



# FasterRain



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## Fasterholt FasterRain Irrigation Machine Controller



### Suppliers Declaration of Conformity

We, Fasterholt Maskinfabrik A/S, hereby declare that the product listed below, to which this Declaration of Conformity relates, is in conformity with standards and other normative documents listed on next page, and follows the provisions of:

Directive 2014/30/EU, Electromagnetic Compatibility Directive (EMC), and  
Directive 2006/95/EC, Low Voltage Directive (LVD)

Type of product: Agricultural Irrigation Machine Controller System  
Brand name: Version: Fasterholt FasterRain  
Product number: R1A  
2013426 CRTP 000013 Display Controller (DC)  
2013145 ECA 00014 Low Level Controller (LLC)  
Intended use: Controller system for irrigation machines.

Fasterholt 2022-09-22

### Standards

The controller system conforms to the following standards:

EMC	EN 55032 B EMC compliance testing of Multimedia Equipment (MME) FCC Part 15 Subpart B / ICES-003 and CISPR 32/EN55032 & CISPR 24/EN55024, Emissions & Immunity for Multimedia Class B Equipment
LVD – Safety	EN 60950-1:2006+A1:2010 +A11:2009 +A12:2011 Safety of information technology equipment.

Danny Hansen

Production and Support Manager

## READ THIS MANUAL BEFORE USING THE FASTERRAIN CONTROL SYSTEM

FasterRain, developed by Fasterholt Maskinfabrik in Denmark, is a high-quality control system for managing irrigation machines. In order to achieve the optimal effect and full utilisation of the control system, it is important that the application methods and guidelines described in this user manual are followed closely.

To ensure that the control system complies with the EU Machinery Directive, only original spare parts may be used. Otherwise, compliance will be lost and you will be entirely responsible for safety.

### **Safety regulations and warnings**

- Do not change or remove the battery during irrigation as this may result in fatal injury
- Never disassemble the battery
- Avoid sparks and flames on and around the battery
- Remove the battery before disconnecting cables connected to the FasterRain computer
- If you come into contact with the battery's sulphuric acid, wash immediately with water. If acid comes into contact with eyes, rinse thoroughly with water and seek medical attention immediately
- Make sure that the battery compartment is complete. If cracks, deformities or leaks around the electrolytes occur, replace the battery immediately
- If the battery gets dirty, clean it immediately
- Avoid irrigating on or around power lines, as contact with overhead power lines can damage the FasterRain computer and thus the entire control system
- Remove the battery and connector from the FasterRain computer before welding nearby
- Batteries and other parts of the irrigator must be disposed of at an approved recycling site
- Do not short circuit the battery
- Battery and computer cabinets are installed for safety reasons, so they must remain on the irrigator
- When installing external electrical components, contact Fasterholt Maskinfabrik first, as the components may be affected by electromagnetic radiation from other devices and may be a hazard
- The maximum charging power of the battery is 11 A. If the charging power exceeds 11 A, the battery may crack
- The battery must be charged at a temperature between 0 °C and +40 °C
- Never place the battery in a sealed box while charging
- During the winter period, the battery should be stored indoors, in a dry place and in a fully charged state

FasterRain is a ground-breaking tool for planning field irrigation with functions such as zone irrigation and remote start and stop. The purpose of FasterRain is to make field irrigation more efficient and easier to manage. This means focusing on correct utilisation of the water while saving on fuel, power consumption and man hours.



### Functions of FasterRain

- Switch between low pressure and high pressure
- Start irrigation
- Start roll out
- Return the machine
- Reset the hose length
- And many more

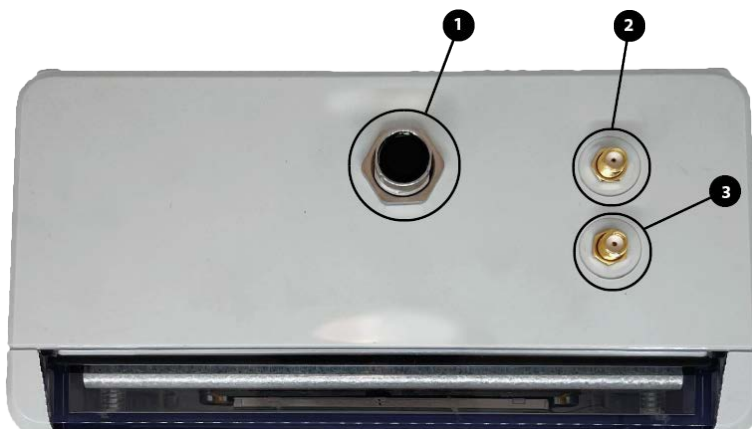
### Information on the type plate

1. Manufacturer's product number
2. Serial number
3. MAC address
4. Wi-Fi IP address
5. Manufacturer
6. **Wi-Fi connection serial number**



### Connectivity options

1. Power
2. GPS
3. LTE





**Navigation:**

- Use the arrows to navigate between menus



**Settings:**

- Function settings
- Date
- Language
- Software update



**Return:**

- This function ensures that irrigation can continue until the error is rectified



**Restore:**

- Restore factory settings when FasterRain computer fails



**Continue:**

- Resume irrigation



**Time setting:**

- Manual time setting on both the FasterRain computer and app



**Back:**

- Go back to the previous menu



**Confirm selection:**

- Confirm your selection



**Select value from a list:**



**Battery:**

- Battery voltage
- Charging voltage



**Start:**

- Start irrigation



**Roll out:**

- Roll out the hose



**Undo:**

- Undo your selection



**Water pressure:**

- Switch between low pressure and high pressure



**Reset length:**

- Reset the hose length



**Edit:**

- Change values on the display



**Modem:**

- System connectivity, including signal strength, number of satellites connected, longitude and latitude and more



**Low Level Controller (LLC):**

- System information including water volume, kilometres and more



**Language:**

- Select the language on the FasterRain computer



**FasterRain computer:**

- Serial number of the FasterRain computer



**Raindancer:**

- Transfer programs to Raindancer



**Page navigation:**

- Navigate between numbers or other data



**Plus:**

- Increase the value of a number



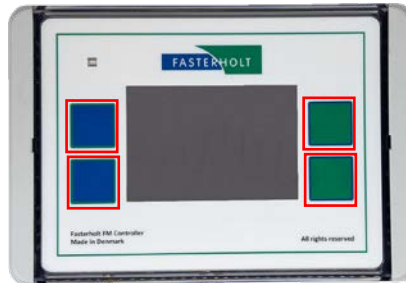
**Minus:**

- Decrease the value of a number

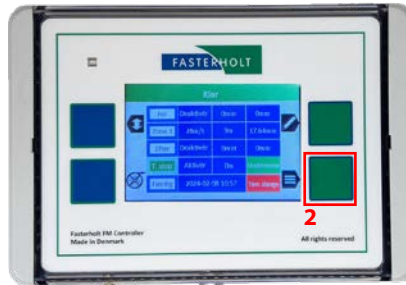
## Select the language

On delivery, the default language setting is Danish. To change this, proceed as follows:

1. Press any button to wake the computer from sleep mode



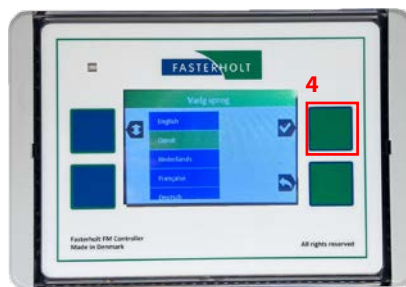
2. The FasterRain computer is now switched on. Press the button in the bottom right corner to access the main menu



3. Press the button in the bottom left corner to choose between the different language packs available on the FasterRain computer



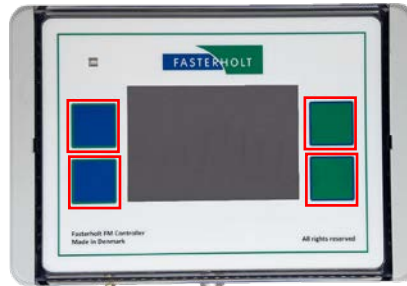
4. Select the required language pack and press the button in the top right corner to confirm your selection



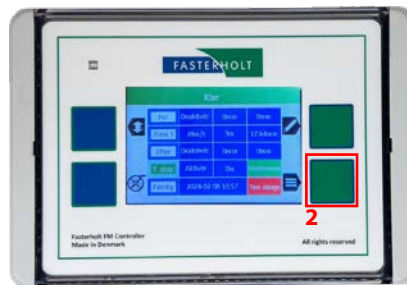
### Select the time zone

The time zone defines the time displayed on the FasterRain computer. Switching between summer and winter time must be done manually.

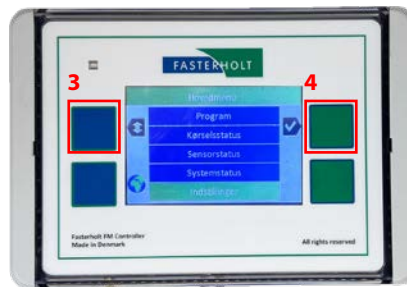
1. Press any button to wake the computer from sleep mode



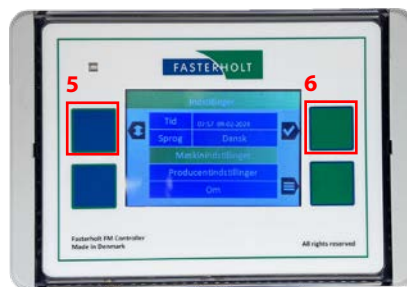
2. The FasterRain computer is now switched on. Press the button in the bottom right corner to access the main menu



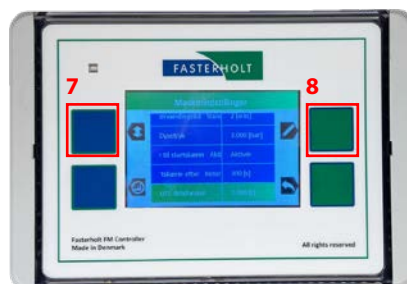
3. Press the button in the top left corner repeatedly until the Settings function can be selected.
4. Press the button in the top right corner to confirm your selection



5. Press the button in the top left corner repeatedly until the Machine Settings function can be selected
6. Press the button in the top right corner to confirm your selection



7. Press the button in the top left corner repeatedly until the UTC Time Difference function can be selected
8. Press the button in the top right corner and change the time zone. Confirm the change Press the button in the top right corner to confirm the change

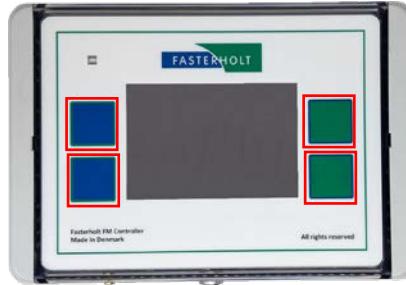




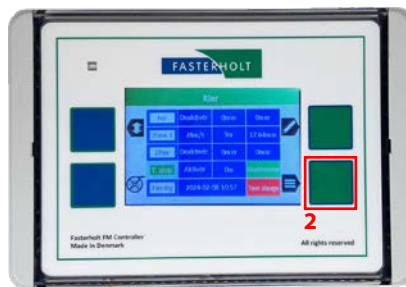
**Set the time**

By default, the time zone defines the time displayed on the FasterRain computer, but it is also possible to change the time manually. See how below. Switching between summer and winter time must be done manually

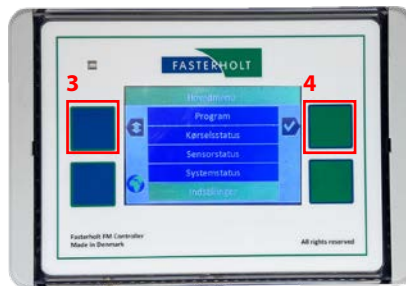
1. Press any button to wake the computer from sleep mode



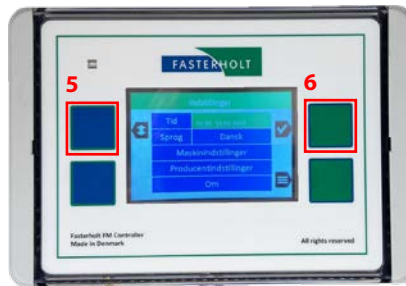
2. The FasterRain computer is now switched on. Press the button in the bottom right corner to access the main menu



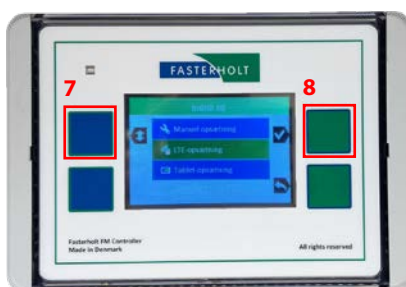
3. Press the button in the top left corner repeatedly until the Settings function can be selected
4. Press the button in the top right corner to confirm your selection



5. Press the button in the top left corner repeatedly until the Time function can be selected
6. Press the button in the top right corner to confirm your selection



7. Press the button in the top left corner repeatedly until the required time is selected
8. Press the button in the top right corner to confirm your selection



**- Manual setup**

of date, time and year on the FasterRain computer

**- LTE setup**

where the computer retrieves the date, time and year from the internet via its SIM card

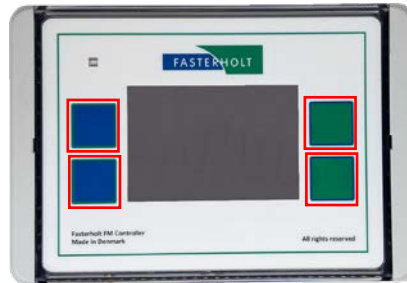
**- Tablet setup**

where the computer retrieves the date, time and year from the tablet

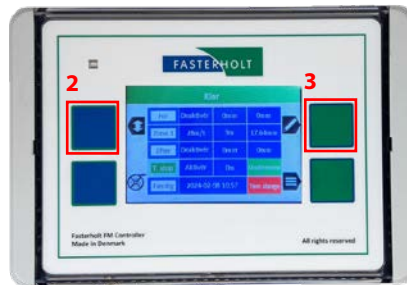
**Activate accessories on the FasterRain computer**

Some irrigators are fitted with optional extras and accessories of various kinds. See below how to activate these.

