SHUTR®

Controller

Installation Guide

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Product warranty

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Contents

1. Safety and handling instructions

Please follow the safety and handling instructions. Not following the instructions may cause serious injuries and/or damage to the controller unit. Warranty will be voided when the instructions are not followed.

- Electrical wiring must be performed by qualified personnel.
- **Always unplug the controller from the mains <u>before opening the cover</u>.**
- The controller is powered by a mains supply of 110VAC to 240VAC 50-60Hz. Ensure that the supply voltage is not outside of this range otherwise the controller may be damaged.
- Heavy electrical equipment with inadequate mains filtering may cause high voltage spikes on the mains. Avoid connecting the controller to the same mains outlet as it may damage the controller.
- Operating temperature is -20°C to +40°C. Do not operate the controller outside of this temperature range.
- The housing of the controller is dustproof to IP54 level. Do not place the unit in an environment that can cause water to ingress in the unit.
- Before operating the unit, ensure that the unit is properly mounted using 4 screws or bolts using lock washers for additional safety.
- Check that electrical wiring in the unit is properly fitted into the terminals and cannot fall out due to vibration.
- Always check the wiring codes with the corresponding terminals as indicated on the circuit board before powering the controller.
- The cable connected to the NC and NO contacts of the controller should not be longer than 3 meters.
- **(!) DO NOT USE THE CONTROLLER TO DIRECTLY SWITCH THE MAINS OF A MOTOR**. The high current of a motor would destroy the relays of the controller. The relays inside the controller are dimensioned to switch the coil of a low current magnetic switch, latched relay or contactor.
- The controller has a glass fuse. Ensure that:
  - (!) Power is unplugged before you replace the fuse
  - The fuse is replaced with a fuse with the specifications as indicated on the circuit board

Important note:
If your Dust Collector does not have a magnetic switch, this controller is not usable

as-is. By using an additional contactor (relay), capable of switching high currents, the dust collector motor can be switched on and off.   See Chapter 5.4.

2. Controller mounting instructions

antenna
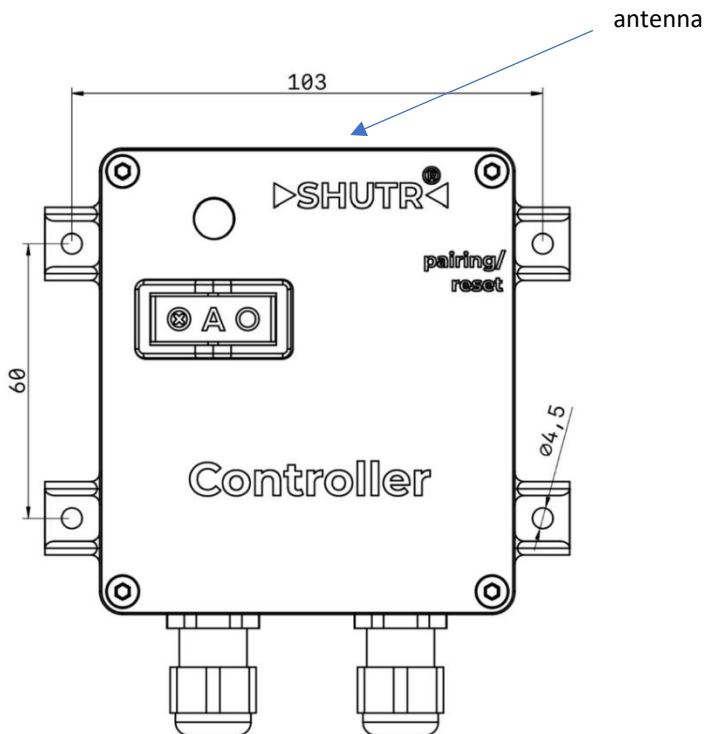
Sizes in mm. Use 4 screws with a diameter of 4mm preferably with a washer and a lock washer to prevent the unit from coming loose due to vibrations when mounted on the Dust Collection unit. Mount the controller in such a way that the indicator light is clearly visible.

Please be aware that the controller has an antenna inside the unit which must be kept clear as much as possible. **Do not mount the controller inside a metal casing or behind a concrete/brick wall.** This will have a negative impact on the ability to communicate with other SHUTR components in the SHUTR Connect™ network.

If there are problems with communication, then re-locate the controller.

3. Controller features

3.1 Functionality

The SHUTR Controller is part of the SHUTR family of products and supports the SHUTR Connect™ protocol. The wireless Controller connects to the Safety Switch (or Magnetic Switch) found on many Dust Collectors. Alternatively the controller may operate a contactor that in turn switches the heavy electrical load of the motor of a dust collector.

Basic use case
The most basic application of the SHUTR controller is to control a machine or dust collector, equipped with a magnetic switch, with the use of a SHUTR remote control.

Advanced use case
SHUTR Gates, Sensors and Remotes can be paired with the Controller in various combinations (Series). The controller will activate the magnetic switch once a Gate, Sensor or Remote in a Series is activated.
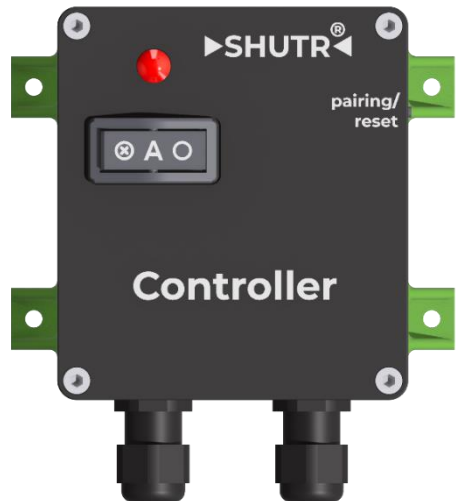
The controller is also activated if any of the manual switches on a Gate or Sensor is switched to "O" (Open/ON).

Pairing
Linking a SHUTR controller to one or more Sensors, Gates and Remotes can be done with the pairing functionality. Pairing can either be done manually, using the push button on the Controller or it can be performed with the SHUTR Connect App.

