

Operation and Maintenance Manual Regulus



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1 General

We assume that you are familiar with the field of irrigation. We have therefore summarized these instructions and only included the information that you absolutely need to know in order to use this product.

Warranty can only be accepted if the control unit has been operated in accordance with these operating instructions and shows defects within the warranty period.

1.1 Application

The control unit is used for the programmable opening and closing of 24V/50Hz valves.

The valves are mainly used in irrigation technology.

The operating temperature is: -10°C to 60°C

The storage temperature is: -20°C to 60°C

1.2 Warranty Information

Regnerbau Calw GmbH warrants to the owner that each new unit will be free from defects in material and workmanship provided it is used for irrigation purposes in accordance with the manufacturer's recommended specifications within the time period specified below. Product failure due to force majeure (e.g. thunderstorms, flooding) is excluded from this warranty.

Regnerbau Calw GmbH will repair or replace, at its discretion, any parts found to be defective within the warranty period and will only pay for replacement or repair of defective components. All other express and implied warranties are excluded.

Return the defective part to your dealer or contact the company's customer service department at the following address:

Regnerbau Calw GmbH, Industriestrasse 19-29, D-75382 Althengstett.

This warranty is void for equipment not used or installed or modified in accordance with Regnerbau Calw GmbH's technical data and instructions for use.

Regnerbau Calw GmbH shall not be liable for indirect or consequential damage arising in connection with the use of the devices, such as e.g: **Loss of vegetation, cost of replacement equipment or services incurred at the time of the defect or due to inability to use resulting from the defect, damage to property or injury to the installer due to negligence or other causes.**

All implied warranties, including those of merchantable quality or suitability for use, are limited to the warranty period provided by law.

2 Safety

These operating and safety instructions contain important information that must be observed during installation, operation, maintenance and repair. It is therefore essential that these operating instructions are read by the installer and the responsible specialist personnel / operator before installation and commissioning.

Not only the general safety instructions listed in this "Safety" section must be observed, but also the special safety instructions included in the other sections.

2.1 Marking of instructions in the operating instructions

The safety instructions contained in these operating instructions, the non-observance of which may endanger persons are specially marked with the general hazard symbol



For safety instructions, non-observance of which may result in danger to the device and its function, the following word is added:

ATTENTION



When connecting the control unit to the mains voltage, the transformer of the power unit is connected to the mains voltage.

There is a danger to life if these components are touched!

2.2 Dangers if the safety instructions are not observed

Failure to observe the safety instructions may result in danger to persons, the environment and the appliance. Failure to observe the safety instructions may result in the loss of any claims for damages

3 Description

- Modular solution:
 - ♦ Modular number of Stations using 4-Station Module for:
 - Regulus 4: 4 Station plus main solenoid valve (MV)
 - Regulus 8: 8 Station plus main solenoid valve (MV)
 - Regulus 12: 12 Station plus main solenoid valve (MV)
 - Regulus 16: 16 Station plus main solenoid valve (MV)
- 8 Independent Watering Programs, A, B, C, D, E, F, G, H
- Watering Schedule by 7 Day Calendar, Day
- 6 Start Times per Program
- Run time 1 Minute to 2 hours
- Station Delay up to 8m in 1s increment
- User Set Budget per Program and Optional Pre-Set Seasonal Budget on all Programs
- Multi-language Display Option: English, French, Spanish, Italian, German, Polish
- 24-hour Date and Time Keep Alive Without Battery
- Automatic Short Circuit Detection
- Full Electric Test for the Valve Solenoid: OK, Open/Short Circuit
- Sector Scout – Function selectable for any station in single or parallel operation of 2 Sector Scout sprinklers
- Quick start program (program A - H) via key switch
- RAIN Delay Mode
- Wi-Fi Remote Control Ready

3.1 Specification

Dimension

- Controller
186 mm W, 140 mm H, 67 mm D
- Control Module
186 mm W, 140 mm H, 47 mm D
- Back Module
149 mm W, 104 mm H, 37 mm D

Power


- Back Module
Power Supply: 24 V AC 50/60Hz @ 1.00 Amps with resettable thermal fuse.
- Output to Each Station and to MV: 24Vac @ 500mA.
Maximum 2 Outputs ON at the same time, including MV not to exceed 800mA tot
Sensor Input: N.C. Dry Switch - 24Vac @ 15mA, optionally NO.
Water Meter Input: Dry Switch - 24Vac @ 15mA.
- Control Module
Power Supply: 24 V AC 50/60Hz @ 100mA.
- WiFi Module (Optional)
Power supply: 3.3V DC @ 150mA.

USE


- Control Module and Back Module work as a matching pair only.
- Back Module accepts 4-Station Module only


3.2 Settings


Setting	Factory setting	Range
Language	English	English, German, Italy, Spanish, French, Polish
12/24	24h	12/24h
Set Time	12:00	24h, 12/24=OK
Set Day	01	1/30, 1/31 , 1/28, 1/29 leap year
Set Month	01	1/12
Set Year	2022	2022-2099
Station Delay	OFF	OFF, 0:01-2:00 m:s Increment 1s
Sensor 1	OFF	OFF, Rain NC ^[1] , Rain NO ^[1] , Sector Scout, Key Switch ^[2]
Sensor Delay ^[3]	OFF	OFF, 0:01-2:00 m:s Increment 1s

3)  Only available if Rain-NC or Rain-NO was chosen for Sensor 1

Sensor 2	OFF	OFF, Rain NC ^[1] , Rain NO ^[1] , Sector Scout, Key-Switch ^[2]
Sensor Delay ^[4]	OFF	OFF, 0:01-2:00 m:s Increment 1s


4)  Only available if Rain NC or Rain NO was chosen for Sensor 2

1)  Only available for one sensor input at a time

2)  Only available for one sensor input at a time

The following SETTINGS are only available if sensor 1 or sensor 2 or both sensors 1 and 2 are set for the Sector Scout:

Sector Scout STN "n" ^[5]	OFF	OFF, Sensor 1 ^[6] , Sensor 2 ^[7]
After-run Left ^[8]	0:05 m:s	OFF, 0:01-0:25 m:s, Increment 1s
After-run Right ^[8]	0:05 m:s	OFF, 0:01-0:25 m:s, Increment 1s
Sensor Time	1:30 m:s	1:00 m:s, 2:30 m:s, Increment 1s
Cycle Time	2:00 m:s	1:00 m:s, 3:00 m:s, Increment 1s

5)  Applies only to all available stations.
Example: with a 12 STN control unit, STN 13 to 16 are not displayed.

6)  Only available if Sensor 1 is set to "Sector Scout"

7)  Only available if Sensor 2 is set to "Sector Scout"

