

Technical Specifications - EDGE 2 Main Controller

EDGE 2 Main Controller – Safety Ratings

Inputs:
DC Supply Input : 24V_{DC} ±10%, 18W

OUTPUTS :
Alarm relay output: 24V_{DC/AC}, 1.5A

Operating Temperature	0 to 40°C (32 to 104°F)
Storage Temperature	-20 to 50°C (-4 to 122°F)
Environment Type	Indoor use only
Pollution Degree	2
Installation Category	2
Altitude	2000 Meters (6561 Ft.) Max.
Operating Relative Humidity (maximum)	0 to 10°C (32 to 50°F) Non condensing 10 to 30°C (50 to 86°F) 95 % (± 3 %) Non condensing 30 to 40°C (86 to 104°F) 95 % (± 3 %) Non condensing
IP rating (IEC 60529)	54
Nema Rating (Nema 250)	12
Flame Rating (UL94)	5VA V-0
Flame Rating (IEC 60695 or IEC 60707)	FV-0
IK rating (degree of mechanical protection - impact, IEC 62262)	08

EDGE 2 Main Controller - Functional Ratings

Enclosure Dimensions	Height	482 mm (19 inches)
	Width	355 mm (14 inches)
	Depth	152 mm (6 inches)
Weight	4150 grams (9.15 lbs)	
Display	Size	15 inches, 12 high
	Type	LED
	Resolution	1024X768
Ethernet ports		
10/100 Ethernet Transceiver	IEEE802.3/802.3u (Fast Ethernet) ISO 802-3/IEEE 802.3 (10BASE-T)	
Wireless	Wi-Fi®, Bluetooth®, ZigBee®	

Technical Specifications - EDGE 2 Controller Screenless

EDGE 2 Controller Screenless – Safety Ratings

Inputs:
DC Supply Input : 24V_{dc} ±10%, between 11W

OUTPUTS :
Alarm relay output: 24V_{DC/AC}, 1.5A

Operating Temperature	0 to 40°C (32 to 104°F)
Storage Temperature	-20 to 50°C (-4 to 122°F)
Environment Type	Indoor use only
Pollution Degree	2
Installation Category	2
Altitude	2000 Meters Max. (6561 Ft. Max)
Operating Relative Humidity (maximum)	0 to 10°C (32 to 50°F) Non condensing 10 to 30°C (50 to 86°F) 95 % (± 3 %) Non condensing 30 to 40°C (86 to 104°F) 95 % (± 3 %) Non condensing
IP rating (IEC 60529)	54
Nema Rating (Nema 250)	12
Flame Rating (UL94)	5VA V-0
Flame Rating (IEC 60695 or IEC 60707)	FV-0
IK rating (degree of mechanical protection - impact, IEC 62262)	08

EDGE 2 Controller Screenless - Functional Ratings

Enclosure Dimensions	Height	482 mm (19 inches)
	Width	355 mm (14 inches)
	Depth	152 mm (6 inches)
Weight	2834 grams (6.25 lbs)	
Ethernet ports		
10/100 Ethernet Transceiver	IEEE802.3/802.3u (Fast Ethernet) ISO 802-3/IEEE 802.3 (10BASE-T)	
Wireless	Wi-Fi®, Bluetooth®, ZigBee®	

Technical Specifications - EDGE PSU 24V 36W

EDGE PSU 24V 36W – Safety Ratings

Inputs:
Supply Input : 100-240Vac ±10%, 50-60Hz, 1 phase, 36W

OUTPUTS :
24V_{DC/AC}, 1.5A max

Operating Temperature	-40 to 40°C (-40 to 104°F)
Storage Temperature	-20 to 50°C (-4 to 122°F)
Environment Type	Indoor and outdoor use
Pollution Degree	2
Installation Category	3
Altitude	2000 Meters Max. (6561 Ft. Max)
Operating Relative Humidity (maximum)	-40 to 10°C (-40 to 50°F) Non condensing 10 to 30°C (50 to 86°F) 95 % (± 3 %) Non condensing 30 to 40°C (86 to 104°F) 95 % (± 3 %) Non condensing
IP rating (IEC 60529)	66
Nema Rating (Nema 250)	4X
Flame Rating (UL94)	5VA V-0
Flame Rating (IEC 60695 or IEC 60707)	FV-0
IK rating (degree of mechanical protection - impact, IEC 62262)	08

EDGE PSU 24V 36W - Functional ratings

Enclosure Dimensions	Height	178 mm (7 inches)
	Width	229 mm (9 inches)
	Depth	76.2 mm (3 inches)
Weight	907 grams (2 lbs)	

Technical Specifications - EDGE 2 Remote Display

EDGE 2 Remote Display - Functional Ratings

Enclosure Dimensions	Height	482 mm (19 inches)
	Width	355 mm (14 inches)
	Depth	152 mm (6 inches)
Weight	4150 grams (9.15 lbs)	
Display	Size	15 inches, 12 high
	Type	LED
	Resolution	1024X768
Ethernet ports		
10/100 Ethernet Transceiver	IEEE802.3/802.3u (Fast Ethernet) ISO 802-3/IEEE 802.3 (10BASE-T)	
Wireless	Wi-Fi®, Bluetooth®, ZigBee®	

EDGE 2 Remote Display - Safety Ratings

Inputs:
DC Supply Input : 24V_{dc} ±10%, 18W

Operating Temperature	0 to 40°C (32 to 104°F)
Storage Temperature	-20 to 50°C (-4 to 122°F)
Environment Type	Indoor use only
Pollution Degree	2
Installation Category	2
Altitude	2000 Meters Max. (6561 Ft. Max)
Operating Relative Humidity (maximum)	0 to 10°C (32 to 50°F) Non condensing 10 to 30°C (50 to 86°F) 95 % (± 3 %) Non condensing 30 to 40°C (86 to 104°F) 95 % (± 3 %) Non condensing
IP rating (IEC 60529)	54
Nema Rating (Nema 250)	12
Flame Rating (UL94)	5VA V-0
Flame Rating (IEC 60695 or IEC 60707)	FV-0
IK rating (degree of mechanical protection - impact, IEC 62262)	08

NOTE: This guide does not provide detailed installation, safety or operational instructions. See the EDGE 2 System Manuals for complete information.

The EDGE 2 is manufactured by GSI Electronics Inc., Canada.

Please scan the QR Code to access the complete manual or visit the website.
Cumberland: <http://www.cumberlandpoultry.com>
AP: <http://www.automatedproduction.com>



WIRING DIAGRAM	
EDGE 2 GENERAL WIRING	
#891-00598	REV 03

Technical Specifications - EDGE 4IN-2V-8DO

EDGE 4IN-2V-8DO Ratings	
DC Supply Input	18-24Vdc, 7.2W
Coils contactors/relays outputs	24Vac-240Vac, 0.5A max, 50/60Hz, PF max: 0.5
Current sensors	
Motor load current sensing	
1 phase, 50/60Hz, PF max: 0.5	100-120Vac : 16FLA, 1HP 200-240Vac : 12FLA, 2HP
3 phases, 50/60Hz, PF max: 0.5	L-L : 208Vac : 10.56FLA, 3HP L-L : 380Vac : 15.4FLA, 10HP L-L : 415Vac : 15.4FLA, 10HP
General use load current sensing	120/208/240/380/415Vac, 16A, PF max: 0.75
Heating Load current sensing	120/208/240/380/415Vac, 16A, PF max: 1
Auxiliary outputs	
0-10Vdc outputs on EDGE 4IN-2V-8DO	0-10Vdc, accuracy : 1% (means, 0.1V), output impedance : 50 Ohms, Max current per output : 100mA
24 VDC outputs	24 VDC, 50 mA for each output
Operational specifications	
Operating Temperature	0 to 40°C (32 to 104°F)
Storage Temperature	-20 to 50°C (-4 to 122°F)
Environment Type	Indoor use only
Pollution Degree	2
Installation Category	2
Altitude	2000 Meters Max. (6561 Ft. Max)
Operating Relative Humidity (maximum)	0 to 10°C (32 to 50°F) Non condensing 10 to 30°C (50 to 86°F) 95 % (± 3 %) Non condensing 30 to 40°C (86 to 104°F) 95 % (± 3 %) Non condensing
IP rating (IEC 60529)	00

EDGE 4IN-2V-8DO - Dimensions and Weight		
Dimensions	Height	77.12mm (3.04 inches)
	Width	144.16mm (5.67inches)
	Depth	340.2mm (13.4 inches)
Weight	680.39 grams (1.5 lbs)	

EDGE 6-Slot and 3-Slot Expansion Box Ratings	
6-Slot	100Vac-240Vac, ±10%, 50-60Hz, 1 phase, 120W
3-Slot	100Vac-240Vac ±10%; 50-60Hz, 1 phase, 120W
On/Off outputs	
NO (normally open) contact - motor/inductive load	12A MAX (Nb of Units = Max current rating divided by the max current of the fan multiplied by its service factor) Ex.: 12A / (2.5 A * 1.5 SF) = 3.2, relay can drive 3 fans Minimum load of 0.2A
NO (Normally Opened) contact - resistive load (electric heating element)	120/208/240Vac: 12A MAX Minimum load of 0.2A
NO (Normally Opened) contact - Tungsten load (incandescent and heat lamp)	120Vac; 5A MAX 208Vac; 5A MAX 240Vac; 5A MAX Minimum load of 0.2A
NO (Normally Opened) contact - DC load	24Vdc; 5A MAX (Current reading not available in DC). Minimum load of 0.2A
NO (normally opened) contact - LED and CCFL loads	120/208/240Vac, 750W; 920VA MAX Minimum load of 0.2A / 25W
NO (normally opened) contact – Ballast loads	120/208/240Vac, 6A MAX Minimum load of 0.2A
NC (Normally Closed) contact - Motor/inductive load	Cycle Timer Mode 5A MAX Minimum load of 0.2A (Nb of Units = Max current rating divided by the max current of the fan multiplied by its service factor) For example, 5A / (2.5 A * 1.5 SF) = 1.333; relay can drive up 1 fans
	No Timer Mode 10A MAX Minimum load of 0.2A (Nb of Units = Max current rating divided by the max current of the fan multiplied by its service factor) For example, 10A / (2.5 A * 1.5 SF) = 2.7; relay can drive up 2 fans
NC (normally closed) contact - Resistive loads (electric heating element)	120/208/240Vac, 10A MAX
NC (normally closed) contact - Tungsten load	120/208/240Vac; 3A MAX Minimum load of 0.2A
NC (normally closed) contact - DC load	24Vdc; 5A MAX (Current reading is not available in DC) Minimum load of 0.2A
NC (normally closed) contact - LED and CCFL loads	120/208/240Vac; 750W; 920VA MAX Minimum load of 0.2A / 25W
NC (normally closed) contact – Ballast load	120/208/240Vac; 3A MAX Minimum load of 0.2A
Variable outputs modules (SSR)	
Resistive loads (heat lamps, heat mats, incandescent light)	120 VAC; 2000W; 16.66A; 50/60Hz
	208 VAC; 2000W; 9.61A; 50/60Hz
	240 VAC; 2000W ; 8.33A; 50/60Hz Minimum load of 0.2A
Motor/inductive load	10,5 A MAX Minimum load of 0.2A Full Load amperage on the motor nameplate is not the maximum amp. When varying, the amperage might be higher. (Nb of Units = Max current rating divided by the max current of the fan)
	120/208/240Vac; 50/60Hz, 750W/ 920VA MAX Minimum load of 0.2A / 25W
Ballast load	120Vac; 50/60Hz; 1200W; 10 MAX
	208 Vac; 50/60Hz; 1040W; 5A MAX
	240Vac; 50/60Hz; 720W; 3A MAX Minimum load of 0.2A

Technical Specifications - EDGE 6 Slot & 3 Slot Expansion Box

Operational specifications	
Operating Temperature	0 to 40°C (32 to 104°F)
Storage Temperature	-20 to 50°C (-4 to 122°F)
Environment Type	Indoor use only
Pollution Degree	2
Installation Category	2
Altitude	2000 Meters Max. (6561 Ft. Max)
Operating Relative Humidity (maximum)	0 to 10°C (32 to 50°F) Non condensing 10 to 30°C (50 to 86°F) 95 % (± 3 %) Non condensing 30 to 40°C (86 to 104°F) 95 % (± 3 %) Non condensing
IP rating (IEC 60529)	00

