Procon

Lossnay-5-FSC

FOR INSTALLERS

INSTALLATION AND OPERATION MANUAL
Version 1.00

For safe and correct use, please read this installation manual thoroughly before installing the Procon Lossnay-5-FSC

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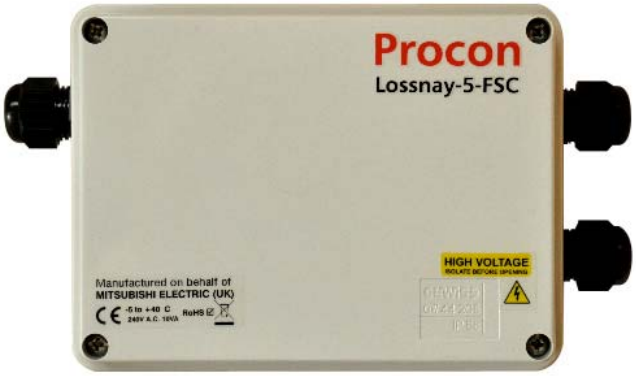
[Fig. 1]
Included Items



A 1 x Procon Lossnay-5-FSC

B 1 x Manual

B

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[Fig. 2]
Inside of Units

A	LED Fan Speed Indicators
B	100-240V AC 0.4A input
C	DC Power Module
D	Voltage / Fan Speed Selectors

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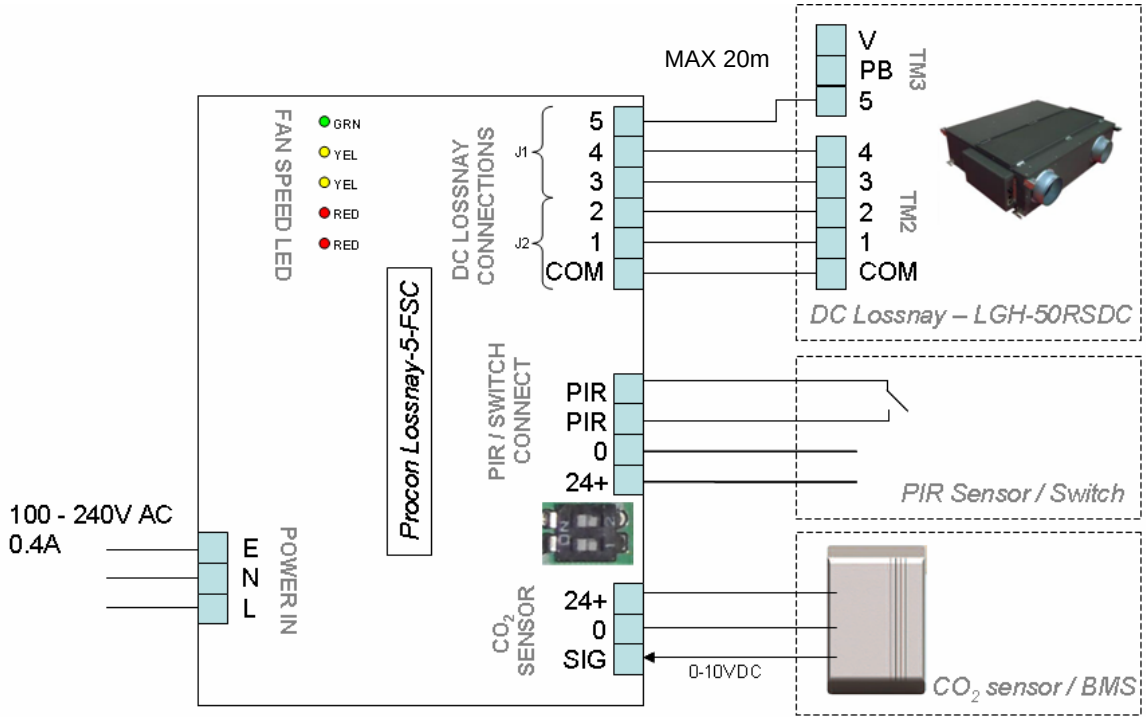
[Fig. 3]
Wiring Diagram for LGH-50RSDC connection



