



PRESENTATION ON

"AMF CONTROL PANEL WITH BPC927V4 - OPERATING POCEDURE"



B) AUTO MODE:

In this mode DG set operation is automatically controlled.

In this mode, if mains is present & is within the pre-set limits, then 3PC927V4 energizes the MAINS CONTACTOR. The BPC927V4 led lamps & L1, L2 shows the relevant status.

The moment mains goes out of it's pre-set limit or it completely goes out, then after the START DELAY, the BPC927V4 gives the start command to the DG set. After built-up of AC voltage, Frequency & laps of RUN-UP & WARM-UP time, it automatically energizes the GENSET contactor. BPC927V4'S LED LAMPS & L3, L4 will shows the relevant status.

If any abnormality happens , then immediately BPC927V4 stops the engine as well as trips the GENSET CONTACTOR giving AUDIO-VISUAL alarm. This AUDIO-VISUAL alarm helps the operator to detect & take relevant restoration action. After rectifying the fault , user can reset the relevant fault on BPC927V4.

If mains resumes , then BPC927V4 transfers the load back to MAINS after it's restoration , load transfer time.

Now, BPC927V4 will take the DG set to COOL DOWN mode. After pre-set cool down time, it shuts down the DG set while mains continues to feed the load. Further BPC927V4 continuously monitors the mains so that DG set can be taken into operation in the event of mains failure.

C) TEST MODE:

In this mode of operation , DG set can be started on pre-set time intervals for pre-set time period so that healthiness of the DG set as well as entire system can be checked. In this mode BPC927V4 does not energizes the power contactors so that further power circuit remains unaffected & intact as per use .

This mode is very useful, where DG set back up power is very necessary, mains failure are least & most of the time DG sets are in standstill conditions.

Apart from this BPC927V4 has a internal "FAULT HISTORY, OPERATING PARAMETER LOG & FUEL LOG". Same can be monitored as & when required by the user.



- **OPERATION:**

The entire system is designed in such a way that it is most user friendly & easy to operate & maintain.

All the engine sensors & protection switches are interfaced to AMF control panel i.e. BPC927V4. The BPC927V4 is a micro-processor based genset cum AMF controller. The BPC927V4 monitors & protects the DG set against abnormal conditions. It also controls the basic functions like START , STOP , HOOTER, CONTACTOR CONTROL etc.

The AMF control panel has three modes of operation.

A) MANUAL MODE:

This mode is specifically provided so that each & every operation (i.e. except DG Protection System) is being controlled manually.

In this mode , engine can be started & stopped manually even in presence or absence of MAINS supply. By pressing START push button of BPC927V4 once or by pressing STOP push button once , the DG set can be started or stopped depending on the user requirement.

Once the DG set is started , BPC927V4 shows all ENGINE & ALTERNATOR parameters. After built-up of AC voltage, Frequency & laps of RUN- JP & WARM-UP time, user can switch ON the GENSET contactor by pressing GENSET CONTACTOR push button of BPC927V4. BPC927V4'S LED LAMPS & L3, L4 will shows the relevant status.

If any abnormality happens , then immediately BPC927V4 stops the engine as well as trips the GENSET CONTACTOR giving AUDIO-VISUAL alarm. This AUDIO-VISUAL alarm helps the operator to detect & take relevant restoration action. After rectifying the fault , user can reset the relevant fault on BPC927V4 & then can start the DG set in manual mode.