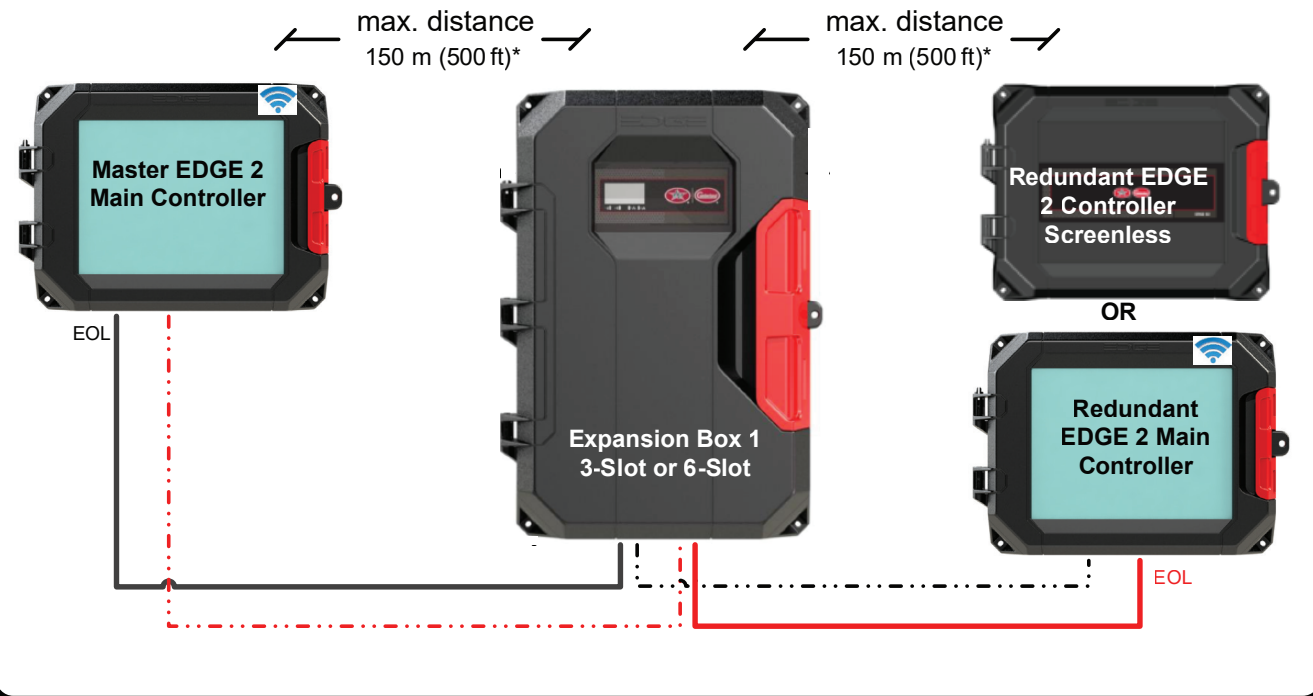
EDGE 3-Slot Expansion Box - Dimensions and Weight		
Enclosure Dimensions	Height	660 mm (26 inches)
	Width	457 mm (18 inches)
	Depth	279 mm (11 inches)
Weight	11521 grams (25.4 lbs)	
Clearance	Top	300mm (12 inches)
	Bottom	300mm (12 inches)
	Hinge Side	250mm (10 inches)
	Latch Side	180mm (7 inches)

EDGE 6-Slot Expansion Box - Dimensions and Weight		
Enclosure Dimensions	Height	660 mm (26 inches)
	Width	635 mm (25 inches)
	Depth	279 mm (11 inches)
Weight	15966 grams (35.2 lbs)	
Clearance	Top	300mm (12 inches)
	Bottom	300mm (12 inches)
	Hinge Side	250mm (10 inches)
	Latch Side	180mm (7 inches)

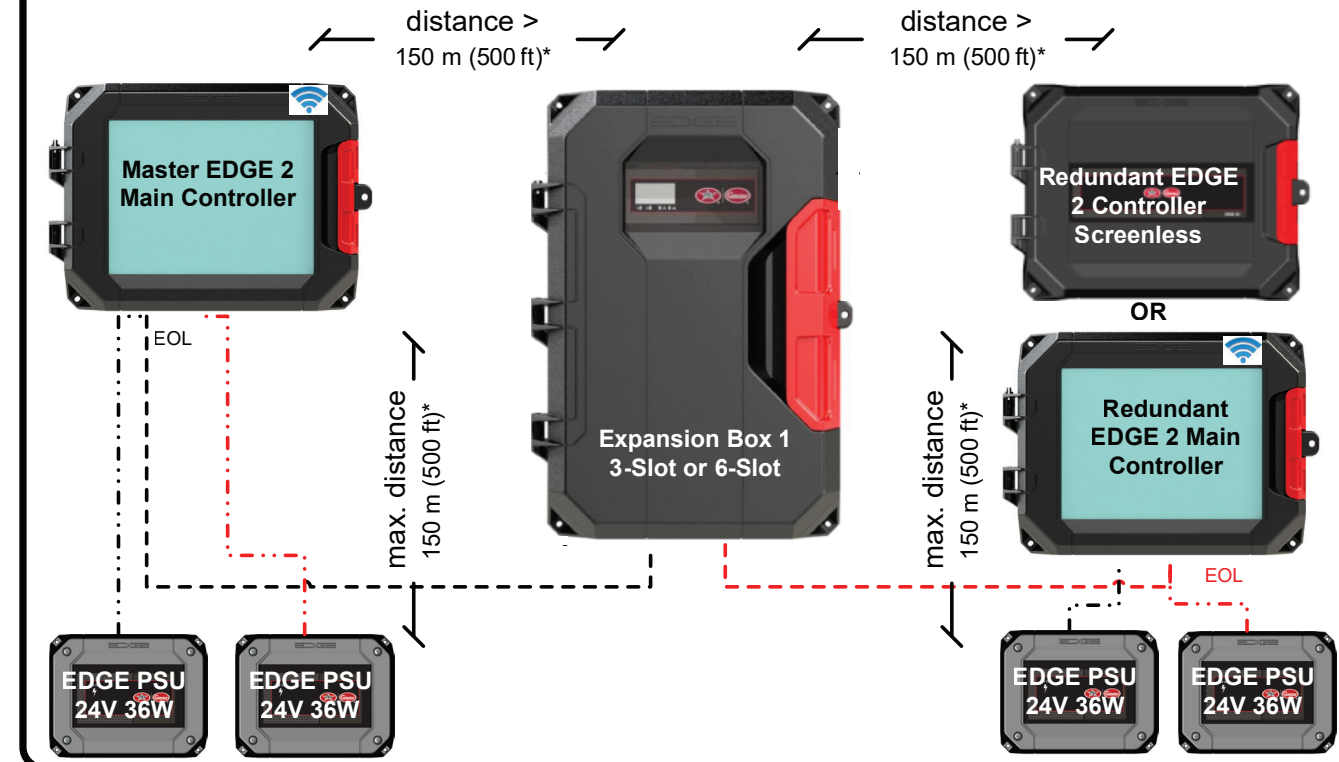
EDGE Light Dimmer Outputs on EDGE 3/6 Slot Expansion Box	
INPUTS:	
SUPPLY INPUT: 100-120/220-240Vac ±10%, 50-60Hz, 1/2 phase(s)	
OUTPUTS:	
POWER OUTPUT (Per channel):	100-120/220-240Vac 8.0Amps max
	100-120Vac, 800-960VA, (CFL/CCFL, LED)
	220-240Vac, 1760-1920VA, (CFL/CCFL, LED)

POWER SUPPLY configuration possibilities

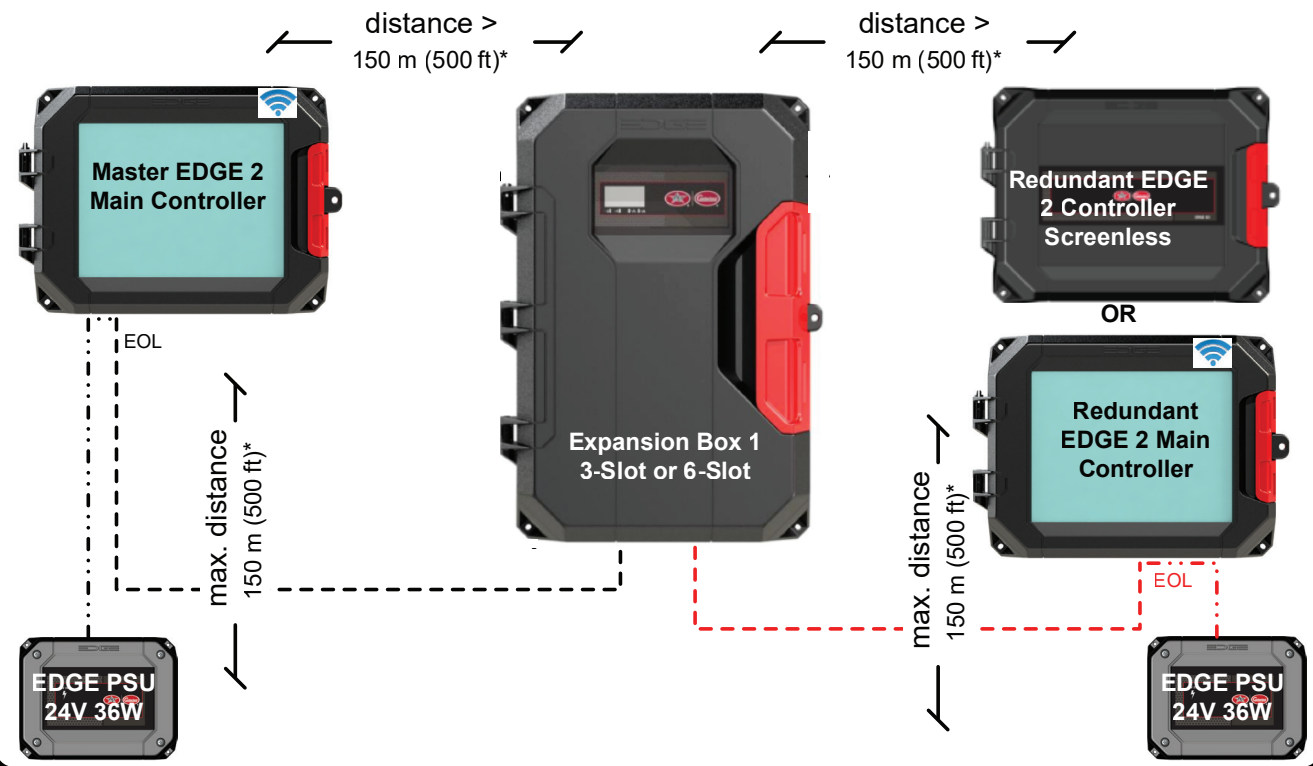
Distance \leq max. distance with 16 AWG, Non redundant supply scheme



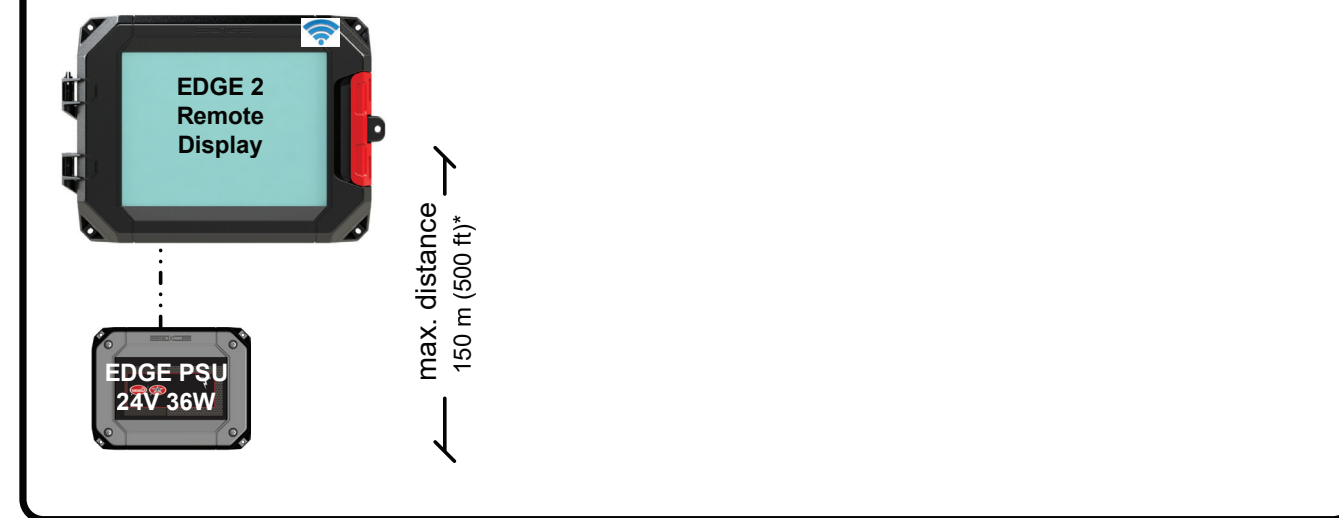
Distance $>$ max. distance with 16 AWG, with redundant power



Distance $>$ max. distance with 16 AWG, no redundant power



POWER SUPPLY on EDGE 2 Remote Display



LEGEND	
AUTOMATION BUS	
SAFETY BUS	

LEGEND	
Power(24Vdc + gnd) only	
Communication only (with gnd)	

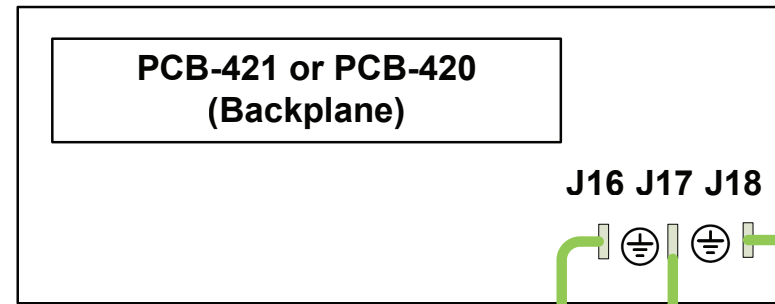
LEGEND	
Power and Communication	
Ethernet cable (optional)	

Note: Install the EDGE PSU 24V 36W as close as possible to the controller.

