ETNA®

ETNA EDP-M
Diesel Engine Motor Pump Controller
User Manual

1. Product Information

The ETNA EDP-M diesel engine-driven motor pump panel is designed to control pump groups driven by internal combustion engines. The ETNA EDP-M electric panel and software is developed specifically for this purpose and provide a comprehensive and user-friendly controller. Ensures flawless control of the system together with the mechanical and electronic devices in the diesel engine pump set. All system data can be monitored via the LCD display and status LEDs, and necessary settings can be easily made using the buttons. Internal battery charging rectifier keeps the battery in the diesel-powered motor pump system continuously charged, ensuring the system is always ready for operation.

The ETNA EDP-M motor pump panel, pressurize and control the system by starting the diesel engine in cases where pressure loss occurs in the system and the diesel engine-driven pump needs to be activated.

Figure 1. ETNA EDP-M motor pump panel exterior view

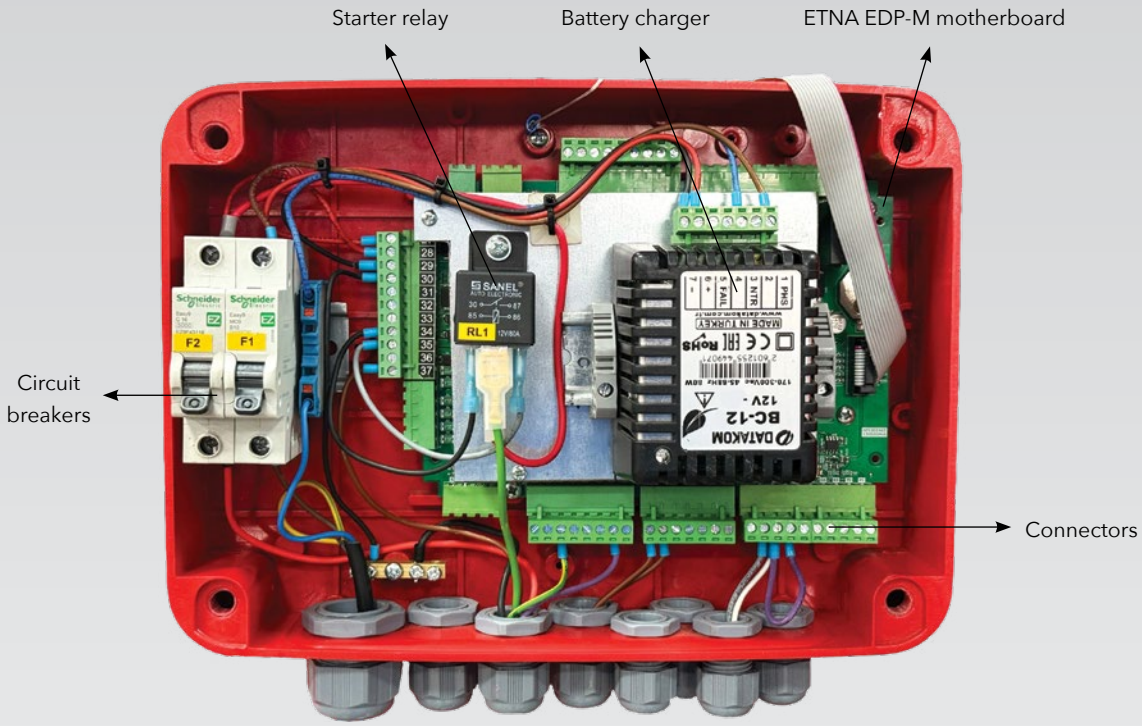


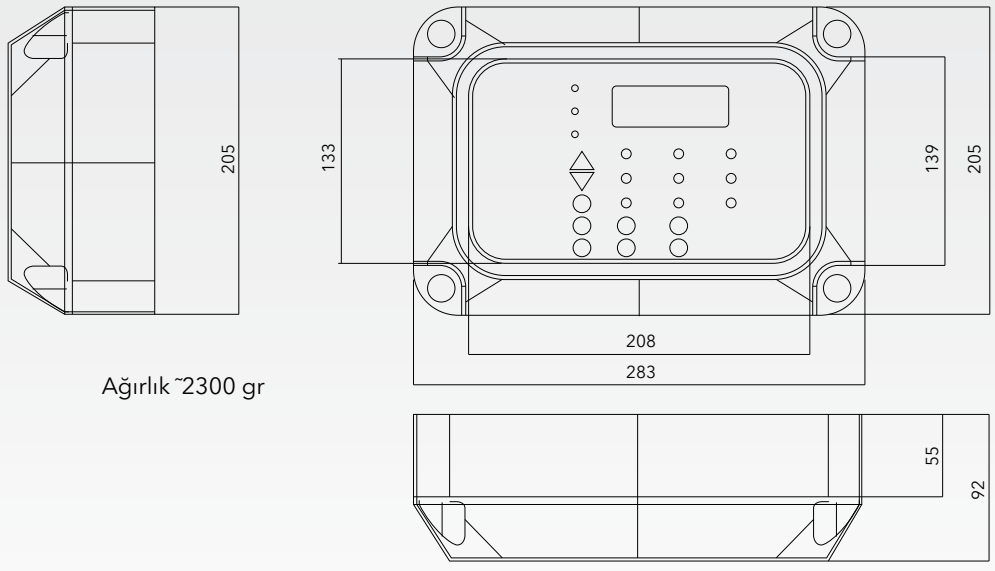
Figure 2. ETNA EDP-M motor pump panel interior view

1.1 Cabinet Specifications

- Automatic control of the diesel engine pump set
- Automatic or manual mode selector button on panel front cover
- Automatic manual mode selection using dry contact information from the automation system
- Automatic start-up with pressure switches
- Manual start button and information LEDs
- Manual stop button
- Ability to perform automatic weekly test on set date, hour and time
- Remote operation through dry-contact
- Running and dry contact relay outputs for general fault information
- Siren relay output for siren connection
- Monitoring and control via Modbus RTU with RS485 protocol
- Can keep 500 past event logs in memory
- Protection class IP 65
- 2x16 character LCD with white screen

- Monitoring all statuses from the LCD display
- Monitoring diesel engine speed with a tachometer
- Fuel level gauge
- Viewing total, manual, test operation times and number of switching counts
- Running on 12V or 24V (optional) DC supply voltage
- Internal battery charging rectifier
- Operating voltage of 180-280VAC, operating frequency of 50/60Hz for battery charging rectifier
- Battery voltmeter and charging current ammeter
- Battery and charging system status LEDs
- 3-cycle automatic start
- Adjustable activation and deactivation delay times
- Periodic maintenance deadline reminder
- Turkish and English language options
- Real-time date and time
- Password protected menu prevents unauthorized access
- Changeable menu password

