SV 1.2 02/07/2019
130492MAN130
96000002

Installation and User Manual

FertiMiX-Go!

Helping you grow
your way

Ridder Growing Solutions B.V.
Honderdland 131
2676 LT Maasdijk
The Netherlands

Mailing address
Postbus 33
2676 ZG Maasdijk
The Netherlands

Tel : +31(0)15 3620300

Website: www.ridder.com

E-mail: info@gs.ridder.com, sales@gs.ridder.com, helpdesk@gs.ridder.com

All efforts have been made to ensure the accuracy of the contents of this manual. Should any errors be discovered, however, Ridder Growing Solutions B.V. would greatly appreciate being informed of them. Ridder Growing Solutions B.V. is naturally very interested in your comments and additions.

This product is subject to the General Conditions of Ridder Growing Solutions B.V.

This document may not be copied or made public by means of printing, photocopying, digital copying or any other process, without the prior written permission of Ridder Growing Solutions B.V.

Publication date: 02/07/2019 14:00 130492MAN130 Item code: 96000002

Contents

1 Introduction

Ridder Growing Solutions supplies both high-tech and simple solutions for large- and small-scale horticulture companies. Ridder Growing Solutions's range is divided into three product categories:

- Water Treatment
- Process Automation
- Management Systems

The Ridder FertiMiX is part of our range of water treatment products.

> This is the installation and user manual for the FertiMiX-Go!. This manual was originally published in Dutch.

1.1 Introduction

The FertiMiX-Go! doses water and fertilizers automatically via a mixing tank into the main irrigation line (or main pipe). This is also known as a 'mixing tank fertigation system'.

1.2 Aims

This manual has two aims:

1. The manual describes how to install and connect the FertiMiX-Go!.
2. This manual describes the functioning of the FertiMiX-Go! and how to maintain it.

1.3 Target groups

The manual has been written for two target groups:

- the installers of the FertiMiX-Go!
- the users of the FertiMiX-Go!.

In general, installation will be carried out by the dealer of the FertiMiX-Go!. This manual uses the term 'dealer' to mean both the dealer and the installer.

The users are the growers, worldwide.

Ridder Growing Solutions advises both target groups to familiarize themselves with the content of the entire manual:

- sections 4 and 5 have been written specifically for the dealers;
- sections 6 and 7 have been written specifically for the users.

1.4 Symbols and annotations

This manual uses symbols, pictograms, abbreviations and annotations. This section provides an overview of these.

1.4.1 Symbols

The following symbols are used:

Note: This notice provides important information or a warning. Ignoring this information may result in product damage or personal injury.

Note: This notice provides important information or a warning.

Information: This notice provides additional information or a brief explanation.

Tip: This relates to advice to users.

1.4.2 Pictograms

To show that personal protective equipment (PPE) is required, the following pictograms are used:

Pictogram	Name
	Protective clothing
	Gloves
	Safety goggles
	Safety boots

1.4.3 Abbreviations

This manual uses the following abbreviations:

Symbol	Name
°C	degrees Celsius
°F	degrees Fahrenheit
W x H x D	width x height x depth
cm	centimetre

Symbol	Name
EC	Electrical Conductivity
Hz	Hertz
L (or l)	litre
L/h	litres per hour
max.	maximum
m	metre
ml	millilitre
m^3	cubic metre
mS/cm	millisiemens per centimetre
pH	acidity
PPE	personal protective equipment
V	Volt

Where appropriate, these terms may be used in full the first time they are mentioned, with the abbreviation shown in brackets. After that, the abbreviation will be used.

1.4.4 Notation methods

The following method of notation is used in the software user instructions:

- A button is indicated as follows: the Start button.
- A field is indicated as follows: the `Connect string` field.
- A setting is indicated as follows: the *Language* setting.
- A window is indicated as follows: the **Log On** window.

1.4.5 Glossary

A glossary has been included in the appendix (see Appendix: "Glossary" on page 60).

1.5 Documentation included

The FertiMiX includes a full set of documentation. This manual is part of that documentation. You will also find:

- Additional information on, for example: pumps, measuring equipment, etc. can be found in the Original Equipment Manufacturer (OEM) manuals, supplied separately. Please consult these OEM manuals for the correct use and maintenance of the relevant components.
- Electrical wiring diagrams.
- HortiMaX-Go! documentation, such as: '160212 HortiMaX-Go! User Manual' and '160211 HortiMaX-Go! Installation Manual'. Visit help.hortimax-go.com for online support.

ONLINE HELP

Scan the QR code to access the online help.

help.hortimax-go.com

1.6 Disclaimer

The FertiMiX-Go! series and all its components have been developed specifically for a horticultural environment. The equipment and accompanying software must be used as delivered and are subject to the instructions in the Ridder Growing Solutions documentation provided with the equipment and software.

The FertiMiX-Go! series is designed for irrigation and fertigation applications in a horticultural environment.

For other conditions of use, please refer to our General Conditions of Sale.

Your warranty will be void if you fail to observe the instructions provided by Ridder Growing Solutions.

This manual describes the FertiMiX-Go!. Certain details of the FertiMiX-Go! that you will be installing may vary from the situation shown. Please refer to the order confirmation to check whether the FertiMiX-Go! provided has non-standard specifications.

Ridder Growing Solutions has made every effort to provide up-to-date illustrations and screenshots in this manual. However, the illustrations and screenshots used may differ from what you actually see. Screenshots have been made using the English-language version of the HortiMaX-Go!. For the latest version of the screenshots, you will need to use the latest version of the HortiMaX-Go! software.

2 Product information

This section describes the components and the functioning of the FertiMiX-Go!.

2.1 Principles of operation

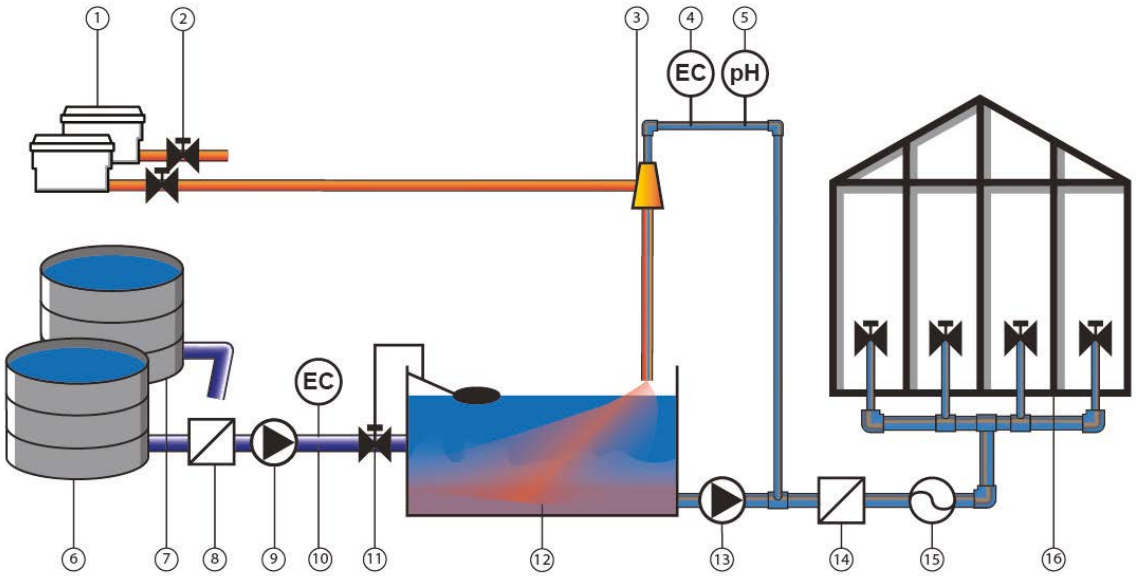


Figure 2-1: *Diagram showing the basic operation of the FertiMiX-Go!.*

No.	Name	No.	Name
1	Fertilizers, acid, lye (alkali) or other substances	9	Pressure pipe/filling pump
2	Dosing valve	10	EC
3	Venturi	11	Filling valve with overflow protection
4	EC sensor	12	Mixing tank
5	pH sensor	13	System pump
6	Clean water	14	Filter
7	Drain water	15	Flow meter
8	Filter	16	Valve groups and valves in the greenhouse

2.2 Process description

The FertiMiX works as follows:

- Fresh water is supplied (optionally pre-blended with drain water).
- The supply pipe is fitted with:
  - (optionally) a filter for filtering water,
  - (if the pre-pressure is less than two bars) a filling pump for pumping water into the mixing tank,
  - (optional) an EC sensor for pre-blending control.
- The water flows into the mixing tank via the filling module. The filling module regulates the water supply to the mixing tank.
- The system pump pumps the water from the mixing tank towards the pressure module.
- From the pressure module, the water is directed to the dosing module.
- Some of the water flows to the measurement module. The measurement module is a branch line where the EC and/or pH is measured.
- A dosing module consists of one or more dosing channels. Each fertilizer (or other additive) requires its own dosing channel equipped with a venturi.
- Fertilizers (or other additives) are sucked out of the stock tanks connected to the venturis.
- The fertilizers and other additives are dosed using the dosing valves based on the fertigation recipe.
- From the dosing module and measurement module, the water is fed into the mixing tank.
- The design of the supply pipe creates a swirling motion in the mixing tank. This swirling motion effectively mixes and aerates the water and fertilizers. This ensures that the fertilizers dissolve completely and allows the equilibrium reaction of the acid or alkali (lye) with the water to stabilize. This reaction creates CO2 gas. The residence time of the water inside the mixing tank plays a key role in the mixing process. It also allows the CO2 gas to escape from the mixture, preventing gas bubbles from clogging the pipes.
- A float and valve prevent the mixing tank from overflowing.
- Once the water and fertilizers have been mixed sufficiently, the system pump pumps the irrigation water from the mixing tank to the pressure module. This module has a branch line for distributing the irrigation water.
- The water flows to the irrigation valves and is then supplied to the crop. If required, the water can first be filtered and the flow rate can be measured.

The entire process is controlled by the HortiMaX-Go! process controller. Its tasks include:

- ensuring that the correct fertigation recipe is prepared (proportion of fertilizers and water),
- controlling the valves to ensure that the water reaches the crop.

2.3 Product specifications

The FertiMiX-Go! is available in various configurations, because different dosing channels, pumps, sensors and I/O modules can be added to the FertiMiX-Go!. This is described in this and the following sections.

2.3.1 Basic configuration

Figure 2-2 is a diagram of the components of the FertiMiX-Go!.

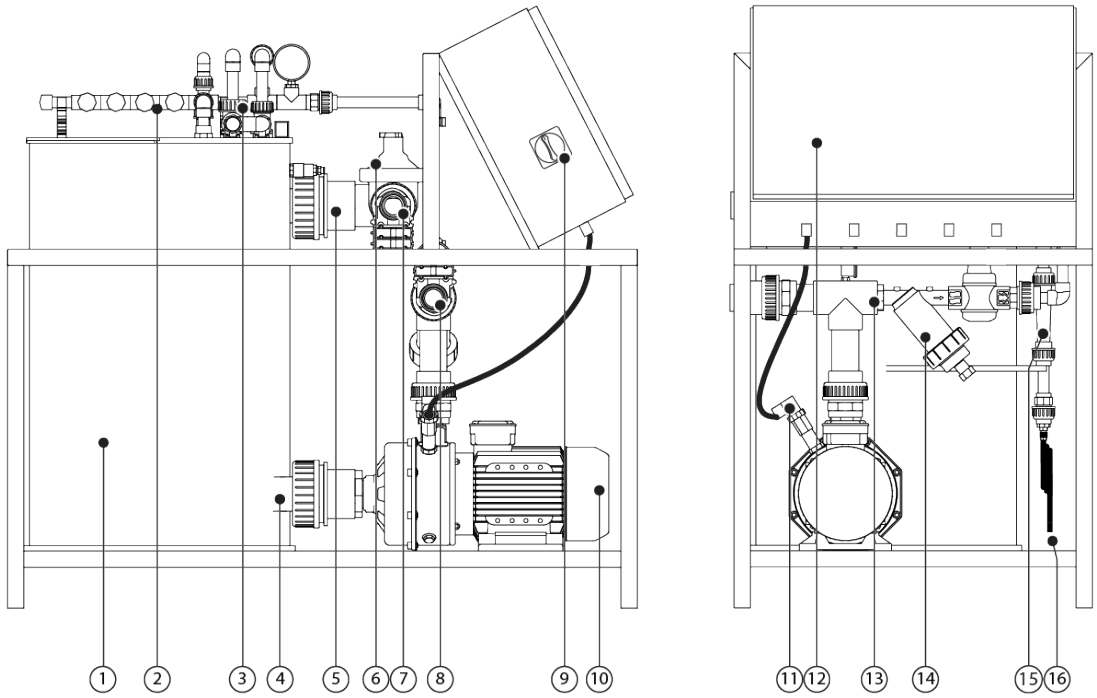


Figure 2-2: *Side and front view of the FertiMiX-Go!*

No.	Description	No.	Description
1	Mixing tank	9	Power switch / emergency stop
2	Dosing module	10	System pump
3	Measurement module (location of sensors)	11	Thermal cut-out for pump (optional)
4	Water outlet of mixing tank	12	Integrated process computer and control panel
5	Water inlet of mixing tank water	13	Pressure module with filter
6	Filling module with float valve	14	Screen filter (500 microns)

No.	Description	No.	Description
7	Connection point for fresh water supply	15	Venturi (at least 1, no more than 5)
8	Connection point for irrigation water distribution	16	Supply pipe(s) (at least 1, no more than 5) for fertilizers and acid/alkali (optional)

The following table provides an overview of the main specifications of the FertiMiX-Go! basic configuration(s):

Component	Specifications
Nominal capacity at 4 bars	10 [m^3/h]
Dimensions (W x H x D)	116 x 102 x 66 [cm]
Dimensions of basic cabinet (W x H x D)	60 x 40 x 20 [cm]
Mixing tank volume	100 [l]
Electrical voltages and frequencies	3 x 400 [V], 50 [Hz], with neutral and earth 3 x 400 [V], 60 [Hz], with neutral and earth 3 x 230 [V], 50 [Hz], with earth 3 x 230 [V], 60 [Hz], with earth
Process controller	HortiMaX-Go!
User interface on the FertiMiX (standalone)	Yes

2.3.2 Filling module with float valve

The filling module is located directly after the connection point of the fresh water supply.