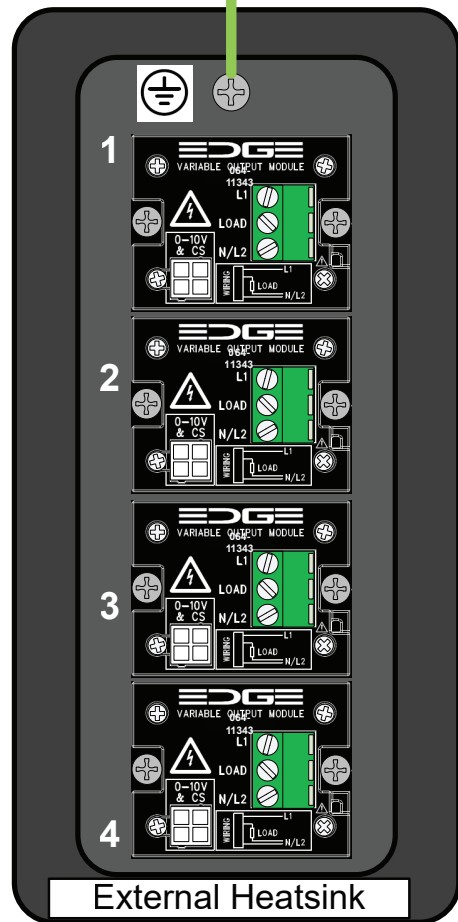
Power Cable (24V and GND)			
Distance	Minimum wire gage	Minimum diameter	Min. cross section
112 m (370 ft)	18 AWG	1.02 mm	0.82 mm ²
150 m (500 ft)	16 AWG *	1.29 mm	1.30 mm ²

* Recommended

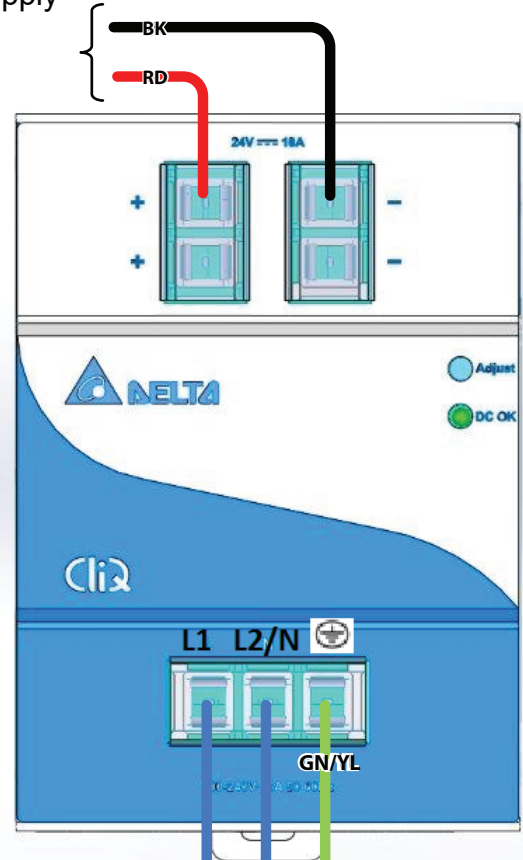
PCB-421 OR PCB-420 CONNECTION



Some models do not come with SSR or with a heatsink. In this case, this wire is not required



Look at the power supply connection section (No redundancy or redundancy power supplies)



Delta model: DRP024V240W1AA (135-00010, PSU 120W)



L2/N

L1

Earth

GN/YL

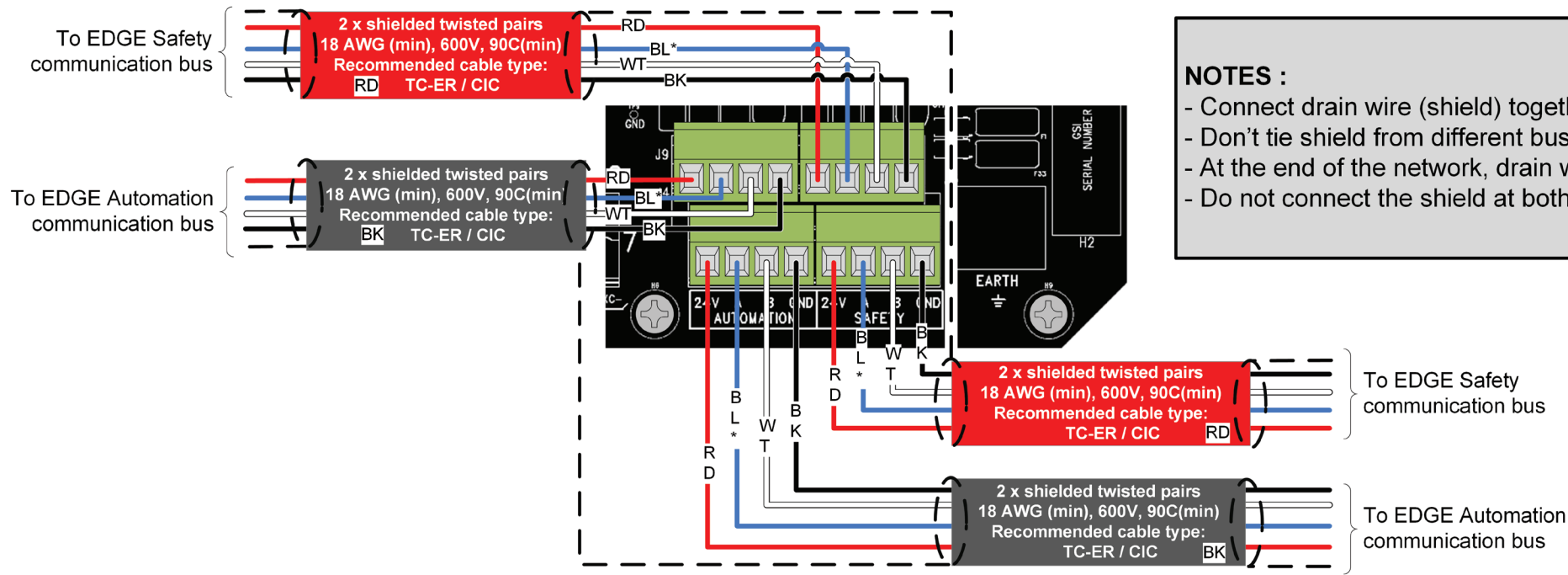
From electrical distribution panel

Connecting a Panel Mount Power Supply (Main sector AC)

Wire Color	Color Code
Red	RD
Blue	BL*
Black	BK
White	WH
Orange	OR
Yellow	YL
Green/Yellow	GN/YL

*BL could be Green instead of Blue.

Shield connection in middle of the communication network

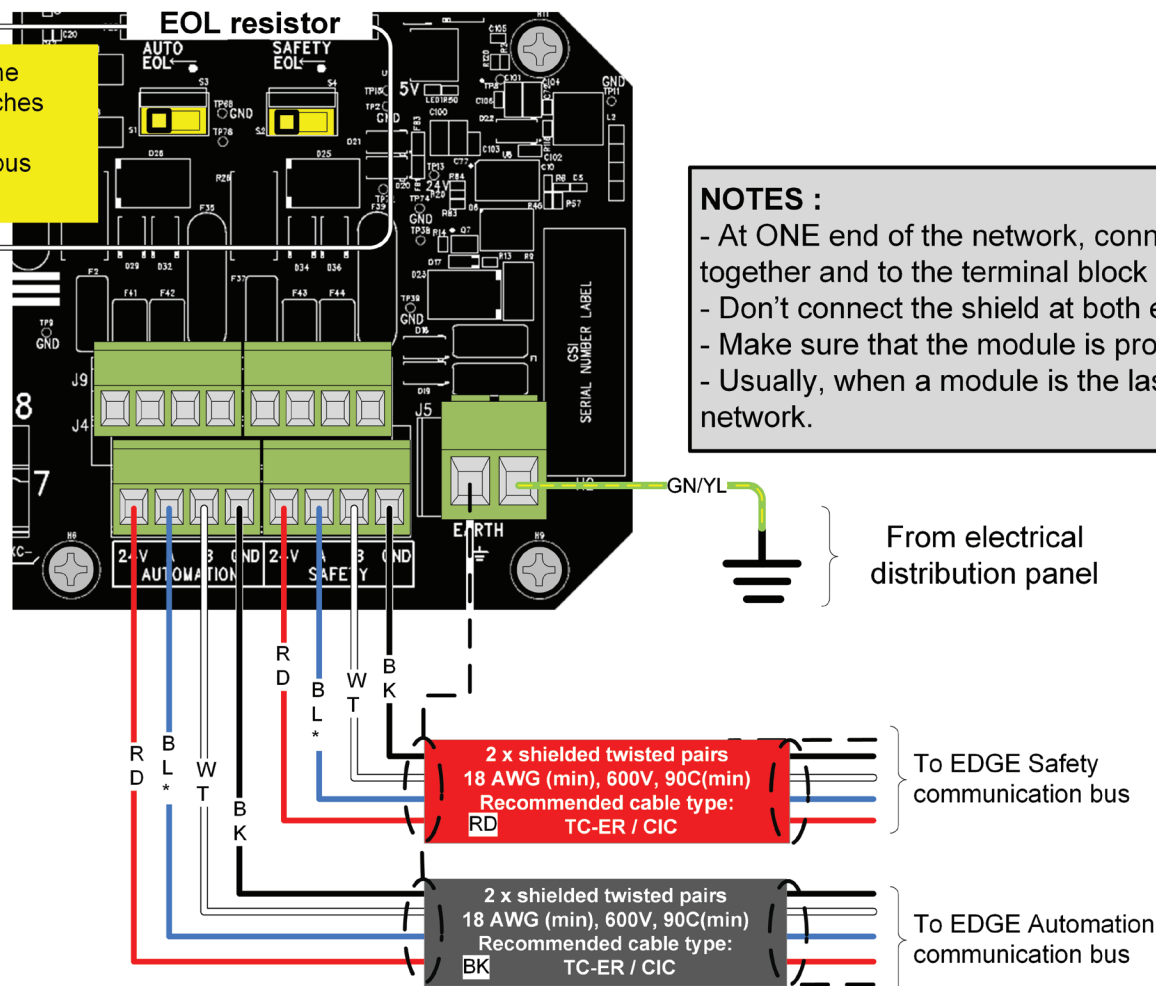


NOTES :

- Connect drain wire (shield) together when 2 cables enter in the same box as shown above.
- Don't tie shield from different bus together (AUTOMATION and SAFETY).
- At the end of the network, drain wire (shield) must be connect to Earth ground.
- Do not connect the shield at both end of the network to Earth ground.

Shield at ONE end of the communication network

If the module is at one of the ends of the communication network, the EOL switches must be set (slide it to left) to the corresponding EDGE communication bus (AUTO (S1) or SAFE (S2)).



NOTES :

- At ONE end of the network, connect both shield of AUTOMATION and SAFETY network together and to the terminal block for the EARTH ground connection.
- Don't connect the shield at both end of the network to EARTH ground.
- Make sure that the module is properly connected to EARTH ground.
- Usually, when a module is the last on the line, the switches must be in EOL position for both network.

ABBREVIATIONS	
COLOR	COLOR CODE
RED	RD
BLUE	BL
GREEN/YELLOW	GN/YL
BLACK	BK
WHITE	WT
ORANGE	OR
YELLOW	YL

BL*: could be Green instead of Blue

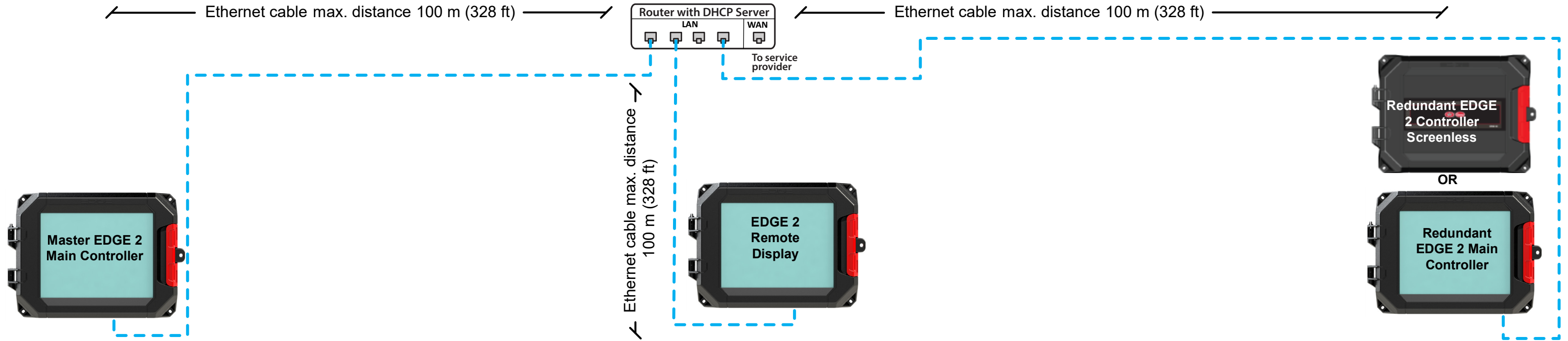
Refer to Section *Grounding recommendations for the system* into Instruction Manual of EDGE

NOTES :

