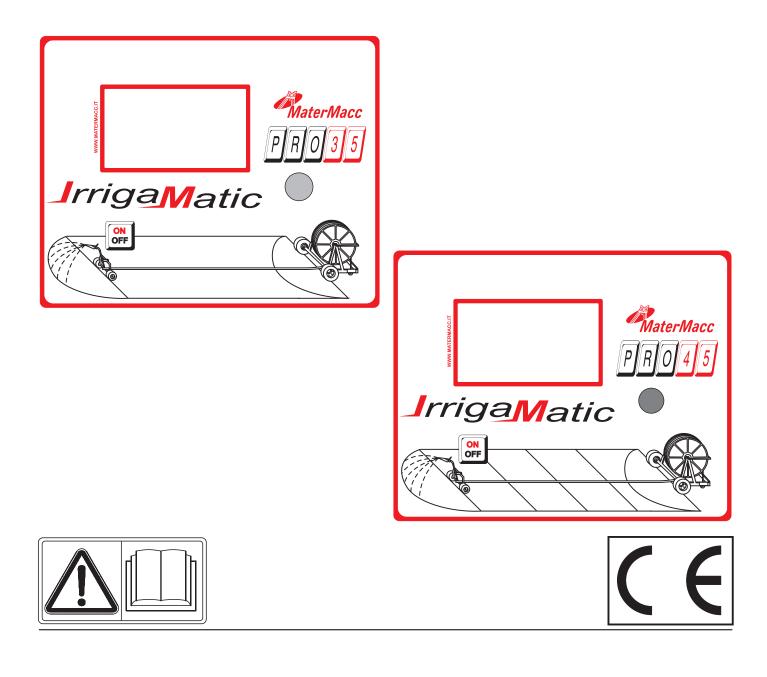


# **ASSEMBLING INSTRUCTIONS IRRIGAMATIC PRO35 - PRO45**





IRRIGAMATIC ASSEMBLING

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## **1 INTRODUCTION**

This manual contains information needed for adjustment, use and maintenance of the electronic Irrigamatic console and its accessories.

## **!!! ATTENTION !!!**

# Please read this manual carefully before using your new IRRIGAMATIC

Please note the data of your IRRIGAMATIC; they will be useful to you for ordering accessories, spare parts, and whenever you need to contact your dealer in general.

The manual contents and drawings are updated on printing date and refer to the features of the console they are supplied with. Matermacc s.r.l. reserves the right of updating and/or modifying them without prior notice.

## 2 GUARANTEE

- Upon delivery of your console please make sure your equipment has not been damaged during transportation and the accessories are whole and sound.
- Any claim shall be submitted in writing within 8 days from receipt.
- The guarantee lasts 1 year from date of delivery against any material defect.
- The guarantee does not include any shipping costs (the material travels at the consignee's risk and peril).
- Any damage caused to people or property is excluded from the guarantee.
- He guarantee is limited to free repair or replacement of the defective part.
- Neither the retailers nor the users cannot claim with the maker for any damage or costs that might occur (labour costs, transportation, defective work, direct or in direct accidents, lack of profit on harvest, etc.)

## 2.1 VALIDITY OF THE GUARANTEE

- Besides what is mentioned in the supply contract, the guarantee expires:
- If the instructions described in this manual are not followed carefully.
- In case of customer's misuse, faulty maintenance or mistakes.
- Should non-original spares be used.

## NOTE

However, Matermacc S.r.I is always at your complete disposal to ensure immediate accurate technical support and whatever can be necessary for the best performance and correct operation of the equipment.