The float valve shuts off the water supply if the water level in the mixing tank rises too high. You can also use the button on the float valve to control the water supply to the mixing tank manually.

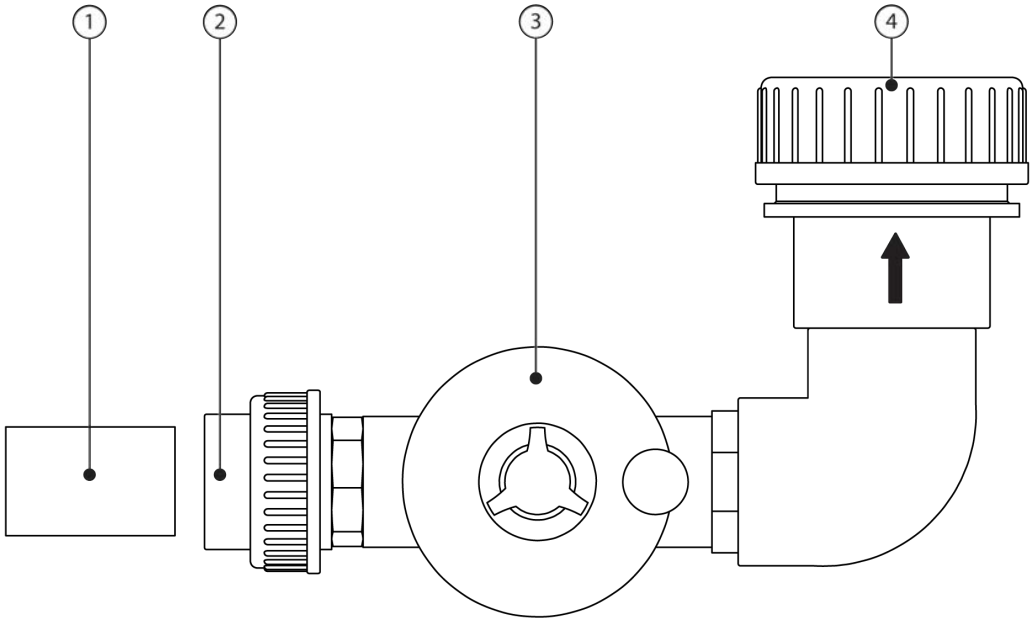


Figure 2-3 *Filling module with float valve*

No.	Description	No.	Description
1	Dummy pipe for transport	3	Float valve
2	Connection point for fresh water, 50-mm coupling	4	Connection point to mixing tank

2.3.3 Pressure module with filter

The pressure module is located directly after the connection point of the irrigation water distribution pipe. The pressure module guides some of the irrigation water to the dosing module with the measurement module. The pressure module is equipped with a pressure regulator that enables the pressure before the venturis (see section "Dosing module" on page 15) to be set to 2.2 bars. The pressure after the venturis is always 0 bars. The screen filter in the pressure module prevents the venturis from clogging.

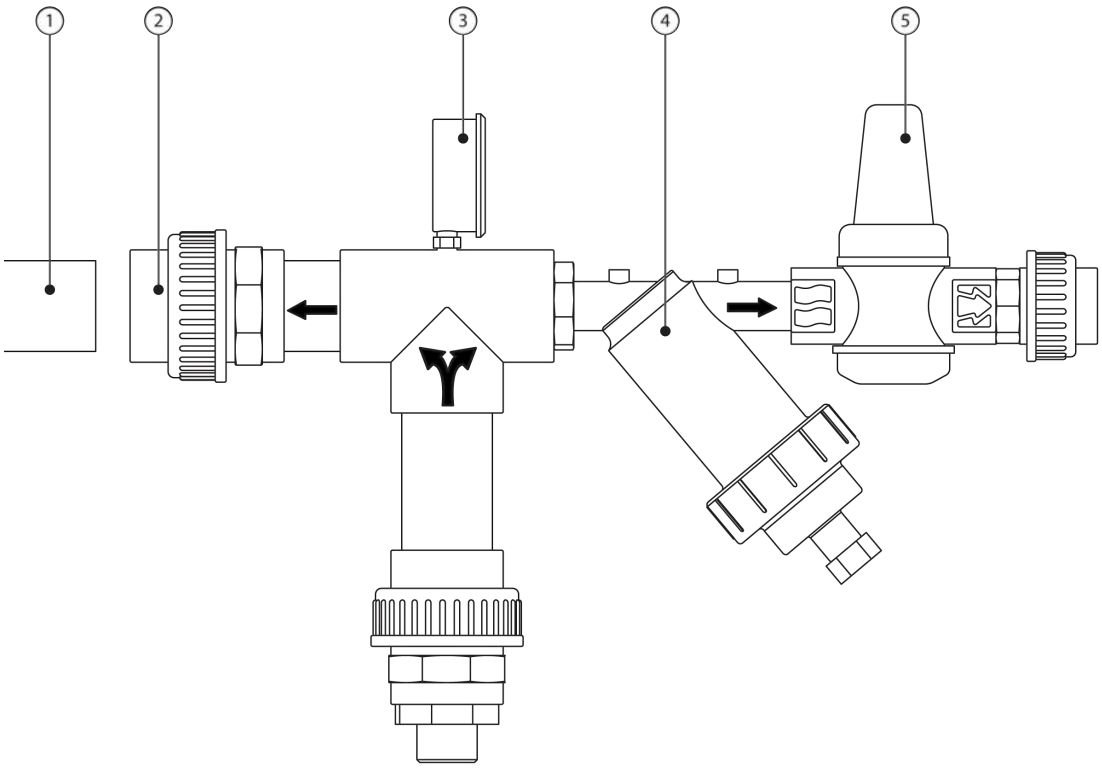


Figure 2-4 *Pressure module with filter*

No.	Description	No.	Description
1	Dummy pipe for transport	4	500-micron screen filter
2	Connection point for irrigation water distribution pipe, 50-mm coupling	5	Pressure regulator
3	Pressure gauge (0 - 6 bars) for filter (4 bars)		

2.3.4 Measurement module (sensors)

The measurement module is located directly after the pressure module; it is a branch of the supply channel of the dosing module. The measurement module is where the sensors are located. After passing through the measurement module, the water is returned to the mixing tank.

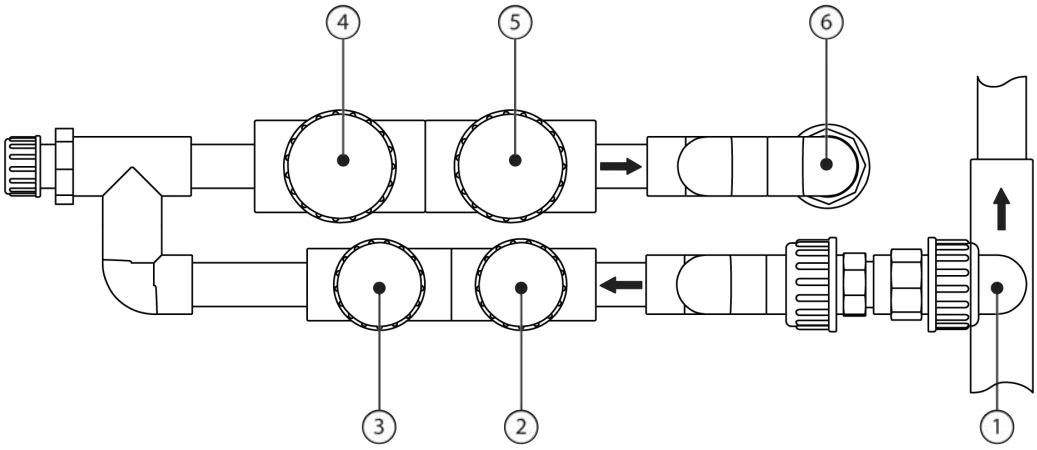


Figure 2-5 *Measurement module*

No.	Description	No.	Description
1	Connection point from pressure module	4	pH control sensor
2	EC control sensor	5	pH verification sensor
3	EC verification sensor	6	Return to mixing tank

Depending on the configuration, the following sensors can be added:

- EC sensor: the EC sensor measures the concentration of fertilizers in the water.
- pH sensor: the pH sensor measures the acidity level of the water.

The FertiMiX-Go! is supplied with at least one EC sensor as standard.

- If there is one EC / pH sensor: this is the control sensor.
- If two EC / pH sensors are present: the verification sensor checks the functioning of the control sensor.

Please consult the supplied OEM manuals for the correct use and maintenance of the relevant components.

2.3.5 Dosing module

A dosing module consists of one or more dosing channels. Each fertilizer has its own dosing channel (a maximum of four). The last channel is used to dose acid or alkali (lye). This is optional.

Before the water reaches the dosing module, some of the water flows past the measurement module. This is where the EC and/or pH level is measured. See "Measurement module (sensors)" on the previous page for more information.

The figure below shows the most complete configuration.

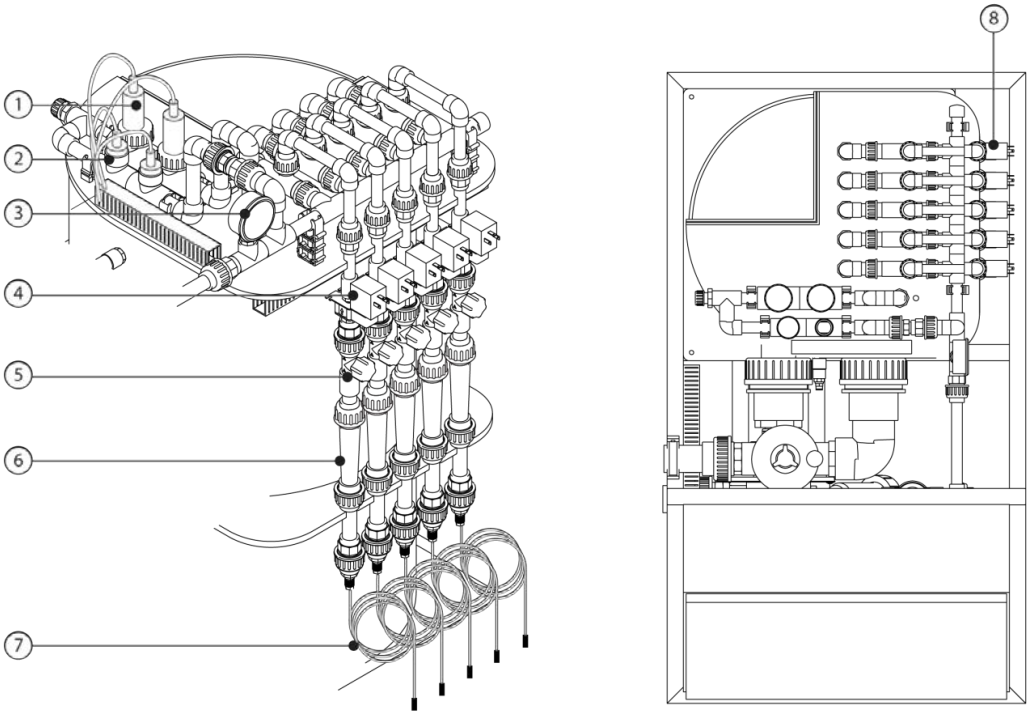


Figure 2-6 *Dosing module and measurement module*

No.	Description	Part of
1	pH control sensor and pH verification sensor	Measurement module
2	EC control sensor and EC verification sensor	
3	Pressure gauge after filter, 0.0 - 2.5 bars -> 2.2 bars	
4	Dosing valve	Fertilizer dosing channel
5	Needle valve	
6	Sight glass of venturi flow meter	
7	Suction hose with filter[1]	
8	Optional acid dosing channel, recognizable by location and different colour sight glass	

[1] If necessary, shorten the included suction hoses or replace them by hoses of a different length and/or diameter

Dosing channel

The figure below shows the components of the dosing channel.