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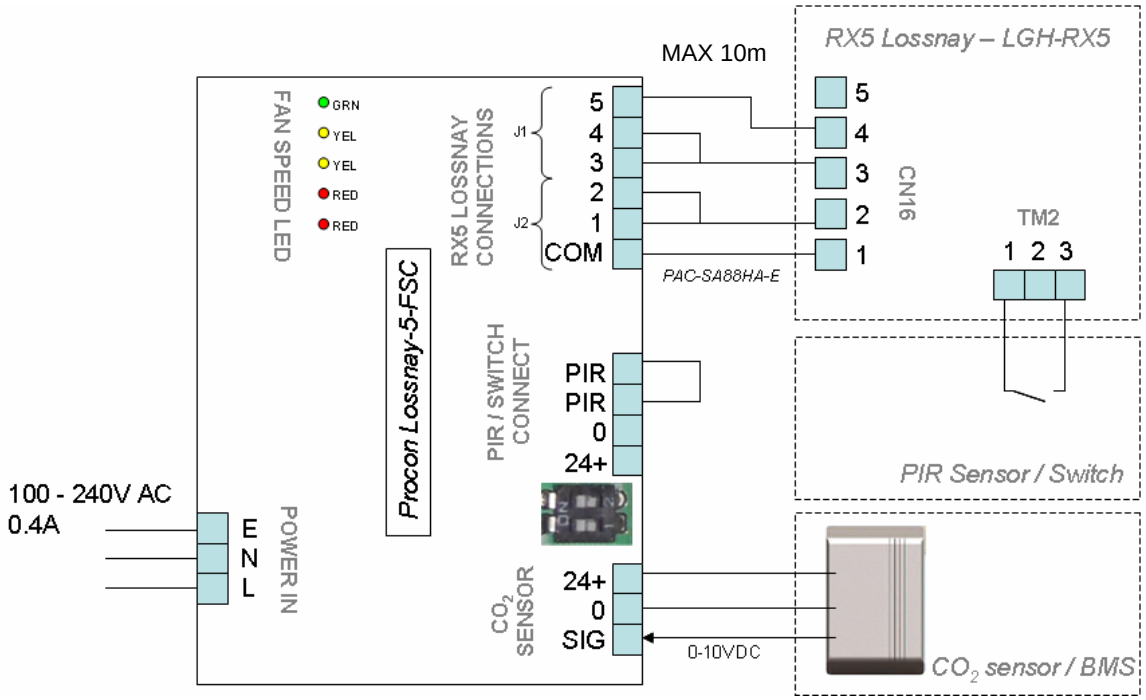
[Fig. 4]
Wiring Diagram for Lossnay RX5 connection



Quick set up

Step 1:
Unpack the Procon Lossnay-5-FSC and secure it in place

Step 2:
Attach a 6 core cable between the LGH-50RSDC fan speed inputs COM, 1-5 and the Procon Lossnay-5-FSC

Step 3:
Install a CO_2 sensor (field supplied) in to the same room as the LGH-50RSDC and wire a 3 core cable between it and the Procon Lossnay-5-FSC. Wire the CO_2 terminal '24+' and '0' to power the sensor and 'SIG' to send the voltage / CO_2 signal back to the Procon Lossnay-5-FSC

Step 4:
Install a PIR sensor / switch in to the same room as the LGH-50RSDC and connect a four core cable between it and the Procon Lossnay-5-FSC. Wire the PIR terminal '24+' and '0' to power the PIR sensor and the 'PIR' inputs to the volt free output on the PIR sensor

Step 5:
Set the dip switches on the Procon Lossnay-5-FSC according to the relationship of fan speed to voltage

