Technical Specifications and Wiring Diagrams

EDGE Main Controller - Dimensions and Weight		
Enclosure dimensions	Height	355 mm (14 inches)
	Width	482 mm (19 inches)
	Depth	152 mm (6 inches)
Weight	3719 grams (8.20 lbs)	
Touch screen	Size	15 inches, 12 high
	Type	LED
	Resolution	1024 X 768
Clearance around the enclosure	Top	260mm (10 inches)
	Bottom	250mm (10 inches)
	Hinge side	180mm (7 inches)
	Latch side	150mm (6 inches)

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 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)
LED and CCFL loads	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

EDGE Main Controller Safety Ratings	
INPUTS: Supply Input: 24VDC, 15W **OUTPUTS:** Alarm relay output: 24VDC/AC; 1.5A MAX	
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
Polution Degree	2
Installation Category	2
Altitude	2000 Meters (6564 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

PN895-00692 REV06

WIRING DIAGRAM (EN)
EDGE Controller
#891-00516 | REV 06

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

GSI Electronics Inc. • 5200 Armand Frappier Saint-Hubert, Qc
Canada J3Z 1G5 • Phone: 1-877-926-2777
E-mail: mtl_techsupport@agcocorp.com

Technical Specifications and Wiring Diagrams

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: 0There is no security high temperature opening feature for natural inlets..35
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
Inputs	
Temperature	Compliant to GSIE temperature probes Accuracy of ±0.1ºC in a normal operation Allowable loss of performance in a noisy environment: Accuracy of ±0.65ºC from initial reading with a fixed resistor of 1% precision used for testing purpose.
Analog 0-5 Volts	Sensor must be able to drive a 2k Ohms load, which means the sensor must drive at least 2.5mA to ensure correct readings. Accuracy of ±30mV in a normal operation. Allowable loss of performance in a noisy environment: Accuracy of ±80mV from initial reading with a voltage source of 1% precision used for testing purpose.
Analog 4-20mA	Sensor must be able to drive a 120 Ohms load Maximum rating: 20.8mA, 2.5V Accuracy of ±0.2mA in a normal operation. Allowable loss of performance in a noisy environment: Accuracy of ±0.4mA from initial reading with a current source of 1% precision used for testing purpose.
Dry contact	Close contact resistance must be lower than 200 Ohms Open contact resistance must be higher than 100k Ohms
Water meter, Pulse speed	Max 100Hz, pulse width minimum of 3.2ms Max 100 Ohms (close contact) and min. 100k Ohms (open contact) including the value of the wire resistance
Variable output module (SSR) current sensor	Frequencies range : 40-70 Hz. Accuracy of ±0.6A for AC load <20A in a normal environment. Allowable loss of performance in a noisy environment: Accuracy of ±0.8A from initial reading with a load of 1% precision used for testing purpose
Relay outputs with current sensing input	Accuracy of ±0.5A for AC load <20A in a normal environment. Allowable loss of performance in a noisy environment: Accuracy of ±0.75A from initial reading with a load of 1% precision used for testing purpose
Current sensing input	Accuracy of ±0.5A for AC load <20A in a normal environment Allowable loss of performance in a noisy environment: Accuracy of ±0.75A from initial reading with a load of 1% precision used for testing purpose

Auxiliary outputs	
0-10 VDC outputs	0-10VDC, accuracy : 1% (means, 0.1V), output impedance : 50 Ohms, Max current per output : 20mA for each output
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)	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)	8

WIRING DIAGRAM	
EDGE Controller	
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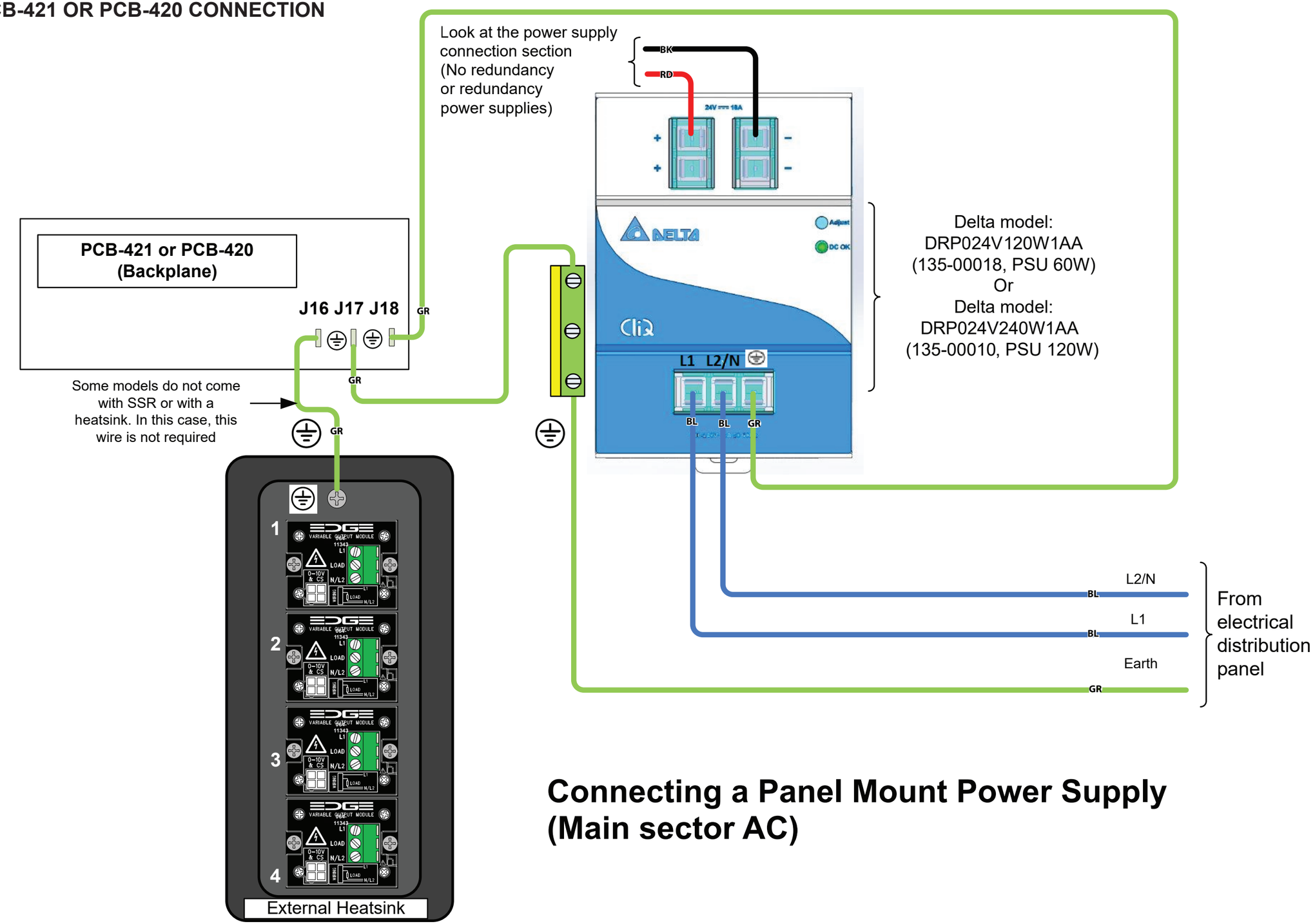
PCB-421 OR PCB-420 CONNECTION



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.

WIRING DIAGRAM	
EDGE Controller	
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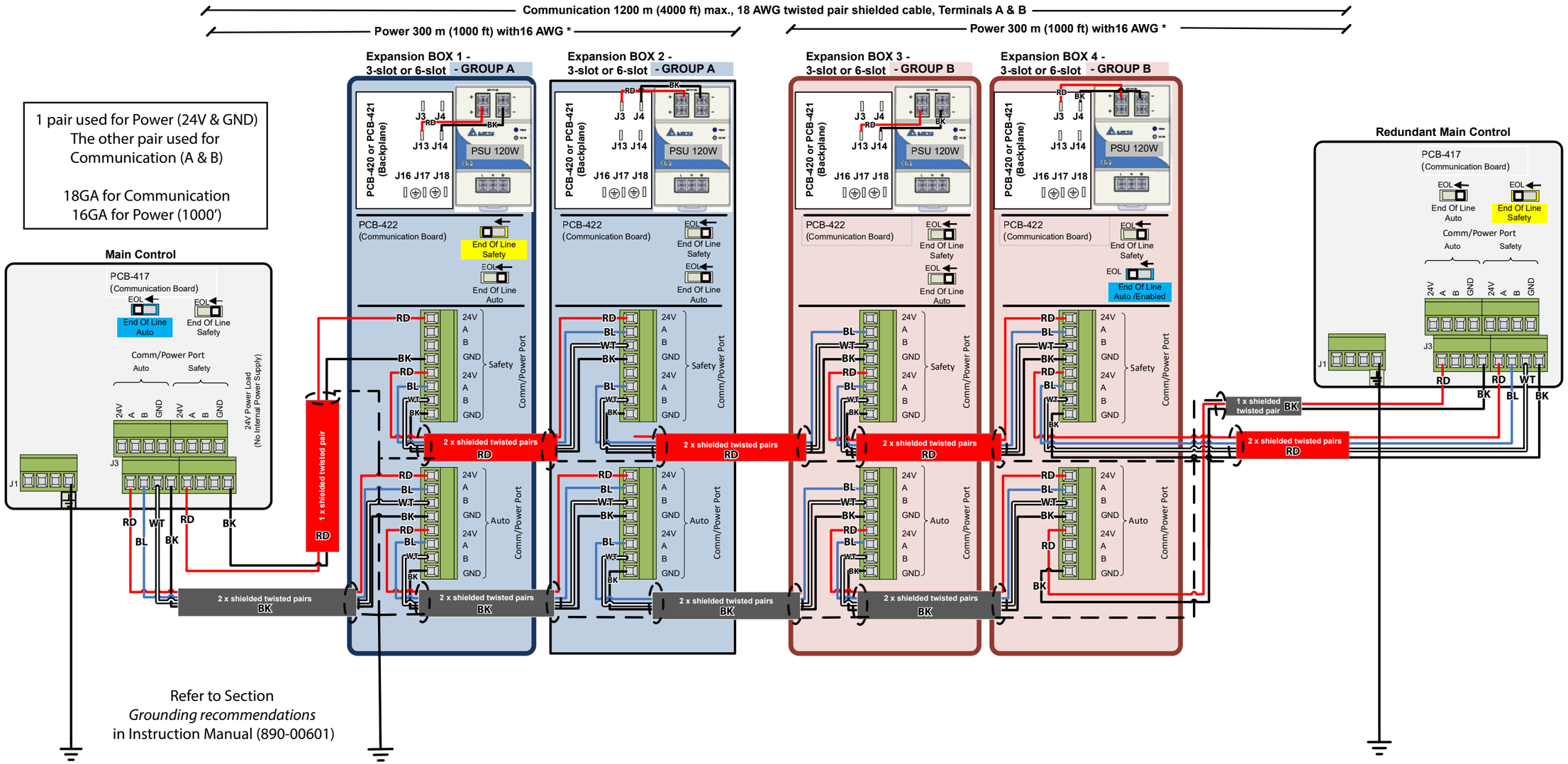
SCHEME 1 - COMMUNICATION, POWER SUPPLY and CONTROLLER REDUNDANCY - Even Number of Expansion Boxes



With even number of modules, redundancy power wiring is made by group of 2. In this example, GROUP A is in blue and GROUP B is in pink.
Rules:
- No power (24V) in between groups of 2
- GND must be connected between all the boxes (1 GND per communication bus)
- Shield must be connected to EARTH at one end of the cable
- Power supply connection for group of 2, one is connected on J13/J14 (AUTO) and in the other is connected to J3/J4 (SAFETY)
- It is recommended to use different pathways for Automation and Safety wires

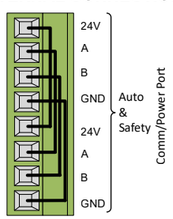
Power Cable	
Distance	**Mim. Wire Gage**
150 m (500 ft.)	18 AWG
300 m (1000 ft.)	16 AWG*
600 m (2000 ft.)	14 AWG
900 m (3000 ft.)	12 AWG
1200 m (4000 ft.)	10 AWG

* Recommended

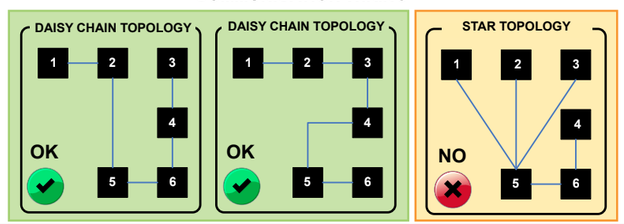
AP/Cumberland Power & Communication Wires: Shielded Twisted Pairs - 18AWG or 16 AWG, 600V, 90C (min.)
Recommended cable type: TC-ER/CIC

WR-16-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-16RED-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET
WR-18-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-18RED-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET

INTERNAL CONNECTION



COMMUNICATION WIRING



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.