8)  Only available if Sector Scout STN "n" not set to OFF

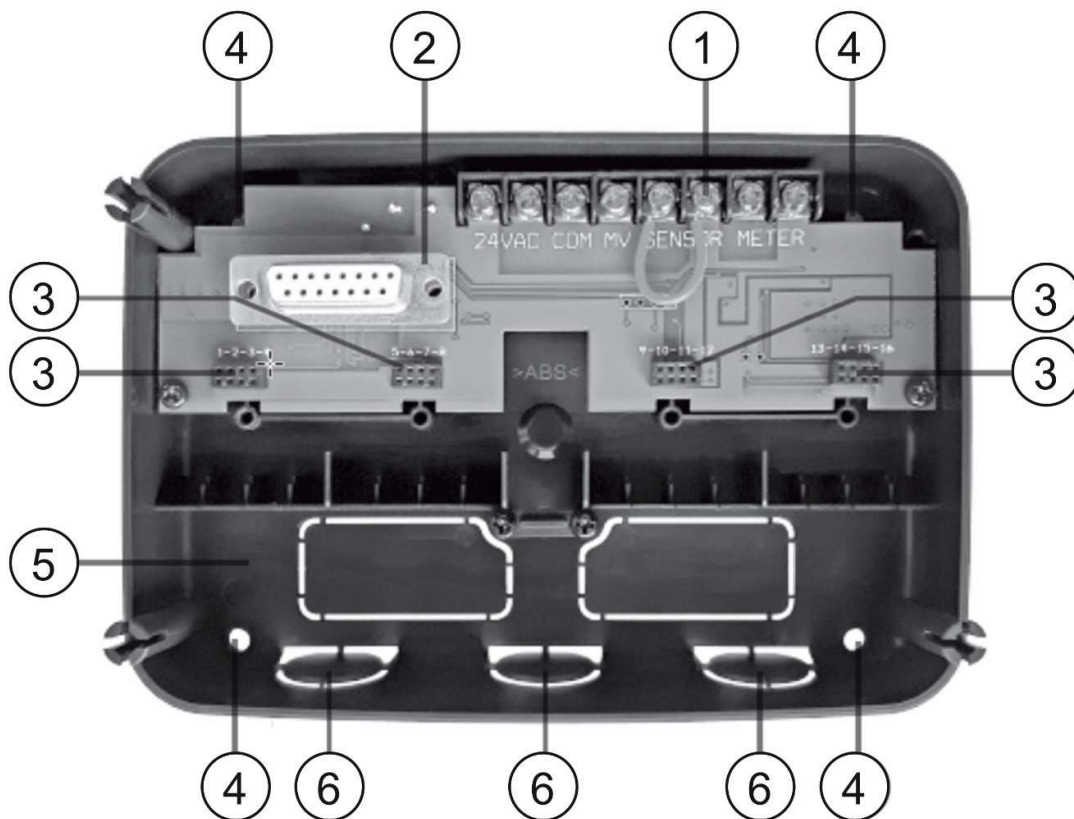
3.3 Irrigation programs

Settings	Factory setting	Range
Program A		
Irrigation	Run time	Run time or number of turns
Run time 1 up to max. number of stations	10m	OFF or 1m to 2h, Increment 1m
Number of turns 1 up to max. number of stations	2	OFF or 1 bis 99, Increment 1
Start Time 1	7:00	OFF or 24h, Increment 1m
Start Time 2-6	OFF	OFF or 24h, Increment 1m
Budget	100	0% bis 200%, Increment 10%
Weekdays	All ON	OFF or ON
Program B bis H		
Irrigation	Run time	Run time or number of turns
Run time 1 up to max. number of stations	OFF	OFF or 1m to 2h, Increment 1m
Number of turns 1 up to max. number of stations	OFF	OFF or 1 to 99, Increment 1
Start Time 1-6	OFF	OFF or 24h, Increment 1m
Budget	100	0% bis 200%, Increment 10%
Weekdays	All OFF	OFF or ON

3.4 Priority of irrigation

- System OFF has the highest priority
- When the system is ON, an active rain sensor has the highest priority.
- When the system is ON and the rain sensor is NOT active:
 - ♦ The electrical test stops and prevents the start of a manual station, a manual program or an automatic program.
 - ♦ Calibration stops and prevents the start of a manual station, a manual program or an automatic program.
 - ♦ Manual station stops and prevents the start of a manual program or an automatic program.
- If 2 stations with **manual station** are switched on, no third station can be activated.
- If a program with one or more stations is set to Sector Scout input 1, a second program that also has one or more stations set to Sector Scout input 1 cannot be started.
- If a program with one or more stations on Sector Scout input 2 is set to, a second program that also has one or more stations on Sector Scout input 2 set to may not be started.
- If 2 programs are running, a third program cannot be started.
- If "Calibrate" or "Calibrate ALL" is running, "Calibration", "Calibration ALL", "Force Left" and "Electric Test" are disabled to select.
- If two sprinklers with Sector Scout are to be run at the same time, they must be:
 - a) connected to different sensor inputs and
 - b) programmed in two different irrigation programs

4 Back Module Components



- ① Terminal block
- ② DB15 Connector to the Control Module.
- ③ Connector for the Regulus 4-Station Module
- ④ Mounting holes for wall installation
- ⑤ Jumper to be connected only if Sensor is normally closed type and no Sensor is used.
- ⑥ Conduit knockout

5 Installation

5.1 Installing the back module

For safe and reliable operation, an installation site must be selected that meets the following conditions:

- In a garage or other weather-protected building.
- Ability to connect to a grounded AC power source (within 1.2 m) that is not controlled by a light switch or used by a high current load device such as a refrigerator or air conditioner.
- Possibility to connect to the control valve wiring as well as the wiring of the optional accessories

Position the back module at eye level on the wall and insert the first screw into the upper hole (A). Position the back module horizontally and insert the second screw into the hole (B), see figure.

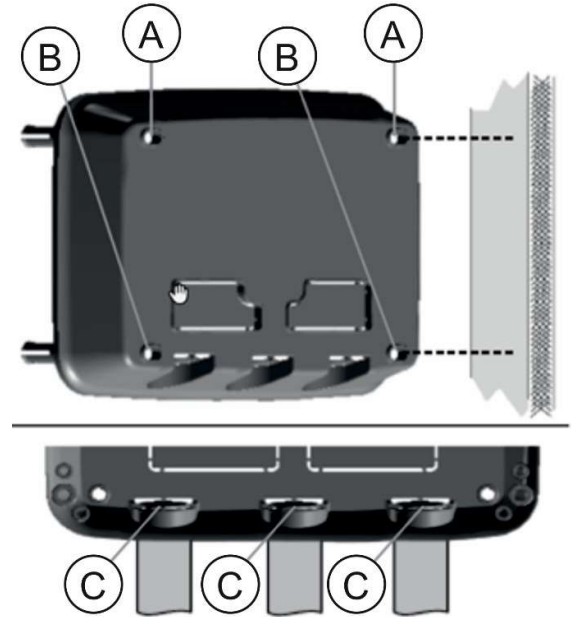


If the control unit is mounted on drywall or masonry, dowels must be provided. Attach the lower dowel at a distance of 73 mm directly below the upper dowel.



Cable ducts and adapters are not included in the scope of delivery. Install cable duct according to local regulations for electrical work.

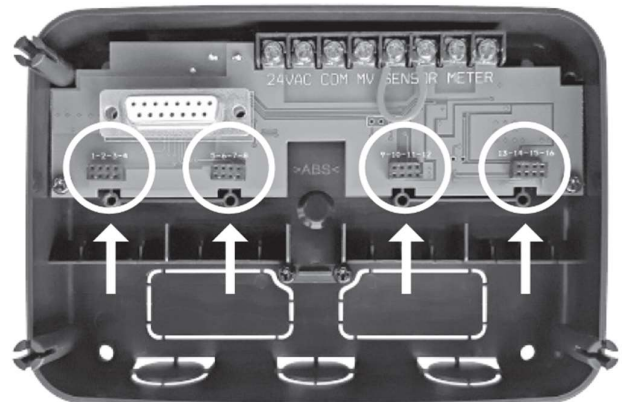
Remove the cutout for the cable duct.
Install the 13 mm ducts (C) and (D) for 24 VAC power cable and valve cable.



5.2 Connecting the terminal modules with 4 stations

The Regulus controller controls the solenoid valves via up to 4 terminal modules, to each of which 4 stations can be connected. The terminal modules can be mounted on the rear module board as follows:

- Plug the terminal module into the connection socket with the corresponding station numbers
- Screw it tight with the supplied screw



5.3 Connecting the valves

All connection lines are led through the 3 pre-punched bushings, preferably via installation pipes, into the rear module. The cable cross-section to be used depends on the distance between the valves / sprinklers and the control unit.

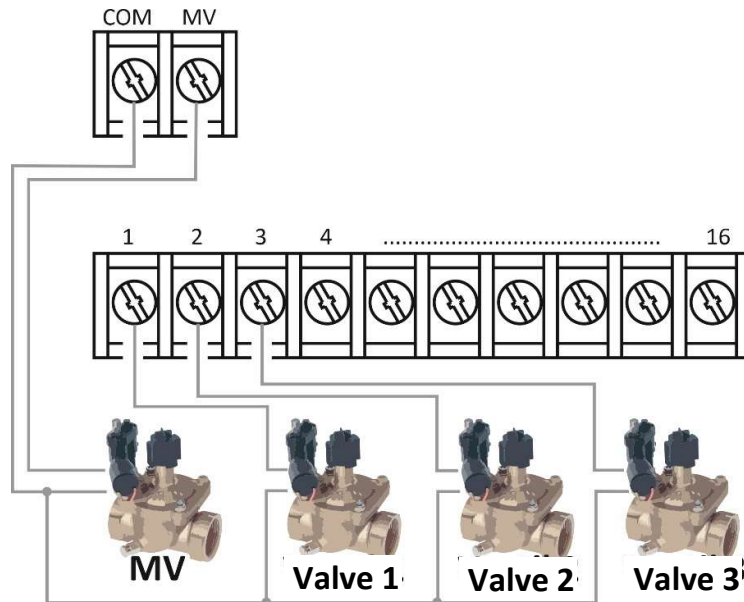
Recommended cable cross sections

Distance	Cross Section mm ²
0-370m	1 mm ²
370-500m	1,5mm ²
500-910m	2,5mm ²

Usually, only one wire per valve is connected to the controller. Care must be taken to ensure that the correct valve number is connected to the correct station number terminal. The second

wire of the coils are all "through-connected" (from station to station) to each other on site and only connected with a single wire to the terminal marked COM (common), see wiring diagram.

