol, Trichlorethylene etc.). Use of these solvents can reduce the mechanical reliability of the device. Use a cloth dampened in ethyl alcohol or water to clean the external plastic case.

1.4 Order Information

Trans-AMF_W: Automatic mains failure unit with USB communication,
Water level sensing input feature

Trans-AMF_C: Automatic mains failure unit with USB communication,
Cabin temperature analog input feature

Trans-AMF.RS485_W: Automatic mains failure unit with USB and RS-485 communication,
Water level sensing input feature

Trans-AMF.RS485_C: Automatic mains failure unit with USB and RS-485 communication,
Cabin temperature analog input feature

2. Installation

Before beginning installation of this product, please read the instruction manual and warnings below carefully.

A visual inspection of this product for possible damage occured during shipment is recommended before installation. It is your responsibility to ensure that qualified mechanical and electrical technicians install this product.

If there is danger of serious accident resulting from a failure or defect in this unit , power off the system and seperate the electrical connection of the device from the system.

Keep the power off until all of the wiring is completed so that electric shock and trouble with the unit can be prevented.

To reduce the effect of electrical noise on device, Low voltage line (especially sensor input cable) wiring must be separated from high current and voltage line.
If possible, use shielded cable and shield must be connected to ground only one side.

Before commissioning the device, parameters must be set in accordance with desired use. Incomplete or incorrect configuration can cause dangerous stiuations.

2.1 Unit Configuration

The unit can be programmed using the buttons and LCD display on the front panel or PC Software.

2.2 Panel Mounting

The unit is designed for panel mounting. Fixing is by two screw fixings.
1- Insert the unit in the panel cut-out from the front.
2- Insert the fixings in the slotted at the corners of the unit and tighten the fixing screws to secure the unit against the panel.

During the equipment is putted in hole on the metal panel while mechanical installation some metal burrs can cause injury on hands, you must be careful.

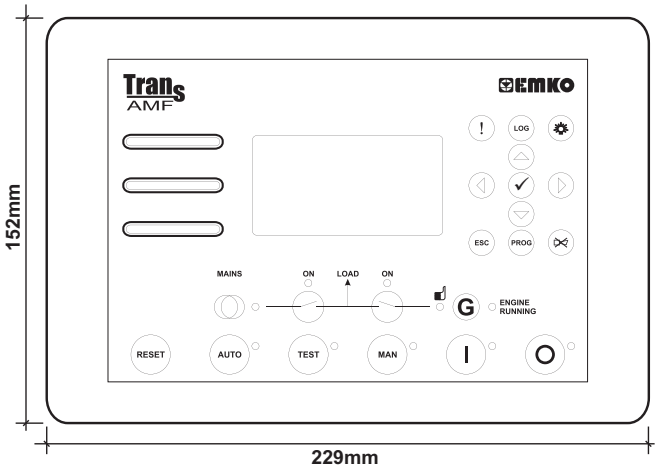


Figure 2.1 Front View

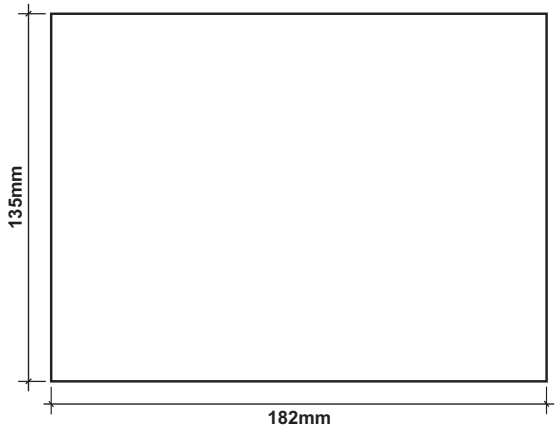
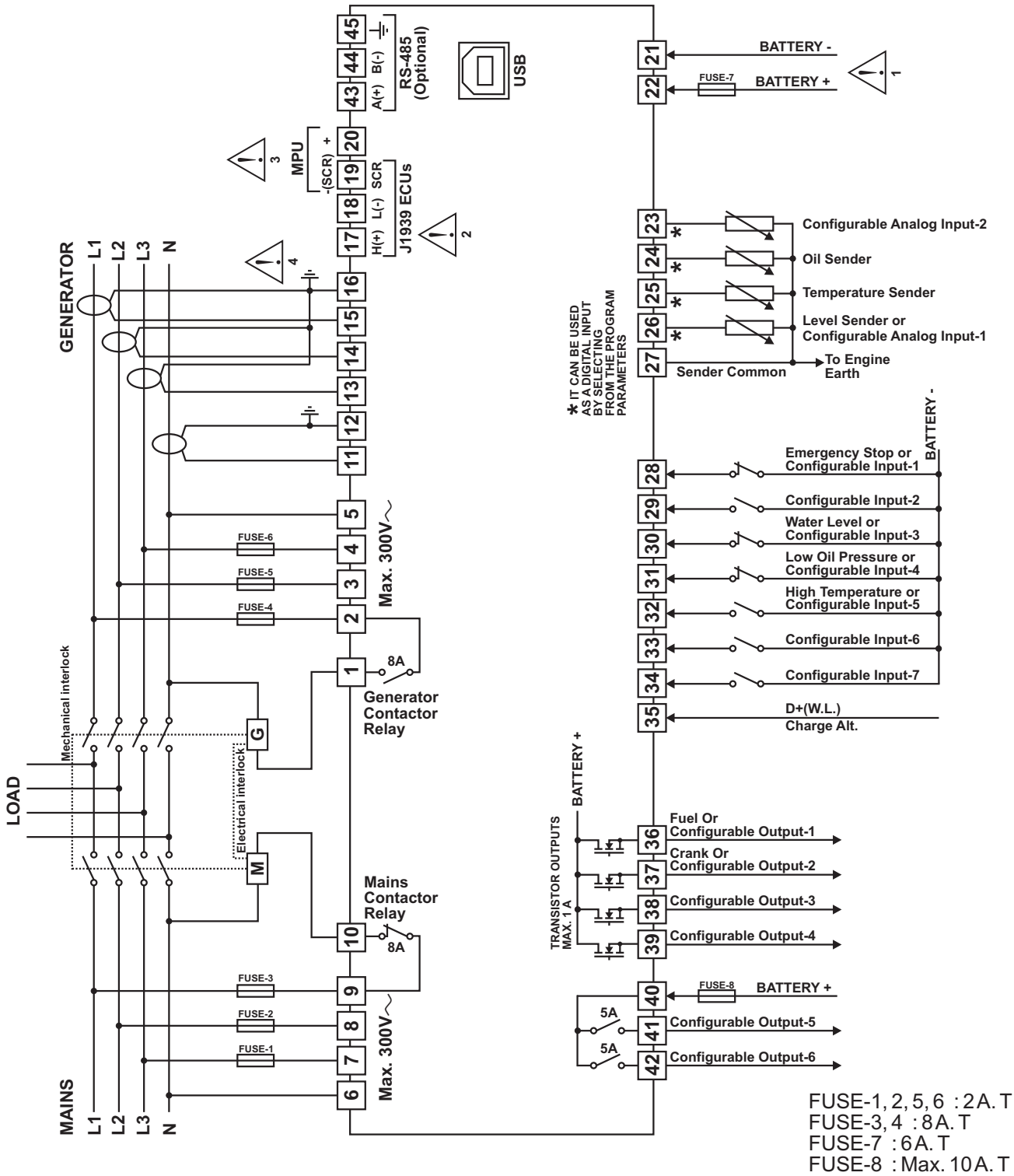


Figure 2.2 Panel Cut-Out

2.3 Electrical Connection

TRANS-AMF_W three phase connections schematic



FUSE-1, 2, 5, 6 : 2 A. T
FUSE-3, 4 : 8 A. T
FUSE-7 : 6 A. T
FUSE-8 : Max. 10 A. T

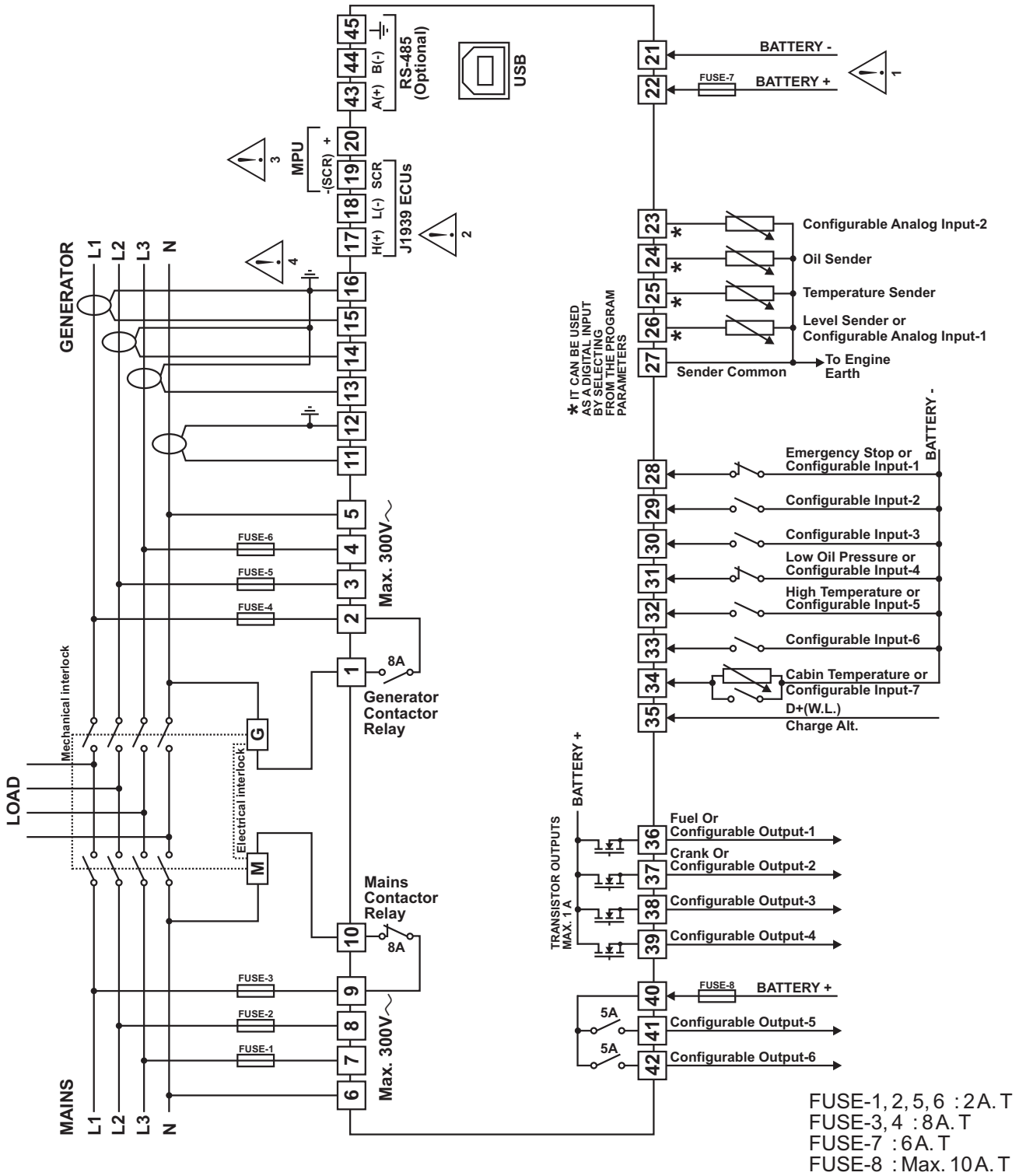
1- Connect the unit as shown in the appropriate diagram. Be sure to connect the battery supply the right way round. External fuse is recommended. Stranded cable cross section: 1,5mm², Solid cable cross section: 2,5mm², The stripping length is 7 to 9 mm. Supply cables must comply with the requirements of IEC 60277 or IEC 60245.

2- The CAN interface requires that a 120 Ohms terminator is fitted to each end of the communications link. This termination resistor is fitted internally into the unit. So it is not required externally. Screened cable must be used for connecting the CAN, ensuring that the screen is grounded at one end ONLY.

3- Screened cable must be used for connecting the Magnetic Pickup, ensuring that the screen is grounded at one end ONLY.

4- Current transformers secondary should be grounded. The CT of 5VA is recommended. The unit has a burden of 0.5VA on the CT.

TRANS-AMF_C three phase connections schematic



FUSE-1, 2, 5, 6 : 2 A. T
FUSE-3, 4 : 8 A. T
FUSE-7 : 6 A. T
FUSE-8 : Max. 10 A. T

1- Connect the unit as shown in the appropriate diagram. Be sure to connect the battery supply the right way round. External fuse is recommended. Stranded cable cross section: 1,5mm², Solid cable cross section: 2,5mm², The stripping length is 7 to 9 mm. Supply cables must comply with the requirements of IEC 60277 or IEC 60245.

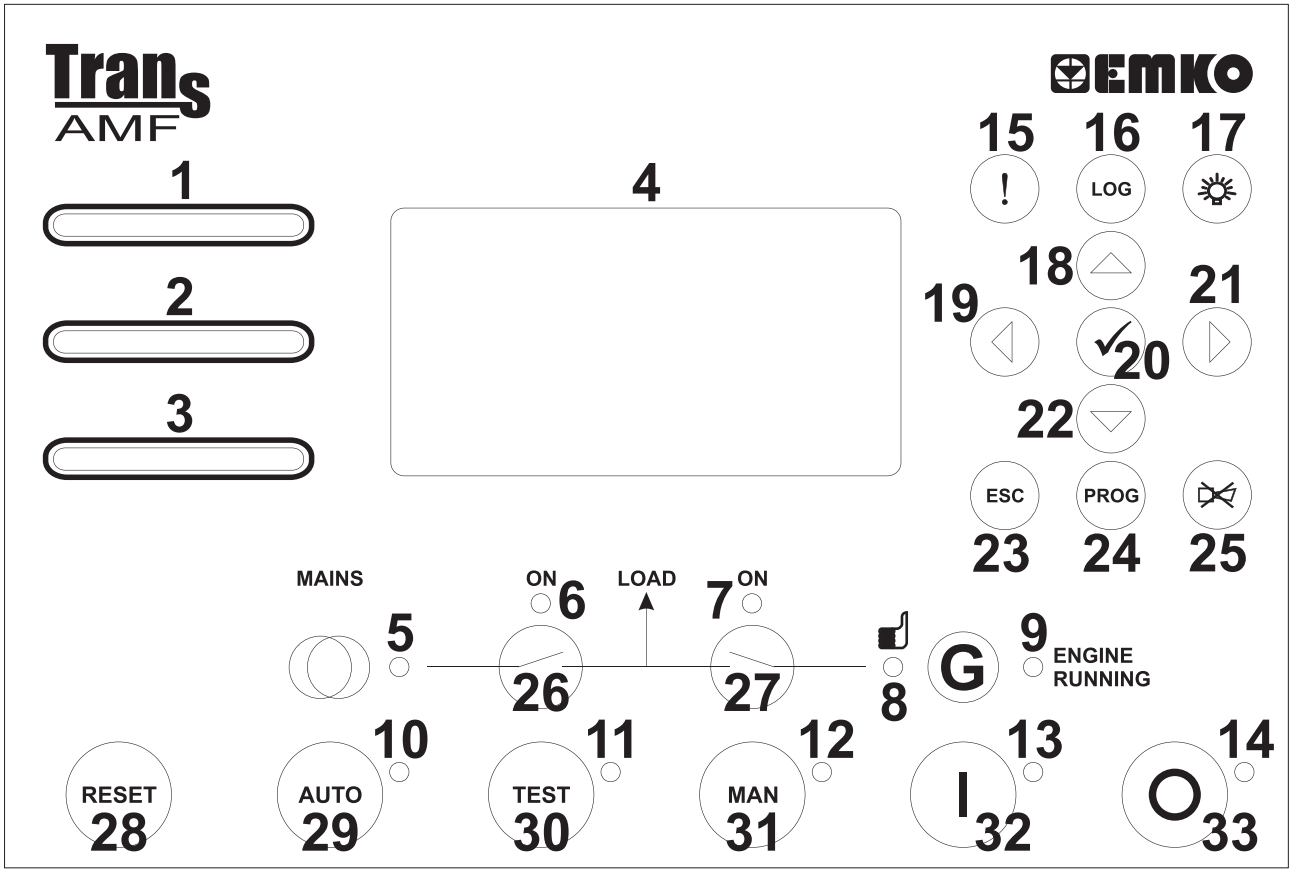
2- The CAN interface requires that a 120 Ohms terminator is fitted to each end of the communications link. This termination resistor is fitted internally into the unit. So it is not required externally. Screened cable must be used for connecting the CAN, ensuring that the screen is grounded at one end ONLY.

3- Screened cable must be used for connecting the Magnetic Pickup, ensuring that the screen is grounded at one end ONLY.

4- Current transformers secondary should be grounded. The CT of 5VA is recommended. The unit has a burden of 0.5VA on the CT.

3. Front Panel Description And Accessing To The Parameters

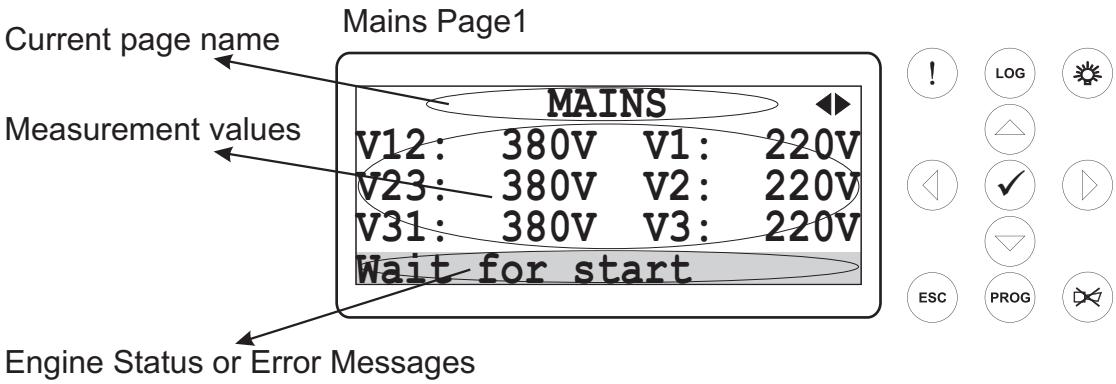
3.1 Front Panel Description



Number	Comment
1	This LED indicates that a "Shutdown" alarm was detected.
2	This LED indicates that a "Warning" alarm was detected
3	This LED indicates that a "Maintenance" alarm was detected
4	This LCD display is used for displaying the electrical measurements during normal operation, and editing/inspecting programming parameters in program mode.
5	This LED indicates that Mains voltage and frequency is within limits and is ready to take over the load.
6	This LED shows that the load is supplied from the mains.
7	This LED shows that the load is supplied from the generator.
8	This LED indicates that Generator voltage and frequency is within limits and is ready to take over the load.
9	This LED indicates that the engine has started and is running.
10	This LED shows that the unit is in the AUTO mode.
11	This LED shows that the unit is in the TEST mode.
12	This LED shows that the unit is in the MANUAL mode.
13	In the MAN, AUTO and TEST modes, this LED indicates that the engine is starting up or is running.
14	This LED shows that the unit is in the STOP mode.

Number	Comment
15	Warning and Alarm messages shortcut button.
16	Event Logs shortcut button.
17	The LAMP TEST button illuminates all LED indicators.
18	This button is used for showing previous parameters on the currently selected page in normal operation. In Programming mode, it operates as an Up button (changing cursor position) or Increment button (increase parameter value).
19	This button is used for showing previous page in normal operation. In Programming mode, it operates as an Left button (changing cursor position).
20	This button is used for entering parameter edit section and saving parameter value in programming mode.
21	This button is used for showing next page in normal operation. In Programming mode, it operates as an Right button (changing cursor position).
22	This button is used for showing next parameters on the currently selected page in normal operation. In Programming mode, it operates as an Down button (changing cursor position) or Decrement button (decrease parameter value).
23	The Escape button is used for exit previous section in programming mode.
24	When this button is pressed, the unit goes into its PROGRAMMING Mode.
25	This button will silence the alarm horn after a failure has been detected.
26	This button opens or closes the mains contactor, only operative when manual mode is selected.
27	This button opens or closes the gen. contactor, only operative when manual mode is selected.
28	This button will reset the controller after a failure has been detected.
29	The AUTO button is used for changing operating mode of the unit to the AUTO Mode.
30	The TEST button is used for changing operating mode of the unit to the TEST Mode.
31	The MAN button is used for changing operating mode of the unit to the MANUAL Mode.
32	The START button is used for starting the engine when the unit is in the Manual Mode.
33	The STOP button is used for changing operating mode of the unit to the STOP Mode. The generator is stopped.

LCD display Description



128x64 Dot-matrix LCD display.

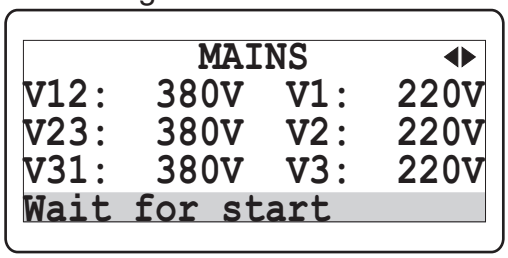
Use the Next and Previous buttons to select which Data display page (screen) is to be displayed.

When the Alarm (!) shortcut button is pressed, the Warning & Alarm display page is displayed.

When the Event log (LOG) shortcut button is pressed, the Event Log display page is displayed.

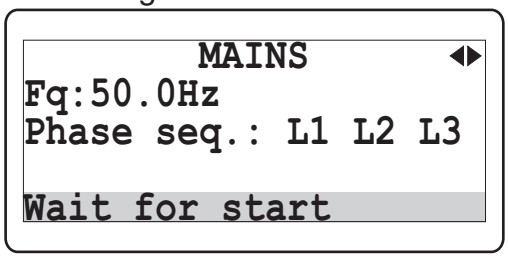
Data display pages on the LCD display;

Mains Page1:



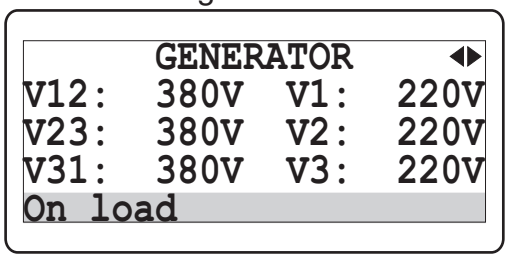
V12: Mains voltage L1-L2
V23: Mains voltage L2-L3
V31: Mains voltage L3-L1
V1: Mains voltage L1-N
V2: Mains voltage L2-N
V3: Mains voltage L3-N

Mains Page2:



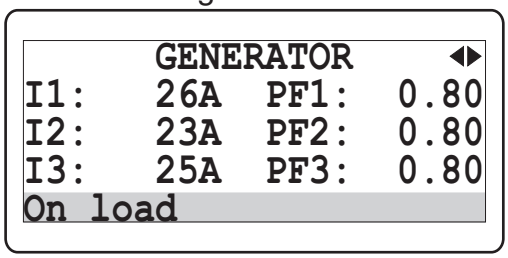
Fq: Mains frequency
Phase Seq.: Mains phase sequence

Generator Page1:



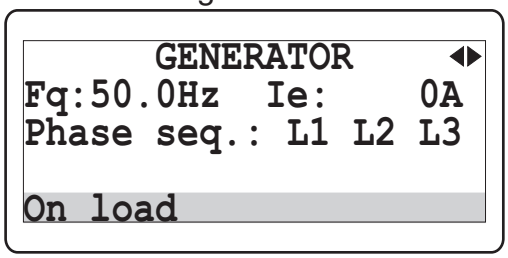
V12: Generator voltage L1-L2
V23: Generator voltage L2-L3
V31: Generator voltage L3-L1
V1: Generator voltage L1-N
V2: Generator voltage L2-N
V3: Generator voltage L3-N

Generator Page2:



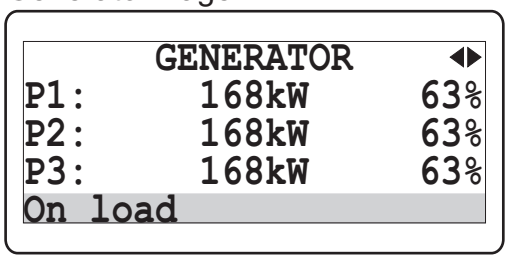
I1: Load Current L1
I2: Load Current L2
I3: Load Current L3
PF1: Generator power factor L1
PF2: Generator power factor L2
PF3: Generator power factor L3

Generator Page3:



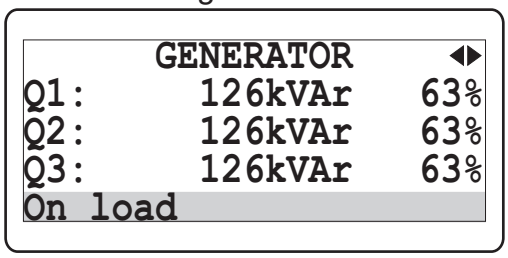
Fq: Generator frequency
Ie: Earth Current
Phase Seq.: Generator phase sequence

Generator Page4:



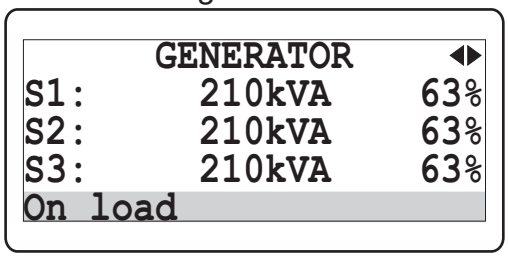
P1: Generator active power L1
P2: Generator active power L2
P3: Generator active power L3

Generator Page5:



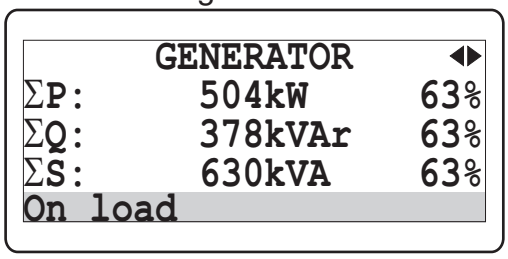
Q1: Generator reactive power L1
Q2: Generator reactive power L2
Q3: Generator reactive power L3

Generator Page6:



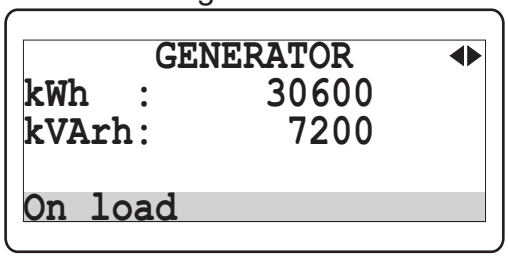
S1: Generator apparent power L1
S2: Generator apparent power L2
S3: Generator apparent power L3

Generator Page7:



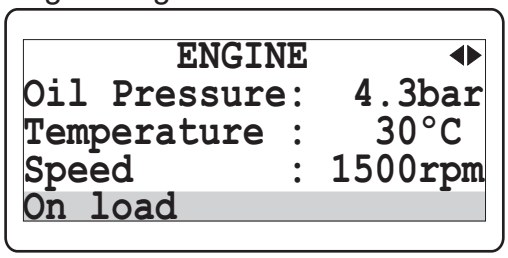
ΣP: Generator total active power
ΣQ: Generator total reactive power
ΣS: Generator total apparent power

Generator Page8:



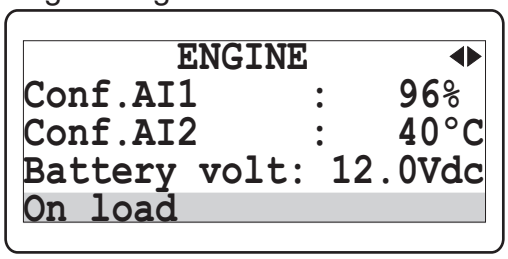
kWh: Generator active energy
KVArh: Generator reactive energy

Engine Page1:



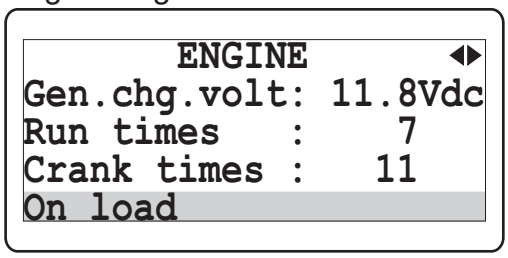
Oil pressure: Oil pressure sender input value
Temperature: Coolant temperature sender input value
Speed: Engine speed

Engine Page2:



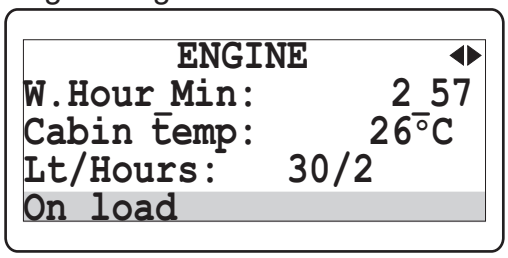
Conf. AI1: Configurable Analog Input-1 value
Conf. AI2: Configurable Analog Input-2 value
Battery volt: Battery supply voltage

Engine Page3:



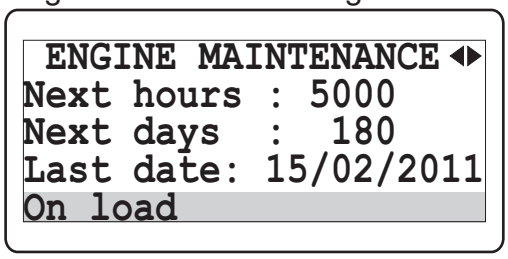
Gen.chg.volt: Charge generator voltage
Run times: Number of generator runs
Crank times: Number of generator starts

Engine Page4:



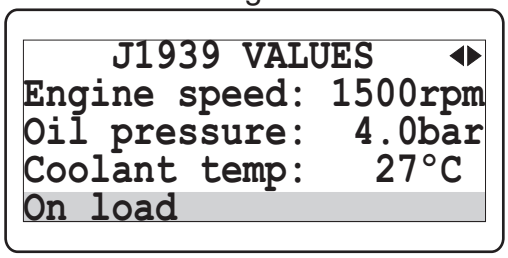
W.Hour_Min: Engine running time (Hour and Minute)
Cabin temp: Cabin temperature (Only available at Trans-AMF_C unit)
Lt/Hours: Fuel consumption

Engine Maintenance Page:



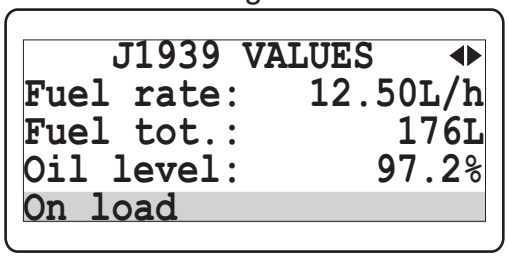
Next hours: The remaining hour for maintenance
Next days: The remaining day for maintenance
Last date: The last maintenance date

J1939 Values Page1:



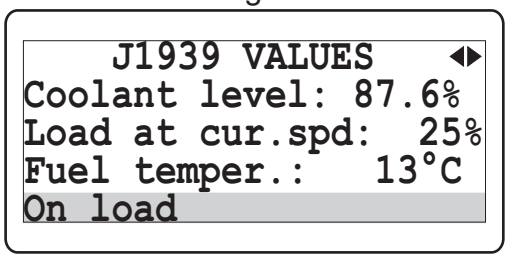
Engine speed: Engine speed via J1939
Oil pressure: Oil pressure via J1939
Coolant temp: Coolant temperature via J1939

J1939 Values Page2:



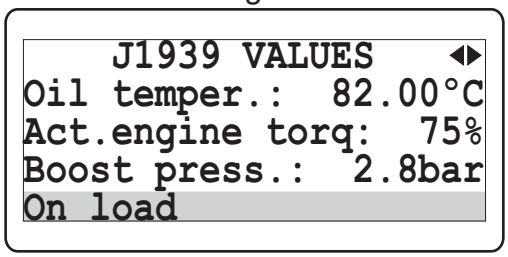
Fuel rate: Fuel rate via J1939
Fuel tot.: Fuel total used via J1939
Oil level: Oil level via J1939

J1939 Values Page3:



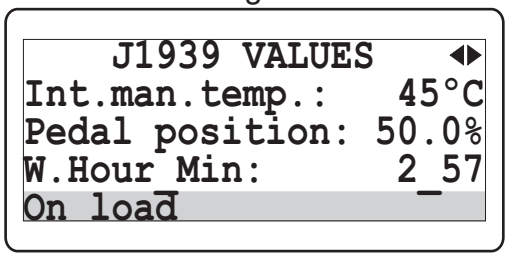
Coolant level: Coolant level via J1939
Load at cur.spd: Load at current speed via J1939
Fuel temper.: Fuel temperature via J1939

J1939 Values Page4:



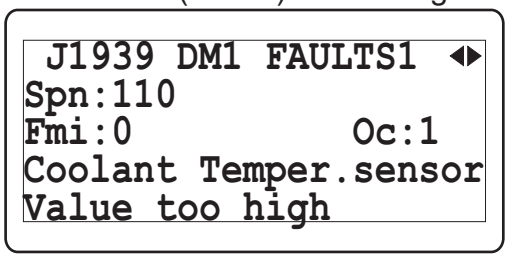
Oil temper.: Oil temperature via J1939
Act.engine torq: Actual engine torque via J1939
Boost press.: Boost pressure via J1939

J1939 Values Page5:



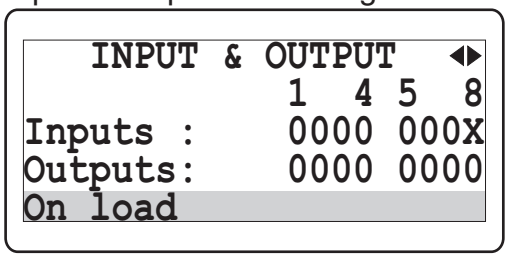
Int.man.temp.: Intake manifold temperature via J1939
Pedal position: Accelerator pedal position via J1939
W.Hour_Min: Working hour and minute via J1939

J1939 DM1 (Active) Faults Page:



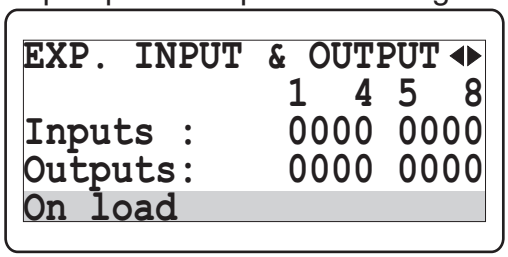
Spn: Suspect parameter number (e.g. SPN = 110 corresponds to coolant temperature sensor)
Fmi: Failure mode identifier (e.g. FMI = 0 means value too high)
Oc: Occurrence count (if OC = 0, no alarm is present)
The first 10 active alarm messages (Active Diagnostic Trouble Codes - DM1) with SPN, FMI, and OC are displayed). If more than one active fault condition is present, all of them is displayed sequencely by pressing Next and Previous buttons.