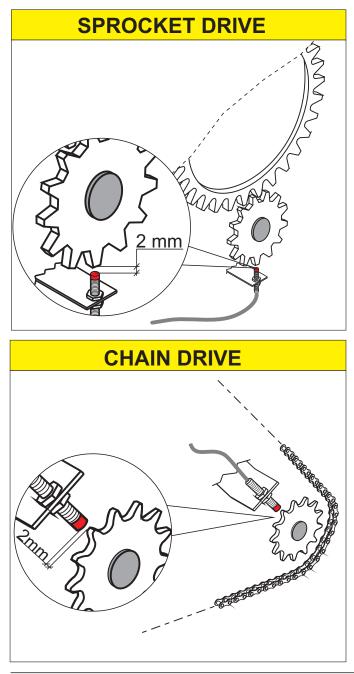


## 3. SPEED SENSOR INSTALLATION

#### 3.1 INSTALLING AN INDUCTIVE SPEED SENSOR ON THE PINION

The inductive sensor has a maximum reading range of 4 mm and should be positioned on the bracket supplied in the kit, on the outlet pinion of the reduction gear, indifferently for crown or chain systems.

Position the bracket and fix the sensor with nut and check nut at approx. 2 mm from pinion edge.



## !!! IMPORTANT !!!

Should it be necessary to position the sensor on the crown, and should the crown not be perfectly circular, keep at higher distance. Then install a sensor with a wider reading range (optional up to 8 mm)

Fix the sensor cable to the irrigator frame by straps or cable holders as far as the electronic gearcase.

The speed sensor cable bears a ring with number 2 and should be connected to gearcase connector 2, while the brown cable should be connected to the positive pole of terminal board 1 (electric diagram on page 9-10).

## !!! NOTE !!!

In the back side of the sensor there is a small light that turns on when the sensor detects the metal. Verify therefore, through this indication, that each tooth of the pinion is detected.

#### 3.2 INSTALLATION OF THE MAGNETIC SPEED SENSOR WITH ROLLER

#### **3.2.1 ROLLER INSTALLATION**

The roller shall roll over the irrigation hose and shall be able to oscillate up and down in such a way as to keep in touch with the hose by its own weight. The arm spacer shall be mounted upwards not to scratch the hose.

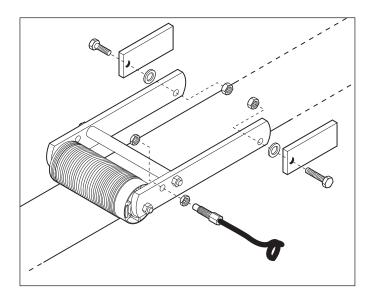
Connections can be welded or bolted on the hose guide. After mounting the roller, this shall be able to oscillate freely.

# IMPORTANT: DO NOT PRESS ON THE ROLLER.



#### **3.2.2 SENSOR INSTALLATION**

- Insert the sensor in the arm hole from the magneto side and fix it with nut and check nut.
- Fix the spiralled cable to the roller arm and to the hose guide by straps or cable holders.
- Fix the cable to the irrigator frame, centrally over the hose guide in such a length as to allow the hose guide to slide from right to left with the cable still slightly twisted. Make sure the cable is in such a position as to avoid any damage during operation.
- For heavy duty conditions an optional speed sensor is available with a Rilsan cable.
- Fix the sensor cable to the irrigator frame by straps or cable holders as far as the electronic gearcase.
- The speed sensor cable bears a ring with number 2 and should be connected to gearcase connector 2.



## 4. INSTALLATION OF THE ADJUSTING VALVE

#### 4.1 INSTALLATION OF THE BY-PASS VALVE

#### 4.1.1 BY-PASS VALVE INFORMATION

- The by-pass valve is used to send more or less water to the turbine, thus allowing to adjust the trolley return speed.
- The valve is sized according to the irrigator characteristics.
- The following table shows the size of the valve generally used according to the irrigation hose diameter:

irrigation hose	by-pass valve		
50 - 100 mm	2"		
80 - 110 mm	<b>2</b> " ½		
100 - 125 mm	3"		
130 - 140 mm	4"		

When the by-pass valve is fully open, the hose rewinding speed is zero even when the hose is partially rewound. For this reason, under specific conditions, it may be useful to install valves in a size different from standard ones.

