# 24v Access Wiring Guide

**Index**

1.

**Warnings:**

1. **The actuators within the Access vent are 24V**. It is imperative that these motors are never connected to 230v mains current. Only use a 24v feed to power the motors.
2. It is imperative that correct cable size is used to connect the control panel to the vent to prevent a voltage drop in excess of 2V and therefore avoid damaging the actuator motors.
3. A 24V certified power pack must be used to for any testing. Under voltage power to these actuators will force them to fail.
4. Incorrect connection and operational testing of this system will damage sensitive components and invalidate any warranty.
5. Incorrect connection can result in damage that requires replacement of the control unit by the manufacturer.
6. The control panel unit and actuators are programmed at the factory prior to shipping. These are tested and QC Passed prior to shipping. Further programming of the motors is not required.
7. Do not cycle the motors via unnecessary multiple repeated pushes of the manual open and close buttons, this can damage the actuator motors. A delay before operation of 2-3 seconds is normal.
8. Use of alternative switches, manual switches, control panels and batteries are not recommended and only to be undertaken by a competent electrician with 24V system knowledge. **If in doubt, please ask!**

**Prerequisite:**

Confirm that all the components ordered have been delivered and are undamaged. Report any shortages within 24 hours.

**Delivered with every rooflight:**


**Transformer Control Panel**

**Optional Extras that can be ordered:**


Wi-Fi Enabled Master Switch (LK-MR523). This is wired the control panel and can then operate the panel via an App or home hub.

Rain sensors (LK-RS001) can be wired to the control panel, or a wireless version is available (LK-RS002). These will tell the vent to close when it starts to rain. 50m range for the wireless version.


Key lockable switch (LK-MS544) can be used internally or externally to open and close the rooflight but only after the panel is unlocked via a key. Externally, a waterproof housing must be supplied by the end user.

Remote fob (LK-RT111). This can be used to open and close the rooflight without needing to use or even see the control panel. 50m range.

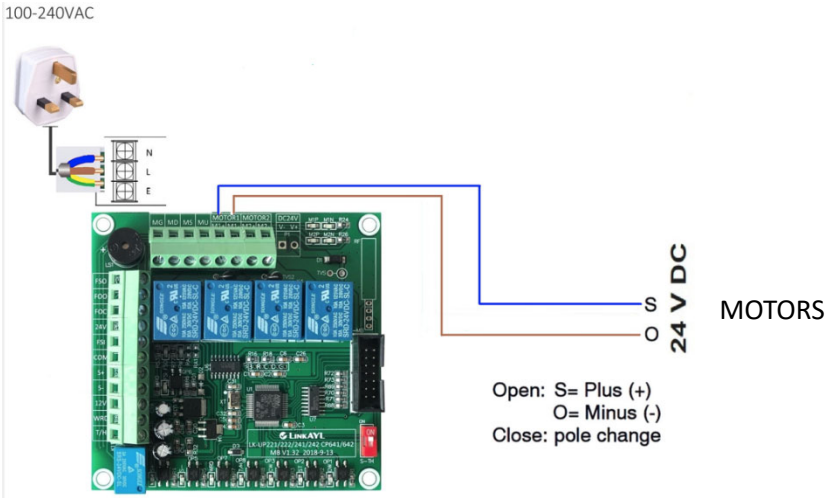

Temperature sensor (LK-TH001). Opens and closes the rooflight based upon heat and humidity settings.

Wind sensor (LK-WLR002). Used to close the rooflight if the wind speed exceeds a set value.

Manual wall switch (LK-MS541). This can be wired to the control panel to operate the rooflight, so that the larger panel can be hidden away. A wireless version is also available (LK-WT211).