Step 6:
Install 100-240V AC 0.4A power to the Procon Lossnay-5-FSC

Step 7:
Turn the LGH-50RSDC and Procon Lossnay-5-FSC 'ON'

Step 8:
Check that the fan speed is changing by altering the voltage from the CO_2 sensor and monitoring the LEDs

Step 9:
Ensure the lid of the controller is fastened on

1. Safety precautions

- **Before installing the unit, make sure you read all the "Safety precautions"**
- **The "Safety precautions" provide very important points regarding safety. Make sure you follow them**

⚠ **Warning:**

- **Ask the dealer or an authorised technician to install the unit**
  - Improper installation by the user may result in electric shock, or fire
- **Use the specified cables for wiring. Make the connections securely so that any outside forces acting on the cables are not applied to the terminals**
  - Inadequate connection and fastening may generate heat and cause a fire
- **Never repair the unit. If the controller must be repaired, consult the dealer**
  - If the unit is repaired improperly, electric shock, or fire may result
- **When handling this product, always wear protective equipment. EG: Gloves, full arm protection and safety glasses**
  - Improper handling may result in injury
- **Have all electric work done by a licensed electrician according to "Electric Facility Engineering Standard", "Interior Wire Regulations" and the instructions given in this manual and always use a special circuit**
  - If the power source capacity is inadequate or electric work is performed improperly, electric shock and fire may result
- **Keep the electric parts away from any water - washing water etc**
  - Contact may result in electric shock, fire or smoke
- **Do not reconstruct or change the settings of the protection devices**
  - If the protection device is shorted or operated forcibly, or parts other than those specified by Mitsubishi Electric are used, fire or explosion may result
- **To dispose of this product, consult your dealer**

⚠ **Caution:**

- **Ground the unit**
  - Do not connect the ground wire to gas or water pipes, lightning rods, or telephone ground lines. Improper grounding may result in electric shock
- **Install the power cable so that tension is not applied to the cable**
  - Tension may cause the cable to break and generate heat which may, in turn, cause fire
- **Install a leak circuit breaker, as required**
  - If a leak circuit breaker is not installed, electric shock may result
- **Use power line cables of sufficient current carrying capacity and rating**
  - Cables that are too small may leak, generate heat, and cause a fire
- **Use only a circuit breaker and fuse of the specified capacity**
  - A fuse or circuit breaker of a larger capacity or a steel or copper wire may result in a general unit failure or fire
- **Safely dispose of the packing materials**
  - Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries
  - Tear apart and throw away plastic packaging bags so that children will not play with them - If children play with a plastic bag which has not been torn apart, they face the risk of suffocation

Warranty:

All products manufactured on behalf of Mitsubishi Electric UK are warranted against defective materials for a period of three years from the date of delivery to the original purchaser.

Mitsubishi Electric UK assumes no liability for damages consequent to the user of this product. We reserve the right to change this manual at any time without notice. The information furnished by us is believed to be accurate and reliable. However, no responsibility is assumed by us for its use, nor for any infringements of patents or other rights of third parties resulting from its use.

2. Overview

The Procon Lossnay-5-FSC is for use with the LGH-50RSDC unit to change the fan speed based on the CO_2 level in a room.

As CO_2 increases in a room, more fresh air is required; therefore by increasing the fan speed, more fresh air will be brought in to the space. Similarly if the CO_2 level is lower, the fan speed is reduced. The controller optimises fan speed to maintain a healthy CO_2 level whilst optimising performance and consuming the least amount of power possible.

The interface also includes an internal transformer which not only powers the interface itself but can also power a CO_2 sensor and another item such as a PIR sensor.

The Procon Lossnay-5-FSC can control up to 16 the LGH-50RSDC units.

It is also possible to control the Lossnay LGH-RX5 models, but with 3 fan speeds (Extra low / Low / High), not 5. Please note that the LGH-150/200RX5-E has 2 fan speeds. In these models Extra low becomes the same fan speed as Low.

