

**USER MANUAL  
FOR  
BTS AMF CONTROLLER  
MODEL - AMF-9924**



**Version - 3.0  
Release of Date - 03/03/2021**

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## **INTRODUCTION**

Smart DG Controller is an advanced 32 bit Micro controller based DG Protection unit and has been specially designed to meet the harsh requirement of Indian conditions.

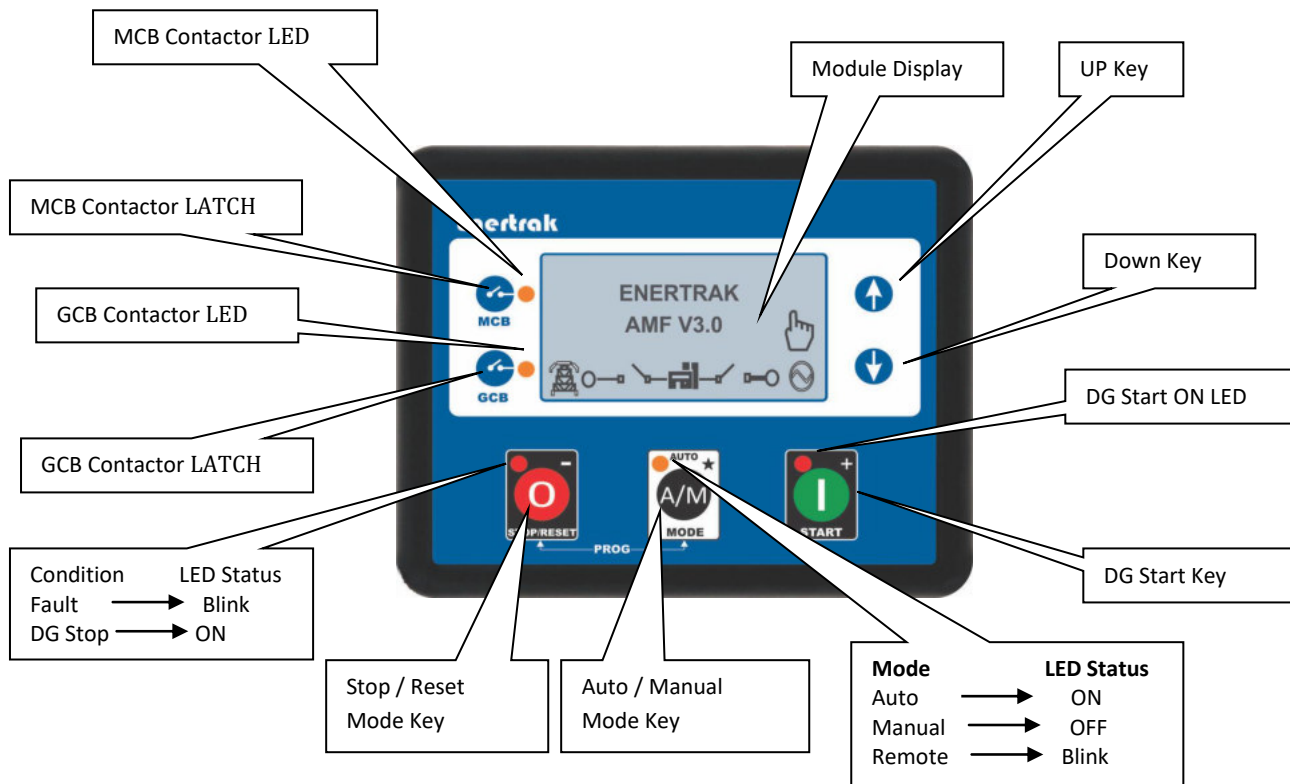
The AMF-9924 series module has been designed to allow the operator to start and stop the generator, and if required, transfer the load to the generator either manually or automatically. Additionally, the AMF-9924 automatically starts and stops the generator set depending upon the status of the mains (utility) supply & BTS Battery if monitoring Enable.

The AMF-9924 module monitors the engine, indicating the operational status and fault conditions, automatically shutting down the engine and giving a true first up fault condition of an engine failure by the LCD display.








## **FEATURES**

- Micro Controller Based Design
- Compact Size, Elegant Design & Easy Install
- Icon based LCD display
- **True RMS** Voltage
- Current and Power monitoring
- USB Communications
- Engine parameter monitoring.

## **FRONT PANEL CONFIGURATION**



## **PUSH BUTTON**

<b>ICON</b>	<b>DESCRIPTION</b>
	<p><b><u>STOP/RESET KEY</u></b></p> <p>This key is used to Stop DG Set in Manual Mode &amp; Reset if any fault Condition Present.</p>
	<p><b><u>AUTO / MANUAL KEY</u></b></p> <p>This key is used to select Auto/Manual mode and to select Fault Log Page &amp; P-Codes.</p>
	<p><b><u>START KEY</u></b></p> <p>This key is used to start the DG Manually.</p>
 	<p><b><u>MENU NAVIGATION</u></b></p> <p>Both key is used to shift from one Page to another Page in Programming mode and used to enter in <b>Event Log History &amp; P-Codes</b>. (Press both key together) &amp; Scrolling display.</p>
 	<p><b><u>MCB/GCB MODE</u></b></p> <p>To Latch Main Contactor in Manual Mode</p> <p>To Latch DG Contactor in Manual Mode.</p>

## **DISPLAY PARAMETER**

<b>Sr.No.</b>	<b>DISPLAY PARAMETER</b>	<b>DESCRIPTION</b>	<b>Display</b>	<b>DISPLAY SCREEN</b>
1	ENERTRAK AMF V3.0	Display Version	Graphical Display	Screen-1
2	000V L1N 000V 000V L2N 000V 000V L3N 000V	Mains & Generator Voltage (L-N)	Graphical Display	Screen-2
3	000V L1L2 000V 000V L2L3 000V 000V L3L1 000V	Mains & Generator Voltage (L-L)	Graphical Display	Screen-3
4	L1N 000V L2N 000V L3N 000V	Generator Voltage (L-N)	Graphical Display	Screen-4
5	L1L2 000V L2L3 000V L3L4 000V	Generator Voltage (L-L)	Graphical Display	Screen-5

6	00.00 Hz	Generator Frequency	Graphical Display	Screen-6
7	L1N 000V L2N 000V L3N 000V	Mains Voltage(L-N)	Graphical Display	Screen-7
8	L1L2 000V L2L3 000V L3L1 000V	Mains Voltage(L-L)	Graphical Display	Screen-8
9	00.00Hz	Mains Frequency	Graphical Display	Screen-9
10	L1 00.00A L2 00.00A L3 00.00A	Load Current (A)	Graphical Display	Screen-10
11	L1 00.00 KW L2 00.00 KW L3 00.00 KW	Active Power (kW)	Graphical Display	Screen-11
12	L1 00.0 KVA L2 00.0 KVA L3 00.0 KVA	Apparent Power (KVA)	Graphical Display	Screen-12
13	L1 0.00 PF L2 0.00 PF L3 0.00 PF	Power Factor	Graphical Display	Screen-13
14	00.00 KW 00.00 KVA 0.00 PF	Combined Active Power Combined Apparent Power Avg. Power Factor	Graphical Display	Screen-14
15	0000.0 kWh 0000.0 kWh	DG kWh Mains kWh	Graphical Display	Screen-15
16	00.00 V 00.00 V	DG Battery Voltage BTS Battery Voltage	Graphical Display	Screen-16
17	00.00 V	Charging Alternator	Graphical Display	Screen-17
18	 Bar	Oil Pressure	Graphical Display	Screen-18
19		Temperature	Graphical Display	Screen-19
20	xxx % 	Fuel Level	Graphical Display	Screen-20
21	000000:00	DG Run Hours.	Graphical Display	Screen-21
22	000000:00	Mains Run Hrs	Graphical Display	Screen-22
23	0000:00	Service Hours	Graphical Display	Screen-23
24	0000	Engine Speed	Graphical Display	Screen-24
25	LOCATION_1D.. 000001	Communication Id	Graphical Display	Screen-25
26	ALARMS	Fault Alarms up to 3	Graphical Display	Screen-26
27	Status	Running Status	Graphical Display	Screen-27
28	XX::XX:XX XX XX/XX/XX	RTC (Real time Clock)	Graphical Display	Screen-28

### **SPECIFICATION-LED**

LED will glow, whenever the corresponding condition is sensed by the controller.