WIRING DIAGRAM
EDGE Controller
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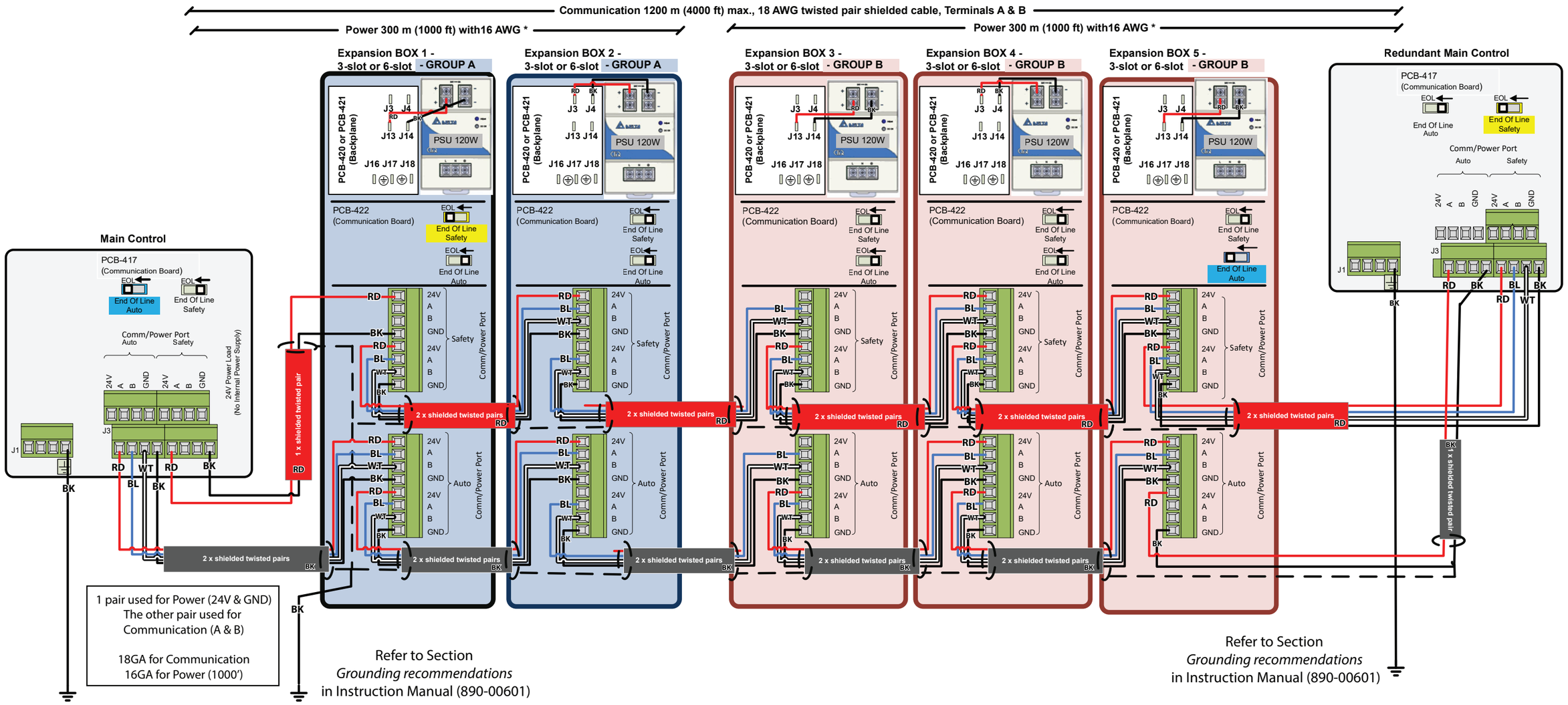
SCHEME 2 - COMMUNICATION, POWER SUPPLY and CONTROLLER REDUNDANCY - Odd Number of Expansion Boxes



With even number of modules, redundancy power wiring is made by group of 2. In this example, GROUP A is in blue and GROUP B is in pink.
Rules:
- No power (24V) in between groups of 2
- GND must be connected between all the boxes (1 GND per communication bus)
- Shield must be connected to EARTH at one end of the cable
- Power supply connection for group of 2, one is connected on J13/J14 (AUTO) and in the other is connected to J3/J4 (SAFETY)
- Power supply connection for group of 3, two are connected on J13/J14 (AUTO) and in the other is connected to J3/J4 (SAFETY)
- It is recommended to use different pathways for Automation and Safety wires

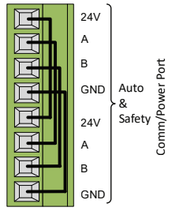
Power Cable	
Distance	**Mim. Wire Gage**
150 m (500 ft.)	18 AWG
300 m (1000 ft.)	16 AWG*
600 m (2000 ft.)	14 AWG
900 m (3000 ft.)	12 AWG
1200 m (4000 ft.)	10 AWG

* Recommended

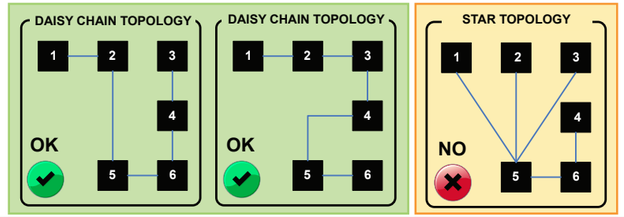
AP/Cumberland Power & Communication Wires: Shielded Twisted Pairs - 18AWG or 16 AWG, 600V, 90C (min.)
Recommended cable type: TC-ER/CIC

WR-16-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-16RED-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET
WR-18-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-18RED-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET

INTERNAL CONNECTION



COMMUNICATION WIRING



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.

WIRING DIAGRAM	
EDGE Controller	
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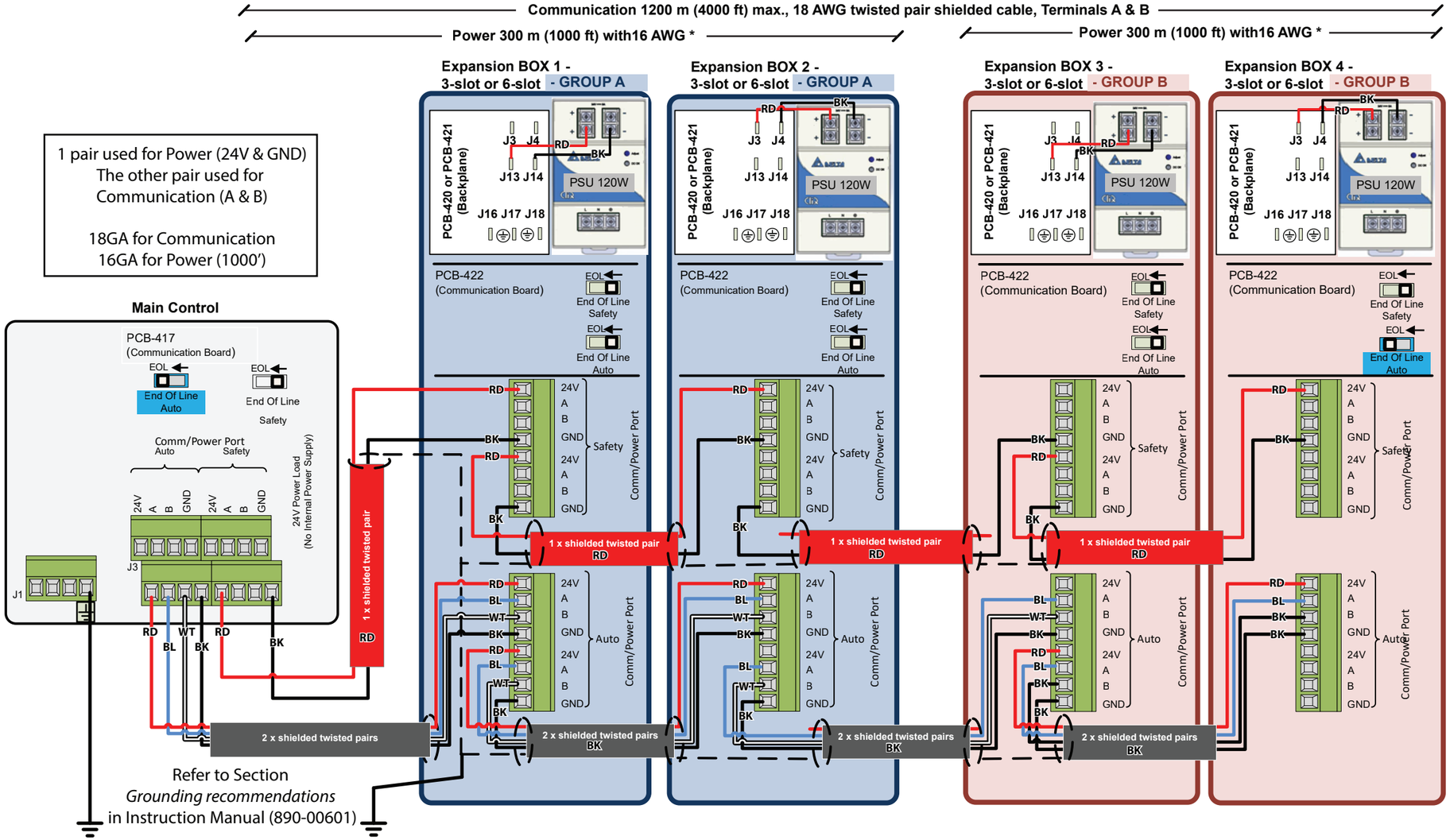
SCHEME 3 - POWER SUPPLY REDUNDANCY - Even Number of Expansion Boxes

– Refer to Scheme 1 for complete wiring



With even number of modules, redundancy power wiring is made by group of 2. In this example, GROUP A is in blue and GROUP B is in pink.
Rules:
- No power (24V) in between groups of 2
- GND must be connected between groups of 2
- Shield must be connected to EARTH at one end of the cable
- Power supply connection for group of 2, one is connected on J13/J14 (AUTO) and in the other is connected to J3/J4 (SAFETY)
- It is recommended to use different pathways for Automation and Safety wires

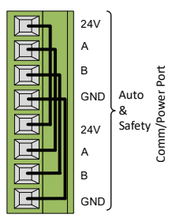
Power Cable	
Distance	**Mim. Wire Gage**
150 m (500 ft.)	18 AWG
300 m (1000 ft.)	16 AWG*
600 m (2000 ft.)	14 AWG
900 m (3000 ft.)	12 AWG
1200 m (4000 ft.)	10 AWG

* Recommended

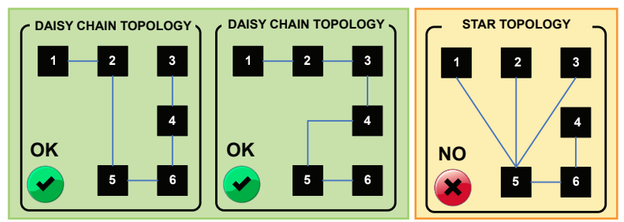
AP/Cumberland Power & Communication Wires: Shielded Twisted Pairs - 18AWG or 16 AWG, 600V, 90C (min.)
Recommended cable type: TC-ER/CIC

WR-16-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-16RED-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET
WR-18-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-18RED-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET

INTERNAL CONNECTION



COMMUNICATION WIRING



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.

