



Capral Automated Window Solutions Instructions

Components	Items Supplied
	<ul style="list-style-type: none"> A Actuator B Mounting Screws C Sash bracket D Sash Bracket Screws E Power Loom (2m) F Control Loom (2m) G Wire Cover H Wire Cover Screw I Chain Limiter Plug (x2) J Chain Limiter Cap K Clutch Cap L Clutch Tool M 2 x Pivot bracket N 2 x Pivot Bracket Screws

Purchase Separately	Tools Required
<ul style="list-style-type: none"> O Sync Loom (1.8m) • Rain Sensor (cable length 2m) • Network Adaptor (Rain Sensor and Network Adaptor can be seen over the page.) 	<ul style="list-style-type: none"> • Marker • #2 Phillips Screwdriver • #2 Sq Driver Bit • Power Drill • 3mm Drill Bit • 8mm Drill Bit • Long Nose Pliers • Small Flat Screwdriver • Silicon (If IP rating applies)

1 Select Single or Double Actuators Per Window

Recommended dimensions only: for further information please visit lockweb.com.au

2 Select Chain Exit Height

Pivot Bracket Top Chain Exit

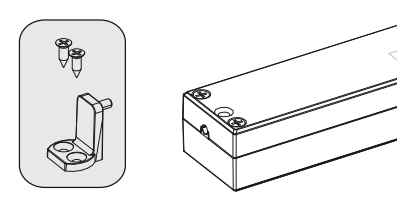
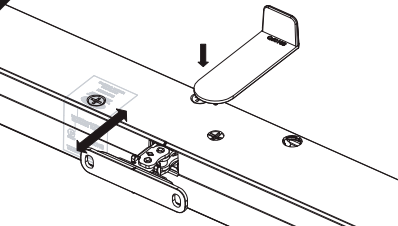
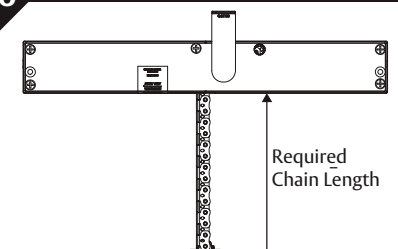
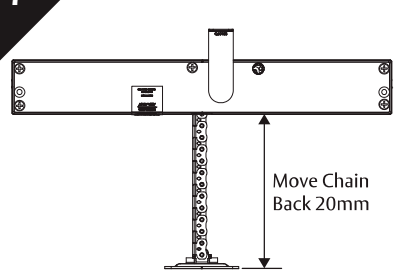
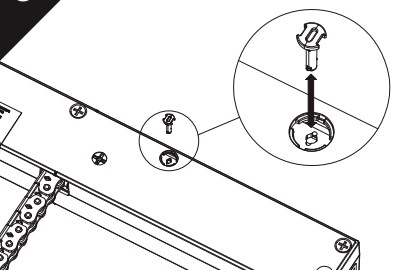
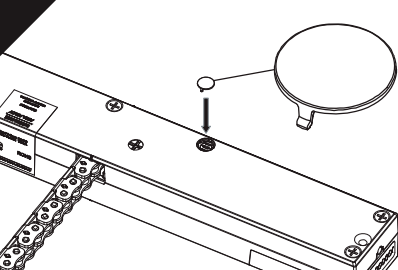
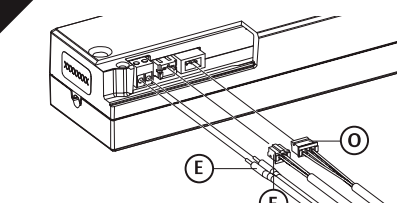
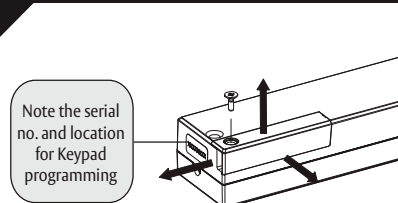
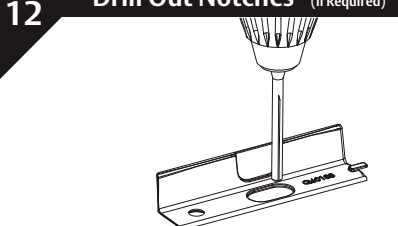
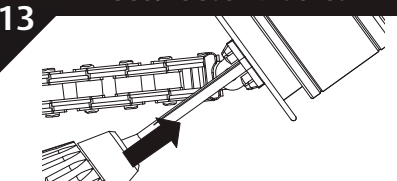
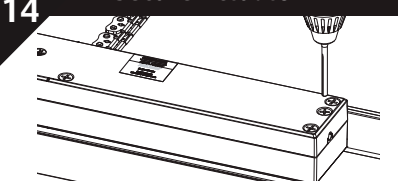
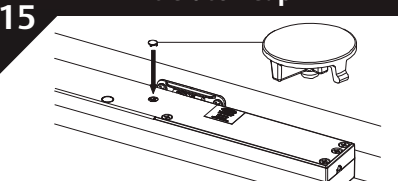
Pivot Bracket Bottom Chain Exit