By-pass valves consist of a 100 mm long body with female gas threading at the ends and a head gasket for wafer mounting. A butterfly valve with an elastic rim is mounted inside The motor reduction gear is fitted on the valve shaft. The motor reduction gear is controlled by the gearcase for speed adjustment.

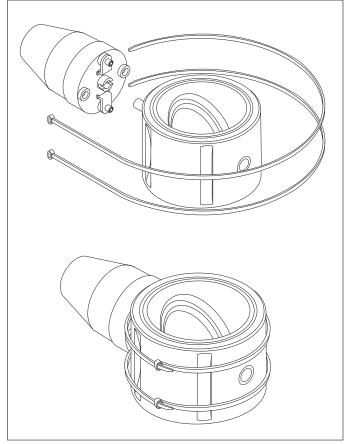
#### 4.1.2 HOW TO MOUNT THE BY-PASS VALVE

Fit the by-pass valve in the by-pass duct of the turbine in such a position as to prevent the motor reduction gear from getting upside down to prevent water seepage. The duct with the by-pass valve should not be rigid, but at least with a section of rubber or plastic hose to prevent any damage to the valve.



# 4.1.3 MOTOR REDUCTION GEAR INSTALLATION

Insert the motor reduction gear in the valve shaft in such a way as to position the shaft plug in the motor reduction gear seat. Insert the locking pin of the motor reduction gear in the slot of the valve body, then lock the unit by straps as shown in the figure below.



Fix the motor reduction gear cable to the irrigator frame by straps or cable holders as far as the electronic gearcase.

The motor reduction gear cable bears a ring with number 4 and should be connected to gearcase connector 4.

#### 4.2 INSTALLATION OF A BALL VALVE FOR PISTON IRRIGATORS

The rewinding speed adjustment for piston irrigators is obtained by means of a ball valve  $(\frac{3}{4})$  with a female to female threading on which the motor reduction gear is applied.

The ball head valve is preferably installed in the delivery hose taking water to the piston, but it can be installed in the water drain as well.

For installation follow the instructions given for by-pass valve installation.

## !!! NOTE !!!

Each valve is supplied with a manual adjustment dial that can be very useful should the adjustment system be out of order, in that it permits to keep the valve approx. in a working position anyway.

## 5 INSTALLATION OF THE END-OF-WORK VALVE

#### 5.1 SHUNT VALVE

The shunt valve is a 3-way motor-driven valve used to pilot a hydraulic valve to discharge pressure from the duct and stop the irrigation cycle. Choose the position for the shunt valve and fix it with its support vertical by two screws.

Fix the 3-way valve motor cable to the irrigator frame by straps or cable holders as far as the electronic gearcase.

The 3-way valve motor cable bears a ring with number 5 and should be connected to gearcase connector 5.

Connect the shunt valve to the hydraulic valve as shown in the diagram below.

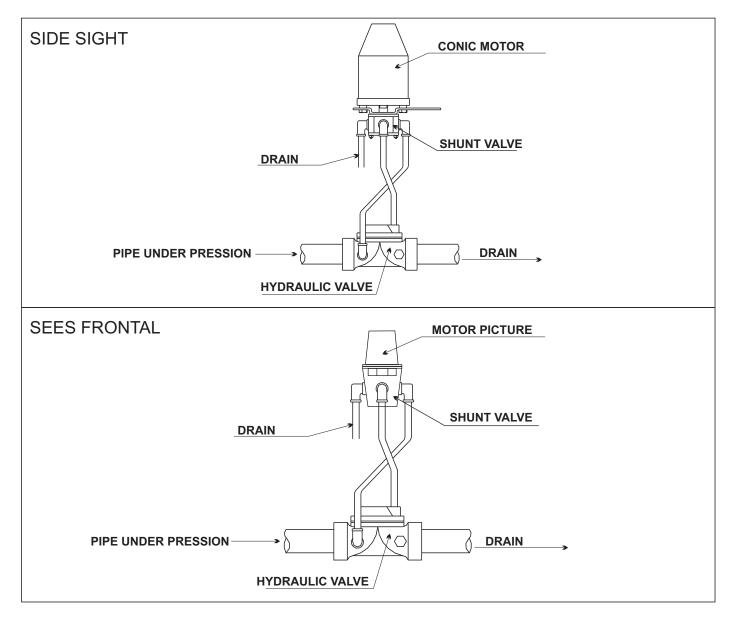
The hydraulic valve is usually fitted on the hose to the drain.