WIRING DIAGRAM
EDGE Controller
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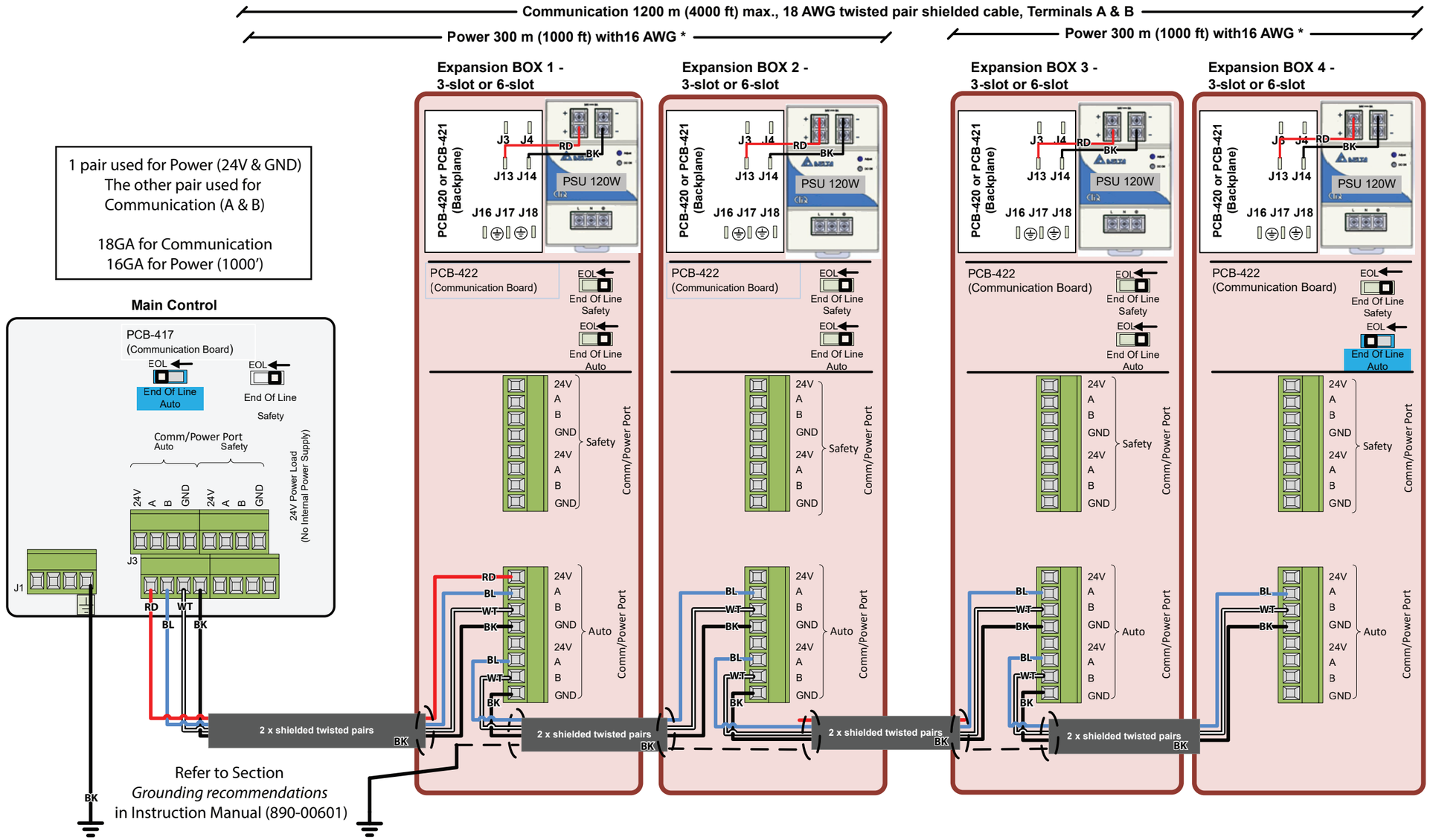
SCHEME 8 - POWER & Communication - No Redundancy

– Refer to Scheme 1 for complete wiring



- No power (24V) between expansin boxes
- GND must be connected between groups
- Shield must be connected to EARTH at one end of the cable
- Power supplies are connected on J13/J14 (AUTO)

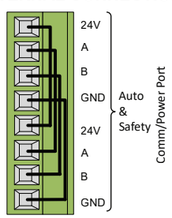
Power Cable	
Distance	**Mim. Wire Gage**
150 m (500 ft.)	18 AWG
300 m (1000 ft.)	16 AWG*
600 m (2000 ft.)	14 AWG
900 m (3000 ft.)	12 AWG
1200 m (4000 ft.)	10 AWG

* Recommended

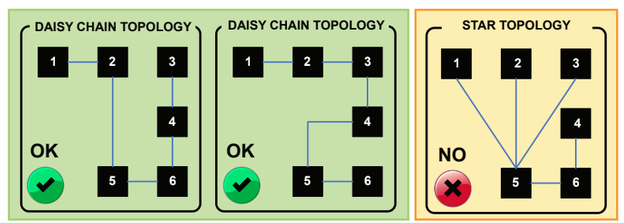
AP/Cumberland Power & Communication Wires: Shielded Twisted Pairs - 18AWG or 16 AWG, 600V, 90C (min.)
Recommended cable type: TC-ER/CIC

WR-16-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-16RED-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET
WR-18-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-18RED-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET

INTERNAL CONNECTION



COMMUNICATION WIRING



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.

WIRING DIAGRAM

EDGE Controller

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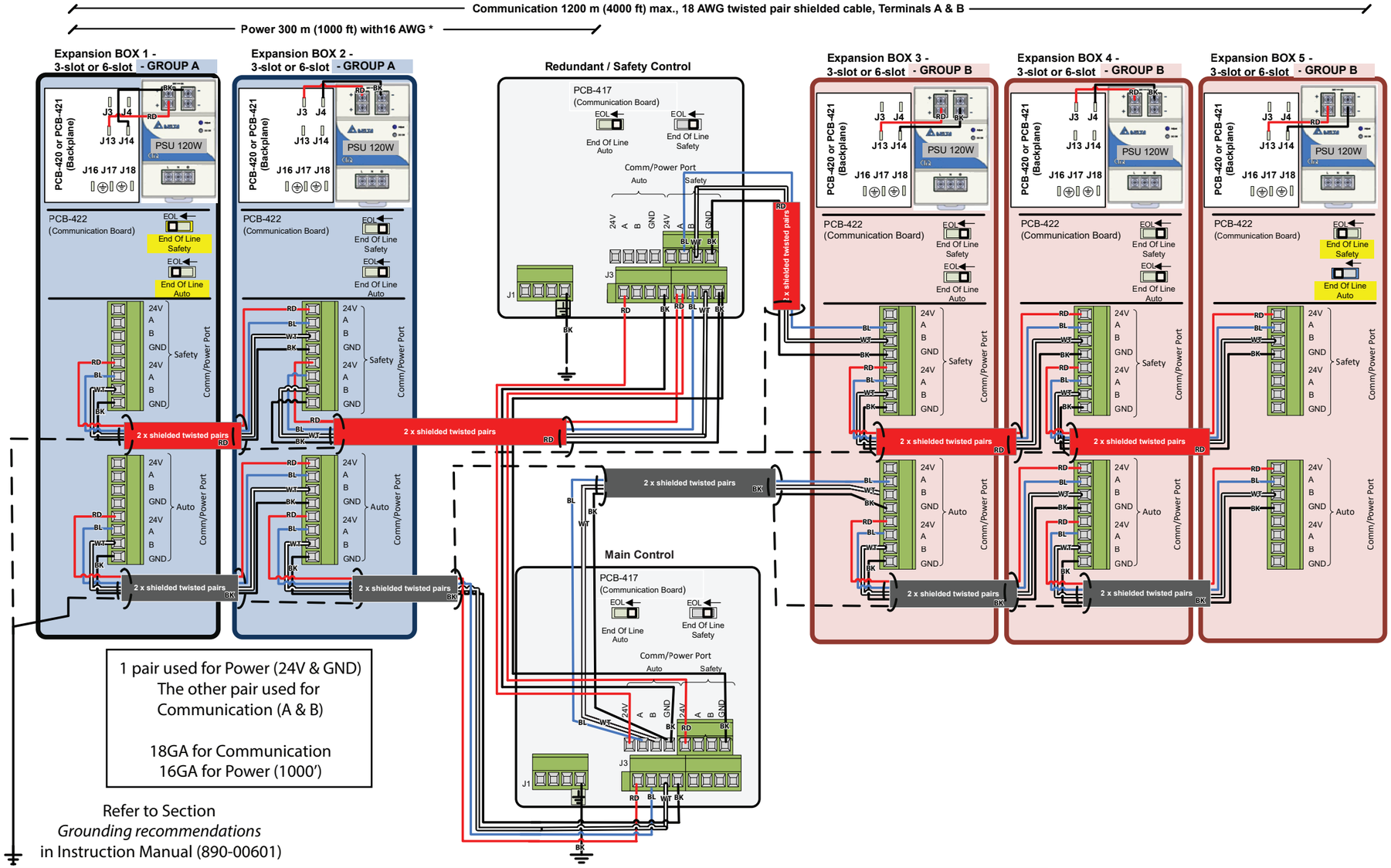
SCHEME 9 - COMMUNICATION, POWER SUPPLY and CONTROLLER REDUNDANCY - Odd Number of Expansion Boxes – Controllers in between – power one side



With even number of modules, redundancy power wiring is made by a group of 2 expansion boxes and 1 group of 3 expansion boxes. In this example, GROUP A is in blue and GROUP B is in pink.
Rules:
- No power (24V) in between groups
- GND must be connected between all boxes (1 GND per communication bus)
- Shield must be connected to EARTH at one end of the cable
- Power supply connection for group of 2, one is connected on J13/J14 (AUTO) and in the other is connected to J3/J4 (SAFETY)
- Power Supply connection for group 3, two are connected on J14/J14 (AUTO) and in the other is connected on J3/J4 (SAFETY)
- It is recommended to use different pathways for Automation and Safety wires

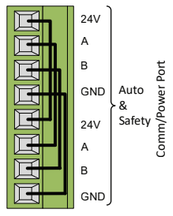
Power Cable	
Distance	**Mim. Wire Gage**
150 m (500 ft.)	18 AWG
300 m (1000 ft.)	16 AWG*
600 m (2000 ft.)	14 AWG
900 m (3000 ft.)	12 AWG
1200 m (4000 ft.)	10 AWG

* Recommended

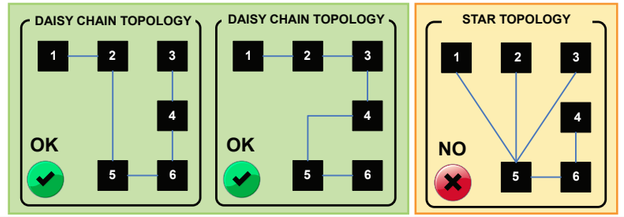
AP/Cumberland Power & Communication Wires: Shielded Twisted Pairs - 18AWG or 16 AWG, 600V, 90C (min.)
Recommended cable type: TC-ER/CIC

WR-16-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-16RED-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET
WR-18-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-18RED-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET

INTERNAL CONNECTION



COMMUNICATION WIRING



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.