Minimum open gates / priorities / minimum airflow – per branch
The controller allows to define one or more branches in the ducting. For each branch one can:
- Define the minimum number of open gates and set priorities which gates need to open first.

- Optionally define a minimum airflow in combination with priorities. The airflow calculation is based on the diameter of the gates. 100% airflow is when all gates are open.

No single-point of failure

A great advantage of the SHUTR controller over pneumatic systems is that the SHUTR Connect network has no single point of failure. Automated sliding dampers systems that use compressed air will all fail if the compressor fails. This can actually lead to dangerous situations. The components in a SHUTR Connect network all work independently of each other. Even if the controller fails all components will continue to work.

Safety features

- By connecting the controller to the existing Magnetic Switch on the Dust Collector, the electrical safety features built into the Dust Collector will remain intact.
- With the use of the SHUTR Connect app the controller can be configured to always leave one or more gates open to prevent a vacuum in the system.
- A gate that is in fault mode can be reset remotely with the app.
- The configuration of a controller can be saved and restored on a different controller.

Cyber security

The following security functions have been implemented:

- The Bluetooth Low Energy (BLE) connection with the SHUTR app from your mobile device can only be established when you have physical access to the pairing/reset button on the controller to prevent unauthorized access.
- The BLE connection will automatically terminate after 1 minute of inactivity.
- Communication between the controller and other SHUTR components is encrypted.
- The firmware within a component is encrypted
- The controller only allows for encrypted firmware updates so that no unauthorized code can be loaded into the SHUTR components.
- No internet connection is needed for operation of the SHUTR Connect network.

4. Configuring controller and components

The controller and all components can be configured either manually or using the SHUTR app. The SHUTR app provides complete configuration functionality, while manual configuration only deals with basic pairing/unpairing and reset. This chapter describes how SHUTR components can be paired manually.

4.1 Introduction to pairing

Pairing is a very easy and quick method of setting up a SHUTR Connect network. For more advanced features regarding pairing please refer to the SHUTR App.

Series are linked SHUTR components that work together in a logical way. A series may consist of one or more gate(s), and/or sensor(s) and/or remote(s).

The controller and/or gate(s), as part of a series, can be activated when:
- A paired sensor for this series detects a current flow in the power cable of the woodworking machine to which this sensor is attached.
  (Rocker switch set to "A")
- A sensor for this series that has its rocker switch is set to "O"
- The black (ON) button on a remote in the series is pressed.
- The rocker switch or external switch on a gate in the series is set to "O".

Examples of series:

- The most basic setup is the combination of a controller and one or more remotes. With this setup you can simply switch ON and switch OFF the dust collector with a remote.
- The combination of a controller and one or more sensors. When a woodworking machine is switched ON, the sensor attached to its power cable will be activated. The controller will then be activated and switch the Dust Collector ON.
- The most common setup is a controller in combination with multiple series: one series for each woodworking machine. Each series consists of a sensor and a gate. When the woodworking machine is turned ON, the attached sensor detects this, the respective gate will open, and the Dust Collector will be turned ON. (Note multiple gates per series are also possible if the woodworking machine has more than one dust port).

Important to know:
- Pairing is always initiated by a controller
- The controller is always part of a series
- A SHUTR system always has at least one controller

You can have multiple SHUTR controllers on one location, each with their own series. Each controller will control its own Dust Collector.

Without the use of the SHUTR App, it is possible to manually initiate a basic set of functions:
• Pairing (add, change or delete series)
• Reset controller or components in a series to factory default settings
• Reset controller or component to factory installed firmware

The next chapter explains the manual configuration of the controller.

5. Configure components manually

To enter the pairing mode and create a new series to link/pair SHUTR components to the controller:
  o Set rocker switch to AUTO
  o Press pairing button for 3 seconds
  o LED turns BLUE: you are now in pairing mode

All available SHUTR components receive a message that pairing was initiated.
If components are not paired yet:
- they will go into pairing mode if their rocker switch is on AUTO
- The component's LED will start blinking BLUE

Components that are already paired as part of other series, will not enter pairing mode.

5.1 Make a series
If pairing was manually initiated on the controller, you can pair components into a new series if they have not been paired yet.

To pair a sensor or a gate:

- o   Initiate pairing on the controller (see above)
- o   Press pairing button shortly once on the sensor or gate
- o   LED will turn from blinking BLUE into steady BLUE
- o   Press the button again to un-pair, LED will blink BLUE again
- o   To add another component to the series, press the button on that component as well
- o   If you have finished adding components to the series, press the button on the controller and the components are now paired.
- o   All LEDs of all components go back to operational mode (WHITE/GREEN)

5.2 Pairing a Remote

A SHUTR Remote is a special case as it has no pairing button or rocker switch. Instead, we use the red (OFF) and black (ON) button.

To enter pairing mode:
- o   initiate pairing on the controller as usual
- o   On the remote: press the red button and add the black button so both are pressed at the same time and release both.
- o   the remote will now "wake up" and enter in pairing mode (if it was unpaired)
- o   LED will blink BLUE if it is not paired yet, or steady BLUE once paired.

Follow instructions for pairing as for every other component in chapter 4.3 and use the RED button to pair/un-pair.

5.3 Add or delete a component to or from an existing series

Select a paired component in an existing series:
- o   Press its button >3 sec while it's rocker switch is on AUTO
- o   LED will blink BLUE
- o   LED on the controller will blink BLUE
- o   Press the button on the controller for > 3sec
- o   LED on the controller will turn steady BLUE: it is now in pairing mode for the particular series
- o   Components with a steady BLUE LED are in the particular series, all other unpaired components LED will blink BLUE

From this point on, it is possible to delete and/or add components to/from the particular series:

Add a component:
- o   Choose an unpaired component (LED blinks BLUE)
- o   Press the button shortly once
- o   LED turns from blinking BLUE into steady BLUE
- o   Component is now paired to the series

Delete a component:
- o   Choose a paired component in the series (LED steady BLUE)
- o   Press the button shortly once
- o   LED turns from steady BLUE into blinking BLUE
- o   Component is un-paired from the series

To finish:
- o   Press the button on the controller once to end the pairing mode
- o   All LED's go to operational mode (WHITE/GREEN)

For a remote a different sequence is needed as the remote needs to be "awake" in order to stat the procedure:

- o   On the remote: press the red button and add the black button so both are pressed at the same time and release both.
- o   the remote will now "wake up"
- o   Press again the RED button and add the BLACK button
- o   Keep them both pressed for > 3 sec
- o   LED will blink BLUE
- o   LED on the controller will blink BLUE
- o   Press the button on the controller for > 3sec
- o   LED on the controller will turn steady BLUE: it is now in pairing mode for the particular series
- o   Components with a steady BLUE LED are in the particular series, all other unpaired components LED will blink BLUE

Use the RED button to toggle between pair and unpair.

