



**ELECTRONIC CONTROL UNIT F3-9000
WITH PHASE SUPERVISOR FOR THREE PHASE MOTORS**

CONNECTIONS:

MOTOR OUTPUT:

- 1.-2.-3. U V W FOR MOTOR.
- 4. NEUTRAL FOR MOTOR.
- 5. MOTOR GROUND FOR MOTOR.

POWER SUPPLY INPUT 380Vac

- 6.-7.-8. POWER SUPPLY R S T .
- 9. NEUTRAL.
- 10.-11.-12. GROUND.

OUTPUT 230 Vac FUSED 6,3 A.

- 13. NEUTRAL.
- 14. LINE 230 Vac.

RELAY OUTPUT

- 15. NO
- 16. NC
- 17. COMMON

MOTOR TERMINAL SWITCH OUTPUT

- 18. 24VDC
- 18.-19. SECURITY LIMIT SWITCH. (NC)
- 18.-20. OPEN LIMIT SWITCH. (NC)
- 18.-21. CLOSE LIMIT SWITCH. (NC)
- 18.-22. PRESSURE SWITCH LIMIT SWITCH. (NC)
- 18.-23. AUXILIARY LIMIT SWITCH. (NC)

COMMANDS OUTPUT

- 24.-25. TOTAL STOP COMMAND. (NC)
- 26.-27. 24VDC OUTPUT
- 28.-29. PRESSURE SWITCH COMMAND. (NC)
- 28.-30. PHOTOCELL COMMAND. (NC)
- 31.-32. START COMMAND. (NO).
- 33.-36. OPEN COMMAND. (NO).
- 34.-36. STOP COMMAND. (NC).
- 35.-36. CLOSE COMMAND. (NO).
- 36. ANTENNA GND.
- 37. ANTENNA.

1. **PROGRAMMING:**

***IMPORTANT NOTICE:** Before you supply the control unit with power you must have completed all the necessary connections.*

The green indication LED which are active show that the contacts of the TERMINAL SWITCHES, PHOTOCELLS, PRESSURE SWITCH as well as the contacts for the commands (START, OPEN, STOP, CLOSE) are closed.

The green indication LED which are not active show that the contacts of the TERMINAL SWITCHES, PHOTOCELLS, PRESSURE SWITCH as well as the contacts for the commands (START, OPEN, STOP, CLOSE) are open.

Please note that for the START, OPEN, STOP, CLOSE commands the contacts are NORMAL OPEN and the green indication LED is always on and goes off only as long the command exists.

Cases:

- i. If the SECURITY LIMIT SWITCH is activated the motor stops completely and it does not take any commands from the control unit. In order to make the motor operate again we have to deactivate the security limit switch. The security terminal unblocking can be done manual. If we haven't connected the LIMIT SWITCH the contact must be bridged with terminal 18.
- ii. If the TOTAL STOP is activated the motor doesn't take any command from the control unit until the deactivation of the command. If we haven't connected the TOTAL STOP the terminal 24 must be bridged with terminal 25.
- iii. If we haven't connected a PRESSURE SWITCH the terminal 28 must be bridged with terminal 29.
- iv. If we want to connect a WARNING LIGHT 230 Vac up to 500W the terminal 14 must be bridged with terminal 15 and we have to connect the WARNING LIGHT at the terminals 13 and 17.
- v. If we want to connect a WARNING LIGHT 24 Vdc up to 9W the terminal 17 must be bridged with terminal 26 and we have to connect the WARNING LIGHT at the terminals 15 and 27.

During the installation the DIP SWITCH 4 of the phase supervisor must be ON in order for the control unit to be able to save on memory the sequence of the phases from the power supply. The DIP SWITCH must be go back to OFF indication after ending the installation.

2. **REMOTE CONTROL AUTO LEARNING :**

The control unit can save up to 15 remote controls with deferent code (12bit).

In order to subscribe the wanted codes of the remote controls please follow the instructions bellow:

- i. Press the LEARN button, the green LED will be activated.
- ii. Press the button of the remote control you want to learn, the LED will be deactivated and the control unit will give the first command to the motor. Now the code is saved into the memory of the control unit.

In order to make the control unit to learn more codes please follow the same procedure as described above.