10	AC	GENSET POWER CONTACTOR	MOUNTING PLATE	IT MAKES & BREAKS THE GENSET POWER CIRCUIT DEPENDING ON THE AVAILABILITY OF MAINS , OPERATION LOGIC, SEQUENCE ETC
11	LC	MAINS POWER CONTACTOR	MOUNTING PLATE	IT MAKES & BREAKS THE MAINS POWER CIRCUIT DEPENDING ON THE AVAILABILITY OF MAINS , OPERATION LOGIC, SEQUENCE ETC
12	CT1-3	CURRENT TRANSFORME RS	MOUNTING PLATE	IT HELPS TO REDUCE THE AMPLITUDE OF THE MEASURANT i.e. LOAD CURRENT, SO THAT SENSING AS WELL AS MEASUREMENT BECOMES SIMPLE.
13	F1-6	POWER FUSES	MOUNTING PLATE	THESE ARE THE SET OF HFC FUSES BEING USED TO PROTECT THE DG SET AS WELL AS MAINS & LOAD AGAINST OVERLOADING OR ANY OTHER ABNORMALITY
14	SBC	SMPS BATTERY CHARGER	MOUNTING PLATE	IT CONTINUOUSLY MONITORS & CHARGE THE DG BATTERY SET.
15	MCB1-14	MINIATURE CIRCUIT BREAKERS	MOUNTING PLATE	THESE PROTECTS THE AMF CONTROL PANEL AUXILIARY CIRCUIT AGAINST OVERCURRENT OR ANY OTHER ABNORMALITY.
16	SCU	SPEED CONTROL UNIT	MOUNTING PLATE	IT CONTROLS THE SPEED OF THE DG SET WITHIN THE GOVERNING RANGE.
17	STP	STOP RELAY	MOUNTING PLATE	IT PROVIDES THE +VE SIGNAL TO SCU SO THAT IT CAN GIVE DISCRETE SUPPLY TO IT'S ACTUATOR HENCE DG SET CAN START.



				OR IT PROVIDES THE +VE SIGNAL TO STOP SOLENOID SO THAT IT WILL MOVE THE FIP'S LEVEL TO STOP POSITION, HENCE DG SET WILL STOP.
18	STR	START RELAY	MOUNTING PLATE	IT PROVIDES THE +VE SIGNAL TO ELECTRIC STARTER SO THAT DG SET CAN START.
19	HTR	HOOTER RELAY	MOUNTING PLATE	IT CONTROLS THE DC SUPPLY TO HOOTER.
20	MCR	MAINS CONTACTOR RELAY	MOUNTING PLATE	IT CONTROLS SWITCHING ON & OFF OF MAINS POWER CONTACTOR. IT IS BEING CONTROLLED BY BPC927V4.
21	GCR	GENSET CONTACTOR RELAY	MOUNTING PLATE	IT CONTROLS SWITCHING ON & OFF OF GENSET POWER CONTACTOR. IT IS BEING CONTROLLED BY BPC927V4.
22	H	HOOTER	MOUNTING PLATE	IT PROVIDES AUDIBLE SOUND IN THE EVENT OF ABNORMAL CONDITION, HENCE THE OPERATOR CAN TAKE FURTHER COURSE OF ACTION FOR DG SET RESTORATION.
23	T1-19	CONTROL TERMINALS	MOUNTING PLATE	THESE ARE THE CONTROL TERMINALS USED FOR INTERFACING DG SET & IT'S ACCESSORIES TO AMF CONTROL PANEL.
24	STRE	START RELAY	ENGINE	IT IS BEING OPERATED BY "STR" RELAY. IT FURTHER CONTROLS SUPPLY TO ELECTRIC STARTER.
25	LOPS1-2	LOP SWITCH CUM SENSOR	ENGINE	IT IS A TRANSDUCER. IT GIVES THE ELECTRICAL SIGNAL FOR LUBE OIL PRESSURE MEASUREMENT & RELEVANT LOW PRESSURE SWITCHING.