Synchronisation: 1 x Synchronisation Loom required for double Actuators. Loom connection as per Step 10.
 Excess cable (up to 300mm) can be stored in the wire cover area up inside the housing. Please refer to Page 8 for a complete window height and restriction guide.
 Remove outer sheathing before tightly bunching inside Actuator.

3 Fixed Mount

**** Critical Step ****

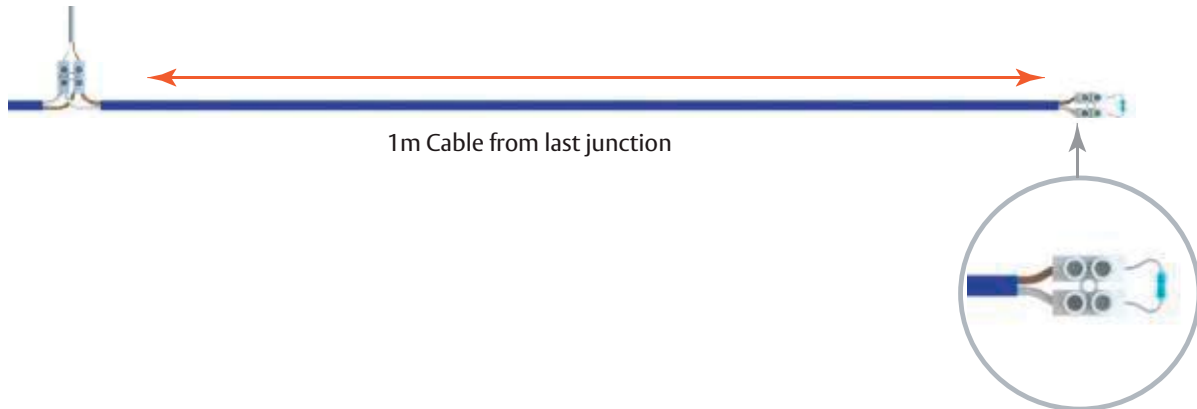
**In order for the Actuator to operate properly;
 Windows shorter than 600mm need to be restricted,
 as per the window matrix on Page 8.
 Failure to do so, may cause the Actuator to not properly calibrate**

<p>4 Prepare Fixing Holes</p>  <p>From the dimensional information above, determine mounting requirements. Mark and drill holes to suit.</p>	<p>5 Set Chain Length</p>  <p>Default chain operating length is 300mm. To adjust the chain opening length, push the Clutch Tool down. The chain can now move in/out.</p>	<p>6 Refer Regulations for Chain Limiting</p>  <p>With the Clutch Tool pressed down, pull the chain out to the required length.</p>
<p>7 Retract Chain</p>  <p>With the Clutch Tool still depressed, retract the chain 20mm from the required length. At the chain limiter hole, locate the nearest hole in the chain link to insert the Chain Limiter Plug.</p>	<p>8 Align Chain Limiter</p>  <p>Align the Chain Limiter Plug with the slotted hole in the chain link, then push firmly into place. Rotate 90° to lock into place. To remove, rotate 90° and pull out.</p>	<p>9 Attach Chain Limiter Cap</p>  <p>Push the Chain Limiter cap into place. Orientation is specific. Little "wings" should run across the length of the product.</p>
<p>10 Connect Cables</p>  <p>Insert the (E)Power Loom, tighten terminal screws. Insert the (F)Control Loom, firmly push into place. (Insert (D)Sync Loom if required, firmly push into place) NOTE: Sync Loom not supplied.</p>	<p>11 To achieve IP30 rating, seal wire exit points with silicon</p>  <p>Note the serial no. and location for Keypad programming</p> <p>The looms can exit in three different orientations as shown. Pick the best solution for your requirement. Secure Wire Cover in place with small screw supplied. NOTE: Depending on Acuator orientation, this cover may be at the bottom, and not as shown.</p>	<p>12 Drill Out Notches (If Required)</p>  <p>If required, drill out the notches with an 8mm drill bit to best suit your application. If the looms are exiting from the end of the product, no drilling is required.</p>
<p>13 Secure Sash Bracket</p>  <p>Secure the Sash Bracket to the window sash with screws supplied. use the Clutch Tool to extend the chain if required. The chain can rotate at the Sash Bracket for ease of access to the fixing screws.</p>	<p>14 Secure Actuator</p>  <p>Secure the Actuator to the window sill with screws supplied. Fixed Mount: 2 x 50mm mounting screws. Pivot Mount: 4 x 25mm mounting screws.</p>	<p>15 Fit Clutch Cap</p>  <p>Use the Clutch tool to close the window. Push the Clutch Cap into place.</p>

