SIMARINE

# SIMARINE SAC15R-230V manual

document v1.0

## Content:


1 Introduction ..... 2
1.1 Product description ..... 2
1.2 Glossary of terminology ..... 2
2 Technical specifications ..... 3
2.1 SAC15R-230V ..... 3
2.2 Unit dimensions ..... 3
2.3 Connectors – detailed description ..... 4
2.4 Internal simplified schematic ..... 4
2.5 Internal detailed schematic ..... 4
3 Unit setup ..... 5
3.1 Installation ..... 5
3.2 Connecting to AC power source and consumers ..... 6
3.3 Settings ..... 7
3.4 LCD display ..... 7
4 NMEA2000 ..... 8
5 Change notes ..... 11

# 1 Introduction

## 1.1 Product description

The SAC15 unit (short for product name SAC15R-230V) is a power distribution unit for alternating current systems on vessels. It distributes power to multiple AC consumers.

The unit is controlled using the Simarine Nereide 2 control panel and allows the user to control up to five outputs. The output channels consist of motorised circuit breakers which integrate two functions: over-current protection and switching functionality.


## 1.2 Glossary of terminology

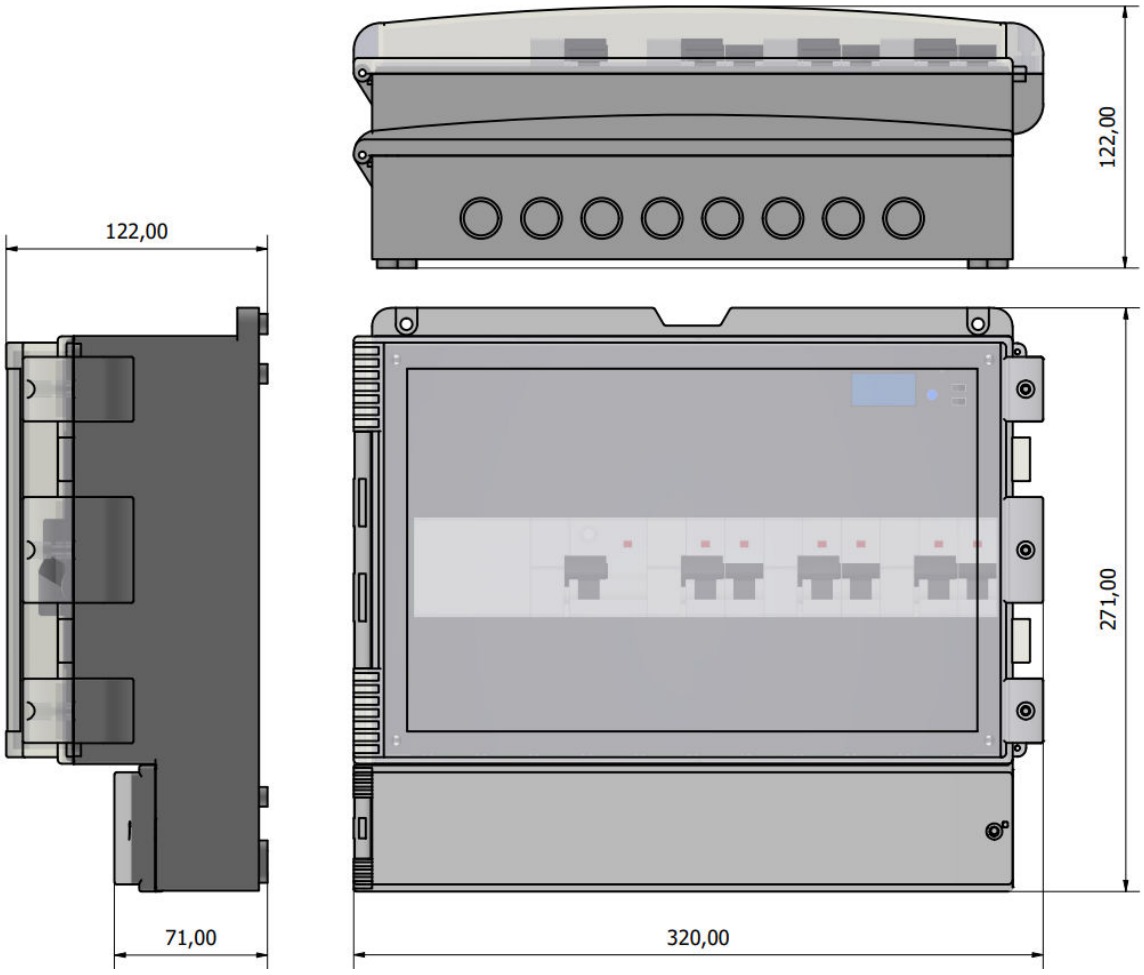
| | |
|---|---|
| Nereide 2 | Control panel with switches and integrated PICO battery monitor. Simarine product label SCP-210. |
| SiCAN | Proprietary CAN-bus based protocol for connecting distribution units to control panels. |
| SiCOM | Proprietary RS485 based protocol for connecting Simarine units to PICO. |
| AC | Alternating current |
| NMEA2000 | Protocol for connecting and communicating between marine oriented devices. |
| N2k | Abbreviation for NMEA2000. |
| MCB | Miniature circuit breaker |