Input & Output Status Page:



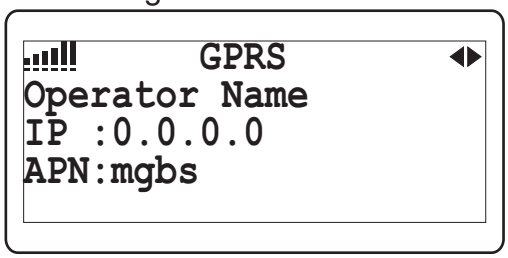
Inputs: Input status information. If an input is active, related digit is displayed as "1" else it is displayed as "0".
1: Conf. in-1, **2:** Conf. in-2, **3:** Conf. in-3, **4:** Conf. in-4,
5: Conf. in-5, **6:** Conf. in-6, **7:** Conf. in-7, **8:** Not available.
Outputs: Output status information. If an output is active, related digit is displayed as "1" else it is displayed as "0".
1: Conf. out-1, **2:** Conf. out-2, **3:** Conf. out-3, **4:** Conf. out-4,
5: Conf. out-5, **6:** Conf. out-6, **7:** Generator contactor,
8: Mains contactor.

Exp. Input & Output Status Page:



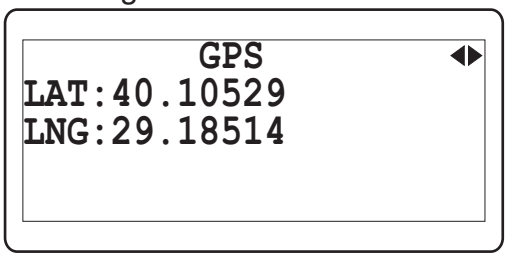
Inputs: Exp. input status information. If an input is active, related digit is displayed as "1" else it is displayed as "0".
1: Exp. conf. in-1, **2:** Exp. conf. in-2, **3:** Exp. conf. in-3,
4: Exp. conf. in-4, **5:** Exp. conf. in-5, **6:** Exp. conf. in-6,
7: Exp. conf. in-7, **8:** Exp. conf. in-8.
Outputs: Exp. output status information. If an output is active, related digit is displayed as "1" else it is displayed as "0".
1: Exp. conf. out-1, **2:** Exp. conf. out-2, **3:** Exp. conf. out-3,
4: Exp. conf. out-4, **5:** Exp. conf. out-5, **6:** Exp. conf. out-6,
7: Exp. conf. out-7, **8:** Exp. conf. out-8.

GPRS Page:



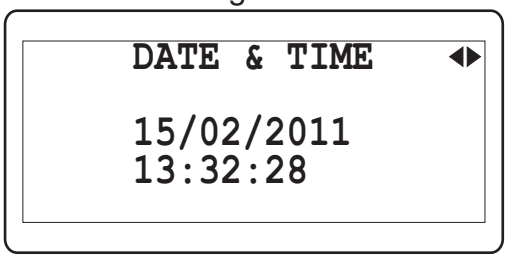
Signal Quality: Signal Quality level indicator
Operator Name: Operator name
IP: Device IP value
APN: Access point name of the operator

GPS Page:



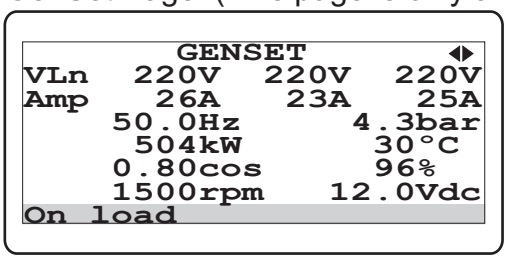
LAT: Latitude value of device's position
LNG: Longtitude value of device's position

Date & Time Page:



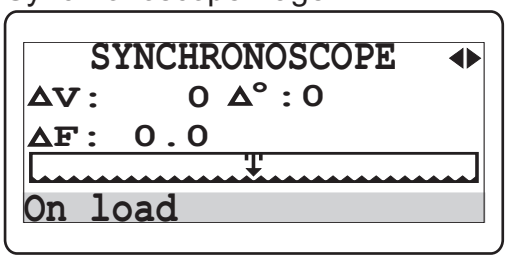
Date: Day, Month, Year.
Time: Hour, minute, second.

GenSet Page: (This page is only available at TRANS-AMF.TR device)



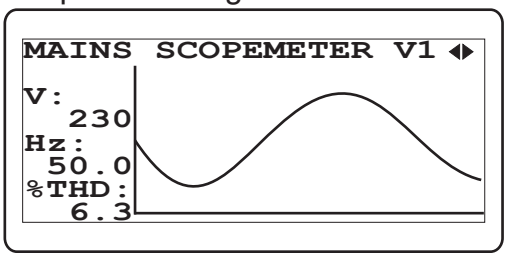
VLn: Generator voltage L1-N, L2-N and L3-N
Amp: Generator current L1, L2 and L3
Hz: Generator frequency
bar: Oil pressure sender input value
kW: Generator total active power
ºC: Coolant temperature sender input value
cos: Generator power factor average
%: Configurable Analog Input-1 value
rpm: Engine speed
Vdc: Battery supply voltage

Synchronoscope Page:



This page is for observing level differences between generator and mains voltage, frequency and phase angle.
When an uninterrupted transfer is in progress, synchronoscope page will be shown automatically.

Scopemeter Page:

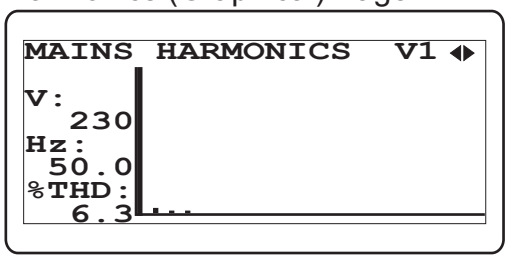


V: Amplitude of selected channel
Hz: Frequency of selected channel
%THD: Total Harmonic Distortion of selected channel

On this page, a total of 16 channels are displayed including mains voltages (Ph-N and Ph-Ph), generator voltages (Ph-N and Ph-Ph), generator currents and earth current. These channels may be scrolled with Increment ▲ and ▼ buttons.

The waveform of selected channel is updated twice per second. The waveform display memory is 97 samples length and 13 bit resolution. The sampling rate is 4166 samples/second. Thus, one cycle of the 50Hz signal is represented by 83 points.

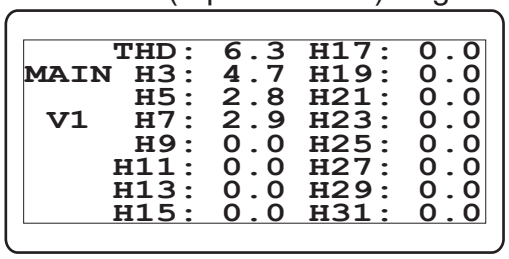
Harmonics (Graphical) Page:



V: Amplitude of selected channel
Hz: Frequency of selected channel
%THD: Total Harmonic Distortion of selected channel

On this page, a total of 16 channels are displayed including mains voltages (Ph-N and Ph-Ph), generator voltages (Ph-N and Ph-Ph), generator currents and earth current. Both graphical and alphanumeric display screens are available for each channel. These channels may be scrolled with Increment and buttons.
Note-1: In the graphical representation, only harmonics above 2% can be display due to the screen resolution.
Note-2: Since the unit can analyze up to the 31st harmonic, the graphic and alphanumeric display of the selected channel up to the 31st harmonic can be made.

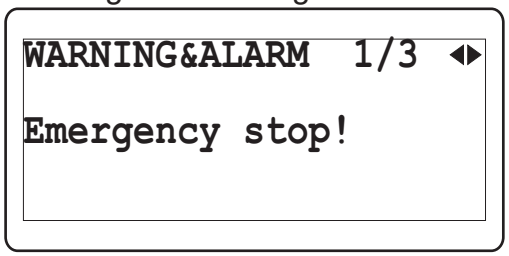
Harmonics (Alphanumeric) Page:



The harmonic analyzer uses the Fast Fourier Transform (FFT) algorithm and calculates twice a second on the selected channel.

Warning & Alarm display pages on the LCD display;

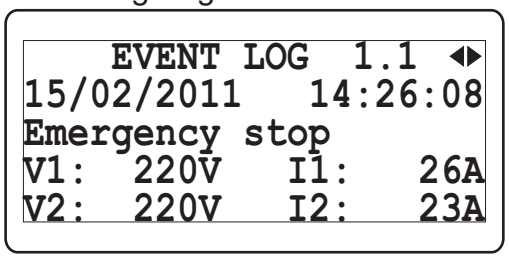
Warning & Alarm Page:



1/3: The first message of current alarms.
Emergency stop!: This message indicates that an emergency stop alarm has occurred.

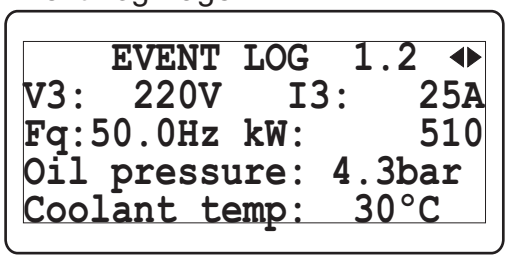
Event Log display pages on the LCD display;

Event Log Page1:



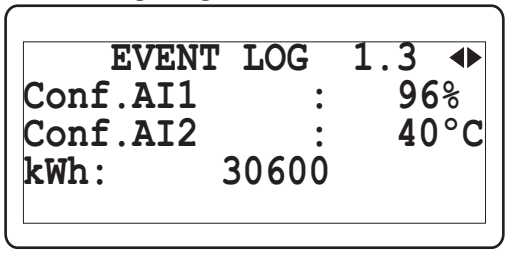
1.1: The first page of related event log
Emergency stop: This message indicates that an emergency stop alarm has occurred. (Event history: 15/02/2011 date, 14:26:08 time).
V1: Generator voltage L1-N
I1: Load Current L1
V2: Generator voltage L2-N
I2: Load Current L2

Event Log Page2:



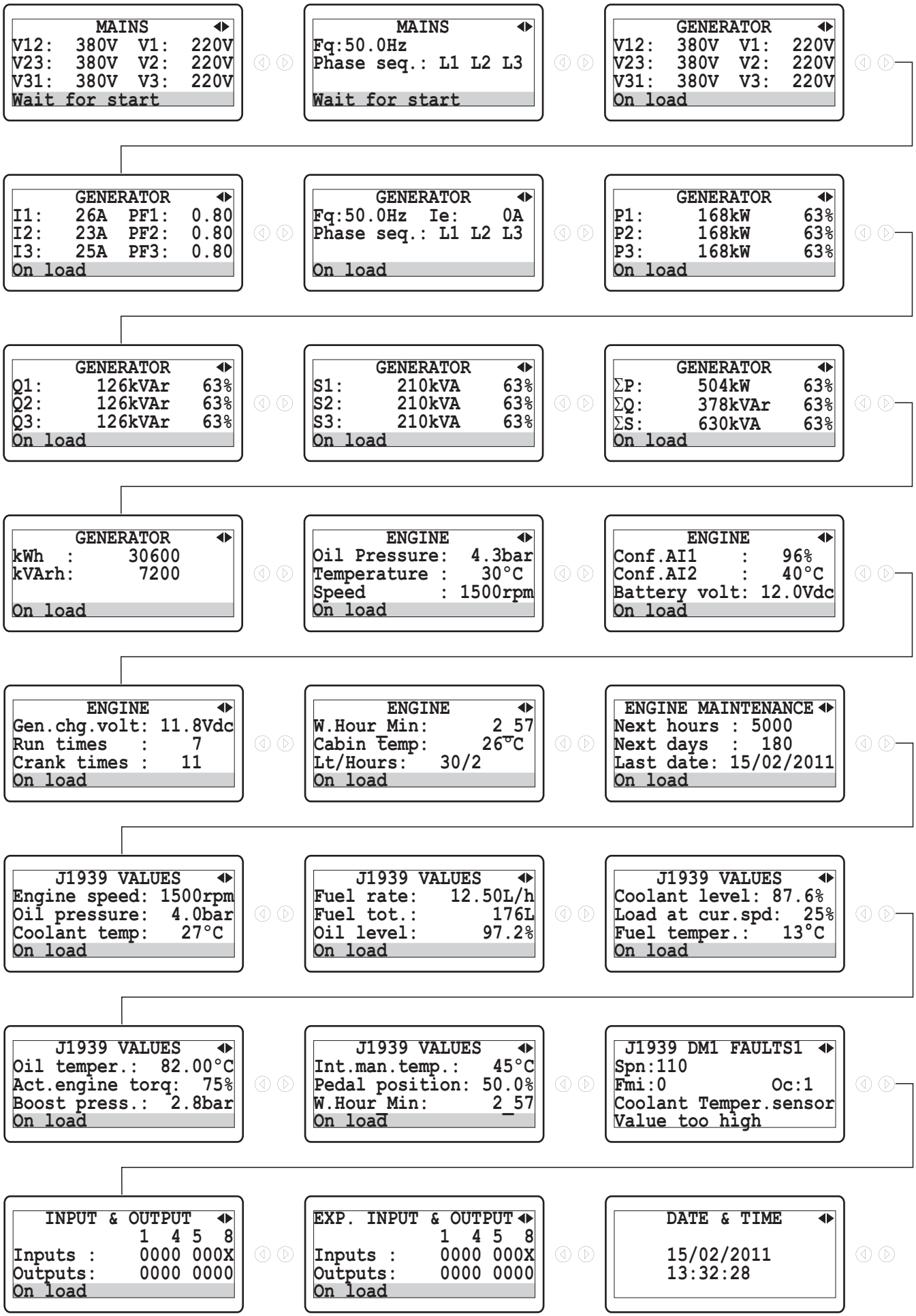
1.2: The second page of related event log
V3: Generator voltage L3-N
I3: Load Current L3
Fq: Generator frequency
kW: Generator total active power
Oil oressure: Oil pressure sender input value
Coolant temp: Coolant temperature sender input value

Event Log Page3:

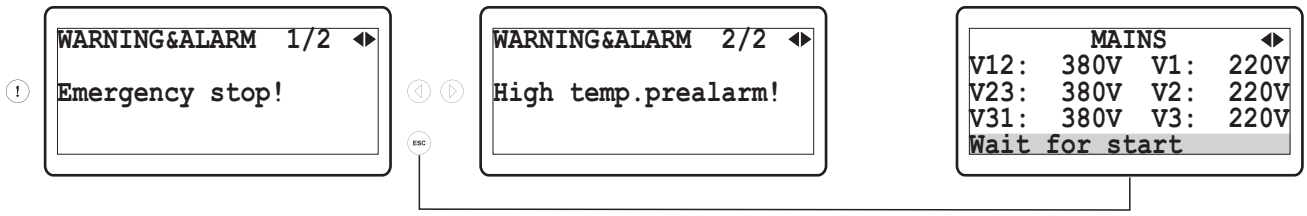


1.3: The last page of related event log
Conf. AI1: Configurable Analog Input-1 value
Conf. AI2: Configurable Analog Input-2 value
kWh: Generator active energy
Events (from 1 to 500) can be displayed sequencely with the Next and Previous buttons.

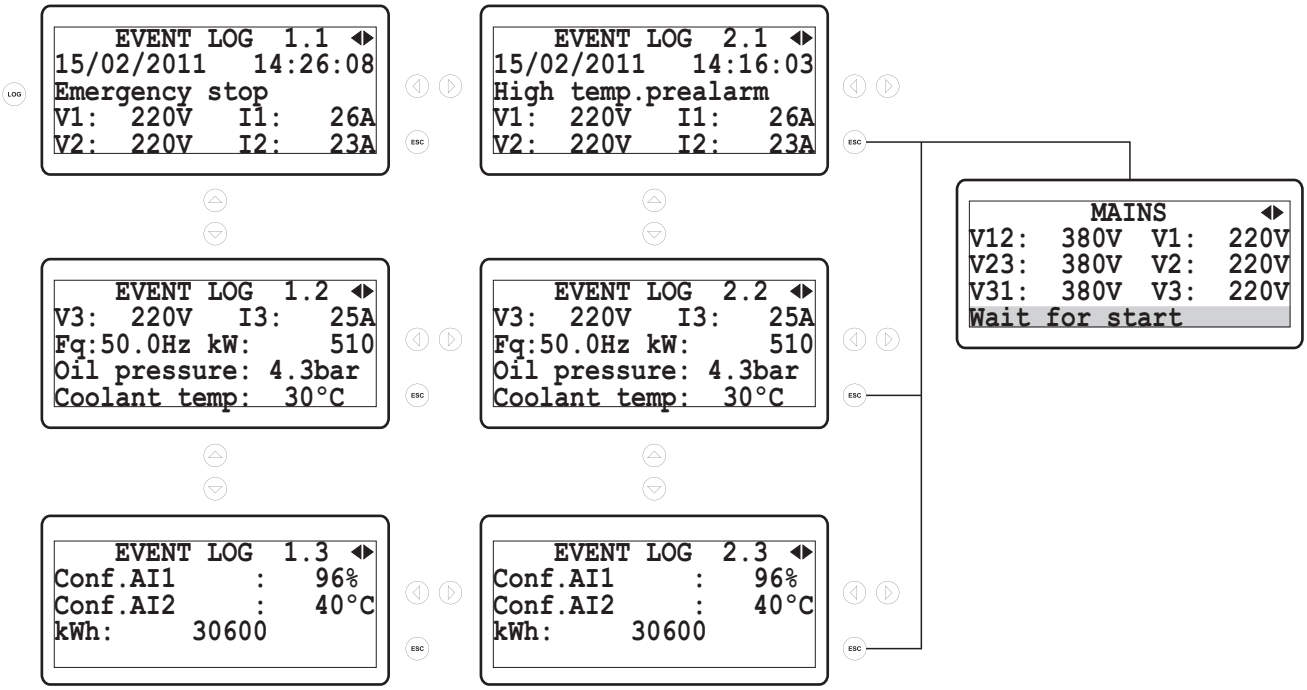
Example-1: Displaying all Data display pages.



Example-2: Displaying all Warning&Alarm display pages

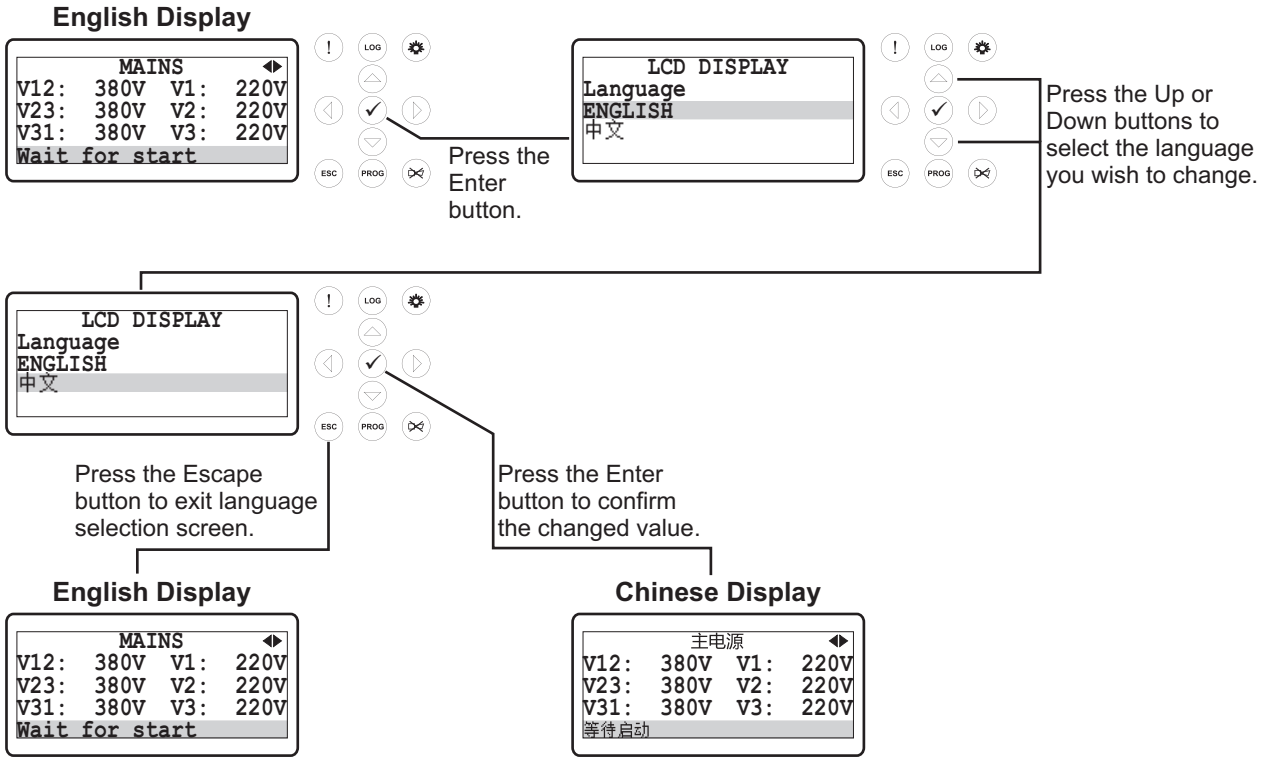


Example-3: Displaying all Event Log display pages

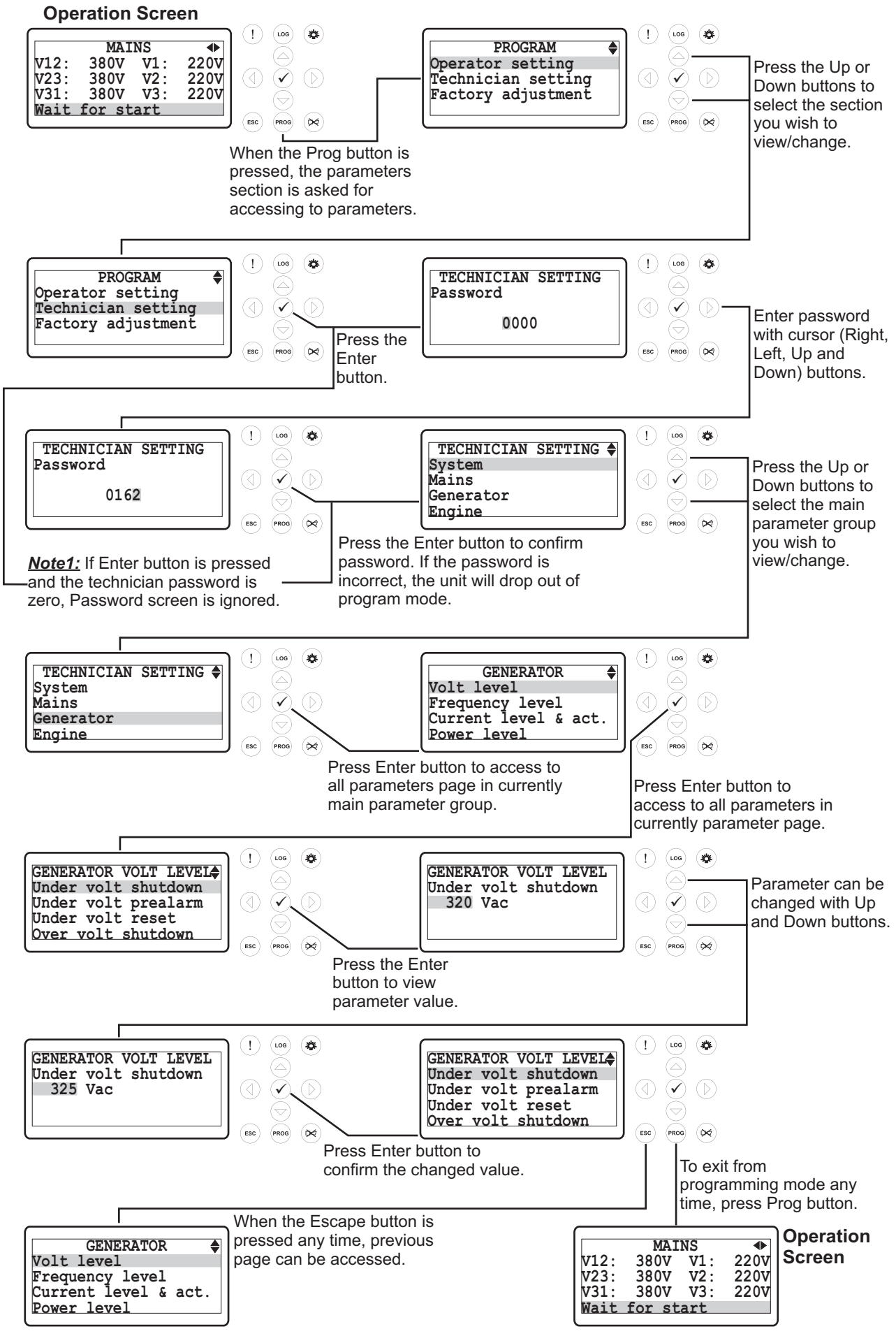


LCD display language selection

English Display



3.2 Changing And Saving Parameters Values



4. Parameters

4.1 Operator Parameters

4.1.1 Mains

MAINS VOLT LEVEL (*Mains->Volt level*)		Min	Max	Default	Unit
Under volt trip	Mains Under Voltage	60	600	320	V~
Under volt reset	Mains Under Voltage Reset	60	600	340	V~
Over volt trip	Mains Over Voltage	60	600	440	V~
Over volt reset	Mains Over Voltage Reset	60	600	420	V~

MAINS FREQ. LEVEL (*Mains->*Frequency *level*)		Min	Max	Default	Unit
Under freq trip	Mains Under Frequency	20.0	75.0	45.0	Hz
Under freq reset	Mains Under Frequency Reset	20.0	75.0	48.0	Hz
Over freq trip	Mains Over Frequency	20.0	75.0	55.0	Hz
Over freq reset	Mains Over Frequency Reset	20.0	75.0	52.0	Hz

4.1.2 Generator

GENERATOR VOLT LEVEL (*Generator->Volt level*)		Min	Max	Default	Unit
Under volt shutdown	Generator Under Voltage Shutdown	60(dis)	600	320	V~
Under volt prealarm	Generator Under Voltage Pre-Alarm	60(dis)	600	340	V~
Under volt reset	Generator Under Voltage Pre-Alarm Reset	60	600	350	V~
Over volt shutdown	Generator Over Voltage Shutdown	60	600	440	V~
Over volt prealarm	Generator Over Voltage Pre-Alarm	60(dis)	600	420	V~
Over volt reset	Generator Over Voltage Pre-Alarm Reset	60	600	400	V~
Shutdown delay time	Generator Voltage Shutdown Delay Time	0.0	10.0	1.0	Sec

GENERATOR FREQ LEVEL (*Generator->Frequency level*)		Min	Max	Default	Unit
Nominal frequency	Nominal Alternator Frequency	30.0	75.0	50.0	Hz
Under freq shutdown	Generator Under Frequency Shutdown	30.0(dis)	75.0	43.0	Hz
Under freq prealarm	Generator Under Frequency Pre-Alarm	30.0(dis)	75.0	45.0	Hz
Under freq reset	Generator Under Frequency Pre-Alarm Reset	30.0	75.0	46.0	Hz
Over freq shutdown	Generator Over Frequency Shutdown	30.0(dis)	75.0	58.0	Hz
Over freq prealarm	Generator Over Frequency Pre-Alarm	30.0(dis)	75.0	55.0	Hz
Over freq reset	Generator Over Frequency Pre-Alarm Reset	30.0	75.0	54.0	Hz
Shutdown delay time	Generator Frequency Shutdown Delay Time	0.0	10.0	1.0	Sec

GENERATOR CUR LEVEL (*Generator->Current level*)		Min	Max	Default	Unit
Under cur. set	Generator Under Current Set	0	9999	1	A~
Under cur. prealarm	Generator Under Current Pre-Alarm	0(dis)	9999	dis	A~
Under cur. reset	Generator Under Current Pre-Alarm Reset	0	9999	5	A~
Over cur. IDMT alarm	Generator Over Current IDMT Alarm	ENABL/DISBL		DISBL	
Over cur. set	Generator Over Current Set	0	9999	9999	A~
Over cur. prealarm	Generator Over Current Pre-Alarm	0(dis)	9999	9990	A~
Over cur. reset	Generator Over Current Pre-Alarm Reset	0	9999	9980	A~

Note-1: The above parameters are explained in the "*4.2 Technician Parameters*" section.

Note-2: dis = disable

GEN POWER LEVEL (*Generator->Power level*)		Min	Max	Default	Unit
Under power set	Generator Under Power Set	0	9999	0	kVA
Under power prealarm	Generator Under Power Pre-Alarm	0(dis)	9999	dis	kVA
Under power reset	Generator Under Power Pre-Alarm Reset	0	9999	5	kVA
Over power IDMT alarm	Generator Over Power IDMT Alarm	ENABL/DISBL		DISBL	
Over power set	Generator Over Power Set	0	9999	0	kVA
Over power prealarm	Generator Over Power Pre-Alarm	0(dis)	9999	dis	kVA
Over power reset	Generator Over Power Pre-Alarm Reset	0	9999	0	kVA
Over load step 1	Generator Over Load Step 1	0	9999	9999	KVA
Over load step 1 rest	Generator Over Load Step 1 Reset	0	9999	9999	KVA
Over load step 2	Generator Over Load Step 2	0	9999	9999	KVA
Over load step 2 rest	Generator Over Load Step 2 Reset	0	9999	9999	KVA
Reverse power set	Reverse Power Set	-9999	0	0	kW

GEN WORKING CALENDAR (*Generator->Working calendar*)		Min	Max	Default	Unit
Disable/enable select	Working Calendar Disable or Enable	DISBL/ENABL		DISBL	
Start time on monday	Working Calendar Work Start Time on Monday	0.00	23.59	0.00	H.Min
Stop time on monday	Working Calendar Work Stop Time on Monday	0.00	23.59	23.59	H.Min
Start time on tues.	Working Calendar Work Start Time on Tuesday	0.00	23.59	0.00	H.Min
Stop time on tuesday	Working Calendar Work Stop Time on Tuesday	0.00	23.59	23.59	H.Min
Start time on wednes.	Working Calendar Work Start Time on Wednesday	0.00	23.59	0.00	H.Min
Stop time on wednes.	Working Calendar Work Stop Time on Wednesday	0.00	23.59	23.59	H.Min
Start time on thurs.	Working Calendar Work Start Time on Thursday	0.00	23.59	0.00	H.Min
Stop time on thursday	Working Calendar Work Stop Time on Thursday	0.00	23.59	23.59	H.Min
Start time on friday	Working Calendar Work Start Time on Friday	0.00	23.59	0.00	H.Min
Stop time on friday	Working Calendar Work Stop Time on Friday	0.00	23.59	23.59	H.Min
Start time on satur.	Working Calendar Work Start Time on Saturday	0.00	23.59	0.00	H.Min
Stop time on saturday	Working Calendar Work Stop Time on Saturday	0.00	23.59	23.59	H.Min
Start time on sunday	Working Calendar Work Start Time on Sunday	0.00	23.59	0.00	H.Min
Stop time on sunday	Working Calendar Work Stop Time on Sunday	0.00	23.59	23.59	H.Min

Note-1: The above parameters are explained in the "*4.2 Technician Parameters*" section.

