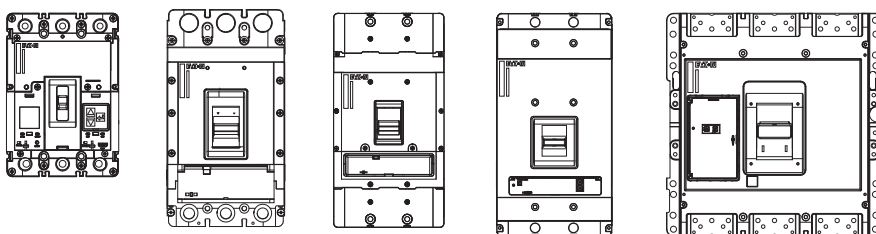


Wiring Diagrams - PXR Trip Units, Power Defense Frames 2, 3, 4, 5 & 6

Instructions apply to:



WARNING

- (1) ONLY QUALIFIED ELECTRICAL PERSONNEL SHOULD BE PERMITTED TO WORK ON THE EQUIPMENT.
- (2) ALWAYS DE-ENERGIZE PRIMARY AND SECONDARY CIRCUITS IF A CIRCUIT BREAKER CANNOT BE REMOVED TO A SAFE WORK LOCATION.
- (3) DRAWOUT CIRCUIT BREAKERS SHOULD BE LEVERED (RACKED) OUT TO THE DISCONNECT POSITION.
- (4) ALL CIRCUIT BREAKERS SHOULD BE SWITCHED TO THE OFF POSITION

FAILURE TO FOLLOW THESE STEPS FOR ALL PROCEDURES DESCRIBED IN THIS INSTRUCTION LEAFLET COULD RESULT IN DEATH, BODILY INJURY, OR PROPERTY DAMAGE.

WARNING

THE INSTRUCTIONS CONTAINED IN THIS IL AND ON PRODUCT LABELS HAVE TO BE FOLLOWED. OBSERVE THE FIVE SAFETY RULES:

- DISCONNECTING;
- ENSURE THAT DEVICES CANNOT BE ACCIDENTALLY RESTARTED;
- VERIFY ISOLATION FROM THE SUPPLY;
- EARTHING AND SHORT-CIRCUITING; AND
- COVERING OR PROVIDING BARRIERS TO ADJACENT LIVE PARTS.

DISCONNECT THE EQUIPMENT FROM THE SUPPLY. USE ONLY AUTHORIZED SPARE PARTS IN THE REPAIR OF THE EQUIPMENT. THE SPECIFIED MAINTENANCE INTERVALS AS WELL AS THE INSTRUCTIONS FOR REPAIR AND EXCHANGE MUST BE STRICTLY ADHERED TO PREVENT INJURY TO PERSONNEL AND DAMAGE TO THE EQUIPMENT.