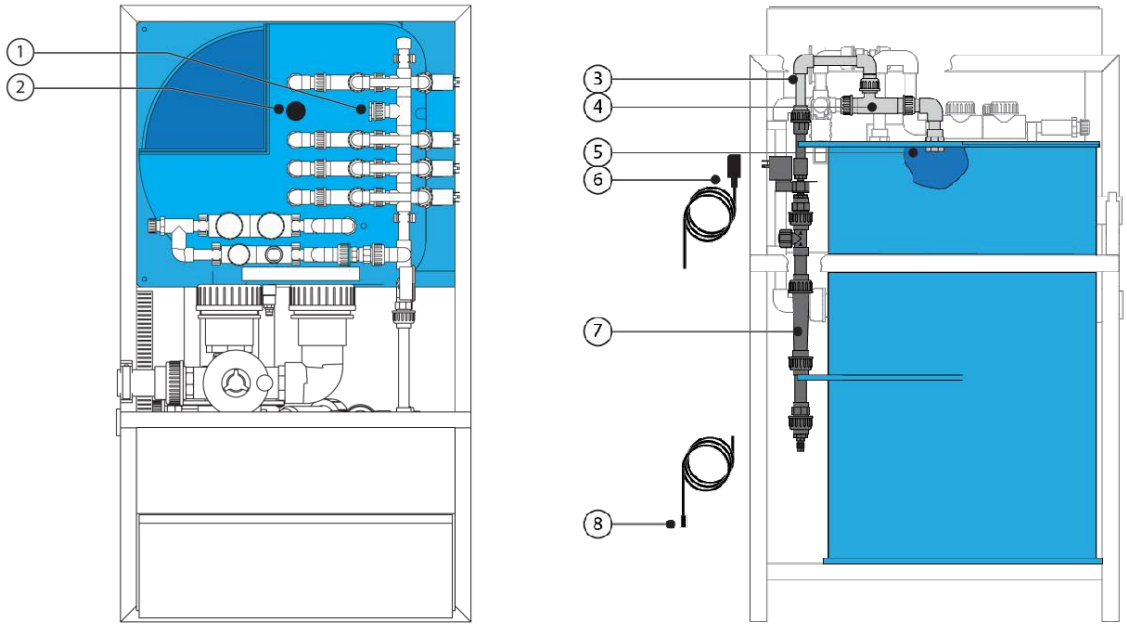


Figure 2-7 *Dosing channel components*

No.	Description	No.	Description
1	Sealing cap of dosing module	5	Connection in the mixing tank
2	Protective cap of mixing tank	6	Dosing valve cable
3	Coupling piece of dosing module	7	Sight glass
4	Venturi	8	Fertilizer/Acid supply pipe

More information on dosing modules:

Component	Specifications
Capacity of dosing channels [l/h]	80

2.3.6 Pumps

The FertiMiX-Go! is suitable for use with two models of pumps:

- Lowara 10HM03S 22T 2.2kw 3x230/400V 50Hz
- Lowara 10HM03S 22T 2.2kw 3x230/400V 60Hz

2.3.7 I/O modules

The FertiMiX-Go! uses I/O modules called Smart Switches. Smart Switches are the (manual control) switches used for the HortiMaX-Go! process controller. These switches are equipped with an electrical circuit, a processor and software.

The following table below provides an overview of the different types of I/O modules:

Module type	When relevant
Weather/Alarm Smart Switch	Always.
System pump Smart Switch	Always.
Filling pump Smart Switch	If a filling pump is used to fill the mixing tank.
EC Smart Switch	If fertilizers are dosed based on an EC measurement.
EC pre-blending Smart Switch	If multiple types of supply water are pre-blended based on an EC measurement.
pH Smart Switch	If acid is dosed based on a pH measurement.

Other types of Smart Switches are not part of the FertiMiX itself, but can be supplied as accessories. See section "Peripheral equipment and accessories" on page 20 for more information.

Figure 2-8: *Example of a Smart Switch I/O module*

For more detailed information, please refer to the following documentation:

- "160087 Insert HMX5091 Smart Switch pH"
- "160088 Insert HMX5092 Smart Switch On Off"
- "160094 Insert HMX5102 Smart Switch EC"
- "160095 Insert HMX5103 Smart Switch Weather Alarm"

2.4 Control

The FertiMiX-Go! is controlled by an integrated process controller that has its own operating system, called the HortiMaX-Go!.

2.4.1 HortiMaX-Go!

The HortiMaX-Go! is an affordable, user-friendly control computer designed specifically for the horticultural sector. With the HortiMaX-Go!, you can control both the irrigation and the climate inside your greenhouse. The HortiMaX-Go! is easy to customize by choosing unique Smart Switches that can be installed in a plug-and-play manner.

The HortiMaX-Go! is also a breeze to operate using its touchscreen display. In combination with the CloudBoX and the HortiMaX-Go! app, you can even operate the HortiMaX-Go! remotely with your smartphone. You can manage your CloudBoXes, controllers and app users on our CloudPortal.

> For more information about the HortiMaX-Go!, please refer to the documentation included or the online help (help.hortimax-go.com).

2.5 Individual components

This section provides an overview of spare parts and extra options, and peripheral equipment and accessories that are available to order.

2.5.1 Spare components and extra options

Item number	Name	Description
74181801	Acid dosing channel 80 L/hour, 50 Hz	Including sensor and Smart Switch
74181811	Acid dosing channel 80 L/hour, 60Hz	Including sensor and Smart Switch.
74181802	Additional dosing channel 80 L/hour, 50 Hz	Up to three additional dosing channels can be installed on the FertiMiX-Go!
74181812	Additional dosing channel 80 L/hour, 60Hz	Up to three additional dosing channels can be installed on the FertiMiX-Go!.
74181803	EC verification sensor	EC verification sensor (maximizes the reliability of EC dosing)
74181804	pH verification sensor	pH verification sensor (maximizes the reliability of pH dosing)
74181805	Thermal cut-out	FertiMiX-Go! thermal overload protection for the pump
74181818	Filling pump	FertiMiX-Go! filling pump, 3 x 230 V/50 Hz
74181819	Filling pump	FertiMiX-Go! filling pump, 3 x 230 V/60 Hz
74181820	Filling pump	FertiMiX-Go! filling pump, 3 x 400 V/50 Hz

Item number	Name	Description
74181821	Filling pump	FertiMiX-Go! filling pump, 3 x 400 V/60 Hz
74181807	EC pre-blending	EC pre-blending including Smart Switch (Also required: filling pump and EC sensor)
20800400	Meteo (Weather) + Alarm Smart Switch	
20801200	System pump Smart Switch	
20801300	Filling pump Smart Switch	
20801510	EC Smart Switch	
20801520	EC pre-blending Smart Switch	
20801610	pH Smart Switch	

2.5.2 Peripheral equipment and accessories

Item number	Name
30517600	Meteo-Go! Weather station
04004100	PVC T-piece D40/DN32 PVC T-piece for F15-P0 (40mm) 1.6 - 14 m³/h
04004000	Flow meter F15 flow meter P51530-P0
32002610	CAT5 E cable Only available in 305-metre length
20810200	Valves cabinet Equipped with eight-valves card (24 VAC) Includes Valves Smart Switch (2 amps)
20810100	Valves cabinet Equipped with eight-valves card (24 VAC) Includes Valves Smart Switch (2 amps)
20801700	Valves Smart Switch Eight valves (2 amps), two start contacts
20800420	MTV-Go! Smart Switch

2.6 Other product characteristics

The FertiMiX-Go! should include the following inspection certificates and stickers.

- Type plate
- Drawing plate
- Product plate
- Quality inspection sticker
- Component stickers

Consult your order confirmation for the exact specifications of your product.

Retain a copy of the order confirmation with this manual; that way, you will always have the right specifications to hand.

2.6.1 Inspection plates

Your FertiMiX-Go! comes with various inspection plates. You will find these on the inside of the cabinet.

All plates include the following information:

- Company name, address and logo of Ridder Growing Solutions
- Product name and type
- CE marking and disposal logo

Type plate

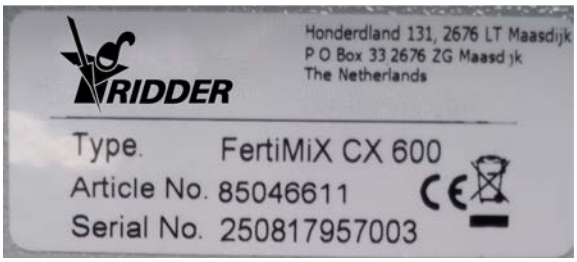


Figure 2-9: *Example of type plate*

The type plate states:

- Item number
- Serial number

Drawing plate

Figure 2-10: *Example of drawing plate*

The drawing plate states:

» Drawing number

Product plate

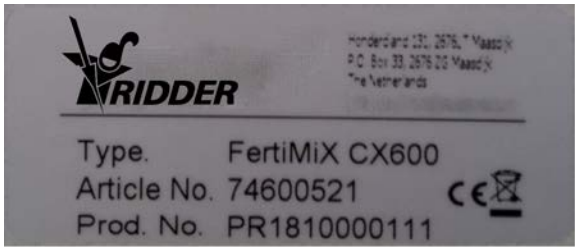


Figure 2-11: *Example of product plate*

The product plate states:

» Production number

2.6.2 Quality control

Every Ridder Growing Solutions is checked and tested for correct operation before shipment. The corresponding certificate can be found in the documentation included with the unit.

When the FertiMiX-Go! has been checked, it is labelled with a control sticker. You will find this sticker on the inside of the cabinet.

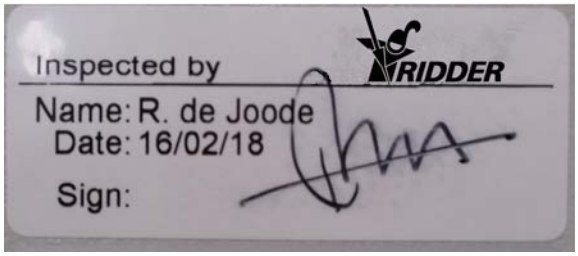


Figure 2-12: *Example of control sticker*

The stickers shows:

» Name of inspector
» Date inspected
» Inspector's signature

i	Please contact Ridder Growing Solutions if this label is missing.

2.6.3 Component stickers

You will find an identification sticker on the main components of the FertiMiX-Go!. The following table below provides an overview:

	English
P1	Filling pump

	English
P2	System pump
EC (no)	Fertilizer (no)
pHz	Acid
pHl	Alkali (Lye)
KM	Pre-blending valve
	Filling valve
pH	Control sensor
pH	Verification sensor
EC	Control sensor
EC	Verification sensor
DS	Pressure system pump
DV	Pressure filling pump
DEC	Pressure to venturies
EC	Pre-blending EC sensor
Pipe	Drain water suction pipe
Pipe	Fresh water suction pipe
Pipe	Pressure pipe
Pipe	From filling pump

Your system may not necessarily include every sticker listed.

2.6.4 Guidelines and standards

The FertiMiX conforms to the essential requirements of the guidelines mentioned below, and their adaptation guidelines.

Guidelines:

- EMC Directive 2014/30/EU
- Low Voltage Directive 2014/35/EU
- Machine Directive 2006/42/EC

The following standards have been consulted to evaluate conformity:

- NEN-EN-IEC 62368-1:2014 en
- NEN-EN-IEC 61000-6-1:2007 en
- NEN-EN-IEC 61000-6-3:2007 en
- NEN-EN-ISO 12100:2010 en
- NEN-EN-IEC 60204-1:2006 en
- NPR-CEN Guide 414:2014 en

2.7 Packaging, storage and shipment

2.7.1 Packaging

The FertiMiX-Go! is shipped in one or more large pieces and includes a number of boxes containing separate components.

2.7.2 Transport

To prevent damage during transport, certain components are shipped separately. Make sure that these components are installed correctly.

Please consider your own safety and that of others when loading, unloading and moving the unit.

Be particularly mindful of the risk of the unit falling or sliding accidentally. Only use vehicles that are suitable for transporting the FertiMiX-Go!. Please take into account the weight and centre of gravity of the FertiMiX-Go! during transport.

The dimensions of the " Basic configuration" on page 11 are provided in section FertiMiX-Go!.