To connect the shunt valve to the hydraulic valve, use a plastic hose (6 or 8 mm diameter) and fittings. The shunt valve is a threaded 1/8" female.

Upon request a 5-way valve can be supplied to control a double-acting piston.



#### 5.1.1 DIAGRAM OF THE HYDRAULIC VALVE TO THE DRAIN



#### 5.2 SLOW- CLOSING VALVE

The slow-closing valve consists of a motor-driven butterfly valve. It can be mounted on the inlet (closing in approx. 4 minutes) to close the water delivery to the irrigator or on the drain (opening in approx.1,5 minutes) to let pressure drop.

#### Two types of motor reduction gears are mounted:

- one for valves (diameter up to 3")
- one for valves (diameter of 4" and over) (with an extra reduction gear).

#### 5.2.1 HOW TO MOUNT THE BUTTERFLY VALVE

Fit the valve in the inlet or outlet duct to prevent the motor reduction gear from capsizing and avoiding water seepage.

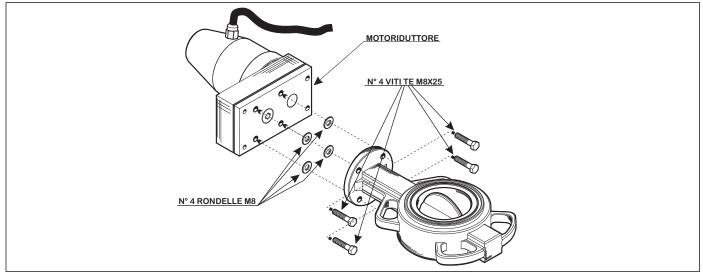
#### 5.2.2 MOTOR REDUCTION GEAR INSTALLATION

Fit the motor reduction gear in the valve square shaft and fix it to the valve body by means of 4 screws (see figure)



# VALVE 3

#### VALVE 4"- 5"



Fix the valve motor cable to the irrigator frame by straps or cable holders as far as the electronic gearcase. The valve motor cable bears a ring with number 5 and should be connected to gearcase connector 5.



## 6 INSTALLATION OF THE END-OF-REWINDING SENSOR

The end-of-rewinding sensor is used to give the gearcase consent to start the procedures of end-of-work once the whole hose has been rewound.

Fix the magnet on the transmission rod at a maximum distance of 5 mm in front of the sensor. The sensor should be fixed on the frame by means of a bracket to obtain the above described condition.

Make sure the distances are complied with and the magnet passes close to the sensor tip without damaging it.

Fix the end-of-rewinding sensor cable to the irrigator frame by straps or cable holders as far as the electronic gearcase.

The end-of-rewinding sensor cable bears a ring with number 3 and should be connected to gearcase connector 3.

## 7 ELECTRONIC CONSOLE INSTALLATION

The eletronic console must be installed on the irrigator frame in an accessible position, far from heat sources (for ex. engine) and away from vibrations. It can be installed in a stainless steel optional protective case.

Open the eletronic console and bore the holes necessary to led the cable through on the bottom and on the cable holder.

Fix the eletronic console bottom in the required position.

Connect the motor cables and the sensor cables in their positions (see electric diagrams on pages 10-11) making sure not to make any mistakes.

Connect the main cable bearing a ring with number 1 to terminal board 1. Of the eletronic console.