26	HCTS1	WATER TEMP. SENSOR	ENGINE-WATER MANIFOLD	IT IS A TRANSDUCER. IT GIVES THE ELECTRICAL SIGNAL FOR WATER TEMP. MEASUREMENT.
27	HCTS2	WATER TEMP. SWITCH	ENGINE-WATER MANIFOLD	IT IS A TRANSDUCER. IT GIVES THE ELECTRICAL SIGNAL FOR HIGH WATER TEMP. SWITCHING.
28	HLOTS	LUB OIL TEMP. SENSOR	ENGINE	IT IS A TRANSDUCER. IT GIVES THE ELECTRICAL SIGNAL FOR LUBE OIL TEMP. MEASUREMENT.
29	RWLS	RADIATOR WATER LEVEL SENSOR	RADIATOR	IT IS A TRANSDUCER. IT GIVES THE ELECTRICAL SIGNAL FOR LOW RADIATOR WATER LEVEL SENSING.
30	FLS	FUEL LEVEL SENSOR	FUEL TANK	IT IS A TRANSDUCER. IT GIVES THE ELECTRICAL SIGNAL FOR FUEL LEVEL SENSING.
31	EMG	EMERGENCY STOP	ACOUSTIC ENCLOSURE EXTERIOR	IT IS A SWITCH & SAME IS TO BE PRESSED FOR STOPPING THE DG SET IN CASE OF EMERGENCY.
32	ACTUATOR	ACTUATOR	ENGINE FUEL PUMP	IT TAKES THE INPUT DISCRETE SIGNAL FROM "SCU". IT CONTROLS THE FUEL & HENCE THE SPEED / FREQUENCY OF THE DG SET.
33	MPU	MAGNETIC PICK UP	ENGINE FLY WHEEL	IT MEASURES THE ENGINE SPEED W.R.T. FLY WHEEL TEETHS & GIVES CORRESPONDING INPUT SIGNAL TO "SCU" SO THAT SPEED CAN BE CONTROLLED / MAINTAINED WITHIN THE SPECIFIED BAND



OPERATING PROCEDURE

- **PRINCIPLE:**

The AMF Control panel is designed in way to provide the DG set power automatically in the event of MAINS failure or MAINS is not within the operational limits.

- **COMPONENT LIST & FUNCTIONS:**

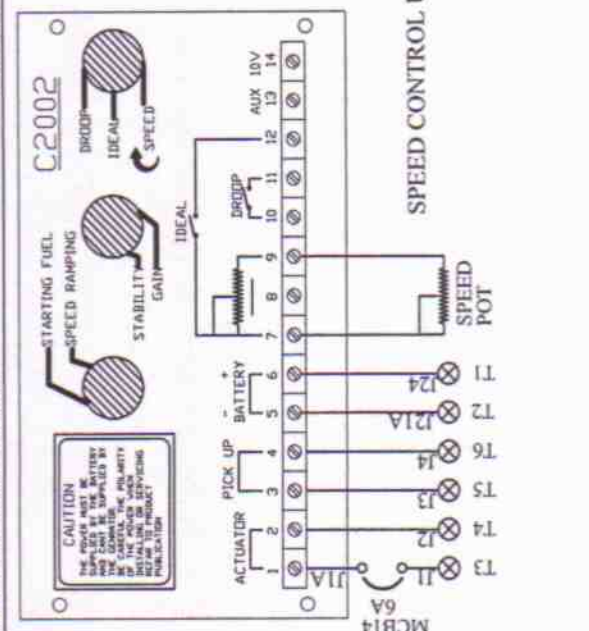
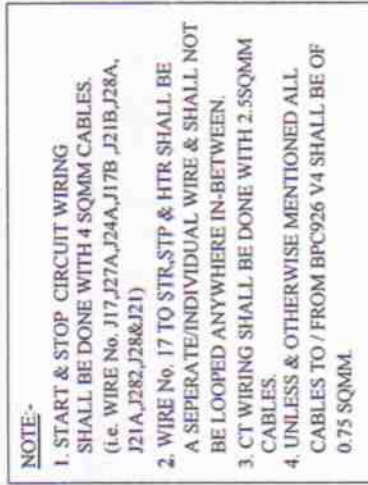
Sr. No.	NOMEN	DESCRIPTION	LOCATION	FUNCTION
1	L1	EB SUPPLY ON	FRONT DOOR	INDICATES THE AVAILABILITY OF EB SUPPLY
2	L2	LOAD ON EB	FRONT DOOR	INDICATES LOAD IS BEING SUPPLIED BY EB
3	L3	SET RUNNING	FRONT DOOR	INDICATES THAT SET IS RUNNING
4	L4	LOAD ON SET	FRONT DOOR	INDICATES LOAD IS BEING SUPPLIED SET
5	L5	CHARGING ON	FRONT DOOR	INDICATES THAT BATTERY CHARGER IS CHARGING THE ENGINE BATTERY SET.
6	SS1	DG CONTROL ON/OFF	FRONT DOOR	IT CONTROLS THE DC SUPPLY TO AMF AUXILIARY / CONTROL CIRCUIT.
7	SS2	HOOTER ON/OFF SWITCH	FRONT DOOR	IT CONTROLS THE DC SUPPLY TO HOOTER & HENCE CAN BE USED TO MUTE THE HOOTER MANUALLY.
8	BPC927V4	BLISS POWER COMM	FRONT DOOR	IT IS A MICRO-PROCESSOR BASED GENSET CUM AMF CONTROLLER.
9	HR	HOUR METER	FRONT DOOR	IT IS NON-RESETABLE HOUR METER WHICH SHOWS THE CUMMULATIVE ENGINE RUNNING HOURS EVEN WHEN THE DG SET IS IN STAND-STILL CONDITION.



