Diesel Engine Pump Control Panel Series

Diesel Pum CONTROLLER

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G TayTech

Diesel Engine Fire Pump Control Panel according to EN 12845 for 12-24V

Instruction Manual

TayTech[®].

advanced automation solutions

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1. Introduction

This manual provides the necessary information for proper installation, use and maintenance of the YD-01 series model device. The user must read this manual before operating the device. Misusage may cause damage to the user or product and void the warranty.

This document should be viewed as an integral part of the YD-01 Series device. For this reason, it should be protected and stored for the duration of use.

The information and instructions in this manual relate to the standard use of this product. In case of special situations, functions or applications not described in this document, contact our service center for assistance.

When you receive the product, check that is not damaged during transportation. If the product is damaged, report directly to TAYTECH technical service unit within 5 days of receipt.

The information provided in this manual is subject to change without notice. Note that failure to follow the instructions given in this manual may cause physical injury or damage to objects.

The product should be installed in a sheltered, well ventilated, non-hazardous environment and used at a maximum temperature of 40° C and a minimum of 5° C.



2. Warnings

DANGER, WARNING symbols indicate critical points related to the product. Please consider these symbols when you see them.

	ELECTRICAL DANGER Risk of Electric Shock There is a risk of electrical shock where this warning is located.
Ń	WARNING There is a risk of damage for human health, pump or system.

The YD-01 Diesel Series should only be used for the purpose specified in the design. Products used for different purposes are considered dangerous because they are inappropriate. In case of fire in or around the installation site, use a suitable extinguisher (dry, chemical powder, foam, carbon dioxide). Install the product in a dry and sheltered place in accordance with the degree of protection, away from heat sources and easily flammable substances.

Any part of the YD-01 Diesel Series product should not be disassembled without the permission of TAYTECH. No changes should be made to the product. Otherwise, the product will be out of warranty.

The installation and maintenance of the product must be done by the authorized person in accordance with the current standard. The environment in which the product is installed must have a grounding line.



3. Transportation



The YD-01 Diesel Set should be handled with care, as falls and bumps can cause damage. If the delivered products are not installed and started to operate immediately for any reason, the unit should be stacked neatly. The outer packaging and accessories packaged separately should not be damaged and should be stored as a whole. It should be stored in a suitable ambient temperature and dry environment.

NOTE: Check whether the product is damaged during the transportation. If there is any damage to the product, report it to TAYTECH service center within 5 days from the delivery date.



4. Operation Limits

YD-01 Diesel Set is a smart, simple, easy to understand and reliable control panel specially developed for fire applications. It integrates all of the mechanical and electronic devices in the booster systems and controls the system perfectly.

TAYTECH is not responsible for damaging the panel or users as a result of using the panel in different applications other than the manual or wrong connection.

4.1. Technical Characteristics

- Input Voltage 1 ~ 230VAC 50 / 60Hz. Three Phase.
- IP Protection Rating: IP54. RAL 3002 Colour.
- Solenoid Valve Output Relay: Maximum 230V 5A.
- General Failure Relay: Maximum 230V 5A.
- Digital Inputs: 24VDC.
- Relay Outputs: 230V 5A.
- Analog Sensor: 4-20mA Pressure Transmitter. 010 Bar.
 - 016 Bar.
 - ₀25 Bar.
- Liquid Level Electrode Connection.
- Automatic, Manual Operation Selector Button.
- Current Reading.
- Pump Protection Against Current failures.
- Disconnector with a handle in Yellow and Red colors that can be locked with Padlock.
- Metalic Box.
- Ambient Temperature: -5 / +40 ° C.



5. Control Panel Oveview

5.1. Keypad and Light Indicators



Keyboard functions

- A. 5 keys for navigation and setup.
- B. 2 keys for manual star from battery A/B with fail-safe function, direct command of the starting relays.
- C. 1 key for manual STOP.
- D. 1 key to silence the alarms.
- E. 1 key for the manual test mode.

Front LEDs

- a) Pump running (green).
- b) Battery status (bicolour: green ok, red failure).
- c) Battery selection (yellow).
- d) Automatic mode excluded (red).
- e) Manual STOP available.
- f) Alarm silencing (RESET).
- g) Manual test function enabled.