5.4 Reset a component or series
If you reset a component, or a component that is part of a series, this component and all other components in that series will be reset and unpaired. Once a component has been reset, it is available again for pairing.

To reset a **gate** or **sensor**:
- o   Set the rocker switch to OFF
- o   Press the button > 10 seconds
- o   After 10 seconds, the LED goes from RED to blinking YELLOW slowly
- o   Release the button, LED blinks YELLOW quickly
- o   Press the button AGAIN shortly within 5 seconds
- o   The component has now been reset and unpaired
- o   Not pressing the button again within 5 seconds will automatically cancel the reset

To reset a **remote**:
- o   press the red button and add the black button so both are pressed at the same time to "wake up" the remote
- o   Press the RED button > 10 seconds
- o   After 10 seconds, the LED goes from RED to blinking YELLOW slowly
- o   Release the button, LED blinks YELLOW quickly
- o   Press the RED button AGAIN shortly within 5 seconds
- o   Remote has been reset and unpaired
- o   Not pressing the RED button again within 5 seconds will automatically cancel the reset

5.5 Reset controller to default settings (also erases pairing data)

Reset the controller to factory settings:
- o   Set the rocker switch to OFF
- o   Press the button > 10 seconds
- o   After 10 seconds, the LED goes from RED to blinking WHITE slowly
- o   Release the button, LED blinks WHITE quickly
- o   Press the button again shortly within 5 seconds
- o   The controller has now been reset to default settings and will reboot
- o   Not pressing the button again within 5 seconds will automatically cancel the reset

After a reset to default settings:
- -   The controller switches OFF the Dust Collector
- -   All settings are set to defaults
- -   The controller sends a reset message to the SHUTR network to all <u>paired</u> SHUTR components, which will then erase their pairing information also
- -   The controller will now erase all of its pairing data and restart
     The controller is now back to factory default settings with all previously paired components now unpaired.

5.6 Reset to factory default

In addition to resetting to default settings, it is also possible to restore the originally factory installed firmware on the controller or a component. To do so, perform the following steps:

- Unplug the controller from the mains
- Keep the button pressed for >15 seconds while restoring power to the controller
- Release the button when the LED turns on again (WHITE or GREEN)
- The controller now runs the original factory firmware with factory default settings.

Use this procedure only if a fatal crash causes the controller to not work anymore. If you have updated the firmware before (with the app), you will have to do so again in order to run the latest version of the SHUTR firmware.

Using the SHUTR App you may be able to restore a previous configuration if you have saved it beforehand.

6. Configure by using the SHUTR Connect app

While basic features for pairing and setting up the controller can be performed with the rocker switch and pairing/reset button, many more advanced features can be accessed through the SHUTR Connect app. The SHUTR Connect app on your mobile device connects over Bluetooth to the controller and provides the following features:

- Connect to an available nearby SHUTR controller
- Allow for pairing, unpairing and identifying components
- Provide a Site Name and a name for each Series you define
- Viewing and changing settings on controller, series and connected components
- Define branches
- Add minimum open gates per branch and set priorities
- Add minimum airflow per branch combined with priorities for open gates

The SHUTR App is available for Apple® iOS and Google® Android.

## 6.1 The SHUTR Connect App - activating Bluetooth

The app communicates with the controller by Bluetooth Low Energy. To establish a connection between the controller and the App:

o   Open the App, login if needed (or create an account first) and start the search for available SHUTR controllers

o   Press the reset/pairing button on the controller 3 times shortly (rocker switch on AUTO). The LED will start blinking purple – the Bluetooth connection is now active.

You will now see the controller in the App: press on the controller button in the app to select and connect to the controller.

6.2 Main screen
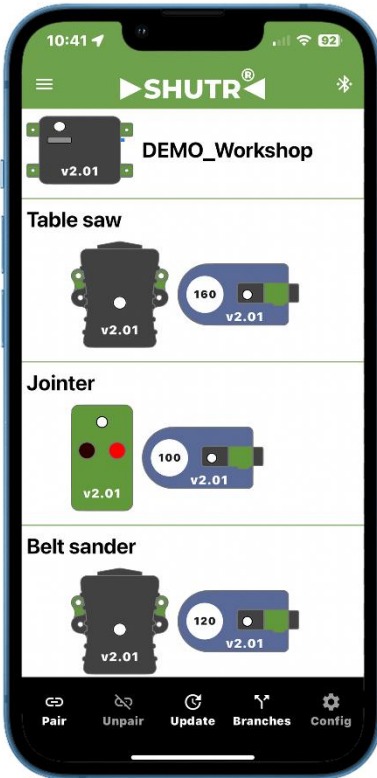
Features

-   **Pair & Unpair**:
    Change, add or delete paired
    devices/series
-   **Update** firmware of selected components
    over-the-air (OTA)
-   **Branches**: define series for each branch
-   **Config**: configure settings for selected
    device

The drop-down menu offers the following options:

-   **Over-the-Air (OTA) firmware updates** on the controller and connected SHUTR
    components.
-   Allow for **firmware rollback**
-   Ability to **backup and restore** a configuration
-   Restore **default settings**
-   Change **language** of the App

6.3 Controller configuration

Mode:
- Magn. switch mode (DIP sw 4=off)
- Contactor mode (DIP sw 4=on)

Site name
max. 14 characters

Time before the dust collector is switched on after activation of a gate, sensor or remote

Time before the dust collector is switched off after de-activation of a gate, sensor or remote

Pulse length to switch on a magnetic switch (when in magn. Switch mode)

Pulse length to switch off a magnetic switch

Minimum time the dust collector must be switched off (cool down time)

Minimum time the dust collector needs to run. Switching a motor on/off many times in a short interval may cause damage.