WIRING DIAGRAM	
EDGE Controller	
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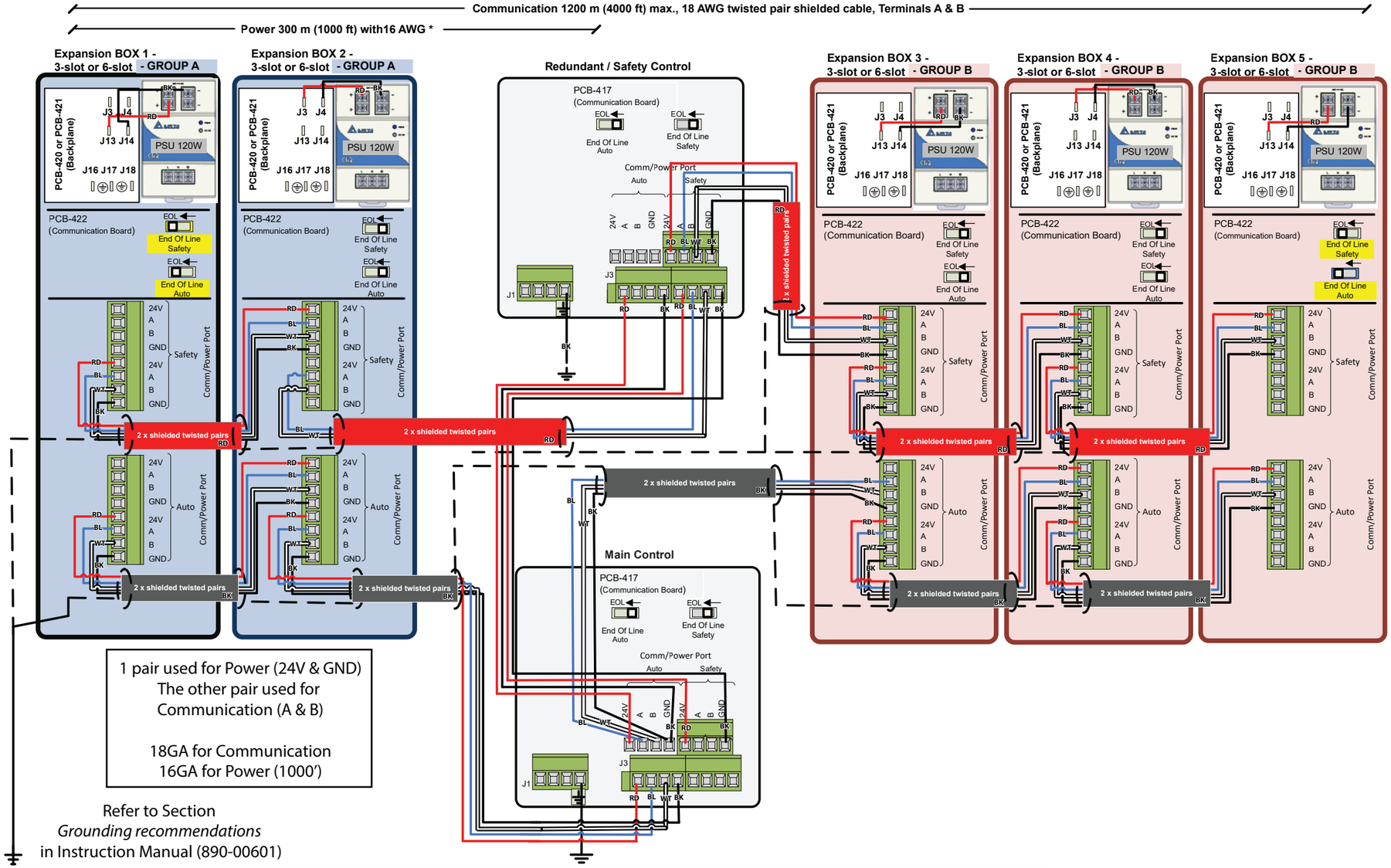
SCHEME 9 - COMMUNICATION, POWER SUPPLY and CONTROLLER REDUNDANCY - Odd Number of Expansion Boxes – Controllers in between – power both side



With even number of modules, redundancy power wiring is made by a group of 2 expansion boxes and 1 group of 3 expansion boxes. In this example, GROUP A is in blue and GROUP B is in pink.
Rules:
- No power (24V) in between groups
- GND must be connected between all boxes (1 GND per communication bus)
- Shield must be connected to EARTH at one end of the cable
- Power supply connection for group of 2, one is connected on J13/J14 (AUTO) and in the other is connected to J3/J4 (SAFETY)
- Power Supply connection for group 3, two are connected on J14/J14 (AUTO) and in the other is connected on J3/J4 (SAFETY)
- It is recommended to use different pathways for Automation and Safety wires

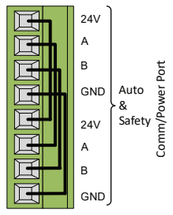
Power Cable	
Distance	**Mim. Wire Gage**
150 m (500 ft.)	18 AWG
300 m (1000 ft.)	16 AWG*
600 m (2000 ft.)	14 AWG
900 m (3000 ft.)	12 AWG
1200 m (4000 ft.)	10 AWG

* Recommended

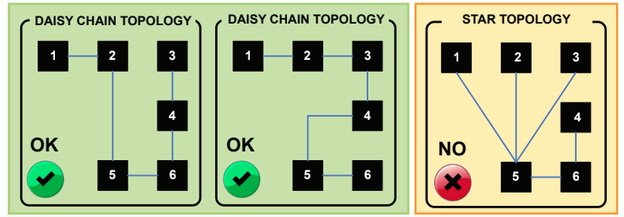
AP/Cumberland Power & Communication Wires: Shielded Twisted Pairs - 18AWG or 16 AWG, 600V, 90C (min.)
Recommended cable type: TC-ER/CIC

WR-16-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-16RED-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET
WR-18-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-18RED-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET

INTERNAL CONNECTION



COMMUNICATION WIRING



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.

WIRING DIAGRAM
EDGE Controller
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SCHEME 12 - COMMUNICATION, POWER SUPPLY and CONTROLLER REDUNDANCY – Many Groups of Expansion Boxes with VariFlame in Between

Communication 1200 m (4000 ft) max., 18 AWG twisted pair shielded cable, Terminals A & B

Power 300 m (1000 ft) with16 AWG *

Power 300 m (1000 ft) with16 AWG *

1 pair used for Power (24V & GND)
The other pair used for Communication (A & B)

18GA for Communication
16GA for Power (1000')

NOTE: In EDGE VR Heater, terminal blocks of 4 positions are available to connect the 24V wires to extend the Power and Communication bus.
Refer to EDGE VR Heater manual.

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

Main Control

PCB-417 (Communication Board)

24V Power Load (No Internal Power Supply)

1 x shielded twisted pair

Expansion BOX 1 - 3-slot or 6-slot - GROUP A

Expansion BOX 2 - 3-slot or 6-slot - GROUP A

Expansion BOX 3 - 3-slot or 6-slot - GROUP B

Expansion BOX 4 - 3-slot or 6-slot - GROUP B

Expansion BOX 5 - 3-slot or 6-slot - GROUP B

PCB-420 or PCB-421 (Backplane)

PSU 120W

PCB-422 (Communication Board)

EDGE VR Heater Mode

EOL resistor

Redundant Main Control

2 x shielded twisted pairs

Refer to Section
Grounding recommendations
in Instruction Manual (890-00601)

Refer to Section
Grounding recommendations
in Instruction Manual (890-00601)

With odd number of modules, redundancy power wiring is made by a groups of 2 expansion boxes and 1 group of 3 expansion boxes. In this example, GROUP A is in blue and GROUP B is in pink.
Rules:
- No power (24V) in between groups
- GND must be connected between all boxes (1 GND per communication bus)
- Shield must be connected to EARTH at one end of the cable
- Power supply connection for group of 2, one is connected on J13/J14 (AUTO) and in the other is connected to J3/J4 (SAFETY)
- Power Supply connection for group 3, two are connected on J14/J14 (AUTO) and in the other is connected on J3/J4 (SAFETY)
- It is recommended to use different pathways for Automation and Safety wires
- Different wires can also be used for Power and for Comunication runs; in this case, shields of power wire should be tied together and connected to Earth in 1 location; same rule applies to communication wire

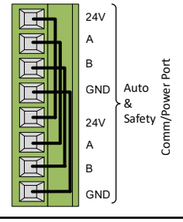
Power Cable	
Distance	**Mim. Wire Gage**
150 m (500 ft.)	18 AWG
300 m (1000 ft.)	16 AWG*
600 m (2000 ft.)	14 AWG
900 m (3000 ft.)	12 AWG
1200 m (4000 ft.)	10 AWG

* Recommended

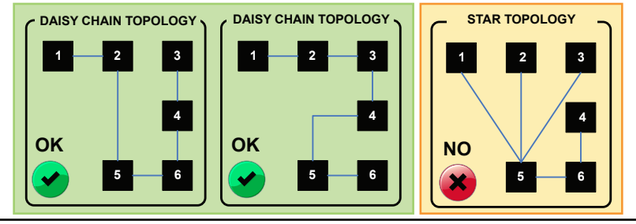
AP/Cumberland Power & Communication Wires: Shielded Twisted Pairs - 18AWG or 16 AWG, 600V, 90C (min.)
Recommended cable type: TC-ER/CIC

WR-16-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-16RED-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET
WR-18-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-18RED-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET

INTERNAL CONNECTION



COMMUNICATION WIRING



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.

WIRING DIAGRAM
EDGE Controller
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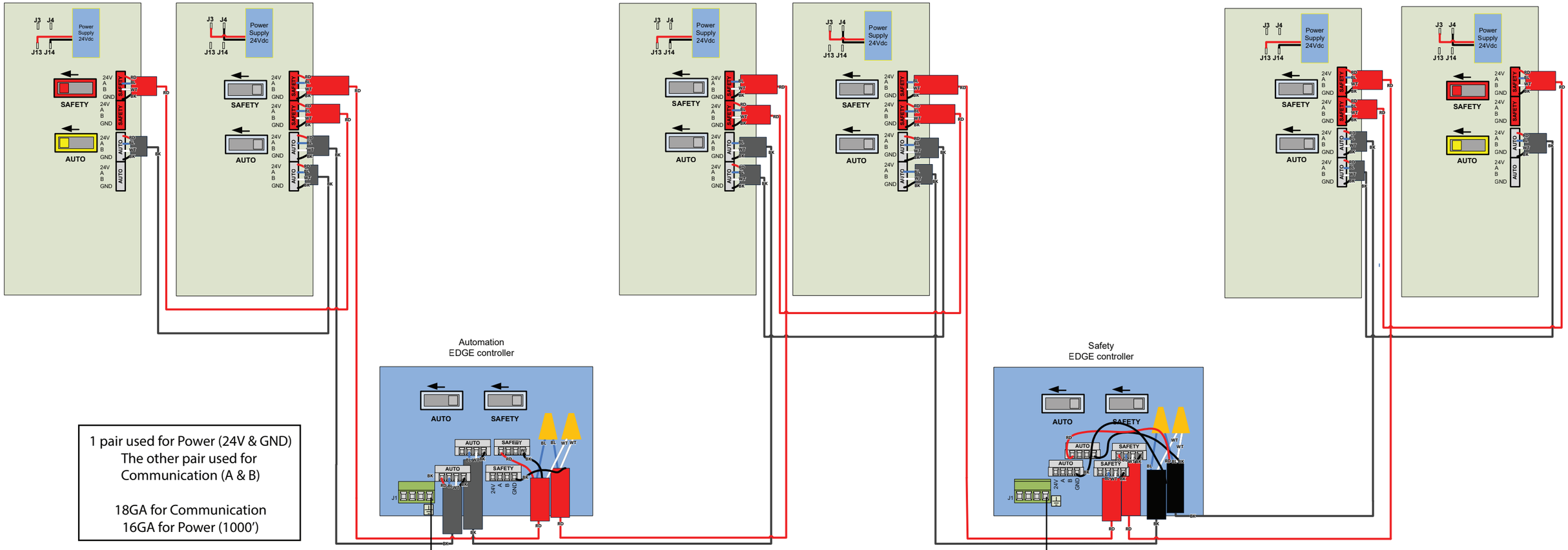
SCHEME 13 - COMMUNICATION, POWER SUPPLY and CONTROLLER REDUNDANCY – Many Groups of Expansion Boxes with EDGE controls in Between

EXPANSION BOXES GROUP A

EXPANSION BOXES GROUP B

EXPANSION BOXES GROUP C



1 pair used for Power (24V & GND)
The other pair used for Communication (A & B)

18GA for Communication
16GA for Power (1000')

Automation
EDGE controller

Refer to Section
Grounding recommendations
in Instruction Manual (890-00601)

Safety
EDGE controller

Refer to Section
Grounding recommendations
in Instruction Manual (890-00601)

Shields ust be connected between all boxes (1 GND per communication bus) and must be connected to EARTH at one end of the circuit.
NOTE: END OF LINE for communication: Red for Safety and Yellow for Automation
Rules:
- No power (24V) in between groups
- Power supply connection for group of 2 expansion boxes, one is connected on J13/J14 (AUTO) and in the other is connected to J3/J4 (SAFETY)
- It is recommended to use different pathways for Automation and Safety wires

Power Cable	
Distance	**Mim. Wire Gage**
150 m (500 ft.)	18 AWG
300 m (1000 ft.)	16 AWG*
600 m (2000 ft.)	14 AWG
900 m (3000 ft.)	12 AWG
1200 m (4000 ft.)	10 AWG

* Recommended

AP/Cumberland Power & Communication Wires: Shielded Twisted Pairs - 18AWG or 16 AWG, 600V, 90C (min.)
Recommended cable type: TC-ER/CIC