Note-2: dis = disable

4.2 Technician Parameters

4.2.1 System

SYSTEM NETWORK (*System->Network*)		Min	Max	Default	Unit
CT ratio	Current Transformer Ratio	1	9999	100	
Earth fault CT ratio	Earth Fault Current Transformer Ratio	1	9999	100	
Type of AC system	Select AC System; 0- 1 Phase 2 Wire 1- 3 Phase 4 Wire 2- 2 Phase 3 Wire L1-L2 3- 2 Phase 3 Wire L1-L3	0	3	1	
Phase sequence	Generator Phase Sequence (dis, L123 or L321)	DISBL, L123, L321		DISBL	
Generator kVA rating	Generator kVA Rating Set	0	9999	300	kVA
Power unit	Power Unit	kVA/kW		kVA	
kVA,kW,kVAr point	kVA, kW, kVAr Point Position; 0-> 0 1-> 0.0 2-> 0.00 3-> 0.000	0	3	0	
CT location	Current Transformer Location; 0-> Generator 1-> Load	0	1	0	
Power on mode	Power On Mode Selection	0-LAST MODE 1-AUTO MODE 2-TEST MODE 3-MANUAL MODE 4-STOP MODE		0-LAST MODE	
Nominal Cos Phi	Nominal Cos Phi	0.70	1.00	0.80	
PT primary	Voltage Transformer Primary	50	65000	400	V~
PT secondary	Voltage Transformer Secondary	50	480	400	V~

CT ratio
Load current transformer's transfer ratio(Primary/Secondary) value must be entered to this parameter.

Example:
If Current Transformer Primary=500A and Current Transformer Secondary=5A, Current Transformer Ratio should be entered CT Primary/CT Secondary=100.

Earth fault CT ratio
Earth current transformer's transfer ratio value must be entered to this parameter.

Type of AC System
This parameter is used to detail the type of AC system to which the unit is connected:
1 phase 2 wire, 3 phase 4 wire, 2 phase 3 wire L1-L2, 2 phase 3 wire L1-L3.

Phase Sequence
DISABLE: the mains and generator phase sequence checking disabled.

L123 or L321: if the mains phase sequence is faulty, the "Mains phase sequence wrong" warning is given and the mains contactor is deenergized. If the generator phase sequence is faulty, the "Generator phase sequence wrong" warning is given and the generator is stopped.

Generator kVA Rating Set
This parameter specifies the generator apparent power rating, which is used as a reference value for the power protection functions.

Power Unit
This parameter is used to select whether the power protection is done in "kW" or "kVA".

CT location
0-Generator: The CTs are located to the generator side, so will show only generator load.
1-Load: The CTs are located to the load side, so will show generator or mains load provided by supply.

Nominal Cos Phi
This parameter specifies the generator power factor rating, which is used as a reference value for the % load display.

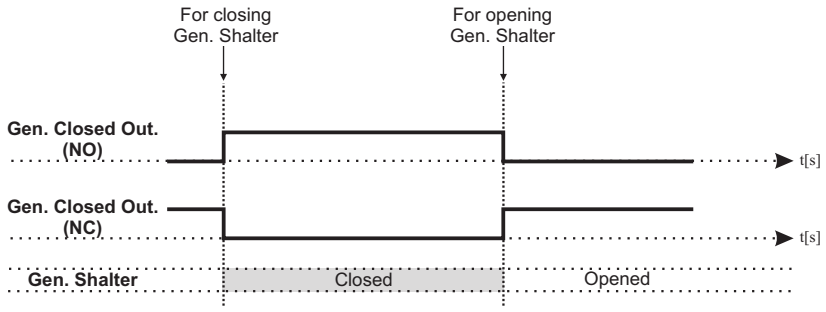
PT primary
This parameter defines the rating of the primary side of the potential transformer.
Note: If the potential transformer is not used, "***PT primary***" and "***PT secondary***" parameters should be entered with the same value.

PT secondary
This parameter defines the rating of the secondary side of the potential transformer.
Note: If the potential transformer is not used, "***PT primary***" and "***PT secondary***" parameters should be entered with the same value.

BREAKERS (*System->Breakers*)		**Min**	**Max**	**Default**	**Unit**
Type of Breaker	Hardware Breaker Selection	0	2	0	
Gen.brk.cls.contact	Gen Close Breaker Contact Type	NO / NC		0	
Gen.brk.cls.relay	Gen Close Breaker Relay Type	NOR / PULS		0	
Gen.brk.cls.time	Gen Close Timer	1	250	5	Sec
Gen.brk.open relay	Gen Open Breaker Relay Type	NOR / PULS		0	
Gen.brk.open time	Gen Open Timer	1	250	5	Sec
Mains.brk.cls.contact	Mains Close Breaker Contact Type	NO / NC		0	
Mains.brk.cls.relay	Mains Close Breaker Relay Type	NOR / PULS		0	
Mains.brk.cls.time	Mains Close Timer	1	250	5	Sec
Mains.brk.open relay	Mains Open Breaker Relay Type	NOR / PULS		0	
Mains.brk.open time	Mains Open Timer	1	250	5	Sec
Break.close puls.time	Breaker Close Pulse Time	0.0	10.0	0.5	Sec
Break.open pulse time	Breaker Open Pulse Time	0.0	10.0	0.5	Sec
Transfer time	Transfer Time	0	250	2	Sec
Spring loading time	Spring Loading Time	1	250	3	Sec
Retry number	Retry Number	1	250	5	

Hardware Breaker Selection (Type of Breaker)
0- Breakers: Mains and Gen breakers have only close drives and if close drive off breaker will open. Parameters; GEN CLOSE BREAKER CONTACT TYPE, GEN CLOSE TIMER(if gen closed input selected), GEN OPEN TIMER(if gen closed input selected), MAIN CLOSE BREAKER CONTACT TYPE, MAINS CLOSE TIMER(if mains closed input selected), MAINS OPEN TIMER(if mains closed input selected), TRANSFER TIME.

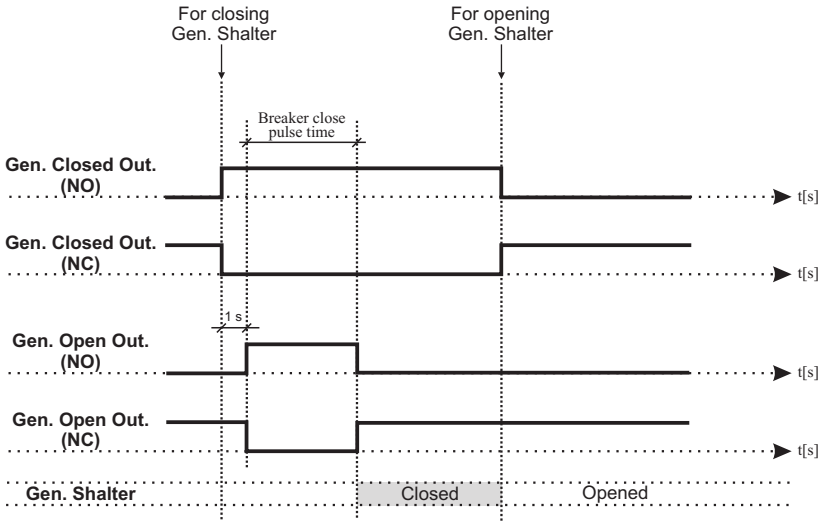
Example: If Hardware Breaker Selection parameter is selected as 0;



Note-1 : NO / NC : Normally Open / Normally Close
2 : NOR / PULS : Normal / Pulse

1- User Configured: Mains and Gen breakers have only close drives, when want to breaker close, close breaker output on and after 1 sec. open breaker output on and after breaker close pulse time open breaker output will off. When want to breaker open close breaker output and open breaker output will off.
Parameters; GEN CLOSE BREAKER CONTACT TYPE, GEN CLOSE TIMER(if gen closed input selected), GEN OPEN TIMER(if gen closed input selected), MAIN CLOSE BREAKER CONTACT TYPE, MAINS CLOSE TIMER(if mains closed input selected), MAINS OPEN TIMER(if mains closed input selected),BREAKER CLOSE PULSE TIME, TRANSFER TIME.

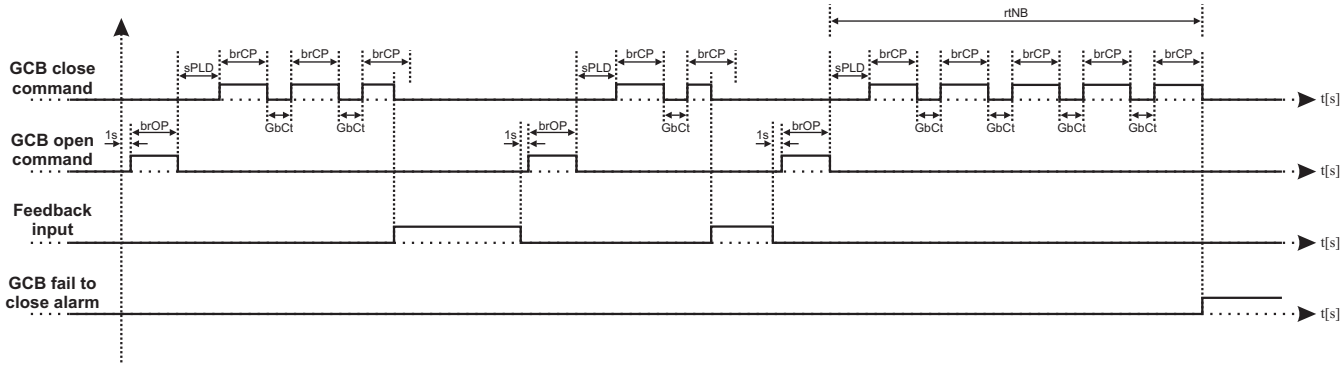
Example: If Hardware Breaker Selection parameter is selected as 1;



2- Motorised Breakers: User can select all the breaker types.
Parameters; GEN CLOSE BREAKER CONTACT TYPE, GEN CLOSE BREAKER RELAY TYPE, GEN CLOSE TIMER(if gen closed input selected), GEN OPEN BREAKER RELAY TYPE, GEN OPEN TIMER(if gen closed input selected), MAIN CLOSE BREAKER CONTACT TYPE, MAIN CLOSE BREAKER RELAY TYPE, MAINS CLOSE TIMER(if mains closed input selected), MAIN OPEN BREAKER RELAY TYPE, MAINS OPEN TIMER(if mains closed input selected), BREAKER CLOSE PULSE TIME(if Gen Close Breaker Relay Type or Main Close Breaker Relay Type parameter is selected as 1), BREAKER OPEN PULSE TIME(if Gen Open Breaker Relay Type or Main Open Breaker Relay Type parameter is selected as 1), TRANSFER TIME, SPRING LOADING TIME, RETRY NUMBER.

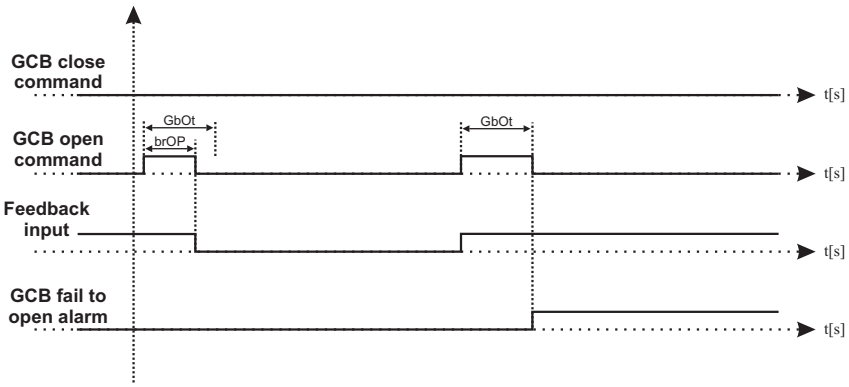
Example-1: GCB Close Diagram.
If Hardware Breaker Selection parameter is selected as 2 (motorised breakers), Gen. Close Breaker Relay Type parameter is selected as 1 (PULSE) and Gen. Open Breaker Relay Type parameter is selected as 1 (PULSE);

GbCt: Gen close timer
brCP: Breaker close pulse time
brOP: Breaker open pulse time
sPLD: Spring loading time
rtNB: Retry number



Example-2: GCB Open Diagram.
If Hardware Breaker Selection parameter is selected as 2 (motorised breakers), Gen. Close Breaker Relay Type parameter is selected as 1 (PULSE) and Gen. Open Breaker Relay Type parameter is selected as 1 (PULSE);

GbOt: Gen open timer
brOP: Breaker open pulse time



Gen Close Timer
This is used to monitor the closure of the generator contactor or breaker. It will only operate if an auxiliary input is configured as 'Generator Closed Auxiliary' and connected to the auxiliary on the generator contactor or breaker. Once a generator closed signal is issued the 'gen close timer' is initiated. Should the 'Generator Closed Auxiliary' input become active the timer the 'gen close timer' is cancelled. If the timer expires and the 'Generator Closed Auxiliary' has not become active the module will issue a 'generator failed to close' alarm.

Gen Open Timer
This is used to monitor the opening of the generator contactor or breaker. It will only operate if an auxiliary input is configured as 'Generator Closed Auxiliary' and connected to the auxiliary on the generator contactor or breaker. Once a generator open signal is issued the 'gen open timer' is initiated. Should the 'Generator Closed Auxiliary' input become in-active the timer 'gen open timer' is cancelled. If the timer expires and the 'Generator Closed Auxiliary' has not become in-active the module will issue a 'generator failed to open' alarm.

Mains Close Timer
This is used to monitor the closure of the mains contactor or breaker. It will only operate if an auxiliary input is configured as 'Mains Closed Auxiliary' and connected to the auxiliary on the mains contactor or breaker. Once a mains closed signal is issued the 'mains close timer' is initiated. Should the 'Mains Closed Auxiliary' input become active the timer the 'mains close timer' is cancelled. If the timer expires and the 'Mains Closed Auxiliary' has not become active the module will issue a 'mains failed to close' alarm.

Mains Open Timer
This is used to monitor the opening of the mains contactor or breaker. It will only operate if an auxiliary input is configured as 'Mains Closed Auxiliary' and connected to the auxiliary on the mains contactor or breaker. Once a mains open signal is issued the 'mains open timer' is initiated. Should the 'Mains Closed Auxiliary' input become in-active the timer the 'mains open timer' is cancelled. If the timer expires and the 'Mains closed auxiliary' has not become in-active the module will issue a 'mains failed to open' alarm.

Breaker Close Pulse Time
This is used to determine the duration of the Mains and Generator close signals. This timer is only used if Pulsed outputs are configured to be used.

Breaker Open Pulse Time
This is used to determine the duration of the Mains and Generator close signals. This timer is only used if Pulsed outputs are configured to be used.

Transfer Time
This is used to allow for fixed duration transfer breaks when switching from mains to generator and back. It can be used to ensure that the supply is removed from the load for fixed period of time to allow pumps/motors to come to rest etc.

Spring Loading Time
When the unit give open command to the (GCB or MCB) breaker and after that the unit want to give close command the same breaker, this time for between open and close commands, because if there is no delay between open and close commands can be problem the motorized switches.

Retry Number
The unit try to close (GCB or MCB) breaker number of this parameter. If each try there is no close feedback, after last try the alarm will be activated.

LCD DISPLAY (*System->LCD display*)		**Min**	**Max**	**Default**	**Unit**
Language	Language Selection	ENGLISH/CHINESE		ENGLISH	
Contrast	Contrast Setting	4	9	5	
Auto backlight off	Auto Backlight Off 0-DISABLE 1-ENABLE 2-ENABLE(only when engine is not running)	0	2	0	
Auto scroll time	Auto Scroll Time	0 (dis)	250	0	Sec
Auto scroll number	Auto Scroll Number	1	26	5	
Err. mesg scroll time	Scroll Time For Error Messages	1	250	2	Sec
Back to genset screen	Back To Genset Screen	0 (dis)	250	0 (dis)	Sec

Language Selection
Language selection: English or Chinese.

Digital Contrast
It is used to change contrast of LCD Display.

Auto Backlight Off
0- DISABLE: LCD backlight is on continuously.
1- ENABLE: If any button is not pressed during 60 secs, LCD backlight is automatically changed power saving mode.
2- ENABLE: If any button is not pressed during 60 secs, LCD backlight is automatically changed power saving mode. If the engine is running, backlight is on continuously.

Auto Scroll Time
The scroll time between all data display pages.

Auto Scroll Number
The number of data display pages that will be scrolled.

Scroll Time For Error Messages
Error messages are displayed the last line of LCD Display. If more than one error condition is present, each of them is displayed during time defined by Auto Scroll Timer parameter.

Back To Genset Screen
If any button is not pressed during the time defined in this parameter, LCD screen will automatically changed to the Genset page. **Note:** This parameter is only available at TRANS-AMF.TR device.

Note: dis = disable

COMMUNICATION (*System->Communication*)		Min	Max	Default	Unit
Slave address	Slave Address	1	247	1	
Baud rate	Baud Rate: 0 - 1200 baud 1 - 2400 baud 2 - 4800 baud 3 - 9600 baud 4 - 19200 baud 5 - 38400 baud	0	5	3	
Parity	Parity: 0-> None, 1-> Odd, 2-> Even	0	2	0	
Stop bit	Stop Bit (0-> 1 stop bit,1-> 2 stop bit)	0	1	0	
Datalog period	Datalog Period	0.0(dis)	999.9	1.0	Min
Datalog activation	Datalog Activation: 0-Always active 1-Only active when engine is running	0	1	1	
Timeout	Timeout	0(dis)	999	3	Min
ASCII/RTU selection	ModBus ASCII/RTU Selection	ASCII / RTU		ASCII	

Slave Address
This parameter is used for the ModBus Slave ID.

Baud Rate
This parameter is used for the ModBus communication speed. Baud rate adjustable from 1200-38400.

Datalog Period
The unit will log data to internal memory (limited to 500 records). The logging period is adjustable between “0.1” and “999.9” minutes via this parameter.

Datalog Activation
0-Always active: The unit logs data regardless of engine running state.

1-Only active when engine is running: The unit only logs data when the engine running.

The below registers are logged;

Mains V1, Mains V2, Mains V3 and Mains frequency,
Generator V1, Generator V2, Generator V3 and Generator frequency,
Generator I1, Generator I2, Generator I3,
Generator kWh,
Oil pressure, J1939 oil pressure,
Coolant temperature, J1939 coolant temperature,
Configurable analogue input-1,
Configurable analogue input-2,
Cabin temperature,
Battery voltage,
Working hour&minute

Timeout
This parameter is used for the modem hardware reset. If the data communication is interrupted and this situation continues as this parameter, the modem hardware reset is performed.

ModBus ASCII/RTU Selection
This parameter is only functional for the USB, RS-232, RS-485 or RS-422 communication.

Note: dis = disable

DATE & TIME SET (*System->Date & time set*)		Min	Max	Default	Unit
Year	Year	0	99		
Month	Month	1	12		
Day	Date	1	31		
Week	Day of week	1	7		
Hour	Hour	0	23		
Minute	Minute	0	59		
Second	Second	0	59		

Day of week
1=Monday, 2=Tuesday, 3=Wednesday, 4=Thursday, 5=Friday, 6=Saturday, 7=Sunday.

DEFAULT SETTINGS (*System->Default settings*)		Min	Max	Default	Unit
Save setting to def.	Save setting to default	YES / NO		NO	
Reset default sets	Reset default sets	YES / NO		NO	
Reset factory sets	Reset factory sets	YES / NO		NO	

Save setting to default
If this parameter is selected as “Yes”, the unit’s currently parameters save as default sets.
After this parameter is reset automatically to “No”.

Reset default sets
If this parameter is selected as “Yes”, the unit’s parameters back to default sets.
After this parameter is reset automatically to “No”.

Reset factory sets
If this parameter is selected as “Yes”, the unit’s parameters back to factory sets.
After this parameter is reset automatically to “No”.

PASSWORD SETTINGS (*System->Password settings*)		Min	Max	Default	Unit
Operator password	Operator Password	0	9999	0	
Technician password	Technician Password	0	9999	0	

Operator Password
Use this option to change the Operator password. This password allows access to operator parameters section.

Technician Password
Use this option to change the Technician password. It allows access to both operator and technician parameters section.

Note: dis = disable

4.2.2 Mains

MAINS VOLT LEVEL (*Mains->Volt level*)		Min	Max	Default	Unit
Under volt trip	Mains Under Voltage	60	600	320	V~
Under volt reset	Mains Under Voltage Reset	60	600	340	V~
Over volt trip	Mains Over Voltage	60	600	440	V~
Over volt reset	Mains Over Voltage Reset	60	600	420	V~

MAINS FREQ. LEVEL (*Mains->*Frequency *level*)		Min	Max	Default	Unit
Under freq trip	Mains Under Frequency	20.0	75.0	45.0	Hz
Under freq reset	Mains Under Frequency Reset	20.0	75.0	48.0	Hz
Over freq trip	Mains Over Frequency	20.0	75.0	55.0	Hz
Over freq reset	Mains Over Frequency Reset	20.0	75.0	52.0	Hz

The unit uses the above parameters to decide whether the mains is okay or fail.

If the mains voltage is above the "Over volt trip" parameter or is below the “Under volt trip" parameter, the "Mains Okay Led" will light off.
If the mains voltage is below the "Over volt return" parameter and is above the “Under volt return" parameter, the "Mains Okay Led" will light on.
If the mains frequency is above the "Over freq trip" parameter or is below the “Under freq trip" parameter, the "Mains Okay Led" will light off.
If the mains frequency is below the "Over freq return" parameter and is above the “Under freq return" parameter, the "Mains Okay Led" will light on.

MAINS ACTIONS (*Mains->*Actions)		Min	Max	Default	Unit
Mains failure detect	Mains Failure Detection: 0-DISABLE 1-ENABLE 2-ENABLE ON REMOTE	0	2	1	
Mains fail.stop mode	Look Mains Failure at Stop Mode En/Dis	ENABL/DISBL		ENABL	
Always return delay	Always Look Mains Return Delay	ENABL/DISBL		DISBL	
Immediate MCB open	Immediate MCB Open	ENABL/DISBL		ENABL	

Mains Failure Detection En/Dis
0-DISABLE: The unit will not monitor the mains supply.

1-ENABLE: The unit will monitor the mains supply. If the mains supply go out side of limits, the unit will initiate its automatic mains failure sequence. (If no inputs is selected as a remote start)

2-ENABLE ON REMOTE: The unit will monitor the mains supply. If the mains supply go out side of limits, the unit will initiate its automatic mains failure sequence. (Even if one of the inputs is selected as a remote start)

Look Mains Failure at Stop Mode En/Dis
ENABLE: As soon as the unit detects a mains failure the mains circuit breaker (MCB) will be opened to remove the supply from the load. This is to prevent damage to the load in case of single-phase failure.

DISABLE: In the event of a mains failure the unit will attempt to maintain the supply to the load for the incoming AC mains supply until the generator is available to go on load. In the event of a generator failure the unit will default back to the incoming AC mains supply.

Always Look Mains Return Delay
ENABLE: The unit will always wait the Mains Return Delay parameter before transferring the load back to mains.

DISABLE: The unit will wait the Mains Return Delay parameter while only the engine is running and the generator is available to go on load before transferring the load back to mains.

Immediate MCB Open
ENABLE: In automatic mode, when the mains failure, the mains circuit breaker (MCB) will be opened immediately and the generator start sequence will be initiated.

DISABLE: In automatic mode, when the mains failure, the mains circuit breaker (MCB) will be opened after the generator is running and ready to take on the load.

4.2.3 Generator

GENERATOR VOLT LEVEL (*Generator->Volt level*)		Min	Max	Default	Unit
Under volt shutdown	Generator Under Voltage Shutdown	60(dis)	600	320	V~
Under volt prealarm	Generator Under Voltage Pre-Alarm	60(dis)	600	340	V~
Under volt reset	Generator Under Voltage Pre-Alarm Reset	60	600	350	V~
Over volt shutdown	Generator Over Voltage Shutdown	60	600	440	V~
Over volt prealarm	Generator Over Voltage Pre-Alarm	60(dis)	600	420	V~
Over volt reset	Generator Over Voltage Pre-Alarm Reset	60	600	400	V~
Shutdown delay time	Generator Voltage Shutdown Delay Time	0.0	10.0	1.0	Sec

Generator Under Voltage Shutdown
If the generator voltage (Phase-Phase) falls below the value in this parameter and this situation continues for the time defined in the "Shutdown delay time" parameter, the unit lights on the red "Fault" led, displays the “Generator under voltage shutdown!" error message and stops the generator.

Generator Under Voltage Prealarm
If the generator voltage (Phase-Phase) falls below the value in this parameter, the unit lights on the yellow "Warning" led and displays the "Generator under voltage prealarm!" warning message.

Generator Under Voltage Prealarm Reset
If the generator voltage (Phase-Phase) exceeds the value in this parameter, the unit lights off the yellow “Warning” led and removes the “Generator under voltage prealarm!” warning message.

Generator Over Voltage Shutdown
If the generator voltage (Phase-Phase) exceeds the value in this parameter and this situation continues for the time defined in the "Shutdown delay time" parameter, the unit lights on the red "Fault" led, displays the “Generator over voltage shutdown!" error message and stops the generator.

Generator Over Voltage Prealarm
If the generator voltage (Phase-Phase) exceeds the value in this parameter, the unit lights on the yellow "Warning" led and displays the "Generator over voltage prealarm!" warning message.

Generator Over Voltage Prealarm Reset
If the generator voltage (Phase-Phase) falls below this parameter, the unit lights off the yellow “Warning” led and removes the “Generator over voltage prealarm!” warning message.

Shutdown Delay Time
This parameter defines the delay before the unit issues a "Generator under voltage shutdown!" or "Generator over voltage shutdown!" error message.

GENERATOR FREQ LEVEL (*Generator->Frequency level*)		Min	Max	Default	Unit
Nominal frequency	Nominal Alternator Frequency	30.0	75.0	50.0	Hz
Under freq shutdown	Generator Under Frequency Shutdown	30.0(dis)	75.0	43.0	Hz
Under freq prealarm	Generator Under Frequency Pre-Alarm	30.0(dis)	75.0	45.0	Hz
Under freq reset	Generator Under Frequency Pre-Alarm Reset	30.0	75.0	46.0	Hz
Over freq shutdown	Generator Over Frequency Shutdown	30.0(dis)	75.0	58.0	Hz
Over freq prealarm	Generator Over Frequency Pre-Alarm	30.0(dis)	75.0	55.0	Hz
Over freq reset	Generator Over Frequency Pre-Alarm Reset	30.0	75.0	54.0	Hz
Shutdown delay time	Generator Frequency Shutdown Delay Time	0.0	10.0	1.0	Sec

Generator Nominal Frequency
It is the nominal value of the generator frequency. It is used to calculate generator frequency from RPM value or to calculate RPM value from generator frequency.

Generator Under Frequency Shutdown
If the generator frequency falls below the value in this parameter and this situation continues for the time defined in the "Shutdown delay time" parameter, the unit lights on the red "Fault" led, displays the “Generator under frequency shutdown!" error message and stops the generator.

Generator Under Frequency Prealarm
If the generator frequency falls below the value in this parameter, the unit lights on the yellow "Warning" led and displays the "Generator under frequency prealarm!" warning message.

Generator Under Frequency Prealarm Reset
If the generator frequency exceeds the value in this parameter, the unit lights off the yellow “Warning” led and removes the “Generator under frequency prealarm!” warning message.

Generator Over Frequency Shutdown
If the generator frequency exceeds the value in this parameter and this situation continues for the time defined in the "Shutdown delay time" parameter, the unit lights on the red "Fault" led, displays the “Generator over frequency shutdown!" error message and stops the generator.

Generator Over Frequency Prealarm
If the generator frequency exceeds the value in this parameter, the unit lights on the yellow "Warning" led and displays the "Generator over frequency prealarm!" warning message.

Generator Over Frequency Prealarm Reset
If the generator frequency falls below this parameter, the unit lights off the yellow “Warning” led and removes the “Generator over frequency prealarm!” warning message.

Shutdown Delay Time
This parameter defines the delay before the unit issues a "Generator under frequency shutdown!" or "Generator over frequency shutdown!" error message.

GEN CUR LEVEL & ACT (*Generator->Current level & act.*)		Min	Max	Default	Unit
Under cur. set	Generator Under Current Set	0	9999	1	A~
Under cur. prealarm	Generator Under Current Pre-Alarm	0(dis)	9999	dis	A~
Under cur. reset	Generator Under Current Pre-Alarm Reset	0	9999	5	A~
Under cur. act.	Generator Under Current Actions 0 - Disable 1 - Warning (Alarm Only, No Shutdown) 2 - Electrical Trip (Alarm/Off Load Generator Followed By Shutdown After Cooling) 3 - Shutdown (Alarm And Shutdown)	0(dis)	3	dis	
Under act. delay time	Generator Under Current Actions Delay Time	0	99	2	Sec
Over cur. IDMT alarm	Generator Over Current IDMT Alarm	ENABL/DISBL		DISBL	
Over cur. set	Generator Over Current Set	0	9999	9999	A~
Over cur. prealarm	Generator Over Current Pre-Alarm	0(dis)	9999	9990	A~
Over cur. reset	Generator Over Current Pre-Alarm Reset	0	9999	9980	A~
Over cur. act.	Generator Over Current Actions 0 - Disable 1 - Warning (Alarm Only, No Shutdown) 2 - Electrical Trip (Alarm/Off Load Generator Followed By Shutdown After Cooling) 3 - Shutdown (Alarm And Shutdown)	0(dis)	3	dis	
Over act. delay time	Generator Over Current Actions Delay Time	0	99	2	Sec
Short circuit cur.	Generator Short Circuit Current Set	0	9999	9999	A~
Earth fault cur.	Generator Earth Fault Current Set	0	9999	100	A~
Earth fault cur. act.	Generator Earth Fault Current Actions 0 - Disable 1 - Warning (Alarm Only, No Shutdown) 2 - Electrical Trip (Alarm/Off Load Generator Followed By Shutdown After Cooling) 3 - Shutdown (Alarm And Shutdown)	0(dis)	3	dis	
E.F. act. delay time	Generator Earth Fault Current Actions Delay Time	0	99	2	Sec
Unbalance load set	Unbalance Load Set	0	9999	0	A~
Unbalance load act.	Unbalance Load Actions 0 - Disable 1 - Warning (Alarm Only, No Shutdown) 2 - Electrical Trip (Alarm/Off Load Generator Followed By Shutdown After Cooling) 3 - Shutdown (Alarm And Shutdown)	0(dis)	3	dis	
Unbalance act. delay	Unbalance Load Actions Delay Time	0	99	2	Sec

Generator Under Current Set
If one of the generator phase currents falls below the value in this parameter and this situation continues for the time defined in the “Under current actions delay time” parameter, a generator under current error will occur.

Generator Under Current Actions
In case of generator under current error, the behavior of the device is determined by this parameter.

0-DISABLE: Generator under current error is not considered.

1-WARNING: The yellow "Warning" led lights up and "Under current warning!" warning message is displayed.

2-ELECTRICAL TRIP: The red "Fault" led lights up, "Under current trip cooling!" error message is displayed and the generator is stopped with cooling.

3-SHUTDOWN: The red "Fault" led lights up, "Under current trip!" error message is displayed and the generator is stopped immediately.

Generator Under Current Actions Delay Time
If one of the generator phase currents goes below the value in the "Under current set" parameter for the time defined in this parameter, a generator under current error will occur.

Generator Under Current Prealarm
If one of the generator phase currents falls below the value in this parameter, the device turns on the yellow "Warning" led and displays the "Under current prealarm!" warning message on the screen.

Generator Under Current Prealarm Reset
If all of the generator phase currents exceed the value in this parameter, the device turns off the yellow "Warning" led and removes the "Under current prealarm!" warning message on the display.

Generator Over Current IDMT Alarm
DISABLE: If one of the generator phase currents more than the “Over current set” parameter and this condition is go on more than “Over current actions delay time” parameter, the unit will give an “Over current” alarm.

ENABLE: If one of the generator phase currents more than the “Over current set” parameter and this condition is go on more than “***Tripping time***”, the unit will give an “Over current” alarm.

$$\textbf{\textit{Tripping time}} = \frac{\text{(“Over current actions delay time” parameter) x (“Over current set” parameter)}}{\text{(Measured current) - (“Over current set” parameter)}}$$

Generator Over Current Set
If one of the generator phase currents more than this parameter and this condition is go on more than “Over current actions delay time” parameter, the unit will give an “Over current” alarm.

Generator Over Current Actions
In case of generator over current error, the behavior of the device is determined by this parameter.

0-DISABLE: Generator over current error is not considered.

1-WARNING: The yellow "Warning" led lights up and "Over current warning!" warning message is displayed.

2-ELECTRICAL TRIP: The red "Fault" led lights up, "Over current trip cooling!" error message is displayed and the generator is stopped with cooling.

3-SHUTDOWN: The red "Fault" led lights up, "Over current trip!" error message is displayed and the generator is stopped immediately.

Generator Over Current Actions Delay
If one of the generator phase currents rises above the value in the "Over current set" parameter for the time defined in this parameter, a generator over current error will occur.

Generator Over Current Prealarm
If one of the generator phase currents rises above the value in this parameter, the device turns on the yellow "Warning" led and displays the "Over current prealarm!" warning message on the screen.