Minimum no of gates that must be open before the dust collector switches on

Default time between de-activation and closing of a gate (unless individually set)

Default sensitivity (unless individually set)

When off, the component LED's will light only in case of fault or activation.

When off, the controller will only react to remote(s) to switch the dust collector on/off.

Controller default settings

- Dust collector ON delay [0, 0.5, 1, 1.5, 2] sec - default 1 sec
- Dust collector OFF delay [0…255] sec - default 5 sec
- Relay pulse length ON and OFF [0.5, 1, 1.5, 2] sec - default 0,5 sec
- Dust collector minimum RUN time [0…60] min – default 0 min
- Dust collector minimum OFF time [0…60] min – default 0 min
- Minimum # open gates [0…8] for vacuum protection- default 1*
- Default open gate delay [0...255] sec - default 5 sec
- Default sensor sensitivity [0…3000] - default 75 = high sensitivity
- LED indicators sensors and gates ON/OFF - default ON
- Activation of Dust collector by sensors/gates ON/OFF - default ON

(*) Important: setting this value to zero (0) may create a situation whereby a vacuum is created by the dust collector. This may lead to damage to the ducting system. The vacuum safeguard can be set to 0 (zero) if the controller is not connected to the dust collector.
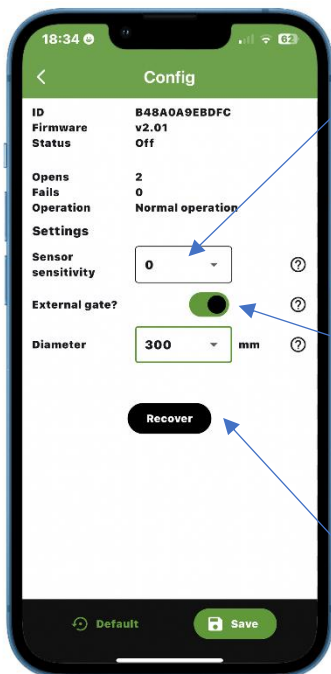
6.4 Configure a gate
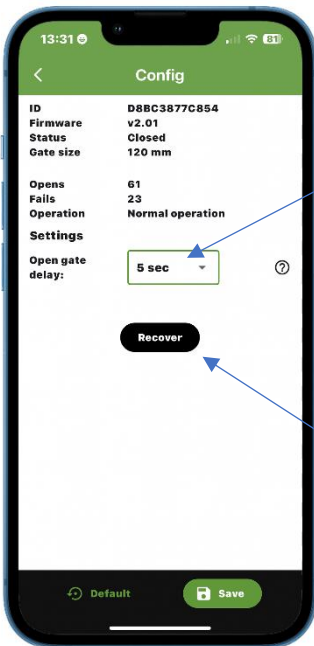
The Open gate delay is the delay from Open state to closing state:

- The amount of time chosen replaces the global delay as configured in the controller config screen.

- If left to zero the gate will use the global delay.

The recover button allows for remotely resetting a gate when it is in fault mode.

6.5 Configure a Sensor

Features

Sensor sensitivity can be set from 75 (high sensitivity) to 3000 (very low sensitivity). Changing the sensitivity can be useful if a processing machine has a standby current. The sensor sensitivity can be changed (less sensitive) so that it will not be triggered by the standby current.

Activate the external gate option if you want to include a pneumatic damper to the system. Clamp the sensor on its processing machine. The diameter of the pneumatic damper will be used to include the damper in the airflow calculations.

The recover button can be used to reset the sensor remotely.

6.6 Define branches
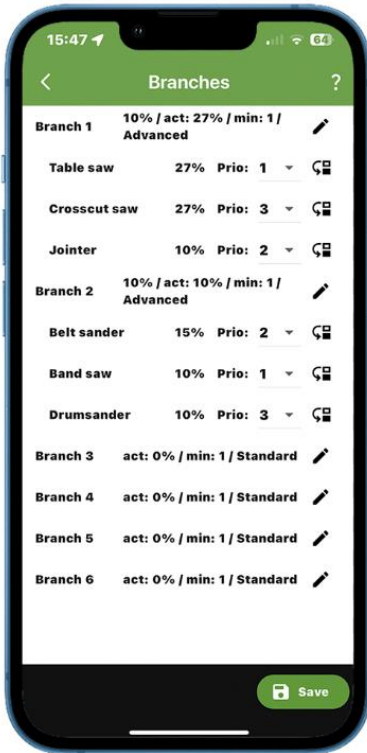
Features

- **Grouping series** into branches off the main ducting.
- **Set priorities** per series within a branch: default 1 = high priority
- **Move series** to a different branch – defaults to priority 0 = not used to reach the minimum open gate count.
- Set **minimum open gates** per branch - default 1*
- Set **required airflow** % per branch – default 0% (advanced mode)
- See a **series airflow % of the total %** of all series (advanced mode)

Standard mode

Series connected to the same part of a duct, can be grouped into branches (1-6). By default, all series are part of branch 1. Series can be moved to another branch using the arrow/move icon to the right of the series. Specific requirements can be set for a branch (pencil icon) and priorities given to its connected series. Settings of a branch define or show: **Required%/Active%/Min open gates/Algorithm**

- **Min open** gates for a branch (0-8)
  (*) WARNING: Setting this to 0 may lead to a vacuum which can damage the dust collector and/or other parts of the dust collection system or lead to malfunction!
  The total number of min open gates in all branches containing gates should be

equal to or higher than the controller vacuum safeguard setting! Note: The vacuum safeguard can be set to 0 if the controller is not connected to the dust collector.

- Algorithm "**Standard**" uses series and their priorities to decide which gate(s) to open in order to maintain the minimum open gates for this branch.

