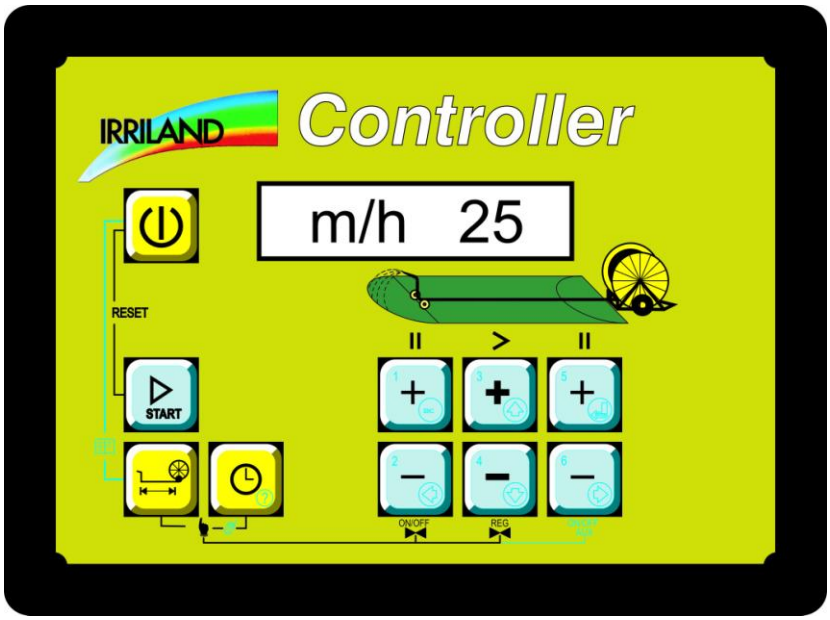
cod.XXXXXXXX GB
rev.01 (software VER. 1.48)

USER INSTRUCTIONS

Controller gsm

(ELECTRONICIRRIGATION CONTROL SYSTEM **with GSM**)



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1. OVERVIEW

The CONTROLLER unit may be equipped with an add-on GSM module for data exchange and to enable control functions while operating via SMS text messages or via simple telephone ring signals.
The module requires a SIM card issued by a mobile telephone service provider that ensures reliable coverage in the location where the unit will be used.

The CONTROLLER with GSM enables the following functions:

1. send SMS text messages to up to 10 programmable phone numbers in the event of specific events programmed for each number.
2. advise by RINGS up to 10 phone numbers triggered by different events that can be programmed.
3. irrigation START and STOP control functions either by SMS text message or by voice call by the number of rings.
4. send SMS text messages to confirm reception of control message
5. send SMS text message showing screen contents of the CONTROLLER display
6. send SMS text message with all irrigation and programming parameters and other data.
7. modify programmed parameters by SMS text message even during irrigation.
   Remaining irrigation hours, Metres of tube to be rewound, Initial pause, Restart speed, End pause.
8. SMS text messages may include a programmable header for the immediate identification of the irrigator in question.
9. access to GSM controls may be unrestricted, limited to the numbers contained in the phonebook or (programmable) password restricted.
10. programming and modification can also be simply performed by SMS text message.

With weak reception, an amplified or direction aerial may be installed to improve operation.