## Wiring Diagrams

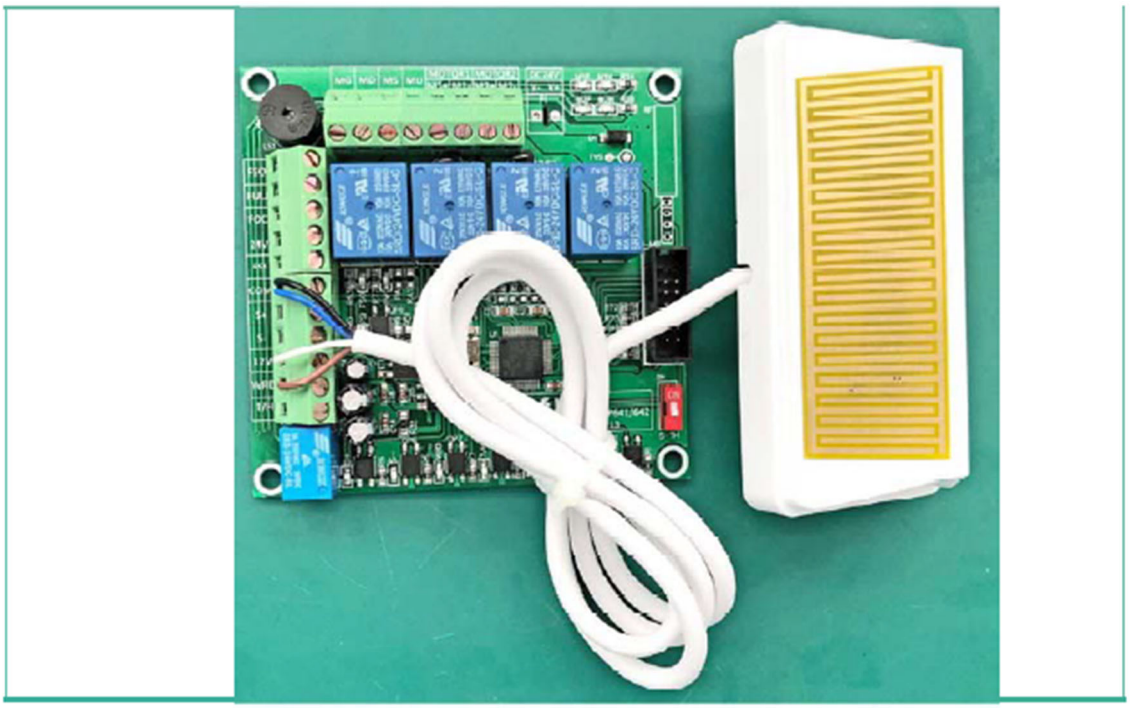
### Control Panel Only




**CONTROL PANEL**
**CP61x, CP63x, CP64x**

**Rain Sensor LK-RSOOI**

- COM = Blue cable = Black cable
- 12V = White cable
- WRD = Brown cable

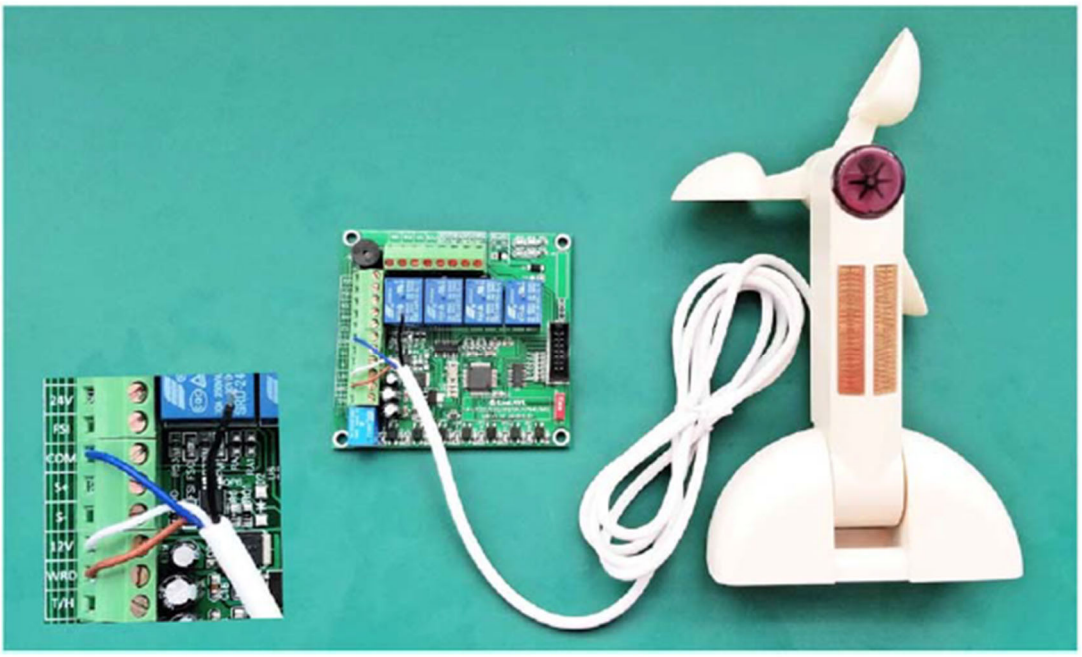