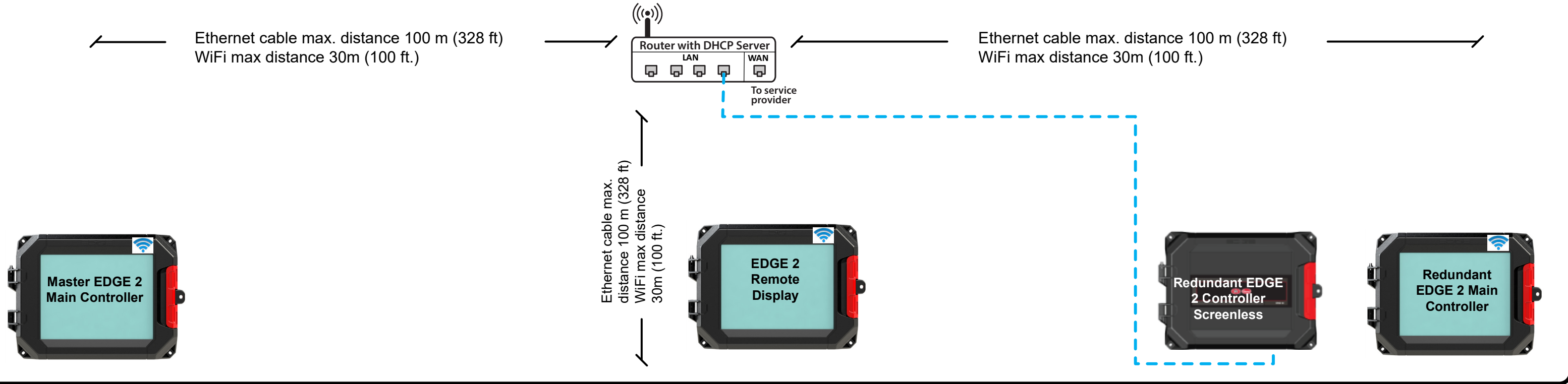
Refer to Low voltage cable specifications into Instruction Manual of EDGE

AP/Cumberland can provide sourced color-coded communication wire to install EDGE controls. The wire will be available in both 16 and 18 gauge to accommodate the specified distance between controls

ETHERNET with cables



ETHERNET with WIFI



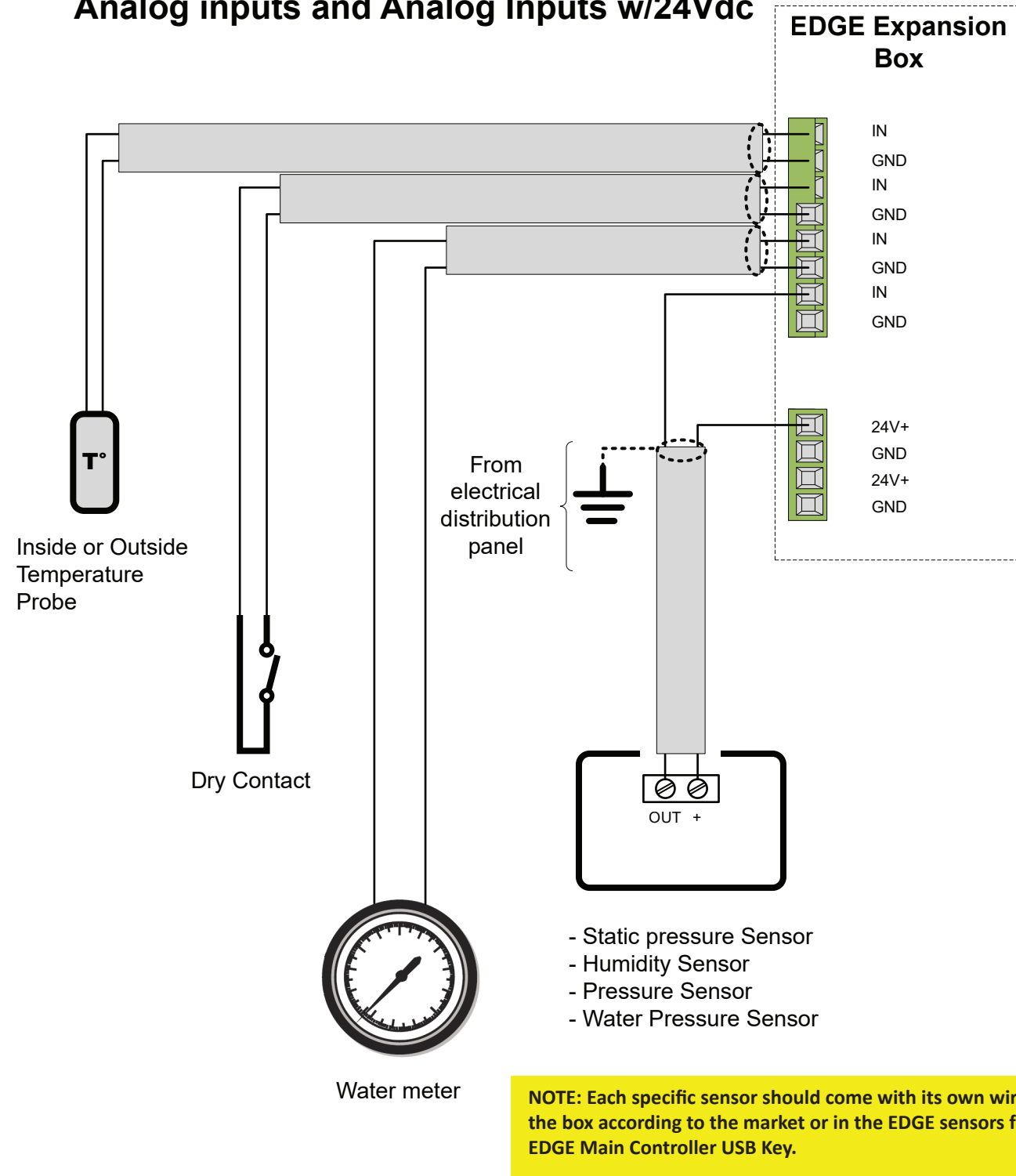
LEGEND	
AUTOMATION BUS	
SAFETY BUS	

LEGEND	
Power(24Vdc + gnd) only	
Communication only (with gnd)	

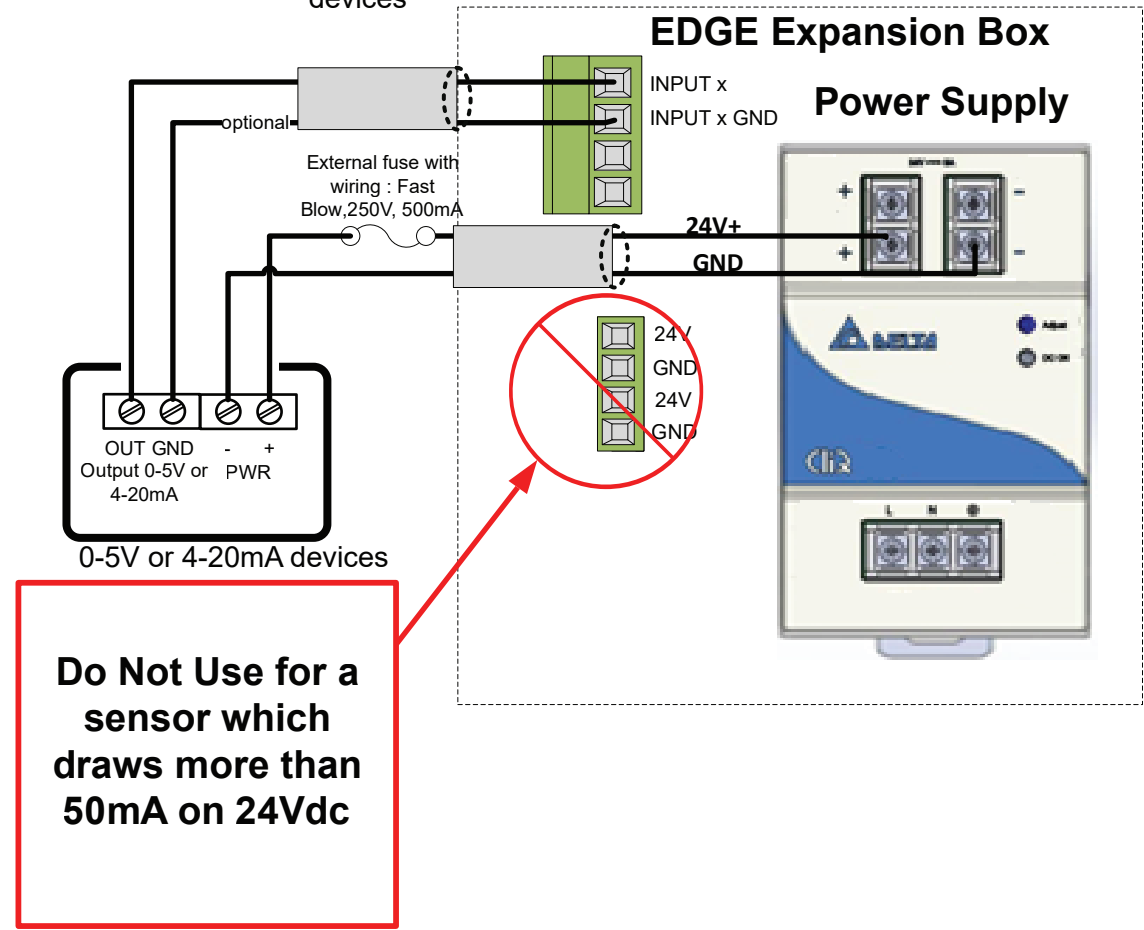
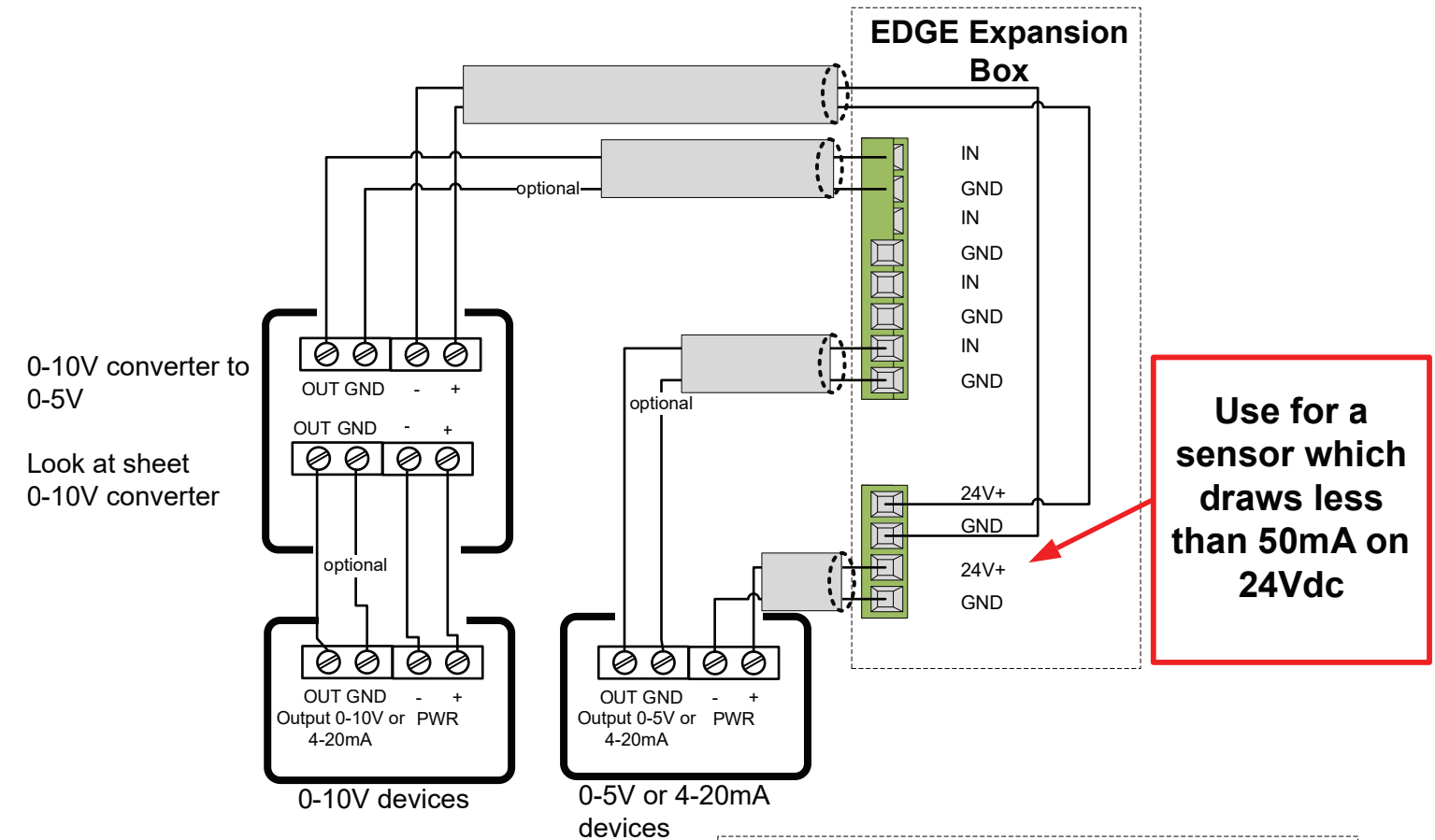
LEGEND	
Power and Communication	
Ethernet cable	