<b>Tag</b>	<b>Color</b>	<b>Status</b>
<b>START</b>	<b>RED</b>	Normal Protected - OFF
		Start Enable - Blink
		DG Start - ON
<b>STOP</b>	<b>RED</b>	Normal - OFF
		DG Stop - ON
		Fault Condition - Blink
<b>AUTO</b>	<b>AMBER</b>	Manual Mode - OFF
		Auto Mode - ON
		Remote Mode - Blink
<b>MCB</b>	<b>AMBER</b>	Mains Contactor - ON
		Manual Mode - OFF
<b>GCB</b>	<b>AMBER</b>	Normal - OFF
		Genset Contactor - ON

### **ACTION ON FAULTS**



















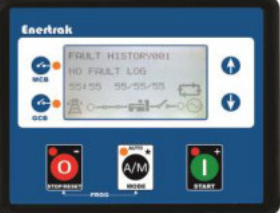
<b>Sr.No.</b>	<b>Name of Faults</b>	<b>Description of Indication</b>
<b>1</b>	FAIL TO START	When after no. of Set attempt , DG not start then FAIL TO START fault occur & Graphical Display
<b>2</b>	LLOP	DG Stop and GCB Contactor OFF & Graphical Display
<b>3</b>	HET	DG Stop and GCB Contactor OFF & Graphical Display
<b>4</b>	RWL	DG Stop and GCB Contactor OFF & Graphical Display
<b>5</b>	LOW FUEL	DG Stop and GCB Contactor OFF & Graphical Display
<b>6</b>	EMERGENCY / CANOPY	DG Stop and GCB Contactor OFF & Graphical Display
<b>7</b>	UNDER/OVER VOLTAGE	DG Stop and GCB Contactor OFF & Graphical Display
<b>8</b>	UNDER / OVER SPEED	DG Stop and GCB Contactor OFF & Graphical Display
<b>9</b>	UNDER /OVER FREQUENCY	DG Stop and GCB Contactor OFF & Graphical Display
<b>10</b>	OVER CURRENT	DG Stop and GCB Contactor OFF & Graphical Display
<b>11</b>	UNBALANCE CURRENT	DG Stop and GCB Contactor OFF & Graphical Display
<b>12</b>	CHARGING ALTERNATOR	DG Stop and GCB Contactor OFF & Graphical Display

13	UNDER / OVER BATTERY	DG Stop and GCB Contactor OFF & Graphical Display
14	OVER ACTIVE POWER(KW)	DG Stop and GCB Contactor OFF & Graphical Display
15	SERVICE DUE	ALARM & Graphical Display

**Description of Programming Parameter**

Step	Process	Image
1	Press and hold the  and  buttons together to enter the editor mode. Display shows <b>PROGRAMMING MODE</b> <b>PASSWORD</b> <b>0000</b>	
2	Press  button 1 appear on right side on LCD means first digit from MSB can change from 0-9 by using  button . For Password Enter “1” at first digit. <b>PROGRAMMING MODE</b> <b>PASSWORD</b> <b>1000</b> <b>1</b>	
3	Use  button to shift to next digit, now can change value of second digit from 0 to 9 by using  Button and enter “0” and so on. Default Password is 1000 <b>PROGRAMMING MODE</b> <b>PASSWORD</b> <b>1000</b> <b>4</b>	
4	After entering ‘1000’ Press  button again. If the entered Password is correct then controller shifts to programming page otherwise the controller shows ‘0000’ and again prompts for entry of password.	
5	Press the  or  navigation buttons to cycle through the front panel editor to select the required page in the configuration tables.	




6	<p>Press the  to select the next parameter or  to select the previous parameter within the current page.</p>	
7	<p>When viewing the parameter to be edited, press the  button, the value begins to flash.</p>	
8	<p>Press the  or  buttons to adjust the value to the required setting</p>	
9	<p>Press the  button to save the current value, the value ceases flashing.</p>	
10	<p>Press and hold the  button to save and exit the editor, the configuration icon  is removed from the display.</p>	
11	<p>If User wants to see Event &amp; Fault History then Press  &amp;  button simultaneously (Long Press) to enter in Event Log &amp; fault history Mode then can see 210 history by  button. To exit from Event Log History, Long Press both button  &amp;  Simultaneously.</p>	
12	<p>If Engine Selection CAN then Enter Password "1717" as per above step, User can see CAN Parameter -</p> <ul style="list-style-type: none"> <li>• Fuel Rate</li> <li>• Fuel Pressure</li> <li>• Oil Temp.</li> <li>• Engine Intake manifold temperature</li> </ul>	

## **Fault & Event History Details -**


<u><b>Range</b></u>	<u><b>Faults</b></u>
1 to 50	DG Faults
51 to 100	Engine Faults
101 to 150	Start/Stop Event
151 to 200	Mains Event
201 to 210	Fuel Log

## **Operation -**

**Auto Mode** - To Enter into Auto mode press  key. When the mains unhealthy condition occurs, first Mains Restoration Delay timer is initiated and genset will be cranked at the end of this delay. Controller will latch the genset contactor when genset loading voltage and frequency are above the Minimum Healthy thresholds after the warm-up time is over. Engine run hours will start incrementing when the genset voltage becomes greater than Minimum Healthy Voltage. During genset running, if the mains voltage returns, Return to Mains Delay timer starts. If the mains voltage is healthy over the entire return delay duration, genset contactor gets opened and controller will initiate the stopping sequence and latch the mains contactor after transfer delay.

During start sequence, if the mains voltage recovers or any stop command or shutdown / warning alarm occurs controller will not issue start command. To start the genset it is necessary to clear all the alarms manually and put the controller in Auto mode.

**Manual Mode** – In this mode start and stop key use for starting and stopping DG set. Similarly generator and Mains contactors can latched by MCB switch & Genset contactor can latched By GCB Switch.  
1) MCB and GCB key

**Test Mode** - At long press Auto Key  enter in test mode. In test mode all LED's (MCB, GCB, STOP, AUTO, START) glow for 5 Sec . In Test Mode when Manually DG Start then DG ON and Manually DG Stop then DG Stop if Test Mode timer 0 set. If Test Mode Timer set any value then DG Start manually & DG continue run for "Test mode timer".  
During Test Mode MCB & GCB Contactor doesn't work .

### **Remote Mode-**

To use Remote mode, follow below points  
1) Configure one one digital input as "Remote"  
2) Put controller in Auto mode

In that case if negative present at configurable digital input, controller activate crank relay for "crank time". DG continue run till Negative present at input and Latch genset contactor. If mains become healthy contactor shift to mains and stop dg set.

### **Engine Selection -**

**If Conventional Engine is selected** – Display of High Engine Temperature show in bar graph format. Up to 7 bar display show OK after 7 bar (8 bar) display show NOT OK. Tripping of DG SET depend only on Temperature Switch.

**If CAN Engine is selected** – Display of HET Temperature show in digital format receive from CAN BUS. Tripping of DG SET depend on Digital value and Temperature Switch. If Digital Value of Temp. is grater then Set Value (Parameter 632) than DG STOP Command Trigger.

## **Communication Failure:-**

RS-485 communications enable/disable option provided in parameter setting at 805.

If Disable (0-non GPRS site) selected in parameter setting at 805 than there will no alarm show on display either Modem or Modbus connected or not connected.

If Enable (1-GPRS site) selected in parameter setting at 805 than there are two type of alarm show on controller if communication break.

1) COMM fail "alarm show on display if communication fail b/w controller (AMF-9924) and Modem/Modbus.

2) "Network Failure" alarm show on display if communication fails b/w Modem and server.

## **Current Unbalance Detection:-**

- A) Controller doesn't take any action till the current is below 25% of the Over current Set Limit in three Phase.
- B) Controller Monitors the Current and upon any phase current exceeding 25% compares it with other phase currents and if the difference between max current and other phase current exceed set value in % defined then controller consider it as a current unbalance condition.
- C) In case the current unbalance persists for a period greater than the limit specified by with default setting of programmable parameters and between 1-99 minutes, then controller issues STOP Command.
- D) The Default setting for this feature is "DISABLE".

## **Charging Alternator Type:**

If Chg. Alternator Type (Parameter no. 430) = 0 , Sense Signal from W Point.