#### CHECK POLARITIES CONNECT RED CABLE WITH POLE + CONNECT BLACK CABLE WITH POLE -

Fit the front and close the eletrocic console.

Connect the power supply cable to a 12V battery.

#### CHECK POLARITIES CONNECT RED CABLE WITH POLE + CONNECT BLACK CABLE WITH POLE -

Fix the various cables by straps and cable holders.

The system is now ready to operate.

The average consumption of an Irrigamatic appliance is approx. 40-50 mA. This means that a 50 Ah battery should last approx 1000 h under normal conditions.

Power supply to the battery can be obtained by an optional photovoltaic panel **(OPTIONAL)**.

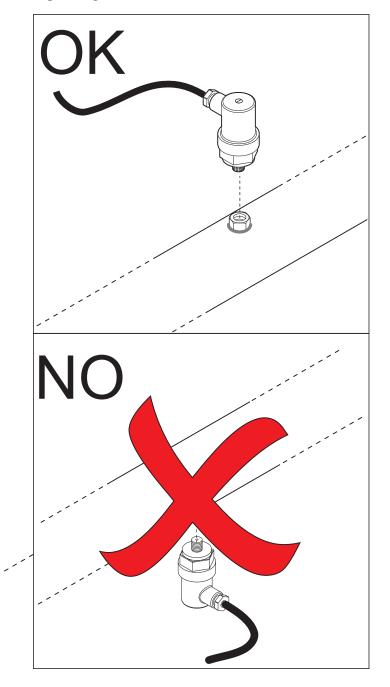


#### 8. OPTIONS

#### 8.1 PRESSURE SWITCH INSTALLATION

The Irrigamatic machines are preset for direct connection to the electronic gearcase of a pressure switch used to inform the system about any leak of pressure in the duct.

The supplied pressure switch has a male threaded 1/8" connection. The pressure switch should be installed at the top of the duct to prevent impurity from depositing on the bulb.



#### 8.1.1 HOW TO CALIBRATE THE PRESSURE SWITCH

Upon supply, pressure switch calibration is random. To modify this value, remove the cover and act on the screw fitted on the pressure switch. Tighten the screw to increase pressure, loosen the screw to reduce it.

The contacts are normally closed and open when the operating pressure is higher than the preset pressure.

The pressure switch cable bears a ring with number 7 and should be connected to gearcase connector 7.

#### 8.2 OUTER ALARM

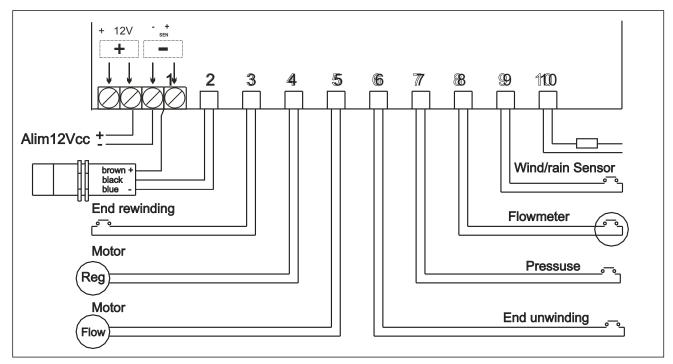
In PRO35 - PRO45 models (preset appliances) an outer alarm (beeper, flashing light or other) the power supply of which is obtained directly from the battery.

It is controlled by an outer gearcase relay that can stand a maximum current of 5A. The relay contacts close after unwinding (if the sensor is installed) and, for one minute, at the end of the irrigation cycle, or in case of trouble.

The outer alarm system should be connected to connector 10.