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Feature	PXR Trip Unit		base/ stripe	Wiring side (PD 2, 3, 4 & 5), Terminal (PD6)						Notes
	Short name	Color		PD 2	PD 3	PD 4	PD 5	PD 6		
Auxiliary Power	AUX +24v	Orange	O	left	left	left	left	C12	24 VDC 0.1A 2.4 VA is required. Eaton's PSG family of 24 Vdc output, globally rated power supplies are recommended.	
	AUX 0v	Orange / Black	O/Bk	left	left	left	left	C13		
	ZIN	Yellow / Black	Y/Bk	left	left	left	left	D1		
	ZOUT	Yellow / Red	Y/R	left	left	left	left	D3		
ZSI	ZCOM	Yellow	Y	left	left	left	left	D2	Connect to other ZSI enabled breakers in the system. Maximum length of 75 meters (250 feet) using AWG # 22 wire. See PXR for PowerDefense™ User Manual (MN012007EN) Zone Selective Interlocking (ZSI).	
	N1	Grey	Gy	left	left	left	left	D5		
Neutral Current Sensor	N2	White	W	left	left	left	left	D4	Observe source/Load polarity mark on the neutral current sensor, see IL012302EN.	
Neutral Voltage	NV	White / Grey	W/Gy	right	right	right	left	D13	Connect to the neutral voltage sensor module and then the neutral bus (see IL012316EN)	
Source Ground Sensor	SGS (dot)	Blue/Black	Bl/Bk	na	na	na	left	D6	Connect to the Ground Fault Secondary Transformer Module.	
	SGS	Blue/Yellow	Bl/Y	na	na	na	left	D7	Refer to IL012309EN for module details.	
Configurable Relays	RLY1	Black / Red	Bk/R	left	right	right	left	C8	Normally open contacts, closed when the associated function is active. Contacts rated (resistive): PD2 = 0.3A@120/240Vac or 1A@30Vdc, PD3, 4, 5, 6 = 2A@120/240Vac or 2A@30Vdc. See PXR for PowerDefense™ User Manual (MN012007EN) General Purpose Relay Mapping for a detailed list of functions supported.	
	RLY2	Black / White	Bk/W	left	right	right	left	C9		
	RLY3	Black / Yellow	Bk/Y	na	na	na	left	C10		
	RLYC	Black	Bk	left	right	right	left	C13		
Form C AUX Contact	NC_AUX_C	Blue	Bl	right	na	na	na	na	One 1NO/1NC (Form C) auxiliary contact is automatically factory installed for all Frame 2 Power Defense breakers with electronic trip units. Contacts rated (resistive): 6A@120/240Vac or 2A@30Vdc.	
	NO_AUX_C	Red	R	right	na	na	na	na		
	COM_AUX_C	Black	Bk	right	na	na	na	na		
	RTU_D(+)	Green / Black	Gn/Bk	left	left	left	right	D8		
Modbus RTU	RTU_D(-)	Green / Red	Gn/R	left	left	left	right	D9	Modbus network, max. 32 nodes, max. length 1200 meters (4000 ft.). Cable: twisted-pair foil shield w/ drain, 120 ohms impedance, rated for the application (typical Belden 3105A or 4000 ft.).	
	RTU_GND	Green	Gn	left	left	left	right	D10		
Maintenance Mode	MM	Brown / White	Br/W	na	left	left	right	C1	Remotely activate ARMS using an external dry contact, use one contact for per breaker. This is a low-voltage signal, high quality gold contact required, max length 3 meters (15 feet).	
	MM (RTN)	Brown	Br	na	left	left	right	C2		
Communication Adapter (CAM) Link	CMMG (GND)	Violet	V	right	left	left	right	C5	Connect directly to selected CAM module. Use 2x twisted pair cable w/ shield and drain, max. length 3 meters (3.2 ft) . Refer to CAM Instruction Leaflets for detail (ECAM: IL0131132EN, Profibus: IL120009EN).	
	CMM1	Violet / Green	V/W	right	left	left	right	C7		
	CMM2	Violet / Yellow	V/R	right	left	left	right	C6		
	CMM3	Violet / White	V/Gr	right	left	left	right	C3		
	CMM4	Violet / Red	V/Y	right	left	left	right	C4		

Note: Available wiring connections depend on optional features selected.

PD2 wires are 0.205 mm² (24 AWG) size, PD3, 4, 5, 6 wires are 0.326 mm² (22 AWG).
Wires are 0.75 meters (30 inches) long.