When using Perrot Sector-Scout VP3 controllers, at least the sensors must be connected via a separate terminal box configured with resistors. However, it is recommended to connect also the first wire of the solenoid coils to the terminal box. The terminal box is then connected to the controller via 1-2 multicore cables.



The control offers the possibility of using a main solenoid valve or a pump relay.

The main solenoid valve or pump relay is connected to the terminal marked MV, the second wire is also connected to COM.



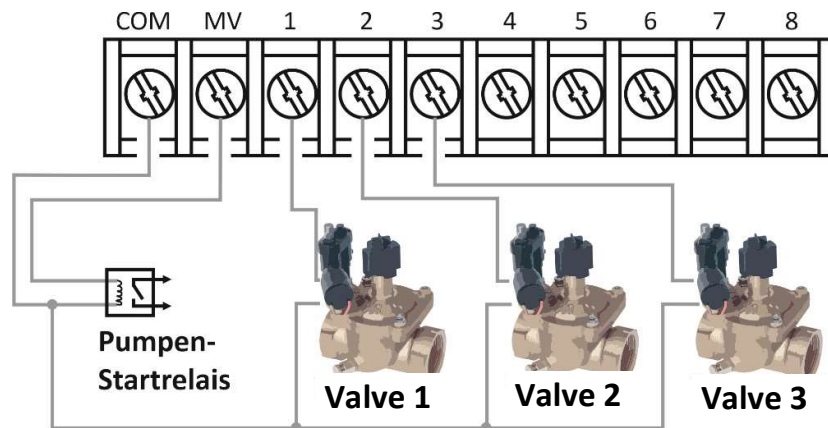
Connection of a main solenoid valve or pump start relay is optional and may not be required for your irrigation system.

On-site electrical connections (common COM or Sector-Scout Sensor +blue, -green/yellow) at the sprinklers or valve boxes must be made watertight with IP68 protection rating. For this purpose, systems, usually with grease cap, are available from different manufacturers.

5.4 Pump relay connection



To avoid damage to the control system, make sure that the current consumption of the start relay does not exceed 0.3 amps. Do not connect the pump starter contactor directly to the controller.



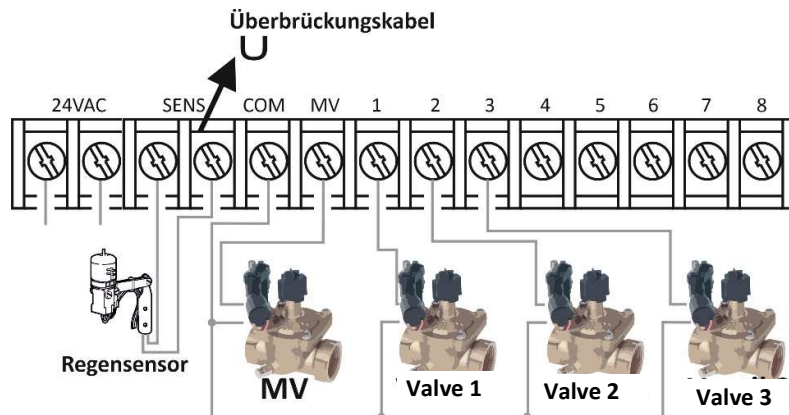
1. Connect a two-wire cable to the 24 VAC pump start relay. Insert the wire into the controller housing together with the valve wires.
2. Connect one wire to the terminal marked **COM**. Connect the other wire to the terminal marked **MV**, see figure.

5.5 Installation des Rainsensors

It is possible to connect a rain sensor to the Regulus controller to that automatically stops watering when it starts to rain. As soon as the rain sensor detects rainwater, it automatically sends a signal to the Regulus controller and watering is stopped.

The display shows flashing. (Sensor).

1. Insert the cable from the Rain sensor together with the valve wires into the control unit.
2. Remove the jumper cable from the sensor terminals.
3. Referring to the instructions provided with the rain sensor, connect two wires from the rain sensor designated for "Normally closed" applications to the sensor terminals. See Figure.



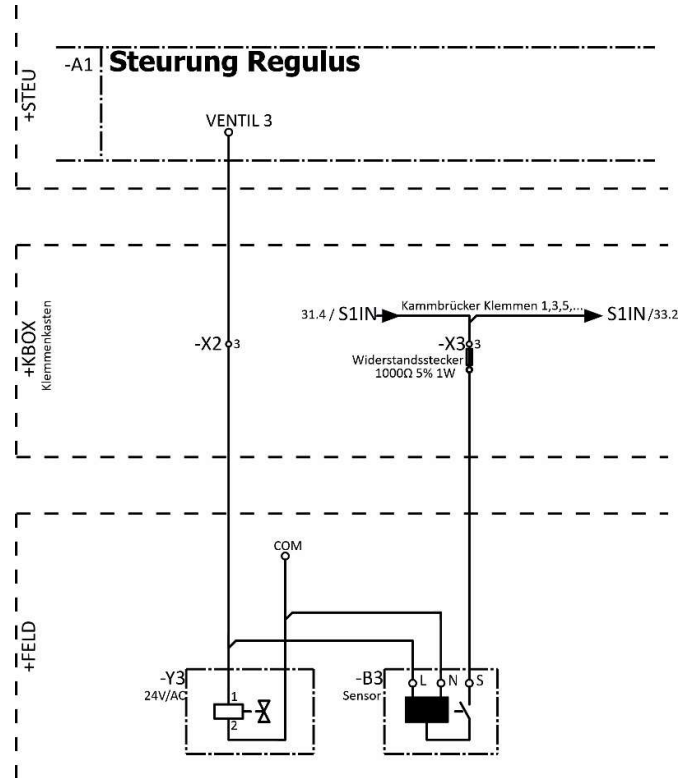
5.6 Using a key switch for external program start

- Connect the key switch in the same way as a Rain sensor
- As key switch is recommended:
 - Perrot key switch order No. SB4916

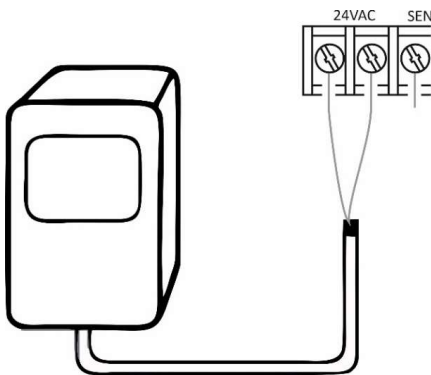
5.7 Connection a Sector Scout Sensor

See connection diagram terminal box for Regulus control.

- Sensor + (blue, 24 VAC): parallel to the valve (coil)
- Sensor - (green/yellow): on COM
- Sensor output (brown, signal): Connected via 1kOhm resistor



5.8 Connecting the Power Source

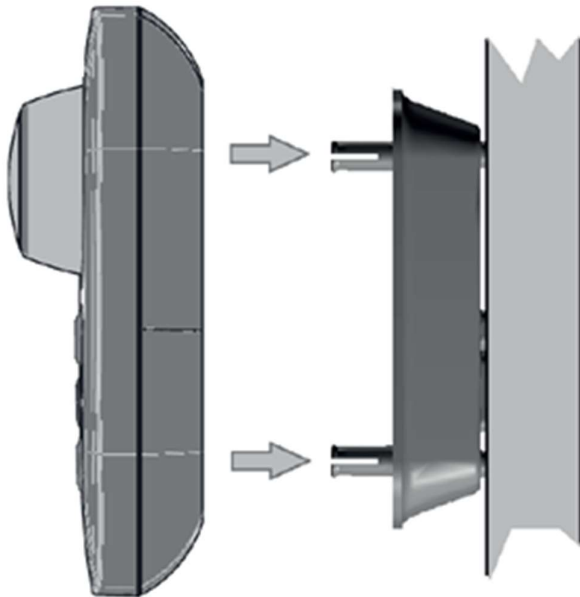


1. Route 4" (10 cm) of the transformer wire cable into the controller through the conduit or through the knockout (if conduit is not used).
2. Connect the transformer cable brown and blue to the terminals labeled "24 V AC"
3. Plug the transformer into the wall plug socket

5.9 Connection of the programming module

To complete the Regulus control assembly, connect the programming module to the back module by simply aligning it and pressing it together.

The programming module can be programmed even if it is disconnected from the back module. For this purpose, the programming module must be charged during the first operation or after 24 hours without power for at least 5 minutes (attached to the back module), see figure.



