

PROTIME^R



Mini-Futuro

For Single Phase Gen-Sets

Special Features

- Most Compact & Simplest Single Phase AMF Control
- Designed using latest Micro-controller technology
- MIMIC type of front fascia makes it easy to use, even for an unskilled person
- INDICATIONS for Mains ON, Gen-set ON, Load on Mains/Gen-set, CRANK ON, FUEL ON and all faults(Mains Fail, Low Lube Oil Pressure, Batt. Low, Set Fails to Start)
- Contactors not required for Gen-sets up to 5 KVA
- ANNUNCIATION with flasher & buzzer both; including ACCEPT, RESET & TEST facility.
- Facility for connection of external HOOTER.
- Design facilitates easy and quick installation
- Virtually MAINTENANCE FREE
- EXISTING non-AMF panels(standard panel) can be easily converted in to AMF panels using Mini-Futuro
- Load Changeover Works even in Manual Mode(when DC Supply is not given)
- Potential Free Contacts for all the faults for external integration(Optional)

INTRODUCTION

The Mini-Futuro is the only “AUTO MAINS FAILURE SOLUTION” for single phase Generator sets . Mini-futuro is designed using latest Micro - controller technology to achieve reliable and accurate START-STOP Operation of GEN-SET, AUTO LOAD CHANGE OVER from MAINS to GEN-SET & Vice versa and FAULT ANNUNCIATION for SAFETY of Gen-set. Mini-futuro is innovatively designed keeping user’s point of view in fore - front there by achieving reduced number of components, more reliability, very good accuracy & interlocks and excellent flexibility. Due to less number of components, major part of cost & time required for fabrication & interlocks and saved, thus making Mini-futuro economically viable to use it for 1-phase Gen-sets up to any capacity. **Mini futuro with inbuilt load changeover is available for capacity up to 5KVA.**

OPERATION

Mini- futuro works on terminal voltage of Battery i.e. 12V or 24V. It senses mains supply & gives starting pulses to Gen-Set starter (Start Solenoid) , when Mains Voltage(in-built) goes below the set limit. Mini futuro gives three attempts to start the Engine with ON & OFF Time intervals (Settable on front). If Engine dose not starts within three attempts, an alarm for “SET FAILS TO START” will come. If Engine starts, but Alternator dose not develop the voltage or it is not reaching to the panel (due to fuse fail or cable fault) “Alternator Fail” will come.

After Gen-set starts, the power is supplied to load from Gen-set. During Engine running period, if any fault on the Engine side occurs, Gen-set will be stopped automatically and fault is indicated by a respective fault LED & buzzer. Fault can be acknowledged by pressing ACCEPT push button. When fault is acknowledged the buzzer stops but the fault LED remains ON. After fault rectification & resetting the system the Gen. set will started once again.

When mains supply resumes, the load is changed-over to mains instantly, and the Engine also gets stop command through DG Stop Contacts after pre-decided idle run time (settable on front).

The Mini Futuro is designed in such a way that Manual Mode operation is not required. However for manual operation, the control supply is to be disconnected & Gen-set shall be started externally. The Load Change over will anyway happen without DC Supply .