- **Priority** 0 for a series means that the series does not open its gate(s) in order to maintain the minimum open gates. Priority 1 is the highest priority and will be the first series to open its gate(s) in order to maintain the minimum open gates. Priority 2 is the next one to open, etc. Although it is possible to have series with the same prio in a branch, this is not advised (unless it is prio 0) For series with the same prio, the algorithm will open a gate based on which one was closed the longest time and close gates based on which one was open the longest time. Priorities for series that do not have SHUTR gates are not relevant and are best set to 0.

Advanced mode

- Algorithm **"Advanced"** additionally allows for setting the minimum required flow % for this branch when series in this branch are active.

Req. %: The required percentage of total possible flow. Total possible flow is when all gates in all branches would be open (which is defined as 100% flow). All series that include SHUTR gates or external gates show their percentage of the total flow possible. This is calculated by the SHUTR controller based on diameters and cannot be changed. When the required branch flow % is higher than the total % of the active series, the algorithm will automatically open additional gates based on series priorities in order to reach this minimal required flow %.

Act. %: The active flow % based on all currently open gates in this branch. This is informational only.

7. LED indicator color codes

If the controller is activated, it means that the Dust Collector is switched ON
(LED is GREEN).
If a gate is activated, it means that it is OPEN (LED is GREEN).
If a sensor is active, it means it detects that a machine is turned ON (LED is GREEN).
For all components: if the LED is WHITE, this means OFF or CLOSED.

Color	Blinking/steady	Status
WHITE	steady	Ready, component OFF, communications oke
WHITE	blinking slowly	Dust Collector will turn OFF after SWITCH OFF or min off time delays have passed Gate determining its size.
WHITE	blinking very fast	Component selected in App (identified)
WHITE	blinking fast	Gate opening
WHITE	blinking	Controller: manual pairing request from a component in an existing series (press controller pairing button for 3 sec to start manual pairing)
GREEN	steady	Ready, component ON/OPEN, communications oke
GREEN	blinking slowly	Dust Collector will turn ON after SWITCH ON or min runtime delays have passed. Gate: will close after open gate delay has passed.
GREEN	blinking fast	Gate opening
BLUE	blinking slowly	Controller: received pairing request from series. Component: available for pairing.
BLUE	steady	Controller in manual pairing mode. Component is paired (gate, sensor, remote only).
MAGENTA	blinking fast	Bluetooth activated but not connected yet.
MAGENTA	blinking slowly	Bluetooth active and connected to an App
CYAN	blinking slowly	Uploading new firmware to a component
CYAN	blinking fast	Installing new firmware on a component
RED	flashing 1x	Gate malfunction (Gate is also flashing RED)
RED	flashing 2x	Communication error with one or more components (offline or wifi blocked)
RED	flashing 3x	Not enough open gates to activate dust collector (safeguard against a vacuum in the ducting)
RED	flashing 4x	Component firmware upgrade failed.

The SHUTR Connect app has the option to turn off the component LED when in-
active in Automatic mode (enable/disable in controller settings).

8. Wiring a SHUTR Controller
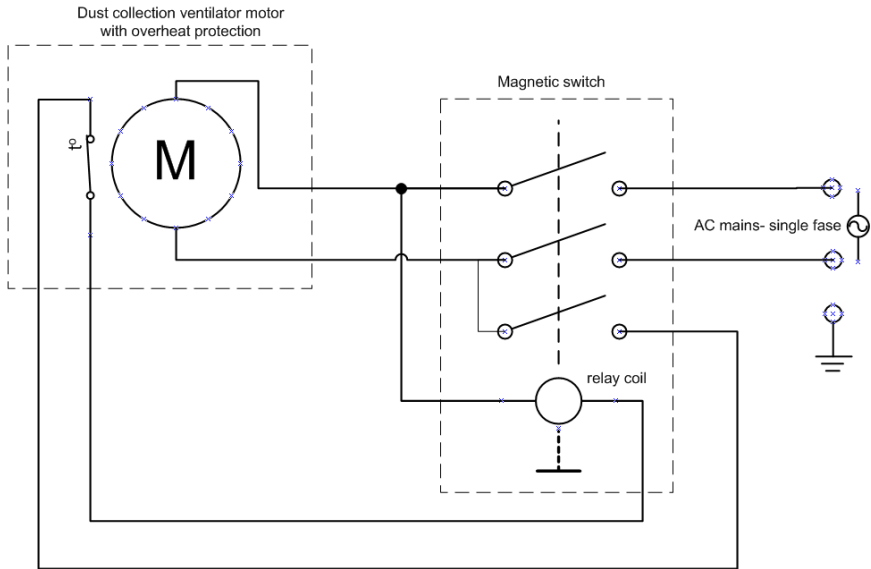
8.1 Why a magnetic switch?

Dust Collection systems or processing machines can have a magnetic switch (or safety switch) to activate the motor. In many countries, especially EU countries, a magnetic switch is mandatory as it provides additional safety:

- If the power fails (interruption of the mains supply) the magnetic switch returns to the "OFF" position and needs to be turned "ON" again manually if one wants to power up the motor again.
- In combination with a motor-overheat safety switch, the magnetic switch can be de-powered when the overheat switch is activated.

To install a second control mechanism, like the SHUTR Controller, it is important to maintain the safety features provided by dust collector and its the magnetic switch.

8.2 How does a magnetic switch work?

Dust collection ventilator motor with overheat protection

Magnetic switch

M

AC mains- single fase

relay coil

A magnetic switch is effectively a relay that can be operated manually, as well as through a coil. The magnetic switch consists of 3 main parts:

1. The switch contacts, for a single-phase setup: 2 contacts + 1 contact for the coil
2. A coil that, if activated, can keep the contacts closed
3. Two manual push buttons (usually green & red) that activate/de-activate the relay mechanically

The idea behind the magnetic switch is that: If the green button is pushed, all contacts are closed. As the contact for the coil is also closed it powers the coil of the relay and therefore the relay stays closed. We call this a latched relay.
This situation remains until:

   a) the power supply (mains) is interrupted
   b) the red button is pushed which mechanically opens the relay again
   c) the overheat safety switch on the motor opens.