1.2. Panel Dimensions



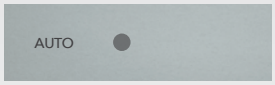
Ağırlık ~2300 gr

Figure 2.1. Panel Dimensions

2. Pump Controller

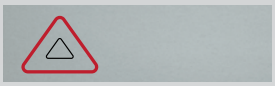
Figure 3: Pump controller descriptions

2.1. Front Panel Descriptions

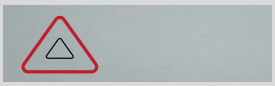


AUTO (automatic manual mode status) warning: Depending on whether the panel is in automatic or manual mode, this LED will light up green or red. This LED lights up green when the panel is in automatic mode and the system is ready for operation. This LED should always be green except during malfunction or maintenance processes, so that the system is ready for operation. If the AUTO LED is flashing red, automatic mode is disabled and the diesel engine will not run automatically even if there is a need for operation. Automatic manual mode can be selected using the AUTO MAN button on the panel. In addition, the EDP-M panel can be switched to automatic or manual mode using dry contact information from the automation system. If a GND signal is received at terminal 59 of the panel, automatic mode is disabled and the device switches to manual mode, in this case the AUTO MAN mode selector button on the front cover of the panel is disabled.

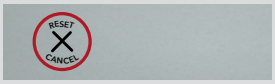
Battery A status warning: When the battery group A is connected to the system and the battery charging system is working properly, this LED will light up green. If the battery group A is not connected to the system, the battery charger is not connected to the system or the battery group A is not charging, this LED will light up red to indicate a fault. This LED must be green to indicate that the system is ready for operation.



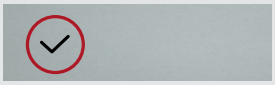
Up button: Used to navigate within the menu or to increase the set value. If the Up button is pressed and held for 3 seconds, the LED test function starts and all LEDs on the panel light up, allowing you to check for any faulty LEDs.



Down button: Used to navigate within the menu or to decrease the set value.



Cancel and reset button: The cancel and reset buttons have multiple functions. When this button is pressed once while in the menu, the screen will return to the previous menu. When on the main screen and there is an audible panel alarm due to a fault, pressing this button once will silence the panel alarm. After the audible alarm is silenced, the fault reset procedure is performed by pressing and releasing this button once more if there is a fault that can be reset. Additionally, if this button is pressed and held for 3 seconds while on the main screen, the software will reset and restart. Software reset must not be performed repeatedly or except when necessary.



Confirm button: Used to enter the menu and save the settings. After the setting is made in the menu, the setting must be saved by pressing the confirm button.

Pressure switch call: When the line pressure drops to the pressure at which the pump will be activated, the run command comes from pressure switch and this LED lights up. When the run command is received from the pressure switch, the GND signal reaches the terminal 55 of pressure switch on the panel, and the pressure switch LED lights up. That is, if the GND signal is not received at the pressure switch terminal 55, the pressure switch LED will not light up and the pump will not be activated; if the GND signal is received, the pressure switch LED will light up and a pump operation request will be generated. If the panel is in automatic mode (the automatic mode status AUTO LED is green), the delay countdown for activation starts when the pressure switch LED lights up, and the diesel engine pump is activated. The pressure switches used in the system must be of the open contact type under pressure. The pressure switch settings must be made in practice according to the system operating point.

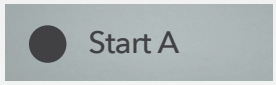
Diesel engine pump activated warning: This LED lights up when the diesel engine is activated. If this LED is on, the diesel cycle has passed the crank cut-off cycle set in the menu and the diesel engine pump is running.

OIL OK (oil pressure present) warning: This is the oil pressure information LED. This LED should be green while the diesel engine is running. If the diesel engine is activated and sufficient lubrication and oil pressure are provided, this LED will light up green according to the contact information received from the oil sensor. If the LED does not turn green despite the diesel engine running, an oil pressure contact error is generated at the end of the delay time and the engine is stopped. This LED should not be on when the diesel engine is not running; if it is, the oil pressure sensor may be defective or the connection may be incorrect.

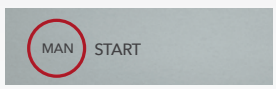
FUEL ON (fuel solenoid activated, fuel path open) warning: It lights up when the fuel solenoid relay is activated. The fuel path is open when this LED is on. If the stop button is pressed in manual mode, the Fuel On LED turns off, meaning the fuel solenoid is deactivated, preventing fuel from reaching the diesel engine and stopping the engine.

AUTO MAN (Automatic Manual) mode selection button: Automatic manual mode can be selected using this button. The mode changes each time the button is pressed. It must always be in automatic mode for the device to be ready for operation. When automatic mode is active, the AUTO LED is green. When the AUTO LED is green, pressing the AUTO MAN button disables automatic mode, the AUTO LED flashes red and a warning is displayed on the main screen indicating that automatic mode is disabled. Except during malfunction or maintenance processes, the device must always be in automatic mode and the AUTO LED should be green.

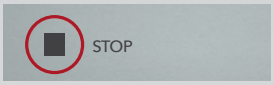
General fault warning: The general fault LED lights up in the event of any fault. When a fault or error occurs, the details are displayed on the main screen and this LED lights up. When the fault clears automatically or when resettable faults are reset by pressing the reset button, this LED turns off.



Start A warning: Start A LED lights up when the starter relay A is activated. When the starter relay A is activated, the starter relay connected to the battery group A engages and energy is supplied from the battery group A to the starter motor, starting the diesel engine.



Manual Start button: Manual start button is used when the engine needs to be started manually from the battery A. While the manual start button is pressed and held, the A starter relay remains engaged and the diesel engine can be started by cranking from the battery group A. The MAN START button must not be pressed for more than 10 seconds. The MAN START button must never be pressed while the diesel engine is running. If the MAN START button is pressed while the diesel engine is running, the starter motor will engage and the diesel engine will be damaged; these are considered out of warranty.



Manual Stop button: The manual stop button is used when the diesel engine needs to be stopped manually. When the stop button is pressed, the fuel solenoid is released and the diesel engine is stopped. When the stop button is pressed while the pressure switch is sending a run command, a warning stating that the system cannot be stopped during a fire is displayed on the main screen. If there is no real fire and the diesel engine needs to be stopped, the panel can be switched to manual mode by pressing the AUTO MAN button on the front cover of the panel, then the diesel engine can be stopped by pressing the stop button. Improper interventions will be considered out of warranty.