9. SCHEME



## IRRIGAMATIC PRO35 AND PRO45 CONNECTION DIAGRAM

- 1 POWER SUPPLY:12 Vcc
- 2 INDUCTIVE PROXIMITY SPEED SENSOR (PINION)
- 3 END-OF-REWINDING SENSOR
- 4 SPEED ADJUSTMENT MOTOR: 12Vcc
- 5 END-OF-WORK VALVE MOTOR: 12Vcc
- 6 END-OF-UNWINDING SENSOR (OPTIONAL)
- 7 PRESSURE SWITCH (OPTIONAL)
- 8 PULSE FLOWMETER (5 180 pulses/ litre)
- 9 WIND/RAIN SENSOR
- 10 CONTACT FOR FLASHING LIGHT/RADIO SIGNAL, etc. (maximum charge 5A)

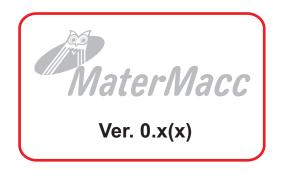


## 10 MODALITY OF USE

#### 10.1 SWITCHING THE ELETRONIC CONSOLE ON

Connect the power supply cables of the eletronic console at a voltage of 12V d.c.

When power is supplied to the eletronic console the LCD displays the logo and version of the firmware.



A message follows informing about the execution of the machine initialization. the flow valve is closed if located at the inlet.

## **CHIUSURA FLUX**

The BYP valve opens to make sure speed is set to zero.

## **BYP OPENING**

followed by a message of confirmation that the device initialization has been carried out.

#### INIT OVER

The gearcase then goes to standby waiting for new commands by the user who can access the menus listed below:

IRR. 2K7 PRO OPERATION CALIBRATION CONFIGURATION CALENDAR COUNTER To scroll the menus just rotate the knob right or left. In order to select a menu just press the knob on the menu item that is being high lighted.

The highlighting is obtained with an inverted contrast.

#### **10.2 ACCESS TO MENUS**

General procedure The eletronic console then goes to standby waiting

for new commands by the user who can access the menus listed below:

To access the menu specified in the paragraph proceed as follows:

- 1. Highlight the relevant menu scroll the menus by turning the knob right or left.
- 2. Press the knob
- 3.If the menu is password-protected the "PASSWORD" label will be displayed and the characters composing the relevant password shall be entered.
- 4. To enter the password:
- A) Press the knob the first character is displayed as "A\*" meaning the character can now be edited.
- B) Modify the character by turning the knob right or left.
- C) Confirm the character you have selected by pressing the knob.
- D) Highlight the next position by turning the knob right or left.
- E) Repeat A) to D) to the last character then high light and press the knob; if the password

is correct, the electronic console will display the first of the menu parameters otherwise it will be locked on the password menu. To quit the menu high light and the electronic console will

return to the main menu.



## **11 CONFIGURATION**

The IRRIGAMATIC gearcase requires programming the parameters needed to configure the device in view of the irrigator equipment and features.

Possible mistakes in programming these parameters would jeopardize the operation of the irrigator badly.

To prevent non-authorized people from changing these parameters by mistake the gearcase is password protected.

This access password is personalized for every manufacturer. It is entered by MATERMACC and communicated only to the interested parties.

#### 11.1 LOADING PROCEDURE FOR CONFIGURATION PARAMETERS

1. Highlight by turning the knob on CONFIGURATION and press the knob. The system displays::

PASSWORD

2. Highlight by turning the knob on the 1st character and press the knob.



## PASSWORD

Will be displayed. Modify the first code number by turning the knob and confirm by pressing the knob. The display will read for example:





Move the focus on to the second position and repeat 2 to 3 until the code has been completed. The following will be displayed, for ex.:

#### PASSWORD

#### 0 1 2 3

5. Highlight by turning the knob on it **NEXT** and press the knob. If the password is correct the following will be displayed:



6. To change the parameter value rotate the knob until the value is highlighted and press the knob. The following will be displayed, for ex.:



7. Modify the value by turning the knob right or left and confirm by pressing the knob again. The following will be displayed for ex.:



8. Keep scrolling the parameters by highlighting



If necessary repeat 6 and 7 to modify other parameters.