The motor-overheat safety switch is normally closed (NC) but opens when the motor reaches a certain high temperature. Once it opens the current to the magnetic switch coil is interrupted and the relay will open and the motor shuts down.

8.3 Wiring the Controller to a magnetic switch

WARNING: DO NOT use the SHUTR Controller to directly switch a motor. It is designed to use the safety switch/magnetic switch to switch the mains of the motor. If your dust collector does not have a safety switch/magnetic switch you will need a Contactor. See the next paragraph how to connect a contactor to the controller.

The SHUTR Controller connects to the existing magnetic switch of your dust collection system and
a) co-operates to switch the dust collector switch on and off, and
b) maintains the safety functions provided by the magnetic switch.

In effect you will still be able to use the magnetic switch in combination with the SHUTR controller with one drawback: if the dust collector was turned on by controller and switched off by the magnetic switch, the controller still assumes the dust controller is "on".

How does it work?
The controller sends a short pulse to the magnetic switch with the NO contact to activate the coil and a pulse with the NC contact to deactivate the coil. The pulse length is default 0,5 seconds but can be changed with the SHUTR Connect app. Also, the start-delay, default 0,5 seconds, can be set.
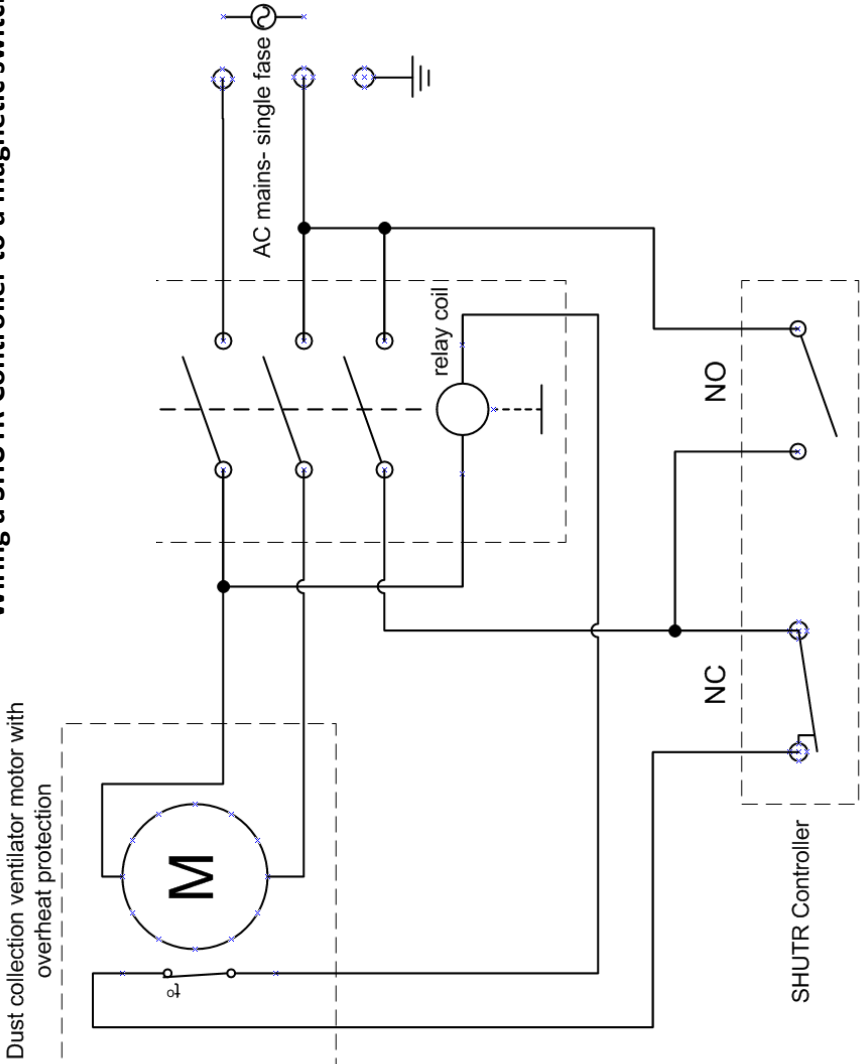
How to connect the controller?
The controller has two potential free contacts: a normally open contact (NO) and a normally closed contact (NC).

To connect the controller, in words:
- the NO contact is connected in parallel with the coil contact of the magnetic switch (green button), and
- the NC contact is connected in series with the relay coil (red button).