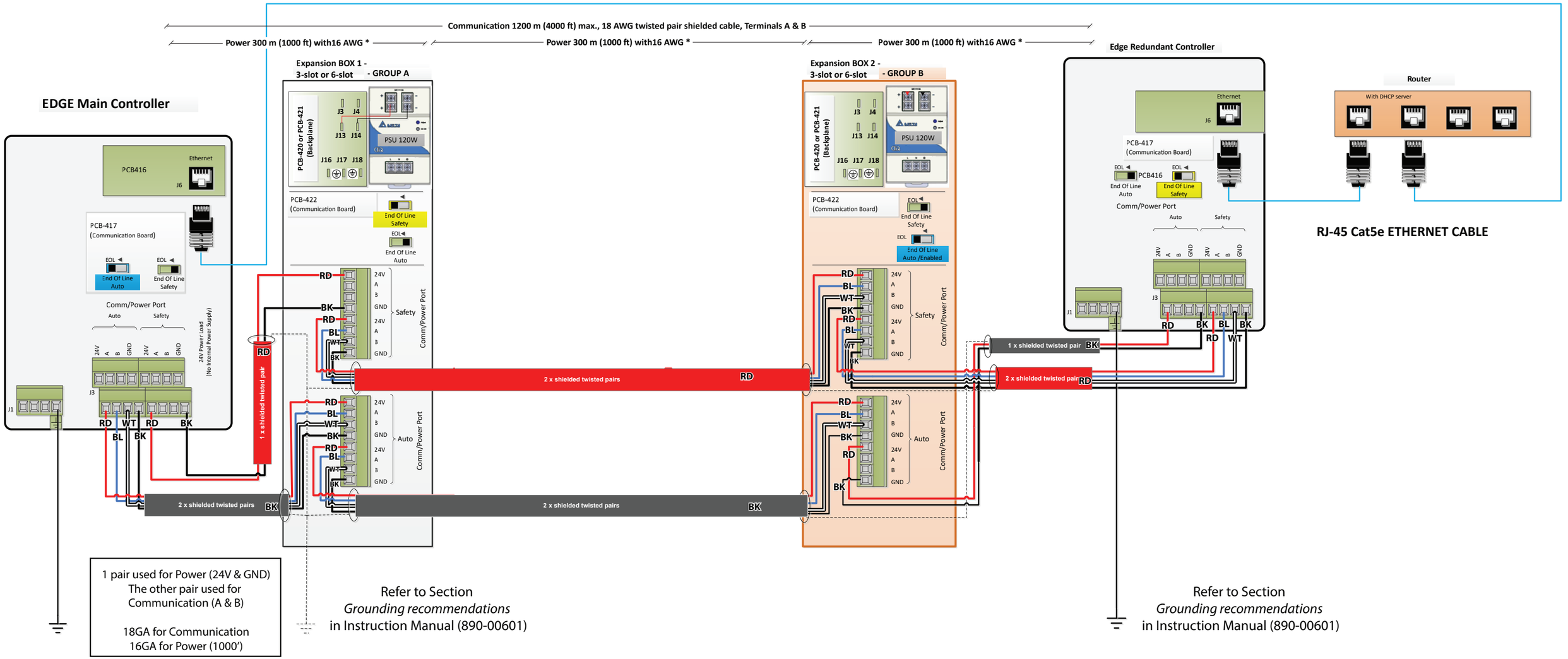
WR-16-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-16RED-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET
WR-18-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-18RED-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET

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.

WIRING DIAGRAM	
EDGE Controller	
891-00516	REV 06

SCHEME 1B - COMMUNICATION, POWER SUPPLY and CONTROLLER REDUNDANCY w/ Ethernet Router - Even Number of Expansion Boxes



1 pair used for Power (24V & GND)
The other pair used for Communication (A & B)

18GA for Communication
16GA for Power (1000')

Refer to Section
Grounding recommendations
in Instruction Manual (890-00601)

Refer to Section
Grounding recommendations
in Instruction Manual (890-00601)

With even number of modules, redundancy power wiring is made by group of 2. In this example, GROUP A is in blue and GROUP B is in pink.
Rules:
- No power (24V) in between groups of 2
- GND must be connected between all the boxes (1 GND per communication bus)
- Shield must be connected to EARTH at one end of the cable
- Power supply connection for group of 2, one is connected on J13/J14 (AUTO) and in the other is connected to J3/J4 (SAFETY)
- It is recommended to use different pathways for Automation and Safety wires

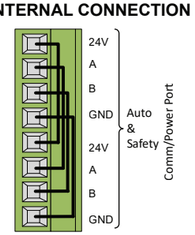
Power Cable	
Distance	**Mim. Wire Gage**
150 m (500 ft.)	18 AWG
300 m (1000 ft.)	16 AWG*
600 m (2000 ft.)	14 AWG
900 m (3000 ft.)	12 AWG
1200 m (4000 ft.)	10 AWG

* Recommended

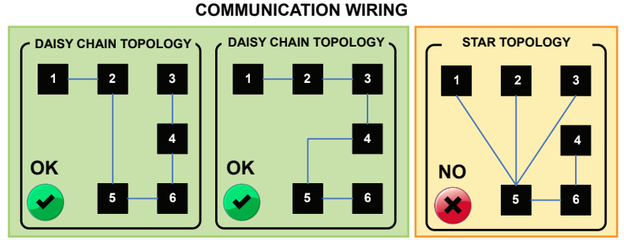
AP/Cumberland Power & Communication Wires: Shielded Twisted Pairs - 18AWG or 16 AWG, 600V, 90C (min.)
Recommended cable type: TC-ER/CIC

WR-16-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-16RED-2TS-S	WIRE, 16 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET
WR-18-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL
WR-18RED-2TS-S	WIRE, 18 AWG 2 TWISTED SHIELDED PAIRS, COMM AND POWER, 600V, 1000' SPOOL, RED JACKET

INTERNAL CONNECTION



COMMUNICATION WIRING



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.

WIRING DIAGRAM	
EDGE Controller	
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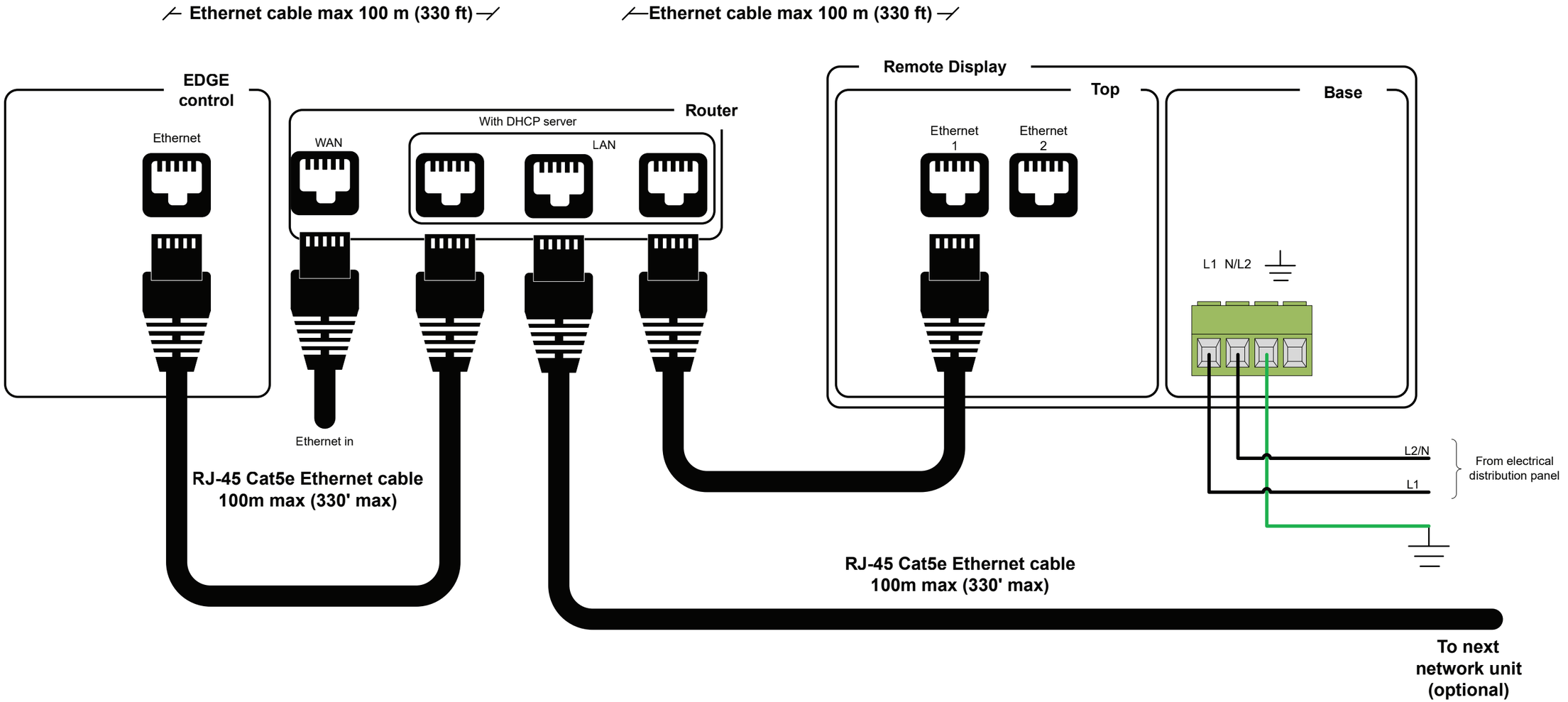
ETHERNET NETWORKING



WIRING DIAGRAM	
EDGE Controller	
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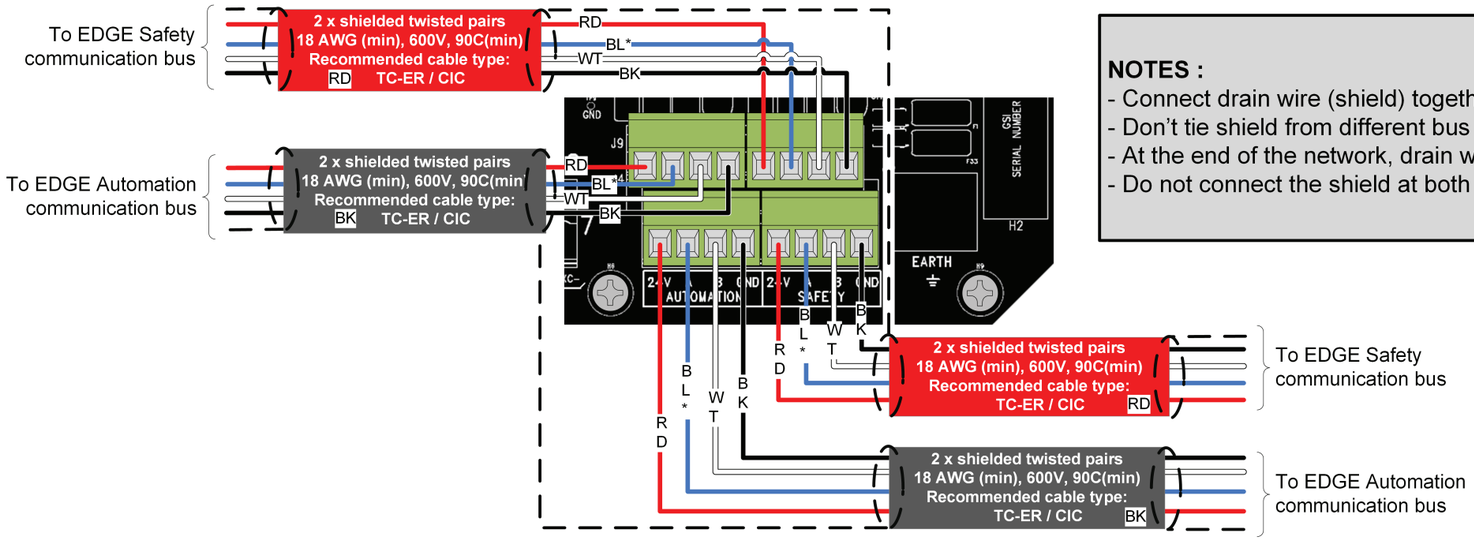
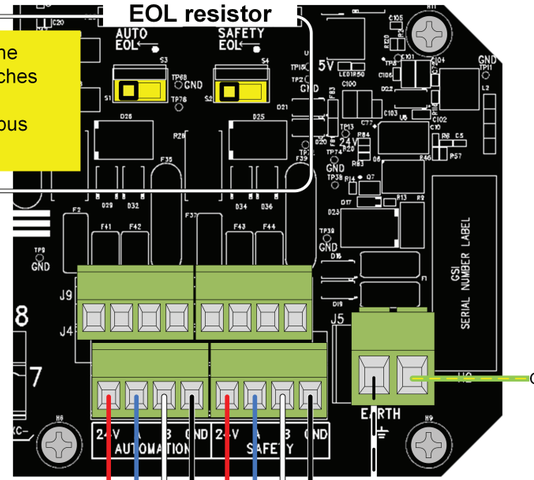
Shield connection in middle of the communication network



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)).