5.2. Ports Description



EXPLANATION	PIN	NAME	NOT
	1	NO	1A
RELAY OUTPUT 5	2	NC	1A
	3	COM	1A
	4	NO	1A
RELAY OUTPUT 6	5	NC	1A
	6	СОМ	1A
	7	NO	1A
RELAY OUTPUT 7	8	NC	1A
	9	СОМ	1A
	10	NO	1A
RELAY OUTPUT 8	11	NC	1A
	12	COM	1A
	13	NO	1A
RELAY OUTPUT 9	14	NC	1A
	15	СОМ	1A
	16	NO	1A
RELAY OUTPUT 10	17	NC	1A
	18	COM	1A
	19	NO	1A
RELAT OUTPOT I	20	COM	1A
	21	NO	1A
RELAY OUTPUT 2	22	СОМ	1A
RELAY OUTPUT 3	23	NO	1A
RELAY OUTPUT 4	24	NO	1A
RELAY OUTPUT 3/4 COMMON	25	СОМ	1A

EXPLANATION	PIN	NAME	NOT
ALTERNATOR	26	D+	1A
FEEDBACK	27	ST-FB	1A
TRANSISTOR OUTPUT 11	28	А	14
	29	к	12
	30	SG	
	31	В	0.14
R3483 MODB03	32	А	0,1A
	33	TR	
BATTERY A	34	+	
BATTERY -	35	-	1A
BATTERY B	36	+	
DIGITAL INPUT 1	37	+	0,1A
DIGITAL INPUT 2	38	+	0,1A
DIGITAL INPUT 3	39	+	0,1A
DIGITAL INPUT 4	40	+	0,1A
DIGITAL INPUT 5	41	+	0,1A
DIGITAL INPUT 6	42	+	0,1A
DIGITAL INPUT 7	43	+	0,1A
DIGITAL INPUT 8	44	+	0,1A
DIGITAL INPUT 9	45	+	0,1A
DIGITAL INPUT 10	46	+	0,1A
PICK-UP/W/AC	47	+	0,1A
PICK-UP/W/AC	48	+	0,1A
S.GND	49	+	0,1A
RES1	50	+	0,1A
RES2	51	+	0,1A
RES3	52	+	0,1A
NTC	53	+	0,1A
NTC	54	+	0,1A
L	55	230V	0,1A
Ν	56	NEUTRAL	0,1A



6. Assembly

6.1. Wall Maunted Assembly



- Fix them on the wall using the mounting screws on the back of the panel.
- Please do not drill any holes in the cabinet.
- For electrical connection, install and assemble the cables regularly through the gland holes.
- Do not try to open the cabinet door while the load-disconnecting latch button (Isolating Switch) is in position 1.



6.2. Electrical Connection





7. Functions and Settings

7.1. Main Page



7.2. Starting Procedure

When the panel is in the manual mode, the fuel solenoid is checked through the motor. The fuel path should be in the open position. It is checked whether the fuel path is closed or not by holding down the stop button when the fuel path is open. If the opposite situation occurs which means that the fuel path is opened when holding down the button, and closed when releasing the button the fuel solenoid terminals are relocated from the diesel plug.

After the fuel path is checked, motor is activated with Battery A and B, while in the manual mode.

The fuel injection lever is adjusted in order to activate the motor at the maximum pressure depending on the pressure of the pump while the motor is running, and the motor which is running at the maximum begins to rotate at 2900 rpm.

Main menu is visited using the navigation buttons, and starting menus visited afterwards.



MAIN MENU	COMMISSIONING
	LED TEST 01/04/2016
FIRE PUMP	I 01∕12/2016 ENGINE STARTING TEST
í)(∆)¦₽®®∎	D+ = 0.0V rpm = 0 ST-FB= 0.0V KID RPM AUT

 In the starting menu, automatic motor revolution adjustment procedure can be initialized by pressing ◀ and ► (right and left arrow buttons) at the same time. During this procedure pressing ◀ decreases the value of the revolution and ► increases. 2900 revolution speed is observed at RPM OUT.