1. Press any button to wake the computer from sleep mode



2. The FasterRain computer is now switched on. Press the button in the top left corner to access the submenu



3. When the submenu is highlighted, press edit

4. The submenu can be used to activate the fitted accessories:

**- Reset hose length**

The hose length is reset before the irrigator is rolled out

**- Drive home**

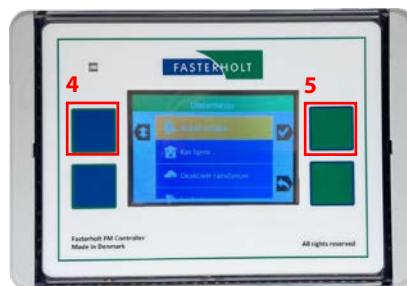
This function should only be used if there is an error on the irrigator. As activating this function disables many of the machine's safety systems, it should only be used in an emergency. This function ensures that irrigation can continue until the error is rectified

**- Activate or Deactivate Raindancer**

This function is used to either enable or disable the connection to Raindancer

**- Low pressure+ / High pressure+**

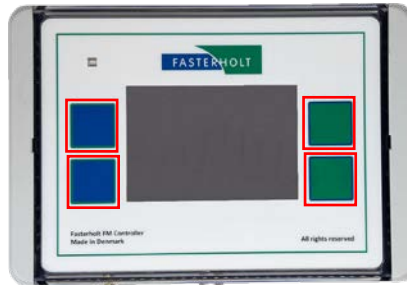
This function is used to switch between high pressure and low pressure



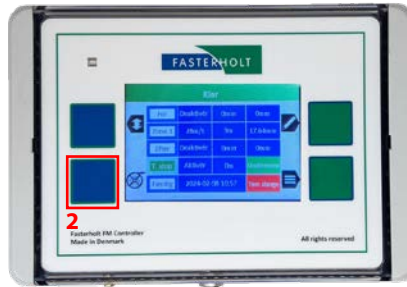
5. If any changes are made, you will need to press the button in the top right corner to confirm the changes

**Start the irrigator**

1. Press any button to wake the computer from sleep mode



2. The FasterRain computer is now switched on  
Press the button in the bottom left corner to start roll out



3. After the machine is rolled out, press the button in the bottom left corner to start irrigation



**NOTE:** If the precipitation volume, early stop, pre- or post-irrigation needs to be changed, see points 1-6 on the next page, which is based on the changing the precipitation volume

### Change machine speed at start-up via the FasterRain computer

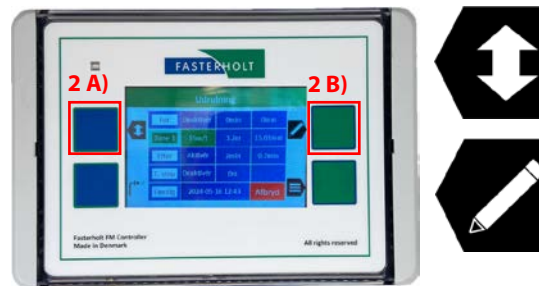
Before irrigation, the machine speed can be changed on the FasterRain computer, including how many metres per hour/mm of water should be irrigated.

It is important to remember that changing the speed on the FasterRain computer will delete all the zones entered in irrigation programming.

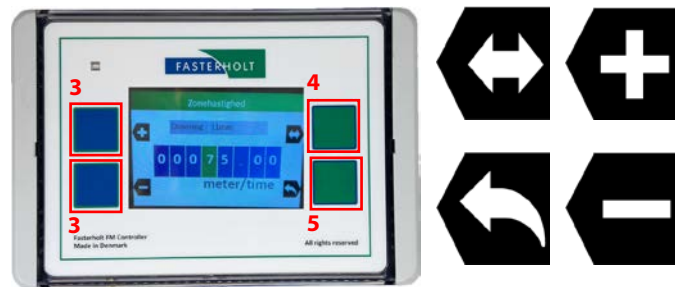
1. Press Roll out in the bottom left corner



2. A) After the machine is rolled out, press the button in the top left corner until the speed is highlighted.  
B) Then click on Edit in the top right corner



3. Increase or decrease the number of metres per hour the irrigator needs to rewind
4. Switch between values
5. Press the back button to add the changes



6. Press Start irrigation

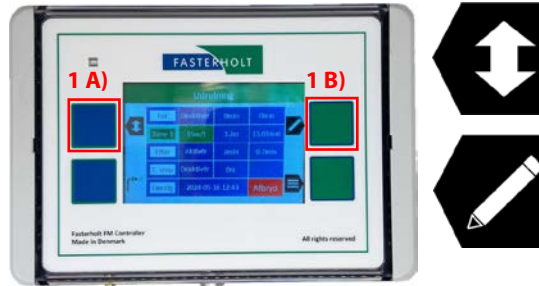


### Change machine speed via the FasterRain computer while irrigation in progress

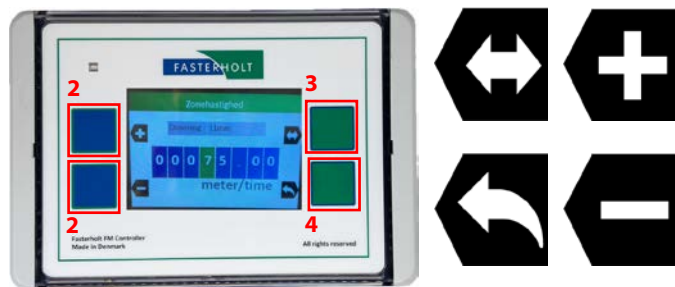
After irrigation, the machine speed can be changed on the FasterRain computer, including how many metres per hour/mm of water should be irrigated.

! It is important to remember that changing the speed on the FasterRain computer will delete all the zones entered in irrigation programming.