2.2. Diesel Pump Group Operation

2.2.1. Automatic mode preparation

If automatic mode is not active, automatic mode disabled warning is displayed on the main screen, the audible alarm is active, and the AUTO LED flashes red. If the device is not in automatic mode, press the AUTO MAN button to switch to automatic mode. When automatic mode is active, the AUTO LED on the ETNA EDP-M panel lights up green. The automatic mode must always be selected on the control panel, and the system must be ready to operate.

2.2.2. Automatic mode operation

When the pressure drops in the discharge collector of the pump set, a start call is received from the pressure switches located on the discharge collector, and the pressure switch call indicator on the EDP panel lights up red. When the start signal is received, the delay time countdown begins and at the end of the delay, the starter relay energizes the starter motor and the diesel engine is started.

Start-up attempts are performed sequentially to help start the diesel engine. Each of these start-up attempts is factory-set to last a total of 20 seconds (10 seconds of operation, 10 seconds of waiting). These times can be changed from the menu, but changing the factory settings is not recommended. The starting attempts are performed automatically in sequence and a total of 3 times until the engine starts.

In automatic mode, remote start or stop can also be performed using dry contact information from the automation system.

2.2.3. Manual operation

In case of emergency, manual operation can be performed.

The diesel engine can be started by holding down the MAN START (manual start) button until the diesel engine is activated. The MAN START button must not be pressed for more than 10 seconds. Manual start must not be performed by pressing the MAN START button except in necessary and emergency situations. The START button must be released as soon as the diesel engine is activated. Unauthorized intervention, failure to release the START button despite the diesel engine activated, or pressing the START button while the diesel engine is running may cause malfunction and will be considered out of warranty. After manual operation, press the STOP button to stop the diesel engine.

2.2.4. Sensing the operation of the diesel engine

The operation of the diesel engine is monitored by signals from the stator and regulator system. After the diesel engine starts, this is sensed and the starter motor is automatically disabled.

2.2.5. Stopping the diesel engine

If automatic start-up was performed with a pressure switch call and the pressure switch call is still active, the engine must not be stopped. Even if the STOP button is pressed while the pressure switch call is active, a cannot be stopped during fire warning is displayed on the screen.

After confirming that the emergency situation has ended, if you want to stop the diesel engine, press the AUTO MAN button to switch the panel to manual mode and press the STOP button to stop the engine. If the diesel engine must be stopped when there is no pressure switch call, press the STOP button to stop the engine without waiting for the diesel engine shutdown delay time.

2.3. Main Screen

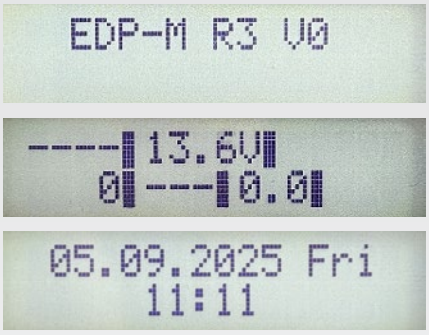


Figure 4. Main Screen

When the panel is powered on, the panel name and version number are displayed on the LCD screen. Then the main screen is displayed. On the main screen, you can alternate between screens using the up and down buttons. The main screen displays diesel engine status, diesel engine RPM, fuel level, battery voltage, and charging current. If the down button is pressed, the screen with date is displayed. You can return to the main screen by pressing the cancel button, or it will automatically be displayed after a certain period of time.

2.3.1. Main screen descriptions

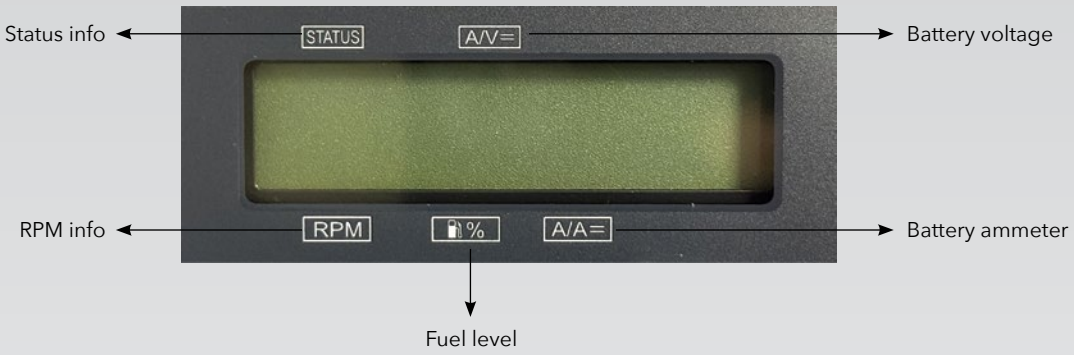


Figure 5. Main screen sections

2.3.2. Main screen display

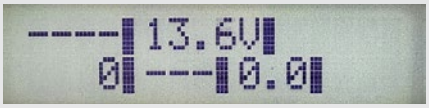


Figure 6. The diesel engine is not running. Battery charging voltage is 13.6V.

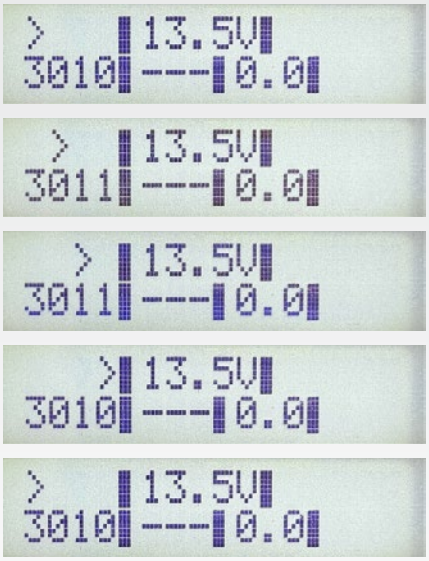


Figure 7. Diesel engine operation is shown with an animation. Speed is 3010 rpm. Battery charging voltage is 13.5V.