6 Factory Settings

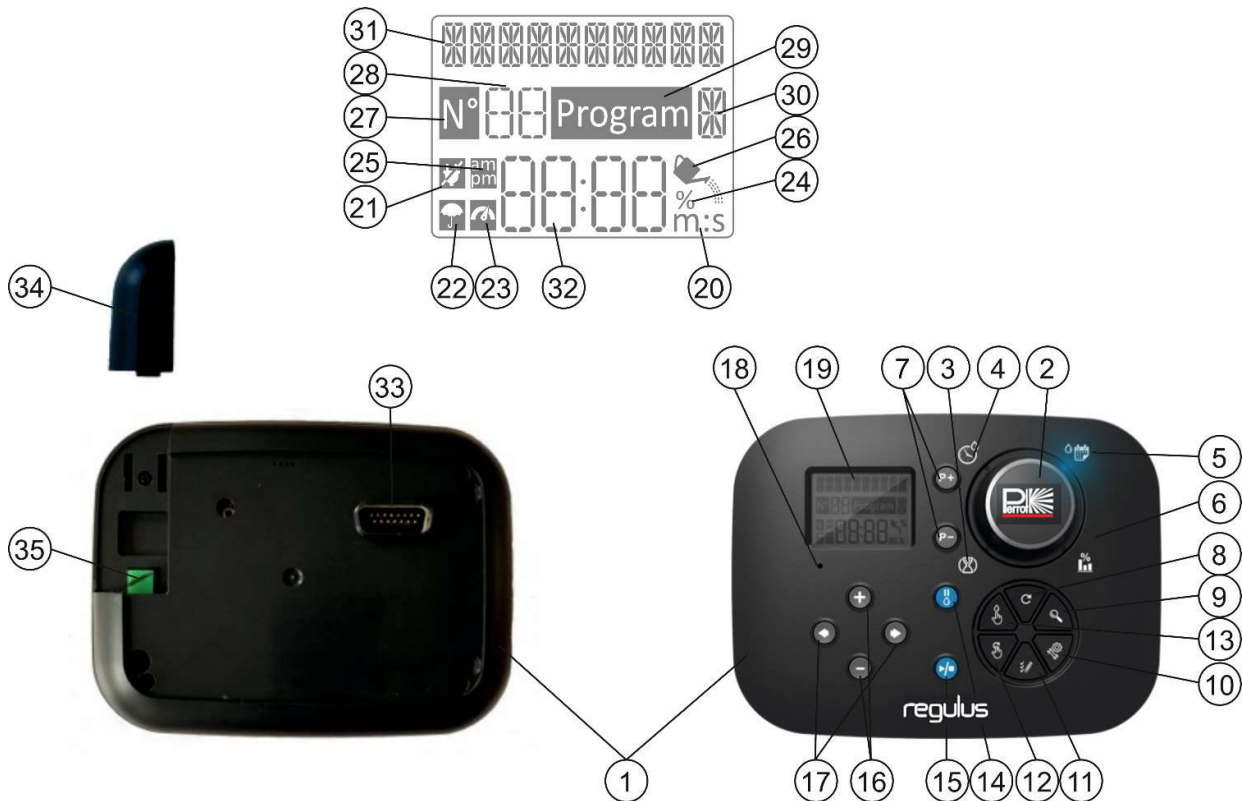
The control module can be reset to its factory settings as follows:

1. press the keys \oplus and \ominus and keep them pressed.
2. Press and release the reset button (see Control Module Components No. 18).
3. When the FACTORY display appears, release the + and - keys.
















ATTENTION

With the factory settings all previous programs and settings are deleted.

7 Control Module Components



- ① Control Module
- ② Programming Dial - To select irrigation functions
Control Dial Positions:
- ③ Run Time ⌚ - To set station run time duration
- ④ Start Time ⌚ - To set start times(s) for automatic irrigation program
- ⑤ Water Days 🗓️ - To set individual days for automatic irrigation
- ⑥ Watering Budget 📊 - To set Watering Budget adjustment for run time duration
- ⑦ P+ and P- Buttons - Select next/previous irrigation programs
- ⑧ Auto-Button ↻ - To select automatic operation
- ⑨ Help Button 🔍 - To show help text on LCD display
- ⑩ Settings Button ⚙️ - To set Controller's parameters
- ⑪ Sector Scout-Calibration / E-Test ✍️
- ⑫ Manual Program(s) Button 🖱️ - To select watering programs for manual operation
- ⑬ Manual Station(s) Button 🖱️ - To select station(s) for manual operation
- ⑭ Pause-Button ⏸️ - Turn off and prevents automatic station operation







- 15 Start/Stop-Button  To start or stop manual program(s) and station(s) and test program(s)
- 16 Button  and  Press to increase or decrease display number values and various functions
- 17 Button  and  - Press to select next or previous function parameter
- 18 **Reset-Button** - Momentarily insert a clip to press the hidden Reset button to restart operations
- 19 **LCD-Display**
- 20 **M:S** Symbol - Displayed when the Time duration shown is in minutes and seconds
- 21  Symbol – Displayed when 24Vac is missing or the Control Module is removed from the Wall Mount. Flashing to indicate power has been missing. Press any key to stop symbol flashing
- 22  Symbol – Displayed when automatic irrigation is on Pause)*
- 23  Symbol – Displayed when sensor is active)*
- 24 % Symbol – Displayed when a Watering Budget run time duration adjustment is in use
- 25  Symbol – Displayed when 12H time format is used
- 26  Symbol – Displayed when irrigation currently on ant either Manual Station(s) or Manual/Auto Program(s) are selected
- 27  Symbol – Displayed to identify the number of the selection within a function
- 28  2-digit - number representing the shown selection
- 29  Symbol – Displayed when an irrigation program is selected
- 30  1-Character - Identifies the irrigation Program selected or M for Master Valve
- 31 10-Character - Multi-language Text for function description and help info
- 32  Main Display - Shows various time values and controller information
- 33 DB15 connector to Back Module
- 34 Wi-Fi Module (optional)
- 35 USB Type A Plug for connecting the Wi-Fi Module (optional). Doesn't comply to USB standard

)* If (when the sensor is active) the associated function is RAIN, in addition to the sensor symbol, the Pause symbol is also activated.





















Note: for best results it is recommended to customize the Controller's SETTINGS first!

7.1 Setting Language

- Press the  button to access the Controller's Settings
- Press the  or  buttons to select LANGUAGE
Many display information can be viewed in any of the 5 languages:
ENGLISH, ITALIAN, FRENCH, GERMAN, POLISH
- Press the  or  buttons to select the language
- To exit Settings press the AUTO  button

7.2 Setting Current Time and Date

- Press the  button to access the Controller's Settings
- Press the  or  buttons to select 12H – 24H.
- Press the  or  buttons to select 12 H or 24 H.
- Press the  button to select SET TIME
- Press the  or  buttons to set the current time.
- Press the  button to select SET DAY.
- Press the  or  button to select SET DAY
- Press the  buttons to set the day of the month
- Press the  or  button to select SET MONTH
- Press the  button to select SET YEAR.
- Press the  or  buttons to set the year
- To exit Settings press the AUTO  button

7.3 Setting Sensor Functions

Under Settings, two sensor inputs can be programmed.
The following functions are available:

- OFF (no sensor function)
- REGEN NC (Contact of the rain sensor is closed when it is not raining)
- REGEN NO (Rain sensor contact is open when it is not raining)
- SECT SCOUT (Sector Scout Sensors from VP3 sprinkler)
- SCHLUESSEL (wired remote control (key switch) to start any irrigation program)

Sensor functionalities:

Sensor 1 OFF, Rain NC^[1], Rain NO^[1], Sector Scout, Key Switch^[2]
Sensor Delay ^[3] OFF, 0:01-2:00 m:s Increment 1s

Sensor 2 OFF, Rain NC^[1], Rain NO^[1], Sector Scout, Key Switch^[2]
Sensor Delay ^[4] OFF, 0:01-2:00 m:s Increment 1s

- ^[1] only available for one sensor input at a time
- ^[2] Only available for one sensor input at a time
- ^[3] Only available if Rain NC or Rain NO has been selected for sensor 1
- ^[4] Only available if Rain NC or Rain NO is selected for sensor 2

The following SETTINGS are Only available if Sensor 1 or Sensor 2 or both Sensors 1 and 2 are set to for the Sector Scout:

Sector Scout STN „n“ ^[5]	OFF, Sensor 1 ^[6] , Sensor 2 ^[7]
After-run Left ^[8]	Increment 1s (Range: OFF, 0:01-0:25 m:s)
After-run Right ^[8]	Increment 1s (Range: OFF, 0:01-0:25 m:s)
Sensor Time	Increment 1s (Range: 1:00 m:s, 2:30 m:s)
Cycle Time	Increment 1s (Range: 1:00 m:s, 3:00 m:s)

- ^[5] Only applies to all available stations.
Example: with a 12 STN control unit, STN 13 to 16 are not displayed.
- ^[6] Only available if Sensor 1 is set to Sector Scout
- ^[7] Only available if Sensor 2 is set to Sector Scout
- ^[8] Only available if Sector Scout STN „n“ is not set to OFF

Example: key switch



8 Setting up the watering schedule

It is helpful to define the watering schedule on paper or using the Excel macro before taking the programming steps.