***IMPORTANT NOTICE:** Please note that when we subscribe more than 15 remote control codes the new code replaces the oldest one saved on the unit memory.*

3. ERASE ALL THE REMOTE CONTROL FROM THE UNIT'S MEMORY:

This specific operation allows as with a simple command to erase all remote control codes:

- i. Hold the LEARN button. The green LED will activate.
- ii. Hold the LEARN button pressed for 10 seconds until the green LED will be flashing.
- iii. Leave the LEARN button. All the remote controls have been erased.

4. OPEN – CLOSE LIMIT SWITCH :

The control unit detects automatically the LIMIT SWITCH and when is deactivated the operation time is resets and its ready for the next command.

5. OPERATION TIME:

The control unit has a default operation time for security reasons. For example if the LIMIT SWITCHES are not working. This time is set by default to 180 seconds.

6. AUTO-CLOSE:

In this case we have to choose between two options AUTOMATIC and SEMI-AUTOMATIC. If we choose the SEMI-AUTOMATIC option and give the OPEN COMMAND from a remote control or from a button, the door start opening. When the door is fully opened or during opening we give the STOP COMMAND the door remains still until it receives a new CLOSE COMMAND.

If we choose the AUTOMATIC option and give the OPEN COMMAND from a remote control or from a button, the door start opening. When the door is fully opened or during opening we give the STOP COMMAND the door remains still and the control unit starts a countdown for a specific period of time which can be set by the user and after that the door close.

When the AUTOMATIC option is active the red LED of the STOP button flashes as long as the time of the auto-close function decreases.

The standby time cannot be renewed if we give the STOP command while the door is closing.

The standby time of the AUTO-CLOSE function is adjustable and can be set from 1 to 120 seconds. The way to set it is with the AUTO-CLOSE trimmer:

- i. When the trimmer is turned fully on the left the standby time is 1 second and as we turned it to the right the time increases up to 120 seconds.
- ii. When the trimmer is fully turned to the right the AUTO-CLOSE function is set to SEMI-AUTOMATIC.

IMPORTANT NOTICE: For security reasons if we choose the AUTOMATIC option we have to use photocells or a pressure switch.

7. FUNCTION OF THE (8) DIP SWITCH :

- 1.-2 WARNING LIGHT FUNCTION
3. START BUTTON FUNCTION
4. PRESSURE SWITCH FUNCTION
5. 2-3 BUTTONS FUNCTION
6. DEAD MAN OPEN FUNCTION
7. DEAD MAN CLOSE FUNCTION
8. PHOTOCCELL FUNCTION

8. WARNING LIGHT FUNCTION:

The control unit allows the connection of a warning light. The warning light can be activated constantly or it can be flashing for as long as the door is working. The warning light can also be activated after the end of any movement of the door; the time that the warning light will remain activated is adjustable.

ON	OFF	FUNCTION
	1.-2	Warning light remains activated as long as the motor is working.
1.	2.	Warning light remains activated for 60 seconds after the end of any movement of the motor.
2.	1.	Warning light remains activated for 90 seconds after the end of any movement of the motor.
1.-2		Warning light flashes for as long as the motor is working.

9. START BUTTON FUNCTION:

This program allows as selecting the functions of START command.

ON	OFF	FUNCTION
	3.	OPEN-STOP-CLOSE-STOP
3.		START command is ONLY OPEN. The CLOSE command is achieved thru AUTO-CLOSE, close button or a remote control. This adjustment can be achieved if we connect a timer or a magnetic loop, etc.

10. PRESSURE SWITCH FUNCTIONS:

This program allows as to choose the functions of the pressure switch contact.

The pressure switch is used as NORMAL CLOSE contact which is used to connect a security rubber. This security rubber (NC) is an active security device when the doors are closing (the security rubber is activated when the door touches an obstacle). The interference of the obstacle on the security rubber while the door is opening does not affect the functionality of the door. Conversely the interference of the obstacle on the security rubber during closing is controlled by the micro switch 4.

ON	OFF	FUNCTION
	4.	If during closing the door meet an obstacle, the door stops and the movement of the door is reversed.
4.		If during closing the door meet an obstacle, stops and the control unit is ready to accept the next command.

11. DOUBLE OR TRIPLE BOUTONNIERE FUNCTION :

This program allows us to choose between the function of double or triple boutonniere. We can also connect an external boutonniere and connect it on the terminals 33.34.34.36.

ON	OFF	FUNCTION
	5.	Triple boutonniere connection : 33.-36 Open command 34.-36 Stop command 35.-36 Close command
5.		Double boutonniere connection : 33.-36 Open command 35.-36 Close command The Stop command can be achieved when we press any of the two buttons while the door is working.