If Chg. Alternator Type (Parameter no. 430) = 1, Controller Provide Excitation from terminal no. 5 (Chg. Alt/Excite) for 10 sec. when DG Start.

If Chg. Alternator Type (Parameter no. 430) = 2 , Controller Provide Excitation from terminal no. 5 (Chg. Alt/Excite) Continuously , when DG Start.

## **Rotary Switch:**

If "Rotary Switch Enable" (Parameter 920) is 1 in editable parameter than Auto/Manual selection only can do through connector Pin no.22 If 12V applied at Pin no. 22 than Controller shift in Auto Mode. If 0 applied or Open than controller remains in manual Mode.

**Auto Load Transfer:** This function only applicable in Manual Mode.

If "Auto Load Transfer" (Parameter -243) is 1 than shifting of contactors method change in Manual mode. In this Mode DG Contactor on high priority. If someone start the DG manually, than DG Contactor Latch either Mains Healthy or Fail.

**CT On Load:** - Measure energy of Mains & DG both depends on Contactor.

**CT On DG:** - Only Measure DG Energy.

## **PROGRAMMING PARAMETERS**

### ***Configuration Parameters – TIMERS (Page 1)***

<b>INDEX</b>	<b>SETTABLE PARAMETER</b>	<b>RANGE</b>	<b>DEFAULT</b>
101	MAINS RESTORATION TIME	0-99 s	10 s
102	PRE HEAT TIME	0-999 s	001 s
103	CRANK TIME	0.0-9.0 s	2 s
104	CRANK REST TIME	0-99 s	10 s
105	WARM UP TIME	0-99 s	10 s
106	COOLING TIME	0-999 s	010 s
107	STOP TIME	0-99 s	30 s
108	MCB_GCB CHANGE OVER TIME	0-99 s	01 s
109	BUZZER TIME	0-99 s	60 s
110	LLOP BYPASS TIME	0-99 s	10 s
111	POWER SAVER MODE TIME	0-99 s	60 s
112	FUEL LOGGING TIME	0-99 s	99 s
113	SAFETY MONITOR DELAY	0-99 s	10 s
114	ALTERNATOR DETECT DELAY	0-99 s	05 s
115	RETURN TO MAINS DELAY	0-999 s	10 s
116	MAINS TRANSIENT DELAY	0-99 s	10 s
117	GENERATOR TRANSIENT DELAY	0-99 s	10 s
118	AUTO START DELAY	0-99 s	1 s
119	MANUAL START DELAY	0-99 s	2 s
120	ADDITIONAL STOP TIMER	0-99 s	10 s
121	TEST MODE TIMER	0-999 s	000 s
122	SCREEN SCROLL TIMER	0-99 s	10 s

## **Configuration Parameters – Generator (Page 2)**

<b>INDEX</b>	<b>SETTABLE PARAMETER</b>	<b>RANGE</b>	<b>DEFAULT</b>
201	ALTERNATOR PRESENT	YES	YES
202	ALTERNATOR POLES	0- 36	04
203	DG PICKUP VOLTAGE	0-240V	30V
204	DG PICKUP FREQUENCY	20 -50 HZ	30HZ
205	DG PHASE DETECT	On(1) , Off(0)	Off (0)
206	DG PHASE REVERSAL ACTION	0-3	3
207	ENGINE UNDER VOLTAGE TRIP ENABLE	On (1), Off (0)	On(1)
208	ENGINE UNDER VOLTAGE TRIP LEVEL	80-240V	180 V
209	ENGINE UNDER VOLTAGE WARNING ENABLE	On (1), Off (0)	Off (0)
210	ENGINE UNDER VOLTAGE WARNING LEVEL	80-240V	200 V
211	ENGINE UNDER VOLTAGE ACTION DELAY	0-99s	10s
212	ENGINE OVER VOLTAGE WARNING ENABLE	On (1), Off (0)	On(1)
213	ENGINE OVER VOLTAGE WARNING RETURN	200-350V	260 V
214	ENGINE OVER VOLTAGE WARNING ALARM	200-350V	270 V
215	ENGINE OVER VOLTAGE TRIP LEVEL	200-350V	280 V
216	ENGINE OVER VOLTAGE ACTION DELAY	0-99s	10s
217	ENGINE UNDER FREQUENCY TRIP ENABLE	On (1), Off (0)	On(1)
218	ENGINE UNDER FREQUENCY TRIP LEVEL	45-50 Hz	47.5Hz

219	ENGINE UNDER FREQUENCY WARNING ENABLE	On (1), Off (0)	Off (0)
220	ENGINE UNDER FREQUENCY WARNING LEVEL	40-50 Hz	48 Hz
221	ENGINE UNDER FREQUENCY ACTION DELAY	0-99s	10s
222	ENGINE OVER FREQUENCY WARNING ENABLE	On (1), Off (0)	On(1)
223	ENGINE OVER FREQUENCY WARNING RETURN	50-60 Hz	53.0 Hz
224	ENGINE OVER FREQUENCY WARNING LEVEL	50-60 Hz	53.5 Hz
225	ENGINE OVER FREQUENCY TRIP ENABLE	On (1), Off (0)	On(1)
226	ENGINE OVER FREQUENCY TRIP LEVEL	50-60 Hz	53.5 Hz
227	ENGINE OVER FREQUENCY ACTION DELAY	0-99s	10s
228	CT PRIMARY	0-9999	0005
229	AMPERE LOAD RATING ( PER PHASE )	0-9999A	05A
230	OVER AMPERE TRIP ENABLE	On (1), Off (0)	On(1)
231	OVER AMPERE ACTION SELECT	0-3	0
232	OVER AMPERE DELAY TIME	0-9999s	010s
233	OVER AMPERE TRIP PERCENTAGE	5-200%	100%
234	UNBALANCE AMPERE TRIP ENABLE	On (1), Off (0)	On (1)

235	UNBALANCE AMPERE ACTION SELECT	0-3	0
236	UNBALANCE AMPERE DELAY TIME	0-9999s	900s
237	UNBALANCE AMPERE TRIP PERCENTAGE	5-200%	25%
238	KW LOAD RATING (TOTAL)	0-9999 KW	4KW
239	OVER KW TRIP ENABLE	On (1), Off (0)	On(1)
240	OVER KW ACTION SELECT	0-3	0
241	OVER KW ACTION LEVEL PERCENTAGE	50-150%	100 %
242	OVER KW DELAY TIME	0 -9999 s	010s
243	AUTO LOAD TRANSFER ENABLE	0-3	0
244	SERVICE HOUR DECREASE ENABLE	On (1), Off (0)	Off (0)

### ***Configuration Parameters – Mains (Page 3)***

<b><i>INDEX</i></b>	<b><i>SETTABLE PARAMETER</i></b>	<b><i>RANGE</i></b>	<b><i>DEFAULT</i></b>
301	MAINS AC SYSTEM CONFIGURATION	0-3	0
302	MAINS FAILURE DETECTION ENABLE	On (1), Off (0)	On(1)
303	MAINS PHASE REVERSAL	On(1), Off(0)	Off(0)
304	MAINS UNDER VOLTAGE ENABLE	On (1), Off (0)	On(1)
305	MAINS UNDER VOLTAGE TRIP VOLTAGE LEVEL	80-240 V	180 V
306	MAINS UNDER VOLTAGE RETURN VOLTAGE LEVEL	80-240 V	190 V
307	MAINS UNDER VOLTAGE TRIP OCCURRENCE DELAY	0 -99s	10s
308	MAINS OVER VOLTAGE ENABLE	On (1), Off (0)	On(1)
309	MAINS OVER VOLTAGE RETURN VOLTAGE LEVEL	150-350 V	260 V
310	MAINS UNDER VOLTAGE TRIP VOLTAGE LEVEL	150-350 V	270 V
311	MAINS OVER VOLTAGE OCCURRENCE DELAY	0 -99s	10 s
312	MAINS UNDER FREQUENCY ENABLE	On (1), Off (0)	On(1)
313	MAINS UNDER FREQUENCY TRIP LEVEL	40-50 Hz	48 Hz