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

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

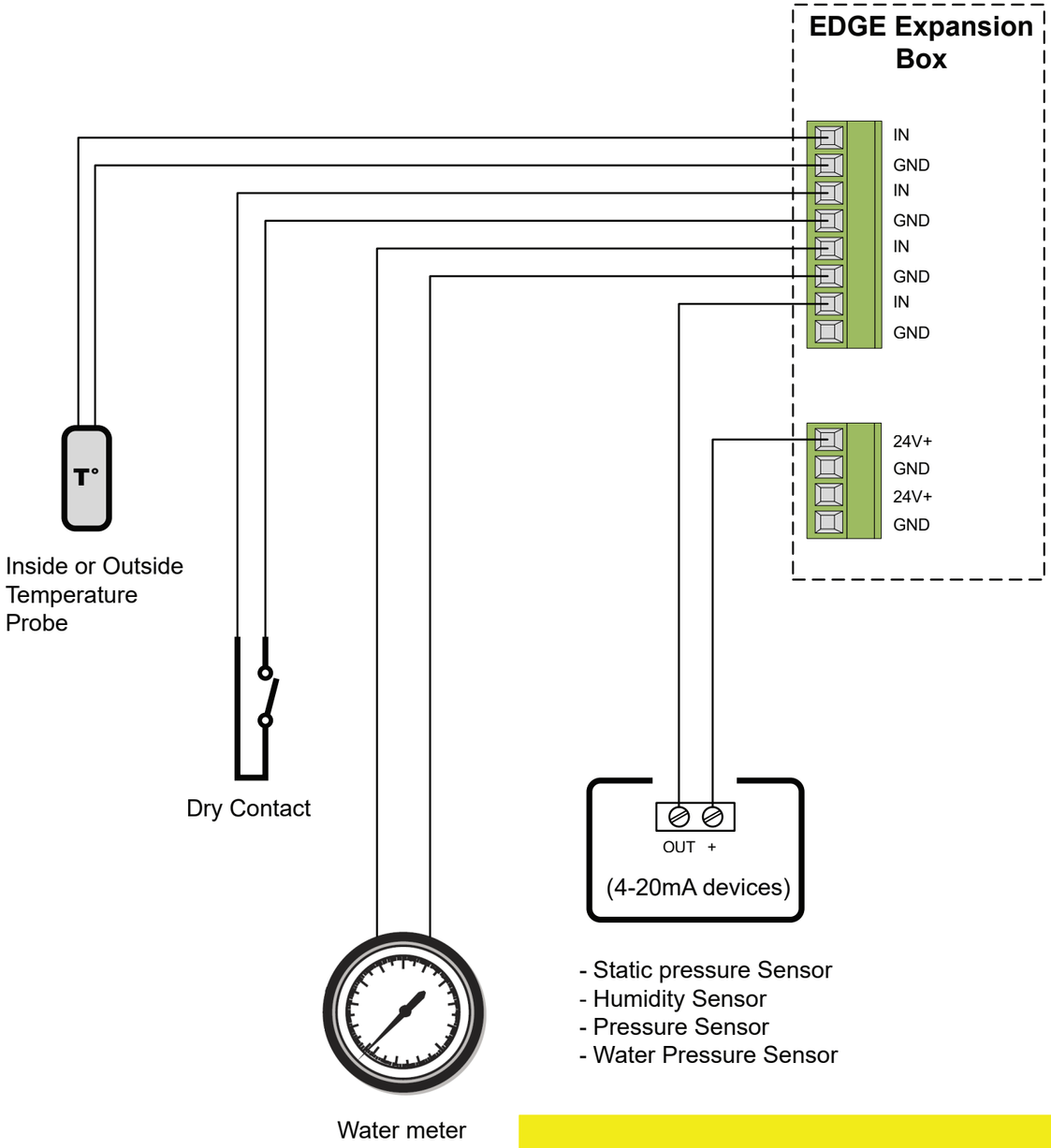
BL*: could be Green instead of Blue

NOTES :
Refer to Low voltage cable specifications into Instruction Manual of EDGE

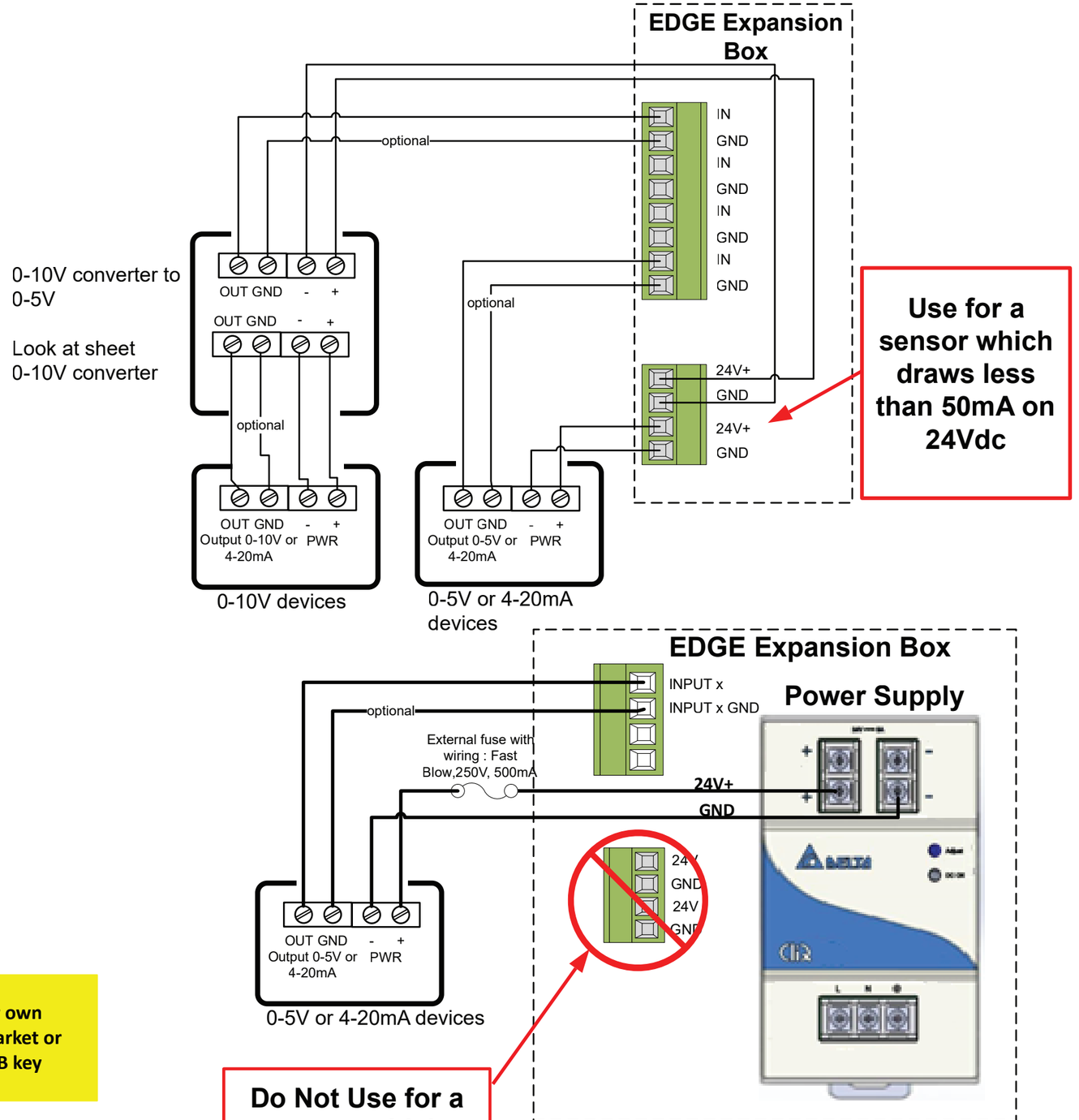
AP/Cumberland can provide sourced color-coded communication wire to install EDGE controls. The wire will be available in both 16 and 18 gauge to accommodate the specified distance between controls

WIRING DIAGRAM	
EDGE Controller	
891-00516	REV 06

Analog inputs and Analog Inputs with 24 Volts DC



Take note that each specific sensors will come with their own wiring diagram in the cardboard box according to the market or on EDGE sensors folder on the EDGE Main Controller USB key



WIRING DIAGRAM	
EDGE Controller	
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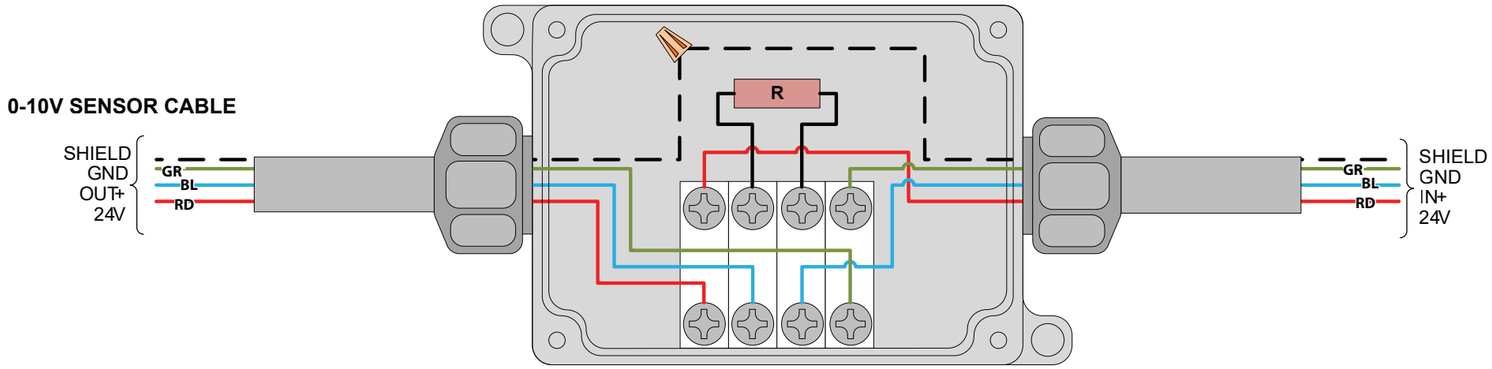
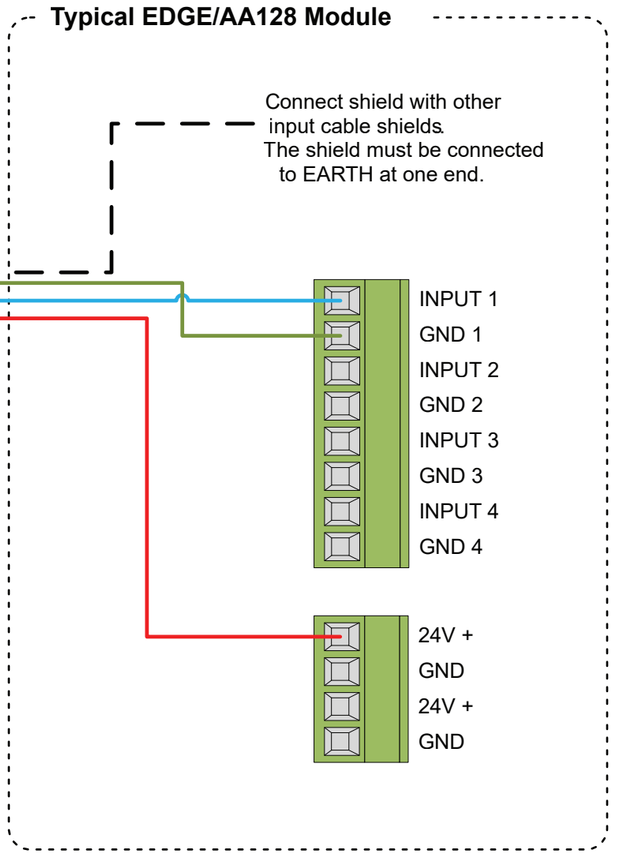
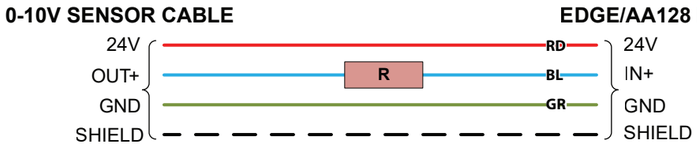
0-10V CONVERTER WIRING DIAGRAM