# 2 Technical specifications

## 2.1 SAC15R-230V

- AC inputs ..... 1
- AC outputs ..... 5
- Voltage range ..... 100 – 240 V AC
- Input current rating, continuous ..... 25 A
- Input current rating, max. ..... 32 A, 60 min
- Output current rating – per output, continuous ..... 20 A
- Output current rating – per output, max. .....25 A, 60 min
- Input connector ..... Lever operated spring latch
- Output connector ..... Removable lever operated spring latch
- Input connector allowed conductor type ..... Solid, stranded, stranded with ferrule
- Output connector allowed conductor type ..... Solid, stranded, stranded with ferrule
- Input connector wire cross section ..... 1 – 6 $mm^2$ (including ferrule)
- Output connector wire cross section ..... 1 – 6 $mm^2$ (including ferrule)
- Available circuit-breaker ratings ..... 10 A, 16 A, 20 A, *
  * - 25 A is available with Simarine engineer consultation
- Circuit breaker type ..... Motor driven double pole
- Supported control protocol ..... SiCAN, NMEA2000
- Supported Simarine control panels ..... Nereide 2

## 2.2 Unit dimensions



## 2.3 Connectors – detailed description

Input:

- 3 pin Wago 2606-1103 conductor cross-section: 1 ... 6 mm² / 18 ... 10 AWG

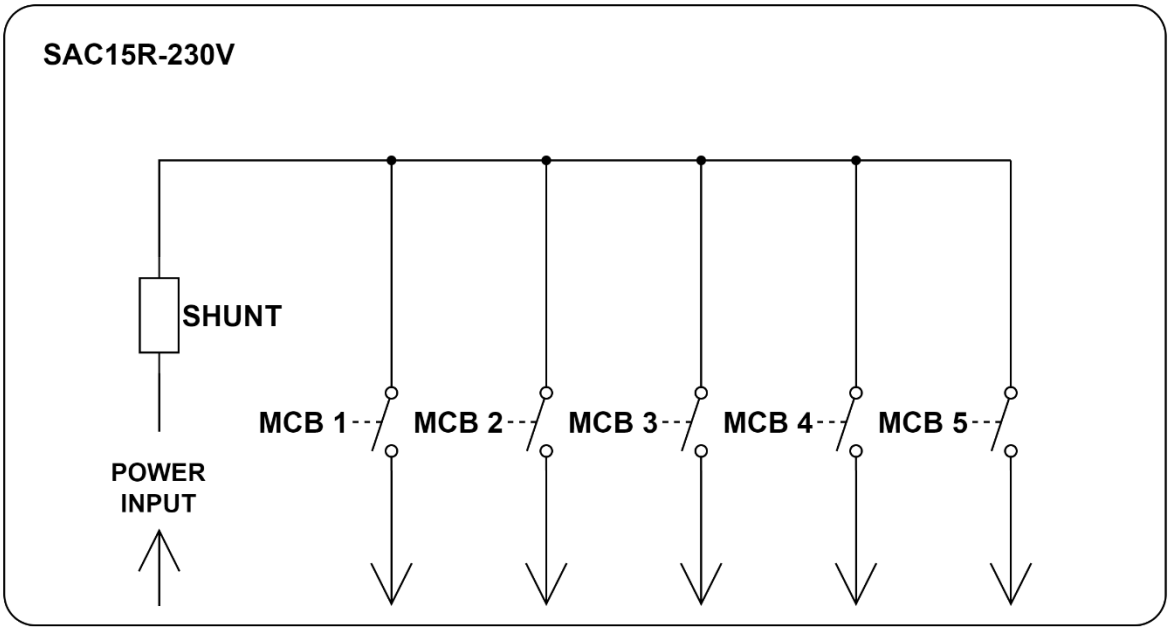
Output:

- 3 pin Wago 831-1103 conductor cross-section: 1 ... 6 mm² / 18 ... 10 AWG

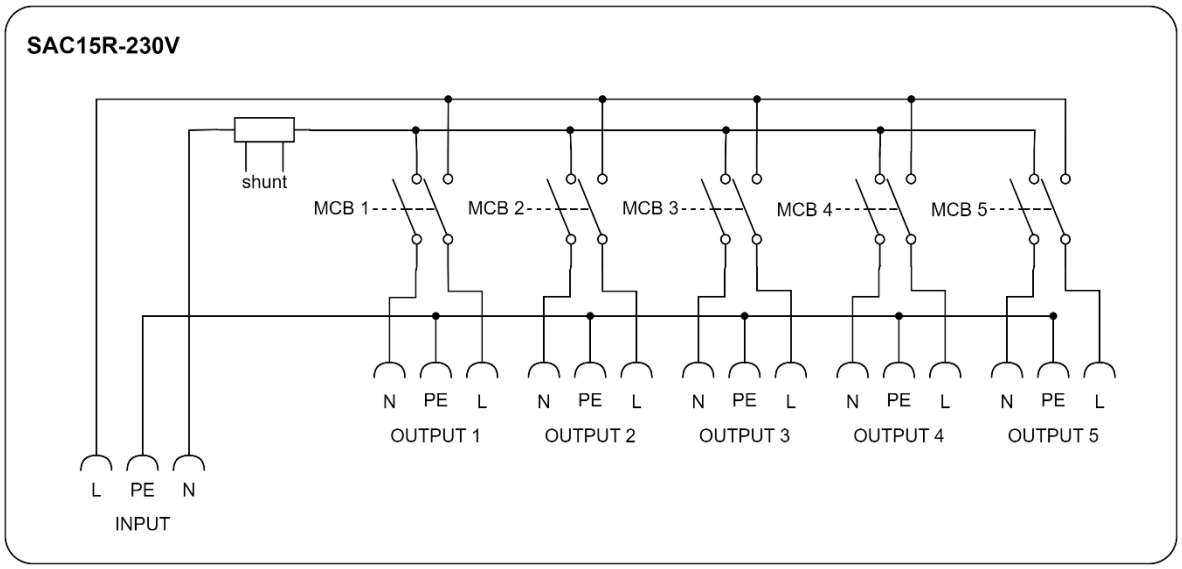
SiCAN/NMEA:

- DeviceNet 5 pin M12 female

## 2.4 Internal simplified schematic



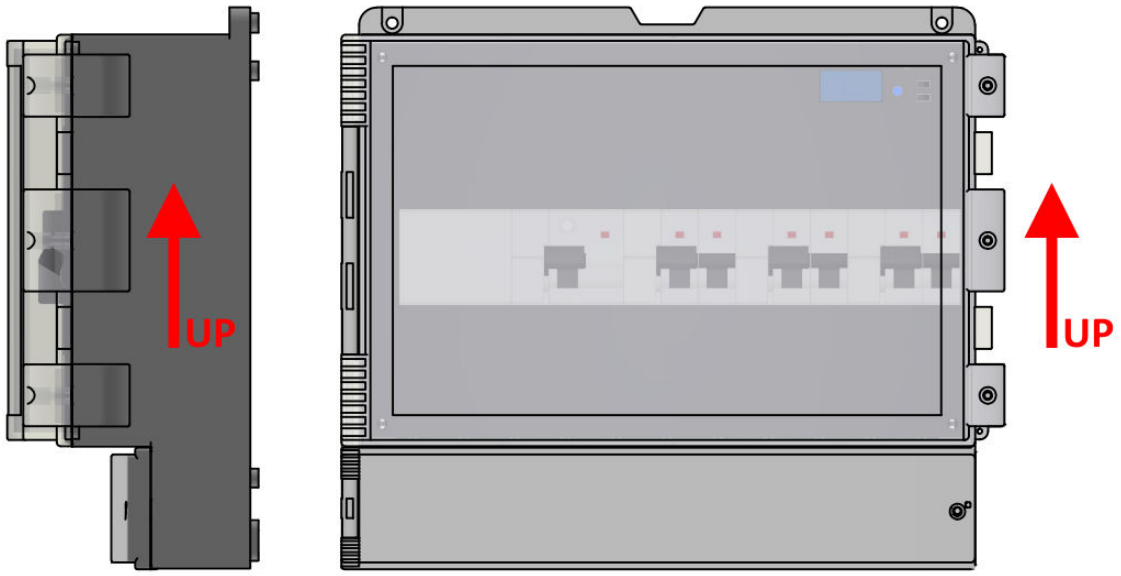

## 2.5 Internal detailed schematic



# 3 Unit setup

## 3.1 Installation

Unit must be mounted vertically to a stable wall. Unintended water ingress is prevented only this way.



## 3.2 Connecting to AC power source and consumers

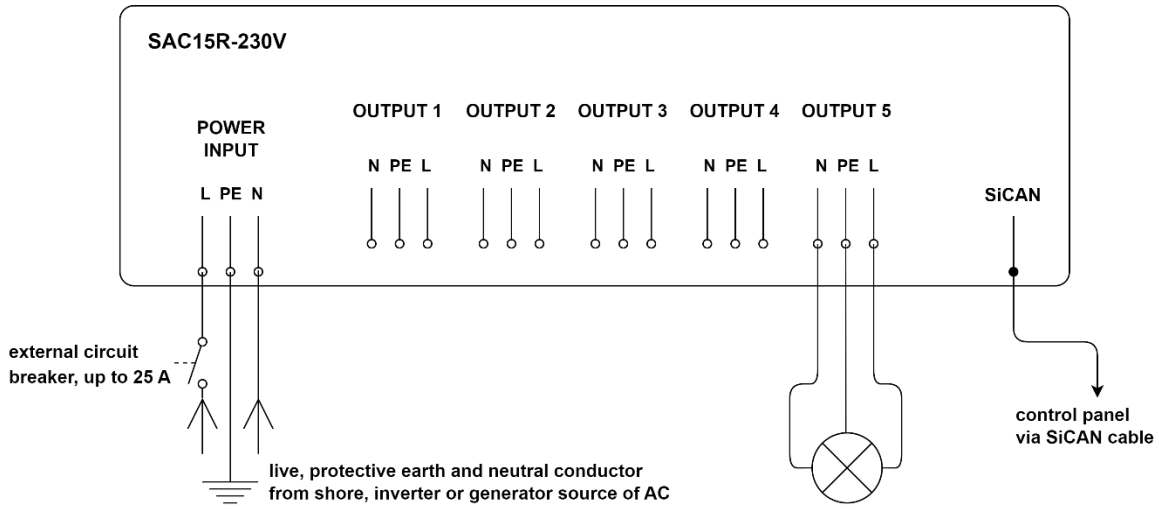
The unit uses one power source. This source can be any AC voltage source, ie. shore power source, inverter or generator.

Due to the unit not having an internal main circuit breaker an external circuit breaker is required. The highest allowed rating of this circuit breaker is the same as continuous rated input current of the distribution unit – 25 A.

An external RCBO or any other kind of ground fault protection device can and should be used where applicable.

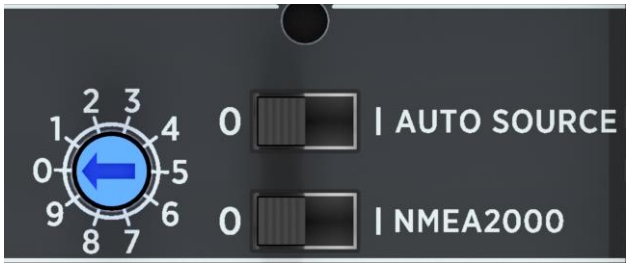
General procedure of safely connecting the unit:

1. Ensure the unit is securely mounted on a wall.
2. Disconnect the SiCAN cable.
3. Open all integrated circuit breakers.
4. Open the bottom cover of the enclosure. Screwdriver is needed.
5. Open the circuit breakers for the power source and ensure that the conductors are not live.
6. Connect conductors into the input connector. No tools needed.
7. Ensure the live and neutral conductors are not reversed.
8. Connect conductors to output connectors. No tools needed. Firmly press the connector plug into the socket.
9. Ensure no wires or strands are left loose around the connectors.
10. Close the bottom cover and tighten the screw.
11. Connect SiCOM cable.
12. Connect or enable AC source.
13. Ready to use.