Filling out the irrigation schedule form

Use the example on the next page as a template and fill in the form similarly.

The following information is required:

- Position: Specify the position of each watering station and the type of area to be watered (lawn, plant, etc.).



The following information must be entered for each program.

If the program is not required, leave the column with the information blank.

- Daily Schedule Irrigation for calendar programming, enter the day(s) of the week to irrigate.
- Station Run Time - Specify the duration of the run time (1 minute to 2 minutes) for each station. Specify "Off" for each station that is not to be used in the program.
- Sector Scout: For VP3 sprinklers with Sector Scout, where a sensor has been assigned in the settings, the number of turns (rotations) is specified. One turn corresponds to a movement from Left to Right or Right to Left (according to the mechanically set direction of rotation changeover).
- Program start times - Specify the time/clock times on the day to start the program. Up to six start times can be specified for each program per watering day.
- Water Budget - Specifies the run times of the stations assigned to a program as a percentage per program. 100% corresponds to the Run time set for the station. <100%: the Run time decreases, >100% the Run time increases. This does not apply to Sector Scout sprinklers.

Table irrigation schedule, example with the help of a macro

Controller programming

Date, Time of testrun:	
Date:	11.04.2022
Weekday:	Monday
Number of stations:	4
Station delay (sec):	1
Sensor 1:	Sector Scout
Sensor 2:	Sector Scout

Sector Scout	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6	Station 7	Station 8
Sensor 1/2	Sh -1	Sh -2	Sh -1	Sh -2	Sh -1	Sh -2	Sh -1	Sh -2
After Run L (mm:ss)	00:02	00:02	00:01	00:01	00:01	00:01	00:01	00:01
After Run R (mm:ss)	00:05	00:04	00:01	00:01	00:01	00:01	00:01	00:01
Sens. Time (mm:ss)	01:00							
Cycle Time (mm:ss)	01:30							

Station run time / turns:

Program	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6	Station 7	Station 8
A	01	-	-	-	-	-	-	-
B	-	01	-	-	-	-	-	-
C	01	-	01	-	01	-	-	-
D	-	01	-	01	-	01	-	-
E	-	-	01	-	01	-	01	-
F	-	-	-	01	-	01	-	01
G	-	-	-	-	-	-	-	-
H	-	-	-	-	-	-	-	-

Program start times:

Program	Start time 1	Start time 2	Start time 3	Start time 4	Start time 5	Start time 6
A	05:22					
B						
C	13:30					
D	13:30					
E						
F						
G						
H						

Watering days:

Program	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A	On	On	On	On	On	On	On
B	On	On	On	On	On	On	On
C	On	On	Off	On	On	On	On
D	On	On	On	On	On	On	On
E	On	On	On	On	On	On	On
F	On	On	On	On	On	On	On
G	Off	Off	Off	Off	Off	Off	Off
H	Off	Off	Off	Off	Off	Off	Off

Program	A	B	C	D	E	F	G	H
Budget	10	10	20	20	10	100	100	100

Table Irrigation Plan, Template

Controller programming

Date, Time of testrun:

Time:

Weekday:

Station delay sec

Budget %

Sensor 1

Sensor 2

Sector Scout	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6	Station 7	Station 8
Sesnor 1/2								
After Run L								
After Run R								
Sens Time								
Cycle Time								

Station run time / turns:

Program	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6	Station 7	Station 8
A								
B								
C								
D								
E								
F								
G								
H								

Program start times:

Program	Start time 1	Start time 2	Start time 3	Start time 4	Start time 5	Start time 6
A						
B						
C						
D						
E						
F						
G						
H						

Watering days:

Program	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
A							
B							
C							
D							
E							
F							
G							
H							

8.1 Memory of the controller

When not powered due to power outages or when the Programming Module has been removed from its Back Module, the **REGULUS Controller**:

- permanently retains the programmed watering schedule
- keeps the clock active for up to 24 hours

Back-up power time

How long the time keeping lasts depends on:









- how long the back-up power has being fully charged by the 24 VAC power (30 min charge is enough for 1 hour back up time, while 3 days guarantees the maximum back up time)
- The programming activities on the Programming Module while not powered by the 24 VAC

Back-up power is fully discharged

When REGULUS Controller is powered again after the back-up power was fully discharged, the controller will resume normal operation starting at the time the power became fully discharged. Current date and time must be set. This permanent memory feature enables your landscape to continue being watered with your programmed watering schedule if a prolonged power outage occurs while you are away. Just set the current time and date and the REGULUS Controller is ready to control your sprinkler system automatically.









8.2 Setting a Calendar Day Schedule

The Calendar Day schedule enables to set each day of the week as an active or inactive watering day. Each day can be active or inactive in each program **A** and **B**.

1. Turn the control dial to the Day Schedule position 
2. Press the  or  buttons to select the desired program **A-H**. Program letter **A - H** will be displayed
3. Press either the  or  button to select the day of the week
4. Press either the  or  button to set the day On or Off
5. Repeat steps 3 and 4 for each day of the week.
6. Repeat steps 2-5 for each program as needed
7. Press the **Auto**  button when finished

8.3 Setting Station Run Time Duration / Number of Sector Scout turns

The station run time duration is the amount of time a station will operate once it has been started. Each station can have a different running time in each program - setting range from 1 min - 2 h or OFF. Times of <1 minute can be realized via reducing the water budget setting. If the station is set to Sector Scout the numbers of turns can set from 1 to 99 turns or OFF.









1. Turn the control dial to the Run Time position 
2. Press the  or  buttons to select the desired program **A - H**. Program letter **A - H** will be displayed
3. Press the  or  press to select the desired station number from 1 to the maximum number of stations: 4, 8, 12 or 16
 Note, if a 4-Station Module is missing the number of stations available is based on the position of the 4-Station Module to the right
4. Press either the  or  button to set the run time
 - To remove the station from the program, decrease the run time duration to less than 1 minute to display OFF
5. Repeat steps 3 and 4 for each Run Time number, if desired
6. Repeat steps 2-5 for each program as needed
7. Press the **Auto**  button when finished

8.4 Setting Program Start Time (single irrigation cycle mode)

The program start time is the time of day you select to begin an automatic watering program cycle. When a program starts, each station with a designated run time duration in the program will operate in numerical order, one station at a time.







Sometimes it is necessary to run a watering program more than once per day: for example, when watering a new lawn.

The Regulus Controller provides 6 independent start times per day for each program.

1. Turn the control dial to the Start Time position 
2. Press the  or  buttons to select the desired program **A - H**. Program letter **A - H** will be displayed.
3. Press either the  or  button to select the desired Start Time number: 1, 2, 3, 4, 5 or 6.
4. Press either the  or  button to set the Start Time
5. Repeat steps 3 and 4 for each Start Time number, as needed.
 - To remove a Start Time from the program set it to OFF by decreasing the Start Time below 12:00AM (0:00) or increasing it above 11:59PM (23:59).
6. Repeat steps 2–5 for each program as needed
7. Press the **Auto**  button when finished

8.5 Setting the Water-Budget

The water budget can be used to decrease or increase the set runtime of all stations assigned to a program for each watering program A-H. Adjustment is in 10% increments from 0% (Program Off) to 200% of normal run time (100%).

1. Turn the control dial to the water budget position 
2. Press either the  or  buttons to select the desired program **A - H**. The letter of the program A - H and the percentage currently set for the program are displayed
3. Press either the  or  press to select the desired percentage for the adjustment, where 90% means a 10% reduction in station run time and 200% means a doubling of station run time
4. Repeat step 2 and 3 for each program as needed
5. Press the **Auto**  button when finished



During operation, the display shows the adjusted runtime for each station at the beginning of operation. As a reminder of the water budget setting (deviating from 100%), the symbol % is displayed together with the current time.

9 Controller Operating Modes

The control has four operating modes:

Automatic , **Manual Station(s)** , **Manual Program** and **Pause (Off)**.

