ETNA®



ETNA EHP-K Control Panel & Electric Motor Driven Firefighting Pump Set User Manual Compliant with EN 12845 & NFPA 20

1. Product Information

ETNA EHP-K series panels are designed to control pump groups driven by electric motors used in fire-fighting systems. With the specially developed ETNA EHP-K electronic panel and software, they provide a comprehensive and user-friendly control solution tailored to operational needs. Together with the mechanical and electronic components of the electric motor-driven pump set, the panel ensures precise and reliable system control. All system data can be monitored via the LCD display and status indicator LEDs, and necessary settings can be easily adjusted using the control buttons. The panel ensures that the fire-fighting system remains ready for operation at all times.

In cases where pressure loss occurs in the fire-fighting system, requiring the main electric motor-driven pump to start, the ETNA EHP-K series panel activates the electric motor, pressurizes the system, and manages the control process accordingly.

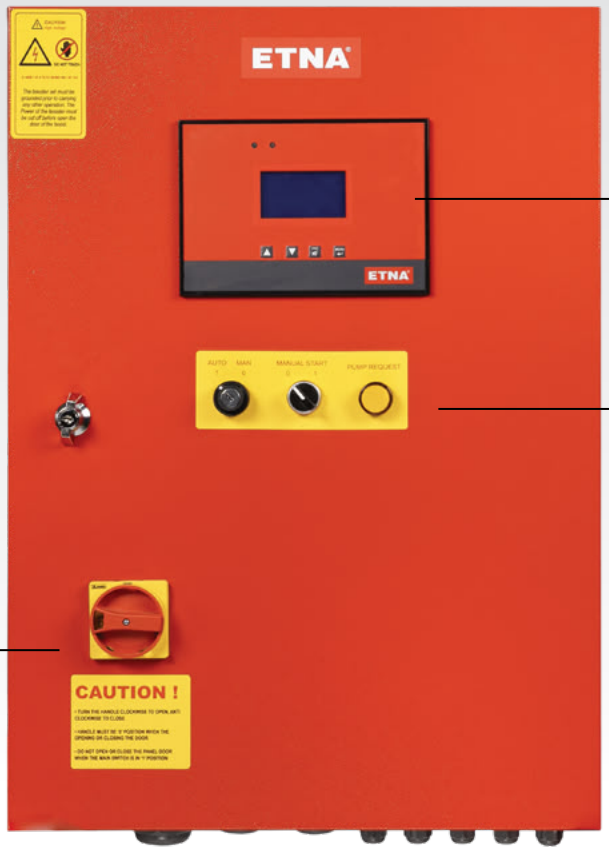


Figure 1: EHP-K Panel External View

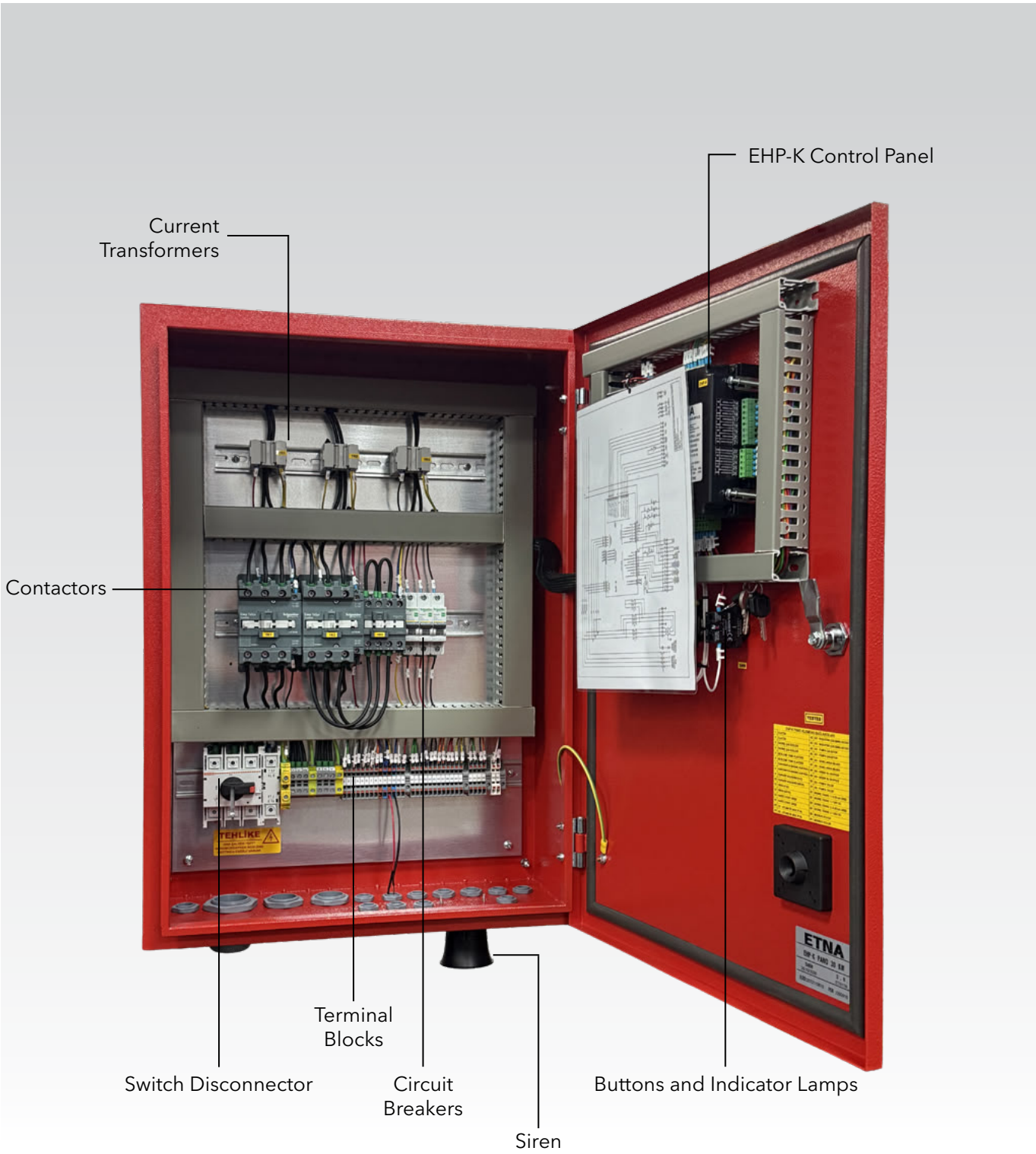


Figure 2: EHP-K Panel Internal View

1.1 Technical Specifications

- Epoxy-coated DKP sheet steel control panel
- Lockable Auto/Manual mode selector switch on the panel front door
- Manual start button on the panel front door
- IP65 protection class
- Current (A), voltage (V), and power (kW) measurement
- Calibration capability for current (A), voltage (V), and power (kW)
- Phase loss, phase imbalance, and phase sequence fault detection and alarm
- Automatic start via pressure switches or priming tank float switch
- Pressure control function
- 128×64 graphic LCD display
- Monitoring of all system statuses such as start requests and fault conditions via the LCD display
- Manual stop, lamp test, reset, and menu access buttons
- Monitoring capability via Modbus RTU over RS485 protocol
- Remote Control via Modbus RTU with RS485 Protocol (Start, Stop and Fault Reset)
- Display of total and manual operating hours and number of starts
- Adjustable start and stop delay times
- Periodic maintenance reminder function
- Turkish and English language options
- Storage of up to 98 historical event records in memory
- Real-time date and time
- Automatic weekly test at the set date, time, and duration
- Restricted access via password-protected menu
- Changeable menu password
- Remote start capability via dry contact input
- Siren relay output for siren connection
- Relay dry contact outputs for pump running, general fault, start failure, pump demand, auto mode off, and low water level signals
- Dry run protection and alarm via external float switch connection