3. 3. Menus

3.1. Event logs (History record)

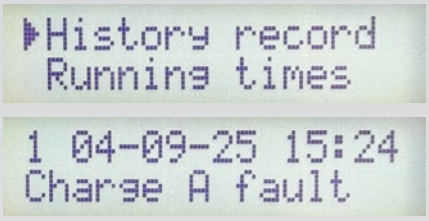


Figure 8. Event logs screens

The menu is displayed by pressing the confirmation button on the main screen. When the cursor on the left is on the history record line, pressing the confirmation button again will display the event logs menu. The event logs menu displays 500 past entries, with date and time information. You can navigate using the up or down button. The most recent event is always moved to the top of the list.

3.2. Running times

Şekil 13. Çalışma süreleri ekranları

The menu is displayed by pressing the confirmation button on the main screen. After the menu is displayed, pressing the down button moves the cursor to the running times. The menu showing the running times is displayed by pressing the confirmation button again. This menu displays the running times and number of starts for the engine. In the running times menu, you can switch between screens and view all values by pressing the down button. Tot.min (total minutes) section displays the total time the engine has run in minutes. Tot.Sw (total switch) section displays how many times the diesel engine was started from battery group A. Man.min (manual minutes) section displays the total time the diesel engine was started manually. Man.Sw (manual switch) section displays how many times the diesel engine was started manually from battery group A. Test min (test minutes) section displays the total number of minutes the diesel engine has run during weekly testing. Test.Sw (test switch) section displays how many times the diesel engine was started manually from battery group A for weekly test purposes.

3.3. General settings and Password menu

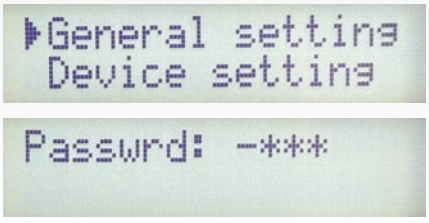


Figure 10. Password menu screen

A password is required to access the settings menus. The menu password is “1234”. Use the up, down, and confirm buttons to enter the menu password and access the settings menu.

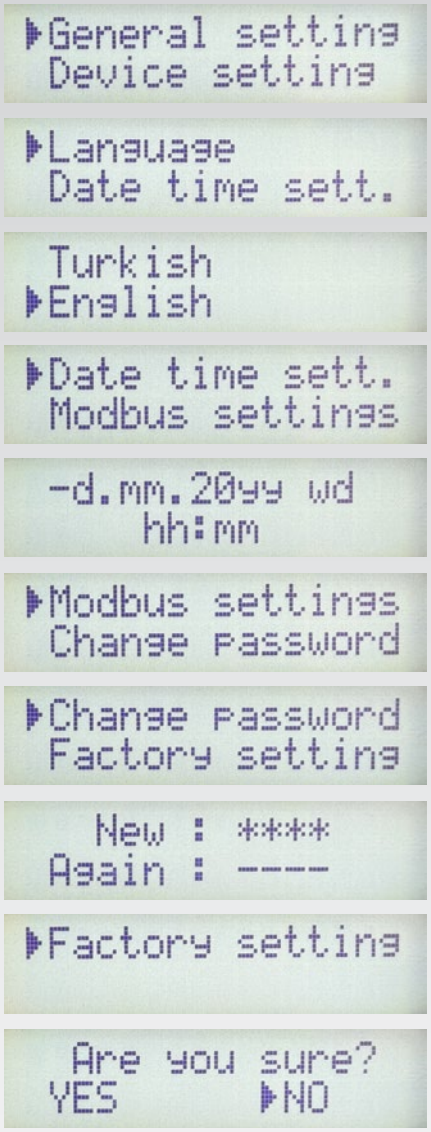


Figure 11. General settings screens

The general settings menu includes language selection, date time settings, Modbus settings, change password, and factory settings menus.

a. **Language:** The language options are Turkish and English.

b. **Date Time settings:** Use time settings menu to set the date (day, month, year), day of the week (Mon, Tue, Wed...), and time (hour, minute), respectively.

c. **Modbus settings:** Use the Modbus settings menu to set the Modbus ID, communication speed, and parity bit settings. The stop bit setting cannot be changed and is fixed at 0. The modbus register table is given on the following pages.

d. **Change password:** Use the password change menu to change the menu password. On the password change menu, enter the new password and press confirm. Enter the new password again, press confirm and save. If the menu password is changed, do not forget the new password. If forgotten, the authorized service must be called.

e. **Factory settings:** The panel can be reset to factory settings from the factory settings menu. It is not recommended to change the settings except by authorized personnel.

3.4. Device settings menu

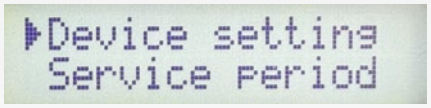
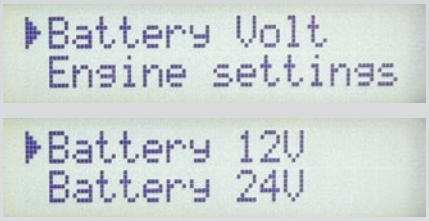


Figure 12. Operation settings screen

The device settings menu includes battery volt settings, engine settings, warning limits, weekly test, sensor settings, and sensor status on/off settings sub-menus.

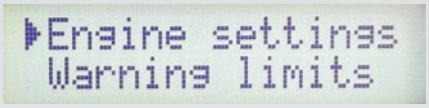
3.4.1. Battery voltage setting



The supply voltage for the diesel engine is selected from the battery voltage menu. The battery voltage can be selected as 12V or 24V from this menu.
The appropriate voltage value must be selected for the diesel engine and battery system.

Figure 13. Battery voltage setting screen

3.4.2. Engine settings



The engine settings menu allows you to adjust settings related to the diesel engine's operation system.

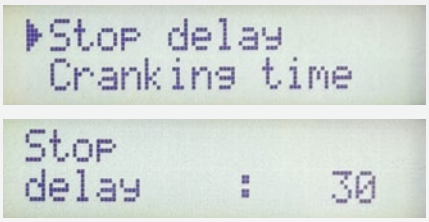
Figure 14. Engine settings screen

3.4.2.1. Start delay

The start delay time can be set from this menu. After the run command is received, the countdown set in this menu on the main screen begins, and the diesel engine is started at the end of the countdown.

Figure 15. Activation delay time screens

3.4.2.2. Stop delay



The stop delay time can be set from this menu. After the run command is interrupted, the countdown set in this menu on the main screen begins, and the diesel engine is stopped at the end of the countdown.