In Automatic mode, the controller monitors the time and day and controls the automatic watering schedules as programmed. The "Manual Station(s)" operating mode allows a single station to be started and manually controlled. The "Manual Programs" operating mode allows watering programs to be started manually. The "Pause (Off)" operating mode prevents all stations from operating

Priority of the operating modes::

1. Activating the **Pause (Off)** operating mode stops and prevents the "Manual Station(s)" and "Manual Programs" operating modes and the automatic watering schedules from starting.
2. The activation of the **Manual Station(s)** operating mode stops and prevents the start of the "Manual Programs" operating mode and the automatic watering schedules. This means that it is also not possible to start directly using the key switch



In the "Pause (Off)", and "Manual Station(s)" modes, AUTO mode can be entered only to display the current time and date, but automatic watering is not possible.

9.1 Automatic operation

Automatic operation occurs whenever the programmed start time and watering day coincide with the controller's internal clock and calendar.

Press the **Auto button** to select automatic operation.

The controller will automatically return to AUTO control after 3 minutes from the last key press, but will run **automatically** in any mode except **Pause (Off)**.

In automatic mode, the display shows the current time and date:

If the 12h time format is used, the date is YYYY-MM-DD

If the 24h time format is used, the date is MM-DD-YYYY

If there is an additional INFO, the word "INFO" appears instead of the year YYYY

Press the  or  button to display the INFO(s) or return to the current time and date

Possible INFOs are:

NO 24VAC: In case of power failure or when the control module is removed.

MANUAL ON: If a station was switched on manually

IRRIGAT ON: When an Irrigation Cycle is running

PAUSE ON: when the controller mode of operation is PAUSE(Off)








SHORT CIRC: If at least one station line has a short circuit

9.2 Manual Station Operation


Manual controller operations will override all currently active automatic operation and sensor input. Any automatic program start time that occurs during a manual operation will be cancelled.





Manual operation enables any stations to be given a temporary station run time duration.

Manual operation stops any running watering cycle

1. Press the Manual Station  button
The selected station number and a Manual run time will be displayed.
Press either the  or  button, to select the desired station number. Station numbers go from 1 to the maximum number of stations of the Regulus model: 4, 8, 12 or 16.
2. To manually start a station that is currently OFF (the symbol  is off to indicate the station is OFF), press either the  or  button to set the running time from 1 minute (0:01) to 2 hours (2:00) and then press the Start/Stop  button.



Note: if the maximum number of stations that can be turned ON (2) has been reached, pressing the Start/Stop  button will not start the station and the display will show MAX OUTPUT.

3. To manually stop a station that is currently ON (the symbol  is on to indicate the station is ON), press the Start/Stop button with symbol . To stop the selected station. The symbol  is turned off to indicate the station is OFF.
4. Repeat steps 1–3 for additional stations.
5. Press the **Auto**  button when finished.









Note: The temporary manual station run time will not affect the station's run time within any automatic program.


9.3 Manual Program Operation




9.3.1 Start at the Controller






Manual program operation enables automatic watering programs to be manually started.

1. Press the Manual Program  button.
The selected program number will be displayed.
2. Press either the  or  button, to select the desired program, **A - H** to be turned ON manually.
3. To manually start a watering cycle for a program that is currently OFF (the symbol  is off to indicate the programs watering cycle is OFF) press the Start/Stop  button. The symbol  is turned on to indicate the watering cycle is ON.



Note: if the maximum number of stations that can be turned ON has been reached, pressing the Start/Stop  button will not start the watering cycle and the display shows MAX OUTPUT.

4. To manually advance through the station sequence, for the selected program, press the  button. If Delay Between Station is not OFF, then pressing the  button will turn off the current station and start the delay: the display will show DELAY.
Pressing  during DELAY will stop the delay and start the next station








5. To manually cancel the STACK condition for the selected program and set it back to OFF, press the Start/Stop  button
6. To manually terminate a watering cycle for a program that is currently ON (the symbol  is on to indicate the program's watering cycle is ON), press the Start/Stop  button. The Symbol  is turned off to indicate the watering cycle is OFF
7. Repeat steps 2–6 for additional programs
8. Press the **Auto**  button when finished

9.3.2 Program-Start via Key Switch








- Turning the key switch starts the selected program, regardless of which watering programs are set.
- The program selection is made by the number of key switch turns within approx. 5 seconds. At 9 turns, the selection is deactivated and no program is started. Precondition for the immediate start via the key switch is that the control unit is not set to "Controller OFF", no automatic watering is active and no station is switched on manually.
- An active watering program is stopped by turning the key switch, regardless of whether the program was activated via the key switch or automatically. This is an option like an "emergency stop" in case something happens or someone enters the watering area.
- Only one program can be started with the key switch, not a second one.
- If a program was started with the key switch, a second program can start automatically or time-controlled.

9.4 Electrical test (testing the electrical cable to the valve solenoids))

1. Press the  button
2. Press the  or  button until **ELEKT TEST** will shown
3. Press the Start/ Stopp  button, to start the electrical test manually. The test is started and automatically ended.
4. Press the  or  button , to display the status of each station:
 - **STN OFFEN** (no valve detected)
 - STN OK (valve present, current consumption OK)
 - **STN KURZ** (Short circuit)
5. Press the **Auto**  button when finished.

9.5 Pause or switch off the irrigation

















1. Press the  button:
the Symbol  is displayed, **SYSTEM AUS** is shown in the display
2. All active stations, automatic programs, manually started programs, manually started stations are switched off immediately and do not restart automatically even after the switch-off has ended. Only a started electrical test cannot be interrupted
3. Press the  button, when the system is off and the symbol  is displayed:
The control is set to active operation again. The Symbol  is no longer displayed

10 Operation with Sector Scout, Perrot VP3 sprinklers

The "Sector Scout" function can ONLY be used in conjunction with the Perrot VP3 pop-up sprinkler with Sector Scout. For the function for this sprinkler, refer to the TDP070 manual. This function cannot be used with all other sprinklers.

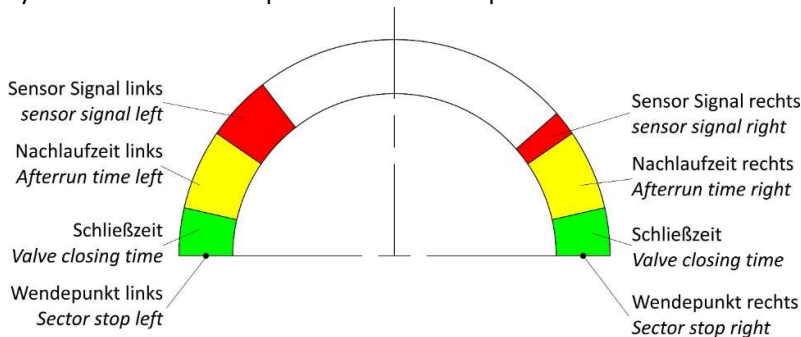
10.1 Sector Scout settings

The definition of which station is operated as a Sector Scout is made in the Settings menu:

1. Press the  button, to access the Controller's Settings
2. Press the  or  buttons and set SECT SCOUT for sensor 1 or 2 or sensor 1 and 2 . According to the planned or given irrigation installation.
3. Once Sector Scout has been selected for one of the sensors using the  or  buttons, the following Sector Scout specific settings can be made for the number of stations installed.:
4. By pressing the  or  button select the according station number. By default, all stations are set to OFF, i.e. no sensor input is assigned to the station.
5. By pressing the  or  button the sensor number is allocated to the station. If only one sensor was previously set to Sector Scout, only this one will be displayed for selection.
6. Once a sensor has been assigned to the station, pressing the  button will display the setting for the left side after-runtime and then for the right side after-runtime.
7. The after-runtime from 0 to max. 25sec is set via the  or  buttons
8. After all Sector Scout stations have been assigned to the sensor number as well as the after-runtimes, the sensor times must be set „SENS ZEIT“ and the Cycletime „ZYKL ZEIT“ .
Press the arrow  or  button until you reach the "Sensor Time" setting. The time in m:ss can be increased or decreased with the  or  buttons
The same procedure is used for setting the cycle time.

10.2 Sensor After-runtime Left, Right

Since the valve installed in the VP3 Sector Scout sprinkler has a closing time of approx. 5-8 sec, the sensor sends its signal to the controller about 15 seconds before the sprinkler is at the turning point. With the sensor after-runtime the switch-off time can be set so that the VP3 pop-up sprinkler sinks at the turning point. The sensor after-runtime can be set individually for the right and left stop side. The specified times depend on the pressure and the set rotational speed at the sprinkler and therefore vary from system to system. A schematic representation of the processes is shown below:



10.2.1 Sensortime

The sensor time is used for monitoring. If the control unit has not received a signal from an active SC station in the set time span, the station is stopped and the irrigation program is continued with the next station.