**Manual Switch LK-MS541**

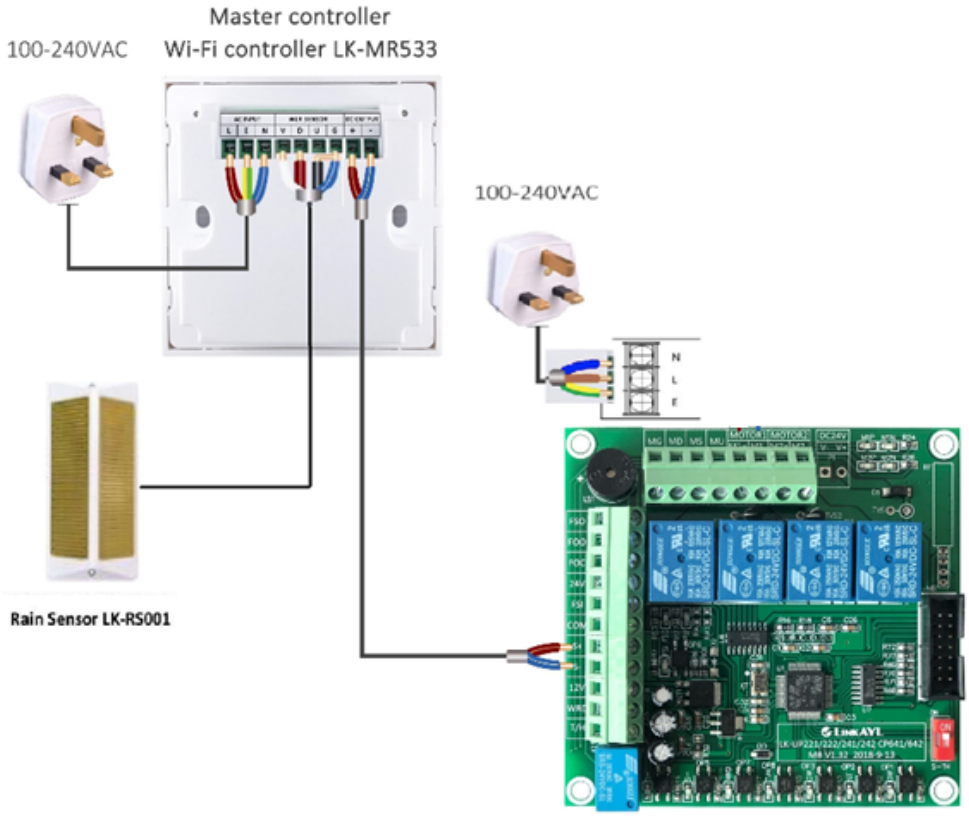
- MG = Blue cable= MS541 MG
- MD= Black cable= MS541 MD
- MS= White cable= MS541 MS
- MU= Brown cable= MS541 MU

**Wind/Rain Sensor LK-WLROOI**

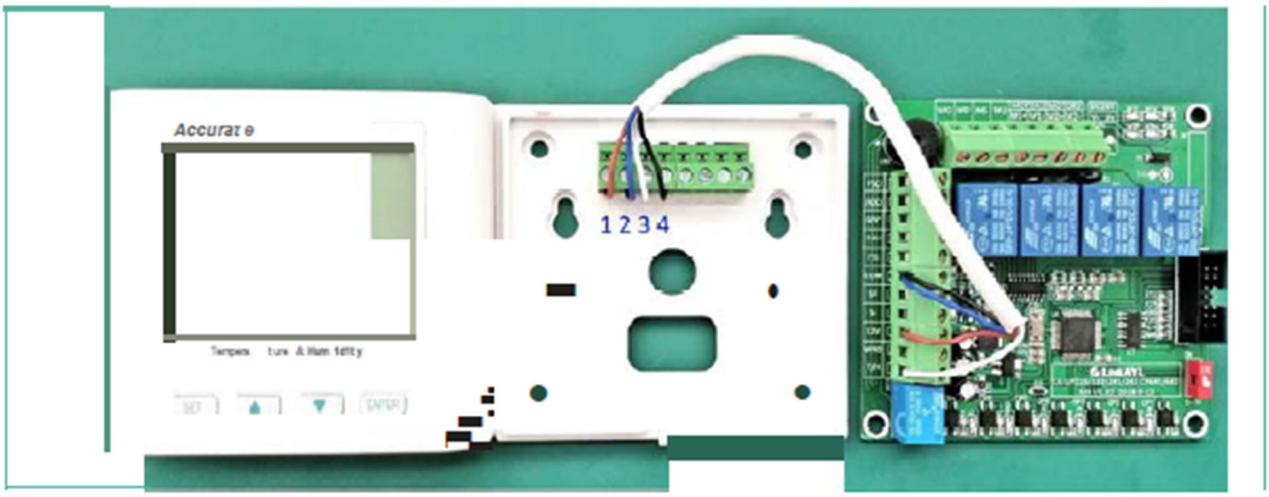
- COM = Blue cable
- 12V = White cable
- WRD = Brown cable
- Black cable= NC



