General

The submersible pump control relay is designed to protect pumps with sensitive operating voltage and current values from faults that may arise from mains voltage and excessive current.

Usage of the Device and Working Principle

Make the connections of the device in accordance with the connection type. Otherwise, the device may be damaged. Adjust the current and voltage settings of the device according to the operating current and voltage values of the motor you will use.

When the device is energized, it counts the first opening time. Then, phase-to-phase voltage values are displayed. When the V/A button is pressed, voltage and current values are switched.

You can make overload adjustment with the >A knobe (high current), low current adjustment with the <A knobe , high voltage with the >V knobe, low voltage with the <V knobe, start waiting time with the ⅄ knobe and low current automatic reset time adjustment with the t knobe . While making adjustments with the knobes, the adjusted value is displayed on the upper display.

When the device is energized, after the first opening time, if the well is full, the tank is empty and the voltage values are normal and in the Start position, it energizes the relay and the "OUT" led is on.

When the device enters an error, it de-energizes the relay, the "OUT" LED turns off, the relevant error LED turns on and the relevant indicator starts flashing (only on voltage errors).

Reset Button: When the device enters an error state, the Reset button must be pressed for 1 second to restart it. After the device is reset, it will exit the error state, energizes the relay and the OUT LED will turns on.

- **In case of high voltage error;** If the voltage value is below the high voltage set value, the device allows manual reset.
- **In case of low voltage error;** If the voltage value is above the low voltage set value, the device allows manual reset.
- **In case of high current, demurrage and fuse error;** If the current value is at least 0.5A lower than the high current set value, the device allows manual reset.

Required Settings:

>A Knobe: High Current Set Value can be adjusted with this knob.
<A Knobe: Low Current Set Value can be adjusted with this knob..
>V Knobe: High Voltage Set Value can be adjusted with this knob.
<V Knobe: Low Voltage Set Value can be adjusted with this knob.
⅄ Knobe: Star waiting time can be adjusted with this knob.
t Knobe: With this knobe, low current error reset time and upper electrode waiting time are set. (The same time value is used for both parameters, this setting is in minutes.)

After all settings are made, the device must be switched to **Start** position via the Start/Stop input in order to energize the relay. **!**

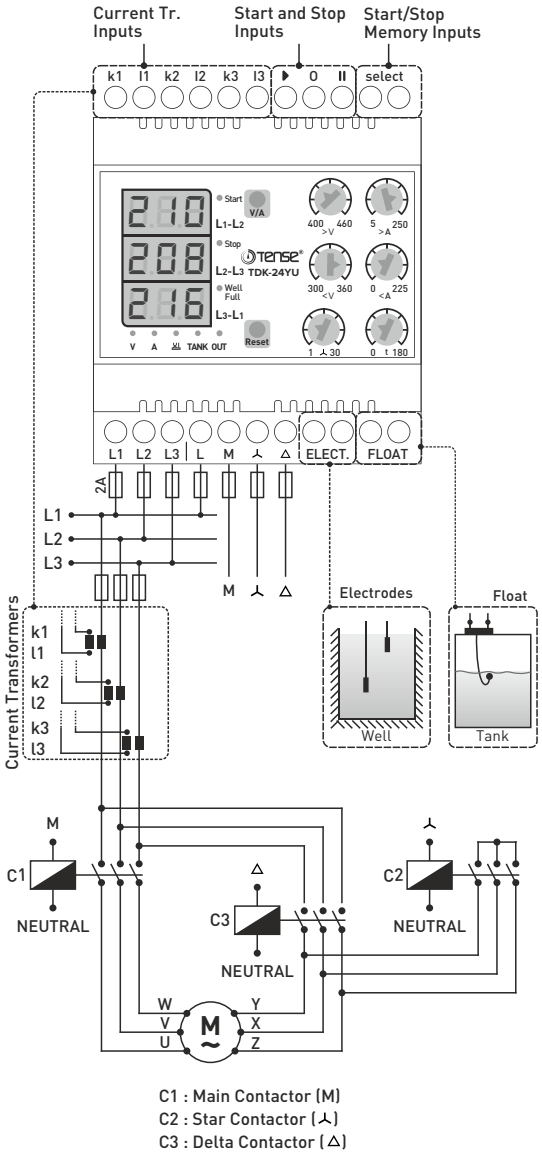
Error Notifications:

V LED is on: This LED lights up when the device enters a high or low voltage error.
V LED is flashing: This LED flashes when the device enters a voltage asymmetry error.
A LED is on: This LED lights up when the device enters a high or low current error.
A LED is flashing: This LED flashes when the device enters a current asymmetry error.
⅄ LED is on: This LED lights up when the phase sequence connected to the device is reversed.
Well full LED is off: There are no electrodes connected to the device or the electrodes do not touch the water, there is no water in the well.
Well full LED is flashing: The device counts the upper electrode waiting time, there is water in the well.
Tank LED is on: There is no float connected to the device or the float is open circuit, the tank is full.
OUT LED: This LED turns on when the relay is energized. The device is not in error.

Technical Specifications

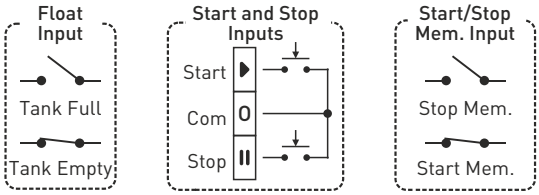
Operating Voltage(Un)	: 3x 380V AC 50/60Hz.	High Voltage	: 400V - 460V (L-L)
Operating Frequency	: 50/60 Hz.	Low Voltage	: 300V - 360V (L-L)
Operating Power	: <5VA	Voltage Hysteresis	: 5V (Fixed)
Operating Temperature	: -20°C.....+55°C	Voltage Set. Increase	: 1V
Display	: 3x3 digit display, 8x LEDs	Voltage Error Waiting	: 3 sec. (Fixed)
High Current (Overload)	: 5A - 250A	Voltage Error Reset	: 3 sec. (Fixed)
Low Current	: 0A - 225A	Current Asymmetry	: %50 (Fixed)
Current Hysteresis	: 0.5A (Fixed)	Voltage Asymmetry	: %22 (Fixed)
Current Set. Increase	: 5A	First opening time	: 1 sec. - 100sec.
Current Error Waiting	: 5 sec. (Fixed)	Electrode Set Value	: 1 - 100
Low Current Reset (t)	: 0 min. - 180 min.	Connection Type	: Terminal connection
Upper Electrode Waiting (t)	: 0 min. - 180 min.	Contact	: 5A/250V AC (Resistive Load)
t Knobe Set. Increase	: 5 min.	Cable Diameter	: 4mm²
Star Waiting Time	: 1 sec. - 30 sec.	Weight	: <220gr.
Transition Time	: 20 msec. (Fixed)	Mounting	: Assembled on the din rail.
		Operating Altitude	: <2000 meters

Connection Diagram

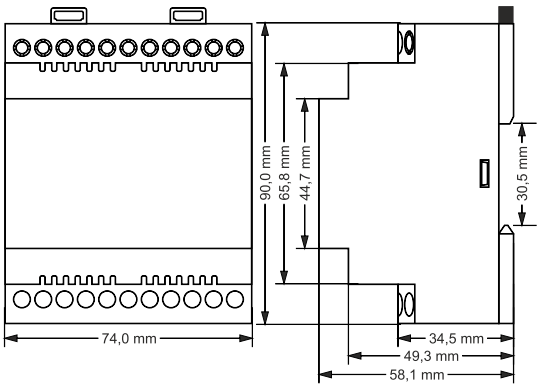


C1 : Main Contactor (M)
C2 : Star Contactor (⅄)
C3 : Delta Contactor (Δ)

Inputs



Dimensions



Protection Functions

High Current Protection - To enter the error state: When the current value drawn from the network exceeds the high current set value, the device waits for 5 seconds and then enters error state. In case of error; the relay is de-energized, the current error LED turns on and the "OUT" LED turns off.

High Current Protection - Exiting the error state: If the current drawn from the network falls below the high current set value by at least 0.5A, the device exits the error state by pressing the reset button for 1 second. In normal operating condition; the relay is energized, error LED turns off, the "OUT" led is on.

Low Current Protection - To enter the error state: When the current drawn from the network falls below the low current set value, the device waits for 5 seconds and then enters an error state. In caseof error state; the relay is de-energized, the current error LED turns on and the "OUT" led turns off.