2.7.3 Storage

Store the product and the separate components in a dry and dust-free environment. Do not expose products to direct sunlight. Keep the various components in their original packaging for as long as possible. Section "Installation requirements" on page 28 provides a complete overview of the requirements for installing the FertiMiX-Go!.

Please also read the warning in section "Connecting pH sensor" on page 33. This warning applies specifically to the transport and storage of the pH sensor.

2.8 Recycling and disposal

When the FertiMiX-Go! has reached the end of its service life, you should dispose of it yourself.

Bear in mind that the pipes may still contain fertilizer residues.

Steps for pumping the pipes empty:

1. Pump the residual fertilizer into labelled containers.
2. Rinse the pipes with plenty of water.
3. Dispose of the containers in the prescribed manner.

Dispose of the containers in accordance with the applicable regulations in your country. Consult the safety data sheets provided by the producers of the substances or equipment you are disposing of and follow the safety instructions specified. Also see the chapter "Safety" on page 26.

3 Safety

This section describes the safety requirements and precautions to be taken. When installing, using and removing the FertiMiX-Go!, you must comply with the safety requirements and instructions, and take the correct safety measures.

> Before installation and use: read and make sure that you have understood this manual and the accompanying documents, so that you are aware of the operating and safety instructions.

The dealer and user must also be familiar with the requirements relating to the positioning of the FertiMiX-Go!. See the section "Installation requirements" on page 28 for this.

3.1 General safety requirements

The FertiMiX-Go! unit is subject to the following general safety and regulatory requirements:

- Make sure that everyone who works with the FertiMiX-Go! has received adequate training and is familiar with the safety requirements.
- Always take prompt and appropriate action in response to warnings and notifications.
- Replace broken or malfunctioning components as soon as possible.
- Only use original components to perform repairs or replacements. Please refer to the current price list or contact the dealer. In the section "Spare components and extra options" on page 19 you can find the items numbers of components that can be reordered.
- It is not permitted to modify the system in any way. Unauthorized modifications can cause serious harm to personnel, the FertiMiX-Go! or the crop.

3.2 Chemical substances

When using chemical substances, such as acid and fertilizers, please take note of the following points:

- When working with chemical substances, take additional precautions to ensure your own safety and that of others in the vicinity.
- Make sure that you have access to an eye wash station and you know where it is located.
- Consult the safety data sheets provided by the producers of the chemical substances and follow the safety instructions provided.
- Make sure that there is adequate ventilation around the FertiMiX-Go! to prevent any adverse health effects from escaping vapours.
- When diluting chemical substances, always add the chemical substance to the water and not the water to the chemical substance.

Please exercise caution when working with acid.

If you want to use a supply pipe for a different chemical substance, make sure to check the following:

» Clean the supply channel before use if there is any risk that the original substance and replacement substance will react with one another.
» Check whether the material that the channel is made of is suitable for the intended chemical substance.

Keep a copy of the safety data sheets of the fertilizers used and other chemicals used with the FertiMiX-Go!.

3.3 Personal protective equipment

If PPE should be used, this will be indicated at the relevant location. Also see section "Pictograms" on page 6.

3.4 Emergency stop

In the event of an emergency: switch off the FertiMiX immediately.

The power switch is located on the FertiMiX-Go! cabinet.

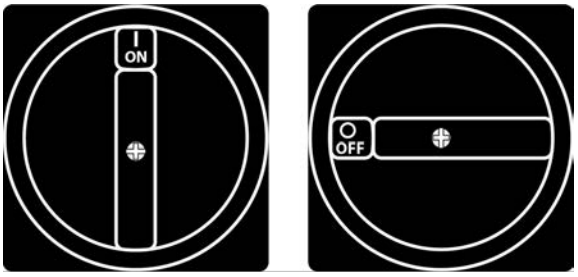


Figure 3-1: *The power switch*

Turn the power switch to the 0 (off) position to switch off the FertiMiX-Go!.

4 Installation

This section is intended for the dealer of the FertiMiX-Go!.

This section describes the following subjects:

- Installation requirements
- Connecting the various components

In section "Step-by-step installation and commissioning instructions" on page 30 you will find an overview of the steps. Use the Appendix: "Checklist for step-by-step installation procedure" on page 62 to check that all steps have been completed.

4.1 Installation requirements

This section describes the requirements for installing the FertiMiX.

4.1.1 Dealer/installer requirements

The installation of the FertiMiX-Go! and the other components, together with the installation and configuration of the software, must be carried out by a qualified dealer. Ridder Growing Solutions considers a dealer/installer to be qualified if that person meets the following requirements:

The dealer:

- has a broad knowledge of installation technology (hydronic and electronic).
- can understand and carry out instructions in English.
- is familiar with the contents of this installation and user manual.

4.1.2 Installation requirements

The following requirements apply to installing the FertiMiX-Go! on site:

- Make sure that the FertiMiX-Go! is level
- Install the FertiMiX-Go! on a hard surface that is able to support its weight
- Install the unit in a dry, dust-free location (1)[1].
- Check the ambient temperature. This should be between 5°C - 30°C (41°F - 86°F) (2).
- Check the relative humidity (RV). This may not exceed 85%, without condensation (3).
- Make sure that the unit is not exposed to dripping or splashing water.
- Avoid exposure to direct sunlight (5).
- Avoid exposure to hazardous substances (6).
- Avoid exposure to unnecessary vibrations (7).

[1] The numbers refer to the numbers in Figure 4-1.

- Make sure that there is sufficient ventilation due to the possible accumulation of harmful vapours (8).
- Make sure that there is sufficient light to operate and maintain the unit.
- Make sure that there is sufficient space around the unit to operate and maintain it.
- To prevent damage during transport, certain components are shipped separately. Make sure that these components are installed correctly.

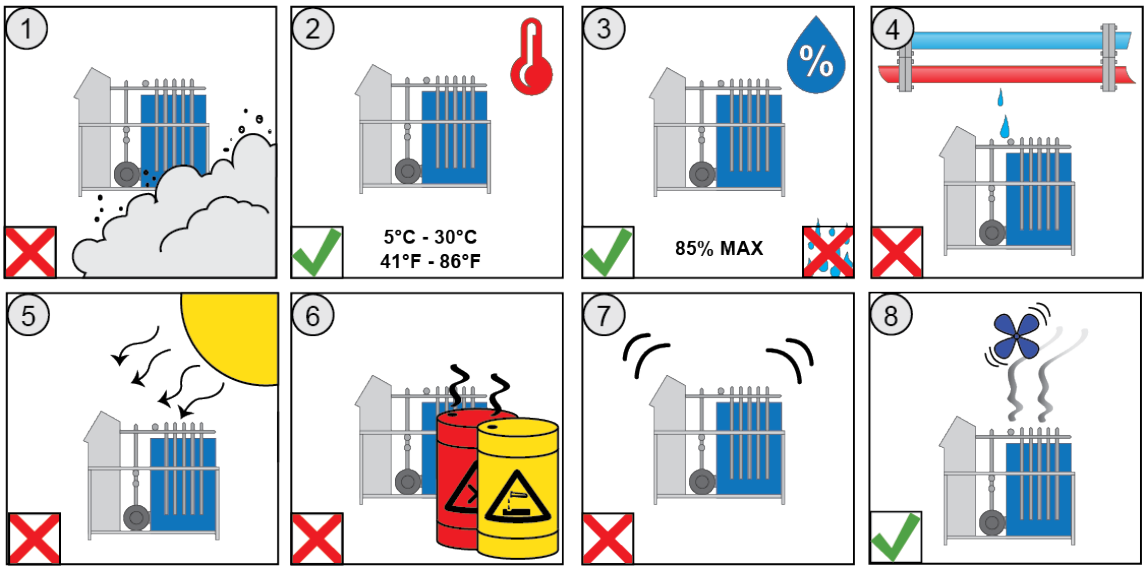


Figure 4-1: *Illustrations showing installation requirements*

4.1.3 Water installation requirements

The installation requirements are as follows:

- Make sure that you have the correct piping.
  Install and use materials as defined in the ISSO 87 publication (Quality requirements for water systems in greenhouses).
- Fill the suction pipes fully with water and bleed them of air before using for the first time.
- Prevent pressure loss by using the correct diameter pipes in relation to the length of the unit and the altitude of the installation site.
  If an automatic filter is used, bear in mind the extra amount of flush water required.
- If an external filling pump or pressure pipe is used, make sure to commission these correctly.
  Bear in mind: risk of overflow, batch or continuous process, distance between pump and unit, minimum flow pressure of 0.7 bar.
- If water is supplied under pressure, install a pressure reduction valve and set it to a maximum of 0.5 bar.
- Ensure that the pressure pipe(s) is (are) the correct diameter in relation to the distance to the field or tank.

» Minimize pressure losses and ensure that the filter discharge pipe(s) is (are) the correct diameter in relation to the distance to the discharge point. Take extra care if using a self-cleaning screen filter.

» If using a self-cleaning filter, make sure that there is enough free space to open or remove the internal filter.

4.1.4 Electrical installation requirements

The requirements are:

» Ensure that there is a stable power source.
» Ensure that there are sufficient extra plug sockets near the unit to operate, maintain and install it.
» Ensure that the equipment and the electricity network is grounded (earthed).

4.2 Step-by-step installation and commissioning instructions

The overview below provides a step-by-step plan. You can follow this when installing and configuring the FertiMiX-Go!.

No.	Step	Section to see for this
Installation		
1	Water installation » Connect the FertiMiX to the water inlet and outlet pipes. » Connect the supply hoses for fertilizers (and acid) to the dosing channels.	"Connecting water supply (hydronic installation)" on the facing page.
2	Electrical installation » Connect the power supply, network cable, external meters and valves.	"Connecting electrical components" on the facing page.
3	Where applicable: connect the extra dosing channels, sensors, filling pump and/or I/O modules.	"Installing other components" on page 32.
Commissioning		
4	Use the latest version of the HortiMaX-Go! software.	"Updating software" on page 35.
5	Check the software configuration.	"Software configuration" on page 36.
6	Check the software settings.	"Software settings" on page 39.
7	Calibrate the EC and pH sensors.	"Calibrating the sensors" on page 40.
8	Pressurize the FertiMiX.	"Pressurizing the FertiMiX" on page 41.

No.	Step	Section to see for this
9	Using the dosing channels for the first time » Test the dosing channels by irrigating briefly using the fertigation recipe. » Place the suction hoses in the correct fertilizer tank/acid tank. » Make sure that the fluid levels in all dosing channels are the same and operating at the capacity specified.	"Using the dosing channels for the first time" on page 42.
10	Test the FertiMiX by irrigating for a short time.	"Testing the FertiMiX" on page 43.

Use the Appendix: "Checklist for step-by-step installation procedure" on page 62 to check that all installation steps have been completed.

4.3 Connecting water supply (hydronic installation)

Complete the following steps to connect the FertiMiX to the water supply:

1. Remove the dummy pipes from the inlet and outlet of the FertiMiX. These are only included for transportation purposes.
2. Connect the FertiMiX to the water inlet and outlet pipes.
3. Connect the supply hoses provided for the fertilizers (and acid) to the dosing channels.

The FertiMiX-Go! is built using metric units of measurement; adaptors for imperial units are also delivered as standard.

4.4 Connecting electrical components

The electrical components include all the components that must be connected to provide the FertiMiX and connected equipment/accessories with electricity and digital information. This includes: the power cable, network cables, pipes and switches.

To connect the electrical components, complete the following steps:

1. Make sure that the supply voltage corresponds to the design specifications of the FertiMiX-Go!. If this is not the case, please contact Ridder Growing Solutions.
2. Make sure that the power switch is set to 0 (off).
3. Make sure that the FertiMiX pump has been switched off manually.
4. Connect the supply voltage according to the wiring diagram provided.
5. Connect the external meters and valves according to the wiring diagram.
6. Set the power switch to position I (on). See the "Power switch" on page 44 section.

4.5 Installing other components

During the initial installation and commissioning of the FertiMiX-Go!, the components listed below will usually already be connected. However, it is also possible to add and connect these components to the FertiMiX later.

Before connecting components such as a dosing channel or sensor, make sure that the FertiMiX is switched off.

4.5.1 Connecting dosing channel

Since a dosing channel is always supplied preassembled, you only need to tighten up the screw couplings.

Use the dosing channels that have already been installed as an example.

To connect an extra or new (acid) dosing channel, complete the following steps:

1. Make sure that there is no water pressure in the FertiMiX.
2. Remove the black protective cap on the mixing tank
3. Unscrew the sealing cap of the dosing street
4. Put the new dosing channel in place.
5. Tighten all the screw couplings securely.
6. Connect the wiring terminal block to the dosing valve.
7. Route all the wiring to the cabinet (follow the already connected wiring)
8. Connect the wiring according to the included wiring diagram.