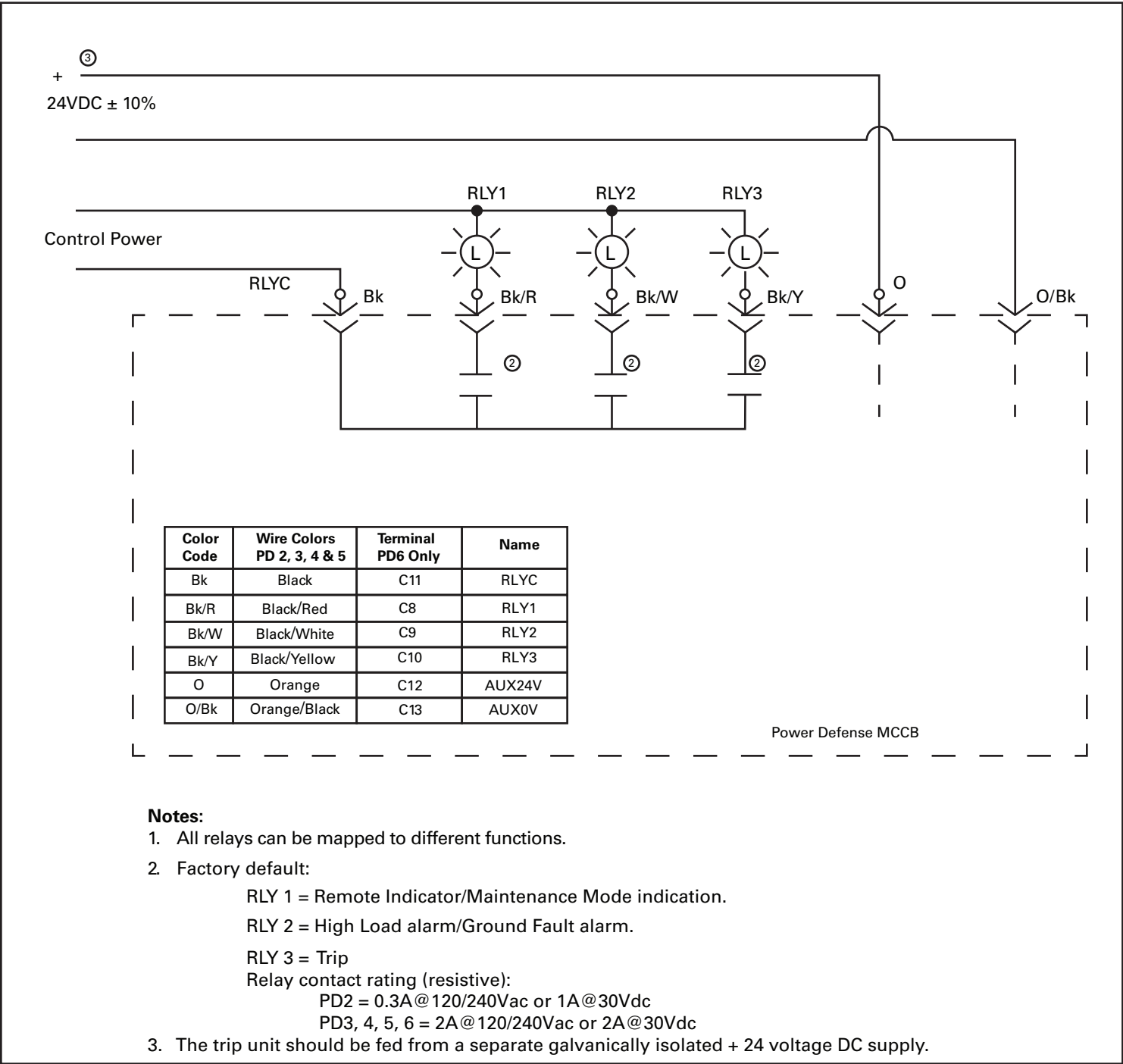


Figure 1. Control Power and Relay Wiring

Frame	Relays	Field Kit Cat #
PD2 w/modbus	1	PDG2XMODRTURELAY
PD2 w/o modbus	2	PDG2XRELAYS
PD3	2	na
PD4	2	na
PD5	3	PDG56XRELAYS
PD6	3	PDG56XRELAYS