Generator Over Current Prealarm Reset
If all the generator phase currents fall below the value in this parameter, the device turns off the yellow "Warning" led and removes the “Over current prealarm!" warning message on the display.

Short Circuit Current Set
If one of the generator phase currents exceeds the value in this parameter, the device turns on the red "Fault" led, displays a "Short circuit trip!" error message and stops the generator.

Generator Earth Fault Current Set
If the generator neutral current goes above the value in this parameter and this condition is go on more than “E.F. current actions delay time” parameter, the unit will give an “Earth fault” alarm.

Generator Earth Fault Current Actions
In case of earth current error, the behavior of the device is determined by this parameter.

0-DISABLE: Earth current error is not considered.

1-WARNING: The yellow "Warning" led lights up and "Earth fault warning!" warning message is displayed.

2-ELECTRICAL TRIP: The red "Fault" led lights up, "Earth fault trip cooling!" error message is displayed and the generator is stopped with cooling.

3-SHUTDOWN: The red "Fault" led lights up, "Earth fault instant trip!" error message is displayed and the generator is stopped immediately.

Generator Earth Fault Current Actions Delay Time
If the generator neutral current rises above the value in the "Earth fault current set" parameter for the time defined in this parameter, a generator earth fault will occur.

Unbalance Load Set
If one of the generator phase currents differs from the average value by the value defined in this parameter and this situation continues for the time defined in the parameter “Unbalance load actions delay time”, a current (load) unbalance error occurs.

Unbalance Load Actions
In case of current (load) unbalance error, the behavior of the device is determined by this parameter.

0-DISABLE: Current (load) unbalance error is not considered.

1-WARNING: The yellow "Warning" led lights up and "Unbalance load warning!" warning message is displayed.

2-ELECTRICAL TRIP: The red "Fault" led lights up, "Unbalance load trip cooling!" error message is displayed and the generator is stopped with cooling.

3-SHUTDOWN: The red "Fault" led lights up, "Unbalance load trip!" error message is displayed and the generator is stopped immediately.

Unbalance Load Actions Delay Time
If one of the generator phase currents goes outside the unbalanced load limit for the time defined in this parameter, a current (load) unbalance error will occur.

GEN POWER LEVEL (*Generator->Power level*)		Min	Max	Default	Unit
Under power set	Generator Under Power Set	0	9999	0	kVA
Under power prealarm	Generator Under Power Pre-Alarm	0(dis)	9999	dis	kVA
Under power reset	Generator Under Power Pre-Alarm Reset	0	9999	5	kVA
Under power act.	Generator Under Power Actions 0 - Disable 1 - Warning (Alarm Only, No Shutdown) 2 - Electrical Trip (Alarm/Off Load Generator Followed By Shutdown After Cooling) 3 - Shutdown (Alarm And Shutdown)	0(dis)	3	0(dis)	
Under act. delay time	Generator Under Power Action Delay Time	0	99	2	Sec
Over power IDMT alarm	Generator Over Power IDMT Alarm	ENABL/DISBL		DISBL	
Over power set	Generator Over Power Set	0	9999	0	kVA
Over power prealarm	Generator Over Power Pre-Alarm	0(dis)	9999	dis	kVA
Over power reset	Generator Over Power Pre-Alarm Reset	0	9999	0	kVA
Over power act.	Generator Over Power Actions 0 - Disable 1 - Warning (Alarm Only, No Shutdown) 2 - Electrical Trip (Alarm/Off Load Generator Followed By Shutdown After Cooling) 3 - Shutdown (Alarm And Shutdown)	0(dis)	3	0(dis)	
Over act. delay time	Generator Over Power Action Delay Time	0	99	2	Sec
Over load step 1	Generator Over Load Step 1	0	9999	9999	KVA
Over load step 1 rest	Generator Over Load Step 1 Reset	0	9999	9999	KVA
Over load step 1 act.	Generator Over Load Step 1 Actions 0 - Disable 1 - Status 2 - Warning Non-Latching 3 - Warning Latching	0(dis)	3	0(dis)	
Over load step 1 dly.	Generator Over Load Step 1 Action Delay Time	0	999.9	30.0	Sec
Over load step 2	Generator Over Load Step 2	0	9999	9999	KVA
Over load step 2 rest	Generator Over Load Step 2 Reset	0	9999	9999	KVA
Over load step 2 act.	Generator Over Load Step 2 Actions 0 - Disable 1 - Status 2 - Warning Non-Latching 3 - Warning Latching	0(dis)	3	0(dis)	
Over load step 2 dly.	Generator Over Load Step 2 Action Delay Time	0	999.9	30.0	Sec
Reverse power set	Reverse Power Set	-9999	0	0	kW
Reverse power act.	Reverse Power Actions 0 - Disable 1 - Warning (Alarm Only, No Shutdown) 2 - Electrical Trip (Alarm/Off Load Generator Followed By Shutdown After Cooling) 3 - Shutdown (Alarm And Shutdown)	0(dis)	3	0(dis)	
Rv.pow.act.delay time	Reverse Power Action Delay Time	0	99	2	Sec

Generator Under Power Set
If the total active power of the generator falls below the value in this parameter and this situation continues for the time defined in the “Under power actions delay time” parameter, a generator under power error will occur.

Generator Under Power Actions
In case of generator under power error, the behavior of the device is determined by this parameter.

0-DISABLE: Generator under power error is not considered.

1-WARNING: The yellow "Warning" led lights up and "Under power warning!" warning message is displayed.

2-ELECTRICAL TRIP: The red "Fault" led lights up, "Under power trip cooling!" error message is displayed and the generator is stopped with cooling.

3-SHUTDOWN: The red "Fault" led lights up, "Under power trip!" error message is displayed and the generator is stopped immediately.

Generator Under Power Actions Delay Time
If the total active power of the generator falls below the value in the "Under power set" parameter for the time defined in this parameter, a generator under power error will occur.

Generator Under Power Prealarm
If the total active power of the generator falls below the value in this parameter, the device turns on the yellow "Warning" led and displays the "Under power prealarm!" warning message on the screen.

Generator Under Power Prealarm Reset
If the total active power of the generator exceeds the value in this parameter, the device turns off the yellow "Warning" led and removes the "Under power prealarm!" warning message on the display.

Over power IDMT alarm
DISABLE: If the measurement value of power more than “Over power set” parameter and this condition is go on more than “Over actions delay time” parameter, the unit will give a “Over power” alarm.

ENABLE: If the measurement value of power more than “Over power set” parameter and this condition is go on more than “***Tripping time***”, the unit will give a “Over power” alarm.

$$\textit{Tripping time} = \frac{\text{(“Over actions delay time” parameter) x (“Over power set” parameter)}}{\text{(Measured power) - (“Over power set” parameter)}}$$

Generator Over Power Set
If the total active power of the generator more than this parameter and this condition is go on more than “Over power actions delay time” parameter, the unit will give an “Over power” alarm.

Generator Over Power Actions
In case of generator over power error, the behavior of the device is determined by this parameter.

0-DISABLE: Generator over power error is not considered.

1-WARNING: The yellow "Warning" led lights up and "Over power warning!" warning message is displayed.

2-ELECTRICAL TRIP: The red "Fault" led lights up, "Over power trip cooling!" error message is displayed and the generator is stopped with cooling.

3-SHUTDOWN: The red "Fault" led lights up, "Over power trip!" error message is displayed and the generator is stopped immediately.

Generator Over Power Actions Delay Time
If the total active power of the generator rises above the value in the "Over power set" parameter for the time defined in this parameter, a generator over power error will occur.

Generator Over Power Prealarm
If the total active power of the generator rises above the value in this parameter, the device turns on the yellow "Warning" led and displays the "Over power prealarm!" warning message on the screen.

Generator Over Power Prealarm Reset
If the total active power of the generator falls below the value in this parameter, the device turns off the yellow "Warning" led and removes the “Over power prealarm!" warning message on the display.

Generator Over Load step 1
If the total active power of the generator rises above the value in this parameter and this situation continues for the time defined in the “Over load step 1 delay time” parameter, a generator Over load step 1 alarm will occur.

Generator Over Load step 1 Reset
If the total active power of the generator falls below the value in this parameter, the device turns off the yellow "Warning" led and removes the “Over load step 1 alr!" warning message on the display.

Generator Over Load step 1 Actions
In case of generator load step 1 alarm, the behavior of the device is determined by this parameter.

0-DISABLE: Generator over load step 1 is not considered.

1-STATUS: The yellow "Warning" led lights up and "Over load step 1 alr!" status message is displayed.

2-WARNING NON-LATCHING: The yellow "Warning" led lights up, “Over load step 1 alr!" warning message is displayed and the internal sounder is activated.

3-WARNING LATCHING: The yellow "Warning" led lights up, “Over load step 1 alr!" warning message is displayed and the internal sounder is activated.

Generator Over Load step 1 Delay Time
If the total active power of the generator rises above the value in the "Over load step 1 set" parameter for the time defined in this parameter, a generator over load step 1 alarm will occur.

Generator Over Load step 2
If the total active power of the generator rises above the value in this parameter and this situation continues for the time defined in the “Over load step 2 delay time” parameter, a generator Over load step 2 alarm will occur.

Generator Over Load step 2 Reset
If the total active power of the generator falls below the value in this parameter, the device turns off the yellow "Warning" led and removes the “Over load step 2 alr!" warning message on the display.

Generator Over Load step 2 Actions
In case of generator load step 2 alarm, the behavior of the device is determined by this parameter.

0-DISABLE: Generator over load step 2 is not considered.

1-STATUS: The yellow "Warning" led lights up and "Over load step 2 alr!" status message is displayed.

2-WARNING NON-LATCHING: The yellow "Warning" led lights up, “Over load step 2 alr!" warning message is displayed and the internal sounder is activated.

3-WARNING LATCHING: The yellow "Warning" led lights up, “Over load step 2 alr!" warning message is displayed and the internal sounder is activated.

Generator Over Load step 2 Delay Time
If the total active power of the generator rises above the value in the "Over load step 2 set" parameter for the time defined in this parameter, a generator over load step 2 alarm will occur.

Generator Reverse Power Set
If the total active power of the generator (with a negative value) falls below the value in this parameter and this situation continues for the time defined in the “Reverse power actions delay time” parameter, a generator reverse power error will occur.

Generator Reverse Power Actions
In case of generator reverse power error, the behavior of the device is determined by this parameter.

0-DISABLE: Generator reverse power error is not considered.

1-WARNING: The yellow "Warning" led lights up and "Reverse power warning!" warning message is displayed.

2-ELECTRICAL TRIP: The red "Fault" led lights up, "Reverse power trip cooling!" error message is displayed and the generator is stopped with cooling.

3-SHUTDOWN: The red "Fault" led lights up, "Reverse power trip!" error message is displayed and the generator is stopped immediately.

Generator Reverse Power Actions Delay Time
If the total active power of the generator (with a negative value) goes below the value in the "Reverse power set" parameter for the time defined in this parameter, a generator reverse power error will occur.

GEN WORKING CALENDAR (*Generator->Working calendar*)		**Min**	**Max**	**Default**	**Unit**
Disable/enable select	Working Calendar Disable or Enable	DISBL/ENABL		DISBL	
Start time on monday	Working Calendar Work Start Time on Monday	0.00	23.59	0.00	H.Min
Stop time on monday	Working Calendar Work Stop Time on Monday	0.00	23.59	23.59	H.Min
Start time on tues.	Working Calendar Work Start Time on Tuesday	0.00	23.59	0.00	H.Min
Stop time on tuesday	Working Calendar Work Stop Time on Tuesday	0.00	23.59	23.59	H.Min
Start time on wednes.	Working Calendar Work Start Time on Wednesday	0.00	23.59	0.00	H.Min
Stop time on wednes.	Working Calendar Work Stop Time on Wednesday	0.00	23.59	23.59	H.Min
Start time on thurs.	Working Calendar Work Start Time on Thursday	0.00	23.59	0.00	H.Min
Stop time on thursday	Working Calendar Work Stop Time on Thursday	0.00	23.59	23.59	H.Min
Start time on friday	Working Calendar Work Start Time on Friday	0.00	23.59	0.00	H.Min
Stop time on friday	Working Calendar Work Stop Time on Friday	0.00	23.59	23.59	H.Min
Start time on satur.	Working Calendar Work Start Time on Saturday	0.00	23.59	0.00	H.Min
Stop time on saturday	Working Calendar Work Stop Time on Saturday	0.00	23.59	23.59	H.Min
Start time on sunday	Working Calendar Work Start Time on Sunday	0.00	23.59	0.00	H.Min
Stop time on sunday	Working Calendar Work Stop Time on Sunday	0.00	23.59	23.59	H.Min

Calendar Disable or Enable
DISABLE: The unit will not monitor the working calendar parameters. If the mains supply go out side of limits, the unit will initiate automatic mains failure sequence.

ENABLE: The unit will monitor the working calendar parameters. If the mains supply go out side of limits, the unit will initiate automatic mains failure sequence only within the set “Start and Stop time parameters”. Otherwise, the unit will not initiate automatic mains failure sequence and the “Auto” led will blink.

Note-1: If the “Start time parameter” of any day is set to "0.00" and the “Stop time parameter” is set to "23.59", the unit will initiate automatic mains failure sequence when the mains supply go out side of limits within that day.

Note-2: If the “Start and Stop time parameters” of any day are set the same, the unit will not initiate automatic mains failure sequence when the mains supply go out side of limits within that day.

GENERATOR GENERAL (*Generator->General*)		Min	Max	Default	Unit
Sens.option gen.freq	Sensing Options Generator Frq En/Dis	ENABL/DISBL		ENABL	
Sens.opt.pickup&flywh	Sensing Opt Pickup En/Dis & Flywheel	0(dis)	1000	DISBL	
All warning are latch	All Warnings Are Latched En/Dis	ENABL/DISBL		DISBL	
Stop mode on shutdown	Changed To Stop Mode On Shutdown Fail	ENABL/DISBL		DISBL	

Sensing Options Generator Freq En/Dis
ENABLE: Speed sensing will be derived from the generator output frequency.

DISABLE: Speed sensing not will be derived from the generator output frequency.

Sensing Options Pickup En/Dis & Flywheel
DISABLE: Speed sensing will not be derived from the magnetic pickup.

1-1000: Speed sensing will be derived from the magnetic pickup and the number is flywheel teeth on the engine.

All Warnings Are Latched En/Dis
ENABLE: Warnings and pre-alarms will latched when triggered. To reset the alarm either an external reset must be applied to one of the inputs or the 'Reset' pushbutton operated, once the triggering condition has cleared.

DISABLE: Normal operation, the warnings and pre-alarms (except spare inputs, because they have their latching or non-latching selections) will automatically reset once the triggering condition has cleared.

Changed To Stop Mode On Shutdown Fail
ENABLE: When the shutdown alarm received in automatic or test mode, the unit will change the operation mode to "STOP" mode.

DISABLE: When the shutdown alarm received in automatic or test mode, the unit will remain at the current operating mode.

4.2.4 Engine

ENGINE START OPTIONS (*Engine->Starting options*)		Min	Max	Default	Unit
Horn prior start	Audible Alarm Prior To Starting En/Dis	ENABL/DISBL		DISBL	
No. of crank attemp	Number Of Start Attempts	1	10	3	
Cranking time	Cranking Time	1	99	5	Sec
Crank rest time	Crank Rest Time	5	99	10	Sec
Pickup fail dely	Pickup Sensor Fail Delay	0.1	10.0	1.0	Sec

Audible Alarm Prior To Starting En/Dis
ENABLE: The audible alarm will sound before the engine starts. The sounder will become active once the start delay is initialised, it will remain active until either the engine reaches crank disconnect speed or pre-heat timers are cancelled.

Number Of Start Attempts
This value is the number of times the unit will attempt to start the generator. Should the generator start the unit will not attempt further starts. If the generator does not start after the final attempt, the unit will give a ‘Fail to start’ alarm.

Cranking Time
This is the maximum amount of time that the unit will energise the starter motor for during starting attempts once the starter has engaged.

Crank Rest Time
This is the amount of time the unit will wait for between start attempts. This is to allow the starter motor to cool and the starter batteries to recover.

Magnetic Pickup Sensor Fail Delay
When the cranking process starts, the unit must detect a speed signal from MPU input. If the unit can not detect the speed signal during the time defined in this parameter, it stops the generator and gives the "Speed loss" alarm. **Note:** This parameter is active if speed sensing from magnetic pickup is used.

ENG. CRANK DISCONNECT (*Engine->Crank disconnect*)		Min	Max	Default	Unit
Generator frequency	Crank Disconnect On Gen. Frequency	10.0	75.0	30.0	Hz
Engine speed	Crank Disconnect On Engine RPM	100	6000	500	RPM
Generator volt	Crank Disconnect On Gen. Voltage	60 (dis)	600	300	V~
Charge alt. volt	Crank Disconnect On Charge Alt. Voltage	6.0 (dis)	30.0	dis	V⎓
Oil pres. enab./dis.	Crank Disconnect On Oil Pressure En/Dis	ENABL/DISBL		DISBL	
Oil pressure value	Oil Pressure Value	1.0	30.0	1.0	BAR
Check oil befor.start	Check Oil Pressure Before Start	ENABL/DISBL		ENABL	

The parameters shown above are used for engine started or stopped signals. If any of the selected signals appears, the unit assumes that the engine has started and stops cranking. If all of the selected signals disappear, the unit assumes that the engine has stopped.

Crank Disconnect On Gen. Frequency
If the generator frequency over than 30.0 Hz, the unit assumes that the engine has started and the unit stops cranking.

Crank Disconnect On Engine RPM
If the generator speed over than 500 Rpm, the unit assumes that the engine has started and the unit stops cranking.

Crank Disconnect On Gen. Voltage
If the generator voltage (Phase-Phase) over than 300 Vac, the unit assumes that the engine has started and the unit stops cranking.

Crank Disconnect On Charge Alt. Voltage
If the charge alternator voltage over than 6.1 Vdc, the unit assumes that the engine has started and the unit stops cranking. **Note:** If the charge generator input (terminal #22) is disconnect, this parameter selected as disabled (6.0 Vdc).

Crank Disconnect On Oil Pressure En/Dis
This parameter is used for to activate of the crank disconnect on oil pressure feature.

Oil Pressure Value
If the oil pressure sender over than this value, the unit assumes that the engine has started and the unit stops cranking. **Note:** If the "Crank disconnect on oil pressure enable/disable" parameter is set as "ENABLE" and the Oil pressure switch is not used, this parameter will be functional.

Check Oil Pressure Before Start
If this parameter is enabled, the unit will not be allowed to crank if the oil pressure isn't seen as being low. **Note:** If the "Crank disconnect on oil pressure enable/disable" parameter is set as "DISABLE", this parameter will be functional.

Note: dis = disable

ENGINE SPEED SETS (*Engine->Speed settings*)		Min	Max	Default	Unit
Nominal speed	Nominal Speed	500	5000	1500	RPM
Under speed shutdown	Engine Under Speed Shutdown	500(dis)	5000	dis	RPM
Under speed prealarm	Engine Under Speed Prealarm	500(dis)	5000	dis	RPM
Under speed reset	Engine Under Speed Prealarm Reset	500	5000	500	RPM
Over speed shutdown	Engine Over Speed Shutdown	500(dis)	5000	dis	RPM
Over speed prealarm	Engine Over Speed Prealarm	500(dis)	5000	dis	RPM
Over speed reset	Engine Over Speed Prealarm Reset	500	5000	500	RPM
Shutdown delay time	Engine Speed Shutdown Delay Time	0.0	10.0	1.0	Sec

Nominal Speed
It is the nominal value of the engine speed. It is used to calculate generator frequency from RPM value or to calculate RPM value from generator frequency.

Under Speed Shutdown
If the engine speed falls below the value in this parameter and this situation continues for the time defined in the “Shutdown delay time" parameter, the device turns on the red "Fault" led, displays the "Under speed trip!" error message on the screen and stops the generator.

Under Speed Prealarm
If the engine speed falls below the value in this parameter, the device turns on the yellow "Warning" led and displays the "Under speed prealarm!" warning message on the screen.

Under Speed Prealarm Reset
If the engine speed exceeds the value in this parameter, the device turns off the yellow "Warning" led and removes the "Under speed prealarm!" warning message on the display.

Over Speed Shutdown
If the engine speed exceeds the value in this parameter and this situation continues for the time defined in the “Shutdown delay time” parameter, the device turns on the red “Fault” led, displays the “Over speed trip!” error message on the screen and stops the generator.

Over Speed Prealarm
If the engine speed rises above the value in this parameter, the device turns on the yellow "Warning" led and displays the "Over speed prealarm!" warning message on the screen.

Over Speed Prealarm Reset
If the engine speed falls below the value in this parameter, the device turns off the yellow "Warning" led and removes the "Over speed prealarm!" warning message on the display.

Shutdown Delay Time
This parameter defines the delay before the unit issues a “Under speed trip!" or “Over speed trip!" error message.

Note: dis = disable

ENGINE PLANT BATTERY (*Engine->Plant battery*)		Min	Max	Default	Unit
Under volt shutdown	Battery Undervolts Shutdown	6.0(dis)	30.0	dis	V⎓
Under volt warning	Battery Undervolts Warning	6.0(dis)	30.0	11.0	V⎓
Under volt reset	Battery Undervolts Warning Reset	6.0	30.0	11.5	V⎓
Under volt delay	Battery Undervolts Volts Delay	0.0	120.0	1.0	Sec
Over volt shutdown	Battery Overvolts Shutdown	6.0(dis)	30.0	dis	V⎓
Over volt warning	Battery Overvolts Warning	6.0(dis)	30.0	29.0	V⎓
Over volt reset	Battery Overvolts Warning Reset	6.0	30.0	28.5	V⎓
Over volt delay	Battery Overvolts Delay	0.0	120.0	1.0	Sec
Alt. chg. warning	Charge Alternator Warning	6.0(dis)	30.0	dis	V⎓

Under Volt Shutdown Set
If the battery voltage falls below the value in this parameter and this situation continues for the time defined in the parameter "Under volt delay", the device turns on the red "Fault" led, displays the “Battery low error!" error message on the screen and stops the generator.

Under Volt Warning Set
If the battery voltage falls below the value in this parameter and this situation continues for the time defined in the parameter "Under volt delay", the device turns on the yellow "Warning" led and displays the "Battery low warning!" warning message on the screen.

Under Volt Warning Reset
If the battery voltage exceeds the value in this parameter, the device turns off the yellow "Warning" led and removes the "Battery low warning!" warning message on the display.

Under Volt Delay
This parameter defines the delay before the unit issues a “Battery low warning!" or “Battery low error!" alarm message.

Over Volt Shutdown Set
If the battery voltage rises above the value in this parameter and this situation continues for the time defined in the parameter "Over volt delay", the device turns on the red "Fault" led, displays the “Battery high error!" error message on the screen and stops the generator.

Over Volt Warning Set
If the battery voltage rises above the value in this parameter and this situation continues for the time defined in the parameter "Over volt delay", the device turns on the yellow "Warning" led and displays the "Battery high warning!" warning message on the screen.

Over Volt Warning Reset
If the battery voltage falls below the value in this parameter, the device turns off the yellow "Warning" led and removes the "Battery high warning!" warning message on the display.

Over Volt Delay
This parameter defines the delay before the unit issues a “Battery high warning!" or “Battery high error!" alarm message.

Charge Alternator Warning
If the charge alternator voltage exceeds the value in this parameter, the device turns on the yellow "Warning" led and displays the "Charge alternator failure!" message on the screen.
Note: If this fail occurs while the generator is running, the generator will not be stopped. However, while this error is active, the generator is not allowed to run.

Note: dis = disable

CANBUS ECU (*Engine->CanBus ECU*)		Min	Max	Default	Unit
Baud rate	Baud Rate: 0: 20, 1: 50, 2: 100, 3: 125, 4: 250, 5: 500, 6: 800, 7: 1.000	0	7	4	kBaud
J1939 ECU type	J1939 ECU Type Selection: 0 - Disable 1 - Standard 2 - Volvo EMS1 3 - Volvo EMS2 4 - Volvo EMS2b 5 - Volvo EDC3 6 - Volvo EDC4 7 - Deutz EMR2 8 - Deutz EMR3 9 - Perkins 1300 10 - Perkins ADEM3 11 - Perkins ADEM4 12 - Scania S6 Single Speed 13 - MAN MFR 14 - Cummins ISB 15 - Cummins CM570 16 - Cummins CM850 17 - Cummins CM2150E 18 - Cummins CM2250 19 - Detroit DDEC 20 - John Deere 21 - MTU ADEC 22 - MTU ECU8 23 - MTU ECU8 SAM 24 - Yuchai 25 - Reserved 26 - Baudouin WISE10B 27 - Baudouin WISE15 28 - Perkins 1600 29 - Perkins A4E2 30 - Perkins A5E2 31 - Perkins A5E2v2 32 - Cummins CM2880 33 - Cummins DCEC QSZ13 34 - Doosan DP222CC 35 - FPT EDC17CV41 36 - FPT EDC7UC31 37 - FPT MD1CE101 38 - FPT NEF67TE8P-S550 39 - Hatz EDC17 40 - Hyundai DC03-OOG00 41 - Hyundai DP222CB 42 - Iveco NEF&CURSOR 43 - Scania S10 Single Speed 44 - Volvo EMS2.2 45 - Volvo EMS2.3 46 - Volvo EMS2.4	0(dis)	46	0	
Device address	Device Address	0	255	17	
SPN version	SPN version	1	3	1	
ECU remote control	ECU Remote Control via J1939	ENABL/DISBL		ENABL	
Speed control enable	Speed Control via J1939	ENABL/DISBL		ENABL	
Oil pres cont. enab	Oil Pressure Control via J1939	ENABL/DISBL		ENABL	
Temp. control enable	Coolant Temperature Control via J1939	ENABL/DISBL		ENABL	
Speed set point	Speed Set Point Selection	1500 / 1800		1500	RPM
Speed correction	Speed Correction Value	0	100	50	%

Note: Changing above mentioned parameter becomes only effective after restarting the unit.

J1939 SPN mask-1	J1939 SPN Mask-1	0(dis)	65535	0(dis)	
J1939 FMI mask-1	J1939 FMI Mask-1	0	255	9	
J1939 SPN mask-2	J1939 SPN Mask-2	0(dis)	65535	0(dis)	
J1939 FMI mask-2	J1939 FMI Mask-2	0	255	9	
J1939 SPN mask-3	J1939 SPN Mask-3	0(dis)	65535	0(dis)	
J1939 FMI mask-3	J1939 FMI Mask-3	0	255	9	
J1939 SPN mask-4	J1939 SPN Mask-4	0(dis)	65535	0(dis)	
J1939 FMI mask-4	J1939 FMI Mask-4	0	255	9	
J1939 SPN mask-5	J1939 SPN Mask-5	0(dis)	65535	0(dis)	
J1939 FMI mask-5	J1939 FMI Mask-5	0	255	9	

Baud Rate
It defines the used Baud rate.

Note: All participants on the CAN bus must use the same Baud rate.

J1939 ECU Type Selection
The J1939 interface of this unit can be operated with different ECUs. This parameter determines the operating mode of the used ECUs. If this parameter is selected as “disable”, No messages will be sent or received.

Note: Volvo EMS2 engine types: TAD734, TAD940, TAD941, TAD1640, TAD1641, TAD1642.
Volvo EDC3 engine types: TAD1240, TAD1241, TAD1242.
Volvo EDC4 engine types: TD520, TAD520, TD720, TAD720, TAD721, TAD722.
Perkins ADEM3 / ADEM4 engine types: 2306, 2506, 1106, 2806.
Scania S6 engine types: DC 9, DC 12, DC 16.
MAN MFR ECU type: EDC7.
Cummins ISB engine type: QSM11.
Cummins CM570 engine type: QSX15.
Cummins CM850, Cummins CM2150E, Cummins CM2250,
Cummins CM2880 engine types: QSB5, QSB7, QSL9, QSK50, QSK60, QSK19, QSK38.
MTU ADEC engine types: Series 2000, 4000.
MTU UCU8 engine types: Series 1600.
Baudouin WISE10B engine types: Series 12M33, 16M33, 12M55.
Baudouin WISE15 engine types: Series 4M06, 6M16, 6M21, 6M33.
Hatz EDC17 engine type: 3/4H50 TICD.

Note: Changing above mentioned parameter becomes only effective after restarting the unit.

ECU Device Address
The unit sends J1939 request and control messages with this ID. It must be changed for different ECU types according to the following table. The ECU listens only to control messages, if they are sent to the correct address.

Baudouin WISE10B, Baudouin WISE15	*Volvo EMS1, Volvo EMS2, Volvo EMS2b, Volvo EMS2.2, Volvo EMS2.3, Volvo EMS2.4, Volvo EDC3*	*Volvo EDC4, Deutz EMR2, Deutz EMR3*	*Perkins 1300, Perkins ADEM3, Perkins ADEM4, Perkins 1600, Perkins A4E2, Perkins A5E2, Perkins A5E2v2*	*Scania S6, Scania S10*	*MAN MFR*
33	17	3	17	39	253

Cummins ISB, Cummins CM570, Cummins CM850, Cummins CM2150E, Cummins CM2250, Cummins CM2880	*Detroit DDEC*	*John Deere*	*MTU ADEC, MTU ECU8 SAM*	*MTU ECU8*	*Yuchai*
220	231	3	1	234	3

Cummins DCEC QSZ13	*Doosan DP222CC*	*FPT EDC17CV41, FPT MD1CE101*	*FPT EDC7UC31*
7	3	3	33

FPT NEF67TE8P-S550	*Hatz EDC17*	*Hyundai DC03-OOG00, Hyundai DP222CB*	*Iveco NEF&CURSOR*
39	3	3	3

SPN Version
There are 4 different Suspect Parameter Number versions with J1939 protocol. The device has ability to detecting version 4 automatically. Therefore, this parameter is important to show alarm messages correctly except version 4.

Note: Changing above mentioned parameter becomes only effective after restarting the unit.

ECU Remote Control Via J1939
If this parameter is selected as “Enable”, The unit sends remote control messages to the ECU if the selected ECU type is supporting the J1939 Remote control Messages. Available messages are engine start-stop, 50/60 Hz selection or Idle mode. For some ECUs;

Parameter	Standard, Baudouin WISE10B, Baudouin WISE15, Volvo EDC4, Deutz EMR2, Deutz EMR3, Perkins 1300, Perkins ADEM3, Perkins ADEM4, Perkins 1600, Perkins A4E2, Perkins A5E2, Perkins A5E2v2, Detroit DDEC, John Deere, Yuchai, Cummins DCEC QSZ13, Doosan DP222CC, FPT EDC17CV41, FPT MD1CE101, FPT EDC7UC31, FPT NEF67TE8P-S550, Hatz EDC17, Hyundai DC03-OOG00, Hyundai DP222CB, Iveco NEF&CURSOR	Volvo EMS1, Volvo EMS2, Volvo EMS2b, Volvo EMS2.2, Volvo EMS2.3, Volvo EMS2.4, Volvo EDC3, Scania S6, Scania S10, Cummins ISB, Cummins CM570, Cummins CM850, Cummins CM2250, Cummins CM2880	MAN MFR	Cummins CM2150E	MTU ADEC, MTU ECU8, MTU ECU8 SAM
Remote Start	No	Yes	Yes	No	Yes
Remote Stop	No	Yes	Yes	No	Yes
50/60 Hz Selection	No	Yes	No	Yes	Yes
Idle Mode	No	Yes	Yes	Yes	No

Note: If this parameter is selected as “Disable”, The ECU remote control via the J1939 protocol will be disabled.

Note: Changing above mentioned parameter becomes only effective after restarting the unit.

Speed Control via J1939
If this parameter is selected as “Enable”, The speed sensing from J1939 ECU will be used for the speed (Rpm) failures.

Oil Pressure Control via J1939
If this parameter is selected as “Enable”, The oil pressure sensing from J1939 ECU will be used for the oil pressure failures and the engine started signal.

Coolant Temperature Control via J1939
If this parameter is selected as “Enable”, The coolant temperature sensing from J1939 ECU will be used for the coolant temperature failures.

Speed Set Point Selection (50/60 Hz)
This parameter used for to select the requested engine speed as 1500Rpm (50Hz) or 1800Rpm (60Hz). **Note:** The scenario; first change the parameter, next wait at least 5 seconds, and then start the engine.

Speed Correction Value
This parameter can be changed between 0 and 100%. The engine should change the speed as follows:

0% = rated speed – speed deviation ECU e.g. 1500 – 120 = 1380rpm
50% = rated speed e.g. = 1500rpm
100% = rated speed + speed deviation ECU e.g. 1500 + 120 = 1620rpm

J1939 SPN & FMI Mask-1, J1939 SPN & FMI Mask-2, J1939 SPN & FMI Mask-3, J1939 SPN & FMI Mask-4 and J1939 SPN & FMI Mask-5
These parameters are used to mask certain indicators or warnings on the ECU and hide their display on the unit screen. **Note:** Entering the FMI parameter as 255 means any FMI value.