An acid dosing channel should be connected to the last channel of the dosing module.

Depending on the pH, different material is used for an acid dosing channel.

4.5.2 Connecting EC sensor

One or two EC sensors can be connected to the FertiMiX-Go!. If two sensors are connected, the first sensor in the direction of water flow is the control sensor, and the second sensor is the verification sensor (also see section "Measurement module (sensors)" on page 14).

To connect an extra or new EC sensor, complete the following steps:

1. Make sure that there is no water pressure in the FertiMiX.
2. Unscrew the sealing cap at the location where the sensor will be connected.
3. Place the sensor in the hole.
4. Connect the wiring according to the included wiring diagram.
5. Calibrate the sensor See section "Calibrating the sensors" on page 40 for explanation.

You can find more information in the OEM manual provided with the EC sensor.

4.5.3 Connecting pH sensor

Zero, one or two pH sensors can be connected to the FertiMiX-Go!. If two sensors are connected, the first sensor in the direction of water flow is the control sensor, and the second sensor is the verification sensor (also see section "Measurement module (sensors)" on page 14).

To connect an extra or new pH sensor, complete the following steps:

1. Make sure that there is no water pressure in the FertiMiX.
2. Unscrew the sealing cap at the location where the sensor will be connected.
3. Remove the protective cap from the sensor.
4. Place the sensor in the hole.
5. Connect the wiring according to the included wiring diagram.
6. Calibrate the sensor See section "Calibrating the sensors" on page 40 for explanation.

You can find more information in the OEM manual provided with the pH sensor.

> **!** A pH sensor must not be allowed to dry out. The pH sensor is kept moist during transport and storage with a protective cap containing water. Remove this cap before use and place the sensor back into it if the FertiMiX-Go! is not in use for an extended period.

4.5.4 Connecting the I/O modules

To connect the I/O modules (Smart Switches), you need to set the DIP switch addresses. If you have one or more Valves Smart Switch(es), these must first be installed in the FertiMiX cabinet or the valves cabinet.

> **i** For more information about Smart Switches, please refer to the documentation included and the "Smart Switch inserts".

Valves Smart Switch

The Valves Smart Switch (called "Smart Switch Valves" in the price list) needs to be installed in a valves cabinet or the FertiMiX cabinet.

Valves Smart Switch in valves cabinet

1. Make sure that the valves cabinet has been installed in a suitable location.
2. Install the Smart Switch(es) in the valves cabinet.
3. Connect the valves cabinet to the FertiMiX cabinet.
4. Connect the Smart Switch as described in the "160211 HortiMaX-Go! Installation Manual".

Smart Switch Valves in FertiMiX cabinet

1. Install the Smart Switch(es) in the FertiMiX cabinet.
2. Connect the Smart Switch as described in the "160211 HortiMaX-Go! Installation Manual".

DIP switch

Up to 32 Smart Switches can be connected to the HortiMaX-Go!. The first step is to assign addresses to the Smart Switches. Each Smart Switch requires a unique address. This address is set using the DIP switch. By moving the small toggle switches (or 'DIPs') up or down, you can set a binary number that will be used as the Smart Switch address.

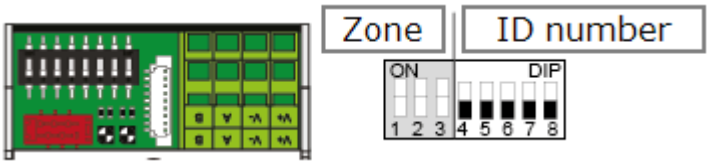


Figure 4-2: *DIP switch*

DIP switches 4, 5, 6, 7 and 8 determine the unique address or ID number of the Smart Switch (called 'DIP switch position' in the software). Each ID number may only occur once for a particular HortiMaX-Go!.

Using the address list provided, you can set a unique address or DIP switch position for each Smart Switch. Place the product sticker of the Smart Switch in an empty spot on the address list. Then adjust the DIPs up or down so it matches the chosen address on the adress list.

5 Commissioning

This section is intended for the dealer of the FertiMiX-Go!.

This section describes how to commission the FertiMiX. Commissioning involves the following steps:

- Updating software
- Configuring software
- Entering software settings
- Calibrating the sensors
- Pressurizing the FertiMiX
- Using the dosing channels for the first time
- Testing the FertiMiX

Ridder Growing Solutions advises you to complete the configuration and set up the software in consultation with the grower.

5.1 Updating software

Ridder Growing Solutions advises you to use the latest version of the software. You can download the latest version from our online portal. If you do not have internet access, please contact Ridder Growing Solutions.

You can find the latest version of the software on the Ridder Growing Solutions portal.

To check whether you are using the latest version, complete the following steps:

- Open an internet browser.
- Enter the web address of the portal: **https://portal.support.hortimax.nl**

The portal opens.

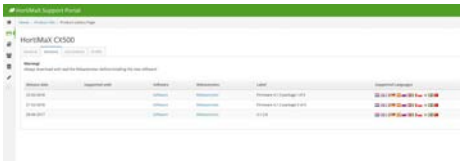
- Click the Login button.

The login screen appears.

- Enter your username and password.
- Click the Login button.

You are now logged in to the portal.

» Click the Product info button. (You can find product info in the menu on the left.)
» Select the software (HortiMaX-Go!) until you reach the **Product Gallery Page**.
» Click the *Versions* tab.



Here you can see the latest version of the software.

5.2 Software configuration

The FertiMiX-Go! is controlled by a HortiMaX-Go!. The HortiMaX-Go! is configured by your dealer.

For more information about the HortiMaX-Go!, please refer to the documentation included or the online help (help.hortimax-go.com).

If the HortiMaX-Go! is reset to factory settings, then complete the steps in this section ("Software configuration" above) and the section "Software settings" on page 39 to configure the HortiMaX-Go!.

When starting up the HortiMaX-Go! for the first time, you need to select the display language, the unit of measurement and the components that are present. This is explained in the next sections.

5.2.1 New start

When you start up the system for the first time, you will be taken to the start-up menu. Here you set the display language and the unit of measurement.

If you need to change the unit of measurement in the future, this is only possible by restoring the HortiMaX-Go! back to the factory settings. This will delete your user history.

EXAMPLE

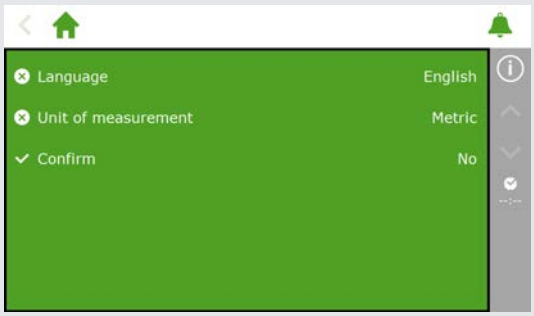


Figure 5-1: *Start-up menu*

» Tap the *Language* setting. A pop-up menu appears.
  » Select the desired language.
  » Tap the Confirm icon '☑'.
» Tap the *Unit of measurement* setting. A pop-up menu appears.
  » Select the desired unit of measurement.
  » Tap the Confirm icon '☑'.
» Tap the *Confirm* setting. A pop-up menu appears.
  » Select Yes.
  » Tap the Confirm icon '☑'.

You have completed the necessary steps in the start-up menu. The scanning screen opens automatically.

5.2.2 Scanning

The control switches of the HortiMaX-Go! are called Smart Switches. To operate correctly, the system needs to know which Smart Switches are present. For this reason, you need to scan the system. You can do this using the scanning screen. This screen opens automatically when you use your system for the first time.

To open the scanning screen manually, proceed as follows:

» Tap the System Time icon '☑' to open the configuration screen.
» Navigate the path: ⌂ › 1 › 1 › 1 › ⚙.

Initially, the scanning screen is empty. This means that no Smart Switches have yet been detected.

» Tap the Scan icon '▶'.

The system now starts scanning for Smart Switches. Once scanning is complete, all Smart Switches detected in the system will appear.

EXAMPLE

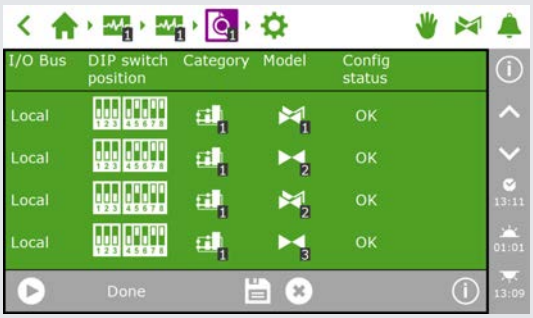


Figure 5-2: *Smart Switches found in the system.*

If Smart Switches are found that are not used or connected, you need to remove these from the configuration.

The system automatically configures eight valves and eight valve groups for every Valves Smart Switch. Remove any valves and valve groups that you are not going to use. However, keeping one extra valve group may be useful for the occasional application of irrigation starts with different settings.

You can remove a Smart Switch from the configuration by changing its configuration status. You do this as follows:

» Tap the Smart Switch that you want to disable/remove. A pop-up menu appears.
» Select the desired status.

The status has been changed.

If necessary, you can restore the previous configuration status. To do this, repeat the above steps and then select the 'Restore' status.

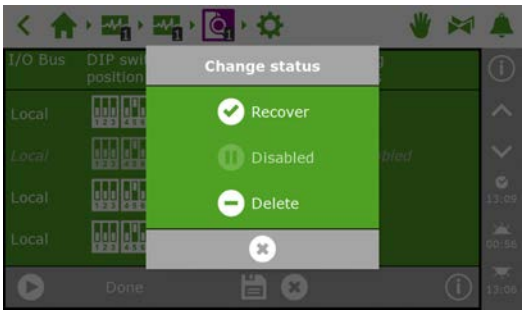


Figure 5-3: *Changing status*

Once you have checked all the components and made sure that the configuration is correct, tap the Save icon '💾'. The system updates the configuration automatically and then takes you to the home screen.

5.3 Software settings

After scanning is complete, the system is updated with all the functions necessary to control the climate and irrigation equipment in your greenhouse. (These functions are collectively referred to as the controls.) A number of software settings and control requirements have been preset. To access the software settings, tap the system time icon '  '.

Figure 5-4: *Tap the System Time icon to open the configuration menu.*

To access the software settings, navigate this path:  .

The following settings are required:

- **Time** Required for time-related settings, such as: *system date/time* , *time format* and *time zone*.
- **Location** The system's location is necessary in order to determine the sunrise and sunset times.
- **Network address** If a network is required, you need to check your network settings.
- **Physical components** Various controls have purple tiles representing the physical components.

For more information about the HortiMaX-Go!, please refer to the documentation included or the online help (help.hortimax-go.com).

K-FACTOR

If the main pipe has been fitted with a flow sensor, you will need to set the 'K-factor' (pulse/litre). Follow the instructions provided with the sensor to install the sensor correctly and to determine the K-factor.

To set the K-factor, navigate this path:  .

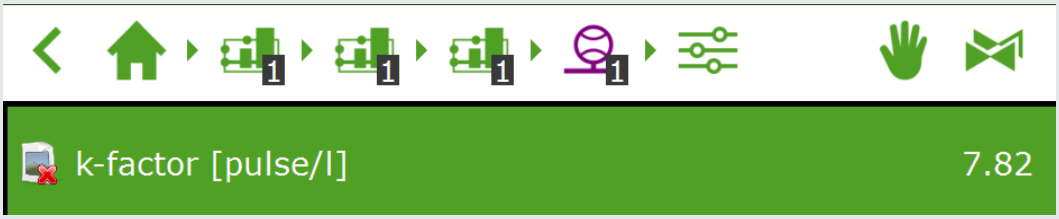


Figure 5-5: *The set K-factor*

5.3.1 Irrigation control

You also need to set up the following in the software:

- Assigning valves to valve groups
- Valves simultaneously
- Periods
- Volume and duration
- Dosing fertilizers and acid
- Pre- and post-flushing
- Start requirements

More information about using and setting up the irrigation program can be found in the section "Assigning valves to valve groups" on page 46.

5.4 Calibrating the sensors

The sensors need to be checked regularly in order to ensure accurate measurements. This must be done at least once per year. If the measurements taken by the verification sensor deviate from those of the control sensor, you need to calibrate the sensors.

The calibration process requires special calibration solutions. To calibrate an EC sensor, you will need EC 1.4 and EC 5.0 solutions. To calibrate a pH sensor, you will need pH 7.0 and 4.0 solutions. The order in which the solutions need to be used is fixed and may not be reversed.

When calibrating the pH sensor: Check whether the water is acidified based on alkali (lye) or acid. The default setting is based on acid.

5.4.1 Calibration steps

The calibration process involves a few simple steps; the controller will describe the steps that you need to carry out.

Make sure that you have a bucket of clean tap water to hand.

Navigate the path for the sensor that you want to calibrate.

» Calibrate EC sensor:  .