Once the RPM Speed is adjusted, the motor is stopped by pressing the stop button, the failures which have occured on the screen is reset with the reset button and the installation is completed.

7.3. Operating Modes

The device normally is on automatic mode.

The selection of manual mode is possible using an external selector connected to a digital input programmed with the function Automatic start block.

When the controller is not in automatic mode, the frontal red LED (d) is turned on to indicate that the device is not ready to start with the signal from the pressure switches.



7.3.1. Automatic Mode

The device normally is on automatic mode.

In this operating mode it monitors the pressure switches status, in case of lack of pressure it starts the motor start-up attempts.

The lack of signal from the pressure switches is highlighted by the blinking LCD backlit (visible from afar) and the text PRESS flashing on the synoptic on the display.

As by norm, automatic start attempts are alternated between battery A and battery B. The device always remembers which battery made the last attempt and the next one will be on the alternative battery. The currently selected battery is indicated by the yellow LED.

As soon as one of the starter relays is energized, it is verified if the pinion input feedback signal is positioned at the correct voltage. If that does not happen, the relay is de-energized and then re-inserted with a new attempt.

If motor start is detected (RPM greater than set speed), the starter relay is de-energized. The engine running status is highlighted by the green LED.

If the motor does not start, the attempt goes on for the maximum time setted (default 6s). After this time, it makes a pause and it tries again with the relay of the alternative battery.

The attempts continue up to the max number setted, after that the alarm A31 Engine starting failure occurs.

When the alarm A31 occurs, the display shows the instructions to reset manually the alarm (LED/key MAN TEST). The reset of the alarm will be possible only after The engine will start successfully.

Once the engine started on automatic it may be arrested if the pressure switches statuses are restored and an operator performs the stopping pressing the key STOP on the front of the device.



7.3.2. Manual Mode

If the device is on manual mode (situation highlight by the red LED turned on and by the text on the synoptic), it does not monitor the pressure switches status.

On this operating mode, it is possible to press the keys START A and START B to verify the correct behavior of the system during the verification and maintenance work.

These keys are operative only in manual mode or in case of internal control board failure.

7.4. Periodic Test According to EN 12845

The periodical test procedure involves the simulation of pressure loss with the consequent automatic start attempt.

From norm, you have to check that, preventing artificially the engine starting (fuel closing), the system is able to do all the starting attempts expected and generate the alarm A31.

From this situation, the fuel must be restored and you must verify that the next cycle of starting attempts is successful. This second cycle of starting attempts begins with the pressing of the key MAN TEST (LED yellow turned

7.4.1. Weekly Test Procedure

The weekly test procedure has programmed to start automatically at 10:00 on every saturday and to stop automatically after 5 minutes of operation.

The weekly automatic test has programmed to deactive mode in configuration menü.

To activate for weekly automatic test must be selected to ON position on Automatic test Active at page 13.01.



7.5. Main and Sub-menus

7.5.1. Main Menu



The main menu is made up of a group of graphic icons (shortcuts) that allow rapid access to measurements and settings.

Starting from normal viewing, press ü key. The main menu screen is displayed.

Press $\blacktriangle \lor$ to rotate clockwise / counter clockwise to select the required function. The selected icon is highlighted and the central part of the display shows the description of the function.

Press ü to activate the selected function.

If some functions are not available, the correspondent icon will be disabled, that is shown in a light grey colour.

–Opens the password entry page, where it is possible to specify the numeric codes that unlock protected functions (parameter setting, commands menu).

Access point to the setup menu for parameter programming. See dedicated chapter.

 Access point to the commands menu, where the authorised user can execute some clearing-restoring actions.



7.5.1. Password Access

The password is used to enable or lock the access to setting menu (setup) and to commands menu.

For brand-new devices (factory default), the password management is disabled and the access is free. If instead the passwords have been enabled and defined, then to get access, it is necessary to enter the password first, specifying the numeric code through the keypad.

To enable password management and to define numeric codes, see setup menu M03 Password.

