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Safety precautions

- Proceed according to the manufacturer's instructions.
- The installer must check the installation and the proper functioning of the appliance.
- Using the product for purposes other than those foreseen by the manufacturer or in an improper way is expressly forbidden.
- Do not tamper or modify the product.
- Use original spare parts.
- Place barriers around the intervention area to prevent the access to non-authorized people.
- The intervention area shall be free from hindrances, with non-slip floor.
- Use only tools in good condition.
- Do not work in environments not sufficiently lit or unsafe.
- Keep unauthorized people clear of the intervention area.
- Do not leave the intervention area unattended.

Purpose of the manual

This manual has been drawn up by the manufacturer and is integral part of the product. The information contained herein is addressed to expert operators charged with the installation and the extraordinary maintenance. These operators must have specific knowledge and must be able to perform all of the interventions in a correct and safe way. The strict observance of these instructions grants safe conditions, an efficient operation and a long life of the product. To prevent operations that can result in accidents, read this manual thoroughly and obey its instructions.

Application field

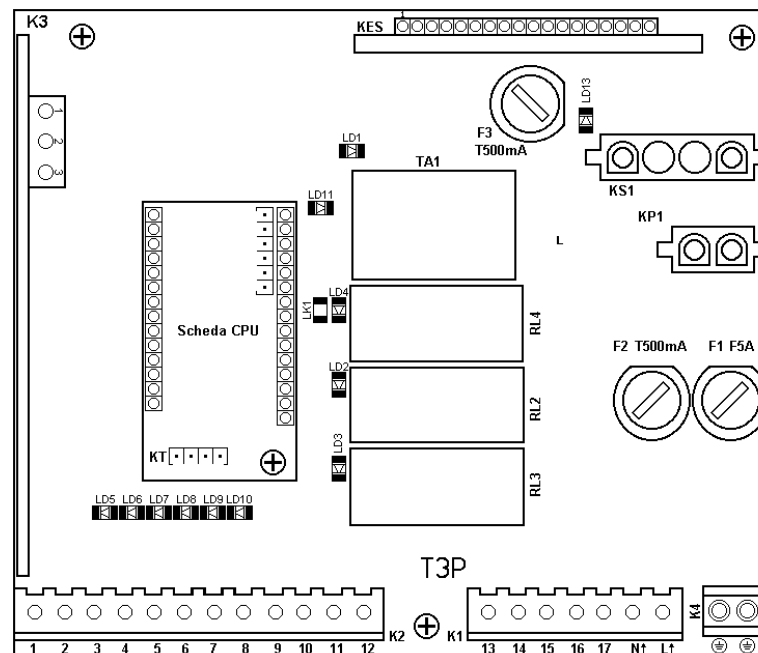
Appliance for Aprimatic gear motors for the operation of tip-up gates or barriers.

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1. DESCRIPTION

The T3 PRO unit, powered at 230 Vac 50 Hz, is an appliance dedicated to the control of tip-up doors and barriers driven by electromechanical or hydraulic operators powered at 230 Vac with max. power of 680 W. All operation modes, and the setting of parameters and functions are controlled through a special **PROGRAMMER** exclusively provided to **APRIMATIC qualified installers**.



1.1 APPLIANCE BLOCK DIAGRAM

K1	High voltage connector	LD1	LED - 24 Vdc power ON
K2	Low-voltage signals connector	LD2	LED - motor direction output
K3	Radio receiver connector	LD3	LED - courtesy lamp output
K4	GND	LD4	LED - motor enabling output
KP1	Transformer main connector	LD5	LED - Start input
KS1	Transformer auxiliary connector	LD6	LED - Close input
KES	Connector for auxiliary cards	LD7	LED - Stop input
KT	<i>The programmer connector can be found in the CPU card</i>	LD8	LED - Auxiliary photocells input
F1	5A fuse - motors	LD9	LED - Standard photocells input
F2	500mA fuse - transformer main	LD10	LED - Limit switches input
F3	500mA fuse - accessories	LD11	LED - Anti-crushing safety activation
LD1	LED - 24 Vdc power ON	LD13	LED - Triac activation
LD2	LED - motor direction output	RL2	Motor direction relay
LD3	LED - courtesy lamp output	RL3	Courtesy lamp relay
LD4	LED - motor enabling output	RL4	Motor enabling relay
LD5	LED - Start input		
LD6	LED - Close input		
LD7	LED - Stop input		
LD8	LED - Auxiliary photocells input		
LD9	LED - Standard photocells input		
LD10	LED - Limit switches input		
LD11	LED - Anti-crushing safety activation		
LD13	LED - Triac activation		
RL2	Motor direction relay		
RL3	Courtesy lamp relay		
RL4	Motor enabling relay		
LK1	Jumper for selecting 1/2 motors		

2. INSTALLATION

- WARNING** - The product must be installed only by qualified technicians of the after-sales service and/or qualified installers.
- WARNING** - The electrical system must comply with the regulations in force in the installation country.
- WARNING** - Always cut off the appliance before opening the box. Make sure the ground system is efficient and connected to the special terminals.