314	MAINS UNDER FREQUENCY RETURN LEVEL	40-50 Hz	48.5Hz
315	MAINS UNDER FREQUENCY OCCURRENCE DELAY	0 -99s	10 s
316	MAINS OVER FREQUENCY ENABLE	On (1), Off (0)	On(1)
317	MAINS OVER FREQUENCY RETURN LEVEL	50-60 Hz	53.0 Hz
318	MAINS OVER FREQUENCY TRIP LEVEL	50-60 Hz	54.0 Hz
319	MAINS OVER FREQUENCY OCCURRENCE DELAY	0 -99s	10 s

### **Configuration Parameters – Engine (Page 4)**

<b>INDEX</b>	<b>SETTABLE PARAMETER</b>	<b>RANGE</b>	<b>DEFAULT</b>
401	Engine Selection	Can/Conventional	CAN
402	ENGINE START ATTEMPT	0 -99	3
403	DG START PROTECTION	On (1), Off (0)	Off (0)
404	DG STOP SWITCH COOL DOWN	On (1), Off (0)	On (1)
405	CRANK DISCONNECT OIL PRESSURE ENABLE	On (1), Off (0)	Off (0)
406	CRANK DISCONNECT OIL PRESSURE LEVEL	0-10	1.0
407	CRANK DISCONNECT FREQUENCY LEVEL	40-50Hz	20 Hz
408	CRANK DISCONNECT RPM LEVEL	500-1500	450
409	MONITORING PRESSURE SWITCH BEFORE	On (1), Off (0)	On (1)
410	MONITORING PRESSURE SENSOR BEFORE	On (1), Off (0)	Off (0)
411	DISCONNECT CRANK LLOP	On (1), Off (0)	On (1)
412	DISCONNECT CRANK CHG. ALTE	On (1), Off (0)	On (1)
413	DISCONNECT LEVEL CHARGING ALTERNATOR	5.0-30.0	5.0
414	ENGINE SPEED SENSE	ALTERNATOR	ALTERNATOR
415	DG UNDER RPM ENABLE	On (1), Off (0)	On (1)
416	DG UNDER RPM TRIP LEVEL	1200-1500	1400
417	DG UNDER RPM TRIP DELAY	0-99s	10s
418	DG OVER RPM TRIP LEVEL	1500-1800	1600
419	DG OVER RPM TRIP DELAY	0 -99s	10s
420	GROSS OVER SPEED THRESHOLD	100-200	120%
421	DG LOW BATTERY ACTION	0-3	2
422	ENGINE LOW BATTERY TRIP VOLTAGE LEVEL	8-12V	11.0
423	ENGINE LOW BATTERY RETURN VOLTAGE LEVEL	8-12V	11.2
424	DG LOW BATTERY DELAY	0 -999s	010s
425	DG HIGH BATTERY ACTION	0-3	2
426	DG HIGH BATTERY RETURN LEVEL VOLT LEVEL	12-18V	15V
427	DG HIGH BATTERY TRIP LEVEL	12-18V	16 V



428	DG HIGH BATTERY DELAY	0 -999s	010s
429	DG CHARGING ALTERNATOR ACTION	0-3	1
430	DG CHARGING ALT. TRIP LEVEL	5-20V	5V
431	DG CHARGING ALTERNATOR DELAY	0-99	10 s
432	DG CHARGING ALTERNATOR TYPE	0-2	0
433	FAN FAULT ENABLE	On (1), Off (0)	On (1)
434	FAN TRIP DELAY	0-99	10 s
435	PREHEAT TEMPERATURE ENABLE	On (1), Off (0)	Off (0)
436	PREHEAT TEMPERATURE ENABLE LEVEL	10-300 <sup>0</sup>	25 <sup>0</sup>
437	DG START SENSE ENABLE	0-999	000

### **Configuration Parameters - Digital Inputs (Page 5)**

<b>INDEX</b>	<b>SETTABLE PARAMETER</b>	<b>RANGE</b>	<b>DEFAULT</b>
501	<b>DIGITAL INPUT A SOURCE</b> (As Per Input Source-A Table)	0-20	LLOP
502	DIGITAL INPUT A POLARITY	On (1), Off (0)	Off (0)
503	DIGITAL INPUT A ACTION	0-3	1
504	DIGITAL INPUT A ACTIVATION	0-3	2
505	DIGITAL INPUT A DELAY	0 -999 s	10s
506	<b>DIGITAL INPUT B SOURCE</b> (As Per Input Source-A Table)	0-20	HWT
507	DIGITAL INPUT B POLARITY	On (1), Off (0)	Off (0)
508	DIGITAL INPUT B ACTION	0-3	1
509	DIGITAL INPUT B ACTIVATION	0-3	2
510	DIGITAL INPUT B DELAY	0 -999 s	10s
511	<b>DIGITAL INPUT C SOURCE</b> (As Per Input Source-A Table)	0-20	LFL
512	DIGITAL INPUT C POLARITY	On (1), Off (0)	Off (0)
513	DIGITAL INPUT C ACTION	0-3	1
514	DIGITAL INPUT C ACTIVATION	0-3	3
515	DIGITAL INPUT C DELAY	0 -999 s	10s
516	<b>DIGITAL INPUT D SOURCE</b> (As Per Input Source-A Table)	0-20	HFL
517	DIGITAL INPUT D POLARITY	On (1), Off (0)	Off (0)
518	DIGITAL INPUT D ACTION	0-3	2
519	DIGITAL INPUT D ACTIVATION	0-3	2
520	DIGITAL INPUT D DELAY	0 -999s	10s

521	<b>DIGITAL INPUT E SOURCE</b> (As Per Input Source-A Table)	0-20	RWL
522	DIGITAL INPUT E POLARITY	On (1), Off (0)	Off (0)
523	DIGITAL INPUT E ACTION	0-3	1
524	DIGITAL INPUT E ACTIVATION	0-3	2
525	DIGITAL INPUT E DELAY	0 -999s	10s
526	<b>DIGITAL INPUT F SOURCE</b> (As Per Input Source-A Table)	0-20	CANOPY
527	DIGITAL INPUT F POLARITY	On (1), Off (0)	Off (0)
528	DIGITAL INPUT F ACTION	0-3	1
529	DIGITAL INPUT F ACTIVATION	0-3	2
530	DIGITAL INPUT F DELAY	0 -999s	10s
531	<b>DIGITAL INPUT G SOURCE</b> (As Per Input Source-A Table)	0-20	FIRE & SMOKE
532	DIGITAL INPUT G POLARITY	On (1), Off (0)	Off (0)
533	DIGITAL INPUT G ACTION	0-3	1
534	DIGITAL INPUT G ACTIVATION	0-3	3
535	DIGITAL INPUT G DELAY	0 -999s	5
536	<b>DIGITAL INPUT H SOURCE</b> (As Per Input Source-A Table)	0-20	Door Open
537	DIGITAL INPUT H POLARITY	On (1), Off (0)	Off (0)
538	DIGITAL INPUT H ACTION	0-3	1
539	DIGITAL INPUT H ACTIVATION	0-3	3
540	DIGITAL INPUT H DELAY	0 -999s	10s

541	<b>DIGITAL INPUT I SOURCE</b> (As Per Input Source-A Table)	0-20	Lamp Test
542	DIGITAL INPUT I POLARITY	On (1), Off (0)	Off (0)
543	DIGITAL INPUT I ACTION	0-3	1
544	DIGITAL INPUT I ACTIVATION	0-3	3
545	DIGITAL INPUT I DELAY	0 -999s	1s
546	<b>DIGITAL INPUT J SOURCE</b> (As Per Input Source-A Table)	0-20	V-Belt Fail
547	DIGITAL INPUT J POLARITY	On (1), Off (0)	Off (0)
548	DIGITAL INPUT J ACTION	0-3	1
549	DIGITAL INPUT J ACTIVATION	0-3	2
550	DIGITAL INPUT J DELAY	0 -999s	10s
551	<b>DIGITAL INPUT K SOURCE</b> (As Per Input Source-A Table)	0-20	Emergency
552	DIGITAL INPUT K POLARITY	On (1), Off (0)	Off (0)
553	DIGITAL INPUT K ACTION	0-3	1
554	DIGITAL INPUT K ACTIVATION	0-3	3
555	DIGITAL INPUT K DELAY	0 -999s	2s