» Calibrate pH sensor:  .

Before taking each measurement, rinse the sensor with the clean tap water and dry it off gently. Blow away any residual moisture.

Make sure to keep stirring the sensor during the wait time. This ensures that the solution will remain homogeneous.

The measured values are not displayed during the calibration process, because the values are still fluctuating. A readout will, however, appear in the step between the two calibration solutions. This readout may differ slightly from the final value, because the calibration process is not yet complete.

5.5 Pressurizing the FertiMiX

To pressurize the FertiMiX, complete the following steps:

5.5.1 Step-by-step instructions

To pressurize the FertiMiX-Go!, complete the following steps:

1. Switch the FertiMiX pump to manual mode (see the section "Operating the main FertiMiX pump" on page 44).
2. Adjust the water supply (see the section "Water supply and pressure" on the next page).
3. Set the correct water pressure to the venturis (see the section "Water supply and pressure" on the next page).
4. Remedy any leaky couplings or other leaks.

PUMP PRECAUTIONS

To prevent damage to the FertiMiX pump, the FertiMiX will stop and generate the following alarm message:

» Pump overheating.

As an option, the FertiMiX pump can be fitted with a temperature sensor. This sensor produces an alarm when the water around the pump gets too hot.

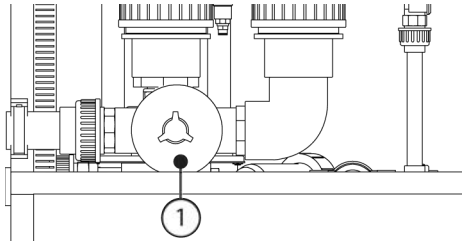
Consult the manual of the FertiMiX pump to check the pump's direction of rotation and bleed air from the pump.

5.5.2 Water supply and pressure

You need to adjust the water supply and set the water pressure to the venturis.

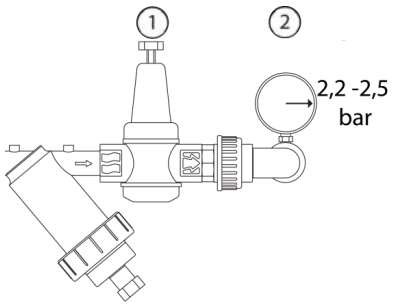
Adjust the water supply

Turn the knob on the float valve (1) to adjust to the water supply.



Set the correct water pressure to the venturi

Turn the adjustment screw (1) until the pressure gauge (2) after the filter displays 2.2 bars. This is the pressure on the venturis.



5.6 Using the dosing channels for the first time

Ridder Growing Solutions advises you to test the FertiMiX first with water, before using fertilizers and/or acid.

To prepare the dosing channels for use, complete the following steps:

1. Place the suction hoses into a bucket of fresh water and submerge them completely.
2. Test the dosing channels by irrigating briefly using the fertigation recipe.
3. Check the water pressure on the venturis (see "Water supply and pressure" above).
4. Check for leaks. Rectify any leaks found.
5. Place the suction hoses in the correct fertilizer tank/acid tank.

Please exercise caution when working with acid.

5.6.1 Even fertilizer dosing

Due to differences in viscosity, some fertilizers may flow through the venturi faster than others. This can cause uneven dosing. This can be prevented by further opening or closing the needle valves. This ensures that the liquid levels in all dosing channels are the same and operating at the preset capacity. The fluid level can be read using the sight glass in the dosing channel.

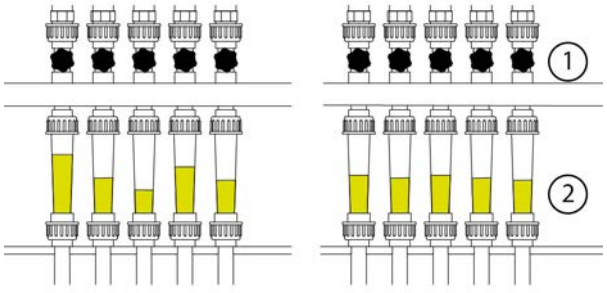


Figure 5-6: *Fertilizer dosing*

No.	Name	No.	Name
1	Needle valve	2	Sight glass / flow meter

5.7 Testing the FertiMiX

To test the FertiMiX, you can initiate a short irrigation cycle. Please check the following:

1. Is water being pumped into and out of mixing tank?
2. Is the system pump working without excessive noise?
3. Are fertilizers (and acid) being dosed? You can check this by looking at the sight glasses on the dosing channels.
4. Are the EC, pH and flow meters showing realistic values?
5. Are the EC and pH setpoints (target values) being achieved?
6. Is the right amount of water being irrigated?
7. Are there any alarms?

6 Operation

As soon as the dealer has prepared the FertiMiX-Go! for use, you can operate the FertiMiX-Go!.

This section first explains how to operate the power switch and the FertiMiX pump. After that, you will find instructions on how to operate the HortiMaX-Go! and set up the irrigation program.

6.1 Power switch

The power switch is located on the FertiMiX cabinet.

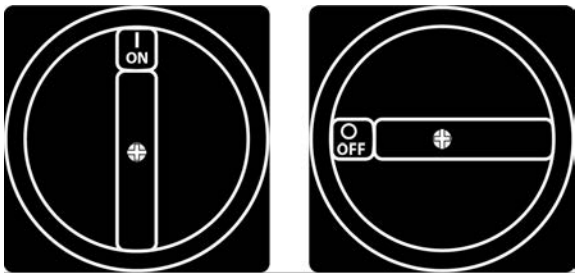


Figure 6-1: *The power switch.*

Operation:

- Turn to position I (on) to switch the FertiMiX on.
- Turn to position 0 (off) to switch the FertiMiX off.

> The power switch can also be used as an emergency stop. Turn the switch to the 0 (off) position to switch off the FertiMiX-Go! immediately.

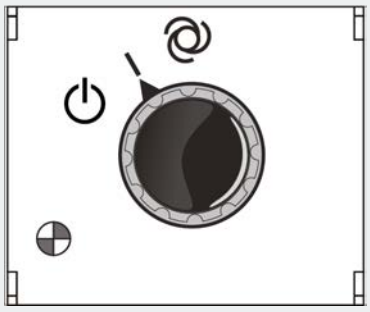
6.2 Operating the main FertiMiX pump

The knob to operate the FertiMiX pump is located on the cabinet. This knob has three modes of operation: off, manual and automatic.

FertiMiX pump off

In the off mode, the FertiMiX pump is switched off and cannot be activated by the controller. You can use this function to:

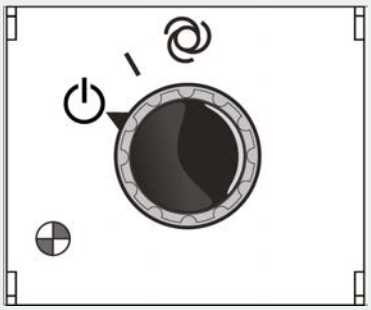
- stop the FertiMiX pump in an emergency situation;
- switch the FertiMiX-Go! off for a prolonged period of time.



FertiMiX pump manual

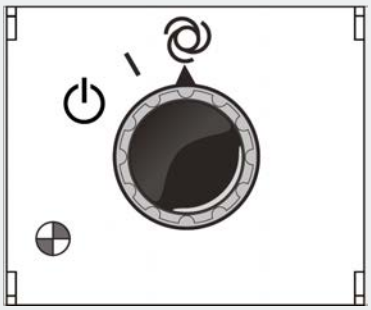
By switching the knob to 'manual' mode, the FertiMiX pump will begin to work. You can use this function to:

- test the pump operation;
- bleed the air from the pipes.



FertiMiX pump automatic

The automatic mode means that the FertiMiX-Go! is in operation. In this mode, the controller can switch the pump on and off automatically as needed.



6.3 Operating the HortiMaX-Go! (Quick Start Guide)

This section provides a brief description of how to operate the HortiMaX-Go!, the main settings of the irrigation program and the alarms. For more detailed information, please refer to the documentation included or the online help (help.hortimax-go.com).

You also need to set up the following in the software:

- Assigning valves to valve groups
- Valves simultaneously
- Periods
- Volume and duration
- Dosing fertilizers and acid
- Pre- and post-flushing
- Start requirements

6.3.1 The home screen

The main screen of the HortiMaX-Go! is the home screen. The home screen displays a number of fixed elements, such as the tiles, the top bar and the right sidebar.

The exact layout of the home screen depends on your configuration. The screenshot below shows what the home screen may look like on your system.

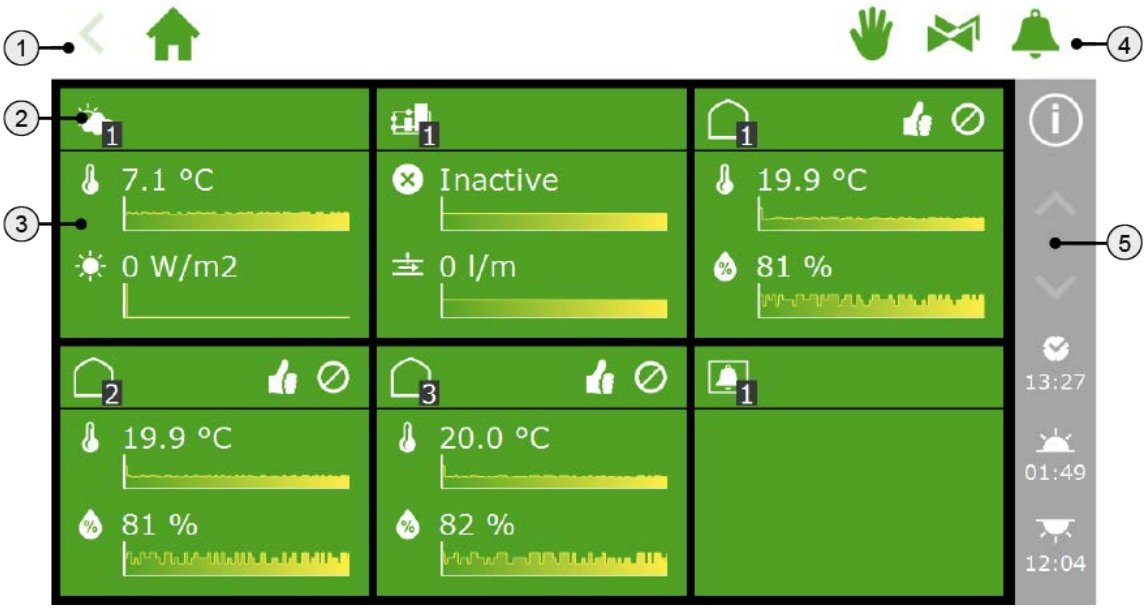


Figure 6-2: *HortiMaX-Go! home screen*

1. Top bar with the breadcrumb trail on the left-hand side.
   The breadcrumb trail shows your current location within the software.
2. Tile header
   The tile header contains the following information: the type of tile, the control mode and the control status.
3. Tile body with information
   The tile body shows readouts and trend graphs.
4. Top bar with, on the right-hand side, direct access to fixed position control, the valve group (manual start control) and the alarm screen.
5. Right sidebar
   The bar on the right-hand side of the screen provides access to a number of basic settings and functions, such as the help button '[i]'.

   Tap the help button to display a help screen with a QR code. Scan the QR code to access our online help.

6.3.2 Assigning valves to valve groups

The irrigation program works based on valve groups. A valve group consists of one or more valves including the start conditions and irrigation settings set for those valves. You set up the irrigation program for each valve group.

To assign valves to a valve group, navigate the following path (for each valve group): [home] › [1] › [1] › [1].

» Tap the Assign Valves to Valve Groups icon '[ ]'. A pop-up window appears.
» Select the valves that you want to assign to the valve group by tapping them. A white border appears around the selected valves.
» Tap the Confirm icon '[ ]'.

You have assigned valves to a valve group.

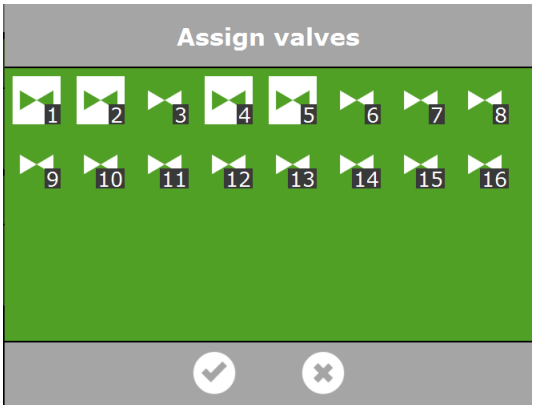


Figure 6-3: *Assigning valves*

The irrigation program enables you to use a separate valve group for each valve. This means that you can program fertigation recipes for each valve individually. It is also possible to assign a particular valve to multiple valve groups.

