

Automatic Gen-Set Transfer Switching Controller with Metering

EAOM - 9F

Automatic Gen-Set Transfer Switching Controller without display

EAOM - 9F ND

Features

- Protection, control and metering
- Automatic engine start/stop and load transfer
- Automatic shutdown on fault condition
- LED status and fault indication
- Simple push-button controlled operation
- Manual, automatic and test mode control
- Two user - inputs configurable
- One user- output configurable
- Fully programmable
- RS-232 communication port
- Standard modem communication

Monitors (Only EAOM-9F)

- 3-phase mains supply voltage
- Alternator voltage
- Alternator frequency
- Engine Speed
- Battery voltage
- Engine running time
- Error Indication
- Program Parameters

Fail Monitoring

- Mains Supply Voltage
- Alternator Voltage and Frequency
- Engine Speed
- Engine Temperature
- Oil Pressure
- Charge Generator Voltage
- Engine Start Over Current
- Alternator
- Emergency Stop
- Maintenance Due
- Low Battery Voltage



Controls

- Engine fuel supply or Engine Stopping
- Starter motor
- Alarm horn
- Preheating
- Automatic generator start
- Load transfer on mains failure
- Return to mains
- Mains contactor
- Generator contactor

The EAOM-9F series offers automatic engine starting, stopping, transfer switching, protection, control and metering of generator sets. In the event of a mains supply failure the unit automatically transfers the load from the mains to the generator and co-ordinates return to mains and controlled generator shutdown when the mains supply is restored. The product is fully programmable from the front panel via an easy to use password protected menu, removing the need for special cables or computer equipment at remote locations, however, the RS-232 communication port allows remote monitoring and programming with PC based software. EAOM-9F can communicate with this software over modem.

Specifications

Equipment Use	Electrical control equipment for generating sets
Housing & Mounting	144mm high x 204mm wide x 37mm deep
Panel Cut-Out	138mmx186mm
Protection	NEMA4X (IP65 at front panel, IP20 at rear side)
Weight	Approximately 0.45 kg
Environmental Rating	Standard, indoor at an altitude of less than 2000 meters with non-condensing humidity
Operating / Storage Temperature	-25°C to +70°C / -40°C to +85°C
Operating / Storage Humidity	90% max. (Non-condensing)
Installation Over Voltage Cat.	II appliances, portable equipment
Pollution Degree	II, Normal office or workplace, non-conductive pollution
Mode of Operation	Continuous
EMC	EN-61000-6-4, EMC generic emission standard for industrial equipment EN-61000-6-2, EMC generic immunity standard for industrial equipment
Electrical Safety	EN-61010-1, safety requirements for electrical equipment for measurement, control and laboratory use
Supply Voltage(---)	8-32 V---
Supply Voltage Measurement	8-32 V---, Accuracy : 1%, Resolution : 0.1V---
Mains Voltage Measurement	Three phase, 4 wire 35 to 300V _{L-N} ~ Accuracy : 1%FS, Resolution : 1V~
Generator Voltage Measurement	Single phase, 2 wire 35 to 300V _{L-N} ~ Accuracy : 1%FS, Resolution : 1V~
Measurement Accuracy	1% of range
Cranking Dropouts	Battery voltage can be 0V--- for max. 100msn during cranking (battery voltage should be at least nominal voltage before cranking)
Generator Speed Measurement	From alternator frequency or magnetic pickup
Alternator Frequency Range	10 - 110 Hz (@35-300V _{L-N} ~)
Magnetic Pickup Freq. Range	35 Hz - 10 kHz (@3-35 Volts peak)
Communication Interface	RS-232 serial communication
Contact Sensing Input	Emergency stop (NC) Oil pressure switch Temperature switch Remote inhibit input (NO) Configurable input 1 Configurable input 2 Over current input
Outputs	Start Output (500mA Transistor Output) Fuel Output (500mA Transistor Output) Hom Output (500mA Transistor Output) Configurable Output (500mA Transistor Output) Mains Contactor Output (500mA Transistor Output) Generator Contactor Output (500mA Transistor Output)
Display	4 digits, 7 segments LED display showing: Mains L1 - L2 Voltage Mains L1 - N Voltage Mains L2 - L3 Voltage Mains L2 - N Voltage Mains L3 - L1 Voltage Mains L3 - N Voltage Alternator Voltage Alternator Frequency Engine Speed Battery voltage Engine running time Error indication Program parameters (Only EAOM-9F)
Failure Indicators	Failed to start High temperature Low oil pressure Over speed Generator voltage failure Charge failure Over current Configurable input 1 Configurable input 2 Low battery voltage (observed with led in EAOM-9F ND, failure message in EAOM-9F) Maintenance due (observed with led in EAOM-9F ND, failure message in EAOM-9F) Emergency stop (observed with led in EAOM-9F ND, failure message in EAOM-9F)
Status Indicators	Off mode Auto mode Test mode Manual mode Engine start Engine stop Engine running Mains voltage available Generator is ready to take the load Mains contactor Generator contactor
Information Alarms	Low battery voltage (EAOM-9F) Maintenance due (EAOM-9F) Emergency stop (EAOM-9F)