10.2.2 Cycle time

The time set in this menu is only used for calculating the run time of the irrigation program. Since the number of turns, and not the time, is entered in the irrigation program of Sector Scout sprinklers, the control unit calculates the run time of the irrigation program as follows:

$$\text{Run time} = \text{amount of turnings} \times \text{cycle time}$$



The VP3 sprinkler requires approx. 70 seconds for a sector of 180° at max. rotation speed. The set sector time should be at least 50% longer, so that the calculated runtime is in any case longer than the actual runtime, so that there are no undesired overlaps in the start times..














10.3 Calibration of the Sector Scout

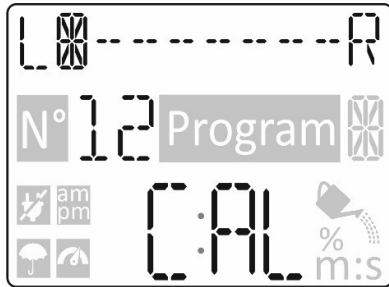
So that the controller knows in which position each Sector Scout sprinkler is, the positions, i.e. the right - and left end position, must be calibrated. There are 3 (4) possibilities for calibration.

- Automatic calibration of a single station
- Automatic calibration of all stations in ascending order
- Manual calibration
- Calibration in the running irrigation program

10.3.1 Calibrating a single station








The operating water pressure must be applied, the sprinkler rises and performs one to max. three turns and then stops in an end position and lowers.

1. Press the  button, to get to the calibration
2. Pressing the  or  button until **CAL** is displayed. Normally you get to this menu by pressing the  key
3. By pressing the  or  button select the Sector Scout Station that is to calibrate
4. By pressing the Start/Stop  button the station starts. The sprinkler rises and performs 1-3 turns until the end positions are calibrated After successful calibration, the display shows either **L  ---OK---R** or **L ---OK---  R**
5. If the correct sequence cannot be detected during calibration, the station is switched off after the set sensor time has been reached and „L ---  ---R“ is displayed.
6. Either select another Sector Scout station to be calibrated with the  or  buttons or exit the calibration with the Auto  button.



10.3.2 Calibrating all stations in sequence









The operating water pressure must be applied, the sprinkler rises and performs one to max. three turns and then stops in an end position and lowers.

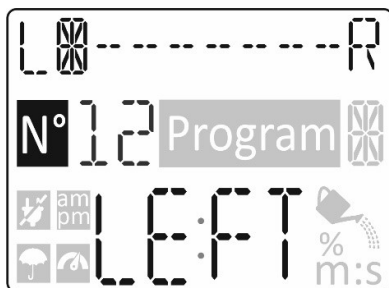
1. Press the  button, to get to the calibration
2. Pressing the  or  button until **KALIBRER ALL** is displayed
3. By pressing the Start/Stop-Taste  button the first station starts. The sprinkler rises and makes 1-3 turns until the end positions are calibrated. After successful calibration, the station is switched off and after the "Station delay time" has elapsed, the second station starts. One by one, all Sector Scout stations will be calibrated.
4. By pressing the  or  button it is possible to check the successful calibration of each station and in which position (Left or Right) the sprinklers are
5. Press the **Auto**  button when finished



10.3.3 Calibrate manually Left

If the calibration is to take place without water, the sprinkler(s) to be calibrated can be turned manually to the "left position". The input at the controller is done as follows:

1. Press the  button, to get to the calibration
2. Pressing the  or  button until LEFT is displayed
3. By pressing the  or  button select the Sector Scout Station that is to calibrate
4. By pressing the Start/Stop  button the station is calibrated to the left position.
The display shows „L  R“
5. Press the **Auto**  button when finished



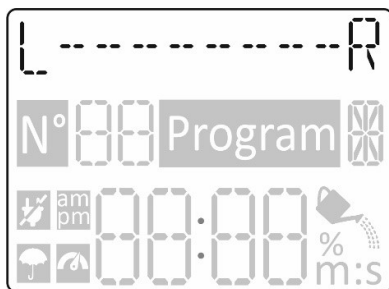
10.3.4 Automatic calibration during an irrigation program

If an irrigation program is started without prior calibration or if the controller loses the calibration of a station during irrigation, the controller automatically performs a calibration first. The sprinkler then performs the programmed number of rotations.

An uncalibrated station or a lost calibration is indicated by flashing lines in the display.

Possible reasons for lost calibration:

- Sensor malfunctioning or electrical connection faulty
- Sensor too far away from the switching cams
- Uneven rotation of the sprinkler. Independent of the rotation speed, the expected second occupancy time is calculated from the first sensor occupancy by the switching cam via the geometrically different ratio of both cams. If this deviates, the controller attempts a new calibration.



10.4 Operating modes Sector Scout

The operating modes for Sector Scout are exactly the same as for "normal" sprinklers:

Automatic , **Manual Station(en)** , **Manual Program** and **Pause (OFF)**

10.5 Settings rotations

While with normal sprinklers for the station run times, see chapter 8.3, the watering times are set, with Sector Scout stations the number of turns is set. One turn corresponds to one turn from Left to Right or Right to Left. This applies to automatic, manual program and manual station operation.

10.6 Displays at Sector Scout operation

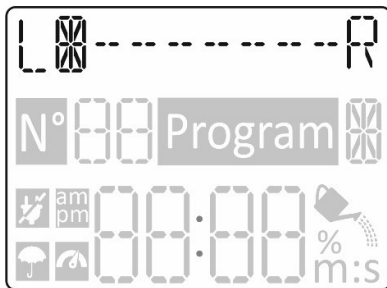
If the display is in automatic mode (this is done by pressing the Auto button or if no input is made for 3 minutes), during irrigation only the day and the month are displayed in the first line instead of the complete date and the word Info is displayed instead of the year.

As soon as a Sector Scout Station is started, the manual programs button can be used to first change the display. If you select the currently running program with or button, the sector history of the controller appears in the top line. The display is the same as during calibration. In the bottom line, the number of ACTUAL turns (Left of colon) and the set number of TARGET turns (Right of colon) are displayed. The display ACTUAL turns is incremented as soon as the end position including after-runtime is reached.

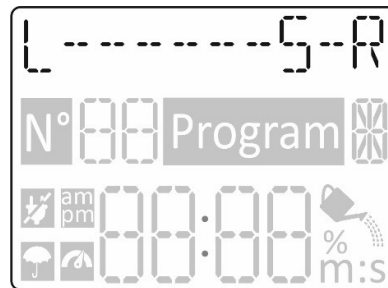
- Example: 01:02 ⇒ The sprinkler performs the first of 2 turns
- Example: 02:04 ⇒ he sprinkler performs the second of 4 turns
- Example: 01:01 ⇒ The sprinkler performs the first of 1 turns and stops when it reaches the end position.

As soon as a sprinkler reaches its end position, the station is switched off. In the first line, "**VERZIEG**" is displayed instead of the sector sequence and the countdown of the set station delay time runs in the bottom line. As soon as this reaches "0", either the next station is displayed or **BER PRGR. OFF**

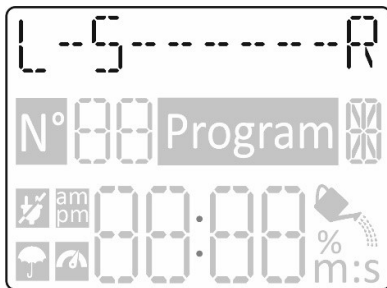
Display examples:



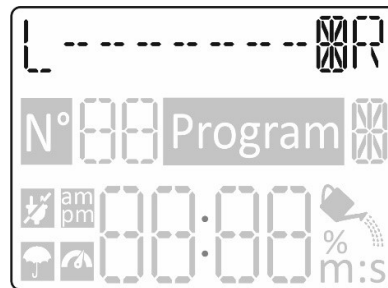
Sprinkler in left position



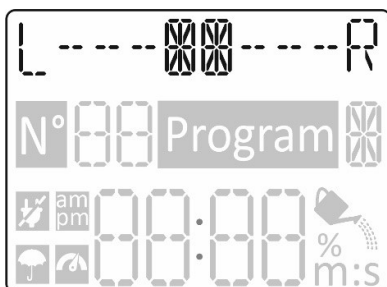
Sensor is occupied by right Cam (narrow)



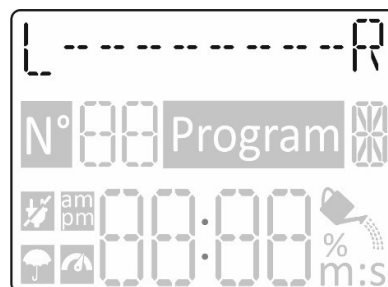
Sensor is occupied by left cam (wide)