Figure 16. Deactivation delay time screens

3.4.2.3. Cranking time

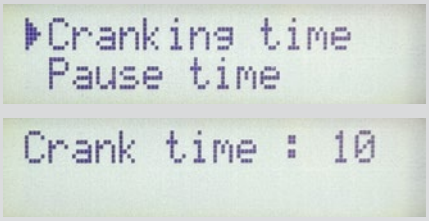


Figure 17. Cranking time screens

The duration of the cranking can be set in seconds from the cranking duration menu. When the run command is received and the automatic cranking scenario begins, the starter relay remains engaged for the duration set in this menu, then releases at the end of the time period, and cranking ends. It is not recommended to change the factory-set time.

3.4.2.4. Cranking interval (Pause time)

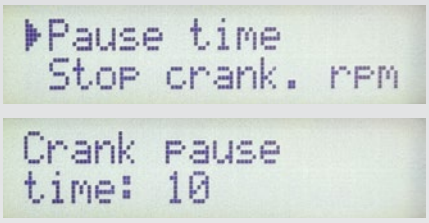


Figure 18. Cranking interval screens

The delay time between crank attempts can be set in the pause time menu. When the run command is received and the automatic cranking scenario begins, the starter motor engages for the duration set in the cranking time menu, and if the engine does not run, the starter motor disengages at the end of the period. Once the starter motor disengages, the cranking interval countdown starts, and the system waits for this period to elapse. At the end of the cranking interval, the next crank attempt begins.

3.4.2.5. Crank cut-off speed (Stop crank rpm)

Figure 19. Crank cut-off speed screens

This is the menu where the crank cut-off speed is set. After the starter motor engages, the diesel engine runs and if the engine's speed reaches the value set in this menu, the starter motor will automatically disengage. It is not recommended to change the factory-set value.

3.4.3. Warning limits

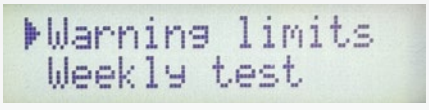


Figure 20. Warning limits screens

Warning limits can be set from this menu.
Fuel level settings, battery settings can be set.

3.4.3.1. Fuel level settings

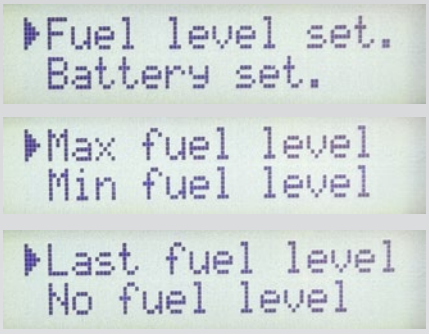


Figure 21. Fuel level settings screens

This is the menu where the limits for fuel level warnings are set. 4 different limits can be set for fuel level: maximum fuel (95%), minimum fuel (25%), last fuel (10%), and no fuel (1%). When a fuel warning is displayed, the fuel tank must be filled to at least the maximum fuel level (95%) for the warning to disappear. These values are factory-set and must not be changed.

3.4.3.2. Battery voltage settings

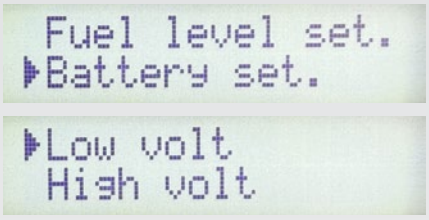


Figure 22. Battery voltage settings screens

The low voltage and high voltage limit values can be set from the battery voltage limits menu. These values automatically change based on the value selected in the battery voltage menu (12V/24V). The values are made in the factory and changing them is not recommended.

3.4.4. Weekly test menu

Figure 23. Weekly test menu screens

In the weekly test menu, the time at which the diesel engine will be automatically started and stopped for testing purposes each week can be determined. In the weekly test menu, the weekly test can be set to on or off. On the screen displayed after the weekly test is set to on, the time, day (1: Monday, 2: Tuesday, 3: Wednesday, etc.), and duration in seconds for the weekly test should be set respectively. If it is set to 2:00 PM, 2, 120 seconds, the diesel engine will automatically start and stop for 120 seconds every Tuesday at 2:00 PM. After the weekly test, ensure that no warnings or errors have occurred and if an error occurs, investigate the cause and perform the necessary repairs. Contact customer service in such cases. The weekly test setting is configured as on at the factory, and the weekly test must not be turned off. The user is responsible if the weekly test is turned off and any faults that may occur are not detected as a result. After the weekly test, the fuel level should be checked and if low, refilled to the maximum level.

3.4.5. Sensor settings

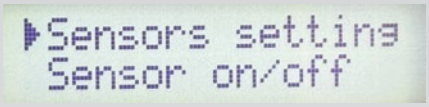


Figure 24. Sensor configuration menu screens

From the sensor settings menu, the parameters for various sensors in the diesel engine system can be entered into the panel. The values for standard sensors are factory-set and do not require adjustment. If a sensor with different parameters from the standard sensors is used, its values must be entered into the panel through this menu to configure it.

3.4.5.1. Fuel float settings

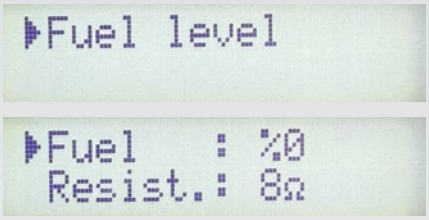


Figure 25. Fuel float menu screens

The resistance values of the fuel level sensor can be adjusted at various values from the fuel float menu. These values are set as standard. If a different float is to be used, the relevant values must be adjusted according to the float to be used.

3.4.6. Sensor status (Sensor on/off) menu

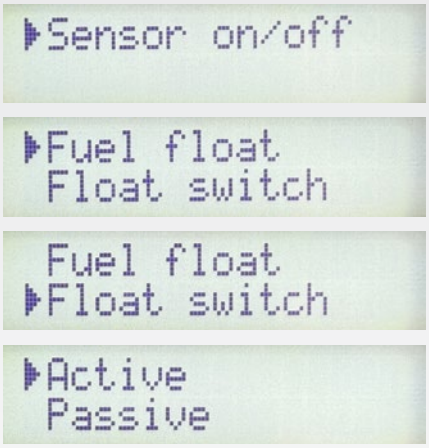


Figure 26. Sensor status menu screens

The sensor on/off menu is designed for full compatibility between the system and the panel. Fuel float and coolant level float sensors can be enabled or disabled from this menu. If there is a sensor that is not present in the system, it can be disabled by accessing the sensor status menu and then entering the menu for the relevant sensor. No warning or fault is generated for the disabled sensor. Sensors that are present in the system and have critical functions must not be disabled under any circumstances. Any fault caused by improper intervention will be considered out of warranty.