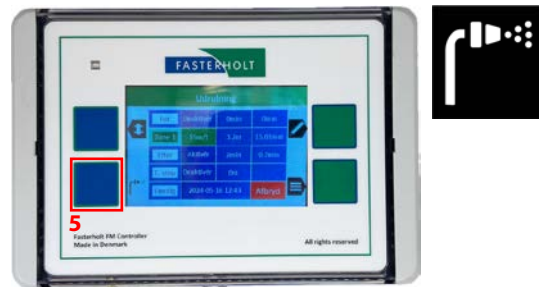
1. A) After the machine is rolled out, press the button in the top left corner until the speed is highlighted.  
B) Then click on Edit in the top right corner



2. Increase or decrease the number of metres per hour the irrigator needs to rewind
3. Switch between values
4. Press the back button to add the changes



5. Press Start irrigation



6. Then press Confirm

The machine will now apply the specified values to the FasterRain computer





**Nozzle calculations:**

- Calculate spreading width and
- Water volume for different nozzle sizes



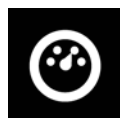
**Set stop to hose length:**

- Insert virtual early stop



**Quick Connect for local irrigator:**

- Connect the tablet to the FasterRain computer via the local Wi-Fi connection



**Machines:**

- Overview of connected machines



**Pumps:**

- Overview of connected pumps



**Settings:**

- Includes various setup options such as
- Machine settings
  - Cloud connection
  - Nozzle calculations



**Notifications:**

- Error codes
- Completed changes
- Warnings



**Cloud connection:**

- Connect and manage machines through the cloud



**Operating information:**



**Wi-Fi connection:**

- Connect tablet and irrigator through local Wi-Fi



**Start irrigation:**



**Observation module for the cloud:**



**Edit:**



**Delete:**



**Drive home:**

- This function ensures that irrigation can continue until the error is rectified



**Reset zones:**

- Reset specified zones



**Reset the hose length:**

- Use this function before rolling out the hose at early stop set to the hose length to reset the hose length



**Roll out the hose:**

- Track how many metres of hose have been rolled out



**Add zone:**

- Add a zone to irrigation programming



**Raindancer:**

- Send the plan directly to Raindancer



**Cancel:**

- Stop irrigation programming on the irrigator



**Upload to the cloud:**

- Send the plan to the cloud from the irrigator



**Battery:**

- View battery voltage on solar panel and battery
- View the charging status of the battery

**Open:**

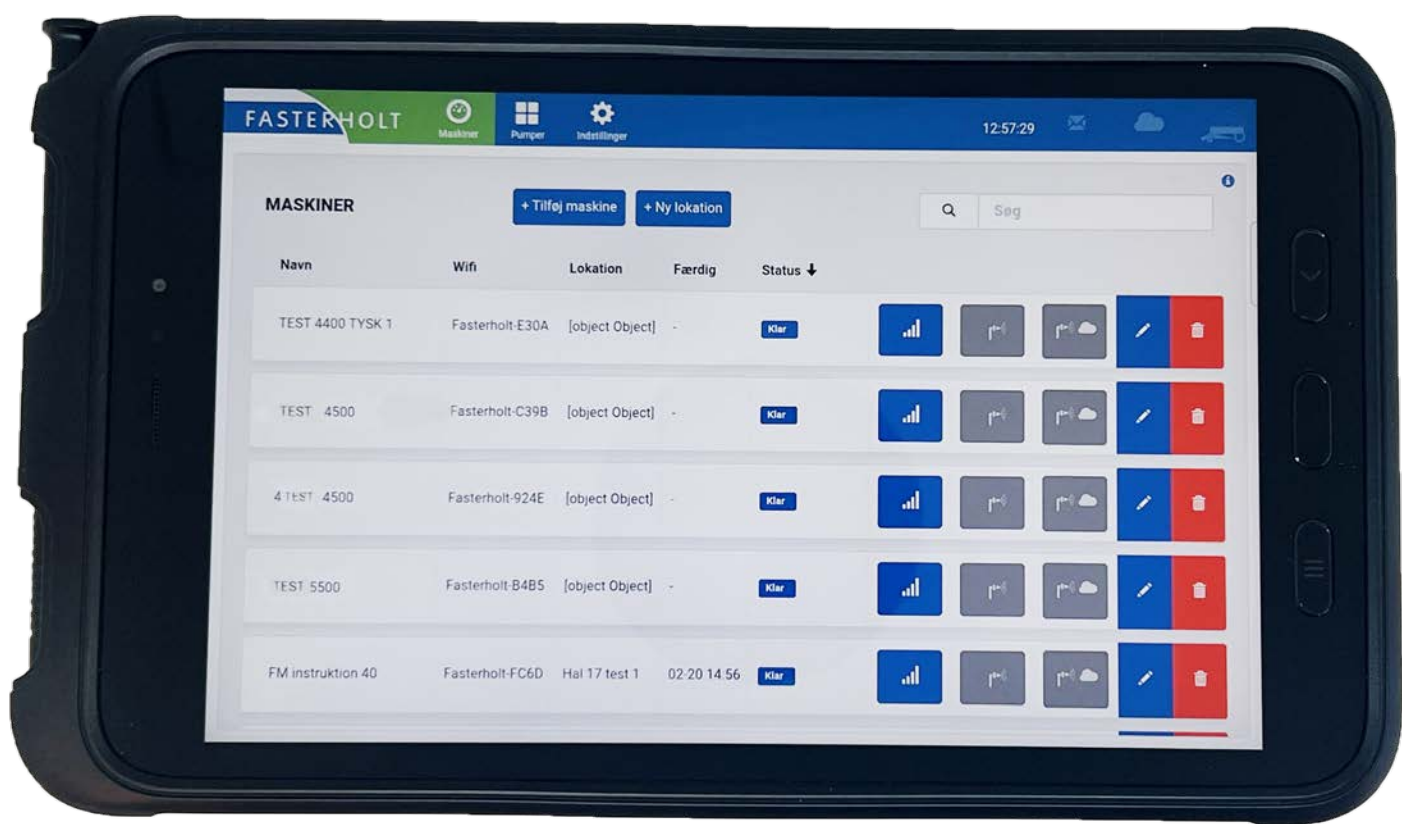
- Open irrigation routes

**Save:**

- Save irrigation routes

**Pause:**

- Pause irrigation route





### Create a new location

In order to save an irrigation route at a given location, the location must be created beforehand. It is not possible when the irrigator is already rolled out.

- Open the app and press New location and enter the following information:
  - Name: the location must be named, e.g. use the name of the area the machine will operate in
  - Land registry number
  - Address
  - Postcode
  - Town
  - Country
- Press OK to create the location

Please note that this is only saved locally on the tablet.

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A Wi-Fi connection must be established between the FasterRain computer and the tablet before the irrigator can be added to the tablet.

### Create a machine via the app

- Open the app
- Select the machine overview, which is also the app homepage
- Press the Add machine button
- Select the MAC address of the irrigator from the list, look in the Wi-Fi MAC column
- Connect to the irrigator by entering the following code:  
**fasterholt**
- The machine is now connected to the app and it is possible to make the required changes without the FasterRain computer entering sleep mode
- In the pop-up that appears, the following information can be entered:
  - Name
  - Wi-Fi - which does not need to be changed as it is already connected to the machine
  - Location - you can choose from pre-defined locations
- Press OK to finally add the machine

When connecting to the machine from the tablet, the FasterRain computer will not enter sleep mode, it is therefore possible to make the necessary adjustments over a longer period of time.


