Auto Start Genset Protection Controller with Load, Current, Power, Pressure, Level, Temperature Measurement, Flat Type

EAOM - 72F

Features

Automatic engine start / stop
Automatic shutdown on fault condition
LED status and fault indication
Alternator voltage and frequency measurement and monitoring
Battery voltage measurement and monitoring
Simple push-button controlled operation
Over / under speed warning and shutdown
Remote start / stop input
Three user inputs configurable
Three Resistive Sender Inputs
Provides charge alternator excitation current
Two configurable outputs
Speed sensing from alternator frequency or magnetic pickup
Fully programmable
RS-232 communication port
Standard modem communication

Fail Monitoring

Alternator Voltage and Frequency
Engine Speed
Engine Temperature
Oil Pressure
Charge Generator Voltage
Engine Start
Alternator Over Current
Emergency Stop
Maintenance Due

Monitors

Three phase alternator voltage
Three phase current input via external transformer
Alternator power
Alternator frequency
Engine speed
Oil pressure
Engine temperature
Fuel level
Battery voltage
Engine running time
Error indication
Program parameters

Controls

Engine fuel supply or engine stopping
Starter motor
Alarm horn
Automatic generator start and stop
Pre-heating

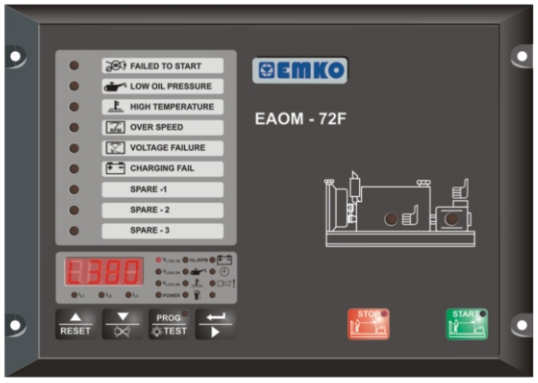
The EAOM-72F provides automatic starting of integrated generator sets and provides control, protection and metering in a compact low profile unit. The unit measures and displays fuel level, water temperature and oil pressure when connected to resistive analogue senders.
The product is fully programmable 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 communications port allows remote monitoring and programming with PC based software. EAOM-72F unit can communicate with this software over modem. With comprehensive engine and generator parameter measurement, including three phase voltage and three phase current measurement, no other metering devices are required on the generator panel.

Operation

EAOM-72F is used to start and stop the engine and to provide indication of operational status and fault conditions. To start the engine simply press the ENGINE START button on the panel or assert the dedicated remote start input for use where a dual engine start position is required. The starter motor will then run to start the engine and will disengage once engine running is detected. If the engine fails to start, a programmable number of start attempts will automatically occur. If a fault is detected the failure will be indicated by a flashing fault LED, the alarm horn will sound and the engine will automatically shutdown. Fault conditions latch so that further operation is prevented.