### ***Configuration Parameters – Analogue Inputs (Page 6)***

<b><i>INDEX</i></b>	<b><i>SETTABLE PARAMETER</i></b>	<b><i>RANGE</i></b>	<b><i>DEFAULT</i></b>
601	ANALOGUE INPUT A SENSOR TYPE	LLOP	LLOP
602	ANALOGUE INPUT A SENSOR SELECTION	Eicher ,User	Eicher
603	ANALOGUE INPUT A LOW OIL PRESSURE ENABLE	On (1), Off (0)	On (1)
604	ANALOGUE INPUT A LOW OIL PRESSURE TRIP POINT	0-10	1.0
605	LLOP WARNING ENABLE	On (1), Off (0)	Off (0)

606	LLOP WARNING THRESHOLD	0-10	1.0
607	ANALOGUE INPUT A LOW OIL PRESSURE OPEN ENABLE	On (1), Off (0)	Off (0)
608	ANALOGUE INPUT A OIL PRESSURE DELAY	0-99s	10s
609-628	RESISITANCE R1 TO R10	0-1000E	AS PER SPECS. SHEET
609-628	PRESSURE P1 TO P10	0-10 BAR	AS PER SPECS. SHEET
629	ANALOG SENSOR TYPE	HET	HET
630	ANALOGUE INPUT B SENSOR SELECTION	WC 0 AC-1 1 AC-2 2 User Defined	WC
631	ANALOGUE INPUT B TEMPERATURE ENABLE	On (1), Off (0)	On (1)
632	ANALOGUE INPUT B TEMPERATURE TRIP POINT	50-200	120
633	ANALOGUE INPUT B TEMPERATURE OPEN ENABLE	On (1), Off (0)	Off (0)
634	ANALOGUE INPUT B TEMPERATURE DELAY	0-99s	10s
635-654	RESISITANCE R1 TO R10	0-1000E	AS PER SPECS. SHEET
635-654	TEMPERATURE T1 TO T10	0-300 °	AS PER SPECS. SHEET
655	ANALOGUE INPUT C SENSOR TYPE	LFL	LFL
656	ANALOGUE INPUT C SENSOR SELECTION	0-1000Ω ,USER DEFINED	10-200Ω
657	ANALOGUE INPUT C SENSOR LFL ENABLE	On (1), Off (0)	On (1)
658	ANALOGUE INPUT C SENSOR LFL TRIP POINT	0-100	10%
659	ANALOGUE INPUT C SENSOR OPEN ENABLE	On (1), Off (0)	Off (0)
660	LOW FUEL LEVEL WARNING ENABLE/DISABLE	On (1), Off (0)	On (1)
661	LOW FUEL LEVEL WARNING THRESHOLD	0-100	20
662	FUEL TANK CAPACITY (LITRE)	0-1000	0180
663	FUEL THEFT ALARM ENABLE	On (1), Off (0)	Off (0)
664	FUEL THEFT THRESHOLD %	0-99 PER	50
665	FUEL CONSUMPTION (LTR/HR)	0 - 99.9	2.5
666	ANALOGUE INPUT C SENSOR LFL DELAY	0-99s	10s
667-686	RESISTANCE	0-1000 E	AS PER SPECS. SHEET
668-686	FUEL LEVEL	0-100 %	AS PER SPECS. SHEET

### **Configuration Parameters – Output (Page 7)**

<b>INDEX</b>	<b>SETTABLE PARAMETER</b>	<b>RANGE</b>	<b>DEFAULT</b>
701	DIGITAL OUTPUT A SOURCE ( Table Output Source -A)	MCB	MCB Close

702	DIGITAL OUTPUT A POLARITY	On (1), Off (0)	Energize
703	DIGITAL OUTPUT B ( Table Output Source -A)	GCB	GCB Close
704	DIGITAL OUTPUT B POLARITY	On (1), Off (0)	Energize
705	DIGITAL OUTPUT C ( Table Output Source -A)	BUZZER	BUZZER
706	DIGITAL OUTPUT C POLARITY	On (1), Off (0)	Energize
707	DIGITAL OUTPUT D SOURCE ( Table Output Source -A)	OVER RPM	Choke
708	DIGITAL OUTPUT D POLARITY	On (1), Off (0)	Energize
709	DIGITAL OUTPUT E SOURCE ( Table Output Source -A)	FAIL TO START	FAIL TO START
710	DIGITAL OUTPUT E POLARITY	On (1), Off (0)	Energize
711	DIGITAL OUTPUT F SOURCE ( Table Output Source -A)	START	START
712	DIGITAL OUTPUT F POLARITY	On (1), Off (0)	Energize
713	DIGITAL OUTPUT G SOURCE ( Table Output Source -A)	ENERGISE TO STOP	ENERGISE TO STOP
714	DIGITAL OUTPUT G POLARITY	On (1), Off (0)	Energize

### **Configuration Parameters – (Page 8)**

801	LAMP TEST ENABLE	On(1) ,Off (0)	On(1)
802	POWER SAVER MODE ENABLE	On(1) ,Off (0)	Off (0)
803	DISPLAY CONTRAST (%)	85%	85%
804	Mains Display Page	00- 127	127
805	RS485 COMM EN	On(1) ,Off (0)	Off (0)

### **Configuration Parameters – Maintenance (Page 9)**

<b>INDEX</b>	<b>SETTABLE PARAMETER</b>	<b>RANGE</b>	<b>DEFAULT</b>
901	OIL MAINTENANCE ENABLE	On(1) ,Off (0)	On (1)
902	OIL SERVICE DUE ACTION	0-3	2
903	OIL MAINTENANCE ALARM HOURS	0-9999h	1000
904	ALARM DUE DATE	1-31	1
905	ALARM DUE MONTH	Jan – Dec	
906	ALARM DUE YEAR	2015 -2075	2019
907	POWER ON DG MODE	0-2	1
908	BTS BATTERY MONITORING ENABLE	On(1) ,Off (0)	Off (0)
909	LOW BATTERY THRESHOLD	40-60	47
910	LOW BATTERY MONITORING DELAY	0-999	10
911	HIGH BATTERY MONITORING	On(1) ,Off (0)	Off (0)
912	HIGH BATTERY THRESHOLD	40-60	56
913	HIGH BATTERY MONITORING DELAY	0-999	10
914	ENGINE MAX RUN TIME	0-999 min	0
915	ENGINE REST TIME	0-999 min	0

916	MODBUS ID	1-247	1
917	MODBUS BAUD RATE	9600	9600
918	MODBUS PARITY BIT	NONE	NONE
919	CT POSITION	CT ON LOAD (0) CT ON DG(1)	Off (0)
920	ROTARY SWITCH ENABLE	On(1) ,Off (0)	Off (0)

### **Configuration Parameters – Maintenance (Page 10)**

<b>INDEX</b>	<b>SETTABLE PARAMETER</b>	<b>RANGE</b>	<b>DEFAULT</b>
1001	Enable Scheduler	On (1), Off (0)	Off (0)
1002	Schedule Run Load	On(1) ,Off (0)	On(0)
1003	Scheduler Period	Week (0) , Month (1)	Week
1004	Scheduler 1 Start Time	0	10:00
1005	Scheduler 1 Start Day	1-7	Monday
1006	Scheduler 1 Start Week	1-4 , L	1
1007	Scheduler 1 Stop Time	0	14:00
1008	Scheduler 2 Start Time	0	10:00
1009	Scheduler 2 Start Day	1-7	Monday
1010	Scheduler 2 Start Week	1-4 , L	1
1011	Scheduler 2 Stop Time	0	14:00
1012	Scheduler 3 Start Time	0	10:00
1013	Scheduler 3 Start Day	1-7	Monday
1014	Scheduler 3 Start Week	1-4 , L	1
1015	Scheduler 3 Stop Time	0	14:00
1016	Scheduler 4 Start Time	0	10:00
1017	Scheduler 4 Start Day	1-7	Monday
1018	Scheduler 4 Start Week	1-4 , L	1
1019	Scheduler 4 Stop Time	0	14:00
1020	Scheduler 5 Start Time	0	10:00
1021	Scheduler 5 Start Day	1-7	Monday
1022	Scheduler 5 Start Week	1-4 , L	1
1023	Scheduler 5 Stop Time	0	14:00