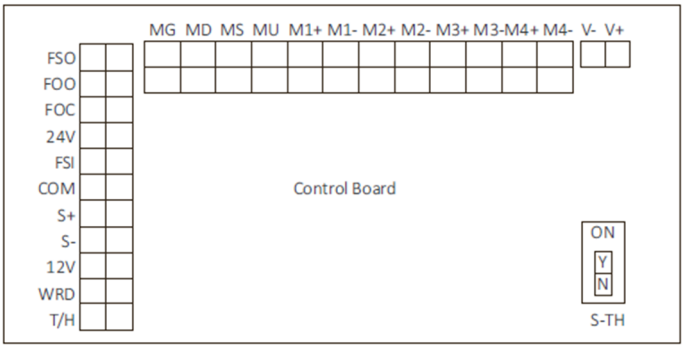
## Control Panel with Master Controller and Rain Sensor



## Temperature & Humidity Sensor LK-THOOI




- COM = Blue cable = THOOI 2
- COM = Black cable= THOOI 4
- 12V = Brown cable= THOOI 1
- T/H = White cable= THOOI3

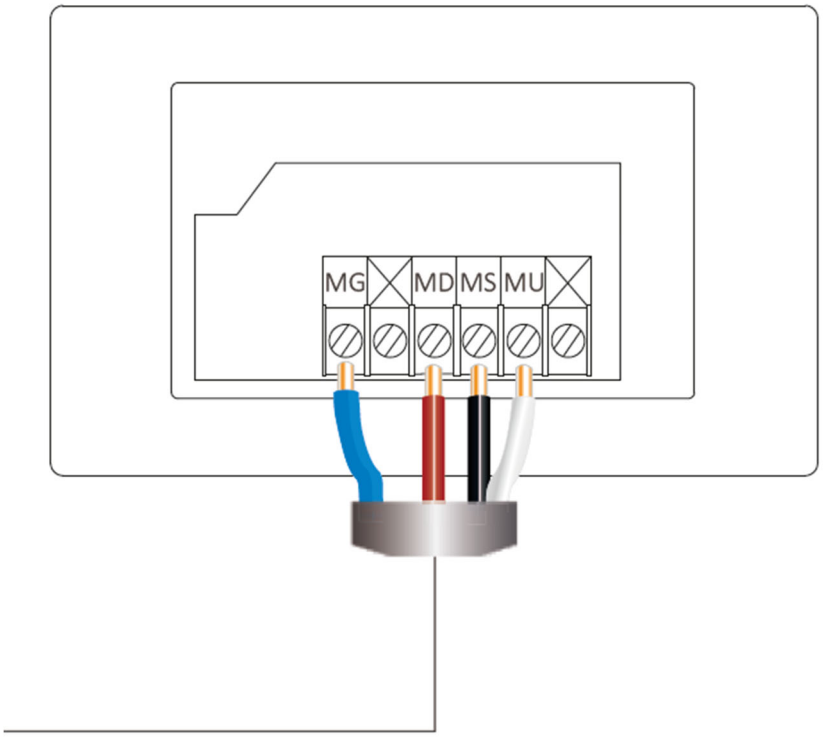

| Symbol | Description | Symbol | Description |
|---|---|---|---|
| L | AC live wire | FSO | Fire signal output |
| N | AC null wire | FOO | Fire output NO |
| E | AC earth wire | FOC | Fire output NC |
| V+ | 24VDC input positive | 24V | 24VDC+ output |
| V- | 24VDC input negative | FSI | Fire signal input |
| M+ | 24VDC motor positive | COM | Sensor COM |
| M- | 24VDC motor negative | S+ | Slave control up |
| MU | Manual switch up | S- | Slave control down |
| MS | Manual switch stop | 12V | DC12V+ output |
| MD | Manual switch down | WRD | Rain sensor down |
| MG | Manual switch GND | T/H | T/H signal |


Turn the switch to the ON position when LK-TH001 is not connected to a controller


Turn the switch to the opposite position of ON when LK-TH001 is connected to a controller

LK-TH001 is Temperature Sensor

**Lockable Key Switch**




Match wires to the panel, MG to MG, etc.

LK-MS544

**Installation testing procedure**

Test the system via the control panel.

Before opening the vent for the first time, do a visual inspection of the rooflight and make sure that there is no obvious damage. Also, check that there are no obstacles to the opening of the rooflight lid. Any obstacle could retard the opening and force the motors to fail.