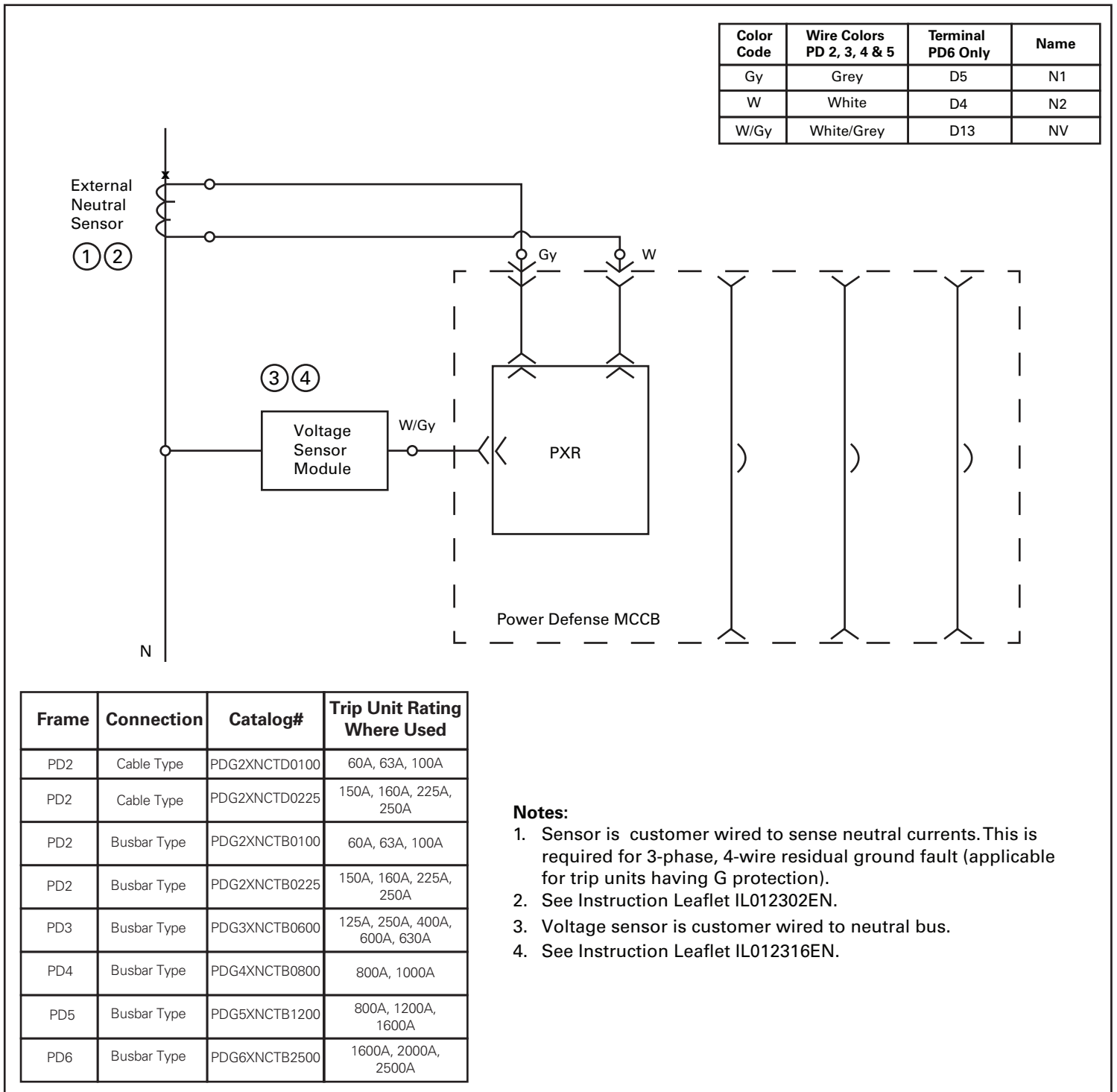


Figure 2. External Neutral Sensing