There are two access levels, depending on the code entered:

User-Level access – Allows clearing of recorded values and the editing of a restricted number of setup parameters.

Advanced access level – Same rights of the user access plus full settings editing-restoring.

From normal viewing, press \Box to recall main menu, select the password icon and press \Box .

The display shows the screen in picture:





Keys \blacktriangle and \triangledown change the selected digit

Keys \blacktriangleleft and \blacktriangleright move through the digits.

Enter all the digits of the numeric code, and then move on the key icon.

If the password code entered matches the User access code or the advanced access code, then the correspondent unlock message is shown.

Once unlocked the password, the access rights last until:

the device is powered off.

the device is reset (after quitting the setup menu).

the timeout period of two minutes elapses without any keystroke.

To quit the password entry screen, press key.

7.5.3. Display Page Navigation

Keys \blacktriangle and \triangledown scroll through the measurements pages one by one. The title bar shows the current page.

Some measurements may not be shown depending on the system programming and connections (for example if a fuel sensor isn't set, the relevant page will not be shown).

Sub-pages, which can be opened with key are also available on some pages (displaying voltages and currents in the form of bar graphs, for example).

The user can specify which page and which sub-page the display should return to automatically when no keys have been pressed for a certain time.

The system can also be programmed so the display remains were it was last.

You can set this function in menu M01 – Utility.



7.5.4. Menus















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8. Troubleshoots

CODE	DESCRIPTION	ALARM EXPLANATION
A01	Engine temperature 1 warning (Analog Sensor)	Engine temperature higher than warning threshold set in P09.05.
A02	Engine temperature 1 high (Analog Sensor)	Engine temperature higher than alarm threshold set in P09.06.
A03	Engine temperature 1 sensor failure (Analog Sensor)	The resistive temperature sensor 1 is an open circuit (disconnected).
A04	Engine temperature 1 low (Analog Sensor)	Engine temperature lower than alarm threshold set in P09.07.
A05	Engine temperature 2 warning (Analog Sensor)	Engine temperature higher than warning threshold set in P10.05.
A06	Engine temperature 2 high (Analog Sensor)	Engine temperature higher than alarm threshold set in P10.06.
A07	Engine temperature 2 sensor failure (Analog Sensor)	The resistive temperature sensor 2 is an open circuit (disconnected).
A08	Engine temperature 2 low (Analog Sensor)	Engine temperature lower than alarm threshold set in P10.07.
A09	Engine temperature 2 high (Digital sensor)	Engine over temperature signalled by the activation of a digital input programmed with the relevant function 'Engine temperature high'.
A10	Engine temperature too low (Digital sensor). Heater failure	Engine under temperature signalized by the activation of a digital input set upped with the appropriate function Engine temperature low.
A11	Oil pressure warning (Analog Sensor)	Engine oil pressure lower than warning threshold set in P08.06.
A12	Low oil pressure (Analog Sensor)	Engine oil pressure lower than alarm threshold set in P08.07.
A13	Analog pressure sensor failure	The resistive pressure sensor is an open circuit (disconnected).
A14	Low oil pressure (Digital sensor)	Low oil pressure signalled by the activation of a digital input programmed with the relevant function 'Oil pressure'.
A15	Digital pressure sensor failure	Engine stopped for over one minute, but oil sensor failed to close on no pressure signal. Presumed break in connection.
A16	Warning low fuel level (Analog Sensor)	Active when fuel level is lower than warming threshold set in P11.08.
A17	Low fuel level (Analog Sensor)	Active when fuel level is lower than alarm threshold set in P11.09.
A18	Warning high fuel level (Analog Sensor)	Active when fuel level is higher than warming threshold set in P11.12.



