ESR 3.1 ENGINE CONTROL UNIT

SAFETY PRECAUTIONS

. Check the supply voltage is correct before connecting the instrument.

.Do not expose to water or moisture.

.Warning: disconnect all electrical connections before any kind of maintenance.

.Consider the maximum current which can be applied to each relay.

DESCRIPTION

ESR is a control unit which can start or stop the engine, protect the engine failures, display the state of the system by the indicators. Manual or remote controls are available in ESR3.1. Models protect the engine against the failures as monitoring oil pressure, engine temperature, and auxiliary fail input and charge alternator. In addition ESR3.1 protects the engine to control low and high speed and voltage. It indicates battery voltage and protects low and high limits. System can configure by twenty-eight parameters.

FUNCTIONS

Micro-processor based design

- Preheat
- Protection Failure
- Low Oil Protection
- High Engine Temperature Protection
- Auxiliary Failure Protection
- Charge Protection
- Fuel Output
- Alarm Output
- Auxiliary Output
- Excitation Current
- Small Dimensions
- Standard Panel Dimensions (72x72mm)
- Easy Connection via Socket
- Low Price
- 5 Digit Display
- Engine working hour display
- 20-99 Hz Frequency Protection
- 600-4500 Revolution Protection
- Remote Start/Stop
- Speed Control with Magnetic Pickup or Generator Frequency
- 28 Parameter
- Battery Voltage Indication
- Generator Frequency and Revolution

10006 Sok. No:64 Atatürk Organize Sanayi Bölgesi Çiğli - İZMİR / TÜRKİYE
Tel: +90 232 376 78 06 (Pbx.) Faks:+90 232 376 77 92 E-Mail: info@enkoelektronik.com

FRONT PANEL COMMANDS

SELECT/PREHEAT: This button is used to display battery voltage, frequency, Ac voltage, Revolution and engine working hour. If button is pressed long time (approximately three seconds) device activates preheat output. In programming mode it selects a parameter or confirms an operation.

STOP/ALARM RESET: This button has two functions." Engine stop" and "Alarm reset" functions. If engine is running and there is no failure in system, this button works as engine stop function. If system has a failure, this button works as alarm reset function. In alarm reset function, at first press ESR3.1 deactivates horn. At second press alarm is cleared from the display. In programming mode it browses the parameter codes or decreases the displayed value or option.

RUN: This button is used to start the engine. Fuel (FSS parameter is Fuel option) and Crunk relay outputs are energized. In programming mode it browses the parameter codes or increases the displayed value or option.

KEY COMBINATIONS:

SELECT + STOP: to enter in programming mode when device is energized for the first time.

USE OF LEDS:

LOW OIL PRESSURE (LOP): This LED indicates the LOP alarm. If this LED is flashing, Oil pressure is high while engine is stopping. Cause of this situation may be sensor fail. If this alarm occurs, engine is stopped while fuel (FSS parameter is Fuel option) solenoid is denergized. If LOP input of ESR3.1 is battery negative during Adt parameter time while engine running, alarm occurs.

HIGH ENGINE TEMPERATURE (HET): This LED indicates HET alarm. If this alarm occurs, engine is stopped while fuel (FSS parameter is Fuel option) solenoid is denergized. If HET input of ESR3.1 is battery negative during Adt parameter time while engine running, alarm occurs.

AUXILIARY ALARM: This LED indicates AUXILIARY alarm. If this alarm occurs, engine is stopped while fuel (FSS parameter is Fuel option) solenoid is denergized. If Auxiliary input of ESR3.1 is battery negative during Adt parameter time while engine running, alarm occurs.

SPEED ALARM: This LED indicates SPEED alarm. If this alarm occurs, engine is stopped while fuel (FSS parameter is Fuel option) solenoid is denergized. This alarm can happen from two reasons. The first one is that if rAD parameter is chosen No, engine speed must be between the revolution limits (rLL and rHL parameters). The second one is that if FAD parameter is chosen No, engine frequency must be between the frequency limits (FLL and FHL parameters). Alarm delay time can be configured at Adt parameter.

AC VOLTAGE ALARM: This LED indicates Voltage alarm. If this alarm occurs, engine is stopped while fuel (FSS parameter is Fuel option) solenoid is denergized. If UAD parameter is chosen No, engine speed must be between the revolution limits (ULL and UHL parameters).

PREHEAT: This LED indicates that device is in preheating mode. At the end of the Pt parameter time, LED becomes off.

CHARGE FAILURE ALARM: This LED indicates charge failure alarm. . If this alarm occurs, engine is not stopped. If there is no voltage at charge input of ESR3.1 while engine is running, alarm occurs.