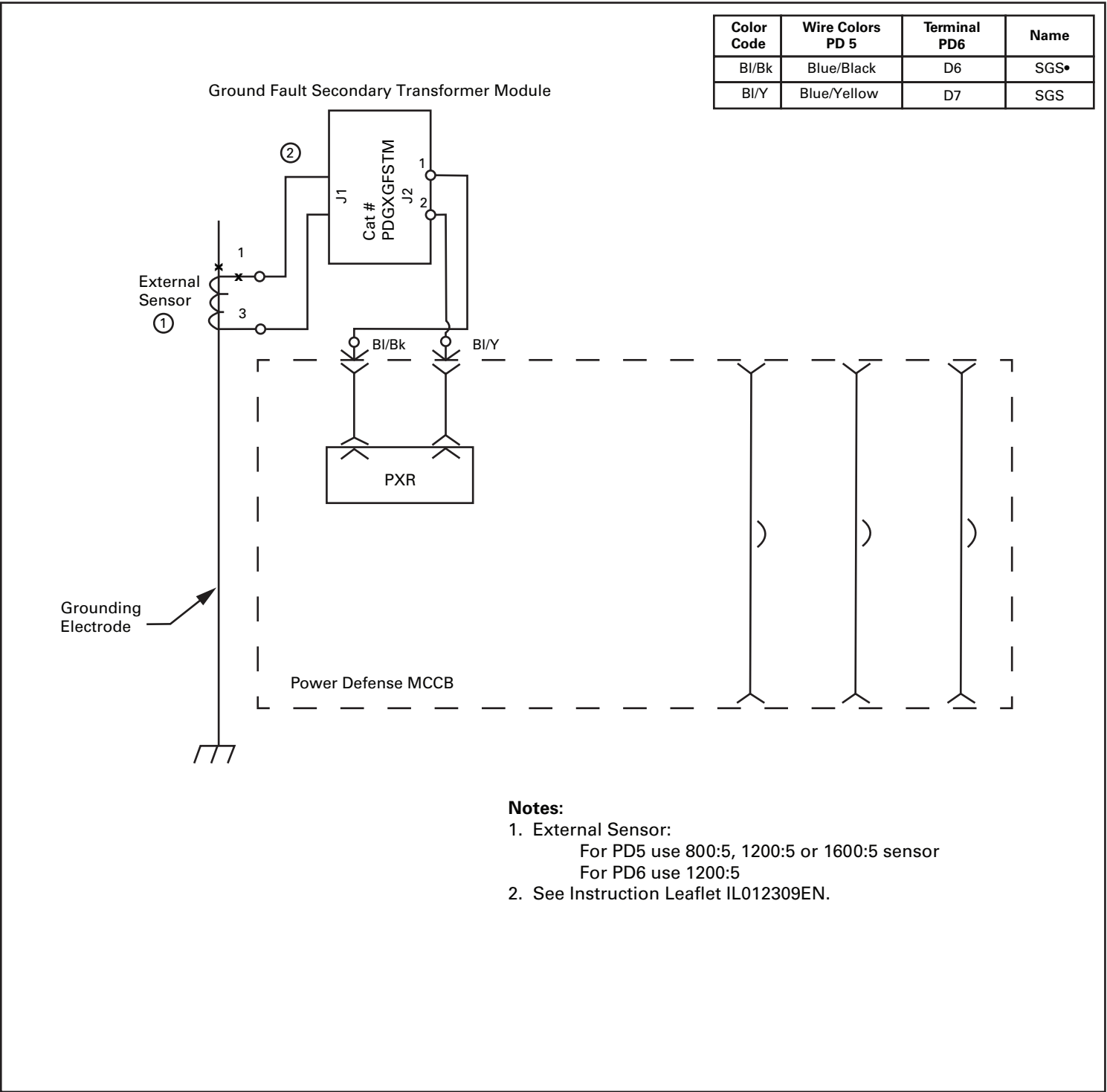
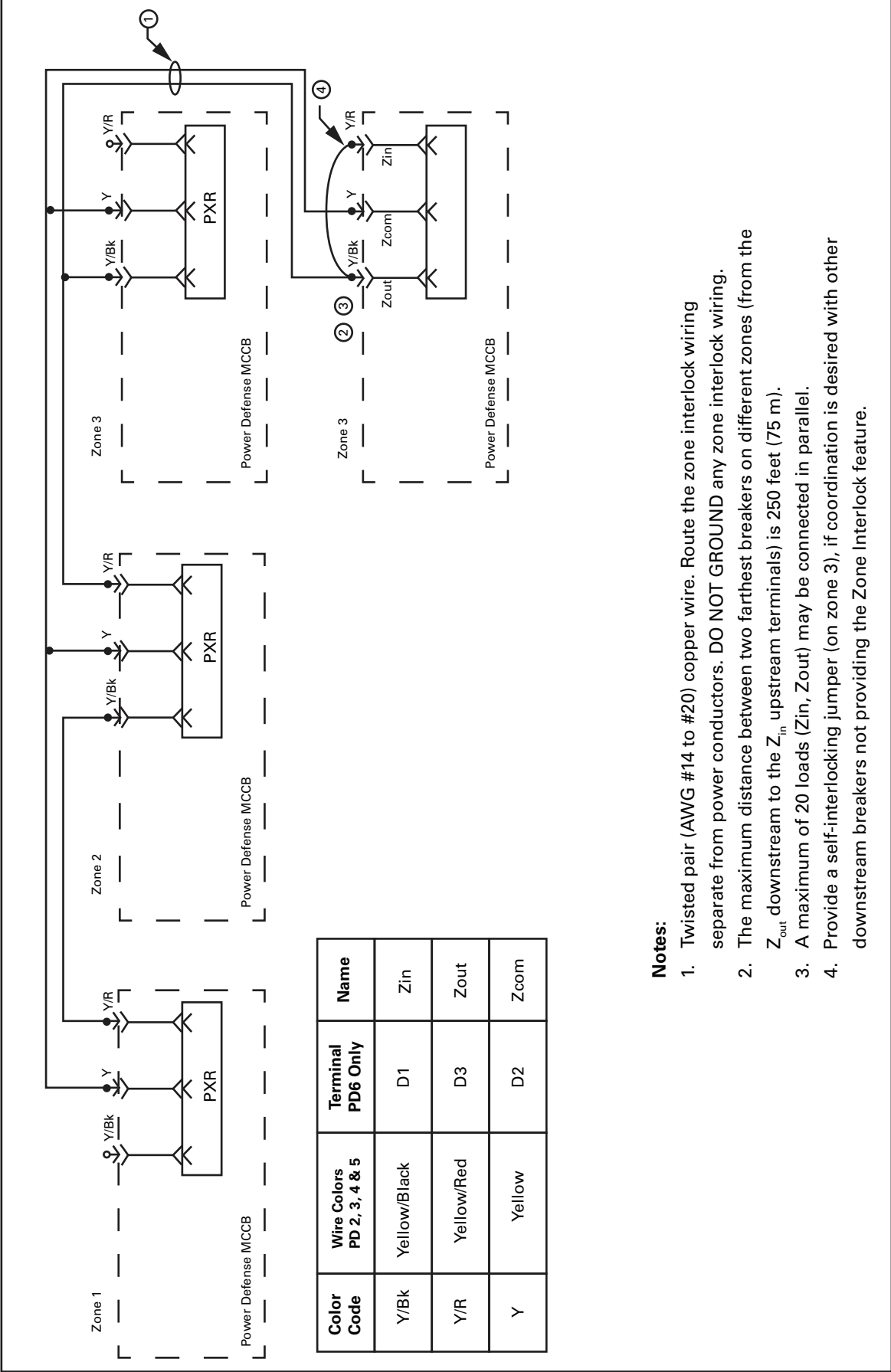