## 3.3 Settings

On the upper right side of the front panel, there are two switches and a rotary dial. These are used for setting up how the distribution unit works.




1. AUTO SOURCE
   Not applicable in SAC15. Does not have any function.

2. NMEA2000
   Enables or disables NMEA2000 protocol. If left unselected the protocol defaults to SiCAN.

3. Rotary dial:
   It is used to set the address or instance of the unit, depending on the type of protocol selected. If SiCAN selected:
   Address is 20 + dial value.
   If NMEA2000 selected:
   Instance is 20 + dial value.

## 3.4 LCD display

The display shows multiple status messages regarding the unit. ie. input voltage and current, MCB output states etc.

| STATE DESCRIPTION | POSSIBLE VALUES | |
|---|---|---|
| S1-INPUT | ON, OFF | Shows if input voltage is present. |
| S2-MCB 1 | ON, OFF | Shows if voltage is present on output 1. |
| S3-MCB 2 | ON, OFF | Shows if voltage is present on output 2. |
| S4-MCB 3 | ON, OFF | Shows if voltage is present on output 3. |
| S5-MCB 4 | ON, OFF | Shows if voltage is present on output 4. |
| S6-MCB 5 | ON, OFF | Shows if voltage is present on output 5. |
| S8-SHUNT | ERR., OK | ERR. – shunt is in error mode, measurements are not valid.<br>OK – shunt is in normal working mode. Measurements are valid. |
| S9-PHASE | ERR., OK, / | ERR. – live and neutral conductors are reversed in the input connector.<br>OK – live and neural are wired properly.<br>/ - can not determine, due to no input voltage |
| S10 | INST., ADDR. | Show current instance or address, depending on selected protocol. |
| S12 | SiCAN NMEA2000 | Shows currently selected protocol. |
| S13-T | °C | Shows internal temperature. |

# 4 Motorised circuit breakers

## 4.1 Description

The motorised circuit breakers, sometimes also referred to as “reclosers” are a vital part of the AC distribution unit. These devices combine a circuit breaker and remote-controlled switch into a single package. The motor drive can be used for remote switching of consumers and re-closing the circuit breakers in case of over-current trip. Each output channel of the distribution unit has one of these motorised circuit breaker devices.

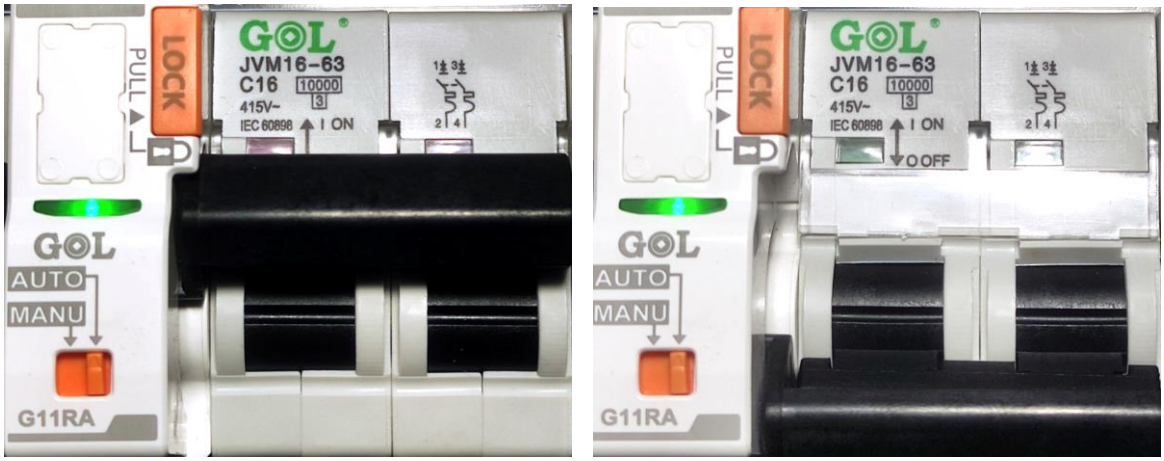
The motorised circuit breakers can be controlled remotely via the control panel or operated manually by moving the lever by hand.

Motorised circuit breakers are remotely operatable only when an AC input source is connected and active.