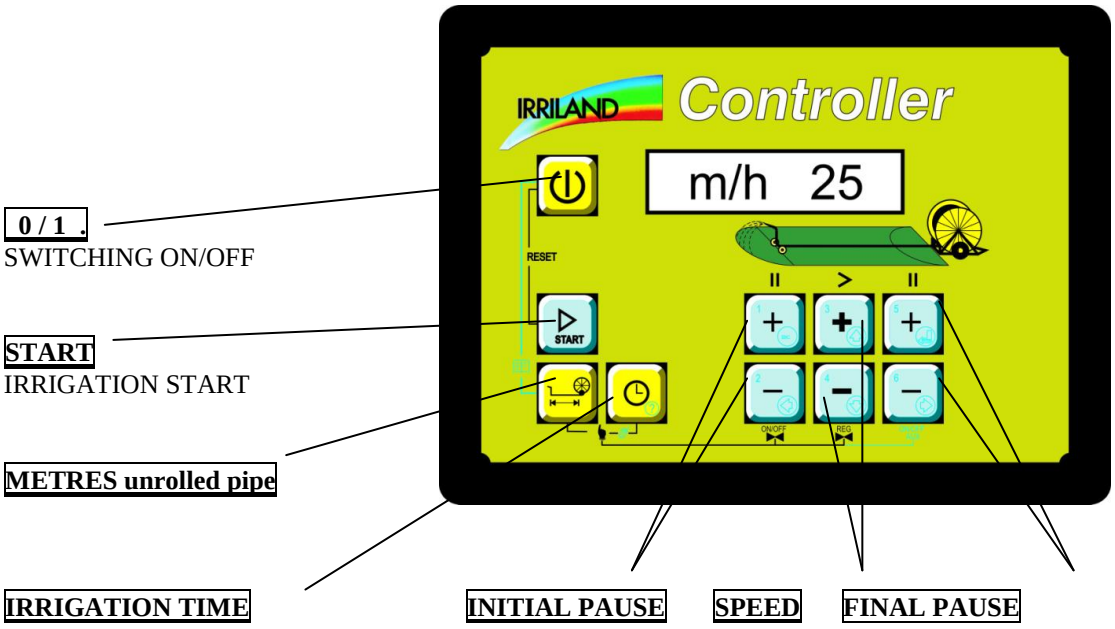
2. SAFETY and SECURITY

The CONTROLLER GSM enables a number of remote control functions. Ensure that the functions controlled cannot cause injury to persons or damage to property.

Control function SECURITY.
If no PASSWORD is saved in position 21 in the phonebook, all controls may be executed by calling or sending a text message from any phone.
If a PASSWORD is saved in position 21 in the phonebook, controls may be executed only from numbers in the phonebook or from numbers not in the phonebook if the control message is preceded by the 4 numbers of the PASSWORD.

3. EVENTS AND CONTROLS

CONTROLLER GSM unit.



3.1 Programmable **EVENTS** for SMS text message notification

The CONTROLLER GSM can be programmed to automatically send SMS text message notification of certain events to up to 10 phone numbers.
Each single event is associated with a letter and groups of events are associated with numbers.

EVENTS

Let.	Event	Active	Notes
B	END IRRIGATION	**YES**	The programmed cycle has been completed
C	ERROR: END	no	The 'end' sensor is activated upon START
D	ALARM m/h=0	**YES**	Irrigator inactive alarm
E	PRESSURE =0	**YES**	Insufficient pressure
H	NOT ENOUGH SPEED	no	The device starts increasing the speed
I	END REWINDING	**YES**	Rewind end sensor activated or programmed rewind cycle is complete
J	START or RE-START	**YES**	Irrigation has started or resumed after an interruption or a STOP
K	ERROR: START	no	
L	STOP	**YES**	Irrigation has been arrested (via GSM, through button, ...)
M	ERROR: STOP	no	
N	ERROR: BATTERY	no	Power supply voltage less than 11 Volts (warning given once per cycle)
d	STRONG WIND WARNING	**YES**	Strong wind warning. Irrigation continues.
b	STRONG WIND INTERRUPTION	**YES**	Irrigation has been suspended waiting for a lighter wind
a	STOP STRONG WIND	**YES**	Irrigation has been arrested. It can be restarted by an external command.
e	LIGHT WIND WARNING	**YES**	Light wind warning. Wind is under the threshold.
c	RE_START LIGHT WIND	**YES**	Irrigation restarts as wind is back to normal
k	LOW PRESSURE WARNING	**YES**	Low pressare warning. Irrigation continues.

h	LOW PRESSURE INTERRUPTION	**YES**	Irrigation has been suspended waiting for sufficient pressure
g	LOW PRESSURE STOP	**YES**	Irrigation has been arrested. It can be restarted by an external command.
j	HIGH PRESSURE WARNING	**YES**	High pressure warning.
i	RE_START HIGH PRESSURE	**YES**	Irrigation restarts as pressure has risen
f	HIGH PRESSURE STOP	**YES**	Irrigation has been arrested. It can be restarted by an external command.