CANBUS ERROR SET (*Engine->CanBus error set*)		Min	Max	Default	Unit
CAN fault actions	Can Fault Actions: 0- Disable 1- Warning Non-Latching 2- Warning 3- Electrical Trip 4- Shutdown	0(dis)	4	0	
CAN fault activation	Can Fault Activation: 0- Active From Starting 1- Active From Safety On 2- Always Active	0	2	0	
CAN fault delay	Can Fault Delay	2	250	10	Sec
Amber warn.actions	J1939 Amber Warning Lamp Actions: 0- Disable 1- Warning Non-Latching 2- Warning 3- Electrical Trip 4- Shutdown	0(dis)	4	0	
Amber warn.activation	J1939 Amber Warning Lamp Activation: 0- Active From Starting 1- Active From Safety On 2- Always Active	0	2	2	
Amber warn.delay	J1939 Amber Warning Lamp Delay	0	250	2	Sec
Red stop actions	J1939 Red Stop Lamp Actions: 0- Disable 1- Warning Non-Latching 2- Warning 3- Electrical Trip 4- Shutdown	0(dis)	4	0	
Red stop activation	J1939 Red Stop Lamp Activation: 0- Active From Starting 1- Active From Safety On 2- Always Active	0	2	2	
Red stop delay	J1939 Red Stop Lamp Delay	0	250	2	Sec

CAN Fault Actions
This parameter must be activated in order for the device to detect CanBus communication error. Whether the generator will be stopped or not in case of communication failure can be set in this parameter.

CAN Fault Activation
CanBus communication error monitoring start can be set with this parameter.

CAN Fault Delay
CanBus communication error delay can be set with this parameter.

J1939 Amber Warning Lamp Actions
This parameter must be activated in order for the device to detect "J1939 ECU warning" failure. Whether the generator will be stopped or not in case of "J1939 ECU warning" failure can be set in this parameter.

J1939 Amber Warning Lamp Activation
"J1939 ECU warning" failure monitoring start can be set with this parameter.

J1939 Amber Warning Lamp Delay
"J1939 ECU warning" failure delay can be set with this parameter.

Note: dis = disable

J1939 Red Stop Lamp Actions
This parameter must be activated in order for the device to detect "J1939 red stop lamp" failure. Whether the generator will be stopped or not in case of "J1939 red stop lamp" failure can be set in this parameter.

J1939 Red Stop Lamp Activation
"J1939 red stop lamp" failure monitoring start can be set with this parameter.

J1939 Red Stop Lamp Delay
“J1939 red stop lamp" failure delay can be set with this parameter.

ENGINE MAINTENANCE (*Engine->Maintenance*)		**Min**	**Max**	**Default**	**Unit**
Running hour interval	Running Hours Interval	0(dis)	9999	600	Hour
Maint. date interval	Maintenance Date Interval	0(dis)	12	6	Month
Eng. stop when maint	Engine Stop When Maintenance	ENABL/DISBL		DISBL	
Engine running hour	Engine Running Hour	0	30000	0	
Maintenance okay	Maintenance Okay	YES/NO		NO	
Maint.Ok Oper. author	Maintenance Okay Operator Authorization	ENABL/DISBL		DISBL	

Running Hours Interval
If the generator has worked as much as the value in this parameter after the last maintenance, the device turns on the "Maintenance" led and displays the "Maintenance alarm!" error message on the screen.

Maintenance Date Interval
If the time as much as the value in this parameter has passed after the last maintenance, the device turns on the "Maintenance" led and displays the "Maintenance alarm!" error message on the screen.

Engine Stop When Maintenance
DISABLE: When a maintenance failure occurs, the device turns on the "Maintenance" led but does not stop the engine.
ENABLE: When a maintenance failure occurs, the device turns on the "Maintenance" led and stops the engine.

Engine Running Hour
The user can change the engine running hours value by using this parameter.

Maintenance Okay
After the device gives a "Maintenance alarm" or the generator is serviced, it is necessary to select this parameter as "YES" and confirm. Otherwise, the next maintenance alert will not work correctly.

Maintenance Okay Operator Authorization
DISABLE: The "Maintenance okay" process cannot be performed from the "Operator setting" menu.
ENABLE: The "Maintenance okay" process can be performed from the "Operator setting" menu.

LOAD TEST (*Engine->Load test*)		**Min**	**Max**	**Default**	**Unit**
Disable/enable select	Disable, No Load or On Load Selection	0-DISABLE 1-NO LOAD 2-ON LOAD		1-NO LOAD	

Disable, No Load or On Load Selection
DISABLE: Test mode disable.
NO LOAD: The generator will be running without taking the load in test mode.
ON LOAD: The generator will be running with load in test mode.

Note: dis = disable

EXERCISE (*Engine->Exercise*)		Min	Max	Default	Unit
Disable/enable select	Exercise Disable or Enable	DISBL/ENABL		DISBL	
Start time1 on monday	Exercise Start Time 1 on Monday	0.00	23.59	0.00	H.Min
Stop time1 on monday	Exercise Stop Time 1 on Monday	0.00	23.59	0.00	H.Min
Start time2 on monday	Exercise Start Time 2 on Monday	0.00	23.59	0.00	H.Min
Stop time2 on monday	Exercise Stop Time 2 on Monday	0.00	23.59	0.00	H.Min
Start time3 on monday	Exercise Start Time 3 on Monday	0.00	23.59	0.00	H.Min
Stop time3 on monday	Exercise Stop Time 3 on Monday	0.00	23.59	0.00	H.Min
Start time4 on monday	Exercise Start Time 4 on Monday	0.00	23.59	0.00	H.Min
Stop time4 on monday	Exercise Stop Time 4 on Monday	0.00	23.59	0.00	H.Min
Start time1 on tues.	Exercise Start Time 1 on Tuesday	0.00	23.59	0.00	H.Min
Stop time1 on tuesday	Exercise Stop Time 1 on Tuesday	0.00	23.59	0.00	H.Min
Start time2 on tues.	Exercise Start Time 2 on Tuesday	0.00	23.59	0.00	H.Min
Stop time2 on tuesday	Exercise Stop Time 2 on Tuesday	0.00	23.59	0.00	H.Min
Start time3 on tues.	Exercise Start Time 3 on Tuesday	0.00	23.59	0.00	H.Min
Stop time3 on tuesday	Exercise Stop Time 3 on Tuesday	0.00	23.59	0.00	H.Min
Start time4 on tues.	Exercise Start Time 4 on Tuesday	0.00	23.59	0.00	H.Min
Stop time4 on tuesday	Exercise Stop Time 4 on Tuesday	0.00	23.59	0.00	H.Min
Start time1 on wednes	Exercise Start Time 1 on Wednesday	0.00	23.59	0.00	H.Min
Stop time1 on wednes.	Exercise Stop Time 1 on Wednesday	0.00	23.59	0.00	H.Min
Start time2 on wednes	Exercise Start Time 2 on Wednesday	0.00	23.59	0.00	H.Min
Stop time2 on wednes.	Exercise Stop Time 2 on Wednesday	0.00	23.59	0.00	H.Min
Start time3 on wednes	Exercise Start Time 3 on Wednesday	0.00	23.59	0.00	H.Min
Stop time3 on wednes.	Exercise Stop Time 3 on Wednesday	0.00	23.59	0.00	H.Min
Start time4 on wednes	Exercise Start Time 4 on Wednesday	0.00	23.59	0.00	H.Min
Stop time4 on wednes.	Exercise Stop Time 4 on Wednesday	0.00	23.59	0.00	H.Min
Start time1 on thurs.	Exercise Start Time 1 on Thursday	0.00	23.59	0.00	H.Min
Stop time1 on thurs.	Exercise Stop Time 1 on Thursday	0.00	23.59	0.00	H.Min
Start time2 on thurs.	Exercise Start Time 2 on Thursday	0.00	23.59	0.00	H.Min
Stop time2 on thurs.	Exercise Stop Time 2 on Thursday	0.00	23.59	0.00	H.Min
Start time3 on thurs.	Exercise Start Time 3 on Thursday	0.00	23.59	0.00	H.Min
Stop time3 on thurs.	Exercise Stop Time 3 on Thursday	0.00	23.59	0.00	H.Min
Start time4 on thurs.	Exercise Start Time 4 on Thursday	0.00	23.59	0.00	H.Min
Stop time4 on thurs.	Exercise Stop Time 4 on Thursday	0.00	23.59	0.00	H.Min
Start time1 on friday	Exercise Start Time 1 on Friday	0.00	23.59	0.00	H.Min
Stop time1 on friday	Exercise Stop Time 1 on Friday	0.00	23.59	0.00	H.Min
Start time2 on friday	Exercise Start Time 2 on Friday	0.00	23.59	0.00	H.Min
Stop time2 on friday	Exercise Stop Time 2 on Friday	0.00	23.59	0.00	H.Min
Start time3 on friday	Exercise Start Time 3 on Friday	0.00	23.59	0.00	H.Min
Stop time3 on friday	Exercise Stop Time 3 on Friday	0.00	23.59	0.00	H.Min
Start time4 on friday	Exercise Start Time 4 on Friday	0.00	23.59	0.00	H.Min
Stop time4 on friday	Exercise Stop Time 4 on Friday	0.00	23.59	0.00	H.Min
Start time1 on satur.	Exercise Start Time 1 on Saturday	0.00	23.59	0.00	H.Min
Stop time1 on satur.	Exercise Stop Time 1 on Saturday	0.00	23.59	0.00	H.Min
Start time2 on satur.	Exercise Start Time 2 on Saturday	0.00	23.59	0.00	H.Min
Stop time2 on satur.	Exercise Stop Time 2 on Saturday	0.00	23.59	0.00	H.Min
Start time3 on satur.	Exercise Start Time 3 on Saturday	0.00	23.59	0.00	H.Min
Stop time3 on satur.	Exercise Stop Time 3 on Saturday	0.00	23.59	0.00	H.Min
Start time4 on satur.	Exercise Start Time 4 on Saturday	0.00	23.59	0.00	H.Min
Stop time4 on satur.	Exercise Stop Time 4 on Saturday	0.00	23.59	0.00	H.Min

Note: dis = disable

Start time1 on sunday	Exercise Start Time 1 on Sunday	0.00	23.59	0.00	H.Min
Stop time1 on sunday	Exercise Stop Time 1 on Sunday	0.00	23.59	0.00	H.Min
Start time2 on sunday	Exercise Start Time 2 on Sunday	0.00	23.59	0.00	H.Min
Stop time2 on sunday	Exercise Stop Time 2 on Sunday	0.00	23.59	0.00	H.Min
Start time3 on sunday	Exercise Start Time 3 on Sunday	0.00	23.59	0.00	H.Min
Stop time3 on sunday	Exercise Stop Time 3 on Sunday	0.00	23.59	0.00	H.Min
Start time4 on sunday	Exercise Start Time 4 on Sunday	0.00	23.59	0.00	H.Min
Stop time4 on sunday	Exercise Stop Time 4 on Sunday	0.00	23.59	0.00	H.Min

Exercise Disable or Enable
DISABLE: The exercise function is disabled. The unit will not monitor the exercise parameters.

ENABLE: The unit will monitor the exercise parameters.
When the start time of any day is reached, the unit will start the generator.
When the stop time of the same day is reached, the unit will stop the generator.

Note-1: If the “Start and Stop time parameters” of any day are set the same, the exercise function for that day will be passive.

Note-2: If the “Start time parameter” of any day is set larger than the “Stop time parameter”, the exercise function for that day will be passive.

ENGINE GENERAL (*Engine->General*)		Min	Max	Default	Unit
Fuel selection	Engine Fuel Selection	0-GAS 1-DIESEL 2-GASOLINE		1-DIESEL	
Stop solenoid time	Stop Solenoid Time	1	99	20	Sec
Ignition delay	Ignition Delay	1	99	5	Sec
Gas valve delay	Gas Valve Delay	1	99	5	Sec
Min. of ignition speed	Minimum Ignition Speed	10	1500	200	RPM
Choke time	Choke Time	0.0	30.0	0.8	Sec

Engine Fuel (Gas/ Diesel/Gasoline) Selection
Gas, Diesel or Gasoline engines can be selected.

Stop Solenoid Time
This timer is used if the unit is configured to operate an Energise to stop engine. It dictates the duration that the Stop Solenoid output will remain active after the module has detected the engine has come to rest. If the Stop Solenoid output is not configured, this timer will still operate, preventing an immediate restart.

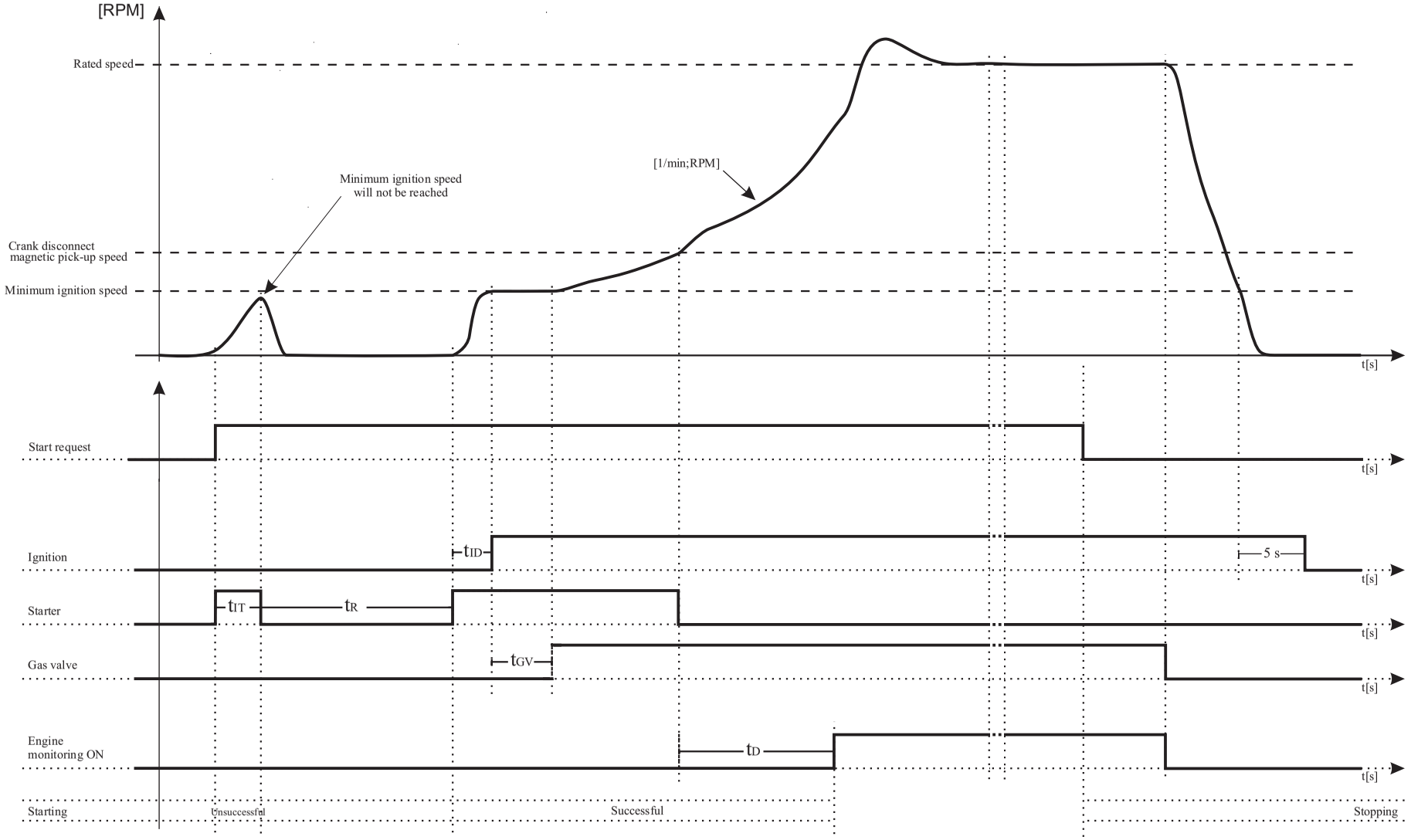
Ignition Delay
With gas engines often a purging operation is desired before starting. With the engaging of the starter the ignition delay is started. If the 'min ignition speed' is reached after expiry of this time, the configurable relay output 'ignition' is set.

Gas Valve Delay
By setting the ignition relay the gas valve delay is started. After the expiry of the set time as long as the number of revolutions is higher than the minimum ignition speed, the gas valve is set. When the necessary engine shutdown process, gas valve is de-energised.

Minimum Ignition Speed
After expiry of the ignition delay the number of revolutions set must be reached, so that the configurable relay output 'ignition' will be set.

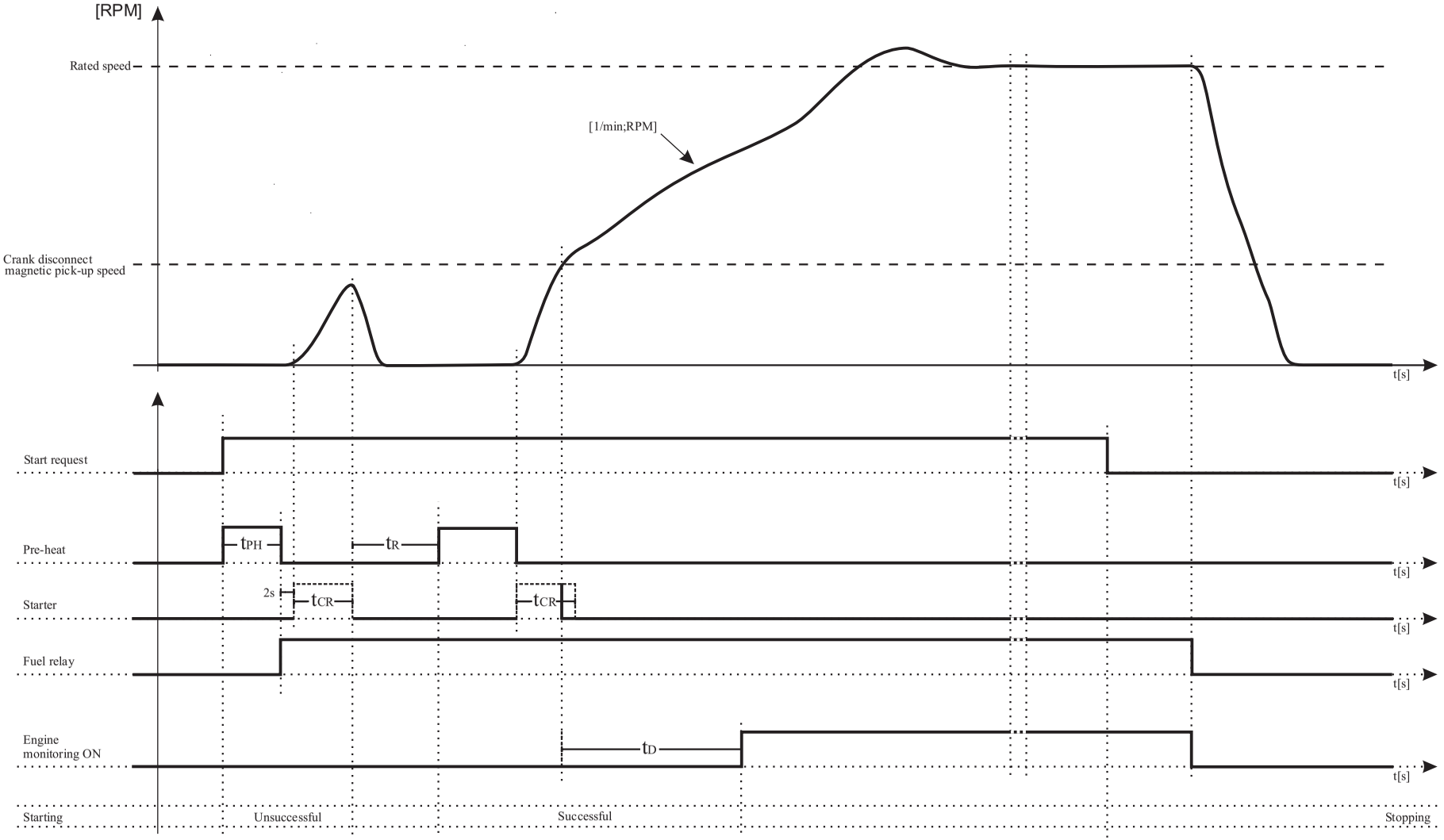
Choke Time
This timer dictates that how long choke output will be active in gasoline engines.

t_R	Interval between 2 start attempts	[s]
t_{ID}	Ignition delay	[s]
t_{GV}	Gas valve delay	[s]
t_D	Engine delayed monitoring	[s]



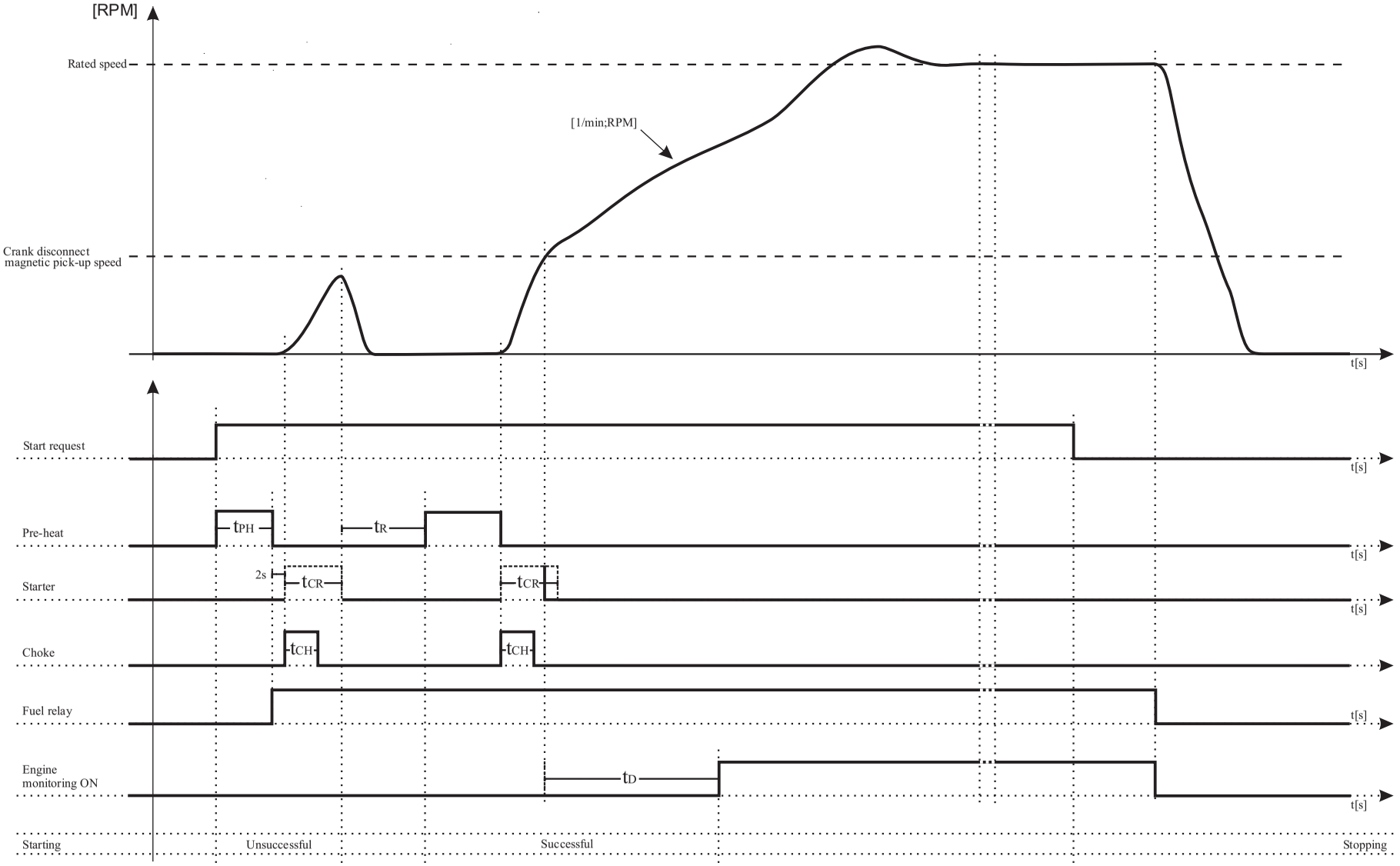
Start/Stop Diagram for GAS ENGINE

t_{PH}	Preheating time	[s]
t_{CR}	Engagement time	[s]
t_R	Interval between 2 start attempts	[s]
t_D	Engine delayed monitoring	[s]



Start/Stop Diagram for DIESEL ENGINE

t_{PH}	Preheating time	[s]
t_{CR}	Engagement time	[s]
t_R	Interval between 2 start attempts	[s]
t_D	Engine delayed monitoring	[s]
t_{CH}	Choke time	[s]



Start/Stop Diagram for GASOLINE ENGINE

4.2.5 Inputs

SENDER INPUTS (*Inputs->Sender inputs*)		Min	Max	Default	Unit
Oil pressure unit	Oil Pressure Unit	BAR/PSI/KPA		BAR	
Oil press. input type	Oil Pressure Input Type	0 - Not Used (Disable) 1 - Digital NC 2 - Digital NO 3 - VDO 5 BAR 4 - VDO 7 BAR 5 - VDO 10 BAR 6 - DATCON 5 BAR 7 - DATCON 7 BAR 8 - MURPHY 7 BAR 9 - User Configured		0 (dis)	
Oil pressure prealarm	Oil Pressure Pre-Alarm	0.0 (dis)	30.0	1.2	BAR
Oil pressure reset	Oil Pressure Pre-Alarm Reset	0.0	30.0	1.4	BAR
Oil pressure shutdown	Oil Pressure Shutdown	0.0	30.0	1.0	BAR
Press.sensor err.shut	Oil Pressure Sensor Error Shutdown	DISBL/ENABL		ENABL	
Temperature unit	Coolant Temperature Unit	ºC/ºF		ºC	
Temp. input type	Coolant Temperature Input Type	0 - Not Used (Disable) 1 - Digital NC 2 - Digital NO 3 - VDO 120 ºC 4 - VDO 150 ºC 5 - DATCON 6 - MURPHY 7 - PT100 8 - User Configured		0 (dis)	
Temp. sensor break	Temperature Sensor Break	0 - Disable 1 - Enable From Safety On (3min. delayed) 2 - Always Enable		0 (dis)	
High temp. prealarm	High Temperature Pre-Alarm	0 (dis)	300	90	℃
High temp. reset	High Temp. Pre-Alarm Reset	0	300	88	℃
High temp. shutdown	High Temperature Shutdown	0	300	95	℃
Low temp. warning	Low Temperature Warning	0 (dis)	70	0 (dis)	℃
Heater control ON	Coolant Heater Control On	0 (dis)	300	0 (dis)	℃
Heater control OFF	Coolant Heater Control Off	0	300	45	℃
Water pump on time	Water Pump On Time	0	9999	5	Sec
Water pump off time	Water Pump Off Time	0	9999	5	Sec
Temp. sensor err.shut	Temperature Sensor Error Shutdown	DISBL/ENABL		ENABL	
Conf. AI1 unit	Configurable Analog Input-1 Unit	BAR/PSI/KPA/ºC/ºF/%/Lt		%	
Conf. AI1 type	Configurable Analog Input-1 Type	0- Not Used (Disable) 1- Digital NC 2- Digital NO 3- VDO OHM (10-180) 4- VDO TUBE (90-0) 5- US OHM (240-33) 6- ELS11 OHM (0-190) 7- FORD (73-10) 8- ELS13 OHM (0-190) 9- ELS30 OHM (0-190) 10- DAVITEQ (RS485)*1 11- KUS CLS2 (RS485)*1 12- MSLL 790 (RS485)*1 13- CSFL 790 (RS485)*1 14- User Configured		0 (dis)	

Note*1: These sensor types can only be used in the Trans-AMF.RS485 units.

Conf. AI1 indication	If Conf. AI1 type is "Digital" 0- Status 1- Warning Non-Latching 2- Warning Latching 3- Electrical Trip 4- Shutdown	0	4	0	
Conf. AI1 activation	If Conf. AI1 type is "Digital" 0- Active From Starting 1- Active From Safety On 2- Always Active	0	2	2	
Conf. AI1 active dely	Configurable Analog Input-1 Active Delay (If Conf. AI1 type is "Digital")	0	250	0	Sec
Conf. AI1 low prealrm	Config. Analog Input-1 Low Pre-Alarm	0 (dis)	3000	0 (dis)	%
Conf. AI1 low reset	Config. Analog Input-1 Low Reset	0	3000	60	%
Conf. AI1 low shutdwn	Config. Analog Input-1 Low Shutdown	0 (dis)	3000	0 (dis)	%
Conf. AI1 high prealr	Config. Analog Input-1 High Pre-Alarm	0 (dis)	3000	0 (dis)	%
Conf. AI1 high reset	Config. Analog Input-1 High Reset	0	3000	90	%
Conf. AI1 high shutd.	Config. Analog Input-1 High Shutdown	0 (dis)	3000	0 (dis)	%
Conf. AI1 control ON	Config. Analog Input-1 control ON	0 (dis)	3000	0 (dis)	%
Conf. AI1 control OFF	Config. Analog Input-1 control OFF	0	3000	75	%
Fuel filling max.time	Fuel Filling Maximum Time	0 (dis)	30000	0 (dis)	Sec
Fuel fill.alarm reset	Fuel Filling Alarm Reset	YES/NO		NO	
Fuel consumpt. reset	Fuel Consumption Reset	YES/NO		NO	
Fuel tank capacity	Fuel Tank Capacity	0	30000	100	Lt
Leak fuel alarm	Leak Fuel Alarm Set	0 (dis)	100	0 (dis)	%
Cnf.AI1 sens err.shut	Conf. AI1 Sensor Error Shutdown	DISBL/ENABL		ENABL	
Conf. AI2 unit	Configurable Analog Input-2 Unit	BAR/PSI/KPA/ºC/ºF/%/Lt		ºC	
Conf. AI2 type	Configurable Analog Input-2 Type	0 - Not Used (Disable) 1 - Digital NC 2 - Digital NO 3 - VDO 120 ºC 4 - VDO 150 ºC 5 - DATCON 6 - MURPHY 7 - PT100 8 - User Configured		0 (dis)	
Conf. AI2 indication	If Conf. AI2 type is "Digital" 0- Status 1- Warning Non-Latching 2- Warning Latching 3- Electrical Trip 4- Shutdown	0	4	0	
Conf. AI2 activation	If Conf. AI2 type is "Digital" 0- Active From Starting 1- Active From Safety On 2- Always Active	0	2	2	
Conf. AI2 active dely	Configurable Analog Input-2 Active Delay (If Conf. AI2 type is "Digital")	0	250	0	Sec
Conf. AI2 low prealrm	Config. Analog Input-2 Low Pre-Alarm	0 (dis)	300	0 (dis)	ºC
Conf. AI2 low reset	Config. Analog Input-2 Low Reset	0	300	60	ºC
Conf. AI2 low shutdwn	Config. Analog Input-2 Low Shutdown	0 (dis)	300	0 (dis)	ºC
Conf. AI2 high prealr	Config. Analog Input-2 High Pre-Alarm	0 (dis)	300	0 (dis)	ºC
Conf. AI2 high reset	Config. Analog Input-2 High Reset	0	300	90	ºC
Conf. AI2 high shutd.	Config. Analog Input-2 High Shutdown	0 (dis)	300	0 (dis)	ºC
Conf. AI2 control ON	Config. Analog Input-2 Control ON	0 (dis)	300	0 (dis)	ºC
Conf. AI2 control OFF	Config. Analog Input-2 Control OFF	0	300	75	ºC
Cnf.AI2 sens err.shut	Conf. AI2 Sensor Error Shutdown	DISBL/ENABL		ENABL	

Oil Pressure Unit
The oil pressure unit can be set as "bar", "psi" or "kPa" from this parameter.

Oil Pressure Input Type
The input type of the oil pressure sensor can be adjusted from this parameter as follows:

0-NOT USED: Oil pressure sensor input is not used.

1-DIGITAL NC (Normally Close): A digital pressure switch is connected to the oil pressure input. This switch should be of the type that gives open contact information in case of low oil pressure.

2-DIGITAL NO (Normally Open): A digital pressure switch is connected to the oil pressure input. This switch should be of the type that gives close contact information in case of low oil pressure.

3, 4, 5, 6, 7, 8 and 9: Oil pressure sensor with resistance output is connected to the oil pressure input. Sensor curves for "3-VDO 5 BAR", "4-VDO 7 BAR", "5-VDO 10 BAR", "6-DATCON 5 BAR", "7-DATCON 7 BAR" and "8-MURPH 7 BAR" options are predefined in the memory of the device.
For the “9-USER CONFIGURED” option, the sensor curve can be adjusted by the user in 10 steps.

Oil Pressure Prealarm
If the oil pressure value falls below the value in this parameter, the device turns on the yellow "Warning" led and displays the "Oil pressure prealarm!" warning message on the screen.

Oil Pressure Prealarm Reset
If the oil pressure value exceeds the value in this parameter, the device turns off the yellow "Warning" led and removes the "Oil pressure prealarm!" warning message on the display.

Oil Pressure Shutdown
If the oil pressure value falls below the value in this parameter, the device turns on the red "Fault" led, displays the “Oil pressure shutdown!" error message on the screen and stops the generator.

Oil Pressure Sensor Error Shutdown
DISABLE: In case of an oil pressure sensor break, the device displays the “Oil pressure sensor err!” error message on the screen but does not stop the generator.

ENABLE: In case of an oil pressure sensor break, the device turns on the red "Fault" led, displays the “Oil pressure sensor err!” error message on the screen and stops the generator.