Resistors

It's important to connect and place resistors at the correct positions on the network. Resistors are placed at the beginning and end of network. For a wall switch network; the beginning of the network is at the wall switch and the end of the network is at the last window actuator. Same for a Keypad network, the beginning of the network is at the keypad, and the end of the network is at the last window actuator.

Place the resistor 1 metre from the last terminating junction as shown below:



Testing that resistors are installed – Place a multi meter across the data (brown and white) cable. Set it to ohms if two resistors are installed, you should see a reading of around 60 ohms.

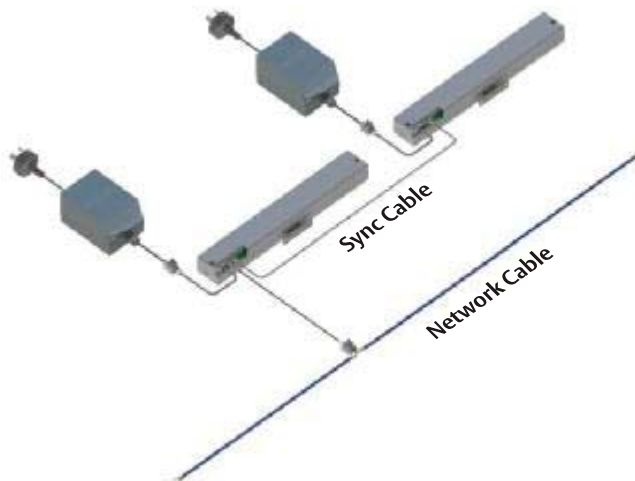
Network adaptor

Network adaptor should be installed close the wall switch. No dipswitch adjustment is required.

Synchronising windows

Windows larger than 900mm wide may need two actuators installed. In this event the sync cable should be used as shown below.

Note: Once the sync cable is used, only one actuator is connected to the network and the other becomes a slave.



Calibration

Every time the unit loses power the unit will need to calibrate.

Switch Calibration – Apply power and wait approximately 60 seconds, Now press the open switch twice; the unit/s will now calibrate by opening and closing twice. Pay close attention that the windows open and close twice. Calibration is now complete.

Keypad Calibration – The Keypad will prompt you; Press the calibrate button, the unit/s will now calibrate by opening and closing twice. Pay close attention that the windows open and close twice. Calibration is now complete.

Power Supplies

Window Actuator – EWAC-SM1500 is a double power supply and has enough current to power two Window actuators. Depending on the location of the actuators; some prefer to use one power supply per actuator, and others prefer to use one power supply per two actuators.

Note: The EWAC-SM1500 power supply can be users for Keypads, Rain sensors and Network Adaptors.

Ensure you calculate the consumption of each of these to determine how many power supplies you need.

Network Adaptor – Even though the network adaptor uses minimal power, it still needs power. Some electricians prefer to connect two spare cables and source the power from the actuator that already has power and other prefer to use a separate power supply.

Touch Screen Keypad – Even though the Keypad uses minimal power, it still needs power. Some prefer to connect two spare cables and source the power from the actuator that already has power and others prefer to use a separate power supply.

Rain sensor – Rain sensors may need its own power supply. EWAC-SM1500 has enough power to power 4 rain sensors.