EVENT GROUPS

No.	Type of event	Event list	Active	Notes
9	All	BCDEIJKLM	**YES**	ALL EVENTS ACTIVE
1	End, Stop	BCLM	**YES**	END IRRIGATION STOP
2	Interruption	DE	**YES**	ALARM m/h=0 PRESSURE =0
8	Errors	CKM ?	no	ERROR: END ERROR: START ERROR: STOP ERROR: BATTERY
0	No event		**YES**	

3.2 **List of CONTROLS** executable via PHONE RINGS or SMS TEXT MESSAGES

The CONTROLLER GSM receives and executes controls given by phone RINGS or SMS text message.

3.2.1 CONTROLS

CONTROL functions by SMS text message (with UPPER and lower case letters) or phone RINGS

Control	SMS	No. of rings	Active	Notes
LCD	**L** or **LCD**		YES	Returns an SMS message with the contents of the display
STATUS	**S** or **STATO**	**1-2** rings	YES	Returns an SMS message with the current STATUS
STOP	**STOP**	**4-5** rings	YES	Arrests irrigation
START	**START**	**7-8** rings	YES	Starts or resumes irrigation

3.2.2 MODIFYING IRRIGATION PARAMETERS

MODIFYING parameters by SMS text message (with UPPER or lower case letters)

Parameter	SMS	Control	Active	Notes
Metres unwound	**M xxx**	M-space-value	YES	Modifies value for metres of tube unwound
irrigation time in hours	**H xx:xx**	H-space-hour value-colon-minutes value	YES	Modifies value for hours and minutes of irrigation remaining. Recalculates speed.
Initial pause	**I XX**	I-space-value	YES	Modifies value for initial pause in minutes
Rewind speed	**V XX**	V-space-value	YES	Modifies value for tube rewinding speed in metres/hour. Recalculates irrigation time.
Final pause	**F XX**	F-space-value	YES	Modifies value for final pause in minutes

send 1 SMS message at a time to alter ONLY 1 irrigation parameter
A STATUS SMS is returned with the modified parameters.

3.2.3 CONTROLS OPERATING WITH A SET PASSWORD (pos. 21 of the phonebook)

When a PASSWORD is set in position 21 of the phonebook, controls may be executed only from numbers in the phonebook or from numbers not in the phonebook if the control sms message is preceded by the 4 numbers of the PASSWORD.
i.e.: SMS sent through a mobile phone number not in the phonebook

Pw(4 numbers)<control>
(4 numbers password)-control.

i.e.: in order to modify the speed to 35 m/h.

4 numbers password	Control	Note
1234	V 35	SMS message: 1234V 35

3.2.4 OTHER CONTROLS VIA SMS

OTHER CONTROLS accessible by SMS text message (with UPPER or lower case letters)

Control	SMS	Active	Notes
GSM	**G** or GSM	YES	Returns an SMS message indicating GSM signal strength
PHONEBOOK	**R** (idx)	YES	R-space-position Returns an SMS message containing T idx,<Phone No.>,<Events> <Name>
SMS BOOK	R *	YES	R-space-asterisk Returns SMS message indicating SMS events followed by associated positions.
PHONEBOOK RINGS	**R** +	YES	R-space-plus. Returns RINGS events followed by associated positions.
DELETE	**D** (idx)	YES	R-space-position delete Phone No./name + events in specified position.

4 PROGRAMMING

The recipient phone numbers for SMS messages, positions, irrigator name and the password, if used, must be saved on the SIM card.
The data on the SIM card is entered or modified by either programming the SIM in a mobile telephone or by sending SMS messages immediately after inserting the SIM and switching on the CONTROLLER GSM.
Use a SIM card with sufficient credit and disable the PIN code or any other security features before use, as these may prevent correct operation. Deactivate the voice mail function, if applicable.
Ensure that the work area has sufficient coverage.
SMS message delivery may be subject to some delay which, however, is usually very brief. If in doubt, check possible delay times with the service provider before installing.
In order to increase security and to enable prompter warnings, it is possible to be warned with RINGS for the set events. Rings will be repeated 4 times with 1 minute lapse if they are not interrupted.
For the programming, please consider what follows.
At the beginning of the name, insert the letters or the numbers corresponding to the events for which you want to receive SMS messages.
Insert * (asterisk) if you want to receive a warning by rings, then insert the letters or the numbers corresponding to the events for which you want to receive a warning by RINGS.
If you want to insert the name corresponding to that phone number, insert a space and then the name.
Up to 14 characters will be stored. If you need more than 14 characters to programme the events for which you want to receive warnings by SMS or by rings, divide them into 2 positions.