3.4.7. Service period

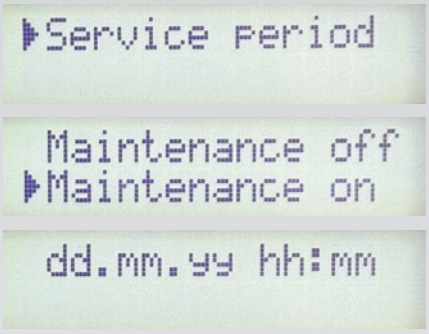


Figure 27. Service period menu screens

This is the menu for setting a maintenance reminder. Maintenance can be set to off or on. Set to on to enter the date and time for maintenance. The pump controller will give a warning when this date and time are reached. When the panel service time warning is displayed, contact an authorized service and have the system serviced. To turn off the warning, the maintenance status must be turned off in this menu. Afterward, set a new date and time for the next maintenance.

3.5. Maintenance and Operation

- Panel must be grounded.
- Disconnect electrical power, remove the battery positive terminal, and wear the necessary protective equipment before performing any service or maintenance.
- The panel energy input should use a residual current relay and appropriately rated fuse. Check all terminal connections and functions during maintenance.
- Check that the electrical connections on the control panel are not loose and that the grounding wire is intact.
- Ensure there is no abrasion, puncture, or color change resulting from heating in the electrical cables.
- Always follow the pump and motor control instructions.
- You can view the product's history from the error history.
- All sub-controls on the diesel engine pump must be conducted while the engine is not running and the starter motor coil terminal (terminal no. 50) is disconnected.
- There must be adequate ventilation at the installation site. Do not install near heat sources.
- Never remove the battery terminals while the engine is running.
- Contact the authorized technical service for more detailed information.

3.5.1. Unsuitable Working Conditions

- Locations where the installation room temperature is outside +4 / +40 °C
- Areas with high condensation due to rapid changes in air temperature
- Places with high contamination, dust, moisture, water vapor, salt, corrosive, or radioactive effects
- Environments where rodents are present
- Environments with risk of explosion
- Areas with excessive vibration
- Unprotected areas exposed to sunlight and rain

3.5.2. Maintenance

The following maintenance operations should be performed weekly:

- Weekly test
- Warning lights test
- Battery and battery connections check
- Cable connection firmness and terminal state check.
- Fuel level check.

The following maintenance operations should be performed monthly:

- Radiator water level check
- Engine oil level check

The following maintenance operations should be performed yearly:

- Antifreeze must be added to the radiator water.
- The engine oil must be changed.
- The oil filter must be replaced.
- The air filter must be replaced.