Figure 1 shows the items included with the Procon Lossnay-5-FSC

Figure 2 shows the inside of the unit.

Figure 3 shows the wiring diagram of the unit.

3. Connections

3.1. Power Wiring

The Procon Lossnay-5-FSC comes with a power supply which requires 100-240V AC 0.4A. There is an internal transformer which takes the 240V AC to 24V DC.

3.2. Connecting to the LGH-50RSDC

The Procon Lossnay-5-FSC requires direct connection between itself and the LGH-50RSDC unit it is controlling. The connections between the units enable the controller to change the fan speed on the LGH-50RSDC unit.

On the LGH-50RSDC there are 5 fan speeds, with 5 being the lowest, 1 being the highest.

3.3. Connecting the PIR / ON signal

⚠ ***The Procon Lossnay-5-FSC does NOT include a PIR sensor. This must be supplied separately.***

The Procon Lossnay-5-FSC has the capability of connecting with a PIR / BMS or switch to enable and disable the unit. This volt free input when connected will enable the Procon Lossnay-5-FSC and will start the LGH-50RSDC, and when open the LGH-50RSDC will stop.

The Procon Lossnay-5-FSC also has a 24V DC output to power a PIR sensor if required.

3.4. Connecting the CO_2 sensor

⚠ ***The Procon Lossnay-5-FSC does NOT include a CO_2 sensor. This must be supplied separately.***

The Procon Lossnay-5-FSC is able to connect directly to a CO_2 sensor (not supplied). The Procon Lossnay-5-FSC outputs a 24V DC output to power a CO_2 sensor if required.

The sensor must then give an output DC voltage of either 0-5V DC, 0-7.5V DC or 0-10V DC which varies with CO_2 level. Alternatively a BEMS system could be used to give a 0-10V DC signal to the Procon Lossnay-5-FSC to change the LGH-50RSDC fan speed.

The Procon Lossnay-5-FSC continually reads the voltage from the sensor / BEMS and translates it in to a fan speed output to the LGH-50RSDC. As standard the controller is set up for a 0-10V DC signal input. This is changeable by dip switches on the Procon Lossnay-5-FSC. Depending on which dip switches are set will determine which fan speed the controller will output based on an input voltage.

Below are the dip switch settings for the voltage/fan speed control **[see Fig 2]**.

Voltage Setting (V DC)	Dip Switch Setting
0 - 5	1 ON, 2 OFF
0 - 7.5	1 OFF, 2 ON
0 - 10	1 OFF, 2 OFF

[Table 3.4.1]

The below charts show how the input voltage will affect the fan speed output. Also for reference purposes, the table includes the CO_2 level it would equate to based on the CO_2 sensor giving a 0-2000ppm output.

0-5V DC

Fan Speed	Voltage (DC)	CO_2 level (ppm)
5 LO	0 - 1	0 - 400
4	1 - 2	400 - 800
3	2 - 3	800 - 1200
2	3 - 4	1200 - 1600
1 HI	4 - 5	1600 - 2000

[Table 3.4.2]

0-7.5V DC

Fan Speed	Voltage (DC)	CO_2 level (ppm)
5 LO	0.0 – 1.5	0 - 400
4	1.5 – 3.0	400 - 800
3	3.0 – 4.5	800 - 1200
2	4.5 – 6.0	1200 - 1600
1 HI	6.0 – 7.5	1600 - 2000

[Table 3.4.3]

0-10V DC

Fan Speed	Voltage (DC)	CO_2 level (ppm)
5 LO	0 - 2	0 - 400
4	2 - 4	400 - 800
3	4 - 6	800 - 1200
2	6 - 8	1200 - 1600
1 HI	8 - 10	1600 - 2000

[Table 3.4.4]

Different Application

If for example high fan speed (1) was required at a lower CO_2 level (i.e. 1000ppm), but the CO_2 sensor only outputted a 0-10VDC from 0-2000ppm, then the dip switches can be changed to use the 0-5V DC or 0-7.5V DC levels. For example if the 0-5V DC settings were used with a CO_2 sensor which outputted 0V DC at 0ppm and 10V DC at 2000ppm, then the Procon Lossnay-5-FSC would ask the LGH-50RSDC to give highest fan speed (1) at 1000ppm CO_2 level.