2. Electronic Control Board

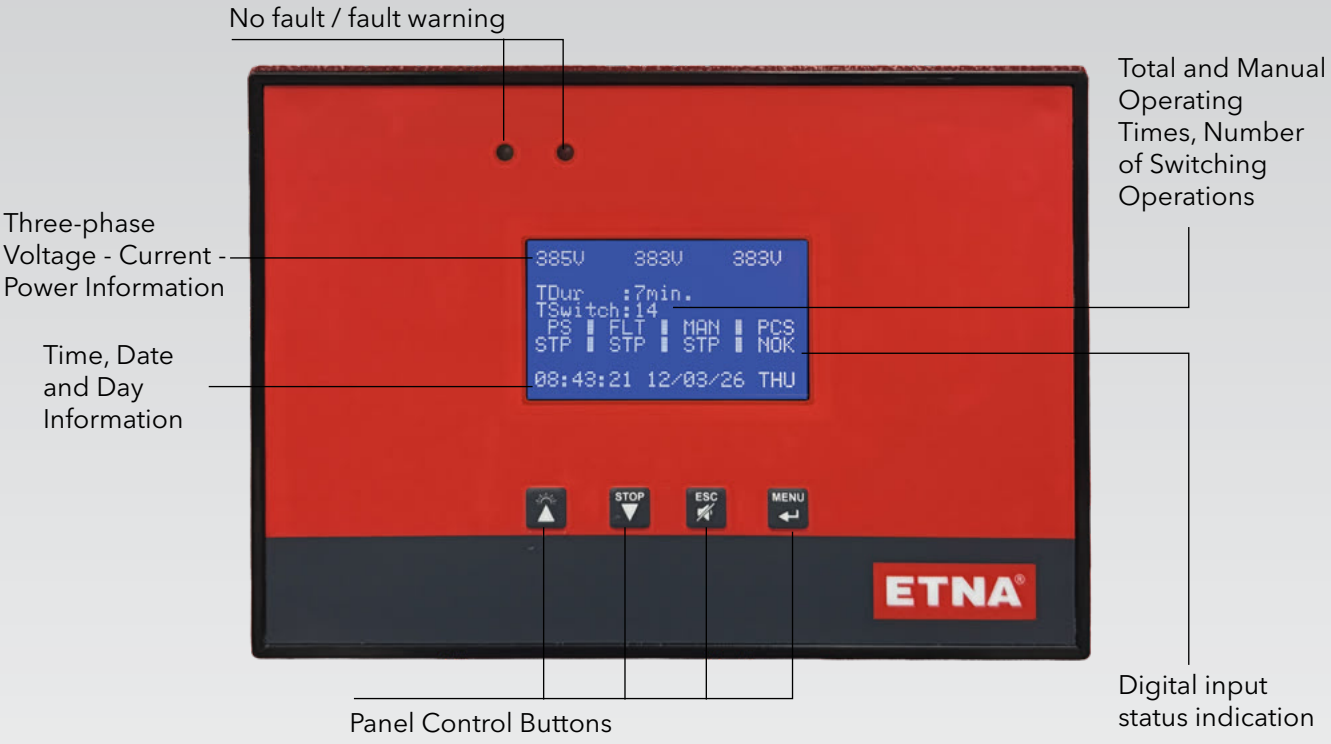


Figure 3: Electronic Control Board

2.1. Control Panel Buttons

: Used to navigate within the menu, increase the value to be adjusted, and perform the lamp test function. When the Up button is pressed and held for 2 seconds, the lamp test function starts and the lamps on the panel light up to check whether they are faulty.

STOP : Used to navigate within the menu, decrease the value to be adjusted, and perform manual stop. The manual stop button is used when the electric motor needs to be stopped manually. When the Stop button is pressed and held for 1 second, the electric motor stops. If the Stop button is pressed during a fire condition, a warning appears on the main screen indicating that the pump cannot be stopped during a fire. If there is actually no fire and the electric motor needs to be stopped, the selector switch on the front door of the panel must be turned to the manual position and then the Stop button should be pressed and held.

ESC : Used to reset faults that require manual reset during a fault condition and to return to the previous menu while navigating in the menu. If there is an audible alarm on the panel due to a fault, pressing this button once will mute the audible alarm. After the audible alarm is muted, pressing and releasing this button once again will reset the fault if it is a resettable fault. In addition, if this button is pressed and held for 5 seconds on the main screen, the software will reset and restart. Performing the software reset repeatedly or unnecessarily is not recommended.

MENU : Used to access the menu or to save the changed parameter. If this button is not pressed after making any change in the parameters, the change will not be saved.

2.2. Starting the Electric Motor Pump Unit

2.2.1. Preparing for Automatic Mode

When the locked mode selector switch on the front door of the panel is set to the AUTO (automatic) position, the automatic mode becomes active and the warning indicator on the ETNA EHP-K panel lights up in green. The control panel must always remain in automatic mode, and the system should be kept ready for operation.

When the automatic mode is selected, the key on the locked mode selector switch should be removed and kept under the supervision of authorized personnel. Once the key is removed, it is not possible to turn the locked mode selector switch to the MAN (manual) position. This prevents unauthorized persons from disabling the system.

During scheduled maintenance, authorized service personnel may insert the key into the mode selector switch and turn the switch to the MAN (manual) position. In this case, the warning indicator lights up red and an audible alarm is activated on the panel.
After the scheduled maintenance is completed, the mode selector switch must be turned back to the AUTO (automatic) position and the key must be removed and kept safely.

2.2.2. Operation in Automatic Mode

When the pressure in the discharge manifold of the fire booster system drops, a start signal is received from the pressure switches located on the discharge manifold, and the message RUN (RUN) appears under the pressure switch call warning (PS) on the EHP-K panel display.

When the start signal is received, the start delay timer (WSDur.) begins counting down, and at the end of this period the electric motor is started. The pressure switch must be of the normally closed type when the system is under pressure.