- If you need to change the name or location of the machine, use the edit function indicated with a pencil




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### Create a machine (alternative method)

#### To connect to a machine, proceed as follows:

- Make a note of the irrigator's MAC address, which can be found on the type plate on top of the FasterRain computer, see page 5
- Open the tablet's general settings 
- Select Connection and then Wi-Fi
- Select the MAC address of the irrigator from the list, look in the Wi-Fi MAC column
- Connect to the FasterRain computer on the machine by entering the following code

#### **fasterholt**

Continue to the app once the Wi-Fi connection is established. It is now possible to add the machine to the tablet. In the meantime, it is important to note that the tablet is only connected to the irrigator's Wi-Fi and not to the FasterRain computer. This means that if no further action is taken, after a while the computer will enter sleep mode and the Wi-Fi connection will be lost.

**Start simple irrigation**

- Connect the tablet to the machine's Wi-Fi by pressing the pictogram
- When the connection is established, press Start irrigation
- Under Start irrigation, which is also the irrigation page, the following functions are displayed
  - Pressure relieve hose
  - Roll out hose
  - Reset zones
  - Reset hose length
  - Drive home
  - Switch to low pressure
  - Switch to high pressure
  - Pre-irrigation
  - Post-irrigation
  - Early stop

Please note that this section describes how to start a simple irrigation, which omits most of the above functions.

- Press Roll out hose to start irrigation
- When Roll out hose is activated, the irrigator can be rolled out
- It is possible to set different parameters such as irrigation speed, either while the irrigator is being rolled out or when the machine is fully extended. This is done during irrigation programming. If you do not want to set irrigation to a specific speed, you can also choose between dosage, time or cubic metres per hectare. This is done by pressing the pictogram

In case the setting cannot be enabled, it is highlighted with a red line around the column. It is possible to change the setting under Machine settings and on the Speed page

- Once the speed is set, Start irrigation can be pressed and irrigation programming will switch to the irrigation page
- The irrigation page there will display information about
  - Machine
  - Gun
  - Water pressure set by the user
  - Nozzle
  - Water consumption
  - Spreading width
  - Start, stop and pause functions
  - Progress of irrigation, displayed via a status bar
- The status bar display only starts to move after irrigation has started
- At the bottom of the information display, it will say that the machine is waiting for water pressure. When the pump is



activated, the water pressure increases and the machine starts to tighten the hose



- When irrigation is complete, the status bar shows 100% and the irrigation page switches to irrigation programming



**Early stop**


- Connect the tablet to the machine's Wi-Fi by pressing the pictogram 
- When the connection is established, press Start irrigation 
- Press Roll out hose
- When Roll out hose is activated, the irrigator can be rolled out
- When rolling out the machine, it is possible to press Set stop to hose length. You can also enter the values manually according to your pre- and post-winding of the machine

When Set stop to hose length is pressed, the exact number of ticks measured during roll out is recorded. This corresponds to the exact distance the rear axle has moved.

**Create zones**

Zone irrigation is an important tool for adapting the volume of water to each crop and field. This way, only the necessary volume of water is added, ensuring optimal water utilisation. Just as it is possible to avoid leaching of the soil's own nutrients.



- When rolling out the machine, add zones by pressing Add zones 
- After adding a zone, the number of metres in the column changes following each added zone. This indicates the speed
- Please note that the zones are not saved automatically after irrigation is complete. If you want to save the route and its settings, you must do so before you start irrigation. Press Save in irrigation programming to save the route

**Activate pre- and post-irrigation or Raindancer**

- Go to Start irrigation, select either pre-irrigation, post-irrigation or Raindancer and enable or disable via the on/off function.

## Manage irrigation routes

It is possible to save irrigation routes locally on the tablet and then use them on other machines as well.

### Save irrigation routes

- Open the app and connect to the machine
- Open the Irrigation programming function and create the irrigation route
- Then press Save and enter the name and the location of the irrigation route. Press OK to save the irrigation route. Please note that the irrigation route is only saved locally on the tablet

### Load irrigation route

The irrigation routes saved on the tablet are located under the Irrigation programming function.

- Open Irrigation programming
- Press Roll out
- Select the required irrigation route
- Drive the machine to its end point
- Press Start irrigation

## Functions in irrigation programming

### Pressure relieve feed hose

- Activating the Pressure relieve feed hose function opens the main valve. It generally takes about a minute for the valve to open. It is possible to change the opening time parameters under Machine settings

### Roll out hose

- Activating the Roll out hose function before rolling out the hose records the hose length during roll out in the status bar at the bottom of the tablet

### Reset zones

- Activating the Reset zones function resets and deletes all zones on the irrigation programming page. This function is used when the created zones need to be removed completely. New zones can then be created

### Reset the hose length

- Activating the Reset hose length function resets the current rolled out hose length

This should only be done when the hose length is 0 m

### Drive home

- Activating the Drive home function returns the machine to the starting point of current irrigation. The machine continues to irrigate along the way. It is possible to choose whether the machine should drive home at normal or maximum speed

- This function should only be used if there are problems with the machine and irrigation is necessary. This is because all monitoring is turned off when the function is activated



## Pump control

### Add pump

- Open the app
- Select Pumps
- Press Add pump
- The following information can be entered in the pop-up window:
  - Pump name
  - Phone number. Remember to enter the country code with + not 00, as this is necessary to communicate with the cloud
  - A command to start the pump, e.g. Start
  - A command to switch off the pump, e.g. Switch off
  - Pump location
- Press OK to add the pump



### Start the pump

- Press the cloud icon in the top right corner to connect to the cloud. The connection is established when the cloud changes colour to white.



- Select one of the following methods to set the time to start the pump



- Current time: Press the time stamp of the added pump
- Optional time: Press the different columns and enter the required values to manually set the time and year



- Press OK when the required time is selected and the pump will send a message to the FasterRain computer
- Send an SMS with the stop command to the pump to stop it again and the pump will switch off

The SMS commands only work and can only be used if connected to the cloud while setting the commands

Please note that if you press OK immediately, the pump will start immediately.

**Observation module for the cloud**

The cloud observation module allows you to follow and manage ongoing irrigations. Via live data

- Open the app and connect to the cloud by pressing the cloud icon in the top right corner. The connection is established when the cloud changes colour to white
- In the machine list, the completion time and status of all machines will be updated when you are connected to the cloud
- For more information about the individual machine, click on the machine in the Machine info list to open and view the latest updated machine data

**Remote controlled irrigation module**

- Then click on the cloud observation module, which provides access to various functions and information:
  - Functions like Start irrigation, Cancel and Pause
  - Information about the pump connected to the machine

The functions are explained in more detail below:

• **Start irrigation**

- When activating Start irrigation, a pump must be selected. The pump must be added to the pump page in advance. Then press OK on the pop-up window to send a message to the irrigator to start irrigation. Irrigation starts as soon as the main valve is opened
- It is possible to select Start irrigation without selecting a pump. Even if a pump is not selected, it is still necessary to specify when the pump should run.