CO_2 sensors

Please note, Mitsubishi Electric do not recommend or warrant the use of any of the below sensors. They are merely typical models which are compatible with the Lossnay-5-FSC

- Telaire Ventostat 8001
- Titan Standard Room CO_2 Sensor
- Clarkson Controls CO_2 Sensor
- **Or any other manufacturer meeting specification**

3.5. Connecting to the Lossnay LGH-RX5 series

The Procon Lossnay-5-FSC can connect to the Lossnay LGH-RX5 model. There is restricted control, with only 3 levels of fan speed control on models LGH-15 to 100RX5 and 2 levels of fan speed control on models LGH-150 to 200RX5.

All connections are the same apart from the fan speed connection and the PIR / switch connection.

PIR / switch connection is made directly to the Lossnay unit, not to the Procon Lossnay-5-FSC

0-5V DC

Fan Speed	Voltage (DC)	CO_2 level (ppm)
Extra low※	0 – 1	0 - 400
Low	1 – 3	400 - 1200
High	3 – 5	1200 - 2000

[Table 3.5.1]

0-7.5V DC

Fan Speed	Voltage (DC)	CO_2 level (ppm)
Extra low※	0.0 – 1.5	0 - 400
Low	1.5 – 4.5	400 - 1200
High	4.5 – 7.5	1200 - 2000

[Table 3.5.2]

0-10V DC

Fan Speed	Voltage (DC)	CO_2 level (ppm)
Extra low※	0 – 2	0 - 400
Low	2 – 6	400 - 1200
High	6 – 10	1200 - 2000

[Table 3.5.3]

※LGH-150/200RX5-E become same fan speed with Low

4. LED indicators

The internal LEDs indicate which fan speed is currently operating, i.e. which output is being made **[Fig 2]**

LED ON	Fan speed				
	5	4	3	2	1
1 GRN TOP	X	X	X	X	X
2 YEL		X	X	X	X
3 YEL			X	X	X
4 RED				X	X
5 RED					X

[Table 4.1]

5. Size and weight

The Procon Lossnay-5-FSC details are:

- Height 80mm
- Width 120mm
- Depth 160mm (210mm inc glands)

- Weight 0.37kg

6. Getting started

6.1. Unpacking

The Procon Lossnay-5-FSC is supplied with the following components:

- Procon Lossnay-5-FSC unit including a 24VDC power supply
- This user guide

Please contact your supplier if any of these components are missing.

6.2. Before switching ON

Please secure the Procon Lossnay-5-FSC before powering the unit on.

7. Installation

7.1. Selecting an installation site

- Avoid locations in direct sunlight
- Avoid locations exposed to steam or oil vapour
- Avoid locations where combustible gas may leak, settle or be generated
- Avoid installation near machines emitting high-frequency waves
- Avoid places where acidic solutions are frequently handled
- Avoid places where sulphur-based or other sprays are frequently used
- Avoid areas of high humidity
- Install inside the building
- Install near the connected indoor units

7.2. Installation

7.2.1. Power supply

⚠ **Warning:**
Electrical work should be done by qualified electrical engineers / electrician in accordance with "Engineering Standards for Electrical Installation" and supplied installation manuals. Dedicated circuits should also be used. If the power circuit lacks capacity or has an installation failure, it may cause a risk of electric shock or fire.

The Procon Lossnay-5-FSC comes with a power supply which requires 100-240V AC 0.4A **[Fig 3]**

⚠ **Caution:**
Do not use anything other than the correct capacity breaker and fuse. Using fuse, wire or copper wire with too large capacity may cause a risk of malfunction or fire.