Wiring a SHUTR Controller to a magnetic switch

AC mains- single fase

relay coil

NO

NC

Dust collection ventilator motor with overheat protection

M

SHUTR Controller

8.4 Wiring the Controller to a contactor

If the dust collector or processing machine does not have a magnetic switch, a contactor needs to be used to switch the high current that occurs when a motor is switched on. The contactor is an external relay that is connect to the controller on one end, to the mains power and to the dust collector. If the controller switches on, the contactor will provide mains power to the dust collector.
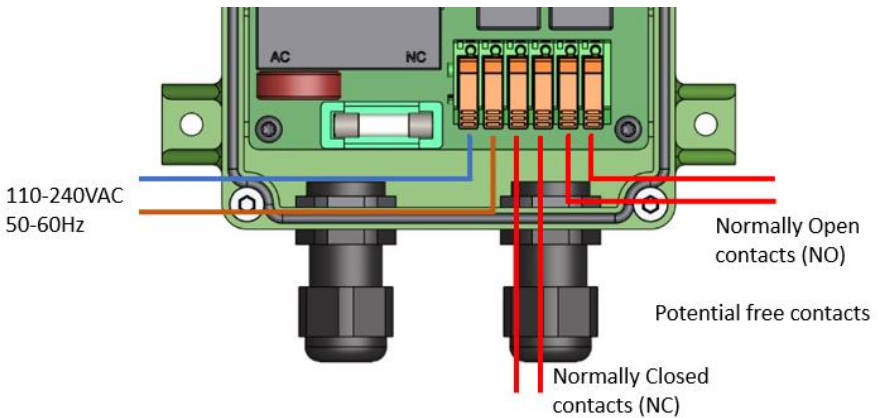
Steps required:
- Remove the power from the controller and open the controller housing.
- Move DIP switch 4 to the ON position (NO contact will now stay closed when the controller is activated - instead of providing a pulse)
- Wire the controller to a contactor according to the following diagram:
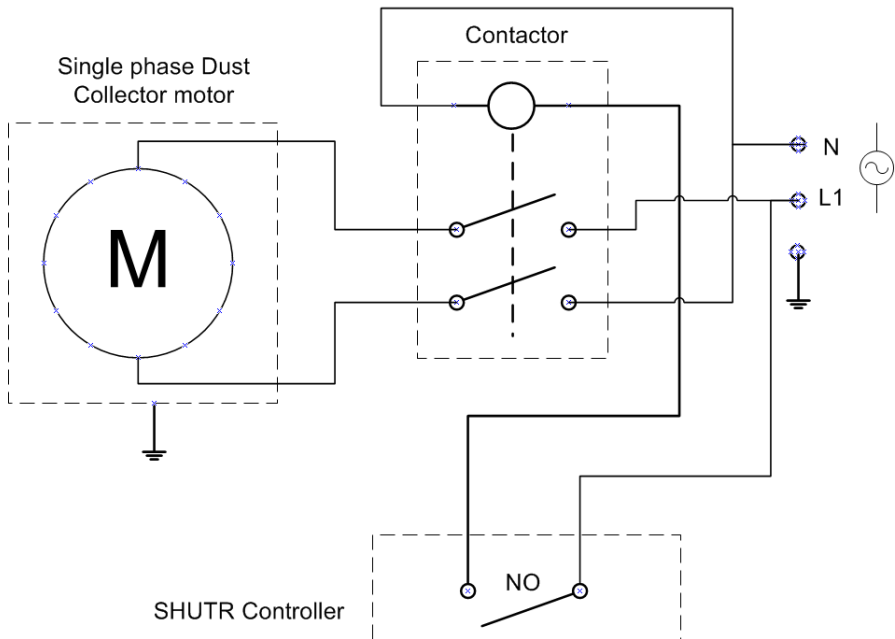
9. Hardware overview
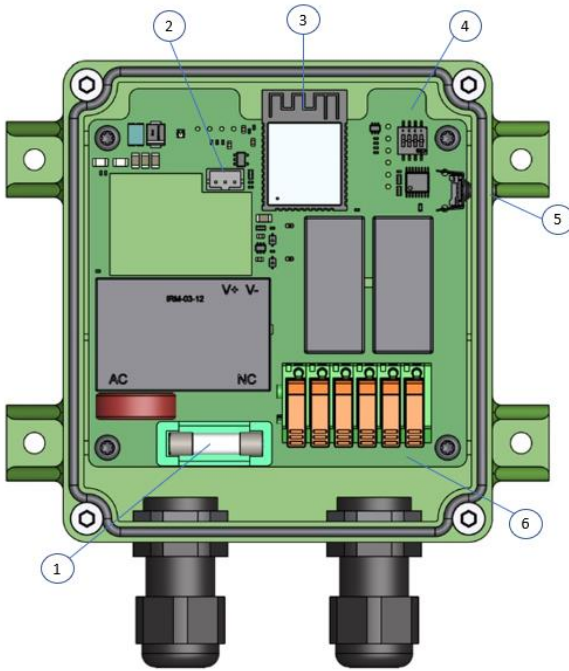
Item	Description
1	Glass fuse 250mA slow blow
2	Rocker switch connection
3	Antenna
4	DIP switches
5	Reset/pairing switch
6	Terminals

110-240VAC 50-60Hz

Normally Open contacts (NO)

Potential free contacts

Normally Closed contacts (NC)

Parts list
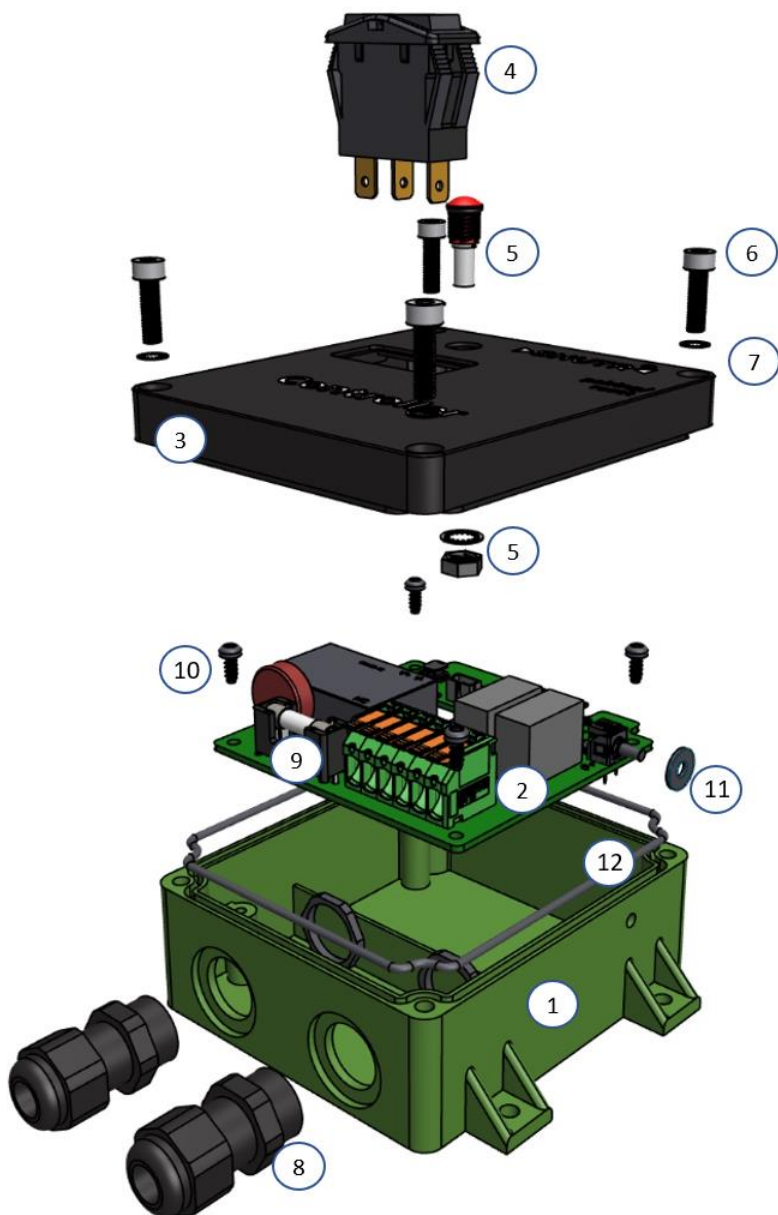
SHUTR Controller part #1013001000-001