• **Cancel**

- When activating Cancel via the cloud, the machine switches off the pump by shutting off the water. Please note that the function also deletes the irrigation route, so it is not possible to resume irrigation later

• **Pause**

- Activating Pause temporarily stops the machine and pump. Press Resume to start the irrigation route

**Sequential irrigation via cloud connection**

Sequential irrigation means that multiple machines can be set up on the same pressurised pump circuit and that the function controls the main valve. This means that when one machine finishes the irrigation route, it can start the next machine. The second irrigator starts the pump that the first machine stopped.

**Settings**

- Open the app
- Select settings



- Under Settings there are a number of menus, which are explained in more detail below:

• **General settings**

- Editing time zones
- Language settings
- Setting up a Wi-Fi connection, including how many times the tablet should try to connect to Wi-Fi

• **Nozzle calculations**

- Use the converter to calculate spreading width and water volume for different nozzle sizes and pressures. Please note that the calculations are not saved. However, changes to nozzle sizes and pressures are made under Machine settings



• **Cloud connection**

- Login to the cloud

• **Machine settings**

- This menu can be used to change several parameters including speed, monitoring time, Raindancer and more. In addition, the menu contains the following three categories
  - Sleep mode
  - System
  - Low Level Controller



• **Manufacturer settings**

- The settings may only be managed by Fasterholt Maskinfabrik, which is why the function is locked and requires a password



• **About**

- Potential updates
- Name of the applicable software version



**Error messages**

No.	Type	Problem	Explanation	Solution
10	ERROR	The machine does not move	The error occurs when the average speed of the irrigator is lower than half of the required speed over a given period of time	Find and fix the error on the irrigator, use the machine's user manual if necessary. Then cancel the error on the FasterRain computer and create a new irrigation.
11	WARNING	The battery voltage is below 11V. Check that: – The solar panel surface is clean – The solar panel has free access to sunlight	The warning occurs when the average battery voltage is lower than a given value over a given period of time. It is possible to temporarily remove the warning, but it will only disappear when the battery voltage is high enough	Change the battery and check that the solar panel surface is clean and has free access to sunlight
13	ERROR	Pressure relief takes longer than permitted.	The error occurs when pressure relief takes longer than a given period of time	Locate the error on the irrigator, use the machine's user manual if necessary. Then the error must be cancelled on the FasterRain computer
14	ERROR	Irrigator does not move after tightening the hose	The error occurs when tightening takes longer than a given period of time	Check that: – The machine is in gear – The machine's hydraulic bypass lever is set correctly (retracted) – The drum brake is set correctly Once the error is fixed, the error must be cancelled on the FasterRain computer
15	ERROR	No data is received from the Low Level Controller	The error occurs when the FasterRain computer does not receive data from the Low Level Controller for a given period of time. This may be due to problems with the CAN connection or the Low Level Controller may be frozen in update mode	If the error is present at system start-up right after an update, the system should be updated again via the tablet. If the CAN connection is faulty, a repair of either the system or the cable is required. If this does not work, a deeper investigation is required
20	WARNING	Error setting up commands or SMS in the cloud	The error occurs if there are problems setting up commands or SMS in the cloud from the FasterRain computer	Restart the system. Otherwise contact Fasterholt Maskinfabrik
21	WARNING	Error setting up commands in the cloud	The error occurs if there are problems setting up commands in the cloud from the FasterRain computer	Restart the system. Otherwise contact Fasterholt Maskinfabrik
22	WARNING	Error setting up SMS in the cloud	The error occurs if there are problems setting up SMS in the cloud from the FasterRain computer	Restart the system. Otherwise contact Fasterholt Maskinfabrik

No.	Type	Problem	Explanation	Solution
1000	WARNING	Lack of data connection	The error occurs when the FasterRain computer cannot communicate with the cloud due to lack of data connection. This may be due to a poor connection or a faulty modem	Make sure that the machine is placed in an area with good connectivity and that the antenna is installed correctly. In some cases, a system reboot may be required to get it working again
1001	WARNING	Lack of GNSS connection	The error occurs when the FasterRain computer does not receive a GPS location. This may be due to a poor connection to GPS satellites or a faulty modem	Make sure that the machine is placed in an area with good connectivity to the satellites and that the antenna is installed correctly. In some cases, a system reboot may be required to get it working again
3011	WARNING	Connection error between the FasterRain computer and the cloud	The error occurs when the FasterRain computer cannot connect to the cloud due to an error	Restart the system. Otherwise contact Fasterholt Maskinfabrik
3012	WARNING	Network problems	The error occurs when the FasterRain computer cannot connect to the cloud due to network problems	Restart the system. Otherwise contact Fasterholt Maskinfabrik
3013	WARNING	Connection error between the FasterRain computer and the cloud	The error occurs when the FasterRain computer cannot connect to the cloud as the connection is rejected	Restart the system. Otherwise contact Fasterholt Maskinfabrik
3014	WARNING	Connection timeout	The error occurs as it takes too long for the FasterRain computer to connect to the cloud	Restart the system. Otherwise contact Fasterholt Maskinfabrik
3015	WARNING	Lack of approvals	The error occurs as the FasterRain computer is refused connection to the cloud due to a lack of approvals	Restart the system. Otherwise contact Fasterholt Maskinfabrik
3016	WARNING	Lack of access to data	The error occurs when the FasterRain computer tries to retrieve data in the cloud that does not exist	Restart the system. Otherwise contact Fasterholt Maskinfabrik
3017	WARNING	Connection error between the cloud and the FasterRain computer	The error occurs when the cloud cannot connect to the FasterRain computer	Restart the system. Otherwise contact Fasterholt Maskinfabrik
3018	WARNING	Error from the cloud	The error occurs when the FasterRain computer cannot connect to the cloud due to unknown error types	Restart the system. Otherwise contact Fasterholt Maskinfabrik

Original user manual for CT-5000, contact supplier GACELL for further information

AC Input: 220-240VAC, 50-60Hz, 0.8A  
FasterRain computer Output: 6VDC, 5A;  
12VDC, 5A;  
12VDC, 1A;  
Temperature controlled



## READ THIS MANUAL BEFORE USING THE CHARGER

### Safety instructions for the FasterRain charger

Read all safety instructions and user manuals before using the charger

Always follow the safety instructions provided by the battery or vehicle supplier.