A19	High fuel level (Analog Sensor)	Active when fuel level is higher than alarm threshold set in P11.13.
A20	Analog fuel level sensor failure	The resistive fuel sensor is an open circuit (disconnected).
A21	Low fuel level (Digital sensor)	Low fuel level signal on activation of digital input programmed with relevant function 'Fuel level'.
A22	Low level of radiator fluid	Alarm generated when the coolant level is lower than the mini- mum level. Activated by digital input with the function 'Radiator fluid level'.
A23	"W / pick-up" signal failure	With speed measure enabled, the alarm occurs when the D+ sig- nal is detected (presence of battery charge alternator) but the "W / pick-up" signal is not detected within 5 seconds.
A24	"W / pick-up" disconnected	With speed measure enabled, the alarm occurs when the "W / pick-up" sensor is disconnected even with the engine stopped.
A25	Low engine speed "W / pick-up"	It occurs when the motor is in motion (presence of battery charge alternator), not decelerated, and the 'W / pick-up' signal remains below the P07.05 threshold for the time set in P07.06.
A26	High engine speed "W / pick-up"	It occurs when the 'W / pick-up' signal remains above the P07.03 threshold for the time set in P07.04.
A27	Pinion inserted (Feedback on during pause)	Alarm generated when the analog input signals of the pinion which is inserted but has not been requested the starting of the engine.
A28	Pinion not inserted (Feedback off during cranking)	Alarm generated when the analog input signals of the pinion which is not inserted but has been requested the starting of the engine.
A29	Pinion sensor disconnected	Alarm generated when the pinion analog input is not properly connected.
A30	Water in the fuel	Alarm generated when the contact indicates the presence of water in the fuel. Activated by digital input.
A31	Failure to start	It occurs when the engine has not started after the number of set start attempts has been made.
A32	Unexpected stop	This alarm occurs when the engine stops automatically after the alarm time has been set, without the device intentionally turning it off.
A33	Failure to stop	Alarm generated if the engine has not stopped after 65 seconds from the start of the stop phase.
A34	High battery A voltage	Battery voltage higher than the set threshold for a time longer than P05.04.



A35	Low battery A voltage	Battery voltage lower than the set threshold on P05.03 for time a longer than P05.04.
A36	Battery A inefficient	Starting attempts for battery A finished and the battery voltage is lower than the minimum threshold.
A37	Alarm from battery charger A	Alarm generated by the programmed input with the function 'Battery charger A alarm' connected to an external battery charger when the mains voltage is within limits.
A38	High battery B voltage	Battery voltage B higher than the threshold programmed on P05.02 for a time longer than P05.04.
A39	Low battery B voltage	Battery voltage B lower than the threshold programmed on P05.03 for a time longer than P05.04.
A40	Battery B inefficient	Starting attempts for battery B finished and the battery voltage is lower than the minimum threshold.
A41	Alarm from battery charger B	Alarm generated by the programmed input with the function 'Battery charger B alarm' connected to an external battery charger when the mains voltage is within limits.
A42	Battery charger alternator failure	It occurs when the engine is running ('W / pick-UP') but the battery charge (D +) alternator signal remains below the motor voltage threshold P12.01 started for more than 4 seconds.
A43	Auxiliary voltage too low	Auxiliary voltage lower than the threshold set to P02.07 for a time longer than P02.09.
A44	Auxiliary voltage too high	Auxiliary voltage higher than the threshold set with P02.08 for a time longer than P02.09.
A45	System error	There was an internal error. Contact our Customer Service.
A46	Room temperature too low (Analog Sensor)	Ambient temperature below the alarm threshold set to P04.02 for more than P04.03.
A47	Room temperature too high (Analog Sensor)	Ambient temperature above the alarm threshold set to P04.04 for more than P04.05.
A48	Water reserve (Digital Sensor)	Alarm generated by the input programmed with the 'Water Reserve' function.
A49	Water reserve low (Analog Sensor)	The water level in the water reservoir tank is below the threshold set by P02.16.
A50	Water reserve high (Analog Sensor)	The water level in the water reservoir tank is below the threshold set by P02.17.