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ALARM SIGNALS

Message	Cause	Outputs
LoP	Low Oil Pressure	Alarm Relay
HEt	High Engine Temperature	Alarm Relay
AuH	Auxiliary Alarm	Alarm Relay
SPEEd	Speed Failure	Alarm Relay
uFAiL	AC voltage failure	Alarm Relay
CFaiL	Charge Failure	Alarm Relay
bAtt	Battery voltage fail	Alarm Relay
rFail	Remote start failure	Alarm Relay
AuH2	Auxiliary Fail 2.If remote start/stop input is programmed auxiliary input, this alarm occurs.(with rAC parameter)	Alarm Relay

PARAMETERS

SELECT and STOP button combinations is used to enter in programming mode when device is energized for the first time.

”Par” message will be displayed and then”000” message will be displayed.

Use STOP or RUN to change its value. Password value is “002”.

If SELECT button is pressed when password is “002”, parameters are opened.

Use STOP or RUN button for navigation of parameters.

Press SELECT button to display its value.

Set parameter value with STOP or RUN button and then press SELECT button to store parameter value.

Parameter values flash during two seconds.

CFd (Charge Fail Disable): Charge failure of ESR3.1 can be made active or passive with this parameter. It has two options. (Yes, No). If No option choose, Charge fail control is active.

Pt (Preheat Time) (Sec): This parameter defines preheat time interval.

Stn (Screw thread number) (pcs): Flywheel screw thread number is setting this parameter to measure RPM from Magnetic Pickup. Default: Flywheel screw thread number is 167.

bAd (Battery Alarm Disable): Battery voltage failure of ESR3.1 can be made active or passive with this parameter. If this parameter is chosen yes, bHL and bLL parameters are hidden and Failure of battery voltage can be made passive. Default value is No.

bLL (Battery Low Level) (Volt): This parameter is low level limit for battery voltage failure.bAtt failure will display in screen when battery voltage is less than this parameter value. In addition battery voltage failure LED is lit.

bHL (Battery High Level) (Volt): This parameter is high level limit for battery voltage failure.bAtt failure will display in the screen when battery voltage is greater than this parameter value. In addition battery voltage failure LED is lit.

rAD (Revolution Alarm Disable): Speed failure of ESR3.1 can be made active or passive with this parameter. . If this parameter is chosen Yes, rHL and rLL parameters are hidden and failure of speed can be made passive. Default value is No.

rLL (Revolution Low Level) (RPM): This parameter is low level limit for speed failure.SPEEd failure will display in screen when RPM (revolution per minute) to measure from magnetic pickup is less than this parameter value. In addition speed failure LED is lit.

rHL (Revolution High Level) (RPM): This parameter is high level limit for speed failure.SPEEd failure will display in the screen when RPM (revolution per minute) to measure from magnetic pickup is greater than this parameter value. In addition speed failure LED is lit.

FAD (Frequency Alarm Disable): Speed failure of ESR3.1 can be made active or passive with this parameter. . If this parameter is chosen Yes, FHL and FLL parameters are hidden and failure of speed can be made passive. Default value is No.

FLL (Frequency Low Level) (Hz): This parameter is low level limit for speed failure.SPEEd failure will display in screen when frequency of AC voltage is less than this parameter value. In addition speed failure LED is lit.

FHL (Frequency High Level) (Hz): This parameter is high level limit for speed failure.SPEEd failure will display in the screen when frequency of AC voltage is greater than this parameter value. In addition speed failure LED is lit.

UAD (Voltage Alarm Disable): AC voltage failure of ESR3.1 can be made active or passive with this parameter. . If this parameter is chosen Yes, UHL and ULL parameters are hidden and failure of speed can be made passive. Default value is No.

ULL (Voltage Low Level) (Volt): This parameter is low level limit for speed failure.AC voltage failure will display in screen when value of AC voltage is less than this parameter value. In addition AC voltage failure LED is lit.

UHL (Voltage High Level) (Volt): This parameter is high level limit for speed failure.AC voltage failure will display in the screen when value of AC voltage is greater than this parameter value. In addition AC voltage failure LED is lit.

rtN (Remote start try number) This parameter defines number of cranking try when remote start /stop nput is connected to battery negative.Default value is three.

FSS (Fuel / Stop Solenoid Selection): This parameter defines Fuel or Stop solenoid selection which stop engine. Default t value is Fuel solenoid.

ASC (Alarm Signal Continuous/Discrete): This parameter defines alarm output signal type. Option of Con is continuous. Option of Disc is discrete.

ASt (Alarm Signal Time) (Sec): This parameter defines how long time alarm relay output is ON after the alarm occurred. .Default value is 180 sec.

SCC (Start Charge Control): This parameter defines engine's working information according to charge input. If "yes" selection is active and there is voltage at charge input then esr3.1 perceives the engine running situation.

Adt (Alarm Delay Time) (Sec): This parameter defines the activation time of this input when failure condition occurs. For example if low oil pressure is low ESR3.1 is not appear failure until this time finish. Default value is 3 sec.