Specifications

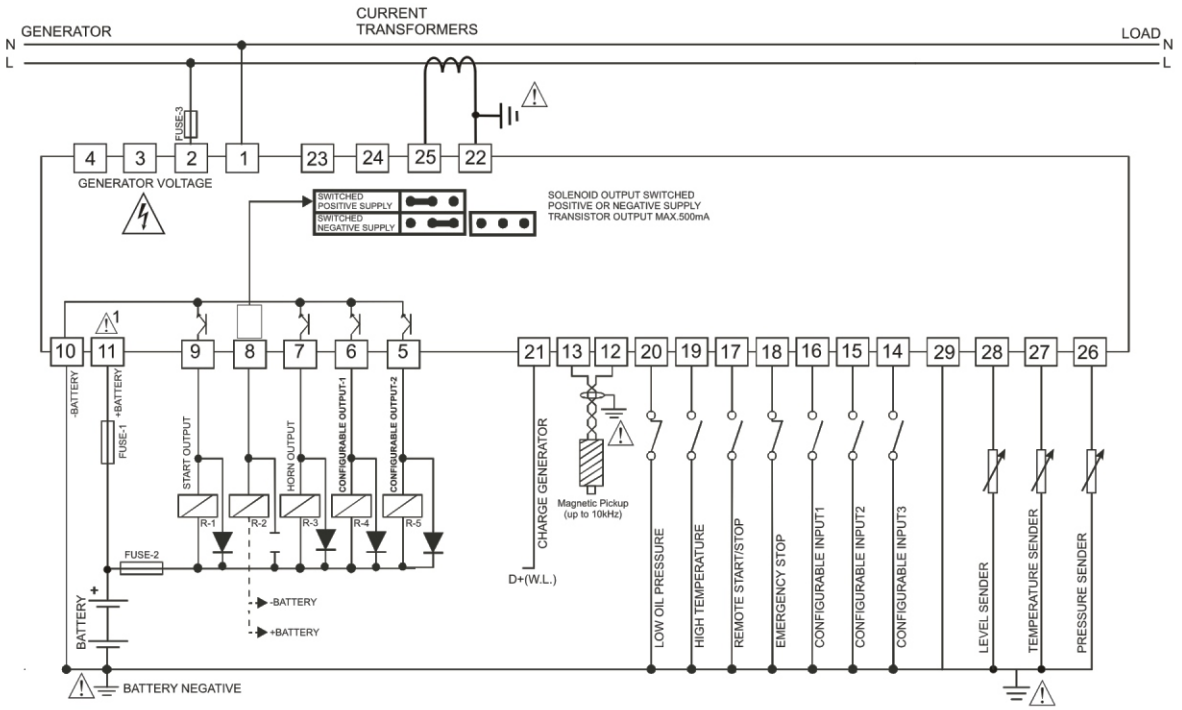
Housing & Mounting	144mmx204mmx37mm (including connectors) plastic housing for panel mounting
Protection	NEMA4X (IP65 at front panel, IP20 at rear side)
Operating / Storage Temperature	-25ºC to +70ºC / -40ºC to +85ºC
EMC	EN-61000-6-4, EMC generic emission standard for industrial equipment EN-61000-6-2, 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 (⎓)	8-32V⎓
Supply Voltage Measurement	8-32V⎓, accuracy:1% FS, resolution : 0.1V⎓
Generator Voltage Measurement	Single phase, 2 wire 35 to 300VL-N ∼ Single phase, 3 wire 35 to 300VL-N ∼ Three phase, 4 wire 35 to 300VL-N ∼
Measurement Accuracy	1% of range (Voltage and Current) 2% of range (Resistive)
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 - 100 Hz (@35 to 300VL-N∼)
Magnetic Pickup Freq. Range	35 Hz - 10 kHz (@3-35 Volts peak)
Load Current Measurement	Via three current transformer inputs 0 – 5A ∼
Generator Power Calculating	Three phase: (V1 x I1) + (V2 x I2) + (V3 x I3) Single phase: V1 (phase to neutral) x I1 Series Delta: L12 = L1N + L2N, L23 = $\sqrt{(L2N)^2 + (L3N)^2}$, L31= $\sqrt{(L3N)^2 + (L1N)^2}$
Analogue Resistive Sender Input Range	10 to 650 Ω
Communication Interface	RS-232 serial communication
Contact Sensing	Emergency Stop (NC) Oil pressure switch (NC) Temperature switch (NO) Remote start / stop input (NO) Configurable input 1 (NO) Configurable input 2 (NO) Configurable input 3 (NO)
Outputs	Start Output (500mA Transistor output) Fuel Output (500mA Transistor output) Alarm Output (500mA Transistor output) Configurable Output 1(500mA Transistor output) Configurable Output 2(500mA Transistor output)
LED Display	4 digits, 7 segments LED display showing: Voltage L1-L2 / Voltage L1-N / Voltage L2-L3 / Voltage L2-N / Voltage L3-L1 / Voltage L3-N / L1 current / L2 current L3 current / Generator KVA output / Engine RPM / Alternator frequency (Hz) / Battery voltage (V⎓) / Engine running time / Oil pressure value / Coolant system temperature Fuel tank level value / Error indication / Program parameters
Failure Indicators	Engine Start Low Oil Pressure High Engine Temperature Over Speed Generator Voltage Charging Fail User Configurable Input 1 User Configurable Input 2 User Configurable Input 3
Status Indicators	Engine Start Engine Stop Engine Running Generator ready to take the load
Information Alarm	Emergency stop Low battery voltage High battery voltage Weak battery alarm Routine maintenance due Over current failure Low oil pressure High temperature alarm Low fuel level