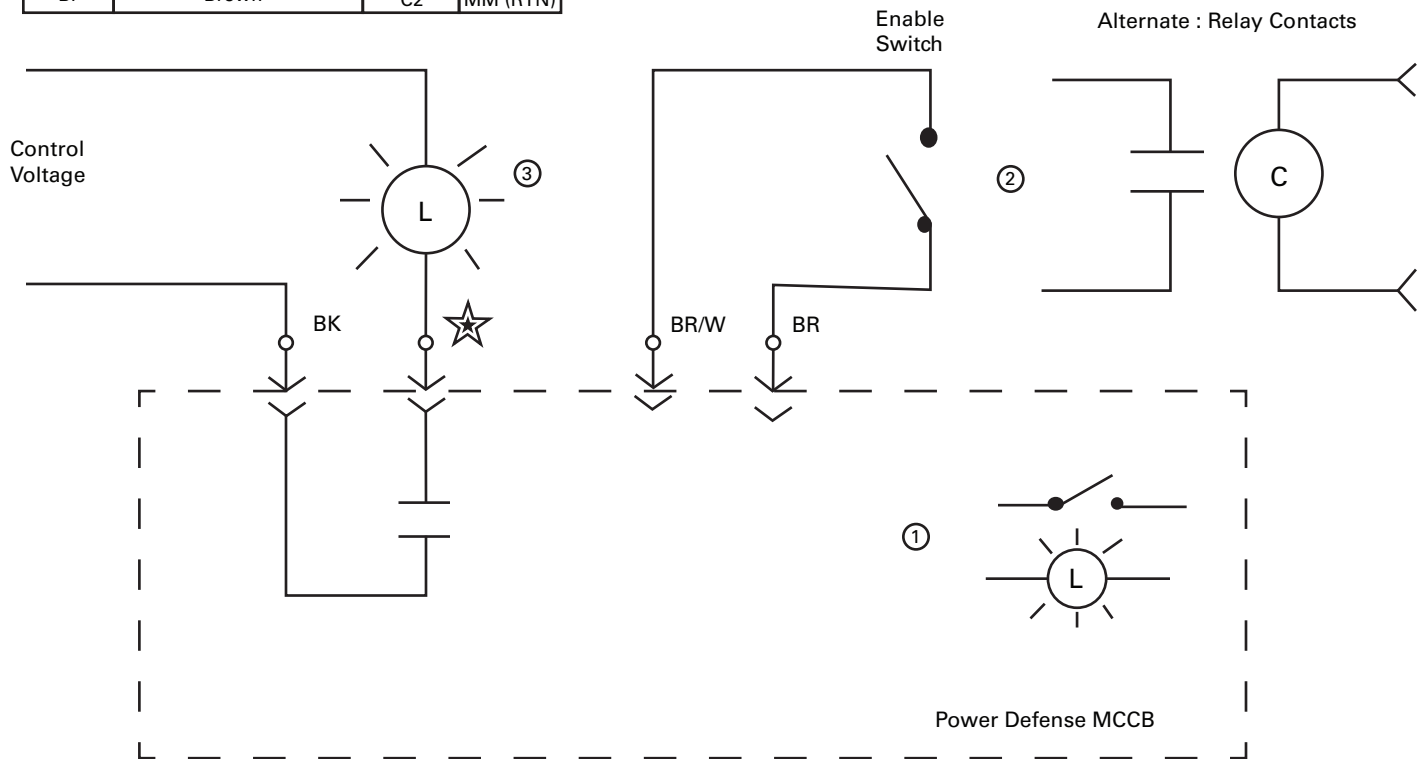
Figure 3. Source Ground and Zero Sequence Sensing - PD 5 and 6 only