2.1 BEFORE MOUNTING

Before proceeding in mounting the appliance, prepare all tools required to fix the appliance to the wall and for the electrical connections. Additionally, you need:

6. Expansion anchors Ø 6 mm
7. PG16 skintop-type cable straps
8. One omnipolar switch with 3mm minimum contact opening
9. One emergency pushbutton
10. Approved cables for outdoor use with minimum cross-section of 0.75 mm² and 1.5 mm²

2.2 MOUNTING

No hole is required to fix the appliance.

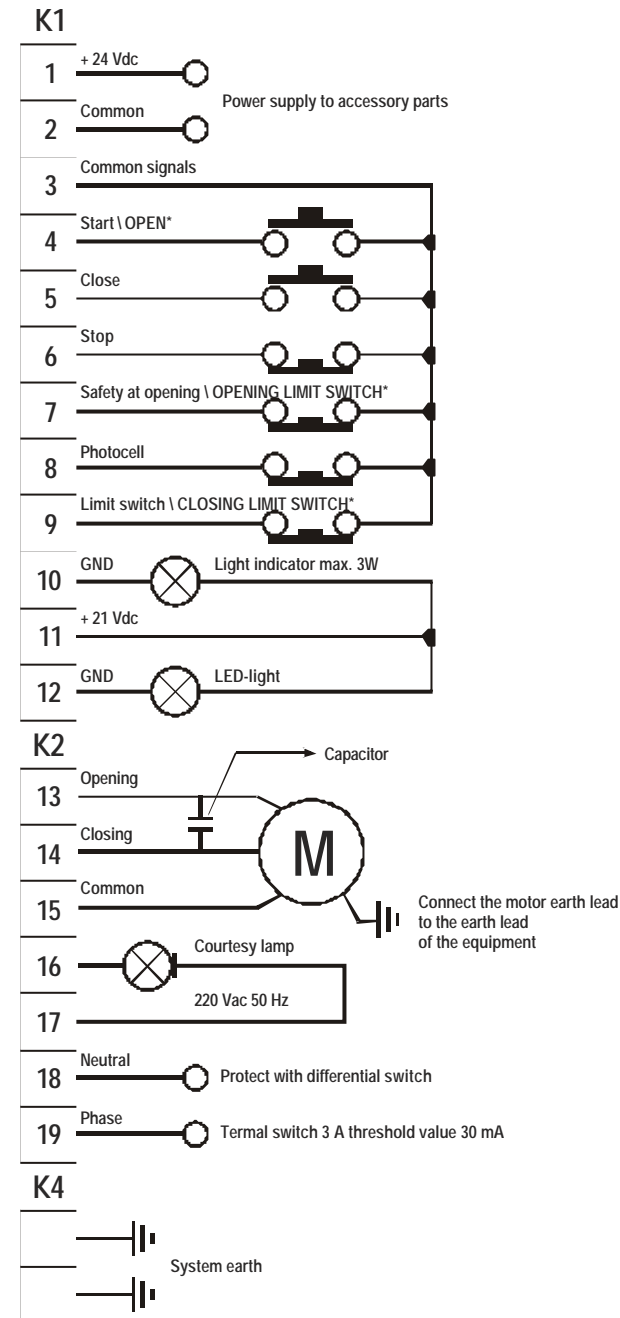
7. Fix the appliance at least 30 cm above the floor using the fixing holes on the plastic box.
8. Insert the connecting cables into the stamped holes at the bottom of the box and join them with the recommended cable straps.
9. Install the omnipolar switch upstream of the appliance.
10. Install the emergency pushbutton in a position allowing to keep the automation under control and to cut the power off.
11. Use the cables with 1.5 mm² cross-section for the connection of the mains supply to the motors and the cables with 0.75 mm² cross-section for the connection to the 24 Vdc devices.
12. **The appliance is not equipped with pick-up capacitors:** use the capacitors supplied with the operator or place a separate order as per instructions supplied with the operator.