6.3.3 Valves simultaneously

Use the *Valves simultaneously* setting to specify how many valves may open simultaneously. To get to this setting, navigate this path:

» Tap the *Valves simultaneously* setting. A pop-up window appears.
» Enter the number of valves.
» Tap the Confirm icon '✓'.

You have set how many valves may open simultaneously.

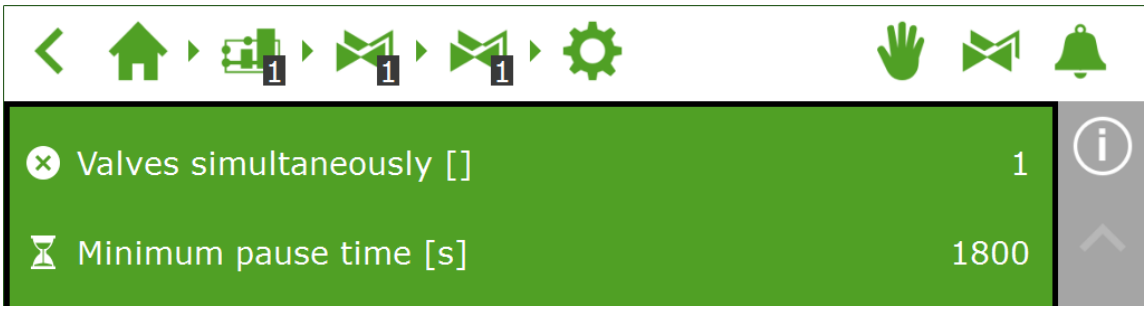


Figure 6-4: *The Valves simultaneously setting*

6.3.4 Periods

Use periods to vary target values throughout the day. You can set up to four periods per day.

You can set periods on the settings screen. To set the dosing ratios, navigate the following path:

» Tap a period at the top of the settings screen. The **Set periods** screen appears.

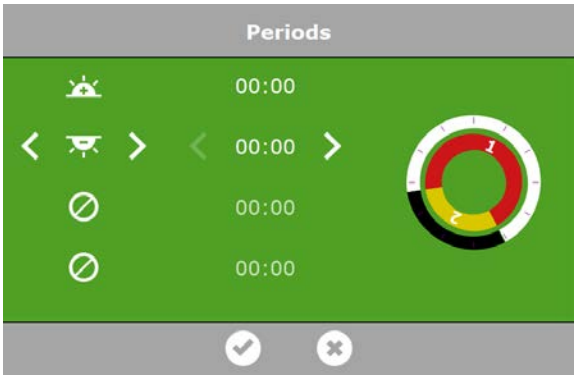


Figure 6-5: *Setting periods*

On the left-hand side of the **Set periods** screen, you can select the type of start time for a period. You can select a start time based on clock time, sunrise or sunset. The icons displayed have the following meaning:

	Start time based on clock time		
	Start time before sunrise (e.g. 1 hour before sunrise)		Start time after sunrise (e.g. 1 hour after sunrise)
	Start time before sunset		Start time after sunset

The circles on the right-hand side represent the 24-hour clock. The outer circle displays the day period in white and the night period in black. The inner circle displays the set time periods. Each period is represented by a coloured section containing a number.

!	If periods overlap, then the highest period number applies.

Figure 6-6: *Periods in 24-hour clock*

To set a period, proceed as follows:

» Select a time indication (clock time, sunrise or sunset).
» If applicable, enter a time.
» Tap the Confirm icon '✓'.

You have set a period.

If you delete periods, then the corresponding settings are retained. If you add these periods again, check whether the preset values are still applicable.

EXAMPLE

Setting day and night periods

» For period 1, select a start time after sunrise '☀'.
» For period 2, select a start time before sunrise '☾'.
» Tap the Confirm icon '✓'.

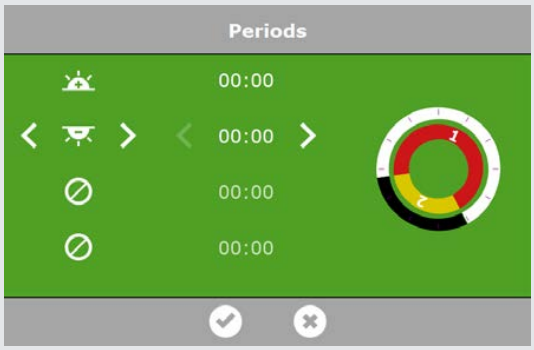


Figure 6-7: *Setting day and night periods*

6.3.5 Duration and volume

To start using the irrigation program, you need to set at least one of these values for a valve group for each period:

» Volume: the desired volume of irrigation (in litres). To use this setting, a flow meter (a flow sensor or water meter) is required on the main pipe.
» Duration: the amount of time that the valves will be open (in seconds).

You can set the volume and the duration on the settings screen for automatic irrigation. To set the dosing ratios, navigate this path:

If both volume and duration are set, then irrigation will stop as soon as the first target value (setpoint) is reached.

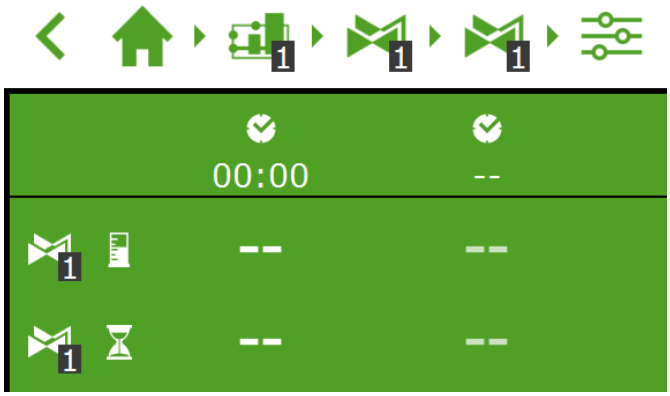


Figure 6-8: *You can set the volume and the duration for each predefined period.*

» Tap volume (or duration) in a period. A pop-up window appears.
» Set the volume in litres in (or the duration in seconds).
» Tap the Confirm icon '✓'.

You have set the volume (or duration).

6.3.6 Fertilizer and acid dosing

A pH Smart Switch is required in order to dose acid. You can use an EC Smart Switch for fertilizer dosing.

Use a Smart Switch EC to dose fertilizers based on EC.

If using more than one fertilizer when dosing fertilizer based on EC, you will need to set the dosing ratio.

The HortiMaX-Go! supports up to four fertilizer dosing channels. To set the number of fertilizers, navigate this path: .

If you have agitators in your fertilizer tanks, the settings to control the agitators can be found under:

.

This requires an Agitator Smart Switch.

EC and pH dosing

You can set the EC and pH target values on the settings screen for automatic irrigation. To set the dosing ratios, navigate this path: . The EC and pH settings are listed at the bottom; use the arrow down button to get to these settings.

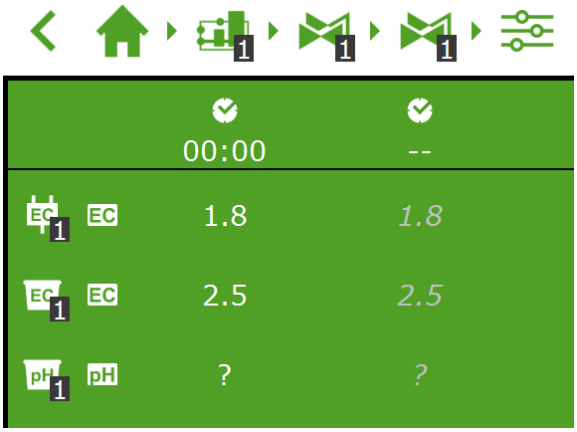


Figure 6-9: *You can set the EC and/or the pH target values for each predefined period.*

» Tap EC or pH in a period. A pop-up window appears.
» Set the EC target value in mS/cm, or the pH target value.
» Tap the Confirm icon '✓'.

You have set the EC and/or pH target values.

Dosing ratio

If more than one fertilizer is used, you can set the dosing ratio of each fertilizer. To get to this screen, navigate the following path: .

By default, the irrigation program uses the same ratio for all available fertilizers.

» Tap one of the *Fertilizer ratio* settings (for example, 'Ratio fertilizer 1') A pop-up window appears.
» Enter a percentage.
» Tap the Confirm icon '✓'.

You have entered a fertilizer ratio.

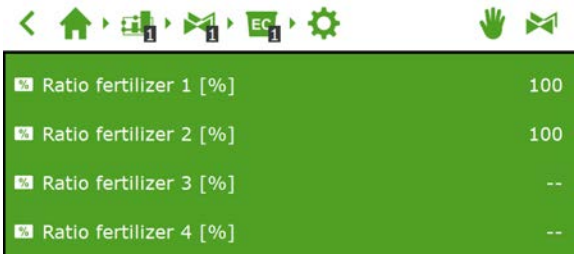


Figure 6-10: *Dosing ratios of fertilizers*

If you want to set a different dosing ratio for a valve group in different periods, then create a new valve group and link the same valves to it. This enables you to set a different dosing ratio for this new valve group.

6.3.7 Pre-flushing and post-flushing

An irrigation cycle may consist of the phases: pre-flushing, dosing and post-flushing. To get to the settings for pre-flushing and post-flushing, navigate this path:  .

You can set the volume in litres or the duration in seconds for both pre-flushing and post-flushing.

EXAMPLE

» Tap the *Pre-flush volume* setting. A pop-up window appears.
» Enter the volume in litres.
» Tap the Confirm icon ''.

You have entered the pre-flush volume.

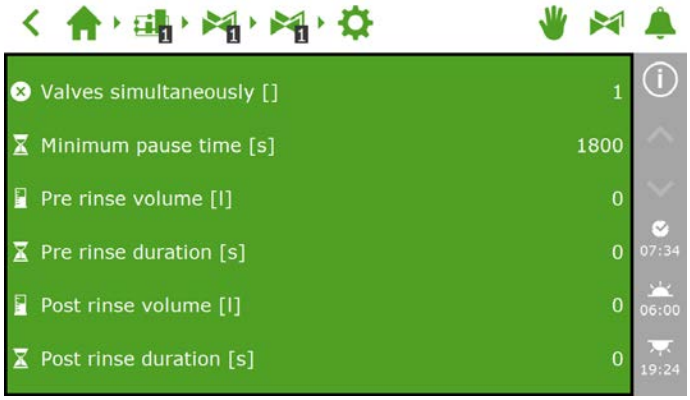


Figure 6-11: *The settings associated with pre-flushing and post-flushing*

6.3.8 Start conditions

You can activate a valve or valve group manually or preprogram the start conditions.

Manual starts

The irrigation program includes two types of manual starts:

» Manual valve start
Use the manual valve start to select valves that you want to activate.

» Manual valve group start
Use the manual valve group start to activate a valve group (with predefined valves/recipes).

Manual valve start

» Navigate the path:  .
» Tap the Manual Valve Start icon '  '. A pop-up window appears.
» Select the valves. A white border appears around the selected valves.
» Tap the Start icon '  '.

The irrigation program now activates the selected valves using the recipe of the valve group from which you opened the screen and that applies for the current period. The manual valve start tile ' displays when the last manual start was performed.

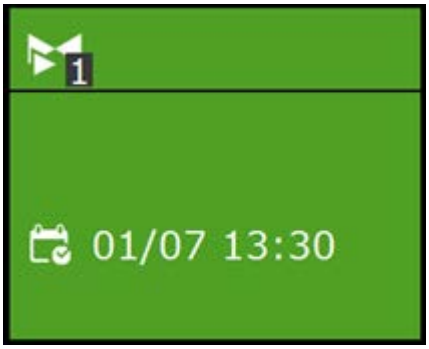


Figure 6-12: *Manual valve start tile*

Manual valve group start

When you activate a valve group manually (i.e. execute a manual start), the irrigation program activates the valves assigned to that group and applies the preprogrammed recipe (of the active period). You can activate a valve group manually on the **Manual valve group control** screen.

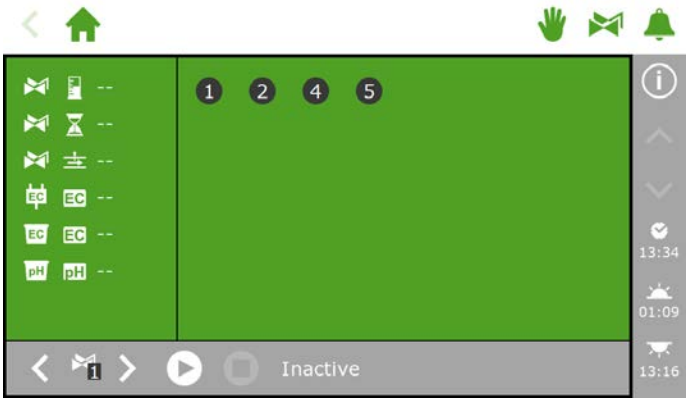


Figure 6-13: *The* **Manual valve group control** *screen*

» Tap the Manual Valve Group Control icon '' on the top bar.
» Select a valve group (bottom left).
» Tap the Start icon ''.