Automatic operation may also occur through the supply tank float switch signal. If the water level in the supply (reserve) tank decreases due to a malfunction or any other reason, the motor is started by the start signal received from the supply tank float switch (FLT).
When the water level is restored, the signal from the float switch is cut off and the motor stops automatically. The supply tank float switch must be of the normally open contact type when the tank is full.

2.2.3. Manual Operation

Manual operation can be carried out using the manual start switch located on the front door of the panel. When the manual start switch is turned to position 1, the motor is started. Manual operation should not be performed except in necessary or emergency situations. Intervention by unauthorized persons may cause malfunctions, and such situations are considered outside the scope of warranty. After manual operation, the motor must be stopped by turning the manual start switch to position 0.

2.2.4. Detection of Discharge Line Pressurization

A pressure sensor (euroswitch) located on the discharge line is connected to the pressure control input. This pressure sensor must be of the normally closed contact type when the system is pressurized.

When the motor is not running (no pressure in the discharge line), the pressure sensor connected to this input remains in the open circuit position, and therefore pressure control (PCS) is displayed as NOK (not ok (no pressure)) on the main screen.

After the motor starts, the pressure control (PCS) input is displayed as OK (pressure is present). If pressure does not build up in the discharge line after the motor starts, a pressure error is generated after the pressure time, which can be set from the menu.

2.2.5. Stopping the Motor

If the motor has started automatically due to a pressure switch signal and the pressure switch signal is still active, the motor must not be stopped. Even if the STOP button is pressed while the pressure switch signal is active, the message “Can't stop in a fire” will appear on the display.

If it is confirmed that the fire has been extinguished and the motor needs to be stopped, the AUTO–MAN mode selector switch located on the front door of the panel must be set to MAN (manual), and the motor must be stopped by pressing and holding the STOP (down button) button for 1 second.

If there is no pressure switch signal and the motor needs to be stopped, the motor can be stopped by pressing and holding the STOP button.

If the automatic stop option is activated in the menu, once the pressure switch signal is cleared, the message STOP (STP) starts flashing under PS (pressure switch) and the wait stop timer (WSDur.) on the main screen begins counting down. At the end of this period, the motor is stopped automatically. This condition is under the responsibility of the user.

According to EN12845 requirements, the automatic stop feature must be set to passive.

2.3. Main Screen Descriptions

On the top line of the main screen, voltage, current and power measurements are displayed alternately. When the motor is not running, only the voltage values are shown. Once the motor starts, voltage, current and power values are displayed sequentially.

Total running time (TDur) and Total number of switchings (TSwitch), as well as Manual running time (MDur) and Manual number of switchings (MSwitch), are displayed alternately.

The status of the digital inputs can be monitored on the screen. These inputs are coded as Pressure Switch (PS), Supply Tank Float (FLT), Manual Start (MAN) and Pressure Control (PCS). If a run command is received from any of these inputs, RUN (RUN) is displayed under the corresponding input. If no run command is present, STOP (STP) is displayed.

2.3.1. Example Screen Description

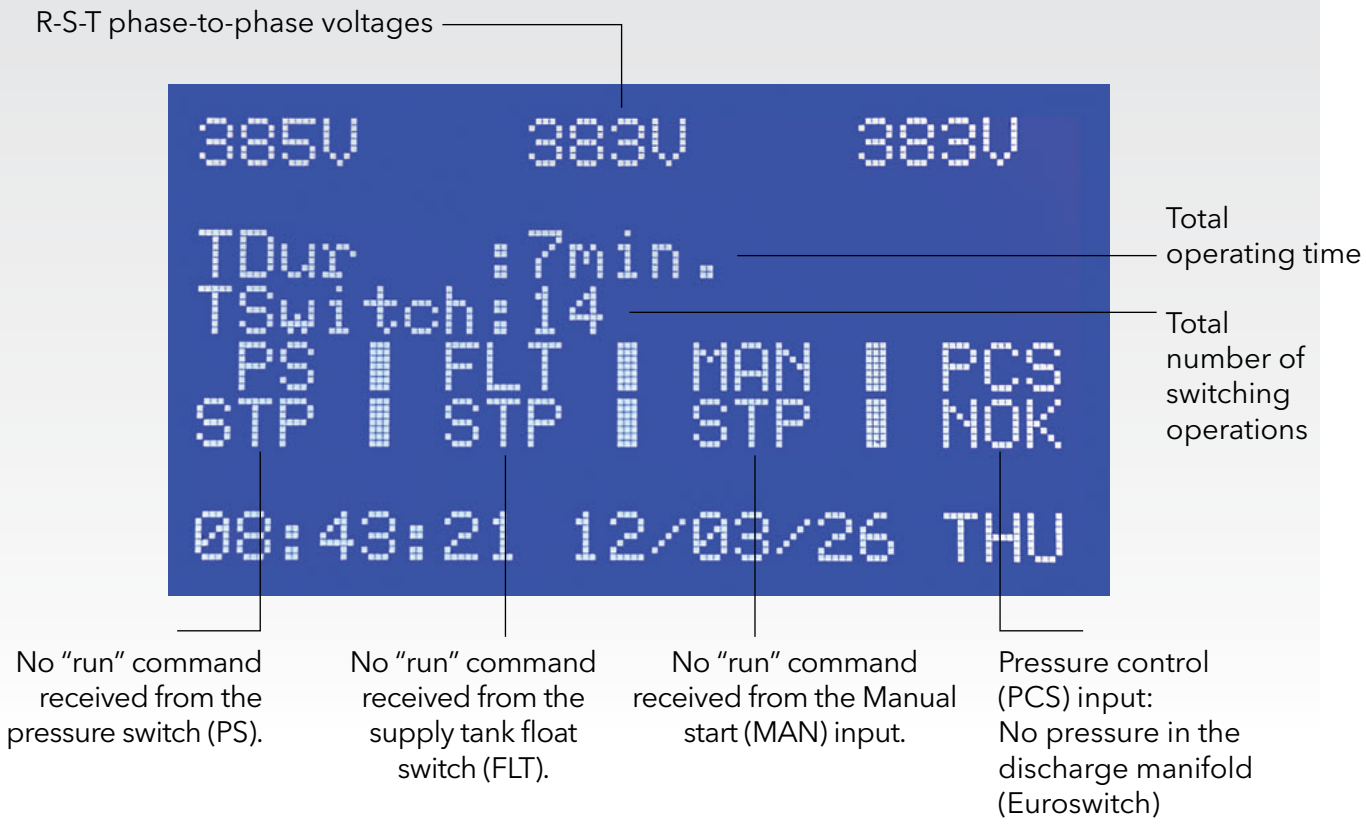


Figure 4: Example Screen Description in Standby Mode

2.3.2. Example operation screens



Figure 5:
Standby mode. Diesel is not running.
No operation demand.
The system is ready and waiting.



Figure 6:
The motor is not running. A start command is received from the pressure switch.
The start delay countdown is in progress.
The motor will start at the end of the countdown.
No pressure.