1024	Scheduler 6 Start Time	0	10:00
1025	Scheduler 6 Start Day	1-7	Monday
1026	Scheduler 6 Start Week	1-4 , L	1
1027	Scheduler 6 Stop Time	0	14:00
1028	Scheduler 7 Start Time	0	10:00
1029	Scheduler 7 Start Day	1-7	Monday
1030	Scheduler 7 Start Week	1-4 , L	1
1031	Scheduler 7 Stop Time	0	14:00
1032	Scheduler 8 Start Time	0	10:00
1033	Scheduler 8 Start Day	1-7	Monday
1034	Scheduler 8 Start Week	1-4 , L	1
1035	Scheduler 8 Stop Time	0	14:00
1036	RTC DATE DD:MM:YY		
1037	RTC TIME HH:MM:SS		
1038	RTC DAY	MONDAY to SUNDAY	
1039	SERVICE HR CLEAR	YES/NO	YES

***AC SYSTEM***

<b><i>AC SYSTEM</i></b>	
<b>Index</b>	<b>Type</b>
0	3-Phase DG, 3-Phase Mains
1	1- Phase DG , 1-Phase Mains
2	3-Phase DG, 1-Phase Mains
3	1-Phase DG, 3-Phase Mains

***DIGITAL OUTPUT POLARITY***

<b><i>OUTPUT POLARITY</i></b>	
<b>Index</b>	<b>Polarity</b>
0	De-Energies
1	Energies

***DIGITAL INPUT POLARITY***

<b><i>DIGITAL INPUT POLARITY</i></b>	
<b>Index</b>	<b>Polarity</b>
0	Close to Activate
1	Open to Activate

***ACTION***

<b><i>ACTION</i></b>	
<b>Index</b>	<b>Action</b>
0	Electrical Trip
1	Shutdown
2	Alarm
3	NONE

## **ACTIVATION**

<b><i>ACTION</i></b>	
<b>Index</b>	<b>Activation</b>
0	Never
1	From Engine Start
2	From Monitoring
3	Always

## **Auto Load Transfer**

<b><i>ACTION</i></b>	
<b>Index</b>	<b>Description</b>
0	Manual
1	Manual -DG Priority
2	Semi Auto
3	As per EDGC-6600R Manual Controller

## ***INPUT SOURCES - A***

0	LLOP
1	HET
2	LFL
3	HFL
4	RWL
5	CANOPY TEMPERATURE
6	EMERGENCY
7	Fire and Smoke
8	Door Open
9	Remote Mode
10	GCB Latch
11	MCB Latch
12	Simulate Start Key
13	Simulate Stop Key
14	Simulate Auto Key
15	Simulate Mains
16	Close Mains & Open Genset
17	Close Genset & Open Mains
18	Lamp Test
19	Alarm Reset
20	V Belt Fail
21	Mains Charge fail
22	BTS Temp High












## OUTPUT SOURCES - A

0	Energise to Start
1	Crank Relay
2	Energise To Stop
3	MCB Open
4	GCB Open
5	MCB Close
6	GCB Close
7	Buzzer Relay
8	Choke Relay
9	Battery Over Voltage Warning
10	Battery Under Voltage Warning
11	Combined Electrical Trip
12	Combined Shutdown
13	Emergency Stop
14	Fail to Start
15	Fail to Stop
16	KW Overload
17	Over Load Current
18	Common Alarm
19	Digital Input A
20	Digital Input B
21	Digital Input C
22	Digital Input D
23	Digital Input E
24	Digital Input F
25	Digital Input G
26	Digital Input H
27	Digital Input I
28	Digital Input J
29	Digital Input K
30	Speed Overshoot
31	DG Under Frequency Shutdown
32	DG Over Frequency shutdown
33	DG Under Speed
34	DG Over Speed
35	Water Temperature Open Circuit
36	Oil Pressure Open Circuit
37	Fuel Open Circuit
38	Water Temperature Shutdown
39	Oil Pressure Shutdown
40	Fuel Level Shutdown
41	Combined Eb Fail
42	Mains Over Frequency
43	Mains Under Frequency
44	Mains Over Voltage
45	Mains Under Voltage
46	Charging Alternator Shutdown
47	Charging Alternator Warning
48	DG Under Voltage
49	DG Over Voltage
50	Auto Mode
51	Manual Mode
52	Stop Mode
53	BTS Mode
54	HI/LO Frequency Shutdown
55	Smoke Limiting





## **INSTRUMENTATION ICONS**

When viewing instrumentation pages, an icon is displayed in the **Inst. Icon** section to indicate what section is currently being displayed.

<b>Icon</b>	<b>Details</b>
	The default home page which displays generator voltage and mains voltage
	Generator voltage and frequency instrumentation screen
	Mains voltage and frequency instrumentation screen
	Load power instrumentation screen
	Engine speed instrumentation screen
	Battery voltage instrumentation screen
	Oil pressure instrumentation screen
	Coolant temperature instrumentation screen
	Current time held in the unit

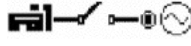

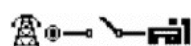
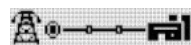
## **MODE ICON**

An icon is displayed in the **Mode Icon** section to indicate the mode the controller is currently in.

<b>Icon</b>	<b>Details</b>
	Auto Mode.
	Manual Mode
	Appears when the unit is in the front panel editor.
	Remote Mode

## **LOAD SWITCHING ICON**








An icon is displayed in the **Load Switching Icon** section to indicate the status of the Controller.

<b>Icon</b>	<b>Details</b>
	The generator breaker is open.
	The generator breaker is closed.
	The mains breaker is open.
	The mains breaker is closed.

## **WARNING ALARM ICONS**



Warnings are **non-critical alarm conditions** and do not affect the operation of the generator system, they serve to draw the operators attention to an undesirable condition.

By default, warning alarms are self-resetting when the fault condition is removed.

<b>Icon</b>	<b>Fault</b>	<b>Description</b>
	<b>Low Fuel Level</b>	The level detected by the fuel level sensor is below the low fuel level pre-set pre-alarm setting.
	<b>Battery Under Voltage</b>	The DC supply has fallen below or risen above the low volts pre-set pre-alarm setting.
	<b>Battery Over Voltage</b>	The DC supply has risen above the high volts pre-set pre-alarm setting.
	<b>Generator Under Voltage</b>	The generator output voltage has fallen below the pre-set pre-alarm setting after the Safety On timer has expired.
	<b>Generator Over Voltage</b>	The generator output voltage has risen above the pre-set pre-alarm setting.
	<b>Generator Under Frequency</b>	The generator output frequency has fallen below the pre-set pre- alarm setting after the Safety On timer has expired.
	<b>Generator Over Frequency</b>	The generator output frequency has risen above the pre-set pre- alarm setting.









## **ELECTRICAL TRIP ALARM ICONS**



Electrical trips are latching and stop the Generator but in a controlled manner. On initiation of the electrical trip condition the module de-energizes the '**Genset Contactor Output**' to remove the load from the generator. Once this has occurred the module starts the Cooling timer and allows the engine to cool off-load before shutting down the engine.

<b>Icon</b>	<b>Fault</b>	<b>Description</b>
	<b>Over Current</b>	The measured current has risen above the configured trip level for a configured duration.
	<b>kW Overload</b>	The measured kW has risen above the configured trip level for a configured duration.

## **SHUTDOWN ALARM ICONS**

Shutdown alarms are latching and immediately stop the Generator. On initiation of the shutdown Condition the module de-energizes the '**Genset Contactor Output**' to remove, the load from the generator. Once this has occurred, the module shut down the generator immediately.

Icon	Fault	Description
	<b>Low Oil Pressure</b>	The module detects that the engine oil pressure has fallen below the low oil pressure pre-alarm setting level after the Safety On timer has expired.
	<b>Engine High Temperature</b>	The module detects that the engine coolant temperature has exceeded the high engine temperature pre-alarm setting level after the Safety On timer has expired.
	<b>Under Speed</b>	The engine speed has fallen below the under speed pre alarm setting
	<b>Over Speed</b>	The engine speed has risen above the over speed pre alarm setting
	<b>Charge Failure</b>	The auxiliary charge alternator voltage is low as measured from the W/L terminal.
	<b>Low Fuel Level</b>	The level detected by the fuel level sensor is below the low fuel level pre-set alarm setting.
	<b>Generator Under Voltage</b>	The generator output voltage has fallen below the pre-set alarm setting. After the Safety On timer has expired.
	<b>Generator Over Voltage</b>	The generator output voltage has risen above the pre-set alarm setting.