9. To quit the configuration menu reach the pseudo-parameter " <- ESC ->", highlight it and press the knob:





## **12 CALIBRATION**

Accessible only if a machine with roll on pinion has been selected in configuration. The calibration menu is password protected. Accessible only through the passwords reserved to the irrigator's manufacturer.

#### 12.1 LOADING PROCEDURE FOR CONFIGURATION PARAMETERS

1. Highlight **CONFIGURATION** by turning the knob and press it to display:

PASSWORD

### CAL. TYPE

#### MANUAL x

#### AUTOMATIC

6. To select the calibration type you intend to carry out, highlight the required item and press the knob. Then highlight and press the knob again. If

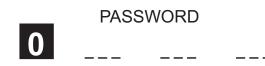
**MANUAL** selection was chosen, the following will be displayed:

Highlight the 1st character position by turning the knob and press it to display:



PASSWORD

Modify the first code number by turning the knob and confirm by pressing it. The following will be displayed, for ex.:



**4.** Highlight the second position and repeat 2 and 3 until the code has been completed. The following will be displayed, for ex.:

#### PASSWORD

#### 0 1 2 3

5. Highlight by turning the knob on it

**NEXT** and press the knob. If the password is correct the following will be displayed:



To continue highlight by rotating the knob and then press it.

The electronic console goes to layer 2; the following is displayed:

#### CALIBRATION

LAYER m

mm i

IMP

Repeat the operations 7 through 9 to the last required layer. The gearcase will quit the calibration by highlighting

by pressing the knob on a layer with zero meters and pulses.

**NOTE.** during calibration pulse count can be suspended (for example to face an unexpected situation) by highlighting "IMP. Xx" and pressing the knob. The following will be displayed:

#### CALIBRATION

LAYER m

mm i

#### PAUSE

To resume calibration highlight "PAUSE" and press the knob.

## 13 PARAMETERS RESERVED TO THE MANUFACTURER (PASSWORD:"CSTR")

Below please find the description of the configuration parameters for IRRIGAMATIC.

Parameter	Description	Range	Default	Um
#1	Flow valve position. This parameter can also be displayed by the final user if he/she has a password for it		0	
#2	Time out on flow valve openong if located at the inlet.		300	S
#3	Time out on flow valve closing if located at the outlet.		300	S
#4	Time out on flow valve opening if located at the outlet.		300	S
#5	Time out on flow valve closing if located at the outlet.		300	S
#6	Pulsed opening time for flow valve		120	S
#7	Constant closing time for flow valve		120	S
#8	Mult. factor to re-initialize the speed buffer with the minimum speed value in order to adjust it with long pulses.		5	
#9	Mult. factor to determine whether the trolley has been lost.		15	
#10	Timeout on bypass valve opening.		60	S
#11	Timeout on bypass valve closing.		60	S
#12	Standby time for zero pressure.		10	Min.
#13	Pressure switch position.	"0" = absent; 1 = downstream flow valve NA 2 = downstream flow valve NC 3 = upstream flow valve NA 4 = upstream flow valve NC	1	
#14	Position of the speed sensor.	$0 = \text{on roll} \\ 1 = \text{on pinion}$	0	
#15	Number of pulses of the speed sensor that are ignored.		0	
#16	Sensor of end of unwinding	absent present	1	