Figure 7:
The motor is running.
A start command is received from the pressure switch.
Pressure is present.



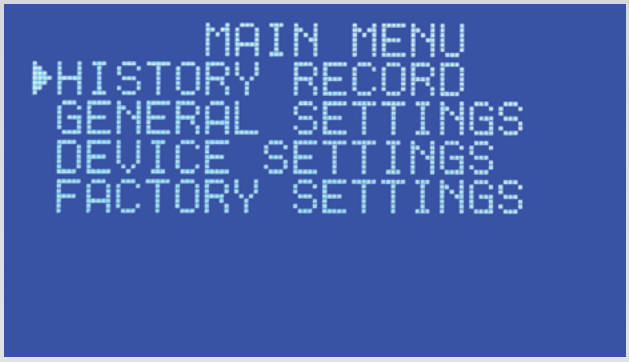
Figure 8:
The motor is running. The start command from the pressure switch has been removed.
The STOP indication is flashing.



Figure 9:
The motor is running. The start command from the pressure switch has been removed and the stop delay countdown is in progress.
Pressure is present. The motor will stop automatically at the end of the countdown.

3. Menus

3.1 Main Menu



When the panel is on Operating Screen and MENU menu button is pushed, main menu is displayed on screen as shown on Figure 4. In order to reach desired menu pointer can be moved by pressing up and down arrow buttons MENU and menu button is pressed to enter related sub-menu.

Figure 10: Main Menu Screen

3.1.1 History Record Menu



Stop System Confirmation is displayed when the pointer is on Settings line and MENU button is pressed. If the system wants to be stopped Yes is selected if not No is selected and after that Password screen is displayed. On password screen, if the correct password is entered Settings submenu becomes visible as seen on Figure 12. MENU

Figure 11: Settings Confirmation Screen

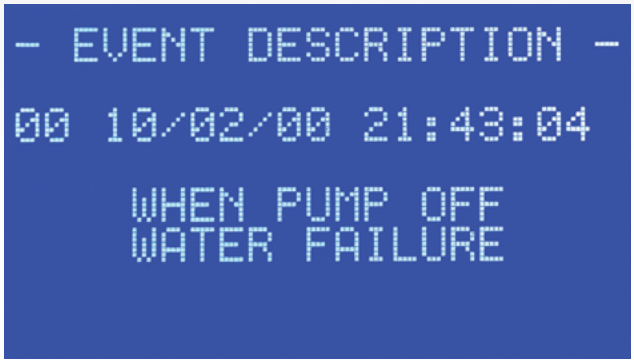


Figure 12: Settings Menu Screen

3.1.2 General Settings

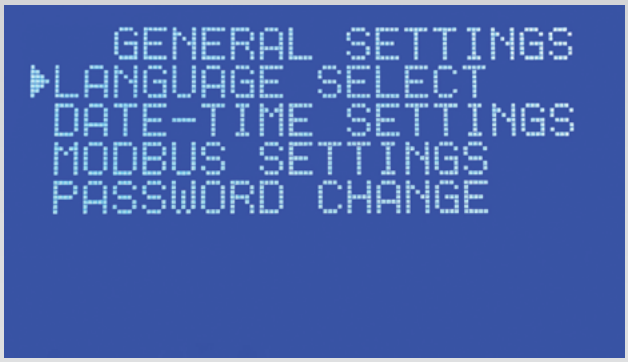


Figure 13: General Settings Screen

A password is required for General Settings, Device Settings, and Factory Settings. For these settings, enter "0000" as the password on the password screen.

When the cursor is on the General Settings line and MENU the button is pressed, the General Settings Screen shown in Figure 7 is displayed. In the General Settings menu, Language Settings, Date/Time Settings, MODBUS Settings, and Password Change can be accessed using the up/down arrow buttons.

- Turkish / English language options are available in the language settings.

- In the Date/Time settings:
  - o Time setting; can be configured in hours, minutes, and seconds,
  - o Date setting; can be configured in day, month, year, and day of the week.

- In the MODBUS settings, the Baud Rate, Stop Bit, Parity values, and Device ID can be configured. The Modbus register table is provided on the following pages.

- The menu password can be changed from the Password Change menu. When entering the Password Change menu, the new password is entered and the confirm button is pressed. The new password is entered again and the confirm button is pressed once more to save it. If the menu password is changed, the new password must not be forgotten. If it is forgotten, authorized service must be contacted.

3.1.3 Device Settings

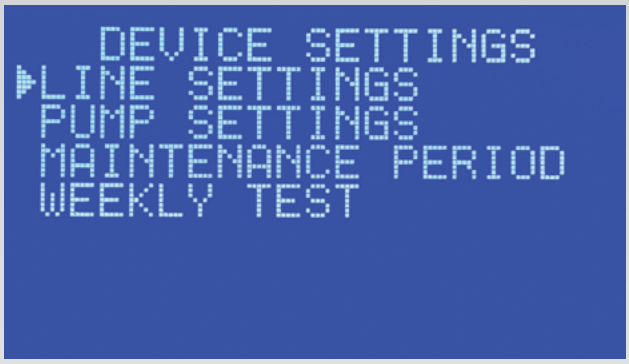


Figure 14: Device Settings Screen

When the cursor is on the Device Settings line in the Settings menu screen and MENU the button is pressed, the Device Settings Screen shown in Figure 8 is displayed. In this menu, Mains Settings, Pump Settings, Service Maintenance Period, and Weekly Test Settings can be configured using the up/down arrow buttons.

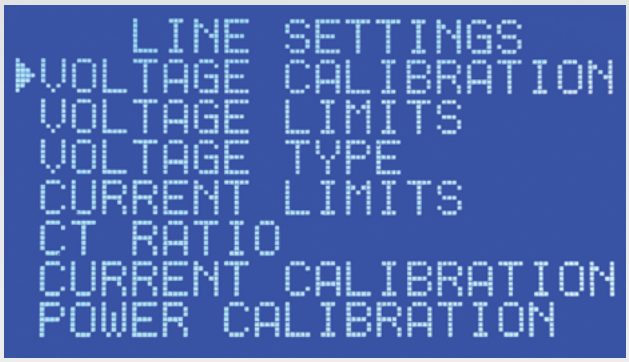


Figure 15: Mains Settings Screen

i) Mains Settings: From this menu, voltage calibration, protection limit settings, and LCD voltage display settings can be configured.

a. **Voltage Calibration Setting:** Calibration of the measured values for R – S – T phases can be performed individually. It is carried out by the manufacturer to calibrate the voltage value displayed on the screen with the mains voltage value.

b. **Protection Limit Setting:** Menu where voltage protection limit values are selected. It can be set as 10% or 15%. If the set limits are exceeded, the panel generates an alarm.

c. **LCD Voltage Display:** Menu where the voltage values displayed on the screen are set as Phase-to-Phase or Phase-to-Neutral.

d. **Current Protection Limit:** Menu where low and high current limit values can be set. These values should be adjusted according to the motor power. If the set limits are exceeded, a warning is generated and a notification is provided.

e. **Transformation Ratio:** Menu where the transformation ratio of the current transformers in the panel is selected. The correct ratio must be selected to ensure accurate display of the motor current.

f. **Current Calibration:** Used to calibrate the power value displayed on the screen with the power value indicated on the calibrated power analyzer.

g. **Power Calibration:** Used to calibrate the power value displayed on the screen with the power value indicated on the calibrated power analyzer.