Coolant Temperature Unit
The coolant temperature unit can be set as "°C" or "°F" from this parameter.

Coolant Temperature Input Type
The input type of the coolant temperature sensor can be adjusted from this parameter as follows:

0-NOT USED: Coolant temperature sensor input is not used.

1-DIGITAL NC (Normally Close): A digital temperature switch is connected to the coolant temperature input. This switch should be of the type that gives open contact information in case of high coolant temperature.

2-DIGITAL NO (Normally Open): A digital temperature switch is connected to the coolant temperature input. This switch should be of the type that gives close contact information in case of high coolant temperature.

3, 4, 5, 6, 7 and 8: Coolant temperature sensor with resistance output is connected to the coolant temperature input. Sensor curves for “3-VDO 120°C”, “4-VDO 150°C”, “5-DATCON”, “6-MURPHY” and “7-PT100” options are predefined in the memory of the device. For the “8-USER CONFIGURED” option, the sensor curve can be adjusted by the user in 10 steps.

Coolant Temperature Sensor Break
0-DISABLE: The Coolant Temperature sensor break will not be monitored.

1-ENABLE FROM SAFETY ON (3MIN. DELAYED): The Coolant Temperature sensor break will be monitored if the engine runs at least 3 minutes. In case of sensor break, the device turns on the red “Fault” led, displays the “Coolant temperature sensor err!” error message on the screen and stops the generator.

2-ALWAYS ENABLE: The Coolant Temperature sensor break always will be monitored. In case of sensor break, the device turns on the red “Fault” led, displays the “Coolant temperature sensor err!” error message on the screen and stops the generator.

High Temperature Prealarm
If the coolant temperature rises above the value in this parameter, the device turns on the yellow "Warning" led and displays the "High temperature prealarm!" warning message on the screen.

High Temperature Prealarm Reset
If the coolant temperature falls below the value in this parameter, the device turns off the yellow "Warning" led and removes the "High temperature prealarm!" warning message on the display.

High Temperature Shutdown
If the coolant temperature rises above the value in this parameter, the device turns on the red "Fault" led, displays the “High temperature shutdown!" error message on the screen and stops the generator.

Low Temperature Warning
If the coolant temperature falls below the value in this parameter, the device turns on the yellow "Warning" led and displays the "Low temperature!" warning message on the screen.

Coolant Heater Control On
If the coolant temperature falls below the value in this parameter, the output configured as "Heater Control" becomes active.

Coolant Heater Control Off
If the coolant temperature rises above the value in this parameter, the output configured as “Heater Control” becomes inactive.

Water Pump On Time
When the heater output is active, the output configured as “Water Pump” is active for the duration of this parameter.

Water Pump Off Time
When the heater output is active, the output configured as “Water Pump” is inactive for the duration of this parameter.

Temperature Sensor Error Shutdown
DISABLE: In case of an coolant temperature sensor break, the device displays the “Temperature sensor err!” error message on the screen but does not stop the generator.

ENABLE: In case of an coolant temperature sensor break, the device turns on the red "Fault" led, displays the “Temperature sensor err!” error message on the screen and stops the generator.

Conf. Analog Input-1 Unit
The configurable analog input-1 unit can be set as “bar”, “psi”, “kPa”, “°C”, “°F”, “%” or “Lt” from this parameter.
If the configurable analog input-1 will be used for pressure reading, its unit should be selected as "bar", "psi" or "kPa".
If the configurable analog input-1 will be used for temperature reading, its unit should be selected as "°C" or "°F".
If the configurable analog input-1 will be used for level reading, its unit should be selected as "%" or "Lt".
Note: Since the fuel level is adjusted by default in configurable analog input-1, the default value of this parameter is "%".

Conf. Analog Input-1 Type
The input type of the configurable analog input-1 sensor can be adjusted from this parameter as follows:

0-NOT USED: Configurable analog input-1 sensor input is not used.

1-DIGITAL NC (Normally Close): A digital pressure, temperature or level (default) switch is connected to input. This switch should be of the type that gives open contact information in case of alarm.
Note: When this switch gives the close contact information, the status of the input is shown as "CLOSE" on the screen of the device. When this switch gives the open contact information, the status of the input is shown as "OPEN" on the screen of the device.

2-DIGITAL NO (Normally Open): A digital pressure, temperature or level (default) switch is connected to input. This switch should be of the type that gives close contact information in case of alarm.
Note: When this switch gives the close contact information, the status of the input is shown as "CLOSE" on the screen of the device. When this switch gives the open contact information, the status of the input is shown as "OPEN" on the screen of the device.

3, 4, 5, 6, 7, 8, 9 and 14: Pressure, temperature or level sensor with resistance output is connected to input.
Sensor curves for “3-VDO OHM (10-180)”, “4-VDO TUBE (90-0)”, “5-US OHM (240-33)”, “6-ELS11 OHM (0-190)”, “7-FORD (73-10)”, “8-ELS13 OHM (0-190)” and “9-ELS30 OHM (0-190)” options are predefined in the memory of the device.
For the 14-USER CONFIGURED” option, the sensor curve can be adjusted by the user in 10 steps.

10-DAVITEQ (RS485), 11-KUS CLS2 (RS485), 12-MSLL 790 (RS485) and 13-CSFL 790 (RS485): Since these sensors have RS485 communication feature, they are connected to the RS485 port of the device. **Note**: The Configurable Analog Input-2 is not used.

DAVITEQ (RS485) Sensor Connection:
Brown cable (+24VDC): To battery pozitive.
White cable (A+): To terminal-43 of Trans-AMF.
Black cable (B-): To terminal-44 of Trans-AMF.
Blue cable (GND): To battery negative.

KUS CLS2 (RS485) Sensor Connection:
Red cable (VCC): To battery pozitive.
Black cable (GND): To battery negative.
Blue cable (B): To terminal-44 of Trans-AMF.
Yellow cable (A): To terminal-43 of Trans-AMF.

MSLL 790 (RS485) Sensor Connection:
Red cable (VCC): To battery pozitive.
Black cable (GND): To battery negative.
Green *cable (A)*: To terminal-43 of Trans-AMF.
White *cable (B)*: To terminal-44 of Trans-AMF.

CSFL 790 (RS485) Sensor Connection:
Red cable (5VDC): To battery pozitive.
Black cable (GND): To battery negative.
Blue cable (A): To terminal-43 of Trans-AMF.
White *cable (B)*: To terminal-44 of Trans-AMF.

Conf. AI1 Low Prealarm
If the Conf. AI1 value falls below the value in this parameter, the device turns on the yellow "Warning" led and displays the "Conf. AI1 low prealarm!" warning message on the screen.

Conf. AI1 Low Prealarm Reset
If the Conf. AI1 value exceeds the value in this parameter, the device turns off the yellow "Warning" led and removes the "Conf. AI1 low prealarm!" warning message on the display.

Conf. AI1 Low Shutdown
If the Conf. AI1 value falls below the value in this parameter, the device turns on the red "Fault" led, displays the “Conf. AI1 low error!" error message on the screen and stops the generator.

Conf. AI1 High Prealarm
If the Conf. AI1 value rises above the value in this parameter, the device turns on the yellow "Warning" led and displays the "Conf. AI1 high prealarm!" warning message on the screen.

Conf. AI1 High Prealarm Reset
If the Conf. AI1 value falls below the value in this parameter, the device turns off the yellow "Warning" led and removes the "Conf. AI1 high prealarm!" warning message on the display.

Conf. AI1 High Shutdown
If the Conf. AI1 value rises above the value in this parameter, the device turns on the red "Fault" led, displays the “Conf. AI1 high error!" error message on the screen and stops the generator.

Conf. AI1 control On
If the Conf. AI1 value falls below the value in this parameter, the output configured as “Conf. AI1 Control” becomes active.

Conf. AI1 Control Off
If the Conf. AI1 value rises above the value in this parameter, the output configured as “Conf. AI1 Control” becomes inactive.

Fuel Filling Maximum Time
After the fuel pump output is activated, if the fuel level does not reach the value in the "Conf. AI1 Control Off" parameter until the time set in this parameter expires, the device will give a "Fuel filling alarm!" warning and cancel the filling process.

Fuel Filling Alarm Reset
The "Fuel filling alarm!" warning message can not be reset by pressing the "RESET" button, it can only be reset after selecting and confirming the value of this parameter "YES"

Fuel Consumption Reset
This parameter is used to reset the fuel consumption value that the device calculates and displays on its screen.

Fuel Tank Capacity
This parameter is used to define the full capacity of the fuel tank.

Leak Fuel Alarm Set
IThis parameter defines the required set value for the device to give the "Leak fuel alarm!" error message. **Note:** Adjust this parameter according to the hourly fuel consumption of the generator. If this parameter is set to 0, the device will not detect the "Leak fuel alarm!" error.

Conf. AI1 Sensor Error Shutdown
DISABLE: In case of a configurable analog input-1 sensor break, the device displays the “Conf. AI1 sensor err!” error message on the screen but does not stop the generator.

ENABLE: In case of a configurable analog input-1 sensor break, the device turns on the red "Fault" led, displays the "Conf. AI1 sensor err!” error message on the screen and stops the generator.

Conf. Analog Input-2 Unit
The configurable analog input-2 unit can be set as “bar”, “psi”, “kPa”, “°C”, “°F”, “%” or “Lt” from this parameter.
If the configurable analog input-2 will be used for pressure reading, its unit should be selected as "bar", "psi" or "kPa".
If the configurable analog input-2 will be used for temperature reading, its unit should be selected as "°C" or "°F".
If the configurable analog input-2 will be used for level reading, its unit should be selected as "%" or "Lt".
Note: Since the temperature is adjusted by default in configurable analog input-2, the default value of this parameter is "°C".

Conf. Analog Input-2 Type
The input type of the configurable analog input-2 sensor can be adjusted from this parameter as follows:

0-NOT USED: Configurable analog input-2 sensor input is not used.

1-DIGITAL NC (Normally Close): A digital pressure, temperature (default) or level switch is connected to input. This switch should be of the type that gives open contact information in case of alarm.
Note: When this switch gives the close contact information, the status of the input is shown as "CLOSE" on the screen of the device. When this switch gives the open contact information, the status of the input is shown as "OPEN" on the screen of the device.

2-DIGITAL NO (Normally Open): A digital pressure, temperature (default) or level switch is connected to input. This switch should be of the type that gives close contact information in case of alarm.
Note: When this switch gives the close contact information, the status of the input is shown as "CLOSE" on the screen of the device. When this switch gives the open contact information, the status of the input is shown as "OPEN" on the screen of the device.

3, 4, 5, 6, 7 and 8: Pressure, temperature or level sensor with resistance output is connected to input. Sensor curves for “3-VDO 120°C”, “4-VDO 150°C”, “5-DATCON”, “6-MURPHY” and “7-PT100” options are predefined in the memory of the device.
For the “8-USER CONFIGURED” option, the sensor curve can be adjusted by the user in 10 steps.

Conf. AI2 Low Prealarm
If the Conf. AI2 value falls below the value in this parameter, the device turns on the yellow "Warning" led and displays the "Conf. AI2 low prealarm!" warning message on the screen.

Conf. AI2 Low Prealarm Reset
If the Conf. AI2 value exceeds the value in this parameter, the device turns off the yellow "Warning" led and removes the "Conf. AI2 low prealarm!" warning message on the display.

Conf. AI2 Low Shutdown
If the Conf. AI2 value falls below the value in this parameter, the device turns on the red "Fault" led, displays the “Conf. AI2 low error!" error message on the screen and stops the generator.

Conf. AI2 High Prealarm
If the Conf. AI2 value rises above the value in this parameter, the device turns on the yellow "Warning" led and displays the "Conf. AI2 high prealarm!" warning message on the screen.

Conf. AI2 High Prealarm Reset
If the Conf. AI2 value falls below the value in this parameter, the device turns off the yellow "Warning" led and removes the "Conf. AI2 high prealarm!" warning message on the display.

Conf. AI2 High Shutdown
If the Conf. AI2 value rises above the value in this parameter, the device turns on the red "Fault" led, displays the “Conf. AI2 high error!" error message on the screen and stops the generator.

Conf. AI2 control On
If the Conf. AI2 value falls below the value in this parameter, the output configured as “Conf. AI2 Control” becomes active.

Conf. AI2 Control Off
If the Conf. AI2 value rises above the value in this parameter, the output configured as “Conf. AI2 Control” becomes inactive.

Conf. AI2 Sensor Error Shutdown
DISABLE: In case of a configurable analog input-2 sensor break, the device displays the “Conf. AI2 sensor err!” error message on the screen but does not stop the generator.

ENABLE: In case of a configurable analog input-2 sensor break, the device turns on the red "Fault" led, displays the "Conf. AI2 sensor err!” error message on the screen and stops the generator.

SENDER LINEARISATION (*Inputs->Sender linearisation*)		**Min**	**Max**	**Default**	**Unit**
Oil pressure sender 1	Oil Pressure Sender Point-1	0	1300	15	R
Oil pressure 1	Oil Pressure Point-1	0.0	30.0	0.0	BAR
Oil pressure sender 2	Oil Pressure Sender Point-2	0	1300	31	R
Oil pressure 2	Oil Pressure Point-2	0.0	30.0	1.0	BAR
Oil pressure sender 3	Oil Pressure Sender Point-3	0	1300	49	R
Oil pressure 3	Oil Pressure Point-3	0.0	30.0	2.0	BAR
Oil pressure sender 4	Oil Pressure Sender Point-4	0	1300	66	R
Oil pressure 4	Oil Pressure Point-4	0.0	30.0	3.0	BAR
Oil pressure sender 5	Oil Pressure Sender Point-5	0	1300	85	R
Oil pressure 5	Oil Pressure Point-5	0.0	30.0	4.0	BAR
Oil pressure sender 6	Oil Pressure Sender Point-6	0	1300	101	R
Oil pressure 6	Oil Pressure Point-6	0.0	30.0	5.0	BAR
Oil pressure sender 7	Oil Pressure Sender Point-7	0	1300	117	R
Oil pressure 7	Oil Pressure Point-7	0.0	30.0	6.0	BAR
Oil pressure sender 8	Oil Pressure Sender Point-8	0	1300	132	R
Oil pressure 8	Oil Pressure Point-8	0.0	30.0	7.0	BAR
Oil pressure sender 9	Oil Pressure Sender Point-9	0	1300	149	R
Oil pressure 9	Oil Pressure Point-9	0.0	30.0	8.0	BAR
Oil pressure sender 10	Oil Pressure Sender Point-10	0	1300	178	R
Oil pressure 10	Oil Pressure Point-10	0.0	30.0	10.0	BAR
Temperature sender 1	Temperature Sender Point-1	0	1300	579	R
Temperature 1	Temperature Point-1	0	300	28	ºC
Temperature sender 2	Temperature Sender Point-2	0	1300	404	R
Temperature 2	Temperature Point-2	0	300	35	ºC
Temperature sender 3	Temperature Sender Point-3	0	1300	342	R
Temperature 3	Temperature Point-3	0	300	40	ºC
Temperature sender 4	Temperature Sender Point-4	0	1300	250	R
Temperature 4	Temperature Point-4	0	300	50	ºC
Temperature sender 5	Temperature Sender Point-5	0	1300	179	R
Temperature 5	Temperature Point-5	0	300	60	ºC
Temperature sender 6	Temperature Sender Point-6	0	1300	136	R
Temperature 6	Temperature Point-6	0	300	70	ºC
Temperature sender 7	Temperature Sender Point-7	0	1300	103	R
Temperature 7	Temperature Point-7	0	300	80	ºC
Temperature sender 8	Temperature Sender Point-8	0	1300	77	R
Temperature 8	Temperature Point-8	0	300	90	ºC
Temperature sender 9	Temperature Sender Point-9	0	1300	67	R
Temperature 9	Temperature Point-9	0	300	95	ºC
Temperature sender 10	Temperature Sender Point-10	0	1300	63	R
Temperature 10	Temperature Point-10	0	300	98	ºC

Conf. AI1 sender 1	Configurable Analog Input-1 Sender Point-1	0	1300	10	R
Conf. AI1 value 1	Configurable Analog Input-1 Point-1	0	3000	0	%
Conf. AI1 sender 2	Configurable Analog Input-1 Sender Point-2	0	1300	30	R
Conf. AI1 value 2	Configurable Analog Input-1 Point-2	0	3000	11	%
Conf. AI1 sender 3	Configurable Analog Input-1 Sender Point-3	0	1300	50	R
Conf. AI1 value 3	Configurable Analog Input-1 Point-3	0	3000	22	%
Conf. AI1 sender 4	Configurable Analog Input-1 Sender Point-4	0	1300	70	R
Conf. AI1 value 4	Configurable Analog Input-1 Point-4	0	3000	33	%
Conf. AI1 sender 5	Configurable Analog Input-1 Sender Point-5	0	1300	90	R
Conf. AI1 value 5	Configurable Analog Input-1 Point-5	0	3000	44	%
Conf. AI1 sender 6	Configurable Analog Input-1 Sender Point-6	0	1300	110	R
Conf. AI1 value 6	Configurable Analog Input-1 Point-6	0	3000	55	%
Conf. AI1 sender 7	Configurable Analog Input-1 Sender Point-7	0	1300	130	R
Conf. AI1 value 7	Configurable Analog Input-1 Point-7	0	3000	66	%
Conf. AI1 sender 8	Configurable Analog Input-1 Sender Point-8	0	1300	150	R
Conf. AI1 value 8	Configurable Analog Input-1 Point-8	0	3000	77	%
Conf. AI1 sender 9	Configurable Analog Input-1 Sender Point-9	0	1300	170	R
Conf. AI1 value 9	Configurable Analog Input-1 Point-9	0	3000	88	%
Conf. AI1 sender 10	Configurable Analog Input-1 Sender Point-10	0	1300	190	R
Conf. AI1 value 10	Configurable Analog Input-1 Point-10	0	3000	100	%
Conf. AI2 sender 1	Configurable Analog Input-2 Sender Point-1	0	1300	579	R
Conf. AI2 value 1	Configurable Analog Input-2 Point-1	0	300	28	ºC
Conf. AI2 sender 2	Configurable Analog Input-2 Sender Point-2	0	1300	404	R
Conf. AI2 value 2	Configurable Analog Input-2 Point-2	0	300	35	ºC
Conf. AI2 sender 3	Configurable Analog Input-2 Sender Point-3	0	1300	342	R
Conf. AI2 value 3	Configurable Analog Input-2 Point-3	0	300	40	ºC
Conf. AI2 sender 4	Configurable Analog Input-2 Sender Point-4	0	1300	250	R
Conf. AI2 value 4	Configurable Analog Input-2 Point-4	0	300	50	ºC
Conf. AI2 sender 5	Configurable Analog Input-2 Sender Point-5	0	1300	179	R
Conf. AI2 value 5	Configurable Analog Input-2 Point-5	0	300	60	ºC
Conf. AI2 sender 6	Configurable Analog Input-2 Sender Point-6	0	1300	136	R
Conf. AI2 value 6	Configurable Analog Input-2 Point-6	0	300	70	ºC
Conf. AI2 sender 7	Configurable Analog Input-2 Sender Point-7	0	1300	103	R
Conf. AI2 value 7	Configurable Analog Input-2 Point-7	0	300	80	ºC
Conf. AI2 sender 8	Configurable Analog Input-2 Sender Point-8	0	1300	77	R
Conf. AI2 value 8	Configurable Analog Input-2 Point-8	0	300	90	ºC
Conf. AI2 sender 9	Configurable Analog Input-2 Sender Point-9	0	1300	67	R
Conf. AI2 value 9	Configurable Analog Input-2 Point-9	0	300	95	ºC
Conf. AI2 sender 10	Configurable Analog Input-2 Sender Point-10	0	1300	63	R
Conf. AI2 value 10	Configurable Analog Input-2 Point-10	0	300	98	ºC

CONF. INPUT-1 (*Inputs->Conf. input-1*)		Min	Max	Default	Unit
Dis,user conf.or list	0- Disable 1- User Configured 2- Select From List	0(dis)	2	2	
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	1	
Indication	If User Configured 0- Status 1- Warning Non-Latching 2- Warning Latching 3- Electrical Trip 4- Shutdown	0	4	0	
Activation	If User Configured 0- Active From Starting 1- Active From Safety On 2- Always Active	0	2	2	
Select from list	If Select From List 0-Remote Start On Load 1-Remote Start Off Load 2-Auxiliary Mains Fail 3-Working Calendar Active 4-Master Auto Ready 5-Simulate Alarm Reset Button 6-Simulate Auto Button 7-Simulate Test Button 8-Simulate Manual Button 9-Simulate Start Button 10-Simulate Stop Button 11-Generator Closed Auxiliary 12-Generator Load Inhibit 13-Mains Closed Auxiliary 14-Mains Load Inhibit 15-Auto Restore Inhibit 16-Auto Start Inhibit 17-Panel Lock 18-Scheduled Runs(Exercise) Inhibited 19-Priority Select 20-Transfer To Generator/Open Mains 21-Transfer To Mains/Open Generator 22-Remote Inhibit 23-Being Found Alive 24-Low Battery 25-Emergency Stop 26-Emergency Stop No-Latching	0	26	25	
Active delay	Input active delay	0	250	0	Sec

Note: dis = disable

CONF. INPUT-2 (*Inputs->Conf. Input-2*)		Min	Max	Default	Unit
Dis,user conf.or list	0- Disable 1- User Configured 2- Select From List	0(dis)	2	1	
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Indication	If User Configured 0- Status 1- Warning Non-Latching 2- Warning Latching 3- Electrical Trip 4- Shutdown	0	4	0	
Activation	If User Configured 0- Active From Starting 1- Active From Safety On 2- Always Active	0	2	2	
Select from list	If Select From List 0-Remote Start On Load 1-Remote Start Off Load 2-Auxiliary Mains Fail 3-Working Calendar Active 4-Master Auto Ready 5-Simulate Alarm Reset Button 6-Simulate Auto Button 7-Simulate Test Button 8-Simulate Manual Button 9-Simulate Start Button 10-Simulate Stop Button 11-Generator Closed Auxiliary 12-Generator Load Inhibit 13-Mains Closed Auxiliary 14-Mains Load Inhibit 15-Auto Restore Inhibit 16-Auto Start Inhibit 17-Panel Lock 18-Scheduled Runs(Exercise) Inhibited 19-Priority Select 20-Transfer To Generator/Open Mains 21-Transfer To Mains/Open Generator 22-Remote Inhibit 23-Being Found Alive 24-Low Battery 25-Sprinkler Mode On Load 26-Sprinkler Mode Off Load	0	26	3	
Active delay	Input active delay	0	250	5	Sec

Note: dis = disable

CONF. INPUT-3 (*Inputs->Conf. Input-3*)		Min	Max	Default	Unit
Dis,user conf.or list	0- Disable 1- User Configured 2- Select From List	0(dis)	2	1	
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	1	
Indication	If User Configured 0- Status 1- Warning Non-Latching 2- Warning Latching 3- Electrical Trip 4- Shutdown	0	4	4	
Activation	If User Configured 0- Active From Starting 1- Active From Safety On 2- Always Active	0	2	2	
Select from list	If Select From List 0-Remote Start On Load 1-Remote Start Off Load 2-Auxiliary Mains Fail 3-Working Calendar Active 4-Master Auto Ready 5-Simulate Alarm Reset Button 6-Simulate Auto Button 7-Simulate Test Button 8-Simulate Manual Button 9-Simulate Start Button 10-Simulate Stop Button 11-Generator Closed Auxiliary 12-Generator Load Inhibit 13-Mains Closed Auxiliary 14-Mains Load Inhibit 15-Auto Restore Inhibit 16-Auto Start Inhibit 17-Panel Lock 18-Scheduled Runs(Exercise) Inhibited 19-Priority Select 20-Transfer To Generator/Open Mains 21-Transfer To Mains/Open Generator 22-Remote Inhibit 23-Being Found Alive 24-Low Battery 25-Sprinkler Mode On Load 26-Sprinkler Mode Off Load	0	26	4	
Active delay	Input active delay	0	250	5	Sec

Note: dis = disable

CONF. INPUT-4 (*Inputs->Conf. input-4*)		Min	Max	Default	Unit
Dis,user conf.or list	0- Disable 1- User Configured 2- Select From List	0(dis)	2	2	
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Indication	If User Configured 0- Status 1- Warning Non-Latching 2- Warning Latching 3- Electrical Trip 4- Shutdown	0	4	0	
Activation	If User Configured 0- Active From Starting 1- Active From Safety On 2- Always Active	0	2	2	
Select from list	If Select From List 0-Remote Start On Load 1-Remote Start Off Load 2-Auxiliary Mains Fail 3-Working Calendar Active 4-Master Auto Ready 5-Simulate Alarm Reset Button 6-Simulate Auto Button 7-Simulate Test Button 8-Simulate Manual Button 9-Simulate Start Button 10-Simulate Stop Button 11-Generator Closed Auxiliary 12-Generator Load Inhibit 13-Mains Closed Auxiliary 14-Mains Load Inhibit 15-Auto Restore Inhibit 16-Auto Start Inhibit 17-Panel Lock 18-Scheduled Runs(Exercise) Inhibited 19-Priority Select 20-Transfer To Generator/Open Mains 21-Transfer To Mains/Open Generator 22-Remote Inhibit 23-Being Found Alive 24-Low Battery 25-Low Oil Pressure 26-Low Oil Level	0	26	25	
Active delay	Input active delay	0	250	0	Sec

Note: dis = disable

CONF. INPUT-5 (*Inputs->Conf. input-5*)		Min	Max	Default	Unit
Dis,user conf.or list	0- Disable 1- User Configured 2- Select From List	0(dis)	2	2	
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Indication	If User Configured 0- Status 1- Warning Non-Latching 2- Warning Latching 3- Electrical Trip 4- Shutdown	0	4	0	
Activation	If User Configured 0- Active From Starting 1- Active From Safety On 2- Always Active	0	2	2	
Select from list	If Select From List 0-Remote Start On Load 1-Remote Start Off Load 2-Auxiliary Mains Fail 3-Working Calendar Active 4-Master Auto Ready 5-Simulate Alarm Reset Button 6-Simulate Auto Button 7-Simulate Test Button 8-Simulate Manual Button 9-Simulate Start Button 10-Simulate Stop Button 11-Generator Closed Auxiliary 12-Generator Load Inhibit 13-Mains Closed Auxiliary 14-Mains Load Inhibit 15-Auto Restore Inhibit 16-Auto Start Inhibit 17-Panel Lock 18-Scheduled Runs(Exercise) Inhibited 19-Priority Select 20-Transfer To Generator/Open Mains 21-Transfer To Mains/Open Generator 22-Remote Inhibit 23-Being Found Alive 24-Low Battery 25-High Temperature	0	25	25	
Active delay	Input active delay	0	250	0	Sec

Note: dis = disable

CONF. INPUT-6 (*Inputs->Conf. Input-6*)		Min	Max	Default	Unit
Dis,user conf.or list	0- Disable 1- User Configured 2- Select From List	0(dis)	2	1	
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Indication	If User Configured 0- Status 1- Warning Non-Latching 2- Warning Latching 3- Electrical Trip 4- Shutdown	0	4	0	
Activation	If User Configured 0- Active From Starting 1- Active From Safety On 2- Always Active	0	2	2	
Select from list	If Select From List 0-Remote Start On Load 1-Remote Start Off Load 2-Auxiliary Mains Fail 3-Working Calendar Active 4-Master Auto Ready 5-Simulate Alarm Reset Button 6-Simulate Auto Button 7-Simulate Test Button 8-Simulate Manual Button 9-Simulate Start Button 10-Simulate Stop Button 11-Generator Closed Auxiliary 12-Generator Load Inhibit 13-Mains Closed Auxiliary 14-Mains Load Inhibit 15-Auto Restore Inhibit 16-Auto Start Inhibit 17-Panel Lock 18-Scheduled Runs(Exercise) Inhibited 19-Priority Select 20-Transfer To Generator/Open Mains 21-Transfer To Mains/Open Generator 22-Remote Inhibit 23-Being Found Alive 24-Low Battery 25-Sprinkler Mode On Load 26-Sprinkler Mode Off Load	0	26	7	
Active delay	Input active delay	0	250	5	Sec

Note: dis = disable

CONF. INPUT-7 (*Inputs->Conf. input-7*)		Min	Max	Default	Unit
Input type	0- Disable 1- User Configured (Digital) 2- Select From List (Digital) 3- Cabin Temperature (Anolog)*[1]	0(dis)	3	3	
Polarity	If Input Type is Digital 0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Indication	If Input Type is User Configured 0- Status 1- Warning Non-Latching 2- Warning Latching 3- Electrical Trip 4- Shutdown	0	4	0	
Activation	If Input Type is User Configured 0- Active From Starting 1- Active From Safety On 2- Always Active	0	2	2	
Select from list	If Input Type is Select From List 0-Remote Start On Load 1-Remote Start Off Load 2-Auxiliary Mains Fail 3-Working Calendar Active 4-Master Auto Ready 5-Simulate Alarm Reset Button 6-Simulate Auto Button 7-Simulate Test Button 8-Simulate Manual Button 9-Simulate Start Button 10-Simulate Stop Button 11-Generator Closed Auxiliary 12-Generator Load Inhibit 13-Mains Closed Auxiliary 14-Mains Load Inhibit 15-Auto Restore Inhibit 16-Auto Start Inhibit 17-Panel Lock 18-Scheduled Runs(Exercise) Inhibited 19-Priority Select 20-Transfer To Generator/Open Mains 21-Transfer To Mains/Open Generator 22-Remote Inhibit 23-Being Found Alive 24-Low Battery 25-Sprinkler Mode On Load 26-Sprinkler Mode Off Load	0	26	8	
Active delay	Input active delay (If Input Type is Digital)	0	250	5	Sec
Cabin temp.low prealr*[2]	Cabin temperature low prealarm	-50(dis)	100	dis	ºC
Cabin temp.low reset*[2]	Cabin temperature low prealarm reset	-50	100	0	ºC
Cabin temp.low shutd.*[2]	Cabin temperature low shutdown	-50(dis)	100	dis	ºC
Cabin temp.high preal*[2]	Cabin temperature high prealarm reset	-50(dis)	100	dis	ºC
Cabin temp.high reset*[2]	Cabin temperature high prealarm	-50	100	0	ºC
Cabin temp.high shutd*[2]	Cabin temperature high shutdown	-50(dis)	100	dis	ºC

Note: *[1] = This option is only available at Trans-AMF_C unit.
*[2] = These parameters are only available at Trans-AMF_C unit
dis = disable

CONF. EXP. INPUT-1 (*Inputs->Conf. exp. input-1*)		Min	Max	Default	Unit
Dis,user conf.or list	0- Disable 1- User Configured 2- Select From List	0(dis)	2	1	
Hardware type	0-> -Ve (Switched To Battery -) 1-> +Ve (Switched To Battery +)	0	1	0	
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Indication	If User Configured 0- Status 1- Warning Non-Latching 2- Warning Latching 3- Electrical Trip 4- Shutdown	0	4	0	
Activation	If User Configured 0- Active From Starting 1- Active From Safety On 2- Always Active	0	2	2	
Select from list	If Select From List 2-Auxiliary Mains Fail 3-Working Calendar Active 4-Master Auto Ready 5-Simulate Alarm Reset Button 6-Simulate Auto Button 7-Simulate Test Button 8-Simulate Manual Button 9-Simulate Start Button 10-Simulate Stop Button 11-Generator Closed Auxiliary 12-Generator Load Inhibit 13-Mains Closed Auxiliary 14-Mains Load Inhibit 15-Auto Restore Inhibit 16-Auto Start Inhibit 17-Panel Lock 18-Scheduled Runs(Exercise) Inhibited 19-Priority Select 20-Transfer To Generator/Open Mains 21-Transfer To Mains/Open Generator	2	21	2	
Active delay	Input active delay	0	250	5	Sec

CONF. EXP. INPUT-2 (*Inputs->Conf. exp. input-2*)		Min	Max	Default	Unit
Dis,user conf.or list	The same as Expansion Config. Input-1 options	0(dis)	2	1	
Hardware type	The same as Expansion Config. Input-1 options	0	1	0	
Polarity	The same as Expansion Config. Input-1 options	0	1	0	
Indication	The same as Expansion Config. Input-1 options	0	4	0	
Activation	The same as Expansion Config. Input-1 options	0	2	2	
Select from list	The same as Expansion Config. Input-1 options	2	21	2	
Active delay	Input active delay	0	250	5	Sec

CONF. EXP. INPUT-3 (*Inputs->Conf. exp. input-3*)		Min	Max	Default	Unit
Dis,user conf.or list	The same as Expansion Config. Input-1 options	0(dis)	2	1	
Hardware type	The same as Expansion Config. Input-1 options	0	1	0	
Polarity	The same as Expansion Config. Input-1 options	0	1	0	
Indication	The same as Expansion Config. Input-1 options	0	4	0	
Activation	The same as Expansion Config. Input-1 options	0	2	2	
Select from list	The same as Expansion Config. Input-1 options	2	21	2	
Active delay	Input active delay	0	250	5	Sec

CONF. EXP. INPUT-4 (*Inputs->Conf. exp. input-4*)		Min	Max	Default	Unit
Dis,user conf.or list	The same as Expansion Config. Input-1 options	0(dis)	2	1	
Hardware type	The same as Expansion Config. Input-1 options	0	1	0	
Polarity	The same as Expansion Config. Input-1 options	0	1	0	
Indication	The same as Expansion Config. Input-1 options	0	4	0	
Activation	The same as Expansion Config. Input-1 options	0	2	2	
Select from list	The same as Expansion Config. Input-1 options	2	21	2	
Active delay	Input active delay	0	250	5	Sec

CONF. EXP. INPUT-5 (*Inputs->Conf. exp. input-5*)		Min	Max	Default	Unit
Dis,user conf.or list	The same as Expansion Config. Input-1 options	0(dis)	2	1	
Hardware type	The same as Expansion Config. Input-1 options	0	1	0	
Polarity	The same as Expansion Config. Input-1 options	0	1	0	
Indication	The same as Expansion Config. Input-1 options	0	4	0	
Activation	The same as Expansion Config. Input-1 options	0	2	2	
Select from list	The same as Expansion Config. Input-1 options	2	21	2	
Active delay	Input active delay	0	250	5	Sec

CONF. EXP. INPUT-6 (*Inputs->Conf. exp. input-6*)		Min	Max	Default	Unit
Dis,user conf.or list	The same as Expansion Config. Input-1 options	0(dis)	2	1	
Hardware type	The same as Expansion Config. Input-1 options	0	1	0	
Polarity	The same as Expansion Config. Input-1 options	0	1	0	
Indication	The same as Expansion Config. Input-1 options	0	4	0	
Activation	The same as Expansion Config. Input-1 options	0	2	2	
Select from list	The same as Expansion Config. Input-1 options	2	21	2	
Active delay	Input active delay	0	250	5	Sec

CONF. EXP. INPUT-7 (*Inputs->Conf. exp. input-7*)		Min	Max	Default	Unit
Dis,user conf.or list	The same as Expansion Config. Input-1 options	0(dis)	2	1	
Hardware type	The same as Expansion Config. Input-1 options	0	1	0	
Polarity	The same as Expansion Config. Input-1 options	0	1	0	
Indication	The same as Expansion Config. Input-1 options	0	4	0	
Activation	The same as Expansion Config. Input-1 options	0	2	2	
Select from list	The same as Expansion Config. Input-1 options	2	21	2	
Active delay	Input active delay	0	250	5	Sec

CONF. EXP. INPUT-8 (*Inputs->Conf. exp. input-8*)		Min	Max	Default	Unit
Dis,user conf.or list	The same as Expansion Config. Input-1 options	0(dis)	2	1	
Hardware type	The same as Expansion Config. Input-1 options	0	1	0	
Polarity	The same as Expansion Config. Input-1 options	0	1	0	
Indication	The same as Expansion Config. Input-1 options	0	4	0	
Activation	The same as Expansion Config. Input-1 options	0	2	2	
Select from list	The same as Expansion Config. Input-1 options	2	21	2	
Active delay	Input active delay	0	250	5	Sec

CONFIGURABLE INPUTS SELECTIONS

0 REMOTE START ON LOAD

In AUTO mode, if one of the configurable inputs are selected as 0 (Remote Start On Load), the unit doesn't perform the mains failure control in order to start the generator. In AUTO mode, if one of the configurable inputs are selected as 0 (Remote Start On Load) and this input is active, then the unit will perform the start sequence and transfer load to the generator. If the input is passive, the unit will perform the stop sequence.