Parameter	Description	Range	Default	Um
#17	Sensor of end of winding up. Flow valve position. This parameter can also be displayed by the final user if he has a password for it:	absent present	1	
#18	Sensor rain wind	absent present	0	
#19	Criterion of regulation	speed of return mm water	0	
#20	Average flow rate value(flowmeter data). This parameter can also be displayed by the final user if he has a password for it:		1000	l min
#21	Average flow rate value(flowmeter data). This parameter can also be displayed by the final user if he has a password for it:		1000	1 min
#22	Max flow rate value at the signal of 20 mA (flowmeter data). This parameter can also be displayed by the final user if he has a password for it.		2700	l min
#23	Percentage of the measured flow rate defining the symmetrical hysteresis during irrigation per mm of water. This parameter can also be displayed by the final user if he/she has a password for it.		5	
#24	Conversion factor for the speed sensor if the sensor is the feeling roller type mm/pulse.		100	m m mpul e
#25	Length of the most external layer 10.		50	m
#26	Conversion factor for the speed sensor for layer 10 if the sensor is the pinion mounted type mm/pulse.		100	m m mpu e
#27	Length of layer 9.		50	m
#28	Conversion factor for the speed sensor for layer 9 if the sensor is the pinion mounted type mm/pulse.		100	m m mpul e
#29	Length of layer 8.		50	m
#30	Conversion factor for the speed sensor for layer 8 if the sensor is the pinion mounted type mm/pulse.		100	m m mpul e
#31	Length of layer 7.		50	m m
#32	Conversion factor for the speed sensor for layer 7 if the sensor is the pinion mounted type mm/pulse.		100	impu m m mpu e
#33	Length of layer 6.		50	m



Parameter	Description	Range	Default	Um
#34	Conversion factor for the speed sensor for layer 6 if the sensor is the pinion mounted type mm/pulse.		100	mm impuls 0
#35	Length of layer 5.		50	m m impuls o
#36	Conversion factor for the speed sensor for layer 5 if the sensor is the pinion mounted type mm/pulse.		100	mm impuls o
#37	Length of layer 4.		50	m
#38	Conversion factor for the speed sensor for layer 4 if the sensor is the pinion mounted type mm/pulse.		100	mm impuls 0
#39	Length of layer 3.		50	m
#40	Conversion factor for the speed sensor for layer 3 if the sensor is the pinion mounted type mm/pulse.		100	mm impuls o
#41	Length of layer 2.		50	m
#42	Conversion factor for the speed sensor for layer 2 if the sensor is the pinion mounted type mm/pulse.		100	mm impuls 0
#43	Length of layer 1.		50	m
#44	Conversion factor for the speed sensor for layer 1 if the sensor is the pinion mounted type mm/pulse.		100	mm impuls 0
#45	Total hour counter.		0	Times
#46	Partial hour counter.		0	Times
#47	Measure units in use This parameter can also be displayed by the final user if he has a password for it:	0 = meters 1 = feet	0	
#48	Language of the texts	0 = Italian 1 = English 2 = German 3 = French	0	
#49	Diameter of the reel used for mathematical calibration This parameter can also be displayed by the final user if he has a password for it:		1400	mm
#50	Width of the reel used for mathematical calibration This parameter can also be displayed by the final user if he has a password for it:		2000	mm



Parameter	Description	Range	Default	Um
#51	Diameter of the tube used for mathematical calibration. This parameter can also be displayed by the final user if he has a password for it:		140	mm
#52	Length of the tube used for mathematical calibration. This parameter can also be displayed by the final user if he has a password for it:		250	m
#53	Correction factor used for mathematical calibration. This parameter can also be displayed by the final user if he has a password for it:		100	х
#54	Pulses per rev. used for mathematical calibration. This parameter can also be displayed by the final user if he has a password for it:		350	
#55	Indicates if the GSM modem is present This parameter is connected with the parameter of "Modem_gsm_present". This parameter can also be displayed by the final user if he has a password for it:	1 = discharge	1	
#56	Logo to be displayed at startup	See logos list	logo mm	





## **CALIBRATION PARAMETER TABLES**

Manufacturer	Model	
Serial Number	Date	
Mod. IRRIGAMATIC		
PRO35		
PRO45		

LAYER NUMBER	PARAMETER	LAYER LENGHT (m)	PARAMETER	CONVERS. Mm/impulse	LENGTH READING ON HOSE (m)
1	#25		#35		
2	#26		#36		
3	#27		#37		
4	#28		#38		
5	#29		#39		
6	#30		#40		
7	#31		#41		
8	#32		#42		
9	#33		#43		
10	#34		#44		

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