WIRING DIAGRAM (EN)	
EDGE 2 GENERAL WIRING	
#891-00598	REV 03

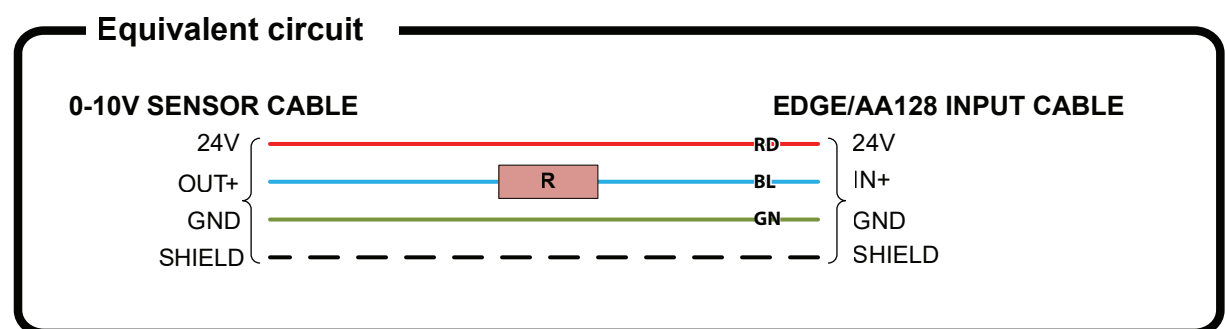
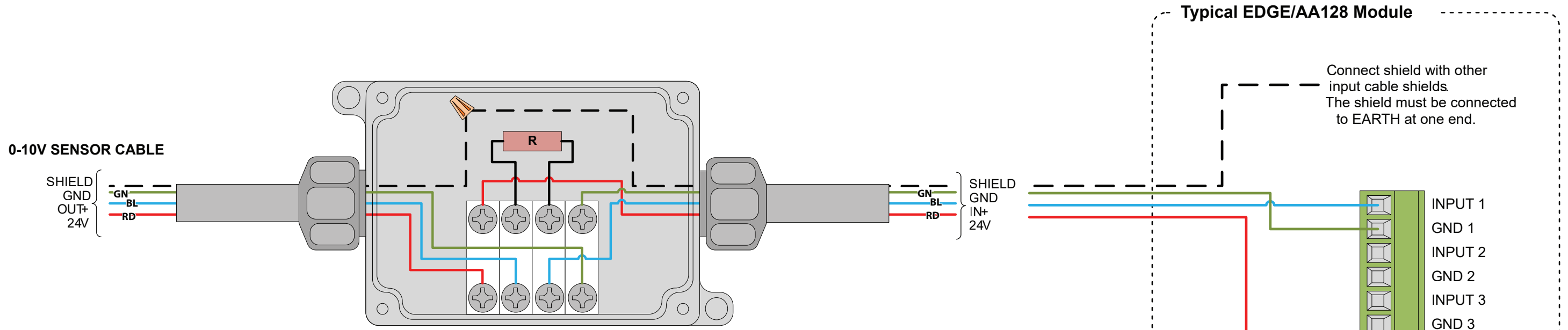
Analog inputs and Analog Inputs w/24Vdc



Connect the cable shields to the electrical distribution panel ground.



0-10V CONVERTER WIRING DIAGRAM



Controller settings

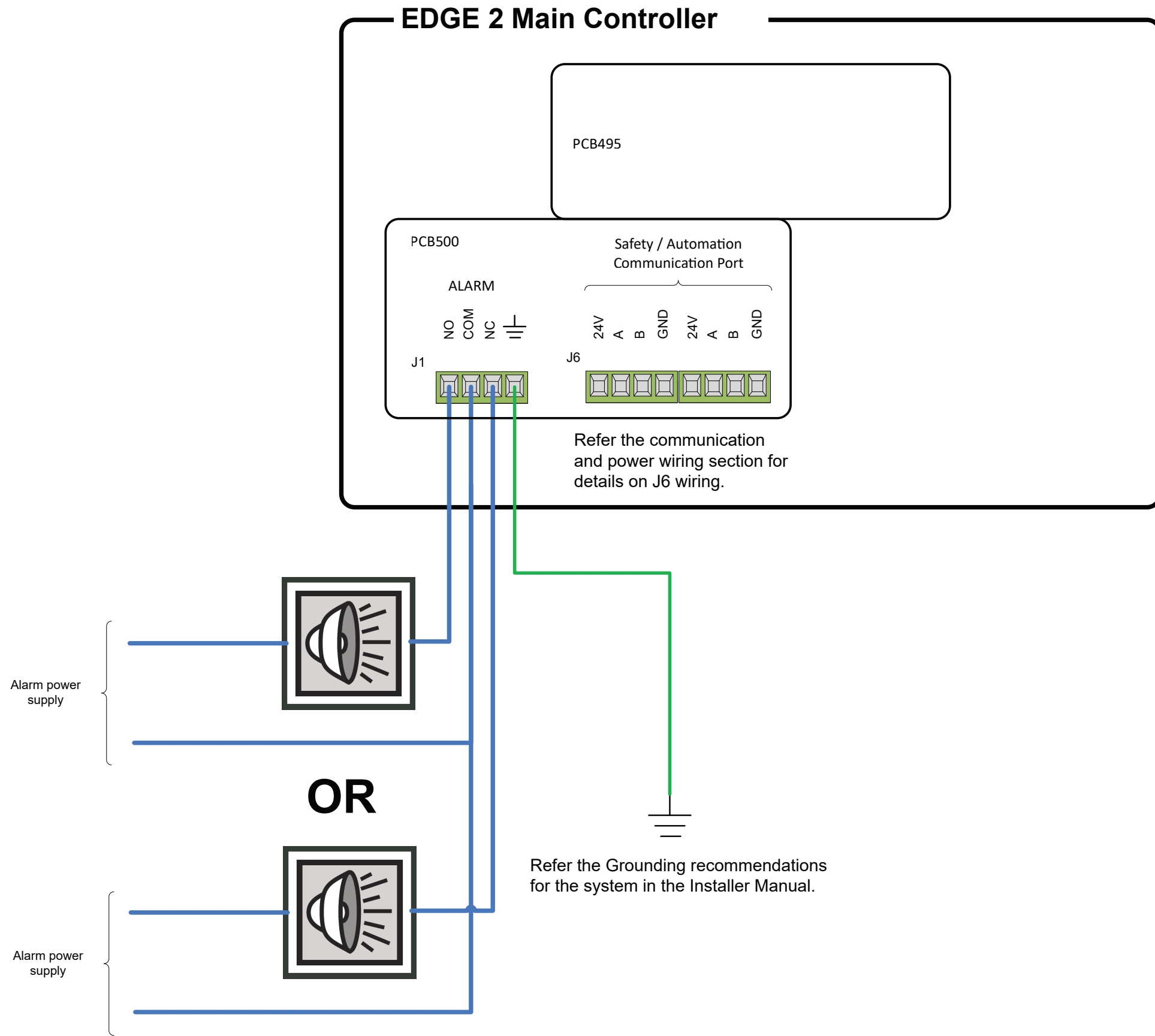
CONTROLLER	RESISTOR VALUE (R)	SETTING IN THE CONTROLLER	KIT P/N
EDGE	R = 6.8 kOhms	Range = 0 to 3.4V	028-00655

- NOTES:**
- Twist both shields from each cable together and use a marrette (twist-on wire connector) to secure the connection.
 - Make sure that the shield does not touch any other bare wire and the resistor. We recommend to add a heat shrink on it.
 - The maximum diameter of the cable must be less than 6.5mm.
 - Cable glands must be correctly tightened to guarantee the sealing of the junction box.
 - Use the 4 screws included in the kit to carefully close the cover on the junction box.
 - The colors used in this drawing are only for reference, wire colors can be different on the sensor.

Wire Color	Color Code
Red	RD
Blue	BL*
Black	BK
White	WH
Orange	OR
Yellow	YL
Green/Yellow	GN/YL

*BL could be Green instead of Blue.

Alarm Without Redundancy

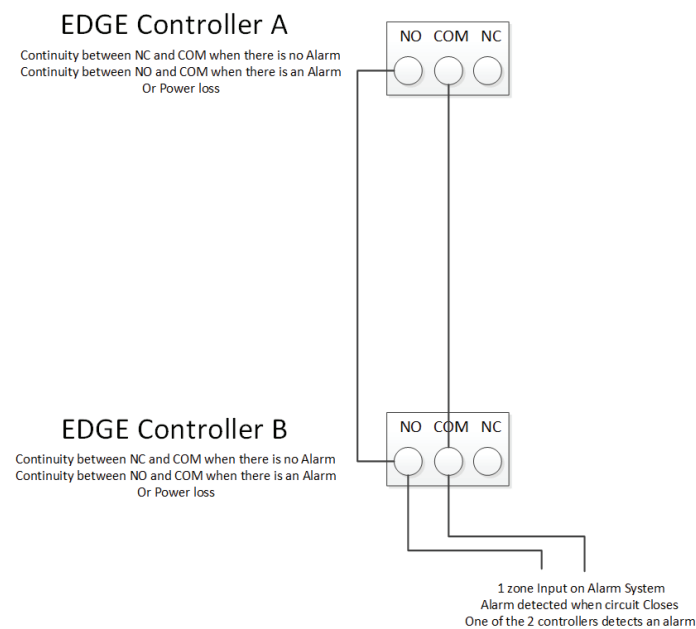


Connecting an alarm relay

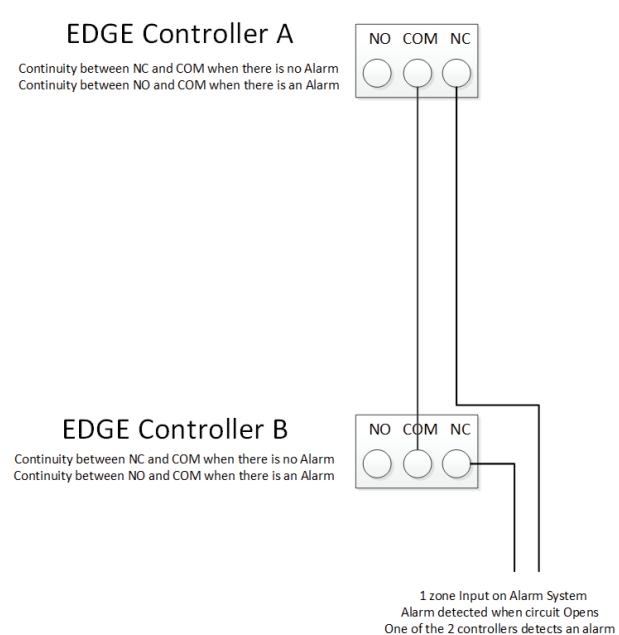
Alarm on Redundant Controllers

EDGE Main Controller Relay Scheme On Alarm Zone

Scheme 1a: 2 controls on one alarm Zone Alarm on Closed contact

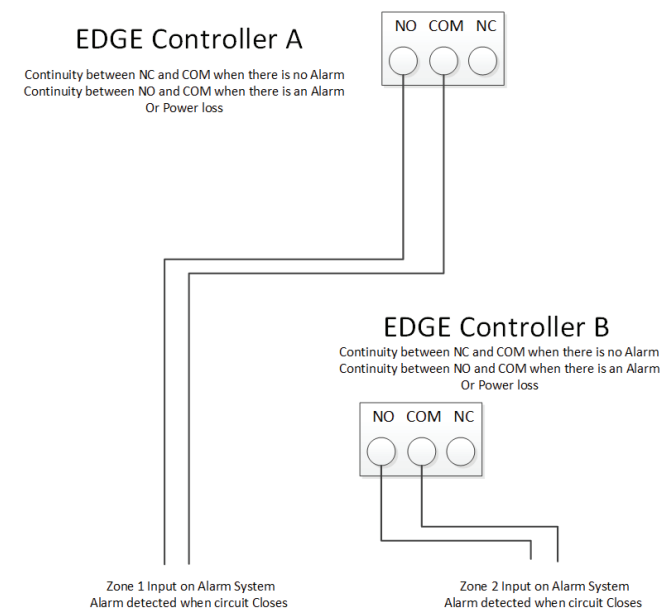


Scheme 1b: 2 controls on one alarm Zone Alarm on Open contact

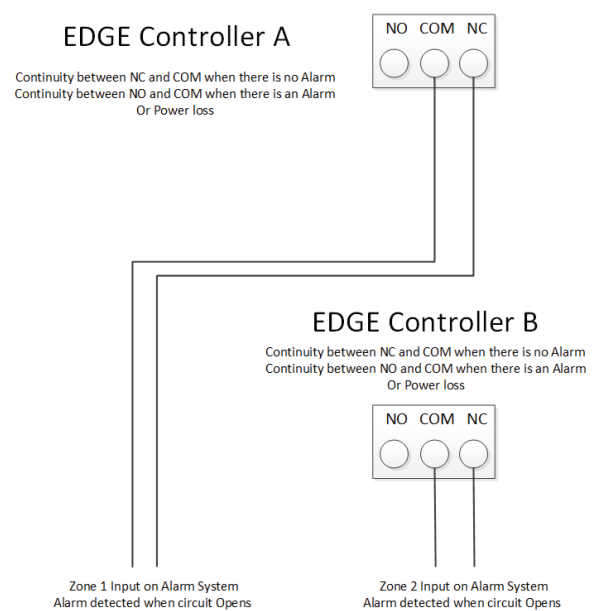


Warning: Switching over causes slave control to reboot and alarm to be set off.