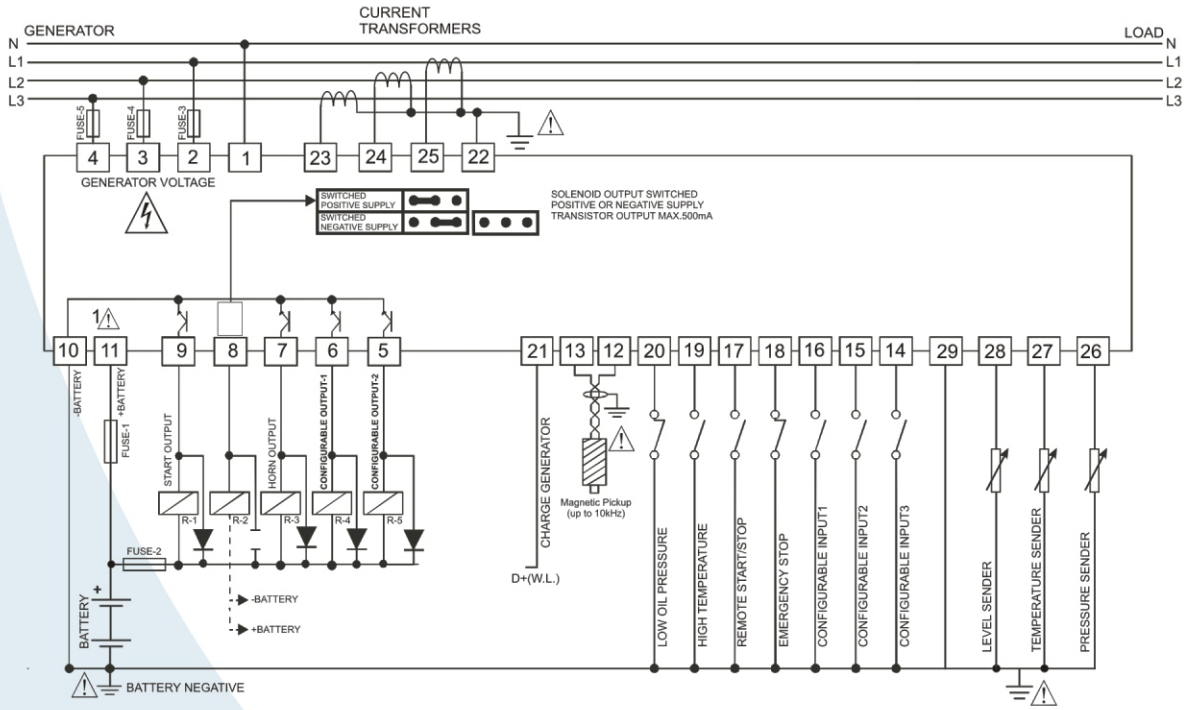
EAOM-72F Parameters List

No	Definition of Parameter	Min	Max	Default	Unit
P00	Alternator Voltage Lower Limit	60	600	300	V~
P01	Alternator Voltage Upper Limit	60	600	440	V~
P02	Speed Lower Limit	30.0	75.0	47.0	Hz
P03	Speed Upper Limit	30.0	75.0	53.0	Hz
P04	Battery Voltage Lower Limit	7.2	24.0	8.0	V⎓
P05	Battery Voltage Upper Limit	12.0	32.0	30.0	V⎓
P06	Over Current Limit	1	9999	1000	A
P07	Periodic Maintenance Hour Set Value	0	9999	0	Hour
P08	Periodic Maintenance Hour Reset	Press 'Silence Alarm' button to reset			
P09	Horn Duration (0 = Continuous)	0	999	60	Second
P10	Preheat Time	0	99	10	Second
P11	Phase Type Selection	1/2/3/ Series Delta		3	
P12	Nominal Alternator Frequency	50.0/60.0		50.0	Hz
P13	Nominal Speed	500	5000	3000	RPM
P14	Tooth Number	1	1000	100	
P15	Current Transformer Ratio	1	2000	500	
P16	Speed Sensing Input Selection	0=Alternator Signal 1 = Magnetic Pick-up		1	
P17	Stop Solenoid /Fuel Solenoid Selection	Stop / Fuel		Fuel	
P18	Stop Magnet Energising Time	0	99	20	Second
P19	Remote Start Time Delay	0	60	10	Second
P20	Remote Stop Time Delay	0	60	5	Second
P21	Engine started signal	0=No, 1=Yes			
	P21.0 Charge Generator	0/1		1	
	P21.1 Speed	0/1		0	
	P21.2 Alternator Voltage	0/1		1	
	P21.3 Oil Pressure	0/1		0	
P22	Battery Voltage Weak Limit	6.0	14.4	7.0	V⎓
P23	Battery Voltage Weak Control Time	1	99	3	Second
P24	Alternator voltage limit for crank disconnection	40	360	300	V~
P25	Speed Limit For Crank Disconnection	20.0	45.0	40.0	Hz
P26	Number Of Starting Attempts	1	10	3	
P27	Starting Attempt Duration	5	99	5	Second
P28	Oil Pressure Bypass Time	0	99	30	Second
P29	Warm-up Time Delay	0	99	10	Second
P30	Control On Delay/Fast Loading Selection	0=Control On Delay 1=Fast Loading		0	
P31	Control On Delay	0	99	10	Second
P32	Alt. Voltage Fault Control Delay	0.0	10.0	5.0	Second
P33	Speed Fault Control Delay	0.0	10.0	5.0	Second
P34	Engine Cooling Time(0 = disable)	1	99	3	Minute
P35	Engine Running Time Reset	Enter technician Password to reset Time to "0" (zero)			
P36	Configurable Failure Input-1	0	4	0	
P37	Configurable Failure Input-2	0	4	0	
P38	Configurable Failure Input-3	0	4	0	
P39	Configurable Failure Inputs	0	8	0	
P40	Configurable Output-1	0	16	0	
P41	Configurable Output-2	0	16	0	
P42	Oil Pressure Switch / Sender Selection	0 = Switch 1 = Sender		0	
P43	Pressure Lower Limit	0.0	99.9	42.6	
P44	Pressure Configuration	0	2	1	
P45	Temperature Upper Limit	0	300	176	
P46	Temperature Configuration	0	2	1	
P47	Level Lower Limit	0	300	75	
P48	Level Configuration	0	2	1	
P49	Operator Password	0	9990	0	
P50	Technician Password	0	9990	0	

EAOM-72F single phase connections schematic



EAOM-72F three phase connections schematic



Product Codes

EAOM-72F	Auto Start Genset Protection Controller with Load, Current, Power, Pressure, Level, Temperature Measurement, Flat Type 144x204x37mm Size
EAOM-72F-SOFT	PC Communication and Programming Software