Note: dis = disable

1 REMOTE START OFF LOAD
If this input is active, operation will be similar to the ‘Remote Start On Load’ function except that the generator will not be instructed to take the load. This function can be used where an engine only run is required e.g. for exercise.

2 AUXILIARY MAINS FAIL
The unit will not monitor the incoming single or three phase supply for Over Voltage, Under Voltage, Over Frequency or Under Frequency. It may be required to monitor a different mains supply or some aspect of the incoming mains not monitored by the unit. If the devices providing this additional monitoring are connected to operate this input, the unit will operate as if the incoming mains supply has fallen outside of limits, the generator will be instructed to start and take load. Removal of the input signal will cause the unit to act as if the mains has returned to within limits. **Note:** This input only operates if the “Mains->Actions->Mains failure detect” parameter is set to “0-Disable”.

3 WORKING CALENDAR ACTIVE
If this input is active, the unit will monitor the working calendar parameters. If this input is passive, the unit will not monitor the working calendar parameters.

4 MASTER AUTO READY
This input indicates that the master group is in the automatic ready state in dual operation.

5 SIMULATE ALARM RESET BUTTON
This input mimic's the operation of the 'Alarm Reset' button and is used to provide a remotely located Alarm Reset push button.

6 SIMULATE AUTO BUTTON
This input mimic's the operation of the 'Auto' button and is used to provide a remotely located Auto mode push button.

7 SIMULATE TEST BUTTON
This input mimic's the operation of the 'Test' button and is used to provide a remotely located Test mode push button.

8 SIMULATE MANUAL BUTTON
This input mimic's the operation of the 'Manual' button and is used to provide a remotely located Manual mode push button.

9 SIMULATE START BUTTON
This input mimic's the operation of the 'Start' button and is used to provide a remotely located start push button.

10 SIMULATE STOP BUTTON
This input mimic's the operation of the 'Stop' button and is used to provide a remotely located Stop push button.

11 GENERATOR CLOSED AUXILIARY
This input is used to provide feedback to allow the unit to give true indication of the contactor or circuit breaker switching status. It should be connected to the generator load switching device auxiliary contact.

12 GENERATOR LOAD INHIBIT
This input is used to prevent the unit from loading the generator. If the generator is already on load, activating this input will cause the unit to unload the generator. Removing the input will allow the generator to be loaded again. **Note:** This input only operates to control the generator-switching device if the unit load switching logic is attempting load the generator. It will not control the generator-switching device when the mains is on load.

13 MAINS CLOSED AUXILIARY
This input is used to provide feedback to allow the unit to give true indication of the contactor or circuit breaker switching status. It should be connected to the generator load switching device auxiliary contact.

14 MAINS LOAD INHIBIT
This input is used to prevent the unit from loading the mains supply. If the manis supply is already on load, activating this input will cause the unit to unload the mains supply. Removing the input will allow the mains to be loaded again. **Note:** This input only operates to control the mains-switching device if the unit load switching logic is attempting to load the mains. It will not control the mains-switching device when the generator is on load.

15 AUTO RESTORE INHIBIT
When module in the AUTO mode. In the event of a remote start or mains failure, the generator will be instructed to start and take load. On removal of the remote start signal or mains return, the module will continue to run the generator on load until this input is removed. Once the input is removed the unit will transfer the load back to the mains supply and follow a normal generator stop sequence. This input allows the module to be fitted as part of a system where the manual restoration to mains is controlled remotely or by an automated system.

16 AUTO START INHIBIT
This input is used to provide an over-ride function to prevent the unit from starting the generator in the event of a remote start or mains out of limits condition occurring. If this input is active and a remote start signal or mains failure occurs the unit will not give a start command to the generator. If this input signal is then removed, the unit will operate as if a remote start or mains failure has occurred, starting and loading the generator. This function can be used to give an 'AND' function so that a generator will only be called to start if the mains fails and another condition exists whish requires the generator to run. If the 'Auto Start Inhibit' signal become active once more it will be ignored until the unit has returned the mains supply on load and shutdown.

17 PANEL LOCK
This input is used to provide security to the installation. If the panel lock input is active, the unit will not respond to operation of the mode select or start buttons. This allows the unit to be placed into a spesific mode (such as Auto) and than secured. The operation of the unit is not affected and the operator will still be able to view the various instrumentation pages etc. **Note:** External control sources (i.e. Simulate Start Button) are not affected by the panel lock input and will continue to operate normally.

18 SCHEDULED RUNS(EXERCISE) INHIBITED
This input is used to prevent the generator for starting in the event of a programmed scheduled (exercise) run occurring. While the input is active no scheduled runs will occur. If the input is active when a schedule run is called for, and is removed during the running period the gen-set will start and complete any remaining scheduled running time.

19 PRIORITY SELECT
This input is used to determine the generator that is working at dual set application.

20 TRANSFER TO GENERATOR/OPEN MAINS
This input is used to transfer the load to the generator when running in Manual mode.

21 TRANSFER TO MAINS/OPEN GENERATOR
This input is used to transfer the load to the mains supply when running in Manual mode.

22 REMOTE INHIBIT
In AUTO mode, if one of the configurable inputs are selected as 22 (Remote Inhibit) and this input is active, the module will inhibit the generator for starting. In the other hand, if this input is active while the generator was starting, the module will stop the generator.

23 BEING FOUND ALIVE
When this input is active, controlling the engine remotely is not possible.

24 LOW BATTERY
If this input is active when the unit is in AUTO mode and if mains is not okay, the unit will perform the start sequence and transfer load to the generator.

25 EMERGENCY STOP (FOR CONFIGURABLE INPUT-1)
This input is used as the emergency stop input.

25 SPRINKLER MODE ON LOAD (FOR CONFIGURABLE INPUT-2,3,6,7)
This input is used as the sprinkler mode input. When this input is active, all alarms will change to warnings, except overspeed and emergency stop.

25 LOW OIL PRESSURE (FOR CONFIGURABLE INPUT-4)
This input is used as the oil pressure failure input. It will be checked while starting or stopping attempts.

25 HIGH TEMPERATURE (FOR CONFIGURABLE INPUT-5)
This input is used as the temperature failure input.

26-LOW OIL LEVEL (FOR CONFIGURABLE INPUT-4)
This input is used as the oil pressure failure input. It won’t be checked while starting or stopping attemps.

26 EMERGENCY STOP NO-LATCHING (FOR CONFIGURABLE INPUT-1)
This input is used as the non-latching emergency stop input.

26 SPRINKLER MODE OFF LOAD (FOR CONFIGURABLE INPUT-2,3,6,7)
This input is used as the sprinkler mode input. When this input is active, all alarms will change to warnings, except overspeed and emergency stop. Also when this input is active, the generator breaker will not be active.

4.2.6 Outputs

CONF. OUTPUT-1 (*Outputs->Conf. output-1*)		Min	Max	Default	Unit
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Function	0-NOT USED 1-AIR FLAP CONTROL 2-ALARM RESET 3-AUDIBLE ALARM 4-AUTO START INHIBIT 5-AUXILIARY MAINS FAILURE 6-BATTERY HIGH VOLTAGE 7-BATTERY LOW VOLTAGE 8-CALLING FOR SCHEDULED RUN(EXERCISE) 9-CAN ECU POWER 10-CAN ECU STOP 11-CHARGE ALTERNATOR FAILURE 12-COMMON ALARM 13-COMMON ELECTRICAL TRIP ALARM 14-COMMON SHUTDOWN ALARM 15-COMMON WARNING ALARM 16-COOLING FAN AFTER START 17-COOLING FAN AFTER STOP 18-COOLANT TEMPERATURE HIGH PRE-ALARM 19-COOLANT TEMPERATURE HIGH SHUTDOWN 20-COOLING DOWN TIMER IN PROGRESS 21-CRANK RELAY ENERGISED 22-DELAYED ALARMS ACTIVE 23-DIGITAL INPUT1 ALARM 24-DIGITAL INPUT2 ALARM 25-DIGITAL INPUT3 ALARM 26-DIGITAL INPUT4 ALARM 27-DIGITAL INPUT5 ALARM 28-DIGITAL INPUT6 ALARM 29-DIGITAL INPUT7 ALARM 30-EXPANSION INPUT1 ALARM 31-EXPANSION INPUT2 ALARM 32-EXPANSION INPUT3 ALARM 33-EXPANSION INPUT4 ALARM 34-EXPANSION INPUT5 ALARM 35-EXPANSION INPUT6 ALARM 36-EXPANSION INPUT7 ALARM 37-EXPANSION INPUT8 ALARM 38-EARTH FAULT 39-EMERGENCY STOP 40-FAIL TO START ALARM 41-FAIL TO STOP ALARM 42-CONF. AI1 CONTROL 43-FUEL RELAY ENERGISED 44-GAS ENGINE IGNITION OUTPUT 45-GENERATOR AT REST 46-GENERATOR AVAILABLE 47-GENERATOR CLOSED AUXILIARY 48-GENERATOR FAILED TO CLOSE 49-GENERATOR FAILED TO OPEN 50-GENERATOR HIGH FREQUENCY PRE-ALARM 51-GENERATOR HIGH FREQUENCY SHUTDOWN 52-GENERATOR HIGH VOLTAGE PRE-ALARM 53-GENERATOR HIGH VOLTAGE SHUTDOWN 54-GENERATOR LOAD INHIBIT 55-GENERATOR LOW FREQUENCY PRE-ALARM 56-GENERATOR LOW FREQUENCY SHUTDOWN 57-GENERATOR LOW VOLTAGE PRE-ALARM 58-GENERATOR LOW VOLTAGE SHUTDOWN 59-GENERATOR STOPPING 60-GENERATOR OPEN BREAKER 61-HORN OUTPUT LATCHED 62-HORN OUTPUT PULSED 63-MASTER AUTO READY 64-CONF. AI2 CONTROL 65-LOSS OF MAGNETIC PICK-UP SPEED SIGNAL 66-LOW TEMPERATURE 67-MAINTENANCE DUE ALARM 68-MAINS CLOSED AUXILIARY 69-MAINS FAILED TO CLOSE 70-MAINS FAILED TO OPEN 71-MAINS FAILURE 72-MAINS HIGH FREQUENCY 73-MAINS HIGH VOLTAGE 74-MAINS LOAD INHIBIT 75-MAINS LOW FREQUENCY 76-MAINS LOW VOLTAGE 77-MAINS OPEN BREAKER 78-NO LOADING COMMAND 79-OIL PRESSURE LOW PRE-ALARM 80-OIL PRESSURE LOW SHUTDOWN 81-CONF.AI1.HIGH PREA 82-CONF.AI1.HIGH SHUT 83-OVER CURRENT PRE-ALARM 84-OVER CURRENT 85-OVER POWER PRE-ALARM 86-OVER POWER SHUTDOWN 87-OVERSPEED PRE-ALARM 88-OVERSPEED SHUTDOWN 89-PANEL LOCK 90-PRE-HEAT(during preheat timer) 91-PRE-HEAT(until end of cranking) 92-PRE-HEAT(until end of warming) 93-PRE-HEAT(until end safety on) 94-REMOTE START PRESENT 95-REMOTE STOP DELAY IN PROGRESS 96-SHORT CIRCUIT 97-SMOKE LIMITING 98-STARTING ALARM 99-STARTING ALARMS ARMED 100-STOP RELAY ENERGISED 101-SYSTEM IN AUTO MODE 102-SYSTEM IN MANUAL MODE 103-SYSTEM IN STOP MODE 104-SYSTEM IN TEST MODE 105-UNDER CURRENT PRE-ALARM 106-UNDER CURRENT 107-UNDER POWER PRE-ALARM 108-UNDER POWER SHUTDOWN 109-UNDERSPEED PRE-ALARM 110-UNDERSPEED SHUTDOWN 111-WAITING FOR GENERATOR 112-DUAL COMMUNICATION ERROR 113-LOAD SUPPLY FROM GENERATOR 114-LOAD SUPPLY FROM MAINS 115-CONFIGURABLE ANALOG INPUT 1 LOW PRE-ALARM 116-CONFIGURABLE ANALOG INPUT 1 LOW SHUTDOWN 117-CONFIGURABLE ANALOG INPUT 2 LOW PRE-ALARM 118-CONFIGURABLE ANALOG INPUT 2 LOW SHUTDOWN 119-CONFIGURABLE ANALOG INPUT 2 HIGH PRE-ALARM 120-CONFIGURABLE ANALOG INPUT 2 HIGH SHUTDOWN 121-CHOKE ACTIVE 122-REMOTE CONTROL ACTIVE 123-REVERSE POWER 124-CABIN TEMPERATURE LOW PRE-ALARM (only available at Trans-AMF_C unit) 125-CABIN TEMPERATURE LOW SHUTDOWN (only available at Trans-AMF_C unit) 126-CABIN TEMPERATURE HIGH PRE-ALARM (only available at Trans-AMF_C unit) 127-CABIN TEMPERATURE HIGH SHUTDOWN (only available at Trans-AMF_C unit) 128-HEATER CONTROL 129-REMOTE OUTPUT 130-UNBALANCE LOAD 131-WATER PUMP 132-ATS OPEN(0) 133-BATTERY CHARGER OPERATION 134-RESERVED 135-RESERVED 136-SYNCHRON POSITION 137-OVER LOAD STEP 1 138-OVER LOAD STEP 2	0	138	43	

CONF. OUTPUT-2 (*Outputs->Conf. output-2*)		Min	Max	Default	Unit
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Function	The same as Configurable Output-1 options	0	138	21	

CONF. OUTPUT-3 (*Outputs->Conf. output-3*)		Min	Max	Default	Unit
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Function	The same as Configurable Output-1 options	0	138	62	

CONF. OUTPUT-4 (*Outputs->Conf. output-4*)		Min	Max	Default	Unit
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Function	The same as Configurable Output-1 options	0	138	9	

CONF. OUTPUT-5 (*Outputs->Conf. output-5*)		Min	Max	Default	Unit
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Function	The same as Configurable Output-1 options	0	138	10	

CONF. OUTPUT-6 (*Outputs->Conf. output-6*)		Min	Max	Default	Unit
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Function	The same as Configurable Output-1 options	0	138	12	

CONF. EXP. OUTPUT-1 (*Outputs->Conf. exp. output-1*)		Min	Max	Default	Unit
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Function	The same as Configurable Output-1 options	0	138	12	

CONF. EXP. OUTPUT-2 (*Outputs->Conf. exp. output-2*)		Min	Max	Default	Unit
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Function	The same as Configurable Output-1 options	0	138	12	

CONF. EXP. OUTPUT-3 (*Outputs->Conf. exp. output-3*)		Min	Max	Default	Unit
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Function	The same as Configurable Output-1 options	0	138	12	

CONF. EXP. OUTPUT-4 (*Outputs->Conf. exp. output-4*)		Min	Max	Default	Unit
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Function	The same as Configurable Output-1 options	0	138	12	

CONF. EXP. OUTPUT-5 (*Outputs->Conf. exp. output-5*)		Min	Max	Default	Unit
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Function	The same as Configurable Output-1 options	0	138	12	

CONF. EXP. OUTPUT-6 (*Outputs->Conf. exp. output-6*)		Min	Max	Default	Unit
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Function	The same as Configurable Output-1 options	0	138	12	

CONF. EXP. OUTPUT-7 (*Outputs->Conf. exp. output-7*)		Min	Max	Default	Unit
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Function	The same as Configurable Output-1 options	0	138	12	

CONF. EXP. OUTPUT-8 (*Outputs->Conf. exp. output-8*)		Min	Max	Default	Unit
Polarity	0- Normally Open (Close To Activate) 1- Normally Close (Open To Activate)	0	1	0	
Function	The same as Configurable Output-1 options	0	138	12	

CONFIGURABLE OUTPUTS SELECTIONS

0 NOT USED
Output is not used

1 AIR FLAP CONTROL
Normally used to control an air flap, this output becomes active upon an Engine shutdown failure situation. Inactive when the set has come to rest.

2 ALARM RESET
The output indicates that an alarm reset being performed. Once the alarm reset has been completed, the output become inactive again. The output could be used to give an external reset signal to external systems.

3 AUDIBLE ALARM
The output indicates that the internal sounder is operating. It may be use for external sounder.

4 AUTO START INHIBIT
This output indicates that a digital input that has been configured as 'auto start inhibit' is active.

5 AUXILIARY MAINS FAILURE
This output indicates that a digital input that has been configured as 'auxiliary mains failure' is active.

6 BATTERY HIGH VOLTAGE
This output indicates that a battery high voltage alarm has occurred.

7 BATTERY LOW VOLTAGE
This output indicates that a battery low voltage alarm has occurred.

8 CALLING FOR SCHEDULED RUN(EXERCISE)
This output indicates that a scheduled run(exercise) has been called for. If the unit is in the 'auto' and mains okay, the unit will change mode to 'test' and the generator will run if no shutdown alarms are present.

9 CAN ECU POWER
This output normally used to turn on the ECU (sometimes via an external slave relay). Some engine ECUs are permanently powered in which case the ECU Power output is used to give input to a Run (or similarly named) input on the ECU.

10 CAN ECU STOP
This output used to give input to a Stop (or similarly named) input on the ECU. This is used as a backup stop system should the ECU Data link fail. In this instance, it is not possible to stop the engine using a data command as the link is not operative. As a backup, the STOP signal is given to the engine via a separate hardwired connection.

11 CHARGE ALTERNATOR FAILURE
This output indicates that a charging alternator failure has occurred.

12 COMMON ALARM
This output indicates that a warning, electrical trip or shutdown alarm has been activated.

13 COMMON ELECTRICAL TRIP ALARM
This output indicates that an electrical trip alarm has been activated. This output can only be reset by removal of the fault and by then pressing the RESET button.

14 COMMON SHUTDOWN ALARM
This output indicates that a shutdown alarm has been activated. This output can only be reset by removal of the fault and by then pressing the RESET button or by using an external 'alarm reset' input.

15 COMMON WARNING ALARM
This output indicates that a warning alarm has been activated. This output is normally self-resetting on removal of the fault.

16 COOLING FAN AFTER START
This output should energise as soon as engine has started so the fan should be running when the engine is running. This output should continue to operate for Cooling Fan Time parameter after engine has stopped.

17 COOLING FAN AFTER STOP
This output indicates that can be made to energise for Cooling Fan Time parameter after the engine shuts down (to run an electric cooling fan on the radiator).

18 COOLANT TEMPERATURE HIGH PRE-ALARM
This output indicates that a high engine coolant temperature warning (pre-alarm) has occurred.

19 COOLANT TEMPERATURE HIGH SHUTDOWN
This output indicates that a high engine coolant temperature shutdown has occurred.

20 COOLING DOWN TIMER IN PROGRESS
This output source will be active when the cooling off-load timer is running.

21 CRANK RELAY ENERGISED
The output mimics the operation of the crank relay. Can be used to control external logic circuitry.

22 DELAYED ALARMS ACTIVE
The output indicates that the delayed alarms now enabled. Can be used to control external logic circuitry.

23 DIGITAL INPUT1 ALARM
This output indicates that digital input 1 alarm has occurred.

24 DIGITAL INPUT2 ALARM
This output indicates that digital input 2 alarm has occurred.

25 DIGITAL INPUT3 ALARM
This output indicates that digital input 3 alarm has occurred.

26 DIGITAL INPUT4 ALARM
This output indicates that digital input 4 alarm has occurred.

27 DIGITAL INPUT5 ALARM
This output indicates that digital input 5 alarm has occurred.

28 DIGITAL INPUT6 ALARM
This output indicates that digital input 6 alarm has occurred.

29 DIGITAL INPUT7 ALARM
This output indicates that digital input 7 alarm has occurred.

30 EXPANSION CONFIGURABLE INPUT1 ALARM
This output indicates that expansion configurable input 1 alarm has occurred.

31 EXPANSION CONFIGURABLE INPUT2 ALARM
This output indicates that expansion configurable input 2 alarm has occurred.

32 EXPANSION CONFIGURABLE INPUT3 ALARM
This output indicates that expansion configurable input 3 alarm has occurred.

33 EXPANSION CONFIGURABLE INPUT4 ALARM
This output indicates that expansion configurable input 4 alarm has occurred.

34 EXPANSION CONFIGURABLE INPUT5 ALARM
This output indicates that expansion configurable input 5 alarm has occurred.

35 EXPANSION CONFIGURABLE INPUT6 ALARM
This output indicates that expansion configurable input 6 alarm has occurred.

36 EXPANSION CONFIGURABLE INPUT7 ALARM
This output indicates that expansion configurable input 7 alarm has occurred.

37 EXPANSION CONFIGURABLE INPUT8 ALARM
This output indicates that expansion configurable input 8 alarm has occurred.

38 EARTH FAULT
This output indicates that the unit has detected that an earth fault exists on the generator output.

39 EMERGENCY STOP
This output indicates that an emergency stop alarm has occurred.

40 FAIL TO START ALARM
This output indicates that the engine has not started after the specified number of attempts.

41 FAIL TO STOP ALARM
This output indicates that the generator has failed to stop within the selected time

42 CONFIGURABLE ANALOG INPUT-1 CONTROL
Becomes active when the Analog Input-1 falls below the "ANALOG INPUT-1 ON" setting. If the output is already active it will become inactive when the Analog Input-1 is above the “ANALOG INPUT-1 OFF" setting.

43 FUEL RELAY ENERGISED
The output mimics the operation of the fuel relay. It can be used to control external logic circuitry.

44 GAS ENGINE IGNITION OUTPUT
With the engaging of the starter the ignition delay is started. If the ‘minimum ignition speed’ is reached after expiry of this time, the configurable relay output ‘ignition’ is set. When the necessary engine shutdown process, firstly gas valve is de-energised. Then ignition output is de-energised that after 5 seconds when the engine speed become lower than ‘minimum ignition speed’

45 GENERATOR AT REST
The output indicates that the generator is not running.

46 GENERATOR AVAILABLE
This output indicates when the generator is ready to accept load, i.e. after safety on and warm up timers have timed out.

47 GENERATOR CLOSED AUXILIARY
This output indicates that a digital input that has been configured as 'generator closed auxiliary' is active.

48 GENERATOR FAILED TO CLOSE
This output source has intended to be used to indicate a failure of the generator contactor or breaker. It can only be used if the unit is configured to use 'generator closed auxiliary' feedback.

49 GENERATOR FAILED TO OPEN
This output source has intended to be used to indicate a failure of the generator contactor or breaker. It can only be used if the unit is configured to use 'generator closed auxiliary' feedback.

50 GENERATOR HIGH FREQUENCY PRE-ALARM
This output indicates that a generator high frequency warning (pre-alarm) has occurred.

51 GENERATOR HIGH FREQUENCY SHUTDOWN
This output indicates that a generator high frequency shutdown has occurred.

52 GENERATOR HIGH VOLTAGE PRE-ALARM
This output indicates that a generator high voltage warning (pre-alarm) has occurred.

53 GENERATOR HIGH VOLTAGE SHUTDOWN
This output indicates that a generator high voltage shutdown has occurred.

54 GENERATOR LOAD INHIBIT
This output indicates that a digital input has been configured as 'generator load inhibit' is active.

55 GENERATOR LOW FREQUENCY PRE-ALARM
This output indicates that a generator low frequency warning (pre-alarm) has occurred.

56 GENERATOR LOW FREQUENCY SHUTDOWN
This output indicates that a generator low frequency shutdown has occurred.

57 GENERATOR LOW VOLTAGE PRE-ALARM
This output indicates that a generator low voltage warning (pre-alarm) has occurred.

58 GENERATOR LOW VOLTAGE SHUTDOWN
This output indicates that a generator low voltage shutdown has occurred.

59 GENERATOR STOPPING
This output indicates that the engine has been instructed to stop but has not come to rest.

60 GENERATOR OPEN BREAKER
This output used to control the load switching device. For Details see: "BREAKERS Page" section.

61 HORN OUTPUT LATCHED
This output indicates that the latched horn alarm has occurred.

62 HORN OUTPUT PULSED
This output indicates that the pulsed horn alarm has occurred.

63 MASTER AUTO READY
In dual operation, this output is active when the master group is in automatic mode and the master group does not have a shutdown alarm.

64 CONFIGURABLE ANALOG INPUT-2 CONTROL
Becomes active when the Analog Input-2 falls below the "ANALOG INPUT-2 ON" setting. If the output is already active it will become inactive when the Analog Input-2 is above the “ANALOG INPUT-2 OFF" setting.

65 LOSS OF MAGNETIC PICK-UP SPEED SIGNAL
This output indicates that the magnetic pick up signal is not sufficient to be used by the unit for speed monitoring. The alarm can only operate if the speed signal fails to appearduring cranking. It is disabled if ‘multiple attempts to engage’ is selected. If the MPU fails during engine running this would result in an under speed alarm.

66 LOW TEMPERATURE
This output indicates that a low temperature warning has occurred.

67 MAINTENANCE DUE ALARM
This output indicates that the generator is now due for maintenance either because it has used all the available running hours or the periodic maintenance time has expired. To clear the output a maintenance reset must be performed.

68 MAINS CLOSED AUXILIARY
This output indicates that a digital input that has been configured as 'mains closed auxiliary' is active.

69 MAINS FAILED TO CLOSE
This output source has intended to be used to indicate a failure of the mains contactor or breaker. It can only be used if the unit is configured to use 'mains closed auxiliary' feedback.

70 MAINS FAILED TO OPEN
This output source has intended to be used to indicate a failure of the mains contactor or breaker. It can only be used if the unit is configured to use 'mains closed auxiliary' feedback.

71 MAINS FAILURE
This output indicates that the unit has sensed that a failure of the incoming AC mains supply. This output will become active whenever the mains voltage or frequency goes out of limits, or if the auxiliary mains failure input active (if used) and the mains transient timer has expired.

72 MAINS HIGH FREQUENCY
This output indicates that the unit has sensed that the incoming AC mains supply frequency has exceeded the frequency limit setting.

73 MAINS HIGH VOLTAGE
This output indicates that the unit has sensed that the incoming AC mains supply voltage has exceeded the voltage limit setting.

74 MAINS LOAD INHIBIT
This output indicates that a digital input has been configured as 'mains load inhibit' is active.

75 MAINS LOW FREQUENCY
This output indicates that the unit has sensed that the incoming AC mains supply frequency has fallen below the frequency setting.

76 MAINS LOW VOLTAGE
This output indicates that the unit has sensed that the incoming AC mains supply voltage has fallen below the voltage limit setting.

77 MAINS OPEN BREAKER
This output used to control the load switching device. For Details see: "BREAKERS Page" section.

78 NO LOADING COMMAND
This output indicates that the unit is not calling of the generator contactor or breaker to be closed. Should the unit close the generator contactor this output will become inactive.

79 OIL PRESSURE LOW PRE-ALARM
This output indicates that a low oil pressure warning (pre-alarm) has occurred.

80 OIL PRESSURE LOW SHUTDOWN
This output indicates that a low oil pressure shutdown has occurred.

81 CONFIGURABLE ANALOG INPUT-1 HIGH PRE-ALARM
This output indicates that a high analog input-1 warning (pre-alarm) has occurred.

82 CONFIGURABLE ANALOG INPUT-1 HIGH SHUTDOWN
This output indicates that a high analog input-1 shutdown has occurred.

83 OVER CURRENT PRE-ALARM
This output indicates that the over current pre-alarm has been reached.

84 OVER CURRENT ALARM
This output indicates that the over current trip level has been reached.

85 OVER POWER PRE-ALARM
This output indicates that the over power pre-alarm has been reached.

86 OVER POWER SHUTDOWN
This output indicates that the over power shutdown has been reached.

87 OVER SPEED PRE-ALARM
This output indicates that the over speed warning (pre-alarm) has occurred.

88 OVER SPEED SHUTDOWN
This output indicates that the over speed shutdown has occurred.

89 PANEL LOCK
This output indicates that the unit ‘panel lock’ is active. If the panel lock input is active, the unit will not respond to operation of the Mode select or start buttons. This allows the unit to be placed into a specific mode (such as auto) and then secured.

90 PRE-HEAT(during preheat timer)
The output controls the pre-heater. Pre-heat output is available for the duration of pre-heat timer, which terminates prior to cranking.

91 PRE-HEAT(until end of cranking)
The output controls the pre-heater. As 'Pre-heat (during pre-heat timer)' mode but pre-heat is also available during cranking.

92 PRE-HEAT(until end of warming)
The output controls the pre-heater. As 'Pre-heat (until safety on)' but pre-heat continues to be available until the warm-up timer has elapsed.

93 PRE-HEAT(until end safety on)
The output controls the pre-heater. As 'Pre-heat (until end of cranking)' but pre-heat is also available while waiting for the delayed alarms to become active.

94 REMOTE START PRESENT
This output indicates that a digital input that has been configured as 'remote start' is active. This output could be used to pass the remote start signal on to else where in the control system.

95 REMOTE STOP DELAY IN PROGRESS
This output source will be active to indicate that the return timer is running.

96 SHORT CIRCUIT
This output indicates that the module has detected a short circuit on the generator output.

97 SMOKE LIMITING
This output is used to supply a smoke-limiting signal to an Electronic Governor to limit smoke emissions on start-up. It is used in conjunction with the Smoke limit timer (Idle mode timer) settings. Once the timer has expired, the Smoke limit output will cease to operate allowing the engine to accelerate to normal running speed.

98 STARTING ALARM
This output is used to supply an external sounder with a signal that the engine is about to start. The output will be active during the start delay and pre-heat timer (if used).

99 STARTING ALARMS ARMED
The output indicates that the starting alarms are now enabled. It can be used to control external logic circuitry. Starting alarms are armed as soon as the unit commences starting of the engine and remain armed until the engine at rest.

100 STOP RELAY ENERGISED
The output mimics the operation of the stop relay. Can be used to control external logic circuitry.