Scheme 2a: 1 control per alarm Zone Alarm on Closed contact

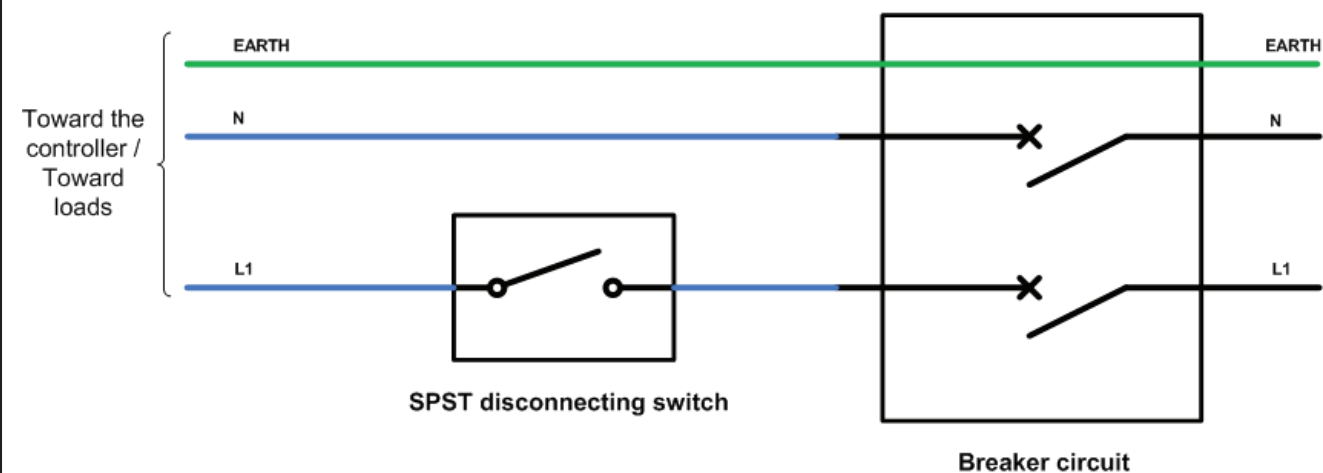


Scheme 2b: 1 control per alarm Zone Alarm on Open contact

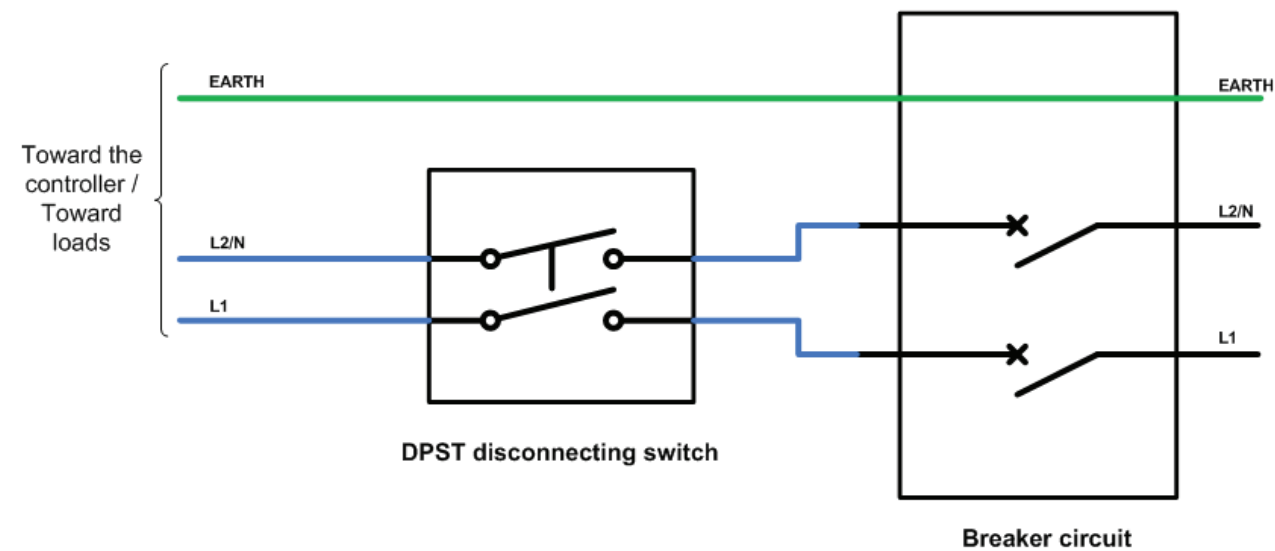


Warning: Switching over causes slave control to reboot and alarm to be set off.

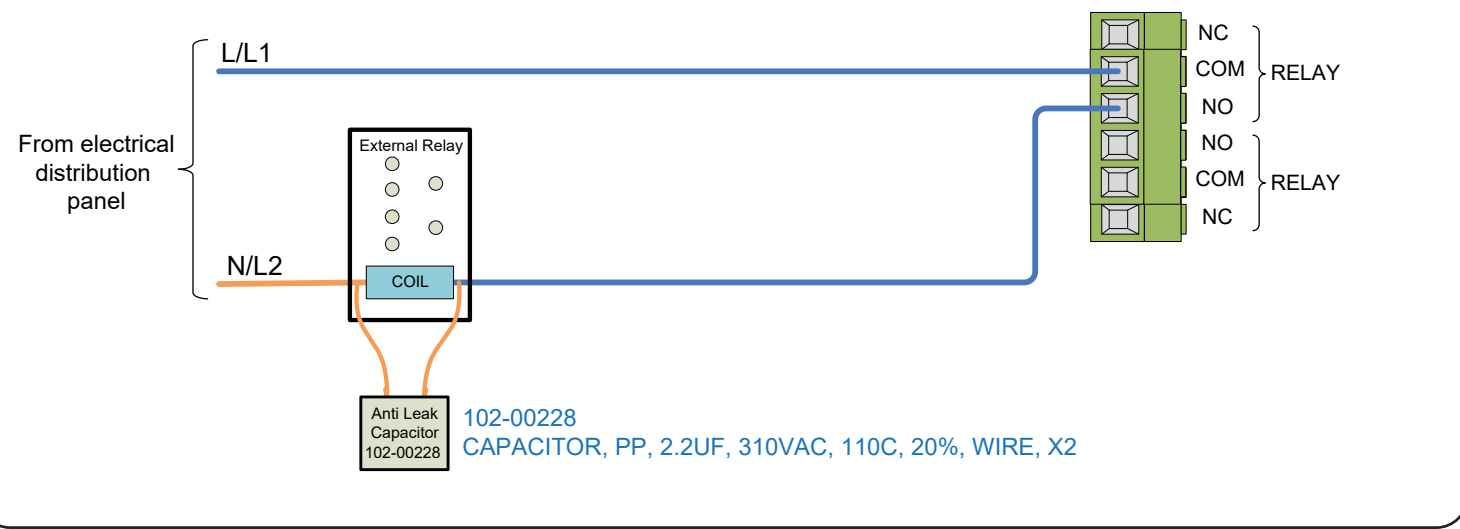
Wiring Diagram with a SPST Disconnect Switch



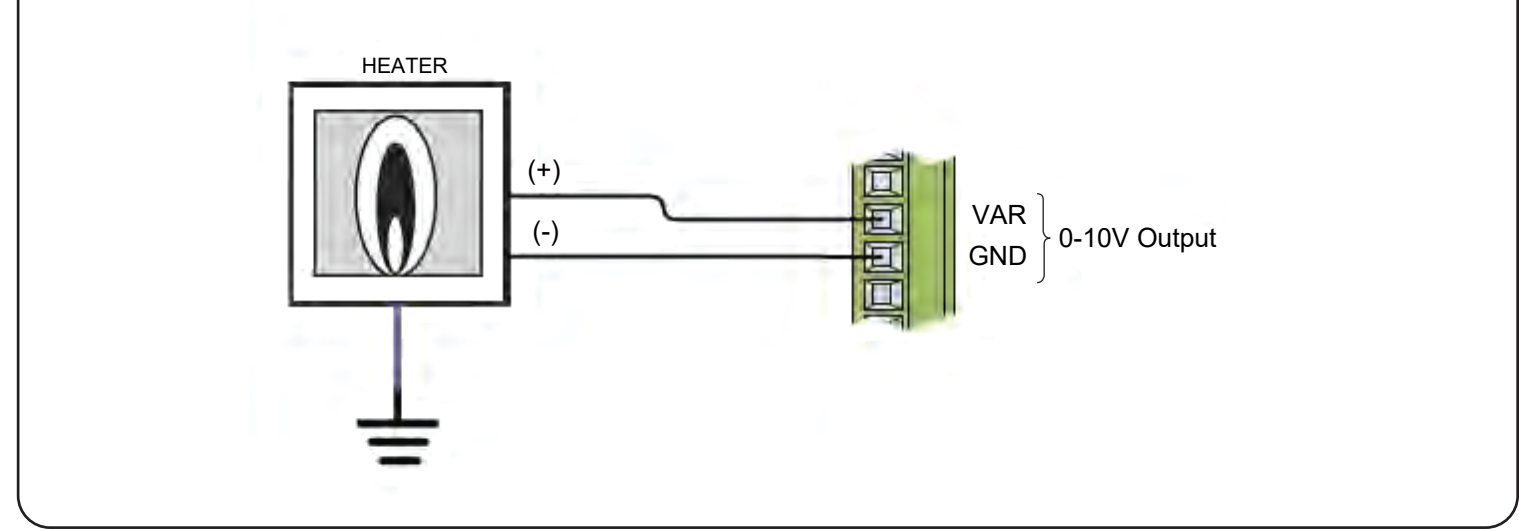
Wiring Diagram with a DPST Disconnect Switch