To OPEN the vent, press the [open] button on the control panel. If nothing happens check that the wires are the correct way around in the control panel. If incorrect, try them the other way around. If the wires are correct, check voltage at the motor end of the wiring, while pressing the button. Report findings to the rooflight supplier.

To CLOSE the vent. Press the [close] button on the control panel. If nothing happens check that the wires are the correct way around in the control panel. If incorrect, try them the other way around. If the wires are correct, check voltage at the motor end of the wiring, while pressing the button. Report findings to rooflight supplier.

Cabling between the 6A Control Panel and the 24v Actuator Motors most be sized sufficiently to minimise voltage drop (VD). **The maximum permissible VD (at the Actuators) is to be no greater than 2Volts.**

If the required CSA for the cabling to the Actuator is greater than can be terminated in the Control Panel (max CSA 2.5mm$^2$), the contractor will require to supply and fit a suitable Cable Changing Box (CCB) adjacent to the Control Panel.

A suitable CCB will also be required at the Actuator end in order to terminate the Cable Tail supplied with the Vent Actuator/ Motor Unit. Note - Volt drop within the vent internal cabling and tail could be as high as 1V.

**TABLE 1** provides details of typical voltage drops for a 6Amp max rated load, based on cable length and conductor Cross Sectional Area (CSA) using the formula: **mV/A/m.**

**24V Cable sizing**

**TABLE 1 - Typical cable sizes / lengths required for use with the 6A Control Panel**

| | Cable CSA (mm$^2$) | 1.5 | 2.5 | 4 | 6 | 10 | 16 |
|---|---|---|---|---|---|---|---|
| | *mV/A/m* | 31 | 19 | 12 | 7.9 | 4.7 | 2.9 |
| | Cable Length (m) | | | | | | |
| | 0 – 10 | 1.86V | 1.14V | 0.72V | 0.47V | 0.28V | 0.17V |
| | 11 – 20 | X | X | 1.44V | 0.95V | 0.56V | 0.35V |
| | 21– 30 | X | X | X | 1.42V | 0.85V | 0.52V |
| | 31 – 40 | X | X | X | 1.89V | 1.13V | 0.70V |
| | 41 – 50 | X | X | X | X | 1.41V | 0.87V |
| | 51 – 60 | X | X | X | X | 1.69V | 1.04V |
| | 61 – 100 | X | X | X | X | X | 1.74V |

**Maximum Permissible VD = 2V Cable length/CSA marked "X" should not be used.**

**Example: 6**A (max) Actuators connected to 6A Control Panel using 4mm$^2$ cable with a maximum cable length of 30 metres:

mV/A/m = 12*6*30 / 1000 = **2.16V** (VD too large – use 6mm$^2$ cable)

**For 6mm$^2$ Cable:**

mV/A/m = 7.9*6*30 / 1000 = **1.42V** (Acceptable VD = < 2V)

Typical mV drop ratings for copper cable are shown in TABLE 2.

**TABLE 2 – Typical Voltage Drop (per Ampere per metre) for copper cables**

| Conductor CSA (mm$^2$) | | 0.75 | 1.0 | 1.5 | 2.5 | 4.0 | 6.0 | 10 | 16 |
|---|---|---|---|---|---|---|---|---|---|
| mV / A / m | | 62 | 46 | 31 | 19 | 12 | 7.9 | 4.7 | 2.9 |

**Motor Reset**

If motors freeze and they need to be reset, expose the reset switches. These can be found behind the white access panel door to the inside of the base frame, opposite the hinge side.

Once you can see the buttons, they are numbered 1 to 4 with 1 on the far left.

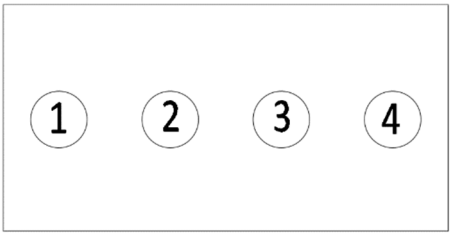
START POSITION OF RESET SWITCHES

Switch 1 – ON

Switch 2 – OFF

Switch 3 – OFF

Switch 4 – ON




---

RESET PROCEDURE

Switch 1 – OFF

Switch 2 – ON

Switch 3 – ON

Switch 4 – OFF

Switch 1 – ON

Press CLOSE button on control panel.

Switch 1 – OFF

Switch 2 – OFF

Switch 3 – OFF

Switch 4 – ON

Switch 1 – ON

Now press the open button on the control panel. The motors should now work.