12. “DEAD MAN “ FUNCTION DURING OPENING:

This program allows us to choose if the Open command has a restrained or we have to keep the button pressed for as long as the doors is in operation.

ON	OFF	FUNCTION
	6.	The control unit gives the OPEN command. The only thing you have to do is to press the button once.
6.		The control unit gives the OPEN command as long as we press the button.

13. “DEAD MAN “ FUNCTION DURING OPENING:

This program allows us to choose if the close command has a restrained or we have to keep the button pressed for as long as the doors are in operation.

ON	OFF	FUNCTION
	7.	The control unit gives the CLOSE command. The only thing you have to do is to press the button once. The command has a restrained.
7.		The control unit gives the CLOSE command as long as we press the button. This command does not have a restrained.

14. PHOTOCCELL FUNCTION:

The photocell (NC) is an active security device which interferes if necessary while the door is closing. The interference of an obstacle on the photocell while the door is closing stops the door and the doors movement is reversed. When the door is closed the control unit doesn't take any kind of command from the photocell.

After the unblocking of the obstacle the AUTO-CLOSE is renewed.

ON	OFF	FUNCTION
	8.	Photocell operation with NORMAL-OPEN. (contact opened)
8.		Photocell operation with NORMAL-CLOSE. (contact closed)

15. PHASE SUPERVISOR FUNCTION:

The control unit has a phase supervisor attached. The phase supervisor is a security device that controls:

- If there is a phase sequence from the energy supply network.
- If there is a lack of phase from the power supply network.
- If there is a voltage loss in one of the phases.
- If there is a reverse on the sequence of the phases.

The control unit has three red LED (R S T) which are flashing successively clockwise (R S T) or counterclockwise (T S R) and show to as the constant sequence of the phases.

The green LED (Δ) when is active shows that the voltage of the power supply network is correct and all three phases have the right sequence.

16. FUNCTIONS OF DEEP SWITCH 4 (PHASE SUPERVISOR):

The PHASE SUPERVISOR has a four position deep switch which we can use in order to adjust the tolerance percentage of the dropping voltage for the three phases in comparison with the reference voltage of the power supply network 230Vac.

ON	OFF	PERCENTAGE FALL VOLTAGE TOLERANCE
	1.-2.-3.	The voltage supervisor is not active.
1.	2.-3.	+ - 5% Operating voltage: 220 Vac – 240 Vac
2.	1.-3.	+ -10% Operating voltage: 210 Vac – 250 Vac
1.-2.	3.	+ -15% Operating voltage: 195 Vac – 265 Vac
3.	1.-2.	PROPOSED SETTINGS + -20% Operating voltage: 185 Vac – 275 Vac
1.-3.	2.	+ -25% Operating voltage: 175 Vac – 285 Vac
2.-3.	1.	+ -30% Operating voltage: 160 Vac – 300 Vac
1.-2.-3.		+ -35% Operating voltage: 150 Vac – 310 Vac

ON	OFF	FUNCTION
4.		During the installation the deep switch 4 of the phase supervisor must be ON in order for the control unit to be able to save on memory the sequence of the phases from the power supply network.
	4.	The PHASE SUPERVISOR is activated.

When the PHASE SUPERVISOR is activated with DIP SWITCH 4 and any of the phases is out of the limits of the percentage fall voltage tolerance for more than 10 seconds, then the red LED of the phase (R or S or T) which the problem occurred is flashing or goes off completely on a lack of a phase. The two remaining LED will be active, the red LED ALARM of the boutonniere will be activated and the control unit will block any movement of the door in order to protect the motor.

After a power cut or any power supply problem restoration, the control unit does not accept any command for 10 seconds or until the red LED ALARM of the boutonniere is deactivated.

When the LED ALARM of the boutonniere will flash the phase supervisor reads the voltage and the sequence of the power supply network in order to compare them with the saved on memory adjustments which made to the control unit during the first installation. If after the comparison the sequence of the phases is deferent with the sequence saved on memory the LED ALARM of the boutonniere will be activated and the control unit will not give any command to the motor until the problem is restored.

17. INSTALLING INSTRUCTIONS:

The installation of the control unit must be performed by trained and authorized personnel only. It is vitally important to take all the necessary security measures as well as all the protection measures to protect sensitive devices to electrostatic discharge during the procedures of:

- Control unit adjustment.
- Handling of the electronic board and other accessories.