Item	Part #	Description
1	1013101000-001	Controller housing
2	1013310000-003	Controller PCB v3
3	1013102000-001	Controller cover
4	1011325000-001	Rocker switch assembly
5	9800301018-000	LED pipe assembly PC clear
6	9920004045-004	Bolt Hex SSA2 DIN912 M4x45
7	9960001001-004	Lock washer M4
8	1013420016-000	Cable gland 16mm IP67
9	1013440250-000	Glass fuse 250mA slow blow
10	9910002007-003	Screw TX SS-A2 Plastite M3x7
11	1013452000-000	EPDM seal 1mm x 4mm
12	1013451000-000	EPDM MOS cord seal 2mm

10. Specifications

SHUTR controller specifications *

Model, part number	SHUTR Controller, 1013001000-030
Power supply	Built-in power supply, 110-240VAC, 25Watts max.
Radio signal	2.412-2.462 GHz. 19dBm max output power.
	Built-in antenna.
	Range 50-100 meters in open space.
Supported # SHUTR components	60 components on a single controller, multiple controllers per site.
Operation	Rocker switch for OFF/AUTOMATIC/ON
	Push button for RESET/PAIRING
	LED indicator for ON/OFF, reset, pairing, Bluetooth Low Energy connection, error.
Contacts	Two potential free contacts, 1xNO – 1xNC, max 400V 1 Amps.
Housing material	Polycarbonate/ABS, IP54
Safety & conformity	CE compliant conforming to RED, EMC, LvD and RoHs
	Radio FCC certified
Warranty period**	1 year
Package includes	Controller unit with EU power cable
	1 meter cable to connect to magnetic switch
	3mm hexagon screwdriver
	Installation Guide

(*) Specifications may change without prior notice.
(**) Please refer to the Warranty clause on www.blastgate.com

11. Diagnostics

Symptom	Possible cause and remedy
You want to start a pairing session on a gate or sensor but the LED turns RED instead of WHITE	The rocker switch needs to be in the AUTO position first. If it is in the CLOSE position, you start a reset sequence instead, hence the RED LED
The LED on the controller keeps flashing RED	Possible causes: A gate or sensor was unplugged (plug back in or, if the gate or sensor was unplugged intentionally, unplug the controller from the mains and plug back in) A gate or sensor is unable to communicate The shutter of a gate is stuck and went into fault mode There are not enough gates open to safely start the dust collector
The LED on the Remote blinks MAGENTA just before falling asleep	Batteries low, need changing
Magnetic switch on the dust collector starts jittering when switched ON	This can be problematic. This happens with low quality magnetic switches. Try to increase the pulse time with the SHUTR app. If this does not work, then the magnetic switch is not suitable for this application. Contact support for a solution.
Intermittent problems with communication	1. Check if the components are covered by metal or by a wall: this will negatively impact the transmission. 2. For communication the SHUTR components all use Wifi frequency channel 1. This should not be a problem when there is an existing local Wifi network as they usually will switch to another channel automatically. If it is a problem,

		then try to manually set the Wifi channel of your local network to another channel then 1 on the router or access point.
Unexpected reboot of a component	1.	As the SHUTR components will most certainly be used in an industrial environment with heavy machines, it is possible that severe power spikes influence the electronics. Try to plug the wall mount adapter in a different power outlet.
	2.	Make sure that the metal housing of the gate is always grounded.

EC declaration of conformity

Manufacturer:

BlastGate.com B.V.

Botsholsedwarsweg 2A

3646AK Waverveen

The Netherlands

Declares that the following line of products:

Product family: **SHUTR**

Model(s): **Controller**

Fulfill all relevant provisions of the Radio Equipment Directive (RED directive), 2014/53/EU. According to the harmonized standards:

EN 300 328 (V2.2.2)	Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz band; Harmonised Standard for access to radio spectrum

Fulfill all relevant provisions of the Electromagnetic Compatibility Directive 2014/30/EU. According to the harmonized standards:

EN 301 489-1 (V2.2.3)	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements
EN 301 489-17 (V2.2.1)	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment; Part 17: Specific conditions for Broadband Data Transmission Systems
EN 61326-1 (2013)	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
EN 55011 (2016) + A1 (2017) + A11 (2020)	Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement
EN 61000-3-2 (2014)	Electromagnetic compatibility (EMC) — Part 3-2: Limits — Limits for harmonic current emissions (equipment input current <= 16 A per phase)

| EN 61000-3-3 (2013) | Electromagnetic compatibility (EMC) — Part 3-3: Limits — Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection |

Fulfills all relevant provisions of the Low voltage directive 2014/35/EU.
According to the harmonized standards:

| EN 62368-1 (2014) | Audio/video, information and communication technology equipment - Part 1: Safety requirements |
| EN 62311 (2008) | Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz) |

Fulfills all relevant provisions of the EC RoHS directive 2011/65/EU.
According to the harmonized standards:

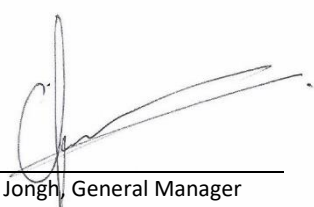| EN IEC 63000 (2018) | Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances |

The signatory on behalf of the manufacturer:

Waverveen, The Netherlands	20 November 2023	Chris de Jongh, General Manager
Place of issue	Date of issue	

BlastGate.com

SMART DUST CONTROL