EAOM-9F / EAOM-9F ND Parameters List

No	Definition of Parameter	Min	Max	Default	Unit	
P00	Mains Voltage Connection Level	60	600	320	V _~	
P01	Mains Voltage Disconnection Level	60	600	300	V _~	
P02	Mains Voltage Upper Limit	60	600	440	V _~	
P03	Alternator Voltage Lower Limit	60	600	320	V _~	
P04	Alternator Voltage Upper Limit	60	600	440	V _~	
P05	Speed Upper Limit	30.0	75.0	53.0	Hz	
P06	Periodic Maintenance Day Set Value	90	365	365	Day	
P07	Periodic Maintenance Hour Set Value	0000	9999	5000	Hour	
P08	Periodic Maintenance Hour Reset	Press 'Silence Alarm' button to reset				
P09	Number of Starting Attempts	1	10	3		
P10	Engine Cooling Time(0 disable cool process)	0	99	3	Minute	
P11	Horn Duration (0 Continuous)	0	999	60	Second	
P12	Mains Transition Delay	0	30	3	Minute	
P13	Preheat Time	0	99	10	Second	
P14	Exercise Time (0 Disable)	0	999	0	Hour	
P15	Exercise Duration Time Period	0	999	20	Minute	
P16	Single / Three Phase Selection	1/3		3		
P17	Speed Sensing Input Selection	0=Alternator Signal (internal) 1 = Magnetic Pick-up		0		
P18	Nominal Alternator Frequency	50.0/60.0		50.0	Hz	
P19	Nominal Speed	500	5000	3000	Rpm	
P20	Tooth Number	1	1000	100		
P21	Battery Voltage Lower Limit	7.2	24.0	8.0	V _{DC}	
P22	Mains Change Over Delay	0.1	25.0	1.0	Second	
P23	Stop / Fuel Solenoid Selection	Stop / Fuel	Fuel	Fuel		
P24	Stop Magnet Energising Time	0	99	20	Second	
P25	Engine started signal	0=No, 1=Yes				
	P25.0 Charge Generator	0/1		1		
	P25.1 Speed	0/1		0		
	P25.2 Alternator Voltage	0/1		1		
P25.3 Oil Pressure	0/1		0			
P26	Starting Attempt Duration	5	99	5	Second	
P27	Alternator voltage limit for crank disconnection	40	360	300	V _~	
P28	Speed Limit for Crank Disconnection	20.0	45.0	40.0	Hz	
P29	Oil Pressure By-Pass Time	0	99	30	Second	
P30	Control on Delay	0	99	10	Second	
P31	Alternator Voltage Fault Control Delay	0.0	10.0	5.0	Second	
P32	Speed Fault Control Delay	0.0	10.0	5.0	Second	
P33	Engine running time reset	Enter technician Password to reset Time to '0' (zero)				
P34	"Power ON" default mode configuration	0=Off, 1=Auto		0		
P35	Normal / Fail safe configuration of inputs	0		31	0	
P36	Configurable input-1 operation	0		10	0	
P37	Configurable input-2 operation	0		10	0	
P38	Configurable input-1 delay time	0		10	0 Second	
P39	Configurable input-2 delay time	0		10	0 Second	
P40	Configurable Output	0		13	0	
P41	Mains Contactor Selection	0=Mains contactor is NC 1=Mains contactor is NC		0		
P42	Operator Password (P00 to P15 and P42)	0000	9990	0		
P43	Technician Password (P00 to P43)	0000	9990	0		