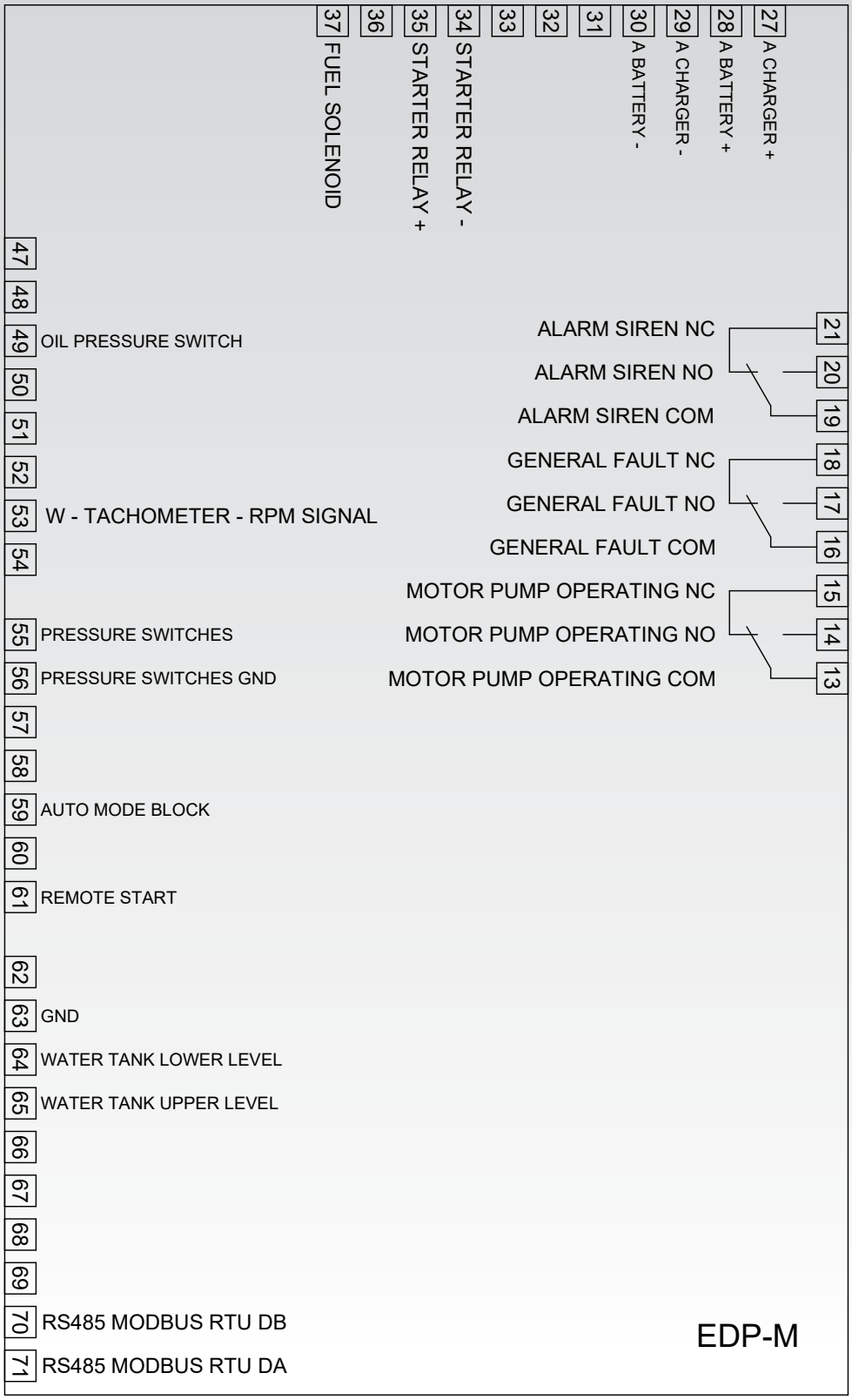
3.6. Diagnostics and Troubleshooting

EVENT LIST	CAUSE	SOLUTION
Startup failure	• The diesel engine failed to start after starting attempts.	• Reset the fault. • Close the discharge valve and start the diesel engine by pressing the manual start button. Verify that the diesel engine is working properly. Then press and hold the stop button to turn off the diesel engine. Open the discharge valve again and confirm that the entire system is ready for operation. • If the diesel engine does not activate when the manual button is pressed and held, the entire system must be checked. • The fuel level, battery group, panel and charging system, diesel engine, and the entire system must be checked. • Contact an authorized service.
Sudden run	• The diesel engine was activated even though the EDP panel did not give the start command.	• The reason for the uncontrolled operation must be examined. • The diesel engine must not run in an uncontrolled way. • It must be ensured that the system is working properly. • Contact an authorized service. • Unauthorized persons must not press the manual start buttons unless necessary.
Pick up anormal	• The diesel engine stopped while running even though the stop signal was not received, or the RPM sensor is not providing RPM information.	• After the diesel engine starts, the stop signal must be sent to the stop actuator, causing the diesel engine to stop. • This fault occurs if the diesel engine has stopped before the stop signal is received, or if the RPM information from the RPM sensor is interrupted. • Check whether the diesel engine is running. • If the pickup abnormal error is displayed while the diesel engine is running, the fault must be reset. If the fault recurs, the RPM sensor or its connection may be defective. The RPM measurement system must be checked. • If the diesel engine stops on its own while running, the diesel engine and the entire system must be checked. • The fuel level and whether there is air in the fuel line must be checked. • Contact an authorized service.

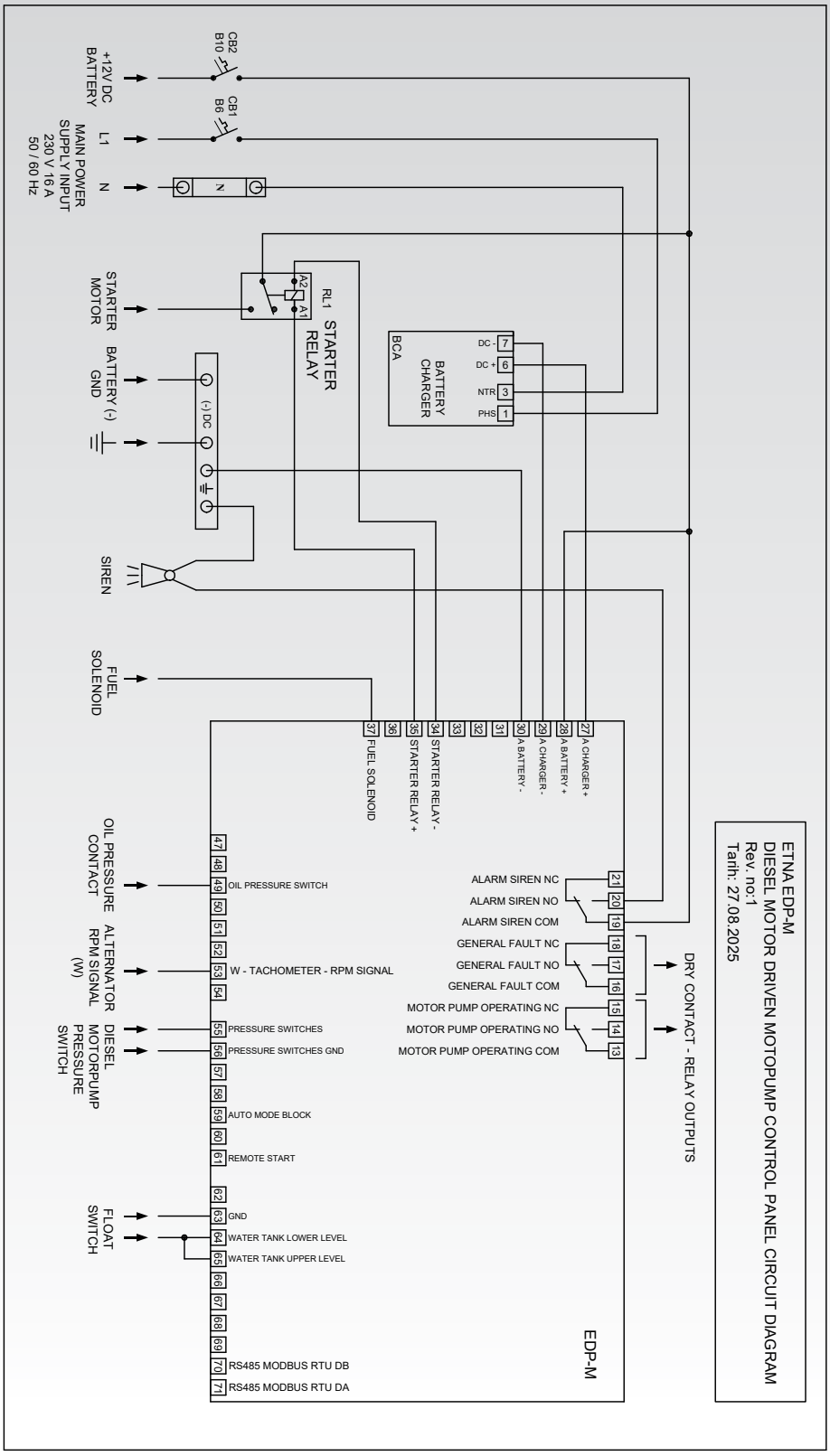
EVENT LIST	CAUSE	SOLUTION
Oil pres contact (Oil pressure contact)	• The oil pressure is low when the diesel engine is running.	• This fault occurs when the oil pressure is insufficient while the diesel engine is running. • The oil level must be checked using the dipstick. • Cable connections must be checked. • Contact an authorized service.
Auto mod disable (Auto mode disabled)	• The automatic manual mode selector button (AUTO MAN) on the front panel cover was pressed.	• Except for maintenance or malfunction, always keep the automatic mode selected. • Authorized personnel may switch to manual mode in cases such as maintenance, and the system must be returned to automatic mode after the operation is complete. • When automatic mode is selected, the GND signal does not reach terminal 59 on the EDP panel. The device is in manual mode if the GND signal reaches terminal 59. • If this error persists even though automatic mode is selected, contact an authorized service.
Maintenance time	• It's time for authorized service maintenance.	• Contact an authorized service and have the periodic maintenance of the system performed. • The authorized service performs maintenance and sets the date for the next maintenance from the service maintenance menu.
Fuel level oc (Fuel float transmitter open circuit)	• The fuel level sensor is defective or the cable connections are broken.	• This fault occurs when the fuel level sensor connection is lost. • Check the fuel level sensor cable connections. • Press the reset button to reset the fault. If the fault recurs, replace the fuel level sensor.
Oil press. start (Oil pressure start)	• The starter was engaged from the battery group while the diesel engine was running.	• The engine was started while oil pressure was present, i.e., while the diesel engine was running. • The start buttons must not be pressed while the diesel engine is running. This causes the diesel engine to malfunction. • It is considered outside the scope of the warranty.
Auto mode enabld (Auto mode enabled)	• The panel is in automatic mode.	• Except for maintenance or malfunction, always keep the automatic mode selected. • Authorized personnel may switch to manual mode in cases such as maintenance, and the system must be returned to automatic after the operation is complete. • When automatic mode is selected, the GND signal does not reach terminal 59 on the EDP panel. The device is in manual mode if the GND signal reaches terminal 59.