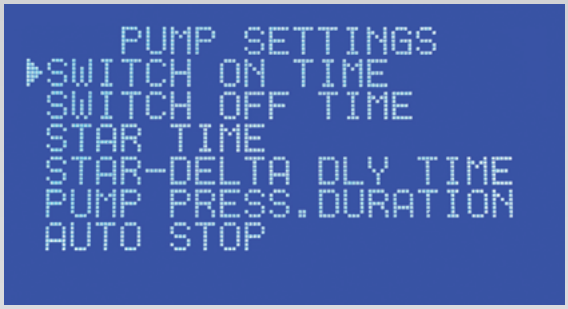


Figure 16: Pump Settings Menu

ii) Pump Settings: Menu where settings related to pump operation are configured.

a. Start Delay Time: The delay time the pump waits before starting when a pump demand occurs via the pressure switch or supply tank float switch.

b. Stop Delay Time: The time the pump waits before stopping when the "run" command from the pressure switch or supply tank float switch is removed. While the pump is running in automatic mode, when the pump demand is removed and the current start command is cut off, the time set in this parameter counts down on the main screen, and the pump stops at the end of this period.

c. Star Time: The parameter used to set the duration for which the main contactor relay and the star contactor relay remain energized in star-delta starting motors. It is set to 5 seconds by default.

d. Star to Delta Transition Delay Time: The parameter used to set the delay between the release of the star contactor relay and the energizing of the delta contactor relay. It is set to 0.05 seconds by default.

e. Pump Pressure Time: The parameter used to set the delay time during which the system checks whether pressure is established after the pump starts. If the pressure control switch input does not short circuit with "com" within the set time, the panel generates a "no pressure" fault.

f. Automatic Stop: The Automatic Stop menu allows selection of whether the electric motor will be stopped automatically. When set to active, the diesel engine that starts upon a run command from the pressure switch will stop automatically at the end of the stop delay period initiated when the run command is removed. When Automatic Stop is set to passive, the diesel engine started by the pressure switch can only be stopped manually by the operator by pressing and holding the stop button. The motor must not be stopped while a run command is present from the pressure switch. In automatic mode, even if the stop button is pressed while a run command is active, a warning indicating that it cannot be stopped during a fire condition is displayed on the screen. If it is confirmed that the fire has been extinguished, the automatic mode must be cancelled using the selector switch on the front panel, manual mode must be selected, and then the motor can be stopped by pressing and holding the stop button. Afterwards, the entire system should be checked, automatic mode should be reselected, and the system should be ready for operation. According to EN12845 requirements, the passive option must be selected in the Automatic Stop menu.

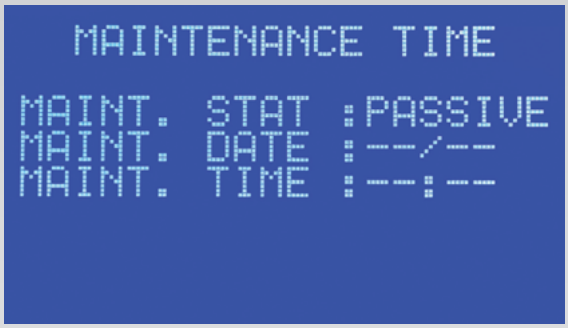


Figure 17: Service Maintenance Period Screen

iii) Service Maintenance Interval: This menu is used to set the service maintenance reminder alert. Maintenance can be set as enabled or disabled. Once enabled, the maintenance date and time can be set. When the scheduled maintenance date and time is reached, the panel will issue a warning. To clear the warning, the maintenance status must be disabled via this menu. Then, a new date and time should be set for the next maintenance.

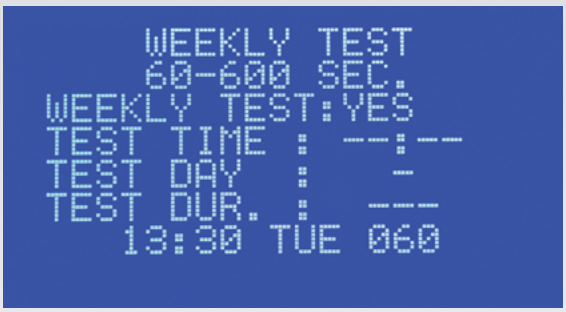
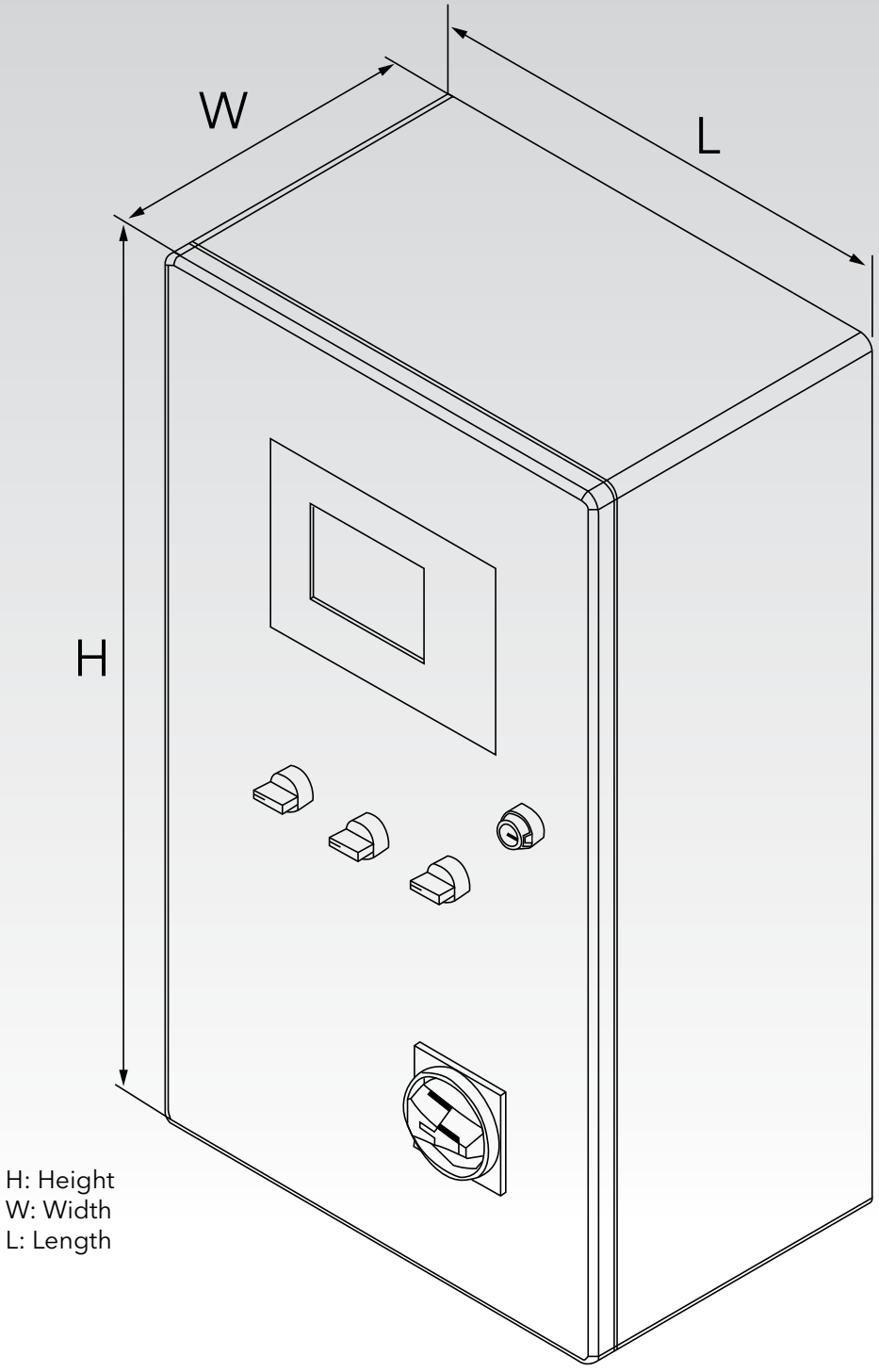