SYNOPSIS

This "**OPERATING PROCEDURE**" for AMF CONTROL PANEL is written, compiled & presented in a simple manner so that the end user will understand the operation of the AMF CONTROL PANEL thoroughly.

This will also help for ease of operation as well as for the trouble shooting & maintenance.

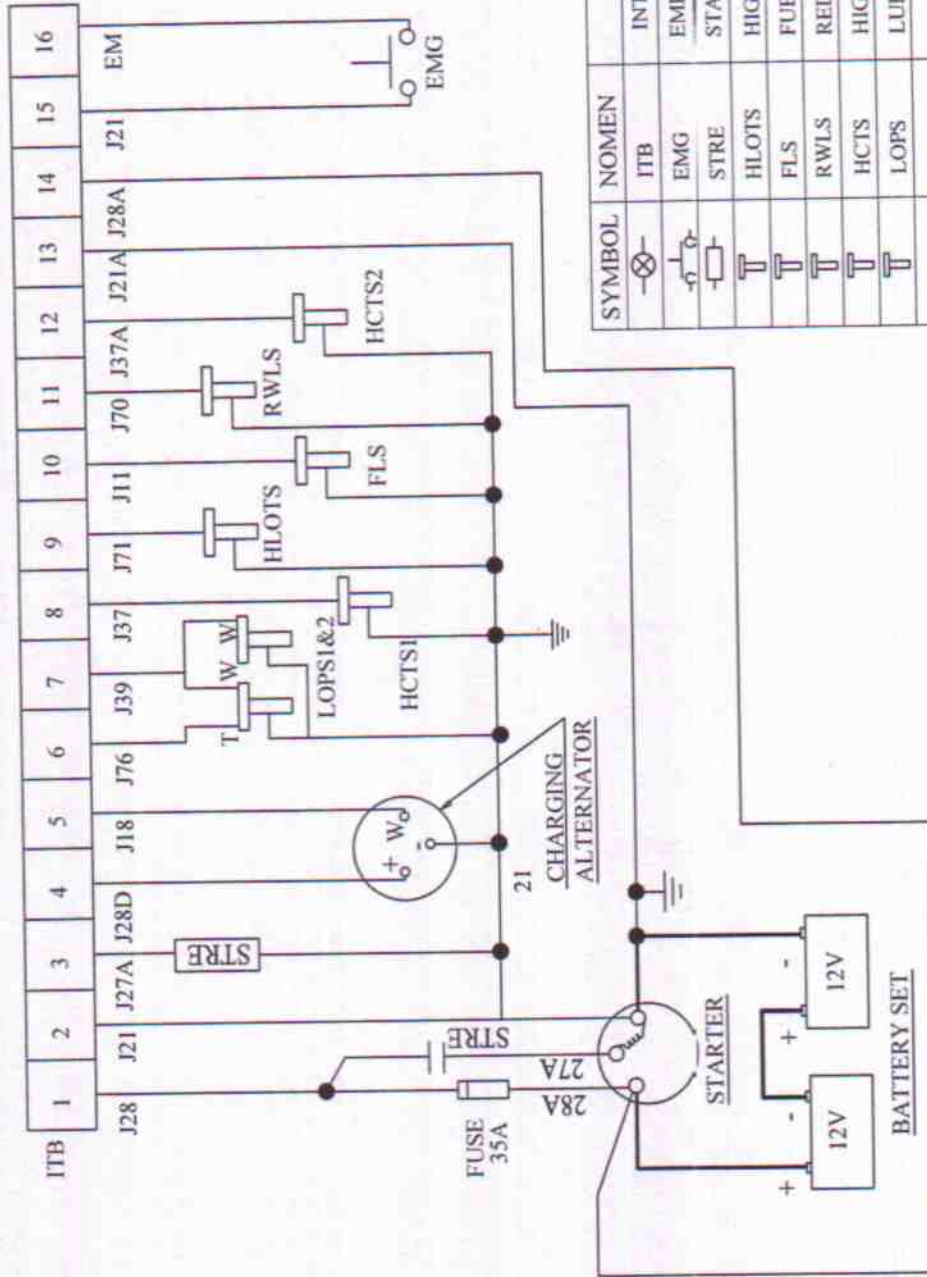
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SYMBOL	NOMEN	DESCRIPTION
		CONTACTOR/RELAY COIL
		AUXILIARY RELAY NO / NC
	H	HOOTER
	STR	STARTER RELAY
	STP	STOP RELAY
	HTR	COMMON FAULT T RELAY
	SS2	SELECTOR SWITCH FOR HOOTER ON/OFF
	MCB	MINIATURE CIRCUIT BREAKER
	T	TERMINAL (ENGINE CONNECTION)
	D1,D2,D3	DIODE 1PIV
	SS1	DG CONTROL SWITCH
	SCU	SPEED CONTROL UNIT
	F	FUSE 35AMP FITTED ON ENGINE