101 SYSTEM IN AUTO MODE
The output indicates that the unit is in the Auto mode.

102 SYSTEM IN MANUAL MODE
The output indicates that the unit is in the Manual mode.

103 SYSTEM IN STOP MODE
The output indicates that the unit is in the Stop mode.

104 SYSTEM IN TEST MODE
The output indicates that the unit is in the Test mode.

105 UNDER CURRENT PRE-ALARM
This output indicates that the under current pre-alarm has been reached.

106 UNDER CURRENT ALARM
This output indicates that the under current trip level has been reached.

107 UNDER POWER PRE-ALARM
This output indicates that the under power pre-alarm has been reached.

108 UNDER POWER SHUTDOWN
This output indicates that the under power shutdown has been reached.

109 UNDER SPEED PRE-ALARM
This output indicates that an under speed warning (pre-alarm) has occurred.

110 UNDER SPEED SHUTDOWN
This output indicates that an under speed shutdown has occurred.

111 WAITING FOR GENERATOR
This output indicates that the engine has been instructed to start but has not yet become available. Once the generator becomes available this output will be in-active.

112 DUAL COMMUNICATION ERROR
This output indicates that an dual communication alarm has occurred.

113 LOAD SUPPLY FROM GENERATOR
This output indicates that the load is supplying from generator.

114 LOAD SUPPLY FROM MAINS
This output indicates that the load is supplying from mains.

115 CONFIGURABLE ANALOG INPUT-1 LOW PRE-ALARM
This output indicates that a low configurable analog input-1 warning (pre-alarm) has occurred.

116 CONFIGURABLE ANALOG INPUT-1 LOW SHUTDOWN
This output indicates that a low analog input-1 shutdown has occurred.

117 CONFIGURABLE ANALOG INPUT-2 LOW PRE-ALARM
This output indicates that a low configurable analog input-1 warning (pre-alarm) has occurred.

118 CONFIGURABLE ANALOG INPUT-2 LOW SHUTDOWN
This output indicates that a low analog input-2 shutdown has occurred.

119 CONFIGURABLE ANALOG INPUT-2 HIGH PRE-ALARM
This output indicates that a high analog input-2 warning (pre-alarm) has occurred.

120 CONFIGURABLE ANALOG INPUT-2 HIGH SHUTDOWN
This output indicates that a high analog input-2 shutdown has occurred.

121 CHOKE ACTIVE
This ouput becomes active everytime generator cranks and stays active until the choke time expires.

122 REMOTE CONTROL ACTIVE
This output indicates that the engine is being controlled remotely.

123 REVERSE POWER
This ouput becomes active when generator's active power drops below the Reverse Power Set value.

124 CABIN TEMPERATURE LOW PRE-ALARM (Only available at Trans-AMF_C unit)
This output indicates that a low cabin temperature warning (pre-alarm) has occurred.

125 CABIN TEMPERATURE LOW SHUTDOWN (Only available at Trans-AMF_C unit)
This output indicates that a low cabin temperature shutdown has occurred.

126 CABIN TEMPERATURE HIGH PRE-ALARM (Only available at Trans-AMF_C unit)
This output indicates that a high cabin temperature warning (pre-alarm) has occurred.

127 CABIN TEMPERATURE HIGH SHUTDOWN (Only available at Trans-AMF_C unit)
This output indicates that a high cabin temperature shutdown has occurred.

128 HEATER CONTROL
Becomes active when the Coolant Temperature falls below the "Heater control ON" setting. If the output is already active it will become inactive when the Coolant Temperature is above the "Heater control OFF" setting.

129 REMOTE OUTPUT
This output indicates that the output can be energised or de-energised remotely.

130 UNBALANCE LOAD
This output indicates "out of balance" current loading of the generator.
Sometimes also called Negative Sequence Current or Symmetry Fault.

131 WATER PUMP
This output becomes active for the "Water pump on time" parameter and passive for the "Water pump off time" parameter while the "Heater control output" was active.

132 ATS OPEN(0)
This output is used to return the ATS to the "Open (0)" position.

133 BATTERY CHARGER OPERATION
This output is used to control battery charger device.

134 RESERVED

135 RESERVED

136 SYNCHRON POSITION
This output will be active active when the synchronization process starts.
This output will be passive when the synchronous operation ends.

137 OVER LOAD STEP 1
This output indicates that the over load step 1 level has been reached.

138 OVER LOAD STEP 2
This output indicates that the over load step 2 level has been reached.

4.2.7 Timers

START TIMERS (*Timers->Start timers*)		Min	Max	Default	Unit
Mains transient delay	Mains Transient Delay	0.0	20.0	2.0	Sec
Mains fail start dely	Mains Fail Start Delay	0	9999	0	Sec
Remote start delay	Remote Start Delay	0	3600	4	Sec
Pre-heat	Pre-Heat	0	250	3	Sec
Pre-heat bypass	Pre-Heat Bypass	0	250	0	Min
Safety on delay	Safety On Delay	0	99	5	Sec
Warming up time	Warmup Time	0	250	3	Sec
Horn duration	Horn Duration	0 (dis)	999	60	Sec
Chg. excitation time	Charge Excitation Time	0	99(cont)	15	Sec
Cooling fan time	Cooling Fan Time	0	250	180	Sec
Idle mode time	Idle Mode Time (Smoke Limiting)	0 (dis)	3600	dis	Sec
Idle mode time off	Idle Mode Time Off (Smoke Limiting Off)	0	250	5	Sec
Bat.charger oper time	Battery Charger Operation Time	0 (dis)	9999	0 (dis)	Min
Bat.charger rest time	Battery Charger Rest Time	0 (dis)	9999	0 (dis)	Min

Mains Transient Delay
The unit uses this parameter to decide the mains fail.

Mains Fail Start Delay
This timer dictates how long the unit will wait after it has received a mains failure signal before it will attempt to start. This prevent un-necessary starting on a fluctuating mains supply etc.

Remote Start Delay
This timer dictates how long the unit will wait after it has received a remote start signal before it will attempt to start. This prevent un-necessary starting on a fluctuating mains supply etc.

Pre-Heat
This timer dictates the duration that the pre-heat output will be active before an attempt is made to start the engine. Once this timer is expired cranking will commence.

Pre-Heat Bypass
This feature allows the unit to start a hot engine without performing an un-necessary pre-heat delay. The bypass timer is triggered by the generator starting and actually being loaded. If the generator started but does not achieve loading then the timer will not be triggered. The bypass timer is initiated once the engine has come to rest. If any attempts to start are requested within the duration of the bypass timer the start sequence will bypass the pre-heat timer.

Safety On Delay
This timer dictates how long the unit will ignore the Low Oil Pressure, High Engine Temperature, Underspeed, Undervolts and any other inputs configured as active from safety on. It allows the values such as oil pressure to rise to their operating values on starting without triggering an alarm. Once the timer has expired all alarm conditions are monitored again. If configured to use 'fast loading', should all the monitored conditions, such as oil pressure, come to expected state prior to the end of the safety on timer, the timer will be terminated prematurely ensuring maximum protection as soon as possible.

Warmup Time
This timer is initiated once the engine is up and running. It delays loading the generator until it has stabilised. Once this timer is expired the 'Close generator' signal will be given and the generator is available to be loaded.

Horn Duration
This timer dictates how long the external horn and the internal sounder will work after the last error detected. Once after this timer ended unit will do the external horn and the internal sounder reset.

Note: dis = disable cont = continuous

Charge Excitation Time
Charge excitation was selectable as momentary / continuous operation.This timer dictates how long the Charge excitation will active.

Cooling Fan Time
This timer dictates how long the Cooling Fan will continue to operate.

Idle Mode Time (Smoke Limiting)
This is the amount of time that the smoke limiting output will remain active for once the engine has started. While the smoke limiting output is active the engine will be held at a reduced speed to minimise smoke emissions on start-up. (Only if fitted with an appropriate Electronic Control Module). Once the timer has expired the engine will be allowed to accelerate up to its normal operating speed.

Idle Mode Time Off (Smoke Limiting Off)
This timer is started after the Idle mode timer (smoke limit timer) was expired. This is to allow the engine to accelerate to its normal running speed without triggering an underspeed alarm, etc.

Battery Charger Operation Time
The output configured as “133-Battery Charger Operation” is active for the duration of this parameter.

Battery Charger Rest Time
The output configured as “133-Battery Charger Operation” is passive for the duration of this parameter.

STOPPING TIMERS (*Timers->Stopping timers*)		**Min**	**Max**	**Default**	**Unit**
Mains return delay	Mains Return Delay	0	3600	5	Sec
Remote stop delay	Remote Stop Delay	0	250	4	Sec
Cooling time	Cooling Time	0 (dis)	3600	60	Sec
Fail to stop delay	Fail To Stop Time	15	999	30	Sec
Battery charging time	Battery Charging Time	1	9999	5	Min
Idle stop time	Idle Stop Time	0 (dis)	3600	dis	Sec
Engine stopping delay	Engine Stopping Delay	0	999	0	Sec

Mains Return Delay
This timer dictates how long the unit will wait before it will un-load the generator (back to the mains supply if AMF) and initialise it's run-on and shutdown cycle. This is ensure that the mains supply has stabilised before transferring the load back to mains.

Remote Stop Delay
This timer dictates how long the unit will wait after it has received a remote stop signal before it will attempt to stop. This prevent un-necessary stopping on a fluctuating mains supply etc.

Cooling Time
This is the time the generator is to run off-load once the load transfer signal has ceased. This gives the engine time to cool down before shutdown.

Fail To Stop Time
Once the unit has given a shutdown signal to the engine it expects the engine to come to rest. It monitors the Oil pressure and speed sensing sources and if they still indicate engine movement when this timer expires a 'Fail To Stop' alarm signal is generated.

Battery Charging Time
In AUTO mode and no mains, if one of the configurable inputs are selected as “24-Low Battery” and this input is active, the unit will perform the start sequence. When the mains back or “Battery Charging Time” parameter is expired, the unit will perform the stop sequence.

Idle Stop Time
This parameter specifies the duration of the motor to run at idle before it stops.

Engine Stopping Delay
When a shutdown alarm occurs, the engine stop sequence is delayed by the value in this parameter. Typically this is used parameter to make sure that the ATS has returned to the "Open (0)" position before the engine stops.

4.2.8 Expansion Modules

IO (1-8) MODULE (*Expansion modules->IO (1-8)*)		Min	Max	Default	Unit
Disable/enable select	Expansion I/O Module Selection	ENABL/DISBL		DISBL	

IO Module Selection
DISABLE: If IO module will not be used, this parameter should be set as "DISABLE".

ENABLE: If IO module is to be used, this parameter should be set as “ACTIVE”. In this case, the parameters related to the inputs and outputs of the IO module are added to the input/output parameters of the device.

DIAL-UP & ETHERNET (*Expansion modules->Dial-up & Ethernet*)		Min	Max	Default	Unit
Disable/enable select	Expansion Dal-up&Ethernet Module Selection	ENABL/DISBL		ENABL	
Call back selection	Call Back Selection	ENABL/DISBL		DISBL	

When a compatible Dial-up & Ethernet communication module is installed on the back of the device, the device automatically recognizes this module and lists the following parameters in the "Expansion modules->Dial-up & Ethernet” section:

Dial-Up & Ethernet Module Selection
DISABLE: The device does not respond to inquiries via the Dial-up & Ethernet communication module.

ENABLE: The device responds to inquiries via the Dial-up & Ethernet communication module.

Call Back Selection
DISABLE: When a malfunction occurs in the device, the device does not call back.

ENABLE: When a malfunction occurs in the device, the device informs the computer on which the PC software runs through the Dial-up & Ethernet communication module by making a callback.

GPRS MODULE (*Expansion modules->GPRS*)		Min	Max	Default	Unit
Disable/enable select	Expansion GPRS Module Selection	0-DISABLE 1-GPRS SERVER 2-GPRS CLIENT 3-SMS		2-GPRS CLIENT	
Call back selection	Call Back Selection	ENABL/DISBL		DISBL	
Cell inf refresh rate	Cell info refresh rate	0(dis)	999	15	Min
Location data	Location data	ENABL/DISBL		DISBL	
Location warning	Location warning	1(dis)	999	1(dis)	Km

When a compatible GPRS communication module is installed on the back of the device, the device automatically recognizes this module and lists the following parameters in the "Expansion modules->GPRS" section:

GPRS Module Selection
0-DISABLE: The device does not respond to inquiries via the GPRS communication module.

1-GPRS SERVER: The device connects to the internet by using a static IP SIM card inserted on the module and waits for a connection request from the PC or Cloud software.

2-GPRS CLIENT: The device connects to the internet using a static or dynamic IP-enabled SIM card installed on the module and sends a connection request to the PC or Cloud software. **Note:** This mode can be used for reverse connection to the Cloud.

3-SMS: The device can send the fault conditions as an SMS to the mobile phone stored in its memory via the SIM card in the module. In addition, the user can read and write all parameters with special SMS commands, monitor the current status of the generator and control the generator when necessary.

Call Back Selection
DISABLE: When a malfunction occurs in the device, the device does not call back.

ENABLE: When a malfunction occurs in the device, the device informs the computer on which the PC software runs through the GPRS communication module by making a callback.

Cell Info Refresh Rate
GSM cell informations (operator name, signal level, IP number, base station location, etc.) is updated with the period defined in this parameter.

Location Data
DISABLE: The device does not look at the location (latitude-longitude) information.

ENABLE: The device displays the location (latitude-longitude) of the nearest base station on the screen.

Location Warning
When the location of the device changes as much as the value in this parameter, the device adds this situation to the event logs with the message "Location changed" and can send an SMS to the mobile phone stored in its memory.

DUAL SET MODULE (*Expansion modules->Dual set*)		**Min**	**Max**	**Default**	**Unit**
Disable/enable select*1	Expansion Dual Set Module Selection	ENABL/DISBL		ENABL	
Node ID*2	Node Address	1	2	1	
Working period	Dual Working Period	0:00	98:59	1:00	H.Min
Early start time	Early Start Time	0	250	15	Sec
Remote priority selct	Remote Priority Selection: 0- Disable, 1- Priority, 2- None Priority	0(dis)	2	dis	

When a compatible Dual communication module is installed on the back of the device, the device automatically recognizes this module and lists the following parameters in the "Expansion modules->Dual Set" section:

Dual Set Module Selection
DISABLE: Dual set application feature is passive.

ENABLE: Dual set application feature is active.

Node Address
This parameter is used for Master / Slave device selection in dual set application. **Note:** The value "1" means Master, the value "2" means Slave.

Dual Working Period
Dual set application feature is the transfer of the load between 2 generators at regular intervals. The working time of each generator can be adjusted using this parameter. **Note:** If this parameter is set to "0", the generator with priority will not be stopped in any way except in case of failure.

Early Start Time
The generator, whose turn it is to start, starts cranking a certain amount of time (the time determined by this parameter) before the end of the dual working period.

Remote Priority Select
This parameter is used to give priority to the generator in dual set application.

GPRS WEB MODULE (*Expansion modules->GPRS Web)*		**Min**	**Max**	**Default**	**Unit**
Disable/enable select	GPRS-Web Module Selection	ENABL/DISBL		ENABL	

When a compatible Web server communication module is installed on the back of the device, the device automatically recognizes this module and lists the following parameters in the "Expansion modules->GPRS Web" section:

GPRS Web Module Selection
DISABLE: The device does not respond to inquiries via the Web server communication module.

ENABLE: The device responds to inquiries via the Web server communication module.

Note: *1 = Changing this parameter becomes only effective after restarting the unit.
*2 = Changing this parameter becomes only effective after restarting the unit.
dis = disable.

4.2.9 Synchronization

SYNCH CHECK (Synchronization->*Synch Check*)		Min	Max	Default	Unit
Synchronization check	Synchronization check enable/disable	ENABL/DISBL		DISBL	
Synced working time	Synced working time	0.0	25.0	0.5	Sec
Synch. fail time	Synchronization fail time	0	250	30	Sec
Max voltage diff.	Max voltage difference	0	20	5	V~
Voltage type	Voltage type	0=Ph-N / 1=Ph-Ph		0=Ph-N	
Max frequency diff.	Max frequency difference	0.0	2.0	0.5	Hz
Max angle difference	Max angle difference	0	20	10	º
Angle offset	Angle offset	-150	+150	0	º
Show synch fail	Show synchronization fail	ENABL/DISBL		ENABL	

Synchronization check enable/disable
The user can be enable or disable the uninterrupted load transfer with this parameter.

Synced working time
During this timer, both contactors will be active.

Synchronization fail time
When this timer is expired, if the Generator L1 and Mains L1 voltages are still not synchronized; the unit gives synchronization error and performs interrupted load transfer.

Maximum voltage difference
During synchronization process, difference between average Generator voltage and average Mains voltage must be in this limit.

Voltage type
The user can select voltage difference type to be calculated with this parameter;

Maximum frequency difference
During synchronization process, frequency difference between Gen. and Mains must be in this limit.

Maximum angle difference
During synchronization process, angle difference between Gen. L1 and Mains L1 must be in this limit.

Angle offset
The user can give an offset to angle difference between Gen. L1 and Mains L1 with this parameter.

Show synchronization fail
DISABLE: When the “Synchronization fail” is occured, the unit will not display related alarm message and activate horn output. The unit only will log this event.
ENABLE: When the “Synchronization fail” is occured, the unit will display related alarm message, activate horn output and log this event.

4.2.10 User Adjustment

MAINS VOLTAGE OFFSET (*User adjustment->Mains voltage offset*)		Min	Max	Default	Unit
Mains V1 offset	Mains V1 Offset	-20	20	0	V~
Mains V2 offset	Mains V2 Offset	-20	20	0	V~
Mains V3 offset	Mains V3 Offset	-20	20	0	V~

Mains V1 Offset
If the mains voltage V1 value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

Mains V2 Offset
If the mains voltage V2 value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

Mains V3 Offset
If the mains voltage V3 value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

GEN. VOLTAGE OFFSET (*User adjustment->Gen. voltage offset*)		Min	Max	Default	Unit
Gen. V1 offset	Generator V1 Offset	-20	20	0	V~
Gen. V2 offset	Generator V2 Offset	-20	20	0	V~
Gen. V3 offset	Generator V3 Offset	-20	20	0	V~

Generator V1 Offset
If the generator voltage V1 value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

Generator V2 Offset
If the generator voltage V2 value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

Generator V3 Offset
If the generator voltage V3 value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

CURRENT OFFSET (*User adjustment->Current offset*)		Min	Max	Default	Unit
Current I1 offset	Current I1 Offset	-20	20	0	A~
Current I2 offset	Current I2 Offset	-20	20	0	A~
Current I3 offset	Current I3 Offset	-20	20	0	A~
E/F. Current offset	Earth Current Offset	-20	20	0	A~

Current I1 Offset
If the current I1 value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

Current I2 Offset
If the current I2 value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

Current I3 Offset
If the current I3 value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

Earth Current Offset
If the earth current value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

BATTERY&CHRG GEN.VOL (*User adjustment->Battery&chrg gen.vol*)		Min	Max	Default	Unit
Batt.volt offset	Battery Voltage Offset	-5.0	5.0	0	V⎓
Gen.chg.volt offset	Charge Generator Voltage Offset	-5.0	5.0	0	V⎓

Battery Voltage Offset
If the battery voltage value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

Charge Generator Voltage Offset
If the charge generator voltage value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

SENDER INPUTS OFFSET (*User adjustment->Sender inputs offset*)		Min	Max	Default	Unit
Oil Pressure offset	Oil Pressure Offset	-2.0	2.0	0.0	BAR
Temperature offset	Coolant Temperature Offset	-20	20	0	ºC
Conf. AI1 offset	Configurable Analog Input-1 Offset	-200	200	0	%
Conf. AI2 offset	Configurable Analog Input-2 Offset	-20	20	0	ºC

Oil Pressure Offset
If the oil pressure value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

Coolant Temperature Ofset
If the coolant temperature value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

Configurable Analog Input-1 Ofset
If the configurable analog input-1 value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

Configurable Analog Input-2 Ofset
If the configurable analog input-2 value that the device calculates and displays on the screen is different from its actual value, this situation can be eliminated by entering the difference value in this parameter.

Error Messages And Explanations:

Battery high error! : Battery high error
Battery low error! : Battery low error
Battery high warning! : Battery high error
Battery low warning! : Battery low error
Cab temp.high error! : Cabin temperature high error
Cab temp.high prealr! : Cabin temperature high pre-alarm
Cab temp.low error! : Cabin temperature low error
Cab temp.low prealr! : Cabin temperature low pre-alarm
Can bus warning! : Can bus error
Charge alterntr fail! : Charge alternator fail
Conf. AI1 high error! : Configurable analogue input-1 high error
Conf. AI1 high preal! : Configurable analogue input-1 high pre-alarm
Conf. AI1 low error! : Configurable analogue input-1 low error
Conf. AI1 low prealr! : Configurable analogue input-1 low pre-alarm
Conf. AI1 sensor err! : Configurable analogue input-1 sensor break
Conf. AI2 high error! : Configurable analogue input-2 high error
Conf. AI2 high preal! : Configurable analogue input-2 high pre-alarm
Conf. AI2 low error! : Configurable analogue input-2 low error
Conf. AI2 low prealr! : Configurable analogue input-2 low pre-alarm
Conf. AI2 sensor err! : Configurable analogue input-2 sensor break
Dual communicat. err! : Dual communication error
E/F. instant trip! : Earth fault error
E/F. warning! : Earth fault warning
E/F.trip with cool.! : Earth fault electrical trip
Emergency stop! : Emergency stop error
Exp.spare-1 alarm! : Expansion module spare 1 error
Exp.spare-2 alarm! : Expansion module spare 2 error
Exp.spare-3 alarm! : Expansion module spare 3 error
Exp.spare-4 alarm! : Expansion module spare 4 error
Exp.spare-5 alarm! : Expansion module spare 5 error
Exp.spare-6 alarm! : Expansion module spare 6 error
Exp.spare-7 alarm! : Expansion module spare 7 error
Exp.spare-8 alarm! : Expansion module spare 8 error
Fail to start alarm! : Fail to start alarm
Fuel filling alarm! : Fuel filling alarm
Gen break.close fail! : Generator breaker not closed alarm
Gen break.open fail! : Generator breaker not opened alarm
Gen over frq.prealr! : Generator over frequency pre-alarm
Gen over frq.shutdwn! : Generator over frequency shutdown
Gen over vol.shutdwn! : Generator over voltage shutdown
Gen over volt.prealr! : Generator over voltage prealarm
Gen phase seq.wrong! : Generator phase sequence wrong
Gen stop fail! : Generator stop error
Gen under frq.prealr! : Generator under frequency pre-alarm
Gen under frq.shtdwn! : Generator under frequency shutdown
Gen under vol.shtdwn! : Generator under voltage shutdown
Gen under volt.preal! : Generator under voltage pre-alarm
High temp.prealarm! : Temp pre-alarm
High temp.shutdown! : High temp. shutdown
J1939 ECU warning! : Amber warning lamp error
Leak fuel alarm! : Leak fuel alarm
Low temperature! : Low temperature
Mains break.cls fail! : Mains breaker not closed alarm
Mains break.opn fail! : Mains breaker not opened alarm
Mains phase seq. err! : Mains phase sequence error
Maintenance alarm! : Maintenance error
Oil press.shutdown! : Pressure shutdown
Over curr.trip cool.! : Over current electrical trip
Over current prealr! : Over current pre-alarm
Over current trip! : Over current error
Over current warnng! : Over current warning
Over load step 1 alr! : Over load step 1 alarm
Over load step 2 alr! : Over load step 2 alarm
Over power alarm! : Over power error
Over power prealarm! : Over power pre-alarm
Over power trip cool! : Over power electrical trip

Error Messages And Explanations:

Over power warning! : Over power warning
Over speed alarm! : Over speed error
Over speed prealarm! : Over speed pre-alarm
Pressure prealarm! : Pressure prealarm
Pressure sensor err! : Oil pressure sensor break
Red stop lamp! : Red stop lamp error
Reverse power warnng! : Reverse power Warning
Rev.power trip cool.! : Reverse power Electrical Trip
Reverse power trip! : Reverse power Error
Short circuit trip! : Short circuit error
Spare-1 alarm! : Spare 1 error
Spare-2 alarm! : Spare 2 error
Spare-3 alarm! : Spare 3 error
Spare-4 alarm! : Spare 4 error
Spare-5 alarm! : Spare 5 error
Spare-6 alarm! : Spare 6 error
Spare-7 alarm! : Spare 7 error
Speed loss alarm! : Speed loss error
Syncronization alarm! : Syncronization alarm
Temperat. sensor err! : Temperature sensor break
Unbalance load trip! : Unbalance load error
Unbal.load trip cool! : Unbalance load electrical trip
Unbalance load warn.! : Unbalance load warning
Under curr.trip cool! : Under current electrical trip
Under current prealr! : Under current pre-alarm
Under current trip! : Under Current error
Under current warnng! : Under Current Warning
Under power prealarm! : Under power prealarm
Under power trip! : Under power error
Under pow.trip cool! : Under power electrical trip
Under power warning! : Under power warning
Under speed prealarm! : Under speed prealarm
Under speed trip! : Under speed error

Event Messages And Explanations:

Battery high alarm : Battery high error
Battery low alarm : Battery low error
Cab temp.high error : Cabin temperature high error
Cab temp.high prealr : Cabin temperature high pre-alarm
Cab temp.low error : Cabin temperature low error
Cab temp.low prealr : Cabin temperature low pre-alarm
Can bus warning : Can bus error
Changed mode to auto : Changed mode to auto
Changed mode to man : Changed mode to manual
Changed mode to stop : Changed mode to off
Changed mode to test : Changed mode to test
Charge alterntr fail : Charge alternator fail
Conf. AI1 high error : Configurable analogue input-1 high error
Conf. AI1 high preal : Configurable analogue input-1 high pre-alarm
Conf. AI1 low error : Configurable analogue input-1 low error
Conf. AI1 low prealr : Configurable analogue input-1 low pre-alarm
Conf. AI1 sensor err : Configurable analogue input-1 sensor break
Conf. AI2 high error : Configurable analogue input-2 high error
Conf. AI2 high preal : Configurable analogue input-2 high pre-alarm
Conf. AI2 low error : Configurable analogue input-2 low error
Conf. AI2 low prealr : Configurable analogue input-2 low pre-alarm
Conf. AI2 sensor err : Configurable analogue input-2 sensor break
Dual communicat. err : Dual communication error
E/F. alarm : Earth fault alarm
Emergency stop : Emergency stop error
Engine started : Engine started
Engine stopped : Engine stopped
Exp.spare-1 alarm : Expansion module spare 1 error
Exp.spare-2 alarm : Expansion module spare 2 error
Exp.spare-3 alarm : Expansion module spare 3 error

Event Messages And Explanations:

Exp.spare-4 alarm : Expansion module spare 4 error
Exp.spare-5 alarm : Expansion module spare 5 error
Exp.spare-6 alarm : Expansion module spare 6 error
Exp.spare-7 alarm : Expansion module spare 7 error
Exp.spare-8 alarm : Expansion module spare 8 error
Fail to start alarm : Fail to start alarm
Fuel filling alarm : Fuel filling alarm
Gen break.close fail : Generator breaker not closed alarm
Gen break.open fail : Generator breaker not opened alarm
Gen over frq.prealr : Generator over frequency pre-alarm
Gen over frq.shutdwn : Generator over frequency shutdown
Gen over vol.prealr : Generator over voltage pre-alarm
Gen over vol.shutdwn : Generator over voltage shutdown
Gen phase seq.wrong : Generator phase sequence wrong
Gen stop fail : Generator stop error
Gen under frq.preal : Generator under frequency pre-alarm
Gen under frq.shtdwn : Generator under frequency shutdown
Gen under vol.preal : Generator under voltage pre-alarm
Gen under vol.shtdwn : Generator under voltage shutdown
GPRS IP not found : Gprs no IP alarm
GPRS reset fail : Gprs reset fail
High temp.prealarm : High temp. pre-alarm
High temp.shutdown : High temp. shutdown
J1939 ECU warning : Amber warning lamp error
Leak fuel alarm : Leak fuel alarm
Low temperature : Low temperature
Mains break.cls fail : Mains breaker not closed alarm
Mains break.opn fail : Mains breaker not opened alarm
Mains phase seq. err : Mains phase sequence error
Maintenance alarm : Maintenance error
Maintenance warning : Maintenance warning
Modem response: error : Gprs error response alarm
No respons.from modem : Gprs no response alarm
Oil press.shutdown : Pressure shutdown
Over current alarm : Over current alarm
Over current prealr : Over current pre-alarm
Over load step 1 alr : Over load step 1 alarm
Over load step 2 alr : Over load step 2 alarm
Over power alarm : Under power error
Over power prealarm : Under power pre-alarm
Over speed prealarm : Over speed pre-alarm
Over speed shutdown : Over speed shutdown
Pressure prealarm : Pressure prealarm
Pressure sensor err : Oil pressure sensor break
Red stop lamp : Red stop lamp error
Reverse power alarm : Reverse power alarm
Short circuit alarm : Short circuit alarm
SMS was not sent : Sms wasn't sent
SMS was sent : Sms was successfully sent
Spare-1 alarm : Spare 1 error
Spare-2 alarm : Spare 2 error
Spare-3 alarm : Spare 3 error
Spare-4 alarm : Spare 4 error
Spare-5 alarm : Spare 5 error
Spare-6 alarm : Spare 6 error
Spare-7 alarm : Spare 7 error
Speed loss alarm : Magnetic pickup loss of speed error
Syncronization alarm : Syncronization alarm
Temperat. sensor err : Temperature sensor break
Unbalance load alarm : Unbalance load alarm
Under current alarm : Under current error
Under current prealr : Under current pre-alarm
Under power alarm : Under power error
Under power prealarm : Under power pre-alarm
Under speed prealarm : Under speed pre-alarm
Under speed shutdown : Under speed shutdown

5. Specifications

Equipment use	: Electrical control equipment for generating sets.
Housing & Mounting	: 229 mm x 152 mm x 41 mm. (including connectors). Plastic housing for panel mounting.
Panel Cut-Out	: 182mm x 135mm.
Protection Against Mech. Impacts	: 1Joule (IK06).
Protection Class	: IP65 at front panel.
Weight	: Approximately 0,53 Kg.
Environmental rating	: Standard, indoor at an altitude of less then 2000 meters with non-condensing humidity.
Operating/Storage Temperature	: -20°C to +70°C / -30°C to +80°C
Operating/Storage Humidity	: 95 % max. (non-condensing)
Vibration	: EN 60068-2-6 Ten sweeps in each of three major axes 5Hz to 8Hz @ +/-7.5mm, 8Hz to 500Hz @ 2gn.
Shock	: EN 60068-2-27 Three shocks in each of three major axes 15gn in 11mS.
Installation Over Volt. Category	: II Appliances, portable equipment
Pollution Degree	: II, Normal office or workplace, non conductive pollution
Mode of Operation	: Continuous.
Supply Voltage and Power	: 8 to 32 V⎓ (Peak: 36 V⎓) - 3.2W
Cranking Dropouts	: Battery voltage can be “0” VDC for max. 50 ms during cranking (battery voltage should be at least nominal voltage before cranking).
Battery Voltage Measurement	: 8 to 32 V⎓, accuracy: 1 % FS, resolution: 0,1 V
Mains Voltage Measurement	: 10 to 300 VAC Ph-N, 5 to 99.9 Hz. Accuracy: 1 % FS, Resolution: 1 V. Harmonic analysis: Up to 31st.
Mains Frequency	: 5 to 99.9Hz (min. 20 VAC Ph-N) Accuracy: 0,25 % FS, Resolution: 0,1 Hz.
Generator Voltage Measurement	: 10 to 300 VAC Ph-N, 5 to 99.9 Hz. Accuracy: 1 % FS, Resolution: 1 V. Harmonic analysis: Up to 31st.
Generator Frequency	: 5 to 99.9Hz (min. 20 VAC Ph-N) Accuracy: 0,25 % FS, Resolution: 0,1 Hz.
Magnetic Pickup Input	: 35 to 10000 Hz (1 to 35 volts peak continuously). Accuracy: 0,25 % FS.
CT secondary	: 5A. Harmonic analysis: Up to 31st.
Charge Generator Excitation	: 210mA @12V, 105mA @24V. Nominal 2.5W.
Charge Gen. Vol. Measurement	: 8 to 32 V⎓, accuracy: 1 % FS, resolution: 0,1 V.
Sender Measurement	: 0 to 1300 ohm, accuracy: 1 % FS, resolution: 1 ohm.
Canbin Temp. Measurement	: -50 to +100 ºC, accuracy: 1 % FS, resolution: 1 ºC. Only available at Trans-AMF_C unit.
Communication interface	: USB programming and communication port, RS-485 (optional), CanBus communication with 1939 ECU.
Optional Expansion I/O Module	: Expansion I/O module including 8 inputs and 8 outputs.
Optional Comm. Modules	: Ethernet/Dial-up, GSM/GPRS, RS-232/485/422, Dual Set, Web Server and GPRS-Web modules.

Relay Outputs	: Generator contactor relay output 8A@250V~ Mains contactor relay output 8A@250V~ Configurable output-5 5A@250V~ Configurable output-6 5A@250V~
Transistor Outputs	: Fuel or Configurable output-1 1A at DC supply voltage Crank or Configurable output-2 1A at DC supply voltage Configurable output-3 1A at DC supply voltage Configurable output-4 1A at DC supply voltage All transistor ouputs supplied from DC supply terminal 22
Approvals	: CE, UKCA, EAC

6. Other Informations

Manufacturer Information:
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