You have activated a valve group.

The **Manual valve group control** screen displays the details of the valve group, such as the volume, the duration and which valves are active.

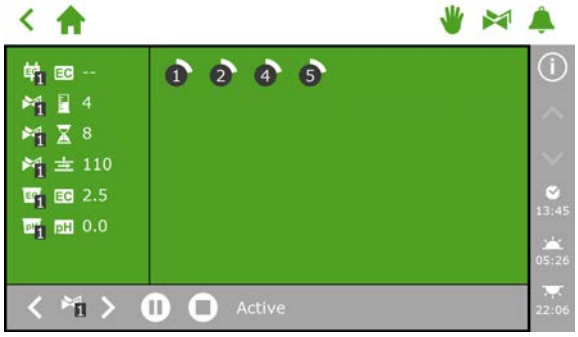


Figure 6-14: *Active valve group*

If you want to a different recipe to be applied for a manual valve start, you can change the EC, pH and volume settings of the valve group. Do not forget to change the settings back afterwards. An alternative method is to assign the desired valves to a group that is still 'free'. You can program different recipe settings for this group without changing your standard recipes.

Preprogramming start conditions

The irrigation program includes a number of start conditions that can be preset or preprogrammed:

	Cyclic start	A cyclic start applies for a specific period and valve group. When the preset cycle time elapses, the valve group is reactivated (i.e. irrigation starts again). The cycle time is reset after each start (of each type).
	Contact start	The group is activated once the selected contact is activated.
	Radiation sum start	The group is activated once the preset radiation sum (J/cm2) is reached. The radiation sum is reset once the irrigation cycle is complete and at midnight (0.00 hours).
	Time start - one-off	Start irrigation one time on the preset date and time (using the recipe settings applicable at that time)
	Time start - daily	Start irrigation on the selected days at a preset time (with the recipe settings applicable at that time)
	Time start - interval	Start irrigation at the preset time after each interval of a preset number of days.

To set a cyclic start, contact start of radiation start, navigate this path: . Here you can set the start conditions for each period.

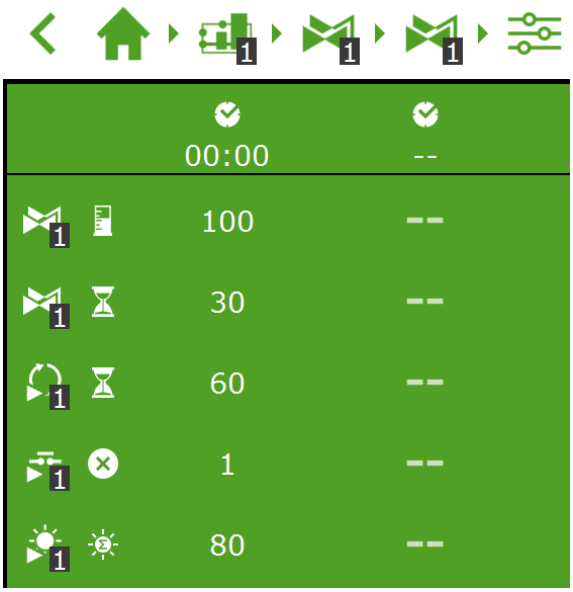


Figure 6-15: *Irrigation start conditions*

You can set the time starts on the **Time start array** screen. Complete the following steps to add a time start:

- » Navigate the path: .
- » Tap the Settings icon '. The **Time start array** screen appears.
- » Tap the Add icon '.
- » Select the type of time start that you want to add.
- » Enter the associated data.
- » Tap the Confirm icon '.

You have set a time start.

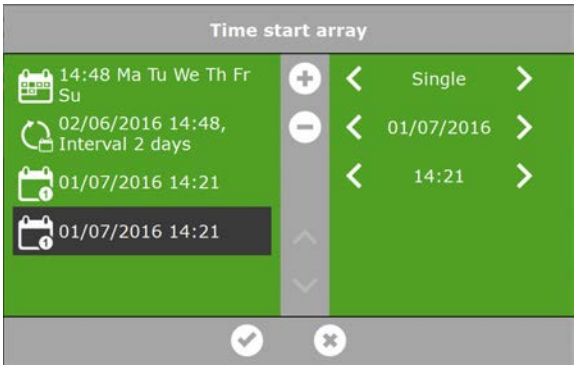


Figure 6-16: *Time starts*

When automated irrigation starts are executed, the irrigation program always uses the recipe settings of the valve group that were set for the period that is currently active. If no period is active, then irrigation will not start automatically.

6.3.9 Alarms

On the top bar, there is a bell icon '' that enables you to access the alarm screen. When this bell is active, it means that an alarm is currently present.

» Tap the (active) bell ''. The alarm screen opens.

The alarm screen displays information about your current alarms and your alarm history. If you open the alarm screen and no alarms are currently active, then the following text is shown: No alarms present!

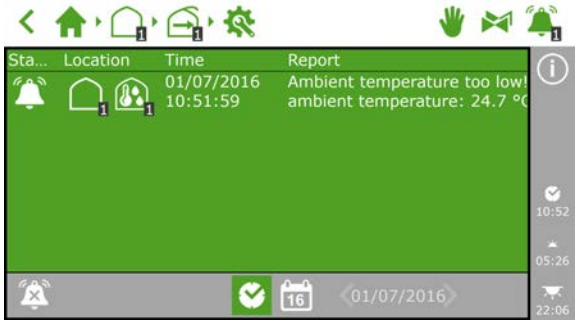


Figure 6-17: *The alarm screen*

The alarm screen lists the following information for each alarm: status, location, time and corresponding message.

If you tap an alarm, a pop-up appears with detailed information about the alarm. This is also where you can acknowledge the alarm. Acknowledging an alarm resets it. However, if the cause of the alarm has not yet been resolved, the alarm will probably return almost immediately.

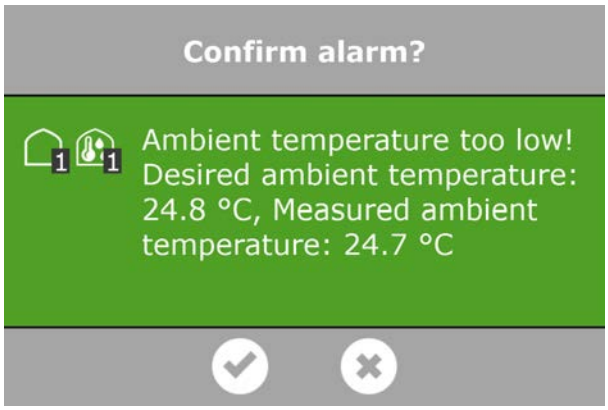


Figure 6-18: *Alarm*

To acknowledge more than one alarm at the same time, proceed as follows:

» Tap and hold the Alarm Condition icon '.

The alarms have been acknowledged.

At the bottom of the alarm screen, you will find the following buttons:

	Switch alarm off This enables you to disable the bell of an active alarm.
	Alarm condition This button is selected by default. The current situation is displayed.
	Historical alarms This enables you to view historical alarms. If you tap this button, you can use the arrow keys to select the desired date. Historical alarms are saved up to one year.

Alarm values can be set for various controls. These alarm settings can be found under the tiles with the Alarm Limits icon '. For example: you can set the 'minimum flow' alarm limit by navigating this path:  .

7 Maintenance

This section describes how the FertiMiX-Go! needs to be maintained on a periodic basis.

7.1 Maintenance guidelines

The following guidelines are important for maintaining the FertiMiX-Go!:

- Disconnect the mains supply from the FertiMiX-Go! before performing any maintenance.
- Make sure that all pressure has been removed from the pipes.
- Make sure that no moisture can get inside the cabinet.
- When replacing or disconnecting pipes, bear in mind the presence of potentially hazardous substances. Also see section "Chemical substances" on page 26.
- Do not leave the FertiMiX-Go! cabinet open unnecessarily.
- Clean the outside of the FertiMiX-Go! with a soft damp cloth. If necessary, wet the cloth in a solution of water and mild soap.

> **!** For instructions on how to clean up any residue caused by fertilizers or acid, please consult the safety data sheets provided by the producer of the chemical in question.

7.2 Weekly maintenance

The following inspection and maintenance tasks should be performed on the FertiMiX-Go! on a weekly basis:

- FertiMiX pump: check for unusual noises.
- The FertiMiX and connected pipes, fertilizer tanks and acid tank: check for leaks.
- Screen filter: check and, if necessary, clean.

7.3 Monthly maintenance

The following inspection and maintenance tasks should be performed on the FertiMiX-Go! on a monthly basis:

- Clean the pH sensors (see OEM manual provided).
- Clean the pH sensors (see OEM manual provided).
- Check dosing channels and re-adjust if necessary (see section "Using the dosing channels for the first time" on page 42).

7.4 Annual maintenance

The following inspection and maintenance tasks should be performed on the FertiMiX-Go! on a yearly basis:

- Update software.
- Clean, check and, if necessary, calibrate pH sensors.
- Clean, check and, if necessary, calibrate EC sensors.
- Check float switches.
- Clean screen filter.
- Clean the sight glass of the flow meter.
- Check the operation of the FertiMiX-Go! (see section "Testing the FertiMiX" on page 43).
- Check, and if necessary replace, the storage tanks and pipes for chemical substances.
- Check components on the main pipe: filter, flow meter and irrigation valves.

Appendices

Glossary

C

Controls

A collective term for the settings, measurements, alarms and readouts based on which the FertiMiX is controlled.

D

DIP switch

Small toggle switches on the Smart Switch that are used to set the address. By moving the toggle switches up or down, you can set a binary number that will be used as the Smart Switch address.

Discharge outlet

Outlet for the removal of superfluous water.

Dosing channel

The piping and associated equipment between the fertilizer tanks and the mixing chamber.

Dosing module

The dosing module consists of one or more dosing channels for fertilizers (and/or acid).

E

Electrical Conductivity (EC)

Electrical conductivity is a measure of the amount of minerals (fertilizers) in a solution.

F

Filling module

The filling module regulates the water supply to the mixing tank. The filling module is equipped with a float valve. This float valve ensures that the water supply stops when the water level in the mixing tank rises too high.

I

Irrigation water

The mixture of water and fertilizers that is pumped to the crop.

M

Micron

One micron is one-millionth of a metre.

N

Needle valves

Valves that can shut off or regulate the flow of a liquid using a thin pin with a sharp tip.

P

Pressure gauge (manometer)

Measurement instrument used to gauge pressure.

R

Relative humidity (RH)

The relative humidity (RH) indicates how much water vapour is in the air compared to the maximum amount of water vapour. This is displayed as a percentage.

S

Smart Switch

An I/O module that peripherals (inputs and outputs) can be connected to.

V

Venturi

A venturi is a narrow point in a channel through which a liquid or gas flows. Because the substance changes speed as it passes through this narrow point, a pressure reduction occurs combined with a suction effect: the venturi effect.

Viscosity

How quickly a liquid or gas will flow. A viscous substance is one that flows slowly.

Checklist for step-by-step installation procedure

The table below can be used as a checklist for the installation and commissioning procedure for the FertiMiX-Go!. The right column shows page references to the relevant sections.

You can use the spaces in the left column to tick off each step as you complete it.

Completed	No.	Step	Section to see for this
		Installation	
☐	1	Water installation » Connect the FertiMiX to the water inlet and outlet pipes. » Connect the supply hoses for fertilizers (and acid) to the dosing channels.	"Connecting water supply (hydronic installation)" on page 31.
☐	2	Electrical installation » Connect the power supply, network cable, external meters and valves.	"Connecting electrical components" on page 31.
☐	3	Where applicable: connect the extra dosing channels, sensors, filling pump and/or I/O modules.	"Installing other components" on page 32.
		Commissioning	
☐	4	Use the latest version of the HortiMaX-Go! software.	"Updating software" on page 35.
☐	5	Check the software configuration.	"Software configuration" on page 36.
☐	6	Check the software settings.	"Software settings" on page 39.
☐	7	Calibrate the EC and pH sensors.	"Calibrating the sensors" on page 40.
☐	8	Pressurize the FertiMiX.	"Pressurizing the FertiMiX" on page 41.
☐	9	Using the dosing channels for the first time » Test the dosing channels by irrigating briefly using the fertigation recipe. » Place the suction hoses in the correct fertilizer tank/acid tank. » Make sure that the fluid levels in all dosing channels are the same and operating at the capacity specified.	"Using the dosing channels for the first time" on page 42.

Completed	No.	Step	Section to see for this
☐	10	Test the FertiMiX by irrigating for a short time.	"Testing the FertiMiX" on page 43.

Signature **Date**

Solutions for
Controlled Environment Agriculture

ridder.com