2.3 ELECTRICAL CONNECTIONS

- WARNING** - Before any connection, cut the mains supply off.
- WARNING** - Do not use intercom or phone cables.
- WARNING** - Firmly strap the high-voltage cables one to the other close to the K2 terminal board. Firmly strap the low-voltage cables one to the other close to the K1 terminal board. Firmly strap the ground cables one to the other close to the K4 terminal board.
- WARNING** - Make sure the ground system is efficient and connected to the special terminals.

Note: Always bridge all N.C. contacts (Stop, Photocell, Limit Switch etc.) when not used.

Do the electrical connections following the wiring diagram.



* ONLY FOR PROGRAMMING 25-9 AND 25-10

3. OPERATION

After having completed and checked all electrical connections thoroughly, turn the power on and make sure the automation works as explained below.

3.1 FUNCTIONAL TESTING

After the connection, proceed in checking the automatic system and make sure that the automation opens when the Start pushbutton is pressed down. If, on the contrary, the automation closes, reverse the motor connections.

3.2 SETTINGS

The use of the programmer allows you to adjust the operation times and modes of the automation by entering the following parameters. Plug the programmer in the special connector on the CPU card.

WARNING! The connector is polarised and has a unique plug-in direction; if the connector can hardly be plugged in, check the plug-in direction.

Note: the digit placed in front of each description indicates the parameter going to be set (corresponding to the two digits on the left on the programmer display). The range of real variation is put in round brackets, while the programmer setting range (corresponding to the two digits on the right) is put in square brackets.

10 - LEAF DELAY DURING OPENING Function used only for double-leaf swing gates.	(0 – 20 s)	[0 – 20]
11 - LEAF DELAY DURING CLOSING Function used only for double-leaf swing gates.	(0 – 20 s)	[0 – 20]
12 - DECELERATION/THRUST LIMIT By setting this parameter, you can adjust the deceleration “smoothness” after the activation of the (opening or closing) limit switch. This deceleration results from the elimination of entire half waves (base 8 or 19) to the motor power supply. The value set refers to the number of half waves sent; the lower this value, the more effective the braking.		[0 – 15]
13 - PAUSE TIME Setting of the pause interval with open automation in any automatic logic.	(2 – 180 s)	[1 – 90]
14 - WORK TIME Setting of the total work time, especially useful for operators without limit switches.	(2 – 180 s)	[1 – 90]
15 - BRAKE DELAY Function used only for sliding gates.	(0 – 2 s)	[1 – 20]
16 - ANTI-CRUSHING SAFETY ACTIVATION Setting of the reaction point of the system which detects possible contacts with obstacles and stops the motion. WARNING: when this parameter is set to 99, the operator will exert its maximum thrust.		[0 – 99]
17 - PEDESTRIAN OPENING Function used only for sliding gates.	(0 – 32 S)	[0 – 32]

3.3 PROGRAMMING

Note: The digits put in square brackets correspond to the ones displayed by the programmer during the selection of the operating logic - i.e. the number 25 (2 digits on the left) indicates you have entered the operating logic selection, while the 2 digits on the right refers to the selected logic.

AUTOMATIC STANDARD [25-00]

By selecting this operation mode, the transmission of a START pulse commands the opening to stroke end; the closing phase is automatically controlled by the automation after the elapsing of the pause time set.

- A START pulse during the closing phase causes a re-opening.
- A START pulse during the opening phase is ignored, while, during the pause interval, it causes a new countdown of the pause time.

AUTOMATIC SPECIAL [25-01]

By selecting this operation mode, the transmission of a START pulse commands the opening to stroke end; the closing phase is automatically controlled by the automation after the elapsing of the pause time set.

If the photocells are activated before the pause interval has elapsed, the automation restarts in closing mode after 3 seconds.

- A START pulse during the closing phase causes a re-opening.
- A START pulse during the opening phase is ignored, while, during the pause interval, it causes a new countdown of the pause time.

AUTOMATIC SUPER [25-02]

By selecting this operation mode, the transmission of a START pulse commands the opening to stroke end; the closing phase is automatically controlled by the automation after the elapsing of the pause time set.

- At any time, a START pulse reverses the current motion; closing can be operated by hand.
- A START pulse during the pause interval immediately activates the pre-flashing and the subsequent closing.