Voltage Drop

The power supply cables may be susceptible to voltage drop. It's required to adhere to the gauge and distance guide shown below. Note: Actuator 24vdc power connection is not polarity sensitive

POWER CABLE REQ:		
LENGTH (m)	WIRE Ø MIN.	AWG
12	0.7mm	22
19	0.8mm	20
29	1.0mm	18
47	1.3mm	16
74	1.6mm	14
119	2.0mm	12

Wall Switch Type

Normally open bell press switches are required; eg. momentary / non latching

HPM Part # 770XM

PDL Part# 681M20P

Clipsal Part# 30MBPR

System Configuration

Wall switch Network

The standalone network can accept 30 devices. Devices are: Network Adaptors / Switches, Window Actuators and Rain Sensors. Below is every possible configuration for the standalone network.

Switches	Rain Sensors	Windows
1	0	29
1	1	28
1	2	27
1	3	26
2	0	28
2	1	27
2	2	26
3	0	27
3	1	26
4	0	26

Note: When the Actuator is synced with a second Actuator, it counts as one device on the Network.

Keypad Network

The Touch Screen network can accept 32 devices. Devices are: Keypads, Window Actuators and Rain Sensors. Below is every possible configuration for the standalone network.

Keypads	Rain Sensors	Windows
1	0	30
1	1	29
1	2	28
1	3	27
1	4	26
2	0	30
2	1	29
2	2	28
2	3	27
2	4	26

Note: When the Actuator is synced with a second Actuator, it one counts as one device on the Network.

Building Automation system (cBus)

You can program any fire panel or 3rd party management system to control your windows. Two separate relays will control one network adaptor network. Two relays outputs (1 x open 1 x close) would be able to control up to 29 windows.

Programming the relays to open and close

Program the relay to pulse the open signal for 2 seconds only, movement will commence until open position is reached. Program the same for the close input.

Setting a window opening pre-sets for Cbus

The full window opening time is between 35-40 seconds, for 300mm window opening. To open a window 50% - Program the relay to pulse the open signal for 2 seconds only, movement will commence, after 20 seconds trigger the open or close signal again, and the window will stop at around 50%. Calculate the run time for other pre-sets and repeat the above steps.

Lockwood Elevation Window Matrix

In order for Elevation to work, it's important that you follow the matrix and restrict your chain accordingly in order to get a tight window seal when closed.

Note: Always install pivot brackets provided allowing the actuator to sufficiently pivot. This will also reduce friction and noise.

Chain restrictions

Awning Window on Top Hinge / Pivot

For windows that are hung without stays, ensure the chain is restricted as per the table on the following page:

Sections highlighted in green only needs one actuator and sections highlighted in red need two.

Sash Height mm	Matrix - Awning Top Hinge / Top Pivot									
	Assume Glass is between 3-12mm									
	Sash Width (mm)									
	500	650	900	901	1200	1500	1700	1900	2100	2400
<299	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
300	110mm	110mm	110mm	110mm	110mm	110mm	110mm	110mm	110mm	110mm
350	130mm	130mm	130mm	130mm	130mm	130mm	130mm	130mm	130mm	130mm
400	155mm	155mm	155mm	155mm	155mm	155mm	155mm	155mm	155mm	155mm
450	180mm	180mm	180mm	180mm	180mm	180mm	180mm	180mm	180mm	180mm
500	210mm	210mm	210mm	210mm	210mm	210mm	210mm	210mm	210mm	210mm
550	280mm	280mm	280mm	280mm	280mm	280mm	280mm	280mm	280mm	280mm
600	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
700	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
800	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
1000	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
1200	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
1400	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
1600	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
1800	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm

Awning Window on Interlock 4 Bar stays

For windows that are hung with Interlock “4 Bar” stays ensure the chain is restricted as per the below table:

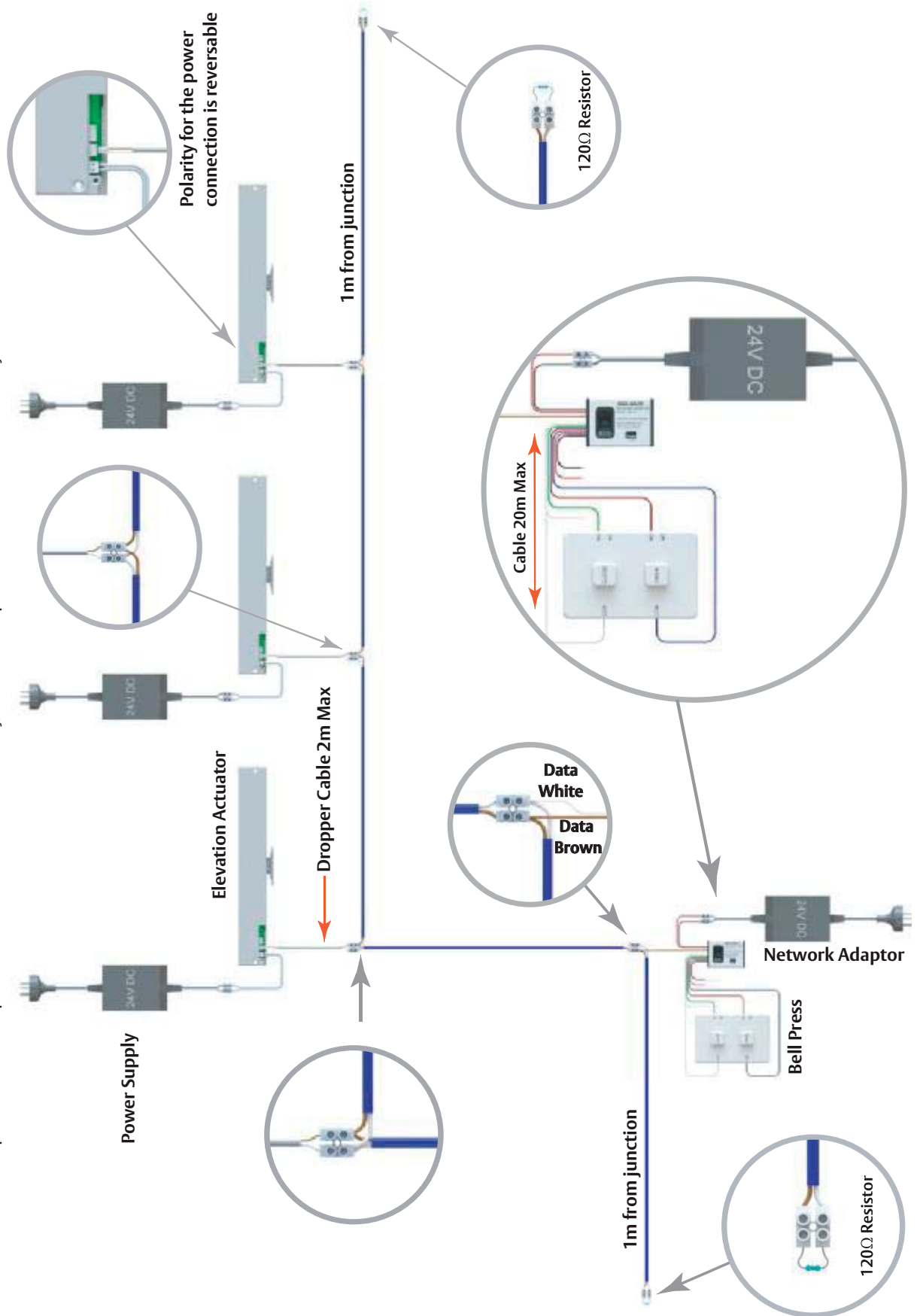
Sections highlighted in green only need one actuator and sections highlighted in red need two.

Sash Height mm	Matrix - Awning with 8 Bar Stay									
	Assume Glass is between 3-12mm									
	Sash Width (mm)									
	500	650	900	901	1200	1500	1700	1900	2100	2400
<299	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
300	220mm	220mm	220mm	220mm	220mm	220mm	220mm	220mm	220mm	220mm
350	280mm	280mm	280mm	280mm	280mm	280mm	280mm	280mm	280mm	280mm
400	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
450	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
500	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
550	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
600	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
700	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
800	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
1000	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
1200	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
1400	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
1600	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm
1800	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm	300mm

Ensure non friction stays are used.