EVENT LIST	CAUSE	SOLUTION
Minimum fuel	• The fuel level is low.	• Fill the fuel tank to the maximum level.
Last fuel	• The fuel is about to be depleted.	• Fill the fuel tank to the maximum level.
No fuel	• The fuel is depleted.	• Fill the fuel tank to the maximum level.
Battey high/ low voltage	• The battery voltage has exceeded the values specified in the menu.	• The EDP panel battery voltage must be selected from the menu according to the system voltage (12V/24V). • The voltage values must be within the high and low voltage range set in the menu.
Charge A fault	• Battery group A cannot be charged.	• This fault occurs when the battery group cannot be charged. • Check that the mains power is connected using the appropriate measuring instruments. • Check the fuses. • Check that the battery charging rectifier for battery group A is in operation. • Check the battery group and terminal connections. • Check the cable connections. • If the fault persists, contact an authorized service.
Anormal stop	• The diesel engine stopped without a stop command from the panel.	• This error occurs if the diesel engine stopped unexpectedly. • The fuel level must be checked. • The diesel engine and system must be checked. • If it recurs, contact an authorized service.

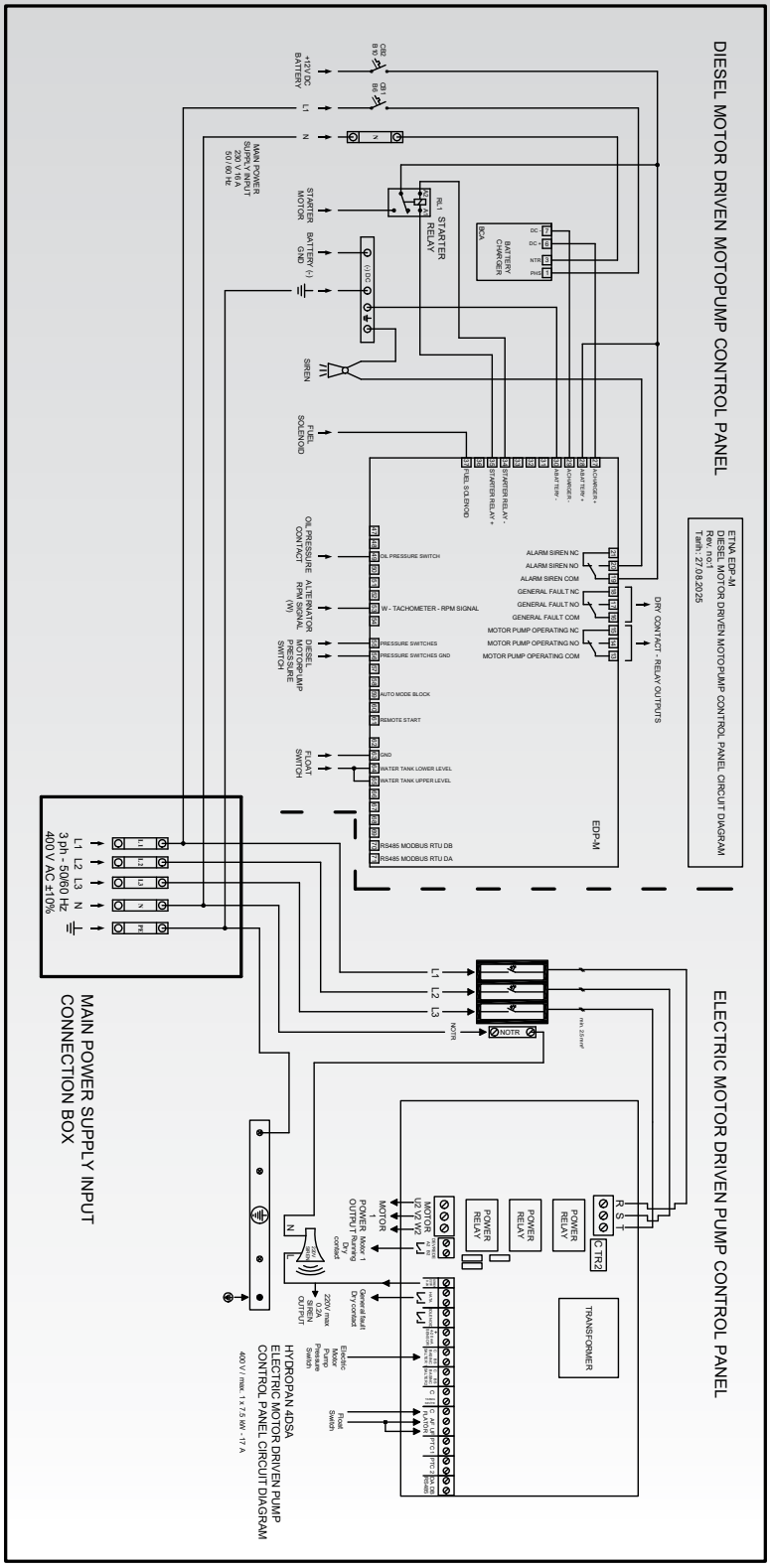
3.7. ETNA EDP panel terminal descriptions



3.8. Circuit diagram



3.9. 1 Diesel + 1 Electrical engine motor pump set connection diagram



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ETNA®

Dudullu Organize Sanayi Bölgesi 2. Cadde No: 14
34775 Ümraniye İstanbul / Turkey
Tel : +90 216 561 47 74 (Pbx) • Fax : +90 216 561 47 50
www.etna.com.tr/en • info@etna.com.tr