## 4.2 Manual operation and settings

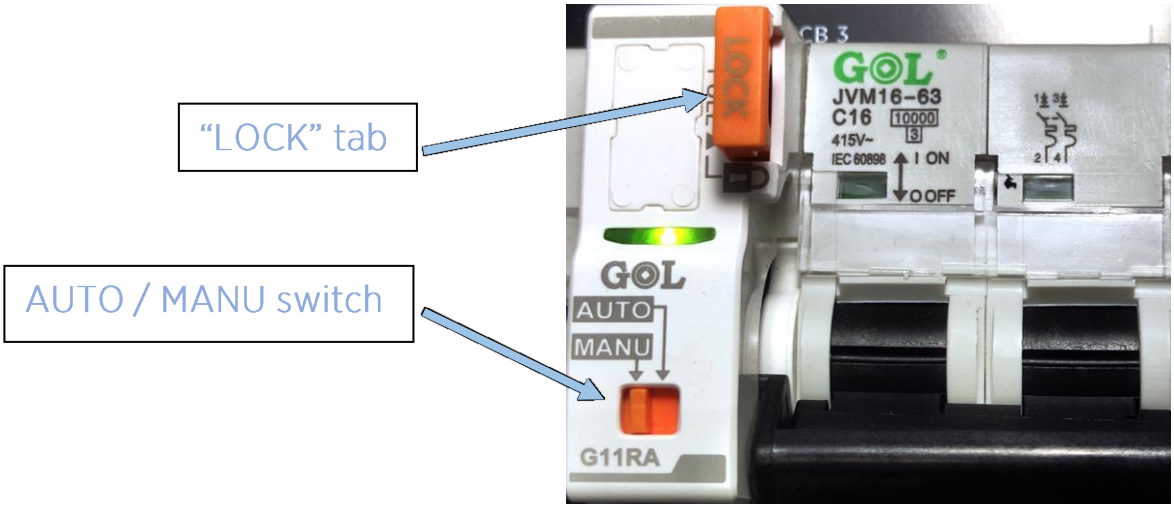
! While connected to the control panel it is forbidden to manually operate the circuit breaker lever, unless the motor drive is set to MANUAL !

If manual operation of the circuit breakers is required due to control panel failure or any other reason, it is recommended to either disconnect the SiCAN cable or set the motor drive to MANUAL.




*CIRCUIT BREAKER, LEFT: CLOSED STATE (OUTPUT ON); RIGHT: OPEN STATE (OUPUT OFF)*

To disable the circuit breaker and lock it in open state, pull the orange “LOCK” tab. To disable remote control switching, move the orange switch from “AUTO” to “MANU”.




## 4.3 LOCK tab

The lock tab on the motor drive is used to disable the circuit breaker. When pulling out the tab the motor drive will open the circuit breaker and lock it in place, thus preventing manual or remote operation. Do not force the lever with your hand if the tab is pulled. This will lead to damage to the motor drive.

## 4.4 AUTO / MANU switch

When the switch is in AUTO position: the motorised circuit breaker is remotely operatable.

Switch in MANU position: the motor drive ignores remote control operation. The circuit breaker can be operated only by hand.

# 5 NMEA2000

Other manufacturers MFD's or other devices supporting NMEA2000 can be used for remote controlling of the units channels.

| PGN | PGN Name | Receiving | Transmitting |
|---|---|---|---|
| 127501 | Binary Switch Bank Status | No | Yes |
| 127502 | Switch Bank Control | Yes | No |

The unit is presented as a single instance of a binary switch bank to the NEMA2000 network. It will periodically transmit PGN Binary Switch Bank Status with the states being the current sates of the circuit breakers and outputs. On, off and error states are transmitted.

- The instance of the switch bank for both PGNs is 20 to 29 (decimal).
- The switch control and status indexes are the same and are in the range of 1 to 5.

The visual representation below shows how the indexes are mapped:

| Unit output | NMEA2000 |
|---|---|
| OUTPUT 1 | INDEX 1 |
| OUTPUT 2 | INDEX 2 |
| OUTPUT 3 | INDEX 3 |
| OUTPUT 4 | INDEX 4 |
| OUTPUT 5 | INDEX 5 |

# 6 Change notes

- Document v1.0 – 25th September 2024:
  - Initial version of the document, connection diagrams, basic how to use instructions.