Equivalent circuit



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

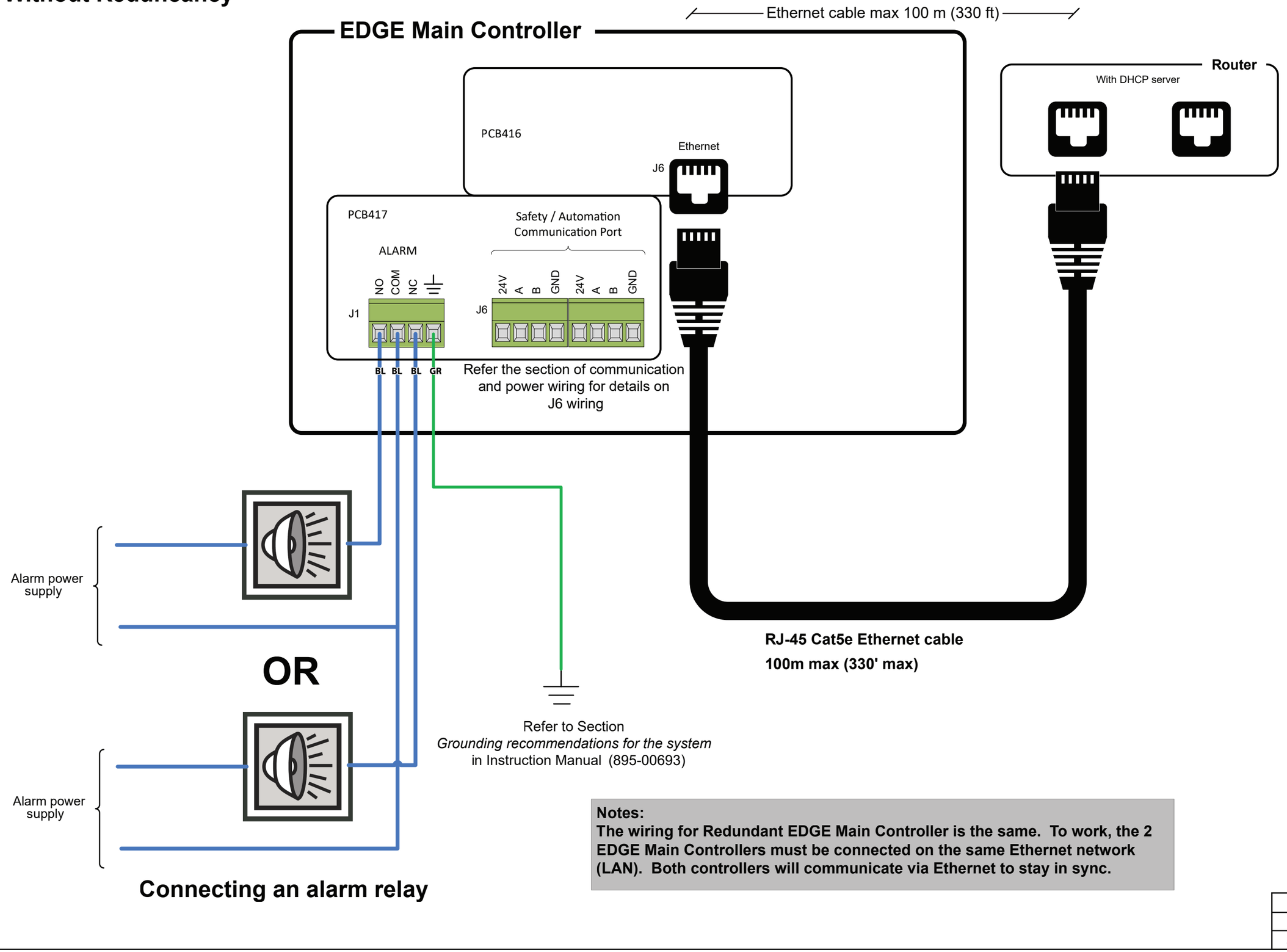
NOTES:
- Twist both shields from each cable together and use a marrette (twist-on wire connector) to secure the connection.
- Make sure that the shield does not touch any other bare wire and the resistor. We recommend to add a heat shrink on it.
- The maximum diameter of the cable must be less than 6.5mm.
- 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.

WIRING DIAGRAM	
EDGE Controller	
891-00516	REV 06

Alarm Without Reduncancy



Connecting an alarm relay

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.

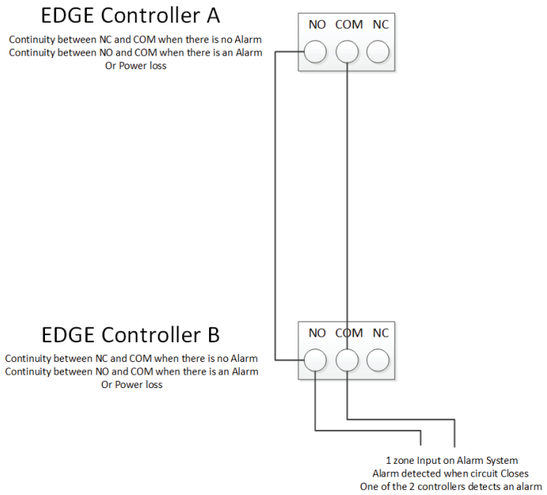
Notes:
The wiring for Redundant EDGE Main Controller is the same. To work, the 2 EDGE Main Controllers must be connected on the same Ethernet network (LAN). Both controllers will communicate via Ethernet to stay in sync.

WIRING DIAGRAM	
EDGE Controller	
891-00516	REV 06

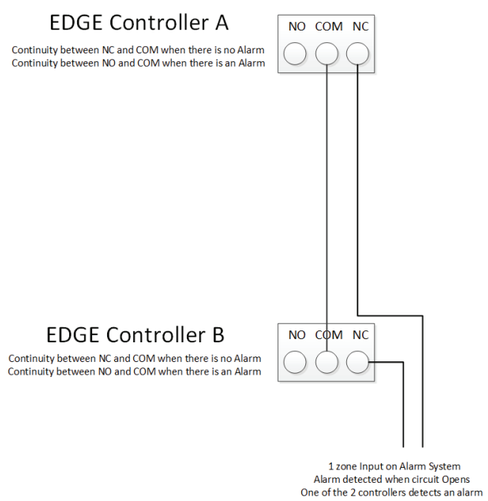
Alarm on Redundant Controllers

EDGE Main Controller Relay Scheme On Alarm Zone

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

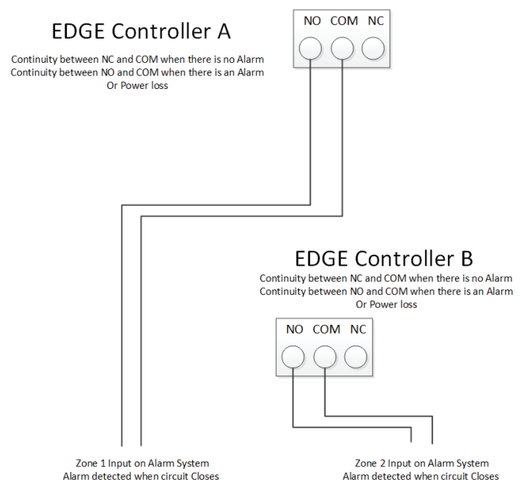


Scheme 1b: 2 controls on one alarm Zone
Alarm on Open contact

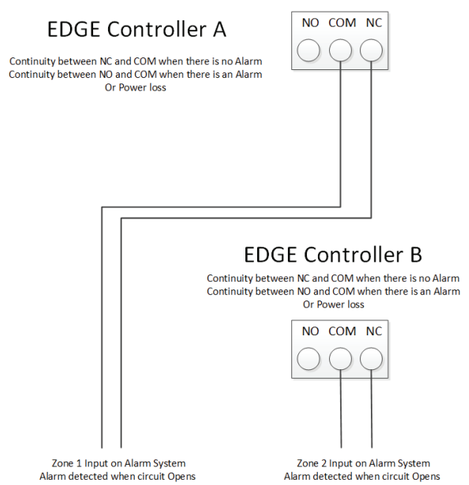


Warning: Switching over causes slave control to reboot and alarm to be set off.

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

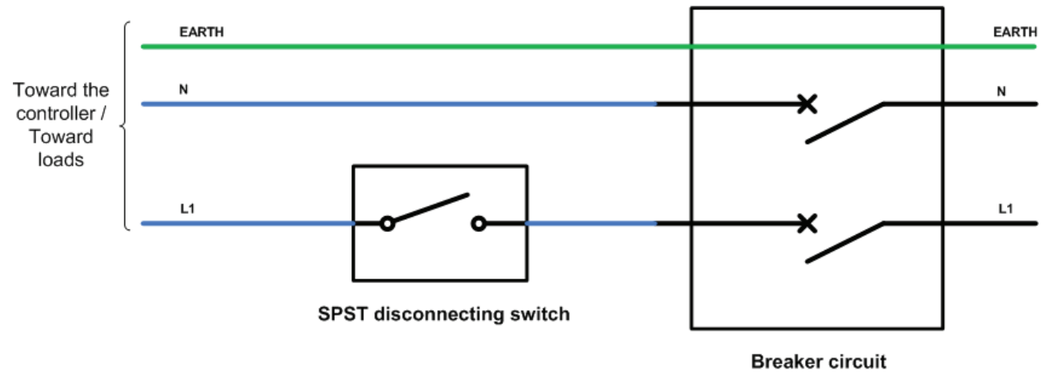


Scheme 2b: 1 control per alarm Zone
Alarm on Open contact

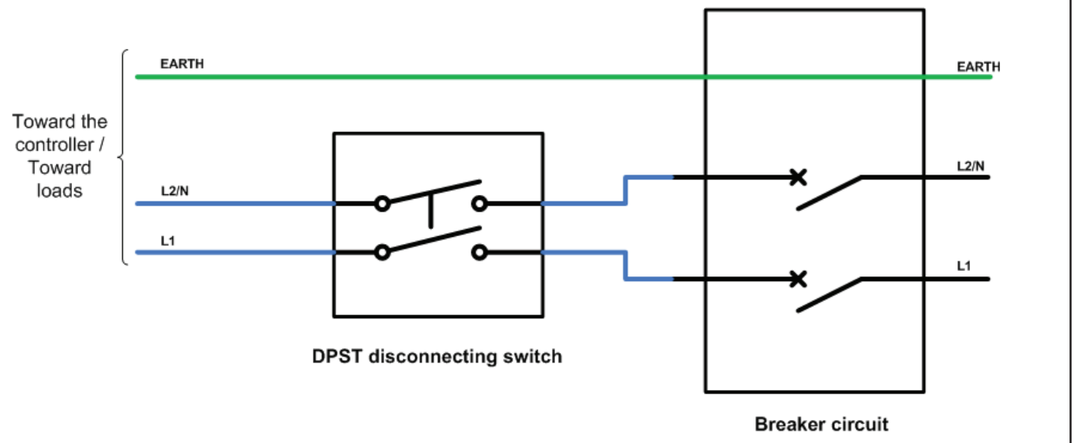


Warning: Switching over causes slave control to reboot and alarm to be set off.