A51	Low priming tank level	Alarm generated by the input programmed with the 'Priming tank level' function.
A52	Supply of outputs disconnected	Alarm generated by power failure on terminal 25.
A54	System not in automatic mode (for 24 hours)	System not in automatic mode for more than 24 hours.
A55	Engine running	Alarm generated by the input programmed with the 'Pressure switch start' function.
A56	Pump failure	Alarm generated by the programmed input with the function Pump running pressure switch does not active and motor in mo- tion for more than P02.21.
A57	Pump in pressure (with engine off)	Alarm generated by the programmed input with the function 'Pump running pressure switch' active and motor stopped for more than P02.21.
A58	Maintenance request 1	Alarm concreted when the maintenance intervals of its range
A59	Maintenance request 2	reach zero. See menu M14. Use the command menu to reset the
A60	Maintenance request 3	
A69	Suction valve partially open	Suction valve partially open Alarm generated by the programmed input with the function 'Suction valve partially open', in this situation the suction valve is not capable of delivering the maximum flow rate of water needed to the pump.
A70	Delivery valve partially open	Alarm generated by the programmed input with the function 'Delivery valve partially open', in this situation the delivery valve is not capable of delivering the maximum flow rate of water nee- ded to the sprinkler system.
A71	Room pump sprinkler alarm	Alarm generated by the programmed input with the function 'Room pump sprinkler alarm'.
A72	Jockey pump starts alarm	Alarm generated when the threshold set to parameter P02.19 is exceeded and if there is a programmed input with the function 'Jockey pump running'.
A73	Thermal alarm jockey pump	Alarm generated by the programmed input with the function 'Jockey pump thermal protection'.



A74	Drain pump alarm	Alarm generated by the programmed input with the function 'Drain pump failure'.
A75	Alarm fuel tank leak	Alarm generated by the programmed input with the function 'Alarm fuel tank leak '.
A76	Communication error	When P17.n.9 is set to Master+1 or Master+2 and the device is not abled to communicate with 1 or 2 FFLs.
A77	Jockey pump time out	Threshold set in P02.20 is exceeded and "Jockey pump running" input function is set.
A78	Test valve open	The "Test valve" input is activated
UA1 UA8	User alarm	The user alarm is generated by enabling the variable or associated input in menu M24.



9. General Conditions

9.1. Warranty

All products are covered by a 24-month warranty, covering production defects and replacing / repairing defective parts.

Warranty conditions; does not cover damage caused by missing / incorrect electrical connections, improper installation, misuse or any negligence due to the installation and operation of the facility.

In addition;

- Damage due to corrosion or wear of any type or quality
- Malfunction due to incorrect installation;
- Repair, dismantling or tampering by unauthorized persons
- Natural disasters such as fire, flood, water or lighting occur

Damages that may occur due to their reasons are not considered under warranty.

The defective material must be shipped by the customer and sent to the Taytech factory address.



9.2. Maintenance

The Smart YD-01 series panel does not require routine maintenance, within the working limits and provided that the instructions in this manual are followed. Special maintenance or repairs should only be carried out by authorized service centers. Only original spare parts should be used in case of repair. The manufacturer rejects all responsibility for injury or material damage resulting from maintenance interventions by unauthorized personnel.

9.3. Disposal

If the product is taken out of service, local regulations on waste regulations must be observed. According to the material categories, it should be separated within the scope of recycling. You can get help by applying to appropriate recycling centers.

9.4. Spare Parts

When you request technical information or spare parts from our sales or service / service center, always state the product model and serial number.

Any defective product component should only be made by an authorized person in accordance with the applicable standard.



10. Certification



CONFORMITY OF DECLARATION



The company name: **TAYTECH OTOMASYON ve BILISIMTEKNOLOJILERI A.S.**

İnönü Mahallesi, Atatürk Blv. No:7/2 41400 Gebze Plastikçiler O.S.B Gebze / Kocaeli

DECLARES UNDER HIS OWN RESPONSIBILITY THAT THE MACHINE DESCRIBED BELOW:

YD-01 – Fire Series

ARE IN CONFORMITY WITH COMMUNITY DIRECTIVES REGARDING:

- European Directive 2014/35/EU (Low Voltage Directive)
- Electromagnetic Compatibility Directive 2014/30/EU

AND IN COMPLIANCE WITH THE FOLLOWING STANDARTS:

- * EN 61439-1
- * EN 61439-2
- * EN 60204-1
- * EN 55014-1
- * EN 55014-2
- * EN 61000-3-2
- * EN 61000-3-3



Notes



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