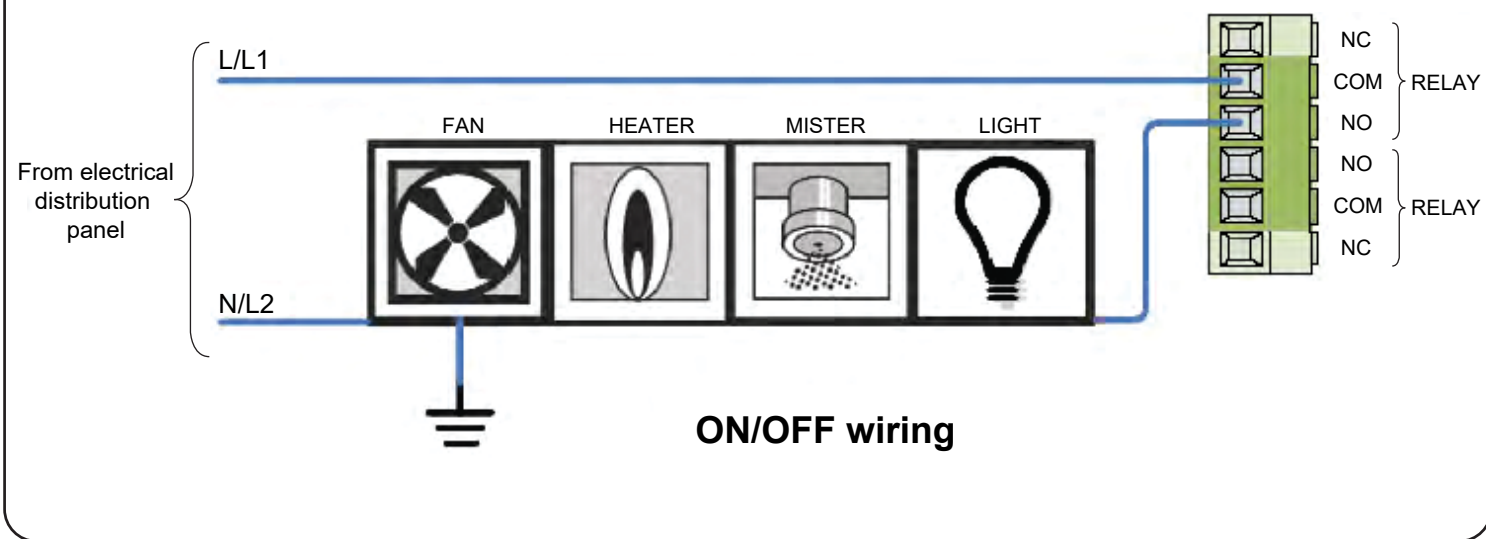
ON/OFF Wiring - Load less than 0.2A



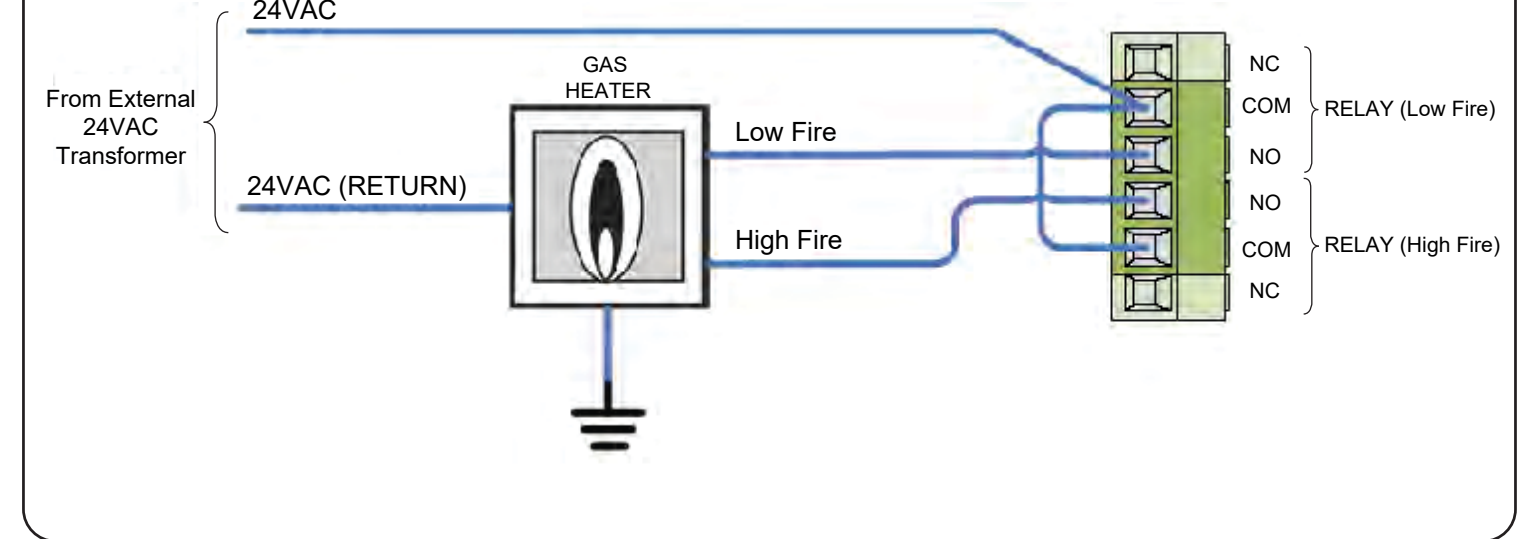
Variable 0-10Vdc Wiring



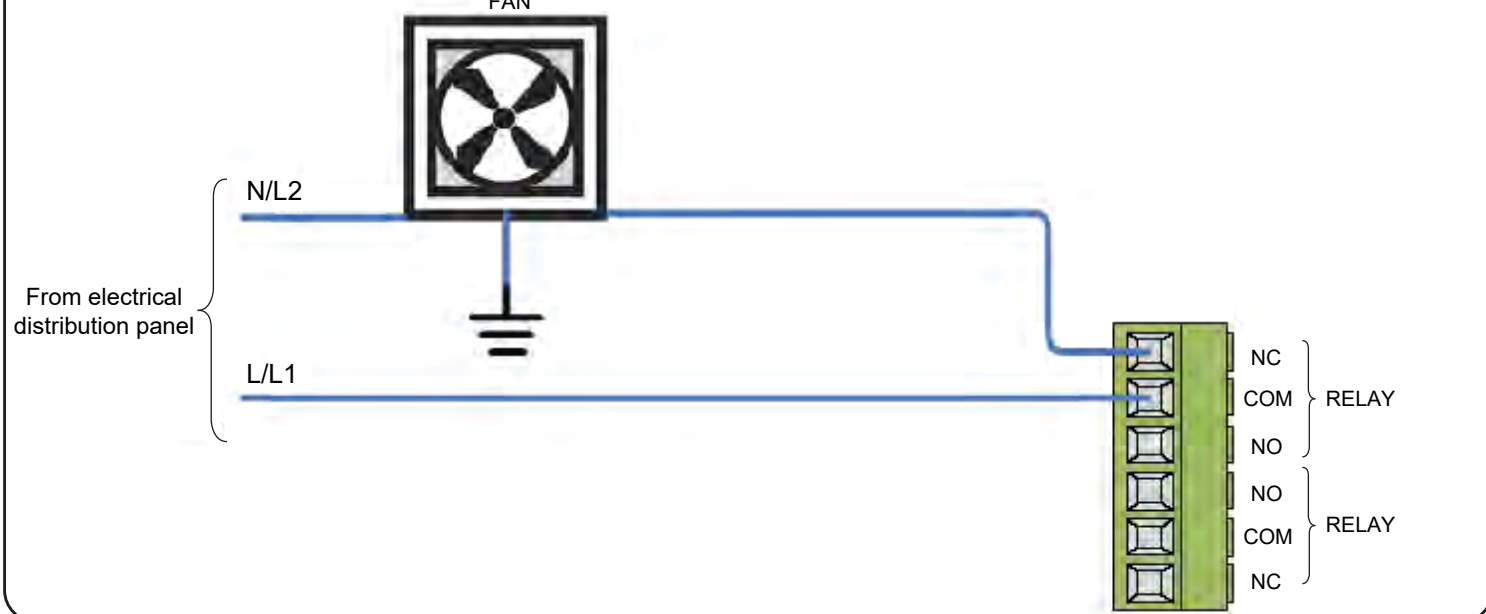
ON/OFF Wiring



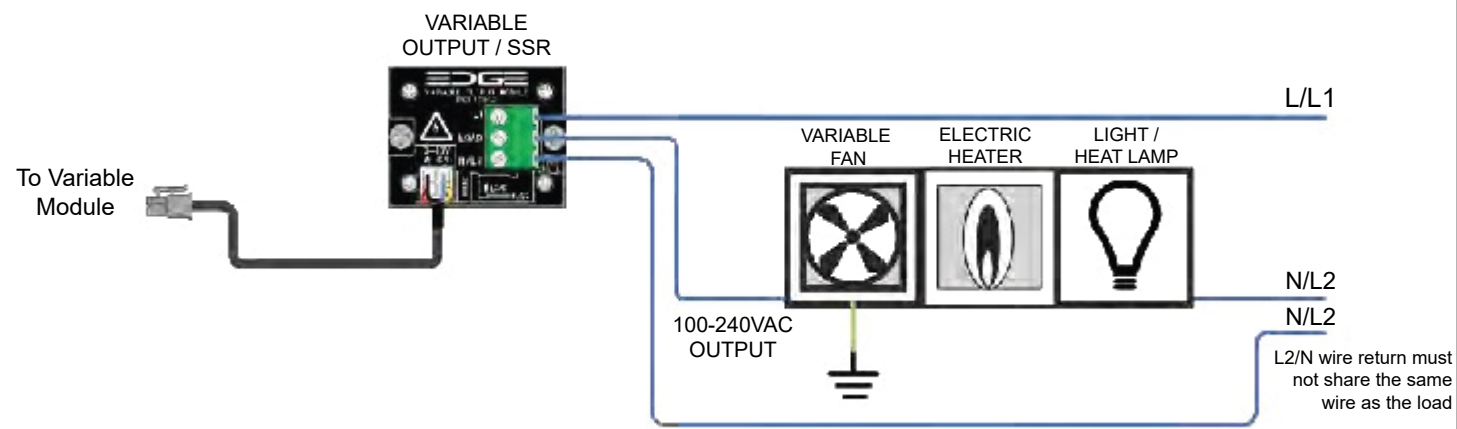
Dual Capacity Wiring



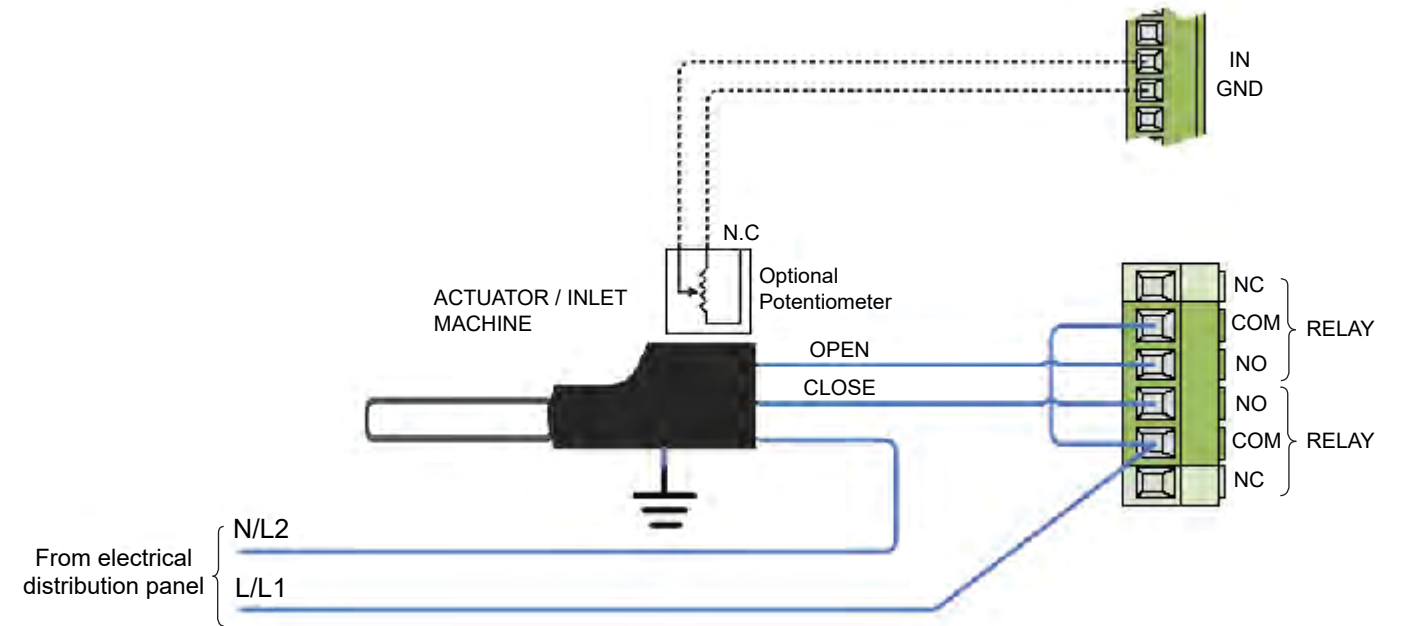
ON/OFF Fail-Safe Wiring



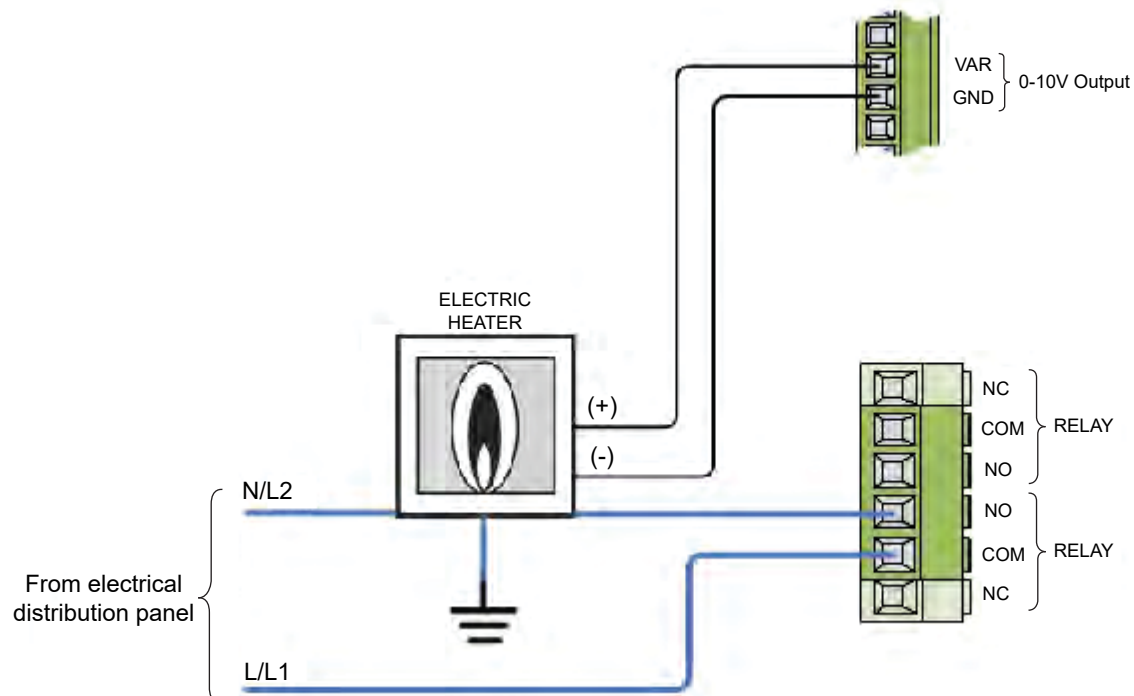
EDGE Variable Output (SSR) Wiring



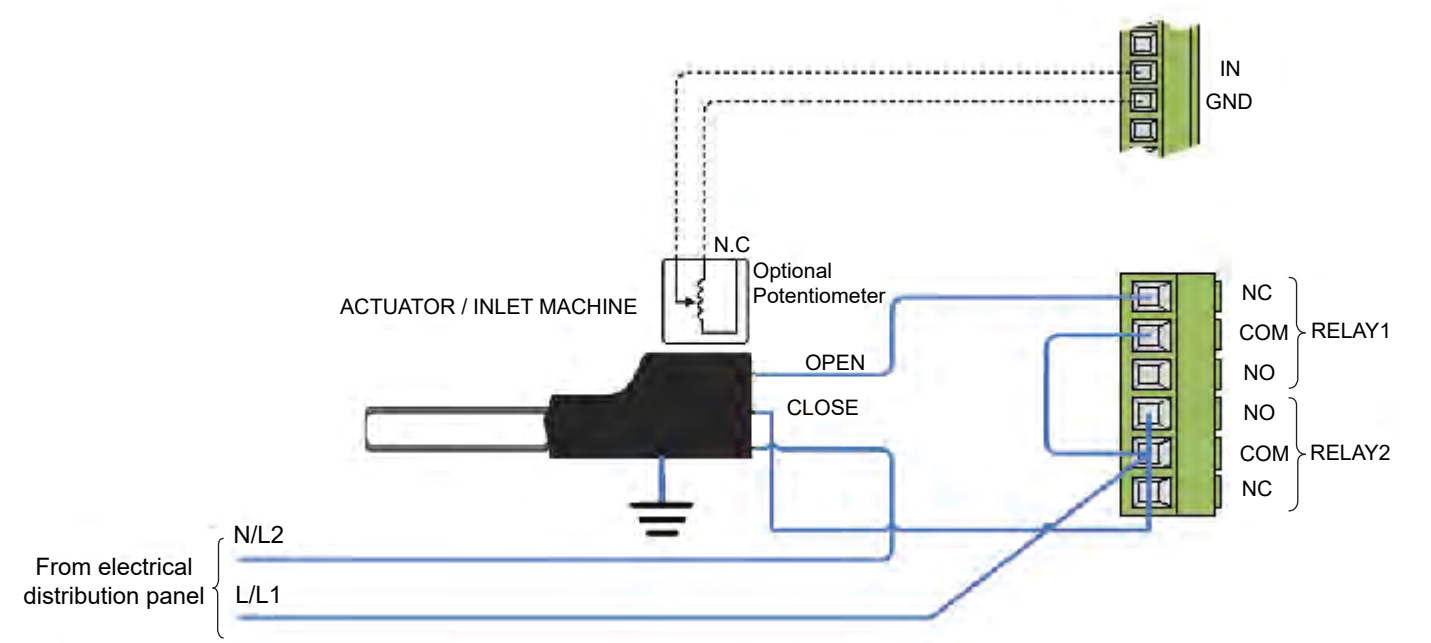
Inlet Wiring



Variable with Relay Wiring

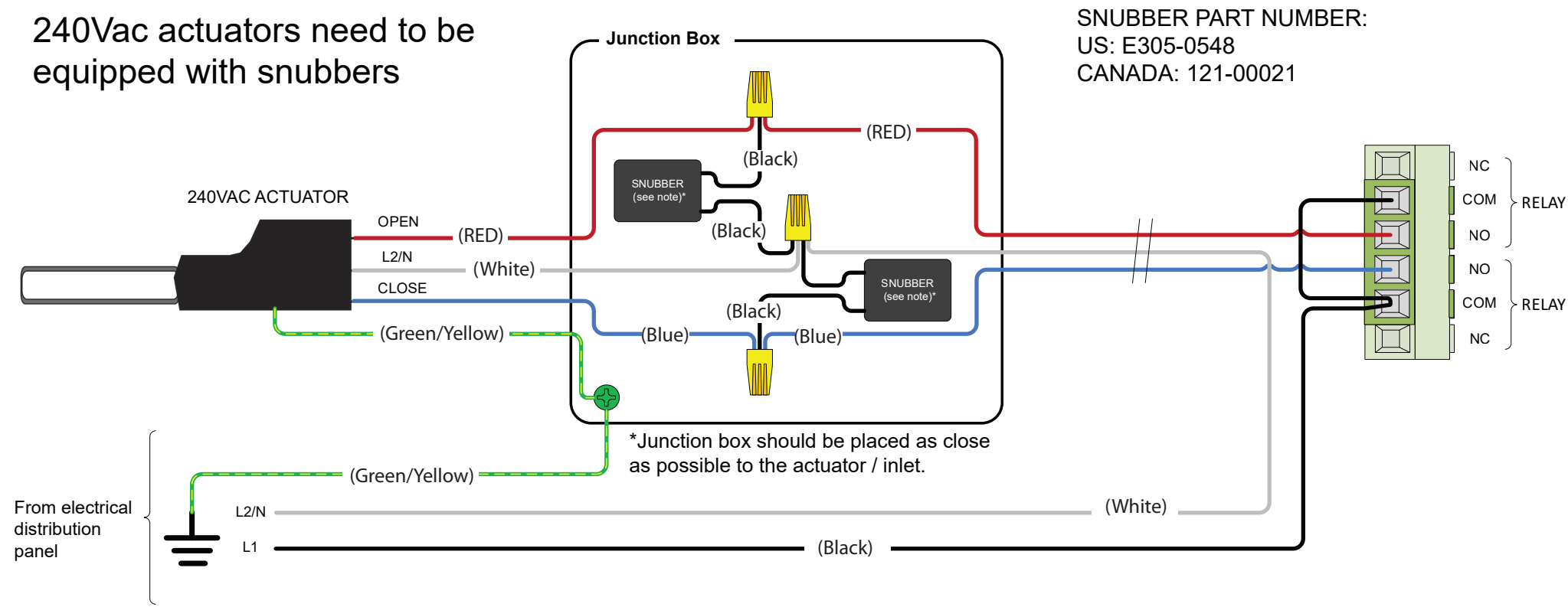


Inlet Failsafe Wiring



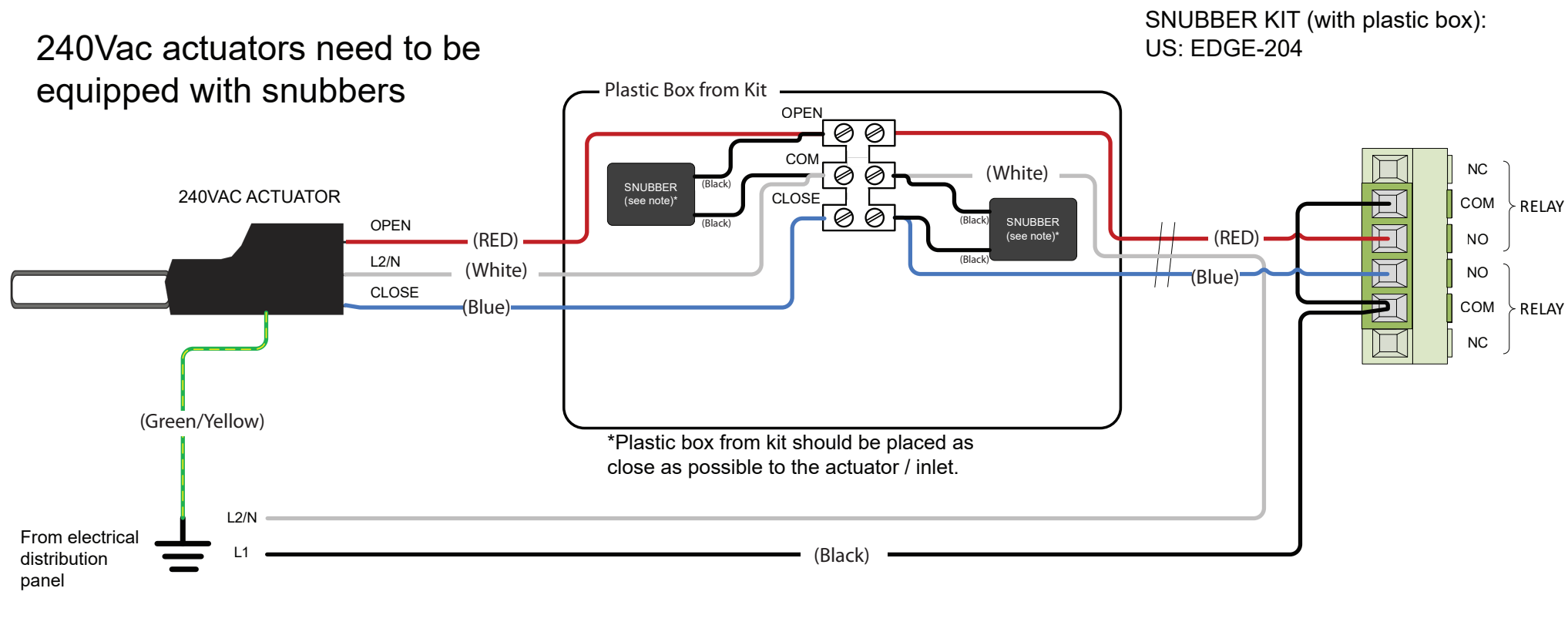
Snubber wiring diagram for 240Vac actuator

240Vac actuators need to be equipped with snubbers

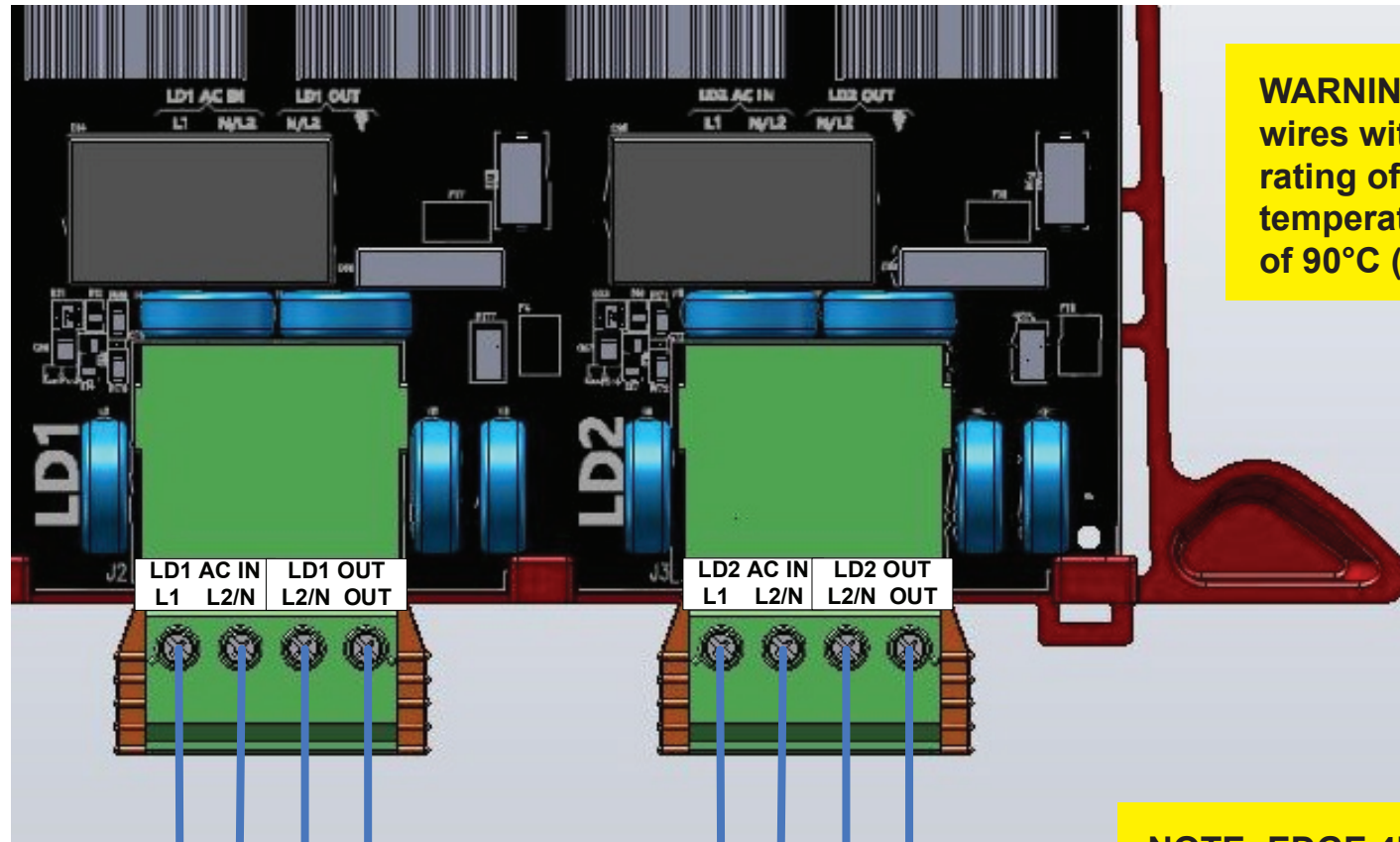


Snubbers kit wiring diagram for 240Vac actuator

240Vac actuators need to be equipped with snubbers



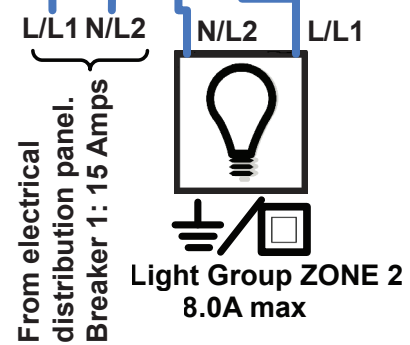
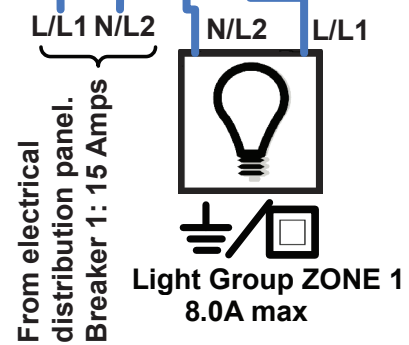
Light Dimmer Outputs



WARNING: Only use copper wires with a minimum voltage rating of 300V and a minimum temperature insulation rating of 90°C (194°F).

NOTE: EDGE 4IN-6R-2LD can only be used with an EDGE 2 system.