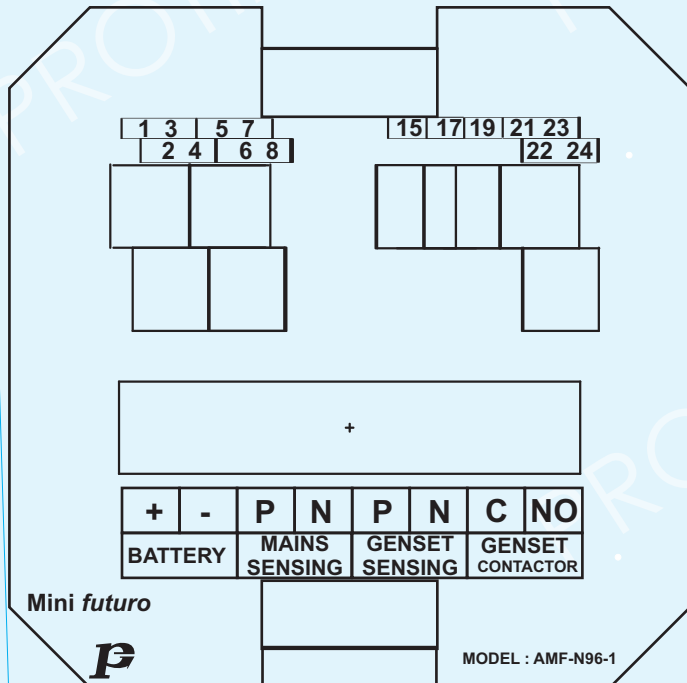
Technical Specification

1	Supply Voltage		12V / 24V	5	Parameters (Setting)	Mains	180-220V(Fac Set)	
2	Annunciation	Faults	Low Oil		Cranking(A)		On Time-2,4,6,8 sec	
			Set Fail To Start				Off Time-4,6,8,10 sec	
			Alternator Fail					
			Batt. Low				Stop solenoid(B)	15-30 sec
			Mains Fail					
			Low Fuel				Gen - Set	Voltage 180-220V(Fac-Set)
		Others	O / L					
			Hwt			Fuel Solenoid (LOGIC)	Start /Stop solenoid	
			Crank On			Idle run Time	1,2,4,8 Min	
			Fuel					
3	Control		Gen - Set On	6	Contacts	Input		
			Load On Gen-Set			Low Oil	C-NO or +12/24V DC	
			Mains ON			Low Fuel	C-NO or +12/24V DC	
		Load on Mains		Hwt		C-NO or +12/24V DC		
		Control ON		Spare-1		C-NO or +12/24V DC		
		Accept		Output				
		Reset		Crank		12V/24V @ 10A		
		Test		Fuel		12V / 24V @ 6A		
4	Mounting	Panel Cutout Depth	92mm(L) X 92mm(H)			Buzzer	C-NO	
			110mm				Fault	C-NO for all the faults
				7	Power	Input		
						Mains	1-Ph. 230V, 30A Max	
						Gen-Set	1-Ph. 230V, 30A Max	
						Battery	12V / 24V	
						Output		
					Load	1-Ph. 230V, 22A Max		

Note:- Design & specification may change to our continuous developmental efforts

Connection Details

DESIGN for 1-ph mini with external load c/o



MINI futuro MODEL : AMF-N96-1

CONNECTION DETAILS

1	3	5	7	15	17	19	21	23
2	4	6	8	22	24			

1,2 - LLOP I/P (C-NO)
3,4 - LFL I/P(C-NO)
5 - +12V CRANK O/P
6 - +12V START SOLENOID O/P
7,8 - HOOTER O/P(C-NO)
17,15 - Mains contact (C-NO)
17,19 - DG Contact (C-NO)
21,22 - Spare (C-NO)
23,24 - Spare (C-NO)

SETTING DETAILS

Idle Run Delay			STOP SOL. DELAY		FUEL SOLENOID LOGIC	
1	2	Min.	3	Sec.	4	LOGIC
1	1	1	3	0	0	START
1	0	5	0	30	1	STOP
0	1	3	1	15		
0	0	8				

Source:
12V DC
24V DC

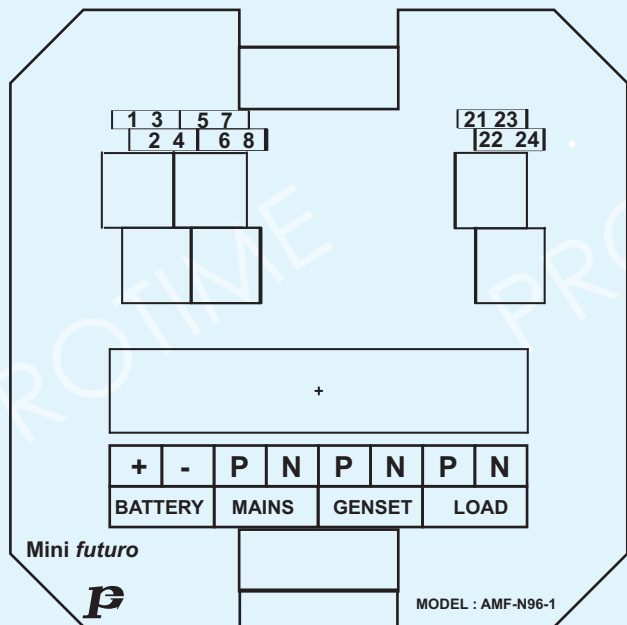
CRANK OFF/ON TIME SETTING							
5	6	OFF(Sec)	7	8	ON (sec)		
0	0	4	0	0	2		
1	0	6	1	0	4		
0	1	8	0	1	6		
1	1	10	1	1	8		

+	-	P	N	P	N	C	NO
BATTERY	MAINS SENSING	GENSET SENSING	GENSET CONTACTOR				

Sr.No.:PE/

Manufactured By :- Protech Engg. & Controls Pvt. Ltd. Mumbai-72

DESIGN for 1-ph mini with inbuilt load c/o (5KVA)



MINI futuro MODEL : AMF-N96-1

CONNECTION DETAILS

1	3	5	7	21	23
2	4	6	8	22	24

1,2 - LLOP I/P (C-NO)
3,4 - LFL I/P(C-NO)
5 - +12V CRANK O/P
6 - +12V START SOLENOID O/P
7,8 - HOOTER O/P(C-NO)
21,22 - Spare-1(C-NO)
23,24 - Spare-2(C-NO)

Capacity: 5KVA (Max)1-Ph.

SETTING DETAILS

IDLE RUN DELAY			STOP SOL. DELAY		FUEL SOLENOID LOGIC	
1	2	Sec.	3	Sec.	4	LOGIC
1	1	5	0	30	0	START
1	0	15	1	15	1	STOP
0	1	10				
0	0	20				

CRANK OFF/ON TIME SETTING							
5	6	OFF(Sec)	7	8	ON (sec)		
0	0	4	0	0	2		
1	0	6	1	0	4		
0	1	8	0	1	6		
1	1	10	1	1	8		

+	-	P	N	P	N	P	N
BATTERY	MAINS	GENSET	LOAD				

Source:
12V DC
24V DC

Sr.No.:PE/

Manufactured By :- Protech Engg. & Controls Pvt. Ltd. Mumbai-72

* Specify the requirement with inbuilt load changeover or external load changeover while placing the order.

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