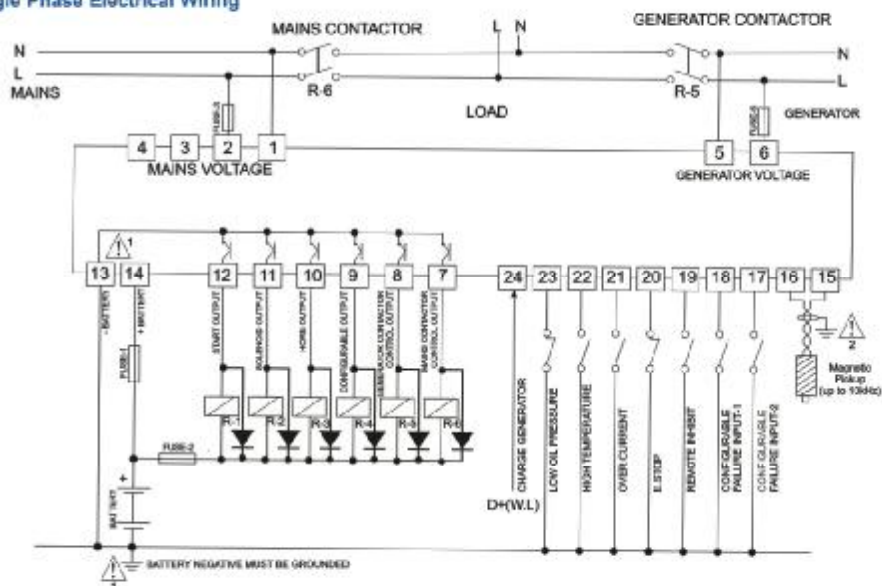
Front View



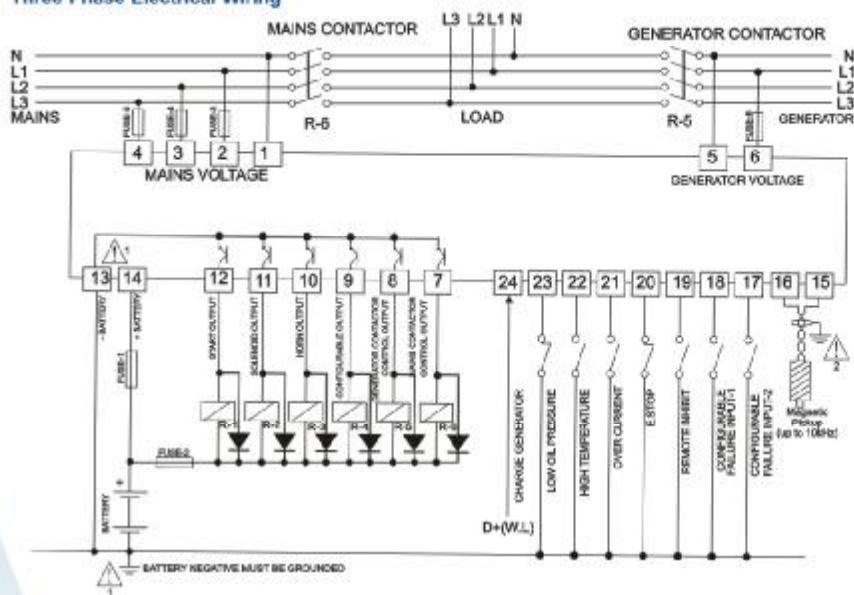
Operation

The EAOM-9F generator transfer switch controller unit provides integrated generator set control, protection, metering and automatic load transfer. The unit detects failure of any phase of the mains supply and is able to start the generator and transfer the load. When the mains supply is restored within the pre-set limits, the load is transferred back to the mains supply and the generator is shutdown in a controlled manner. The unit has two dedicated control output signals to co-ordinate the Mains or Generator contactors or breakers. EAOM-9F offers manual, fully automatic and test mode operation which allows the generator to be run without taking the load from mains supply. The mode of operation can be changed at any time without affecting the operational status of the generator or load connection. EAOM-9F ND has no metering display, but offers identical functionality, programming and observing with PC based software via RS-232. EAOM-9F ND can communicate with this software over modem.

Single Phase Electrical Wiring



Three Phase Electrical Wiring



Product Codes

EAOM-9F	Automatic Gen-Set Transfer Switching Controller w/ metering, Flat Type 144x204x37 Size
EAOM-9F ND	Automatic Gen-Set Transfer Switching Controller without display, Flat Type 144x204x37 Size
EAOM-9F / 9F ND SOFT	PC Communication Software for programming and Remote Monitoring