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MATERIAL SPECIFICATION	RAW MATERIAL SIZE	WEIGHT kg	
		RM	FIN.
			
		SCALE NTS	
CASTING/FAB REF.	USED ON	No.P.S.:	
		DRAWN	
380K-12VKK135IAZLD D.G. SET		S.D.N.	
		dt.20.4.10	dt.
TITLE: D.C. CIRCUIT DIAGRAM FOR AMF-3PH-180-380KVA		32505410R00/000	
KIRLOSKAR ELECTRIC COMPANY LTD. HUBLI-580030 (INDIA)		SHEET 2 OF 6	

[illegible]

ENGINE TERMINAL DETAILS



SYMBOL	NOMEN	DESCRIPTION
	ITB	INTERCONNECTION TERMINAL BOARD
	EMG	EMERGENCY STOP PUSH BUTTON
	STRE	STARTER RELAY
	HILOTS	HIGH LUBE OIL TEMPERATURE SENSOR
	FLS	FUEL LEVEL SENSOR
	RWLS	RADIATOR WATER LEVEL SENSOR
	HCTS	HIGH COOLANT TEMPERATURE SENSOR
	LOPS	LUBE OIL PRESSURE SWITCH

KIRLOSKAR		FORM No. 02 201 028 (ISSUE 6)	
THIS SUPERSEDES		AS PER DCH No.	
MATERIAL SPECIFICATION		RAW MATERIAL SIZE	
WEIGHT kg		FIN. FIN.	
No. P.S.:		SCALE NTS	
DRAWN		CHECKED	
S.D.N.		ETANDARD	
dt. 20.4.10		dt.	
380K-12VKK135IAZLD D.G. SET		32505410R00/000	
TITLE: ENGINE WIRING DIGRAM		FOR AMF-3PH-180-380KVA	
KIRLOSKAR ELECTRIC COMPANY LTD. HUBLI-580030 (INDIA)		SHEET 5 of 6	
REV.	ZONE	DCH No.	DATE
7	8	5	5
BRIEF RECORD		PRINTS ISSUED TO	
UNFUNCTIONED		GRAPH:	
AND THE PROPERTY OF KIRLOSKAR ELECTRIC CO. LTD.		REPRODUCING OF THESE IN ANY FORM IS TO BE DONE WITH THE SPECIFIC PERMISSION OF THE COMPANY.	
ANGLES		MACHINED TOL	
LINEAR DIMENSIONS		UP TO	
ABOVE		1000	
1000		2000	
± 0.2		± 0.5	
± 0.8		± 1.2	

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