DIAGNOSTIC [25-03]

The diagnostic routine allows you to check the correct activation of all outputs and inputs as follows. First of all, the microprocessor activates all outputs in sequence (Motor relay, Direction relay, Courtesy lamp relay, Flashlight, Light indicator), then it sets to idle mode waiting for the activation of the inputs. If, within 10 seconds after the end of the routine, no input is activated, the output activation sequence is repeated.

If, on the contrary, the diagnostic is OK and one input is activated, the microprocessor commands a number of complete flashing cycles (0.5 s ON and 0.5 s OFF) equal to the progressive number of the activated input (Start=1, Close=2, Stop=3, Std photocell=4, Aux. photocell=5, Limit switch=6)

SEMI-AUTOMATIC OPEN/CLOSE [25-04]

By selecting this operation mode, terminal 5 acts as CLOSE control.

When a START pulse is received, the automation opens fully before entering in idle mode and waiting for a CLOSE command.

- A START pulse during the closing phase causes a re-opening.
- A CLOSE pulse during the opening phase causes the closing.

SEMI-AUTOMATIC WITH STOP (step-by-step) [25-05]

By selecting this type of logic, when a START pulse is sent, the automation opens fully before entering in idle mode and waiting for a new command.

- With the automation fully open, a START pulse causes the closing (controlled closing).
- In closing and/or opening mode, a START pulse stops the motion and allows for a partial opening.

SEMIAUTOMATIC WITH REVERSAL [25-06]

By selecting this type of logic, when a START pulse is sent, the automatic device opens fully before entering in idle mode and waiting for a new command.

- With the automation fully open, a START pulse causes the closing (controlled closing).
- In opening mode, a START pulse stops the motion and allows for a partial opening.
- In closing mode, a START pulse causes a re-opening.

OPERATOR [25-07]

By selecting this operation mode, terminal 5 acts as CLOSE control. This logic requires the physical presence of an operator who must control the opening/closing of the automation. For the opening, press and hold pressed down the START pushbutton which, once released, makes the automation stop. For the closing, press and hold pressed down the STOP pushbutton. The response of the photocells as well as the simultaneous pressure of both pushbuttons brings the automation to a stop. In this case, the operator must release the pushbuttons and then decides whether to open or close the automation.

PARK [25-09]

The selection of this type of logic requires a different connection of the automation (see p. 2). In this logic, terminal 4 is no more a START, but turns into the OPEN input and terminal 5 acts as CLOSE function. Input 7 turns into the opening limit switch and input 9 into the closing limit switch.

A pulse transmitted by the safety devices while the automation is closing makes it re-open to stroke end. The system remains in this mode waiting for a close command.

PARK Special [25-10]

For this type of logic, do the same connections as explained for item 25-09.

A pulse transmitted by the safety devices during the closing (or opening) phase brings the automation to a stop and it will remain in this condition until the safety devices are reset. Once reset, the automation will complete the closing (or opening) cycle.

3.4 PRESETTING/SELECTIONS

Note: the digit in front of each description indicates the parameter going to be set (corresponding to the two left-hand digits displayed on the programmer). The selection that can be made is put in brackets -.e. **ON** or **OFF** (2 digits on the right).

35 - PRE-FLASHING DURING OPENING ONLY (ON=1 /OFF=0)

Flashing of the light for 3 seconds before the start-up of the motors (and the activation of the light indicator) during opening.

36 - PRE-FLASHING DURING CLOSING ONLY (ON=1 /OFF=0)

Flashing of the light for 3 seconds before the start-up of the motors (and the activation of the light indicator) during closing.

37 - UNLOCKING (ON=1 /OFF=0)

Function used only for swing gates with electric lock.

38 - REVERSAL AT CYCLE END (ON=1 /OFF=0)

Short final thrust during opening (at the end of the closing phase) to release any tension from the tip-up door frame.

39 - AUTOMATIC OR MANUAL RESTART AFTER ACTIVATION OF AN AUXILIARY SAFETY (MAN=1 / AUT=0)

Possibility to select the restart mode of a controlled half-cycle (whether automatic or manual) after the activation of an auxiliary safety device.

The intervention of the auxiliary device prevents the automation from opening or closing when the space required for the motion (not "serviced" by the standard photocells) is occupied by an object detected by the special auxiliary photocells.

For this function, the contact of a couple of auxiliary photocells must be connected between terminals 3 and 7.

40 - DECELERATION BASE SELECTION (19 semi-waves=1 / 8 semi-waves=0)

This selection allows choosing the slow-down base after the intervention of the limit switches in relation to the operator installed (see also description of parameter 12). The default value of this parameter is 1.