Figure 18: Weekly Test Screen

iv) Weekly Test: In the Weekly Test menu, the time at which the motor will be automatically started and stopped each week for testing purposes can be set. When entering the Weekly Test menu, either Weekly Test Enabled or Weekly Test Disabled can be selected. After selecting Weekly Test Enabled, the test time, test day, and test duration must be set respectively. After the weekly test, it should be checked that no warning or fault has occurred; if any fault occurs, the cause must be investigated and the necessary corrective action must be taken. In such cases, please contact authorized service. The weekly test setting is configured as enabled by default and should not be disabled. If the weekly test is disabled and potential faults are not detected, the responsibility lies with the user. This menu is used to configure the weekly test program. It is not recommended to set the weekly test duration longer than 120 seconds. Automatic mode must be selected for the weekly test to run automatically.

4. Dimensions



H: Height
W: Width
L: Length

Figure 19: EHP - K Panel Dimensions

Motor Power		Panel Dimensions		
kW	HP	Lenght (mm)	Height (mm)	Width (mm)
5,5	7,5	400	600	200
7,5	10	400	600	200
11	15	400	600	200
15	20	400	600	200
18,5	25	400	700	200
22	30	500	700	260
30	40	500	700	260
37	50	500	700	260
45	60	500	700	260
55	75	500	700	260
75	100	700	900	260
90	120	700	900	260
110	148	700	900	260
132	177	800	1200	300
160	215	800	1200	300

Table 2. Panel Dimensions Table

5. Maintenance and Operation

Check List:

- The control panel must always be grounded.
- A magnetic circuit breaker with a rating suitable for the motor power shall be installed at the panel main power input.
- Disconnect the electrical power before any service or maintenance, and use the required protective equipment.
- During maintenance, terminal connections and their functions should be checked for proper operation.
- Check that the control panel's electrical connections are not loose and that the grounding line is intact.
- Check electrical cables for wear, punctures, or discoloration caused by overheating.
- Always follow the pump and motor control instructions.
- You can view historical information about the product from the fault history.
- Ensure adequate ventilation at the installation site. Do not install near heat sources.
- Contact an authorized technical service for more detailed information.

6. Troubleshooting

WARNING: Please cut off the electricity before set-up and maintenance.

Warnings and Faults:
In case any faul tor alarm occured on system, please follow below listed instructions;

NO	FAULT or ALARM	REASON	SOLUTION
1	**PHASE LOST**	One or more of the phases required for the 3-phase supply to the EHP panel is missing.	• Check cable connections. • Check the 3-phase and neutral supply voltages. • Verify that 3 phases and neutral are present at the panel input connector.
2	**PHASE SEQUENCE REVERSED**	Phase sequence is reversed.	• Disconnect the power supply. • Change the phase sequence. • Check the rotation direction of the electric motor.
3	**HIGH-LOW VOLTAGE**	The voltage value has exceeded the voltage protection limits set in the menu.	• Check the phase-to-neutral voltages for each phase. • Check cable connections. • Verify that the actual voltage values are within the protection limits set in the menu.
4	**LOW WATER LEVEL**	Low water level in the tank.	• Check the water level in the tank. • Ensure that the float switch is operational. • Check cable connections.
5	**PRESSURE ERROR**	The pump is unable to generate pressure.	• Check whether the pump has been vented. • Check whether water is coming from the pump suction. • Check the connection cables of the pump pressure control sensor (euroswitch).
6	**THERMIC FAULT**	Thermic fault signal is present.	• Check cable connections. • Check the thermal protection of the electric motor.
7	**AUTOMATIC MODE DISABLED**	The AUTO–MAN selector switch on the front panel is in the MAN position.	• Ensure that automatic mode (AUTO) is selected on the panel. • Check cable connections.