Low Current Protection - Exiting the error state: When the waiting time set with the t knobe expires (the current error LED flashes while the device is counting this time) or the reset button is pressed for 1 second, the device exits the error state. In normal operating condition; the relay is energized, error LED turns off, the "OUT" led is on.

High Voltage Protection - To enter the error state: When the voltage value exceeds the set value, the device waits for 3 seconds and then enters error state. In case of error; the relay is de-energized, the voltage error LED turns on, the displays of the phases causing this error flash and the "OUT" LED turns off.

High Voltage Protection - Exiting the error state: The device automatically exits the error state 3 seconds after the voltage values falls below the set value by 10V. In normal operating condition; the relay is energized, the error LED goes off, the displays are on steadily, and the "OUT" LED is on.

Low Voltage Protection - To enter the error state: When the voltage value falls below the set value, the device waits for 3 seconds and then enters error status. In case of error; the relay is de-energized, the voltage error LED turns on, the displays of the phases causing this error flash and the "OUT" LED turns off.

Low Voltage Protection - Exiting the error state: The device automatically exits the error state 3 seconds after the voltage values increase above the set value by 10V. In normal operating condition; the relay is energized, the error LED goes off, the displays are on steadily, and the "OUT" LED is on.

Fuse Protection - To enter the error state: When the current value drawn from the network exceeds twice the high current set value, the device enters error status without waiting. In case of error; the relay is de-energized, the current error LED turns on and the "OUT" led turns off.

Fuse Protection - Exiting the error state: If the current value drawn from the network falls below the high current set value by at least 0.5A, the device exits the error state by pressing the reset button for 1 second. In normal operation; the relay is energized, error LED turns off, the "OUT" led is on.

Demurrage Current: The device allows a current of 2 times the set high current set value to be drawn during the first 9 seconds after the relay is energized. If the demurrage current is exceeded, the device enters a fuse protection error.

Current Asymmetry Protection - To enter the error state: When the difference between the current values drawn from the network exceeds 50%, the device waits for 2 seconds and then enters the error state. In case of error; the relay is de-enegized, the current error LED turns on and the "OUT" led turns off.

Current Asymmetry Protection - Exiting the error state: The device exits the error state by pressing the reset button for 1 second. In normal operation; the relay is energized, error LED turns off, the "OUT" led is on.

Voltage Asymmetry Protection - To enter the error state: When the difference between the voltage values exceeds 22%, the device waits for 2 seconds and then enters the error state. In case of error; the relay is de-enegized, the voltage error LED and the indicators of the phases causing this error flash and the "OUT" LED turns off.

Voltage Asymmetry Protection - Exiting the error state: The device automatically exits the error state 2 seconds after the difference between the voltage values falls below 20%. In normal operating conditions; the relay is energized, the error LED turns off, the indicators are on steadily, the "OUT" LED is on.

Electrode Waiting Protection: After the device enters an error due to the water in the well running out, when the well starts to fill again and the water level reaches the upper electrode, the device waits for the time set with the t button, and during this time the "Well Full" LED flashes. At the end of the time, the relay is energized, the "OUT" LED turns on and the "Well Full" LED turns on steadily. When the "Well Full" LED is flashing and the reset button is pressed for 1 second, the device finishes counting and relay is energizes.

What is Start/Stop Memory Input?

- **When short-circuited;** Each time the device is energized, it starts operating from the Start position and the Start LED turns on.
- **When open-circuited;** Each time the device is energized, it starts operating from the Stop position and the Stop LED turns on.

What is First Opening Time and How to Change It?

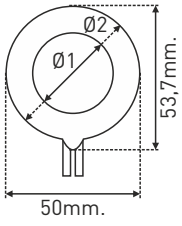
Each time the device is turned on, it counts this time before energizing the relay. The factory default value is 2 seconds. To change; while the device is not energized, press and hold the "V/A" button and energize the device. The value continues to increase as long as the button is pressed, release the button when the desired value is reached.

What is the Electrode Set Value and How to Change It?

It determines the conductivity of the liquid that the electrodes are in contact with. This value should be kept low in liquids with high conductivity and high in liquids with low conductivity. The factory default value is 75. To change; while the device is not energized, press and hold the "Reset" button and energize the device. The value continues to increase as long as the button is pressed, release the button when the desired value is reached.

Current Transformer Dimensions

Current Transformer



Ø1: 30mm.
Ø2: 50mm.
Cable Length: 1m.
Weight: 72,2gr.