4.1 Programming the SIM card

Delete all numbers stored on the SIM card.
Programme the SIM card by inserting in a mobile phone or via SMS message
Use positions 1 to 10 on the SIM card to store the recipient phone numbers for event notification by SMS messages or by rings.
Use position 20 to store the NAME of the irrigator, which will be included at the beginning of all SMS messages.
Use position 21 to store the 4-figure numerical PASSWORD.

4.1.1 Programming the SIM card with a mobile phone

Insert the SIM card in a mobile phone to programme.

Save 1 or more phone numbers in positions 1 to 10 on the SIM card you wish SMS notification messages to be sent to.

Position	Phone No.	Events		Name (optional)	Notes
1	334567890	**BDE**		ANTONIO	Send SMS messages for events B, D and E.
2	335678901	**9*DE**		LUIGI	Send SMS events for all active events and rings for D,E
3	336789012	**0**	**Space**	MARCO	Do not send SMS messages but enable direct control
4	337890123	**BDEI*D**		LUCA	Send SMS for the events BDEI and warn by rings for D
etc.					
10					

At the beginning of the name, list the events (Upper and lower case matters) or/and groups of events (numbers) for which notification SMS messages will be sent, so, if you want to receive warnings by rings, insert * and the events for which you want to be warned by rings, followed by a blank space and, if desired, the name of the recipient.

IRRIGATOR NAME (optional)
Position 20 on the SIM can be used to store a number from the list of recipients and a name, identifying the irrigator. This name is indicated at the beginning of the SMS messages to identify where the message was sent from.

Position	Phone No.	Name (IRRIGATOR name)	Notes
20	1234567	IRRIGATOR 1	

The phone number may be a real number, permitting direct access to the control functions, or may be just a sequence of

numbers, e.g. 1234567. The name may contain both letters and numerals.

4-figure numerical PASSWORD (optional)
If a PASSWORD is saved in position 21 in the phonebook, controls may be executed only from numbers in the phonebook or from numbers not in the phonebook if the control message is preceded by the 4 numbers of the PASSWORD.
If no PASSWORD is saved in position 21 in the phonebook, all controls may be executed by calling or sending a text message from any phone.

Position	Phone No.	Name (4 figure password)	Notes
21	1234567	1234	

The phone number may be a real number, permitting direct access to the control functions, or may be just a sequence of numbers, e.g. 1234567. The name must only consist of 4 numerals.

4.1.2 Programming the sim card by SMS message

To programme the SIM card by SMS message, insert SIM in the mobile phone of the CONTROLLER, switch on the unit and wait approximately 1 minute to establish a connection.
SMS messages may be used to programme empty positions or modify existing positions.
Send one SMS message per position as follows:

Save 1 or more phone numbers in positions 1 to 10 on the SIM card you wish SMS notification messages to be sent to.
T idx,<Phone No.>,<sms Events>*<Events rings> <Name>
T- space- position number-comma-telephone number-comma-single events or event groups by sms -asterisk – single events or groups by rings -space-name

Fixed	Space	Pos.	Comma	Phone No.	Comma	Events	Space	Name (optional)	Notes
T		1		334567890		**BDE**		ANTONIO	Send SMS messages for events B, D and E.
T		2		335678901		**9*DE**		LUIGI	Send SMS events for all active events for D,E
T		3		336789012		**0**		MARCO	Do not send SMS messages but enable direct control
T		4		337890123		**BDEI*D**		LUCA	Send sms for th events BDEI and warn by rings for D
		ecc.							
T		10							

At the beginning of the name, list the events (Upper and lower case matters) or/and groups of events (numbers) for which notification SMS messages will be sent, so, if you want to receive warnings by rings, insert * and the events for which you want to be warned by rings, followed by a blank space and, if desired, the name of the recipient.