Table 3. Troubleshooting Table

7. EHP-K Pump Control Panel Modbus Register Table

REGISTER ADDRESS	Function (R=Read, W=Write)	DESCRIPTION
40000	R	Total operating time (high)
40001	R	Total operating time (low)
40002	R	Total number of switching operations (high)
40003	R	Total number of switching operations (low)
40004	R	Manual operating time (high)
40005	R	Manual operating time (low)
40006	R	Manual number of switching operations (high)
40007	R	Manual number of switching operations (low)
40008	R	Pump status (11 – Pump running, 22 – Pump stopped)
40009	R	Low water level relay status (1- Relay energized, 0 – Relay not energized)
40010	R	Thermal fault relay status (1- Relay energized, 0 – Relay not energized)
40011	R	Power available relay status (1- Relay energized, 0 – Relay not energized)
40012	R	No pressure relay status (1- Relay energized, 0 – Relay not energized)
40013	R	Pump demand relay status (1- Relay energized, 0 – Relay not energized)
40014	R	General alarm relay status (1- Relay energized, 0 – Relay not energized)
40015	R	Solenoid relay status (1- Relay energized, 0 – Relay not energized)
40016	R	Panel start input (1- short circuit with “com” = automatic mode, 0- open circuit with “com” = automatic mode disabled)
40017	R	Water level input (1- short circuit with “com” = water available, 0- open circuit with “com” = no water)
40018	R	Thermal input (1- short circuit with “com” = no thermal fault, 0- open circuit with “com” = thermal fault present)
40019	R	Pressure switch input (1- open circuit with “com” = pump demand from pressure switch, 0- short circuit with “com” = no pump demand from pressure switch)
40020	R	Supply tank float input (1- short circuit with “com” = pump demand from float switch, 0- open circuit with “com” = no pump demand from float switch)
40021	R/W	Manual start input (1- short circuit with “com” = pump demand via manual start, 0- open circuit with “com” = no pump demand) (1- run, 0- stop)
40022	R	Pressure control switch input (1- short circuit with “com” = pressure available, 0- open circuit with “com” = no pressure)
40023	R	Weekly test status (1- weekly test in progress, 0 – no weekly test)
40024	R	Service maintenance status (1- service maintenance due, 0- service maintenance not due)
40025	R	Phase sequence status (1- phase sequence reversed, 0- phase sequence correct)
40026	R	R phase status (0- normal, 1- low, 2- high, 3- phase loss)
40027	R	S phase status (0- normal, 1- low, 2- high, 3- phase loss)
40028	R	T phase status (0- normal, 1- low, 2- high, 3- phase loss)
40029	R	Device mode (0- automatic mode, 1- manual mode)
40030	R	R phase voltage
40031	R	S phase voltage
40032	R	T phase voltage
40033	R	R phase current
40034	R	S phase current
40035	R	T phase current
40036	R	Total power (kW)
40037	W	Fault reset (1- reset faults requiring manual reset)