Icon	Fault	Description
	<b>Generator Under Frequency</b>	The generator output frequency has fallen below the pre-set alarm setting after the Safety On timer has expired.
	<b>Generator Over Frequency</b>	The generator output frequency has risen above the pre-set alarm setting.

## **USB CONNECTION**

The USB port is provided to give a simple means of connection between a PC and the controller. Additionally, the various operating parameters (such as output volts, oil pressure, etc.) of the remote generator are available to be viewed or changed.

To connect a module to a PC by USB, the following items are required:

- Configuration PC Software



- USB cable Type A OR Type B.  
(This is the same cable as often used between a PC And a USB printer)

## **DO'S AND DON'T**

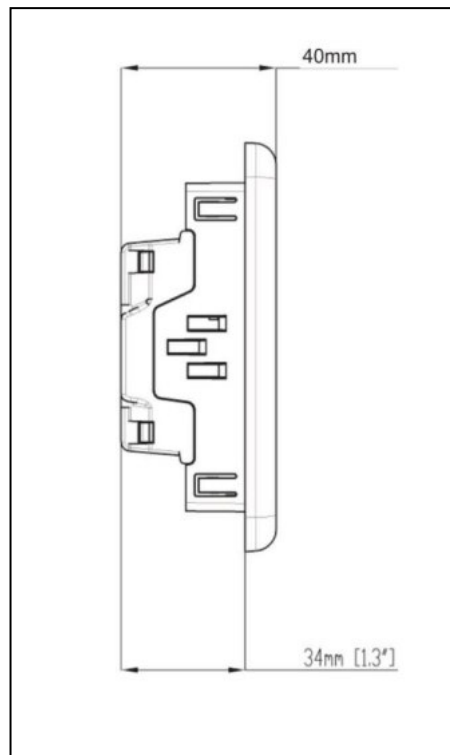
- Before connecting any wire to the back terminal please ensure that wire must be inserted at proper terminal.
- after connecting all the wire to the back connector, once again match all the wires with the back terminal sticker.
- don't miss match any wire in the back green terminal.
- For servicing purpose take out the green female connector very carefully by entering uniform pressure on the connector from all sides.
- Check all mechanical parts are fitted correctly and that all electrical connections (including earths) are sound.
- The unit DC supply is fused and connected to the battery and that it is of the correct polarity.

## **Dimension and Mounting**

-

Dimension - 138.50mm x 113mm X 40mm

Panel Cut Out - 118mm x 92mm



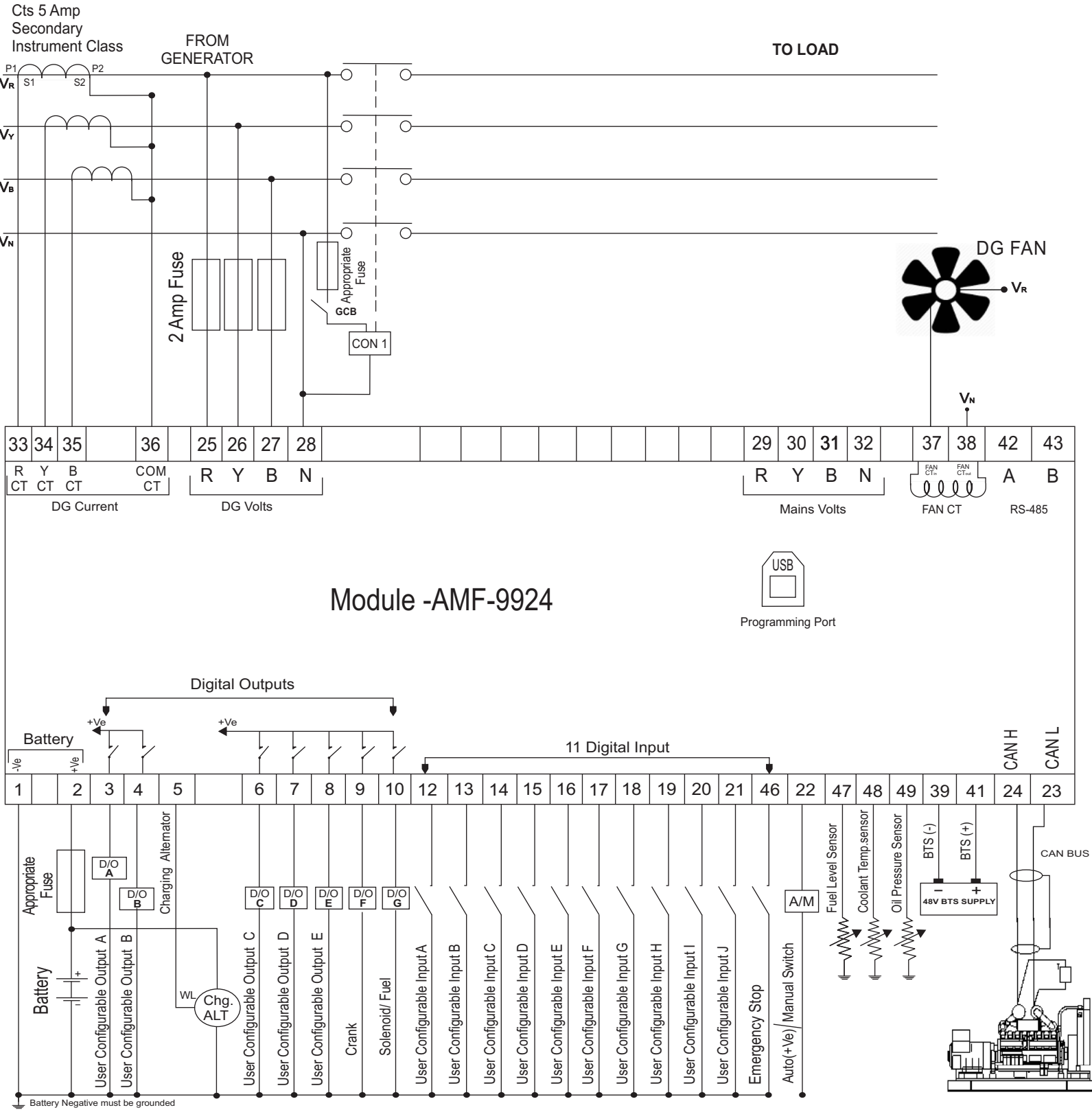
## **GENERAL CHARACTERISTICS**

Rating /Phase /Class	3X230V , 50 Hz ,1Ph/3Ph
Minimum Supply Voltage	8V
Maximum Supply Voltage	32V
AC Current Input	-/5A 50/60Hz,1-3Ph
Display Type	Graphical LCD display
Accuracy	Class 1.0
Resolution	1V
Frequency Range	45 Hz to 55 Hz

## Terminal Description -

<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	DC Supply Input (-Ve)	26	Generator L2 (V) Voltage Monitoring
2	DC Supply Input (+Ve)	27	Generator L3 (W) Voltage Monitoring
3	Digital Output A	28	Generator Neutral (N) Input
4	Digital Output B	29	Mains L1 (R) Voltage Monitoring
5	Charge Alt. / Excite	30	Mains L2 (S) Voltage Monitoring
6	Digital Output C	31	Mains L3 (T) Voltage Monitoring
7	Digital Output D	32	Mains Neutral (N) Input
8	Digital Output E	33	R-CT
9	Crank	34	Y-CT
10	Solenoid	35	B-CT
11	BLANK	36	CT Common
12	Digital Input A	37	FAN CT IN
13	Digital Input B	38	FAN CT OUT
14	Digital Input C	39	BTS (-)
15	Digital Input D	40	Blank
16	Digital Input E	41	BTS(+)
17	Digital Input F	42	RS-485 A
18	Digital Input G	43	RS-485 B
19	Digital Input H	44	Blank
20	Digital Input I	45	Blank
21	Digital Input J	46	Emergency
22	Auto / Manual	47	LFL_S
23	CAN L	48	HET_S
24	CAN H	49	LLOP_S
25	Generator L1 (U) Voltage Monitoring		

# WIRING DIAGRAM FOR USING CONTROLLER IN MANUAL MODE



**Note 1** -These ground Connections must be on the Engine block ,and must be to the Sensor Bodies.

**Note 2** -It is recommended that the Generator and Mains Switching devices are mechanically and Electrically Interlocked.