Warning: set this parameter from 19 to 8 semi-waves only when, after setting the deceleration speed, the automation jerks while opening/closing.

41 - ANTI-CRUSHING CONTROL (stop=1 / thrust reduction =0)

In relation to the value set, the intervention of the obstacle recognition (anti-crushing safety) can stop or slow down the automation until the elapsing of the work time. The default value of this parameter is 1.

42 - STOP OR REVERSAL AND STOP AFTER ACTIVATION OF THE AUXILIARY SAFETY DURING OPENING (inv. + stop=1 / stop=0)

Possibility to select the behaviour of the automation after the activation of the auxiliary safety device during the opening phase. With parameter=0, the automation stops immediately after the intervention of the safety device which, once reset, commands the restart of the opening with a delay of 0.5 seconds. With parameter=1, there is a short reversal of the motion before the stop.

For this function, the contact of a couple of auxiliary photocells must be connected between terminals 3 and 7.

43 - PHOTOCCELL ACTIVATION DURING PAUSE

By setting this parameter, you can select the behaviour of the automation after the activation of the standard photocells during the pause interval. With parameter=0, the activation of the photocells makes the countdown of the pause time restart; with parameter=1, the pause time is set to zero and, after a pre-flashing of 3 seconds, the automation closes.

44 - ANTI-CRUSHING ENABLING COMMAND (ON=1 /OFF=0)

Possibility to enable or disable the electronic anti-crushing function in relation to the type of operator used.

45 - START/NO START WITH PHOTOCCELLS ACTIVATED (start=0 / no start=1)

This parameter enables you to set the behaviour of the automation at the reception of a START pulse when the automatic device is stopped and closed and the standard photocells are activated. With parameter=0 a START pulse controls the opening, with parameter=1 the command is ignored until the photocells are activated.

JUMPER LK1: this jumper allows for the selection of one or two motors for a more efficient anti-crushing control. By turning the jumper on, the automation is set for the control of two motors.



4. OPERATIONAL CHECK

After the selection of the operation mode and times, it is advisable to check the external devices connected to the card.

4.1 OPERATIONAL CHECK OF EXTERNAL DEVICES

Start input: this input must be used to connect, between terminals 3 and 4, the N.O. contact of a device (e.g. a pushbutton) used to transmit a pulse to the automation.

Close input: this input must be used to connect, between terminals 3 and 5, the N.O. contact of a device (e.g. a pushbutton) which, in semiautomatic open/close logic or in operator logic, controls the closing of the automation.

Stop input: this input must be used to connect, between terminals 3 and 6, the N.C. contact of a device (e.g. a pushbutton) used to control the immediate stop of the motion. This input has absolute priority in any logic or condition. The restart will only occur at the reception of a START command which will close the automation. **When the STOP input is activated, the appliance ignores all other commands.**

Photocell input: this input must be used to connect, between terminals 3 and 8, the N.C. contact of a photocell which, when activated during the closing of the automation, brings the motion to a stop and after one second restarts the opening phase. When the automation is open and the photocells are activated, no re-closing will occur.

Opening Safety input: this input must be used to connect, between terminals 3 and 7, the N.C. contact of a device (e.g. a photocell) used as auxiliary safety during opening and closing. The activation of this input brings the automation to a stop. After the deactivation of this input, the restart will occur as per parameters 39 and, in any case, in the same direction prior to the stop. This function can be used to protect areas subject to crushing risk and/or to passage.

Limit switch input: this input must be used to connect, between terminals 3 and 9, the N.C. contact of an electromechanical limit switch (or equivalent) whose activation causes the beginning of the slow-down phase during the last opening or closing phase.

Light-indicator output: 24Vdc output, max charge 3W, for the control of the light-indicator signalling the condition of the automation, to be connected between terminals 10 and 11. The operation is the following: with the automation closed, the light indicator is off; when the automation is open or in opening mode, the light-indicator comes on with a solid light; with the automation in closing mode, the light flashes.

Flashlight output: 24Vdc output for the control of a LED-light to be connected between terminals 11 and 12. This output controls the LED-light operation - i.e. 0.5sec. on and 0.5sec. off, with a pulsating current at a frequency of 1 Hz. In case of activation of the pre-flashing, this output is activated 3 seconds before the opening or closing motion.

NOTE- Use only LED-lights of the Aprimatic ET series to prevent damage to the output and malfunctioning of the entire system.