- Be sure to take power from the special branch circuit
- Install the unit to prevent any of the control circuit cables coming into direct contact with power cables
- Ensure that there is no slack on all wire connections
- Never connect the power cable to leads for the transmission cables. This will damage the transmission cables

7.2.2. Connecting to the LGH-50RSDC

⚠ *Please use cable diameter between 0.5-1.0mm^2 for this connection, with no more than 20m in length*

[Fig 3]

Connect 6 cables between the Procon Lossnay-5-FSC and the LGH-50RSDC unit as in **[Fig 3]**, connecting between COM-5 on J1 and J2 on the Procon Lossnay-5-FSC and on TM2 and TM3 on the LGH-50RSDC unit. Ensure that COM is connected to COM, 1 is connected to 1, 2 to 2 etc.

If power bypass (PB) is required, please connect this separately on an additional switch between COM and PB on the LGH-50RSDC. If this switch is activated, power bypass will initiate whatever fan speed the LGH-50RSDC is in. For power bypass to work, it and a fan speed must be selected.

7.2.3. Connecting the PIR / ON signal

⚠ *Please use cable diameter between 0.5-1.0mm^2 for this connection, with no more than 20m in length*

[Fig 3]

Connect a 2 core cable between the PIR sensor volt free output or switch and the Procon Lossnay-5-FSC on the PIR / PIR input. If the unit is always required to be on, connect a wire between PIR and PIR terminals.

If power bypass is used on a separate switch, the PIR / ON signal to the Procon Lossnay-5-FSC unit will still have the master control over the LGH-50RSDC on/off. For power bypass to work, it and a fan speed must be selected.

The Procon Lossnay-5-FSC also has a 24V DC output to power a PIR sensor if required. Wire between 24+ and 0 on the Procon Lossnay-5-FSC and the PIR input power connections.

7.2.4. Connecting the CO_2 sensor / BEMS

⚠ *Please use cable diameter between 0.5-1.0mm^2 for this connection, with no more than 20m in length*

[Fig 3]

Connect a 3 core cable between 0, 24+ and SIG on the CO_2 terminal on the Procon Lossnay-5-FSC and the power input terminals and signal output from the CO_2 sensor.

If a BEMS input of DC voltage is input to vary the fan speed, connect 0 and SIG to the BEMS system to give a voltage output back to the Procon Lossnay-5-FSC to change fan speed.

Please note this voltage should be checked to ensure that the change in voltage reflects the CO_2 level and therefore the varying fan speed of the LGH-50RSDC on commissioning.

If a different voltage input is required, please change dip switches according to **[Table 3.4.1]**.

7.2.5. Connecting to the Lossnay LGH-RX5 series

[Fig 4]

Connect a 5 wire adapter PAC-SA88HA-E (sold separately) between the Procon Lossnay-5-FSC and Lossnay LGH-RX5 unit as in **[Fig 4]**, connecting between COM-5 on J1 and J2 on the Procon Lossnay-5-FSC and on to pins 1-4 on the PAC-SA88HA-E. Then connect the PAC-SA88HA-E to CN16 on Lossnay LGH-RX5 series.

Please note Lossnay LGH-RX5 series can only control 2/3 fan speeds as reflected in the wiring diagram in **[Fig 4]**.

Connect a permanent link between the PIR inputs on the Procon Lossnay-5-FSC as in **[Fig 4]**.

Connect a 2 core cable between the PIR sensor volt free output or switch and pins 1 and 3 on TM2 on LGH-RX5 series **[Fig 4]**.

This product is designed and intended for use in the residential, commercial and light-industrial environment.

The product at hand is based on the following EU regulations:

Low Voltage Directive 73/23/EEC

Electromagnetic Compatibility Directive 89/336/EEC

2004/108/EC (EMC Directive) and amendments of the European Union

Please be sure to put the contact address/telephone number on this manual before handing it to the customer.

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