## DIMENSIONS

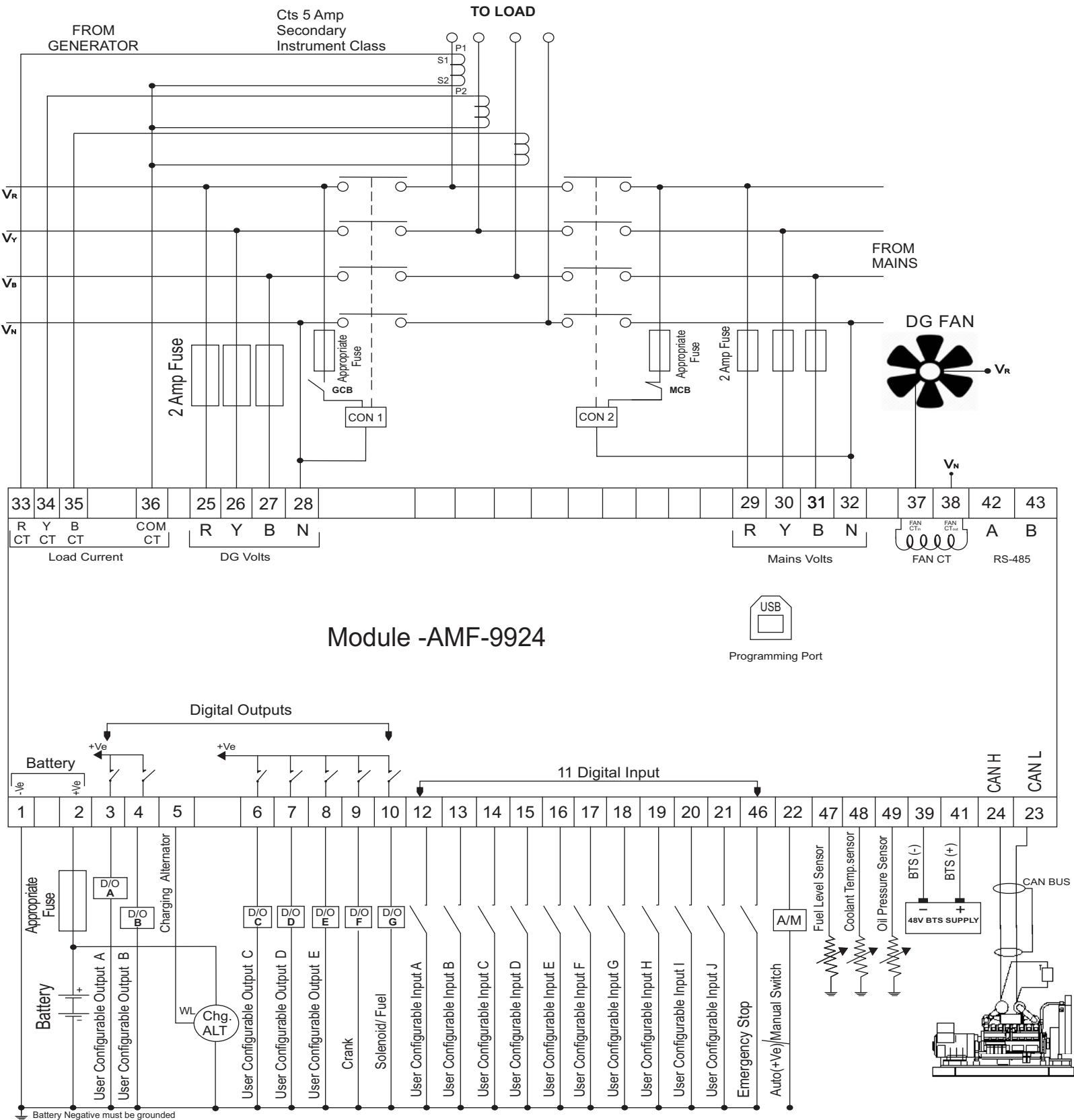
138.50mm X 113mm X 40mm

## PANEL CUT OUT

118mm X 92mm



# WIRING DIAGRAM FOR USING CONTROLLER IN AMF MODE



Note 1 -These ground Connections must be on the Engine block ,and must be to the Sensor Bodies.

Note 2 -It is recommended that the Generator and Mains Switching devices are mechanically and Electrically Interlocked.

## DIMENSIONS







138.50mm X 113mm X 40mm

## PANEL CUT OUT

118mm X 92mm

## Monitoring Mode

In monitoring mode the screen will scroll automatically after a predefined time or one can use the "Navigation UP/DOWN Keys" to scroll/browse the screens.

Display Version	Generator & Mains Voltage (L-N)
	
<p><b>Generator &amp; Mains Voltage (L-L)</b></p>	<p><b>Generator Voltage ( L-N )</b></p>
	
<p><b>Generator Voltage ( L-L )</b></p>	<p><b>Generator Frequency</b></p>
	

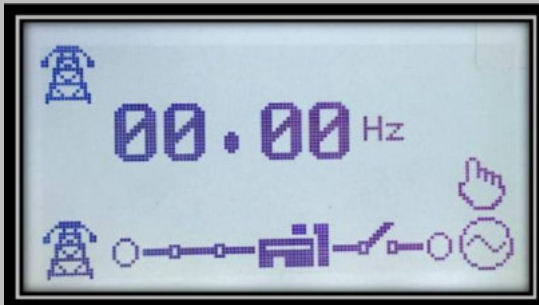
**Mains Voltage ( L-N )**



**Mains Voltage ( L-L )**



**Mains Frequency**



**Load Current**



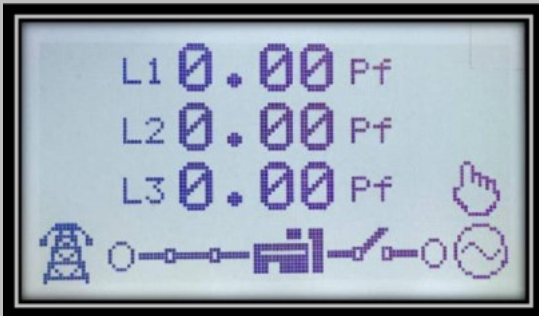
**Active Power**



**Apparent Power**



**Power Factor**



**Combined Active Power, Apparent Power & Avg. Power Factor**



**DG kWh & Eb kWh**



**Battery and BTS Voltage**



**Charging Alternator**



**Oil Pressure**



IF Conventional Selected then "Temp.

IF CAN Selected then "Temperature"



Fuel Level



DG Run Hour



Mains Run Hour



Service Hour





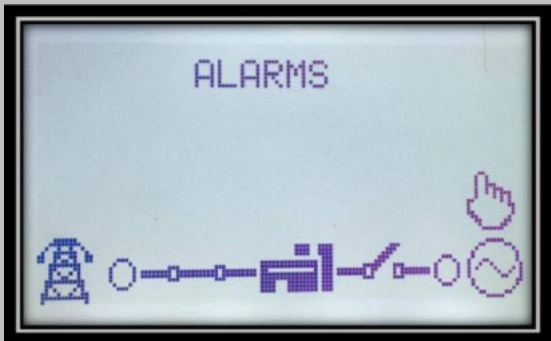
**Engine Speed**



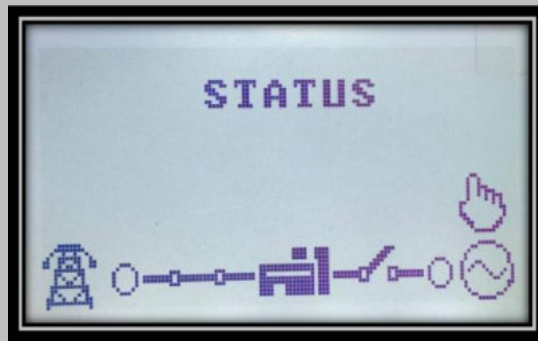
**Communication ID**



**Alarm**



**Status**



**Real Time Clock**



**Enertrak**

IT-3, EPIP RIICO Industrial Area Sitapura, Jaipur (Raj.) -302022

Customer Support: - Email - [raj.enertrak@gmail.com](mailto:raj.enertrak@gmail.com)

Mobile No. - 8233000062