Only two EDGE 4IN-6R-2LD can be used per Expansion Box. In a 6 Slot Expansion Box, the cards have to be installed into slot 1 and slot 6. In a 3 Slot Expansion Box, the cards have to be installed into slot 1 and slot 3.



Safety Ratings

INPUTS :
SUPPLY INPUT:
 • 100-120/220-240Vac ±10%, 50-60Hz, 1/2 phase(s)

LD1 & LD2 OUTPUTS:
 • 100-120/220-240Vac 8.0Amps max
 • 100-120Vac, 800-960VA, PF ≥ 0.5 (CFL/CCFL, LED)
 • 220-240Vac, 1760-1920VA, PF ≥ 0.5 (CFL/CCFL, LED)

Operating Temperature: 0 to 40°C (32 to 104°F)

Formulas

Determine the PF (Power Factor) using this formula:

$$\text{Power Factor (PF)} = \frac{\text{Lamp Power (watts)}}{\text{Lamp Voltage (V)} * \text{Lamp Current (A)}}$$

Determine how many lamps to use on each Zone output using this formula:

$$\text{Number of Lamps per Zone} = \frac{\text{Power Output Amperage (A)}}{\text{Lamp Current (A)}}$$

Formula Example:

Lamp details: Voltage: 120V, 9 watts and 100mA

Power Output Amperage available: 8.0A on 100-120V or on 220-240V

$$\text{Power Factor (PF)} = \frac{9 \text{ watts}}{120V * 0.1A} = 0.75$$

$$\text{Number of Lamps per Zone} = \frac{8.0A}{0.1A} = 80$$

Round off the decimal point to get a total of **80 lamps**.