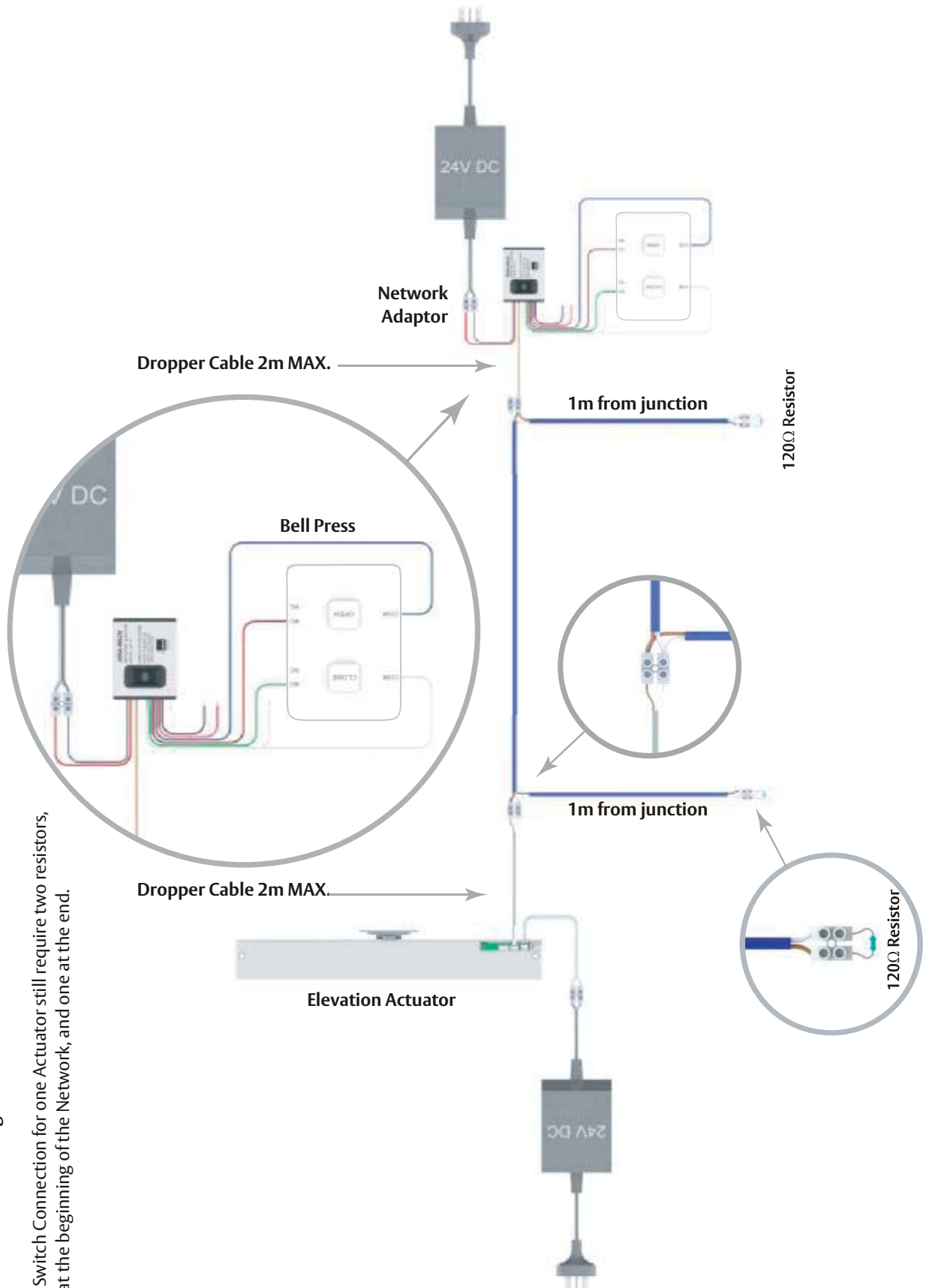
Wall Switch Network Diagram - Medium

Ensure the Network Adaptor is as close as possible to the wall switch. Preferably, Network Adaptors can be left in the wall cavity behind the wall switch.