Wiring Diagram with a SPST Disconnect Switch

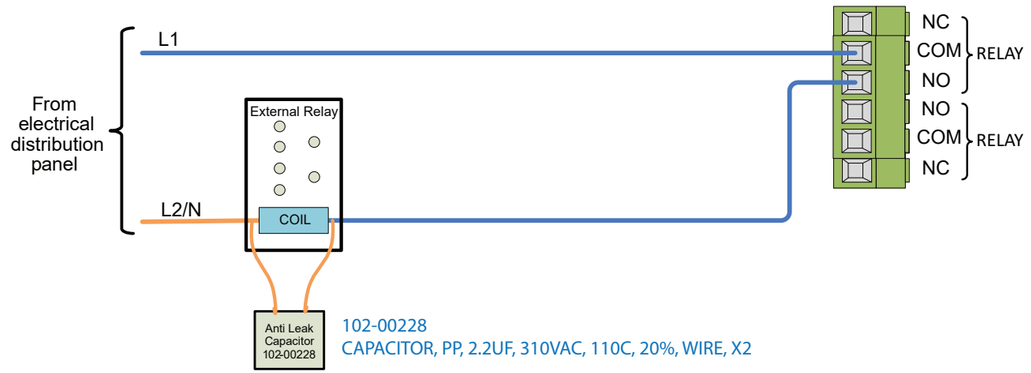


Wiring Diagram with a DPST Disconnect Switch



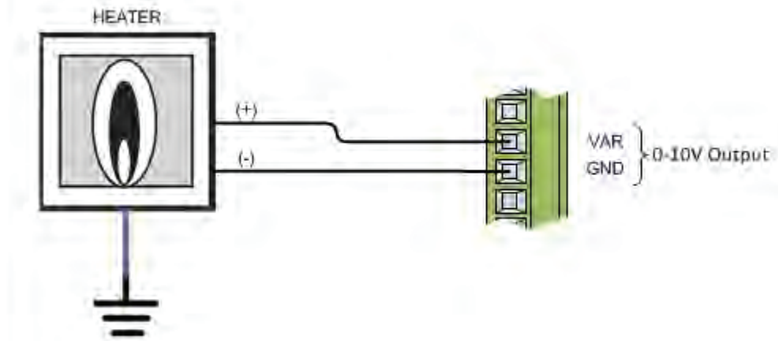
WIRING DIAGRAM	
EDGE Controller	
891-00516	REV 06

ON/OFF Wiring - Load less than 0.2A

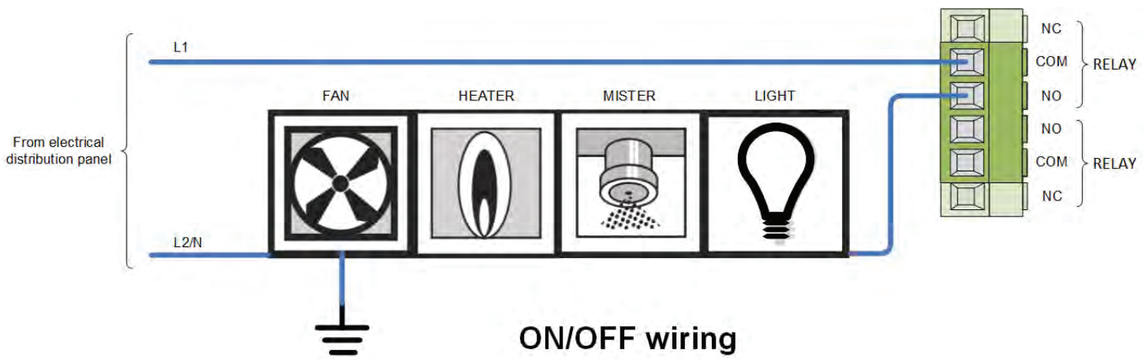


102-00228
CAPACITOR, PP, 2.2UF, 310VAC, 110C, 20%, WIRE, X2

Variable 0-10Vdc Wiring

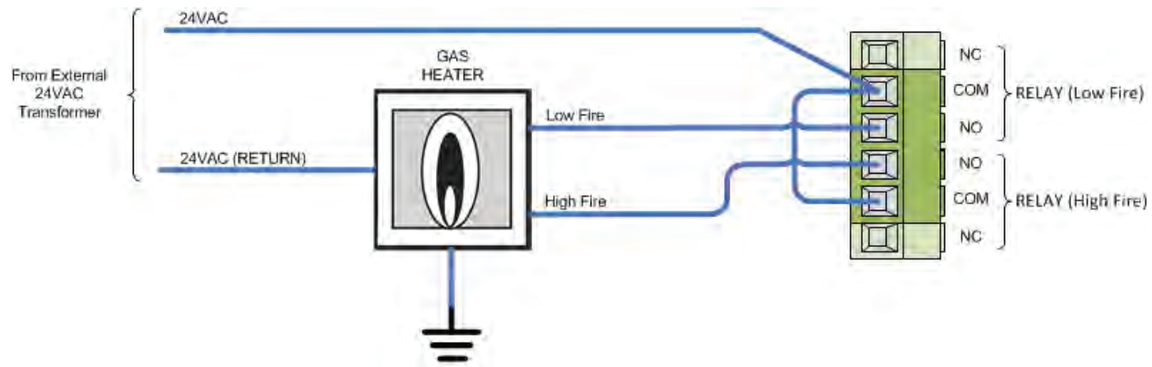


ON/OFF Wiring

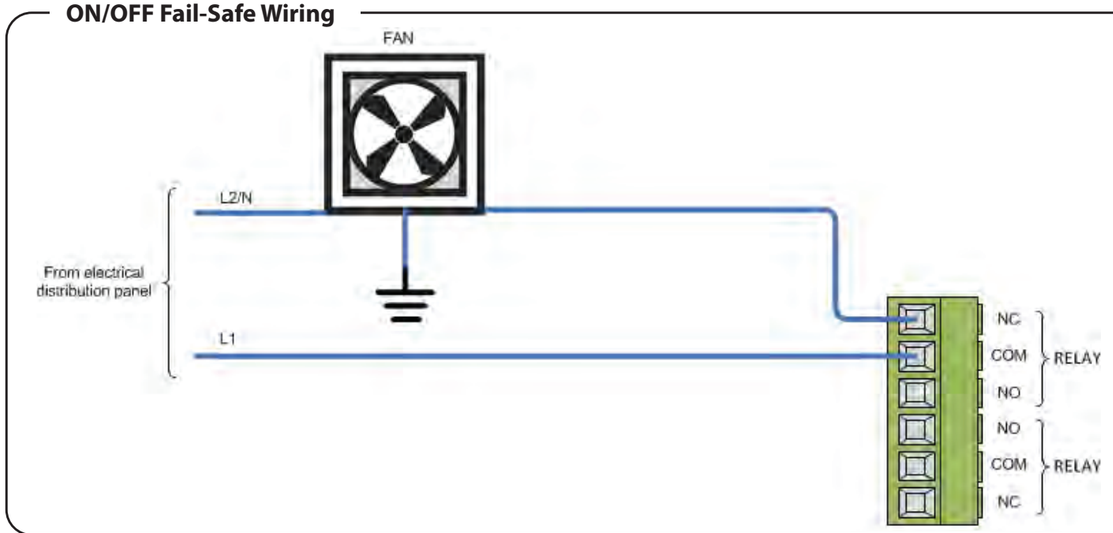


ON/OFF wiring

Dual Capacity Wiring

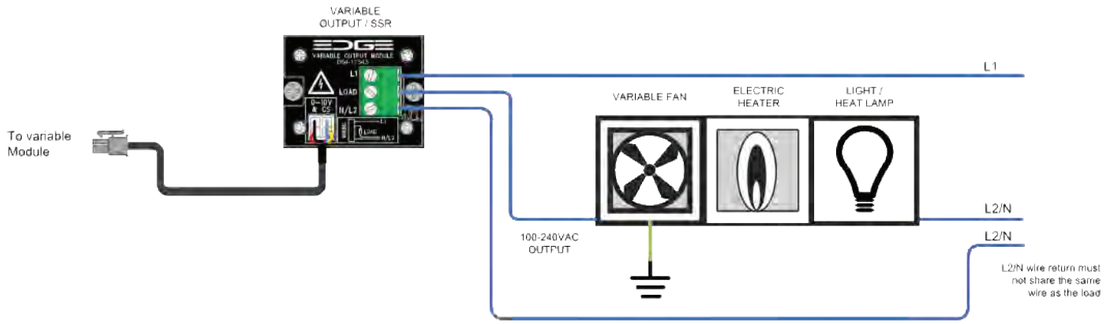


ON/OFF Fail-Safe Wiring

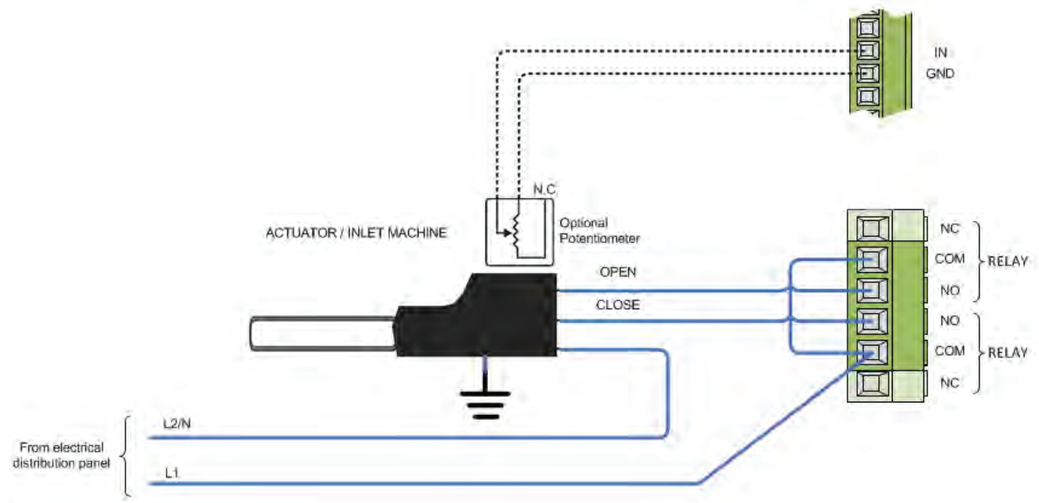


WIRING DIAGRAM	
EDGE Controller	
891-00516	REV 06

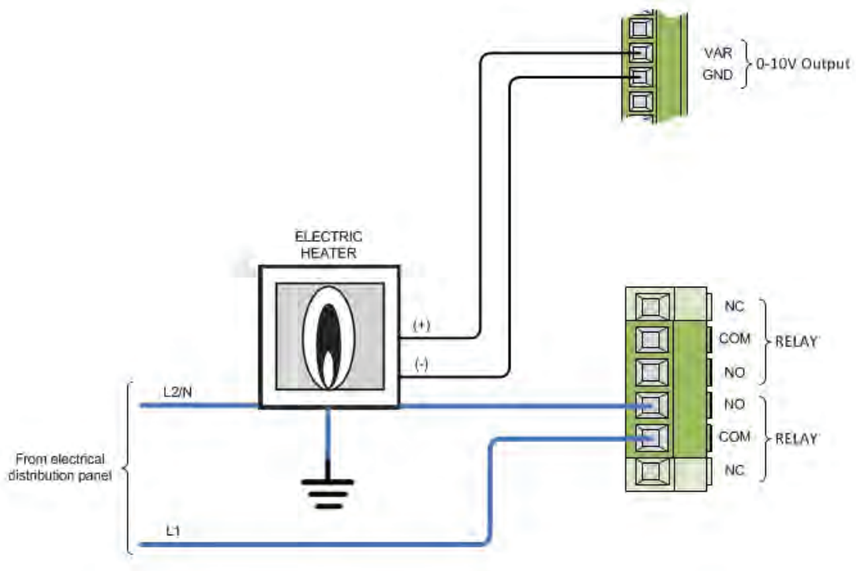
EDGE Variable Output (SSR) Wiring



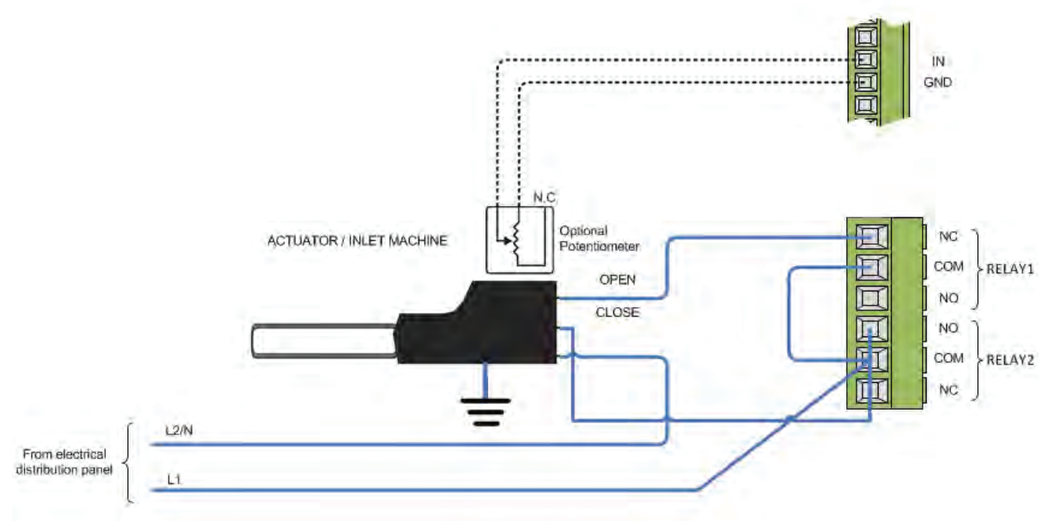
Inlet Wiring



Variable with Relay Wiring



Inlet Failsafe Wiring



WIRING DIAGRAM	
EDGE Controller	
891-00516	REV 06