Table 1: EHP-K Pump Control Panel Modbus Register Table

8. Electrical Schematics

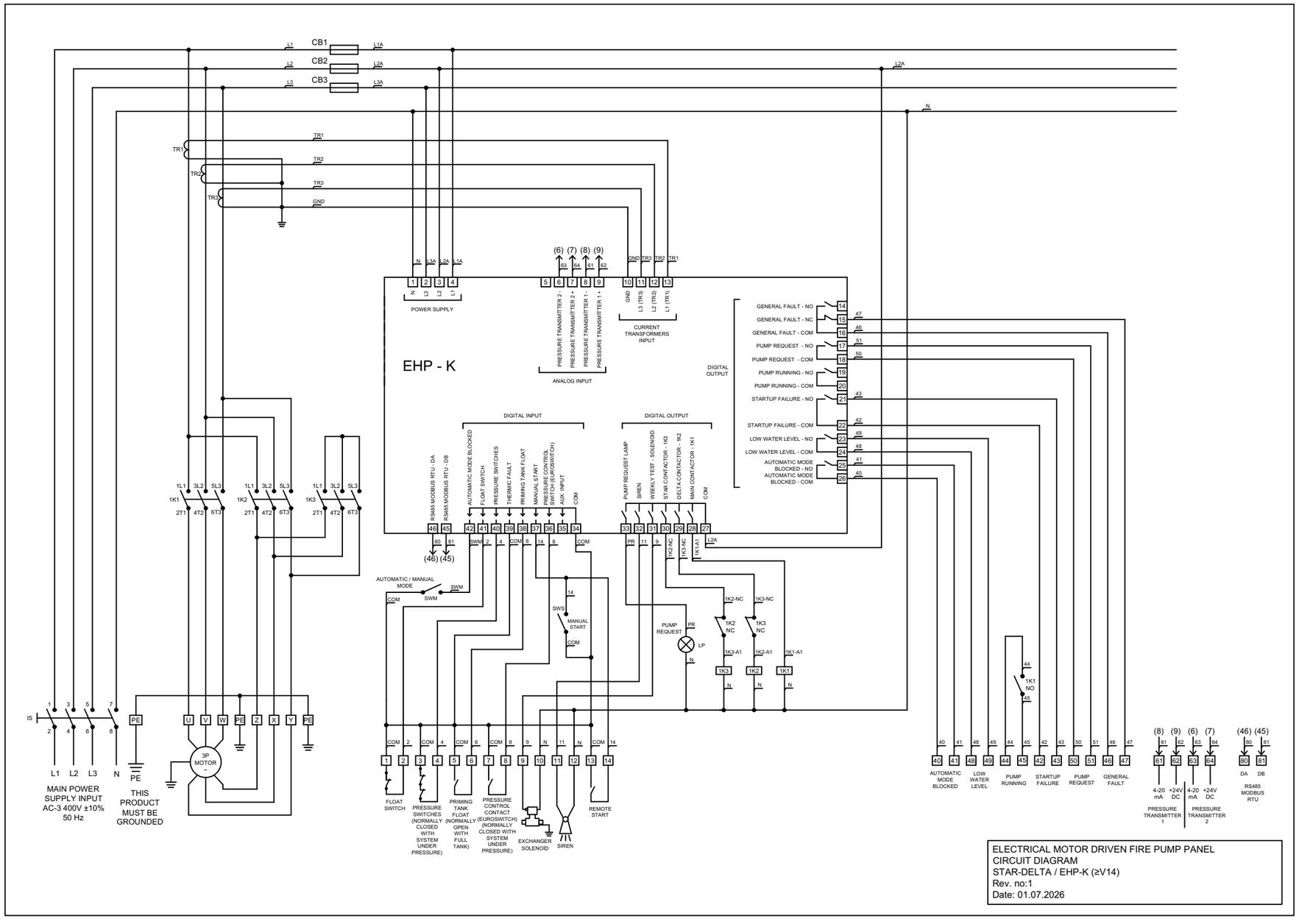


Figure 20. EHP-K Panel Circuit Diagram

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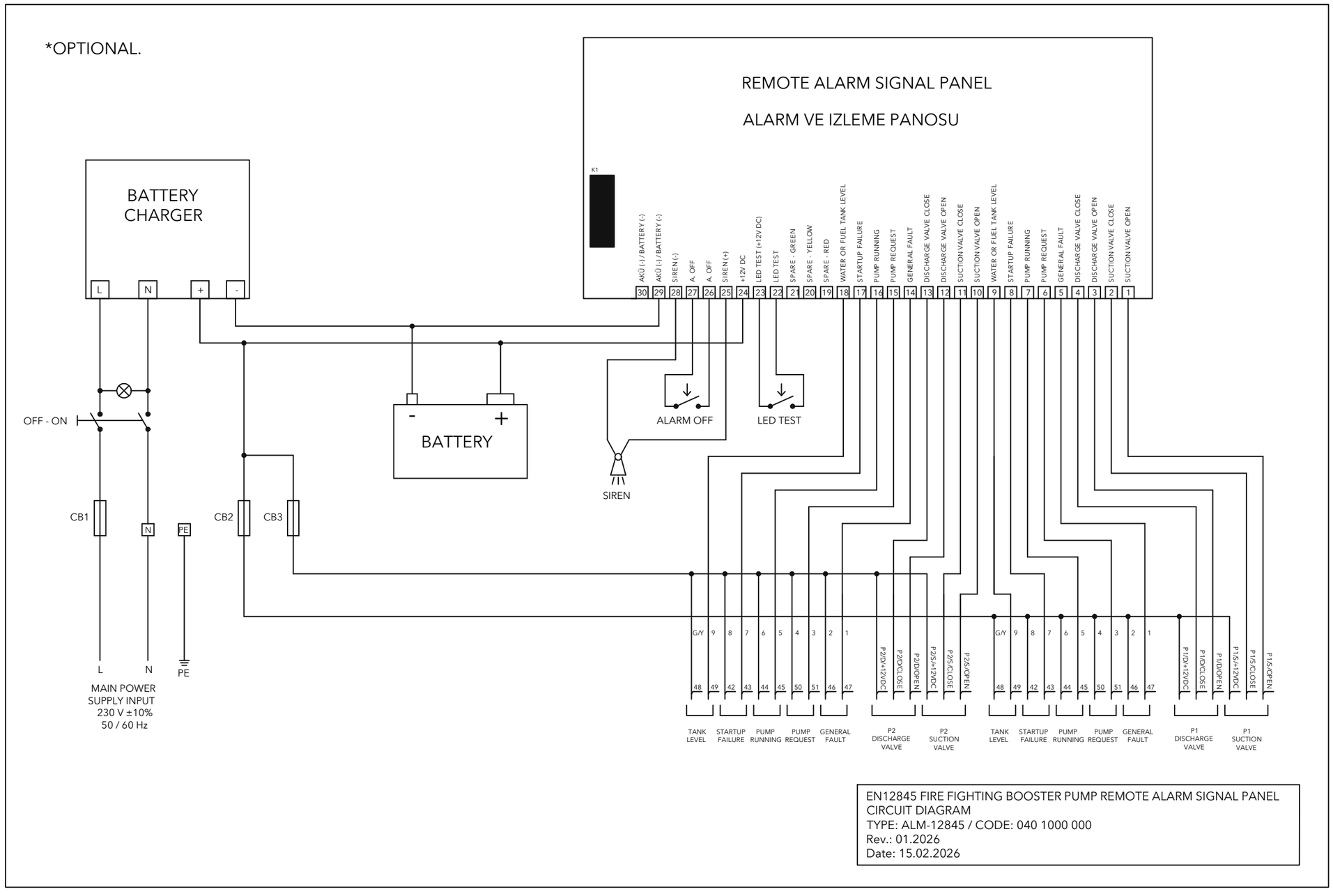


Figure 21. Remote Alarm and Valve Monitoring Panel Circuit Diagram

Recommended Cable and Circuit Breaker Selection Table for 400V, 50Hz Three-Phase Asynchronous Motors

Note: This table is prepared for reference and guidance purposes only. Motor currents are approximate values. The final selection must be based on the nameplate current specified by the motor manufacturer. The final cable selection must be verified through project-specific calculations, taking into account cable laying method, phase arrangement, ambient temperature, cable grouping, voltage drop, short-circuit withstand capability, and other site conditions. The magnetic trip threshold must be determined according to the motor's starting characteristics and the circuit breaker manufacturer's coordination tables. For 175–250 m, it is recommended to select a cable cross-section at least 1 size larger.

Motor Power (kW)	"Approximate Motor Current (A) (400V, 50Hz)"	"Panel Supply Cable (0–20 m) (N2XH 0.6/1 kV) 25°C"	"Panel Supply Cable (20–100 m) (N2XH 0.6/1 kV) 25°C"	"Panel Supply Cable (100–175 m) (N2XH 0.6/1 kV) 25°C"	"Panel-to-Motor Cable 0–10 m (Cu Flexible Power Cable 0.6/1 kV)"	"Recommended Circuit Breaker Rated/Frame Current (A)"
					Direct-on-Line (DOL) Starting	
2,2	4,5	4x2,5 mm²	4x2,5 mm²	4x4 mm²	4x1,5 mm²	10
3,0	5,9	4x2,5 mm²	4x2,5 mm²	4x4 mm²	4x1,5 mm²	16
4,0	7,9	4x2,5 mm²	4x4 mm²	4x4 mm²	4x1,5 mm²	20
5,5	10,3	4x2,5 mm²	4x4 mm²	4x6 mm²	4x2,5 mm²	25
7,5	13,6	4x2,5 mm²	4x4 mm²	4x10 mm²	4x2,5 mm²	35
					Star-Delta Starting	
11,0	19,5	4x4 mm²	4x6 mm²	4x10 mm²	2x(4x2,5 mm²)	40
15,0	28,3	4x6 mm²	4x10 mm²	4x16 mm²	2x(4x2,5 mm²)	50
18,5	32,3	4x10 mm²	4x16 mm²	3x25+16 mm²	2x(4x4 mm²)	63
22,0	38,3	4x10 mm²	4x16 mm²	3x25+16 mm²	2x(4x4 mm²)	63
30,0	52,0	4x16 mm²	3x25+16 mm²	3x35+16 mm²	2x(4x6 mm²)	80
37,0	65,0	3x25+16 mm²	3x25+16 mm²	3x50+25 mm²	2x(4x6 mm²)	100
45,0	81,0	3x25+16 mm²	3x35+16 mm²	3x50+25 mm²	2x(4x10 mm²)	125
55,0	94,0	3x35+16 mm²	3x50+25 mm²	3x70+35 mm²	2x(4x16 mm²)	160
75,0	128,0	3x50+25 mm²	3x70+35 mm²	3x95+50 mm²	2x(3x25+16 mm²)	200
90,0	152,0	3x70+35 mm²	3x95+50 mm²	3x95+50 mm²	2x(3x25+16 mm²)	225
110,0	192,0	3x95+50 mm²	3x95+50 mm²	3x120+70 mm²	2x(3x35+16 mm²)	250
132,0	224,0	3x95+50 mm²	3x120+70 mm²	2x(3x70+35 mm²)	2x(3x50+25 mm²)	320
160,0	266,0	2x(3x50+25 mm²)	2x(3x70+35 mm²)	2x(3x95+50 mm²)	2x(3x70+35 mm²)	400
185,0	307,0	2x(3x70+35 mm²)	2x(3x95+50 mm²)	2x(3x95+50 mm²)	2x(3x95+50 mm²)	500
200,0	330,0	2x(3x70+35 mm²)	2x(3x95+50 mm²)	2x(3x120+70 mm²)	2x(3x95+50 mm²)	500
250,0	420,0	2x(3x95+50 mm²)	2x(3x120+70 mm²)	2x(3x150+95 mm²)	2x(3x120+70 mm²)	630
315,0	530,0	2x(3x120+70 mm²)	2x(3x150+95 mm²)	2x(3x150+95 mm²)	2x(3x150+95 mm²)	800
355,0	600,0	2x(3x150+95 mm²)	2x(3x150+95 mm²)	2x(3x185+95 mm²)	2x(3x150+95 mm²)	800

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