AoF (Auxiliary Output Function): This parameter defines function of auxiliary output. There are three options,Ero,rAo and yAo.
Ero (Engine Running Output): This option gives engine running information to auxiliary output..rAo : This option gives failure condition information to auxiliary output .yAo : this option gives yellow failure information to auxiliary output.

CVG (Calibration Voltage Gain): Measured AC voltage gain calibration regulated by this parameter. Default value is 141.

CbG (Calibration Battery Gain): Measured battery voltage's gain calibration regulated by this parameter. Default value is 32.

rDS (Revolution display source): This parameter defines source of RPM. It may be magnetic pickup or Ac voltage. There are three options. nPS: Only magnetic Pickup voLt: Only Av voltage oto: both of two sources.

Rac (Remote or alarm failure input selection): This parameter defines the condition of the Remote start/stop input function. There are two option.rSF :Remote start/stop function rAF : Second Auxiliary input function.

PLn (pole number for alternator): User should select one of them between 2, 4 or 8. Revolution = (alternator frequency*120 / pole number)

oSP (pole switch position): User should select one of them between NO or NC options. NC:NOrmally Closed
NO : Normally Open

tSP (temperature switch position): User should select one of them between NO or NC options. NC:NOrmally Closed
NO : Normally Open

ASP (auxiliary input switch position): User should select one of them between NO or NC options. NC:NOrmally Closed
NO : Normally Open

Std (Default values): If you select yes and press select button device returns to factory settings.

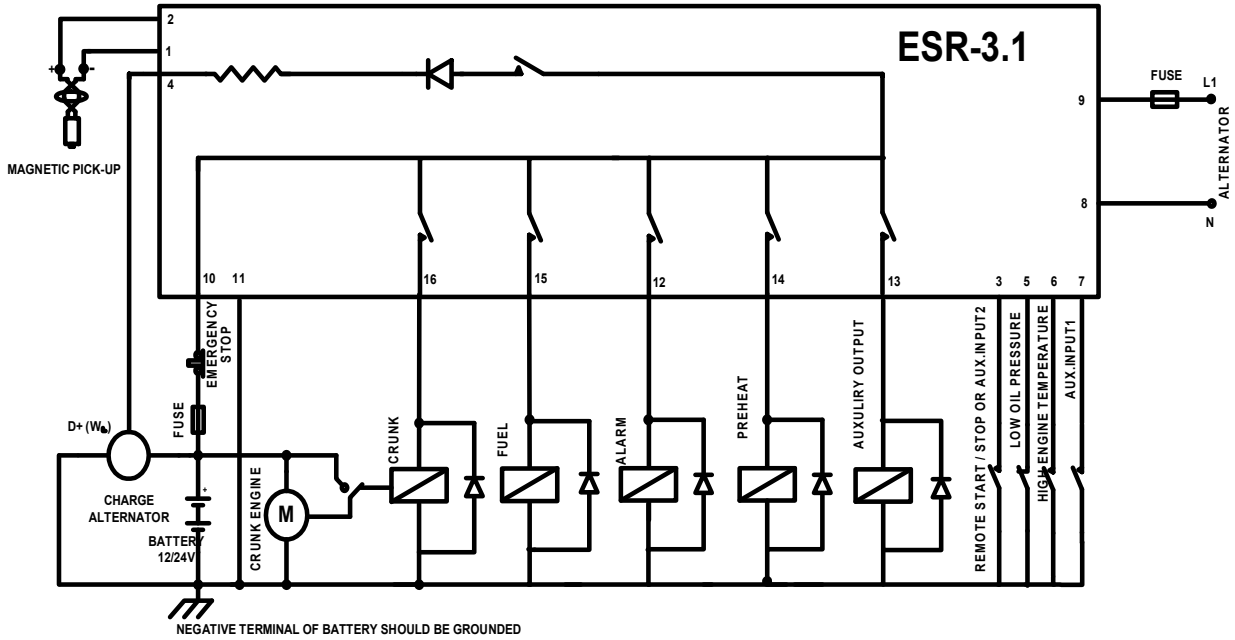
vEr : This parameter defines software version number of ESR3.1.

SPECIFICATIONS

DC Supply	9-35VDC 30mA (closed state) 130mA(maximum current)
Operating Temperature	-10°C / +70°C
Relative Humidity	%10-%95 non-condensing
Outputs	Fuel and Start 16A/30VDC Preheat 6A/30VDC Auxiliary Output 6A/30VDC Alarm 6A/30VDC
Frequency measurement	1-99Hz
Measurement Accuracy	Alternator Frequency : + / - 0.2Hz
Excitation Current	125mA @ 12VDC 250mA @ 24VDC
Connection	Screw socket
Housing	High temperature proof PPO GF %20
Protection Class	IP 52 (Front side)

Weight	250 gr. (aprox.)
Dimensions (GxYxD)	72x72x62 mm
Panel cut out	68x68mm
Mounting Installation	Front panel mounted with metal screw fixings

CONNECTIONS



DIMENSIONS AND MOUNTING