IRRIGATOR NAME (optional)

Position 20 on the SIM can be used to store a number from the list of recipients and a name, identifying the irrigator. This name is indicated at the beginning of the SMS messages to identify where the message was sent from.
T 20,<Phone No.>,<Irrigator name>
T- space-20-comma-telephone no.- comma – irrigator name

Position	Phone No.	Name (IRRIGATOR name)	Notes
20	1234567	IRRIGATOR 1	

The phone number may be a real number, permitting direct access to the control functions, or may be just a sequence of numbers, e.g. 1234567. The name may contain both letters and numerals.

4-figure numerical PASSWORD (optional)

If a PASSWORD is saved in position 21 in the phonebook, controls may be executed only from numbers in the phonebook or from numbers not in the phonebook if the control message is preceded by the 4 numbers of the PASSWORD.
If no PASSWORD is saved in position 21 in the phonebook, all controls may be executed by calling or sending a text message from any phone.

T 21**,**<Phone No.>,<Password>

T- space-21-comma-telephone no.- comma – 4 figures of numerical password

Sets or modifies password. The telephone number specified has direct access to control functions.

Position	Phone No.	Name (4 figure password)	Notes
21	1234567	1234	

The phone number may be a real number, permitting direct access to the control functions, or may be just a sequence of numbers, e.g. 1234567. The name must only consist of 4 numerals.

5 OTHER FUNCTIONS

5.1 Display GSM signal strength

To show the signal [SIGNL] strength on the display of the CONTROLLER, proceed as follows :
Press “m” and "h" simultaneously to enter MANUAL mode. Press "h" to enter [MENU GSM].
After a few moments the message [SIGNL nn]; is displayed, where nn is a number from 0 to 31.
The significance of this value is as follows:

- 15 to 31, excellent signal
- 10 to 14, good signal
- 6 to 9, adequate signal
- 1 to 5, weak signal

If 0 is shown, the signal is almost absent.
If the message [SIGNL nn] is shown, the unit still has not acquired a signal.
The signal strength value is updated once per minute.
Press START to return to standard display mode.
If the display still shows [MENU GSM] and not the message [SIGNL nn], turn the CONTROLLER off and on again to reboot the GSM function

To receive an SMS message indicating GSM signal strength, send an SMS containing:
G or GSM (UPPER or lower case)

5.2 Displaying numbers and events in the PHONEBOOK.

To receive an SMS message indicating the numbers stored in the SIM phonebook, send a message for each position containing:

R (idx)
R-space-position
An SMS message is returned containing the telephone number stored in the relative position, in the following format:
T idx,<Phone No.>,<Events> <Name>
T- 1 space- position number-comma-telephone number-single events or event groups-space-name
The message VUOTO (empty) is returned for empty positions.

To receive an SMS message indicating the events and positions programmed in the phonebook, send an SMS message containing:

R *
R-space-asterisk
An SMS is returned containing the series of events SMS followed by the associated phonebook positions.

R +
R- space- PLUS
returns by SMS the series of events RINGS followed by the associated positions set in the phonebook.

5.3 Deleting 1 number from the PHONEBOOK.

To cancel a phone number and the associated events and name, send an SMS message containing:

D idx
D-space-position
delete Phone No./name + events in specified position.

SUMMARY TABLES

CONTROL functions by SMS message (with UPPER and lower case letters) or phone RINGS

Control	SMS	No. of rings	Active	Notes
LCD	**L** or **LCD**		YES	Returns an SMS message with the contents of the display
STATUS	**S** or **STATO**	**1-2** rings	YES	Returns an SMS message with the current STATUS
STOP	**STOP**	**4-5** rings	YES	Arrests irrigation
START	**START**	**7-8** rings	YES	Starts or resumes irrigation

MODIFYING parameters by SMS text message (with UPPER or lower case letters)

Parameter	SMS	Control	Active	Notes
Metres unwound	**M xxx**	M-space-value	YES	Modifies value for metres of tube unwound
irrigation time in hours	**H xx:xx**	H-space-hour value-colon-minutes value	YES	Modifies value for hours and minutes of irrigation remaining. Recalculates speed.
Initial pause	**I XX**	I-space-value	YES	Modifies value for initial pause in minutes
Rewind speed	**V XX**	V-space-value	YES	Modifies value for tube rewinding speed in metres/hour. Recalculates irrigation time.
Final pause	**F XX**	F-space-value	YES	Modifies value for final pause in minutes