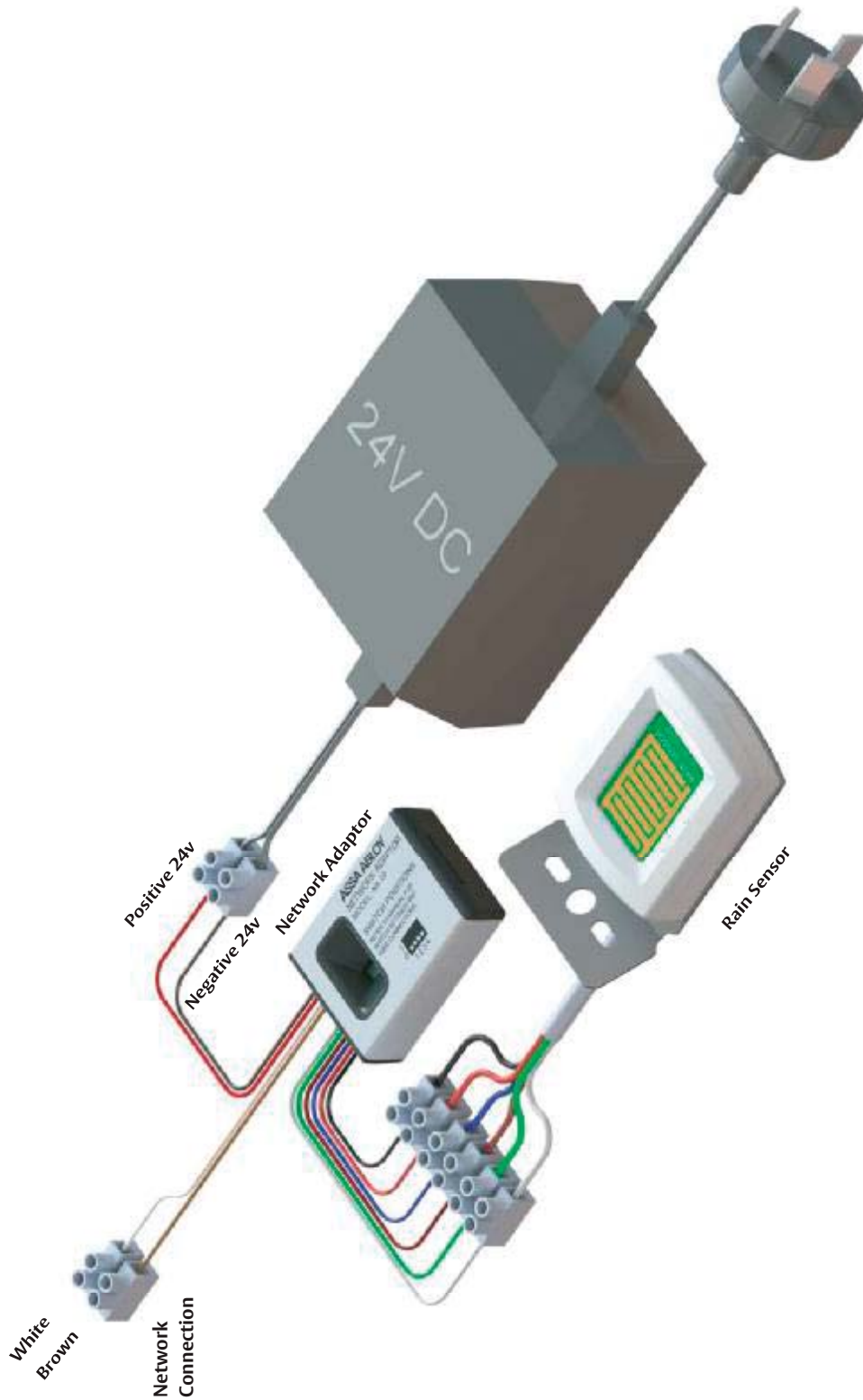


Wall Switch Network Diagram - Small

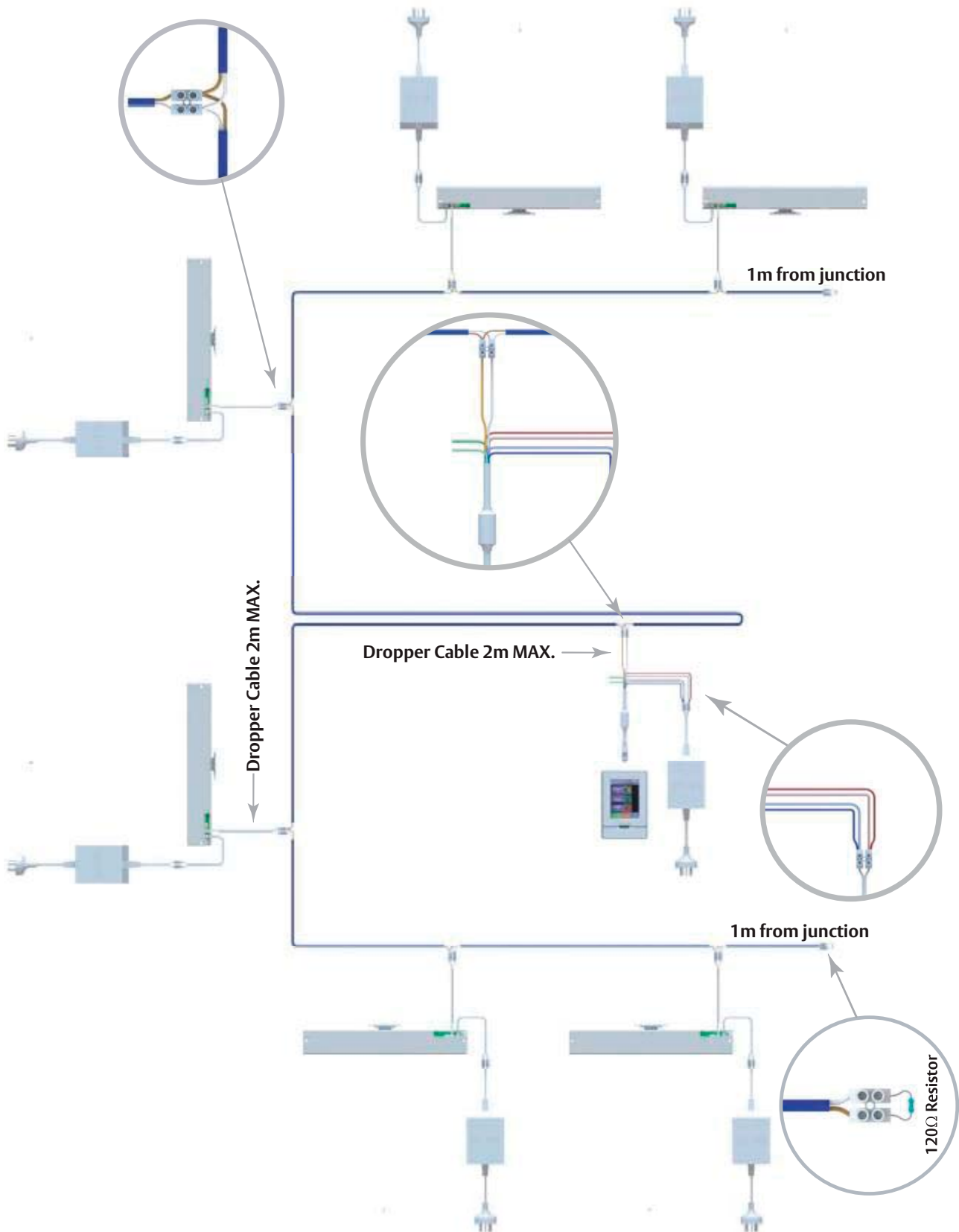
Wall Switch Connection for one Actuator still require two resistors, one at the beginning of the Network, and one at the end.



Rain Sensor Connection



Keypad Network Diagram - Large



Keypad Connection Overview



Frequently Asked Questions

The window used to work and has now stopped working. (or never worked)

It may be that you have short windows 300-600mm high; Ensure windows are restricted as per the Matrix

No actuators are found on keypad or the actuators don't respond to the network adaptor .

Check in this order;

- The polarity of the brown and white cable as per the diagram (it's polarity sensitive)
- Are the resistors installed at the actuator
- Does the network adaptor have power connected (24vdc)
- If the cable has been extended with CAT5 connector ensure Config B is used
- If the keypad cable has been cut and terminated ensure:
- Orange = Brown
- Orange/White = White

What cable is required?

Cable for power supply = "Figure 8" cable for 30m runs

Cable for network = CAT 5 or 6 shielded preferable

What is the reason for the resistor with 1 m cable attached and do I really need it?

The 1m cable with resistor "tells" the network a starting point and end point of the network. The system will not operate without these resistors

Where would I physically connect the resistor?

Resistors need to bridge the white and brown cable and be connected at the start and end points.

Where do I install the network adaptor?

Close to the switch or relay.

Is a network adaptor required when installing a keypad?

No. The network adaptor is only required if you have rain a sensor. Or for installation with a wall switch or Cbus system.

How do you connect Elevation to a Cbus?

The Network adaptor has two inputs; open and close input. Program the Cbus relay to trigger the network adaptors open or close input.

How long should the relay trigger the input explained above?

The open or close pulse should be two seconds at least.

How many network adaptors do I need when connecting to a Cbus?

If windows are to be controlled individually you will need one network adaptor per window.

If windows are controlled in groups, you need one network adaptor per group.

In the event of a fire can I connect the fire panel to close or open all windows?

Yes. The Network adaptor has two inputs; open and close input. Program the fire panel relay to trigger the network adaptors open or close input (30 actuators per network adaptor).

In the event of a fire is there a fail safe mechanical mechanism that will allow the windows to close or open?

No.

Can I connect Elevation to a battery backup system?

Yes. 24vdc backup systems are available.



CAPRAL
ALUMINIUM

Capral Limited
ABN 78 004 213 692

www.capral.com.au
1300 366 517