Sprinkler is in right position

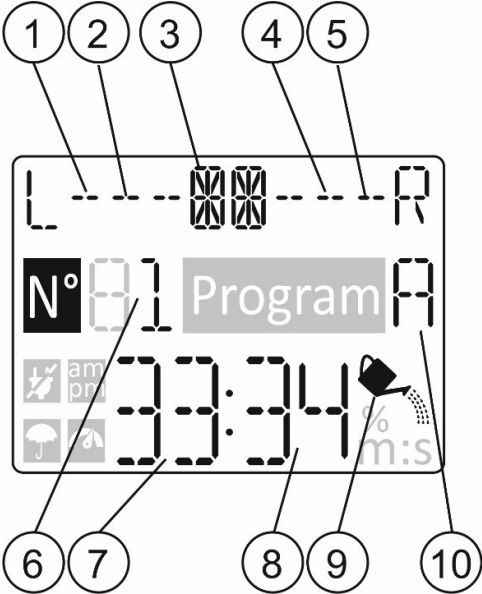


Sensor is located between the two sprinkler cams




Sprinkler not calibrated

- ① ☒ Sprinkler on left stop side
- ② ⏏ Signal from sensor on the left side
- ③ ☒☒ Sprinkler in operation in the middle range
- ④ ⏏ Signal from sensor on the right side
- ⑤ ☒ Sprinkler on right stop side
- ⑥ Active station number
- ⑦ Number of turns passed
- ⑧ Number of given turns
- ⑨ Symbol Irrigation active
- ⑩ Active program number (A-H)




11 Help Function



The REGULUS Controller has an HELP feature that provide instant help for the current function.

- Press and keep pressed the HELP  button to start viewing the help text on the display.



NOTE: the help text repeat itself as long as the HELP  button is pressed.



If there are other help text displays, you will be requested to press the  or  key.

- When finished, release the HELP  key



Note: when in SETTINGS the help suggests to check this User Manual

12 Automatic Circuit Breaker

The REGULUS Controller features an electronic circuit breaker which automatically detects an overload condition on a station terminal during operation and turns off the station before controller damage can occur. The REGULUS Controller advances to the next programmed station in sequence to continue the watering cycle. When a station is found short circuited, INFO-SHORT CIRC will be displayed while in Automatic operation mode.

Run an Electric Test to verify current wiring conditions. When all station numbers are displayed as short circuited, the master valve is malfunctioning. When a short circuited station is found not short circuited any more the INFO-SHORT CIRC is removed.



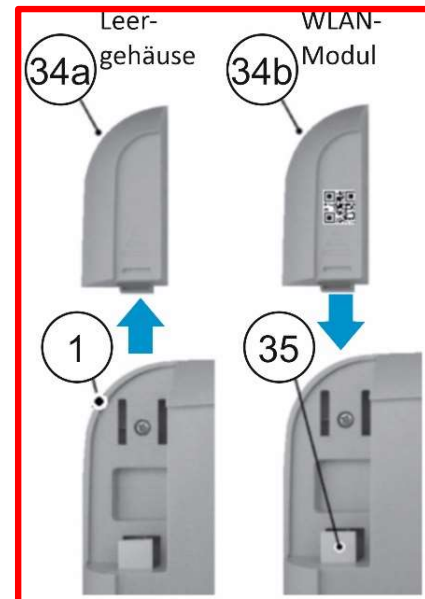
The most common cause of an overload condition is a short circuit in the valve wiring or a malfunctioning valve solenoid. The cause of the overload condition should be corrected before continuing to operate the controller.

13 Local Wi-Fi Module

To be able to operate the control via smartphone, the use of a Wi-Fi module is recommended.

13.1 Installing the optional Wi-Fi Module

- Remove the Empty case 34a from the rear of the Programming Module 1 by sliding it up.
- Connect the optional Wi-Fi Module 34b in the same location where the Empty case was by sliding it down.



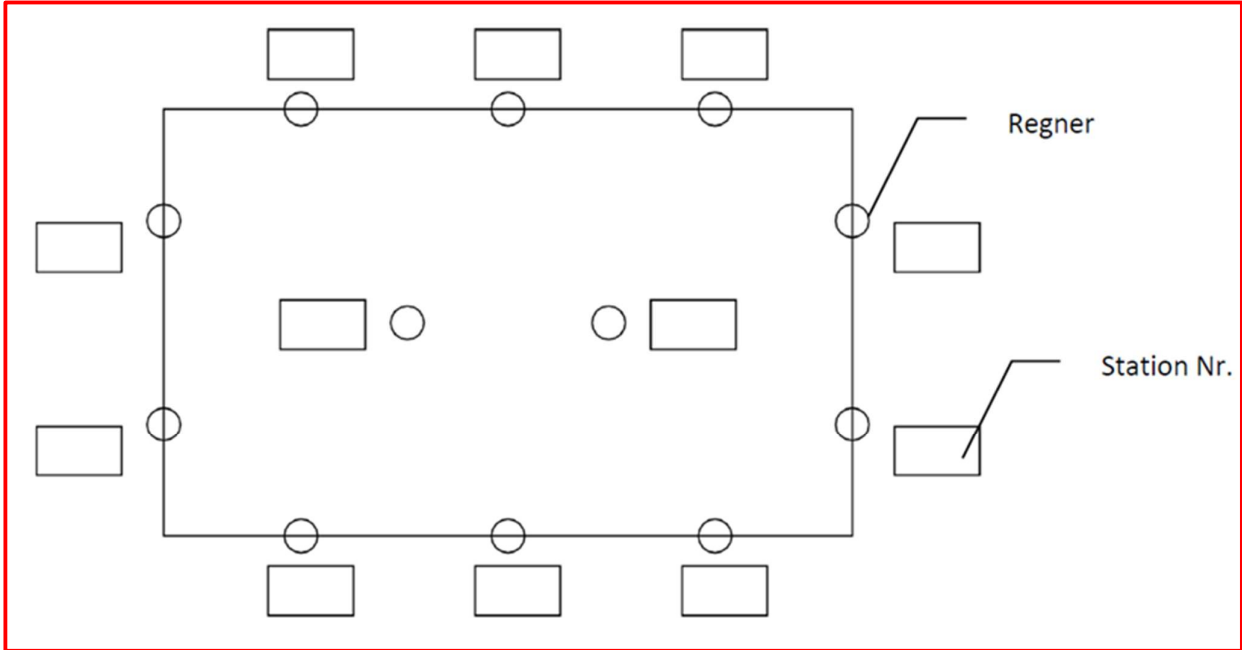
14 Installing the APP on your Smartphone

- Go to your APP Store and search for „REGULUS Controller“.
- Download and install on your Smartphone the APP „REGULUS Controller“
- Start the APP “REGULUS Controller” and follow the procedure for login and for matching the APP to the REGULUS Controller.

15 Troubleshooting

Problems	Probable Cause	Remedy
Display is blank and controller does not operate.	Power is disconnected.	Check transformer connections. Check the AC service panel for a tripped circuit breaker or GFI and reset.
Display not responding to commands (frozen).	Microprocessor stopped.	Press Reset with a pointed tool (clip through the hole below the LCD display).
Valve does not turn on.	Faulty control valve wire connections. Sensor switch in Active position without a sensor or jumper installed. No station run time duration set.	Check the wire connections at control valve and controller. Set sensor switch to Bypass position. Check station run times.
Valve does not turn off.	Control valve problem.	Inspect, clean and/or replace the valve solenoid and/or diaphragm.
Watering program(s) start at unexpected times.	Watering program schedules have overlapping start times. Water Budget setting over 100% can cause delayed start times.	Check program start time schedules. Shorten station run times and/or space start times farther apart. Check Water Budget and decrease adjustment o/o factor as necessary.
No signal from sensor recognizable	Sensor incorrectly connected Station or sensor not controlled Sensor distance to cam too large	Check wiring (see wiring diagram). Activate station. Minimize distance and check with the help of the LED in the sensor
VP3 SC Sprinkler performs more turns than programmed	Sprinkler was not calibrated or signal from sensor not as expected	Check calibration via display. Recalibrate if necessary. If not possible, check sensor signal
VP3 SC sprinkler does not sink exactly at the turning point	After-runtime not set optimally	Optimize after-runtime

16 Irrigation Plan Template



We reserve the right to make changes according to the state of the technology even without special notice.

Correct Disposal of this product

This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

Für weitere Informationen stehen wir Ihnen gerne zur Verfügung!
We remain at your full disposal for any further information you may require!

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