### Safety instructions for working near a battery

- Batteries produce explosive gases during normal use and charging. They should be used in a well ventilated area.
- If possible, never work alone so you can call for help in case of an accident.
- Avoid using open flames when working near batteries and motors.
- NEVER wear watches and jewellery when working with a battery as these can short circuit the battery, resulting in severe burns.
- Be extra careful not to drop tools on the battery while working, as this can cause a spark or short circuit the battery or other electronics, which can cause an explosion.
- Wear safety glasses and protect hands and clothing when working with batteries. Avoid touching eyes and bare skin while working with batteries.
- Always follow the battery manufacturer's instructions regarding charging voltages and handling the battery during charging.
- Make sure that the battery terminals are always clean before connecting the charger.
- If the battery needs to be removed for charging, always make sure that all electronics in the vehicle are switched off and remove the minus (-) first to avoid a spark.
- The charger is not intended to supply power to an electrical system where the voltage is very low and must not be used to charge dry batteries. If dry batteries are charged, they can explode and cause injury or damage to buildings.
- Never charge a frozen, damaged or leaking battery and never charge non-rechargeable batteries.
- If hands or clothing come into contact with battery fluid, wash and rinse thoroughly with soapy water. If battery fluid comes into contact with eyes, rinse thoroughly with cold water for at least 15 minutes and seek medical attention immediately.

### Safety instructions for using the charger

- Never place the charger in the vehicle's engine compartment or close to rotating parts. Always place the charger as far away from the vehicle and battery as possible. Never place the charger on top of the battery during charging as gases and liquid from the battery during charging can cause damage to the charger.
- Do not cover the charger during use.
- The charger must not be exposed to continuous heavy rain.
- Using accessories not supplied with the charger may result in fire, electric shock or injury.
- Always select the correct setting on the charger to avoid

overcharging the battery.

- When connecting/disconnecting the charger, always grasp the plug. Never pull the cable.
- Always make sure that the charger is disconnected before cleaning or servicing it.
- Never use a damaged charger. Have the charger inspected and repaired before use.
- Any repairs must be carried out by authorised persons to avoid damage/injury.

### Important safety information

- The product is not intended for use by persons (including children) with reduced mental or physical abilities, or a lack of experience in using the product unless they have been instructed in the correct use of the product.
- Children must be under supervision so they do not play with the product.
- If the AC cable is damaged, it must be repaired by a suitably qualified person to avoid an accident.
- Always connect the charger first to the battery terminal that is not connected to the vehicle chassis. Then the second connection on the charger should be connected to the vehicle chassis as far away from the battery and fuel supply as possible. Then plug the charger into the wall socket. Once the battery is charged, disconnect the charger from the mains, disconnect the connection to the chassis and finally disconnect the connection on the battery.
- Never attempt to charge non-rechargeable batteries.
- During charging, the battery should be in a ventilated environment.

Original user manual for CT-5000, contact supplier GACELL for further information



- The CT-5000 is designed to charge all types of 12V lead/acid, 6V lead/acid and 12V lithium-ion batteries.

The following types can be charged:

- WET (Flooded)
  - GEL
  - MF (Maintenance Free)
  - EFB (Enhanced Flooded Battery)
  - AGM (Absorbed Glass Mat)
  - LIB (lithium-ion) batteries.
- The built-in microprocessor makes charging and maintenance faster, easier and safer
  - This charger is spark-free. The charger is protected against incorrect polarisation and short circuits, and protects the battery from overcharging.
  - The charger has a built-in memory, which means that it remembers the last setting when it is switched on again.
  - When the battery indicator is constantly lit GREEN, it means that the charger has finished charging and is now switching to maintenance charging.
  - The charger has 4 holes for easy installation on a wall or other surface.

**Technical specifications**

AC Input	220 VAC, 50-60Hz, 0.8A
FasterRain computer Output	6VDC, 5A; 12VDC, 5A; 12VDC, 1A; Temperature controlled
Charger type	8-stage, fully automatic charging cycle
Start voltage (V)	> 1V
Enclosure rating	IP54
Battery types	All types of 6V & 12V lead/acid batteries, and 12V lithium-ion batteries
Battery capacities	2-120Ah (6V). 2-120Ah (12V), Maintenance of all battery capacities.
Accessories included	Cable pliers, eye terminals
Ambient temperature	0°C ~ +40°C

**Connection to the battery**

- Identify the polarity of the battery terminals. The battery's positive terminal is usually marked with one of these indications (POS, P, +). The battery's negative terminal is usually marked with one of these indications (NEG, N, -).
- Never connect the charger to the vehicle's carburettor, injection system, fuel supply or thin metal parts
- Identify the polarity of the machine. This is done by checking whether PLUS or MINUS is connected to the vehicle chassis.
- For vehicles with a negative frame (most common): Connect the red positive clamp/eye terminal to the battery's positive terminal first, then the black clamp/eye terminal to the battery's negative terminal or the vehicle chassis.

- For machines with a positive frame (very rare): Connect the black negative clamp/eye terminal to the battery's negative terminal first, then the red clamp/eye terminal to the battery's positive terminal or the vehicle chassis.

- Disconnect the charger in reverse order by removing the negative first and then the positive. (Positive first on vehicles with a positive frame).

**Charging settings**

The CT-5000 has 8 settings (including standby):

- 12V NORM
- 12V COLD/AGM
- 12V SMALL NORM
- 12V SMALL COLD/AGM
- 6V NORM
- 12V LITHIUM
- 12V REPAIR

Some settings require holding the button for 3 seconds and/or pressing the button to set. Make sure that the correct setting is made before charging starts.

Setting	Battery size (Ah)	Explanation
Standby	—	No charging or energy supply (GREEN LED)
12V NORM	2-120	Charging 12V WET/GEL/MF/EFB batteries (GREEN LED)
12V COLD/AGM	2-120	Charging 12V batteries at temperatures below 10°C (50°F) or 12V AGM batteries (GREEN LED)
12V SMALL NORM	2-40	Charging small 12V WET/GEL/MF/EFB batteries (GREEN LED)
12V SMALL COLD/AGM	2-40	Charging 12V batteries at temperatures below 10°C (50°F) or small 12V AGM batteries (GREEN LED)
6V NORM (Hold Mode button for 3 seconds to set)	2-120	Charging 6V WET/GEL/MF/EFB batteries (BLUE LED)
12V LITHIUM (HOLD & PRESS)	2-120	Charging 12V lithium-ion batteries including LiFePO4 (WHITE LED)
12V REPAIR (HOLD & PRESS)	2-120	An advanced charging cycle to repair old and sulphated batteries. REPAIR YELLOW LED + GREEN LED (12V)

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**These button hold and/or press settings are advanced charging cycles that require full attention before selecting them.**

Using 6V NORM (Hold)

This setting can only be used for 6V lead/acid batteries. If in doubt, contact your battery supplier before use

Using 12V LITHIUM (Hold & Press)

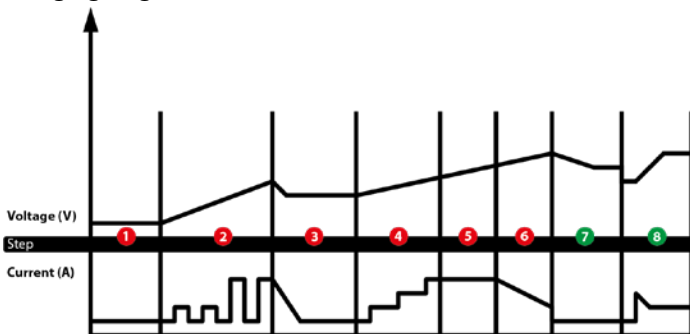
This setting is only used when charging 12V lithium-ion batteries including LiFePO4. Some lithium-ion batteries may be unsuitable for charging. Contact your battery supplier for correct charging voltage and charging current.