Programming EVENTS

T idx,<Phone No.>, <SMS Events>*<Rings Events> <Name>

T- space- position number-comma-telephone number-comma-single events or event groups by sms -asterisk – single events or groups by rings -space-name

Fixed	Space	Pos.	Comma	Phone No.	Comma	Events	Space	Name (optional)	Notes
T		1							
T		2							
T		3							
T		4							
T		5							
T		6							
T		7							
T		8							
T		9							
T		10							

IRRIGATOR NAME (optional)

T 20,<Phone No.>,<Irrigator name>

T- space-20-comma-telephone no.- comma – irrigator name

Position	Phone No.	Name (IRRIGATOR name)	Notes
20			

4-figure numerical PASSWORD (optional)

T 21**,**<Phone No.>,<Password>

T- space-21-comma-telephone no.- comma – 4 figures of numerical password

Sets or modifies password. The telephone number specified has direct access to control functions.

Position	Phone No.	Name (4 figure password)	Notes
21			

OTHER CONTROLS accessible by SMS text message (with UPPER or lower case letters)

Control	SMS	Active	Notes
GSM	**G** or GSM	YES	Returns an SMS message indicating GSM signal strength
PHONEBOOK	**R** (idx)	YES	R-space-position Returns an SMS message containing T idx,<Phone No.>,<Events> <Name>
SMS BOOK	R *	YES	R-space-asterisk Returns SMS message indicating SMS events followed by associated positions.
PHONEBOOK RINGS	**R** +	YES	R-space-plus. Returns RINGS events followed by associated positions.
DELETE	**D** (idx)	YES	R-space-position delete Phone No./name + events in specified position.

EVENTS

Let.	Event	Active	Notes
B	END IRRIGATION	**YES**	The programmed cycle has been completed
C	ERROR: END	no	The 'end' sensor is activated upon START
D	ALARM m/h=0	**YES**	Irrigator inactive alarm
E	PRESSURE =0	**YES**	Insufficient pressure
H	NOT ENOUGH SPEED	no	The device starts increasing the speed
I	END REWINDING	**YES**	Rewind end sensor activated or programmed rewind cycle is complete
J	START or RE-START	**YES**	Irrigation has started or resumed after an interruption or a STOP
K	ERROR: START	no	
L	STOP	**YES**	Irrigation has been arrested (via GSM, through button, ...)
M	ERROR: STOP	no	
N	ERROR: BATTERY	no	Power supply voltage less than 11 Volts (warning given once per cycle)
d	STRONG WIND WARNING	**YES**	Strong wind warning. Irrigation continues.
b	STRONG WIND INTERRUPTION	**YES**	Irrigation has been suspended waiting for a lighter wind
a	STOP STRONG WIND	**YES**	Irrigation has been arrested. It can be restarted by an external command.
e	LIGHT WIND WARNING	**YES**	Light wind warning. Wind is under the threshold.
c	RE_START LIGHT WIND	**YES**	Irrigation restarts as wind is back to normal
k	LOW PRESSURE WARNING	**YES**	Low pressare warning. Irrigation continues.
h	LOW PRESSURE INTERRUPTION	**YES**	Irrigation has been suspended waiting for sufficient pressure
g	LOW PRESSURE STOP	**YES**	Irrigation has been arrested. It can be restarted by an external command.
j	HIGH PRESSURE WARNING	**YES**	High pressure warning.
i	RE_START HIGH PRESSURE	**YES**	Irrigation restarts as pressure has risen
f	HIGH PRESSURE STOP	**YES**	Irrigation has been arrested. It can be restarted by an external command.

EVENT GROUPS

No.	Type of event	Event list	Active	Notes
9	All	BDEIJL	**YES**	ALL EVENTS ACTIVE
1	End, Stop	BL	**YES**	END IRRIGATION STOP
2	Interrupted operation	DE	**YES**	ALARM m/h=0 PRESSURE =0
0	No event		**YES**	