Using 12V REPAIR (Hold & Press)

This setting can only be used for lead/acid batteries. It is an advanced charging cycle designed to repair old and sulphated batteries, as well as batteries that have been deep discharged. Not all batteries can be repaired. For best results, it is recommended to give the battery a full charge and then run the repair cycle.

Once this setting is selected, it is important to remember to choose the correct 12V setting. A repair can take up to 8 hours and will run a full charging cycle after repair. This setting uses a high charging voltage and can cause consumption of battery fluid in open batteries. Never use this setting while the battery is installed in the vehicle as some vehicle electronics can be sensitive to high voltages.

**Charging stage**



**Stage 1: DIAGNOSIS**  
(Checks if the charger is connected to the battery and measures the battery voltage)

**Stage 2: DESULPHATION**  
(If the battery voltage is too low, a pulse current is generated to remove sulphates from the battery. This can take up to 5 hours)

**Stage 3: ANALYSIS**  
(Checks if the battery voltage reaches the required level after desulphation and starts charging if it is OK)

**Stage 4: SOFT START**  
(Charging with gradually increasing constant current)

**Stage 5: BULK**  
(Charging with a maximum constant current until the battery voltage is reached)

**Stage 6: ABSORPTION**  
(Charging with gradually decreasing current to maximise battery voltage)

**Stage 7: ANALYSIS**  
(Test whether the battery can hold the achieved voltage)

**Stage 8: MAINTENANCE**  
(Constant monitoring of the battery and charging current will be adapted to the battery voltage)

**Battery indicators**

LED	Explanation
25% 25% 50% 75% 100% 	The RED LED (25%) flashes slowly as long as the battery is less than 25% charged. When 25% is reached, it switches to a constant light.
50% 25% 50% 75% 100% 	The RED LED (50%) flashes slowly as long as the battery is less than 50% charged. When 50% is reached, it switches to a constant light.
75% 25% 50% 75% 100% 	The RED LED (75%) flashes slowly as long as the battery is less than 75% charged. When 75% is reached, it switches to a constant light.
100% 25% 50% 75% 100% 	The GREEN LED (100%) flashes slowly as long as the battery is less than 100% charged. When 100% is reached, it switches to a constant light. The RED LEDs (25%), (50%) and (75%) switch off.

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**Error messages**

Original user manual for CT-5000, contact supplier GACELL for further information

No.	LED indicator	Problem(s)	Solution(s)
1	WARNING LED is constantly lit RED	Incorrect polarisation	Check that the charger clamps/eye terminals are connected correctly to the battery terminals.
2	WARNING LED flashes red Mode LED is lit	1) Charger is not connected. 2) Battery terminals are dirty. 3) Battery is dead (voltage below 1V)	1) Connect the charger's red and black clamps or eye terminals to the battery terminals. 2) Clean the battery terminals. 3) Replace the battery
3	WARNING LED flashes red + associated Mode LED flashes	Charger set to 6V on a 12V battery.	Press the MODE button to change the setting. <b>NOTE:</b> Setting the charger to 12V on a 6V battery will destroy the battery.
4	Only the MODE LED is lit and the 4 battery indicator LEDs are flashing	The charger is overheating.	Power is reduced when the charger is too hot. When the temperature drops, the charging process starts again.
5	REPAIR LED lights YELLOW + associated 12V MODE LED	In 12V Repair mode	-----
6	WARNING LED rapidly flashes RED + associated MODE LED	The battery does not receive power during the charging process.	Replace the battery immediately with a new one.
7	Light in MODE LED + the 4 battery indicator LEDs are off	In desulphation phase	-----
8	WARNING! LED flashes red twice and pauses for 3 seconds, flashes red twice and pauses for 3 seconds...	The battery cannot be restored during the desulphation phase or repair phase	1) Replace the battery with a new one 2) If the battery cannot be restored during the desulphation phase, try REPAIR Mode
9	WARNING! LED flashes YELLOW	Sulphated battery. Voltage is below 3V. Battery capacity must be restored.	Replace the battery with a new one or try to restore the battery with REPAIR Mode.

**NOTE: The following situation may indicate that the battery needs to be replaced even if there are no error messages during charging.** If after a full charging cycle and with a 100% charged battery indication it is not possible to start the vehicle (and this is not caused by the vehicle). This is because the battery has lost its capacity and needs to be replaced. Alternatively, you can try running a repair cycle and then repeat the test.

**Type plate pictograms and meanings**



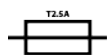
: Class II



: Read the instructions before use



: For indoor use only

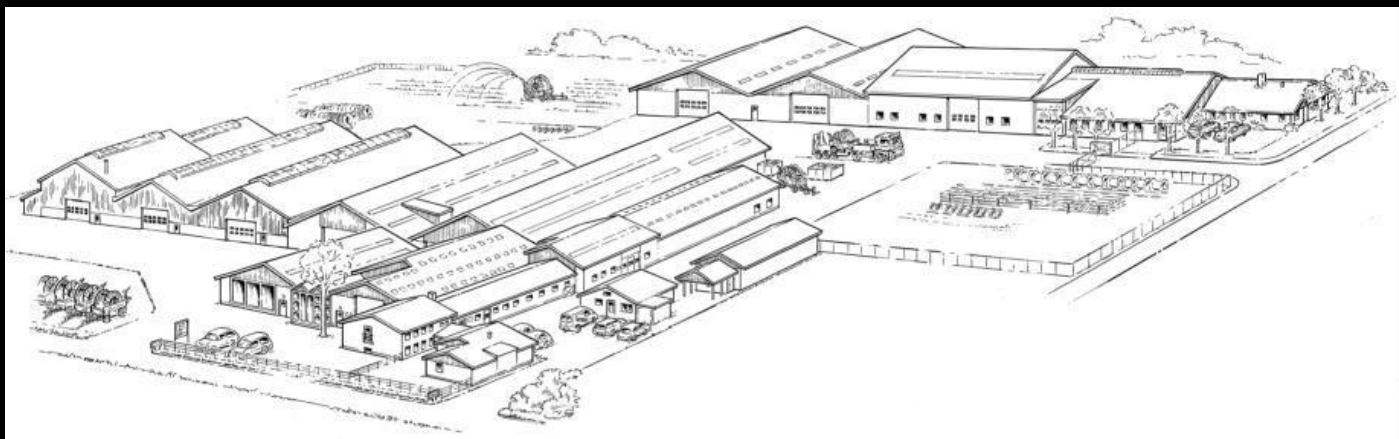


: Fuse



: Disposal of the product

This labelling indicates that the product must not be disposed of with normal household waste. To minimise the environmental impact and increase the amount of recycling, take the device to an approved electronics waste disposal site.



# FASTERHOLT

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