- Notes:**
- Twisted pair (AWG #14 to #20) copper wire. Route the zone interlock wiring separate from power conductors. DO NOT GROUND any zone interlock wiring.
 - The maximum distance between two farthest breakers on different zones (from the Z_{out} downstream to the Z_{in} upstream terminals) is 250 feet (75 m).
 - A maximum of 20 loads (Zin, Zout) may be connected in parallel.
 - Provide a self-interlocking jumper (on zone 3), if coordination is desired with other downstream breakers not providing the Zone Interlock feature.

Figure 4. Zone Interlock Wiring

Color Code	Wire Colors PD3, 4 & 5	Terminal PD6 Only	Name
Bk	Black	C11	RLYC
☆	Use configurable relay		RLY1, 2, 3
Br/W	Brown/White	C1	MM
Br	Brown	C2	MM (RTN)



Notes:

1. PXR20/25 can be placed in Maintenance Mode locally via the two position switch on the front of the trip unit (models with Arc Flash Reduction Maintenance System™ - ARMS). A blue LED on the PXR also lights to indicate that the PXR is in Maintenance Mode.
2. A high quality low voltage switch w/gold contacts is required. The recommended switch for this low voltage application is Eaton part number L0250T133-2E which includes a contact block rated for logic level and corrosive use. Alternately use a general-purpose relay (IDEC RY22) with the appropriate coil voltage. In any application wire length (AWG #20) should not exceed 15 feet.
3. On PXR models with on-board relays, a remote indicator can be connected to show that the PXR is in Maintenance Mode. Use one of the general-purpose relays.

Figure 5. Maintenance Mode Wiring

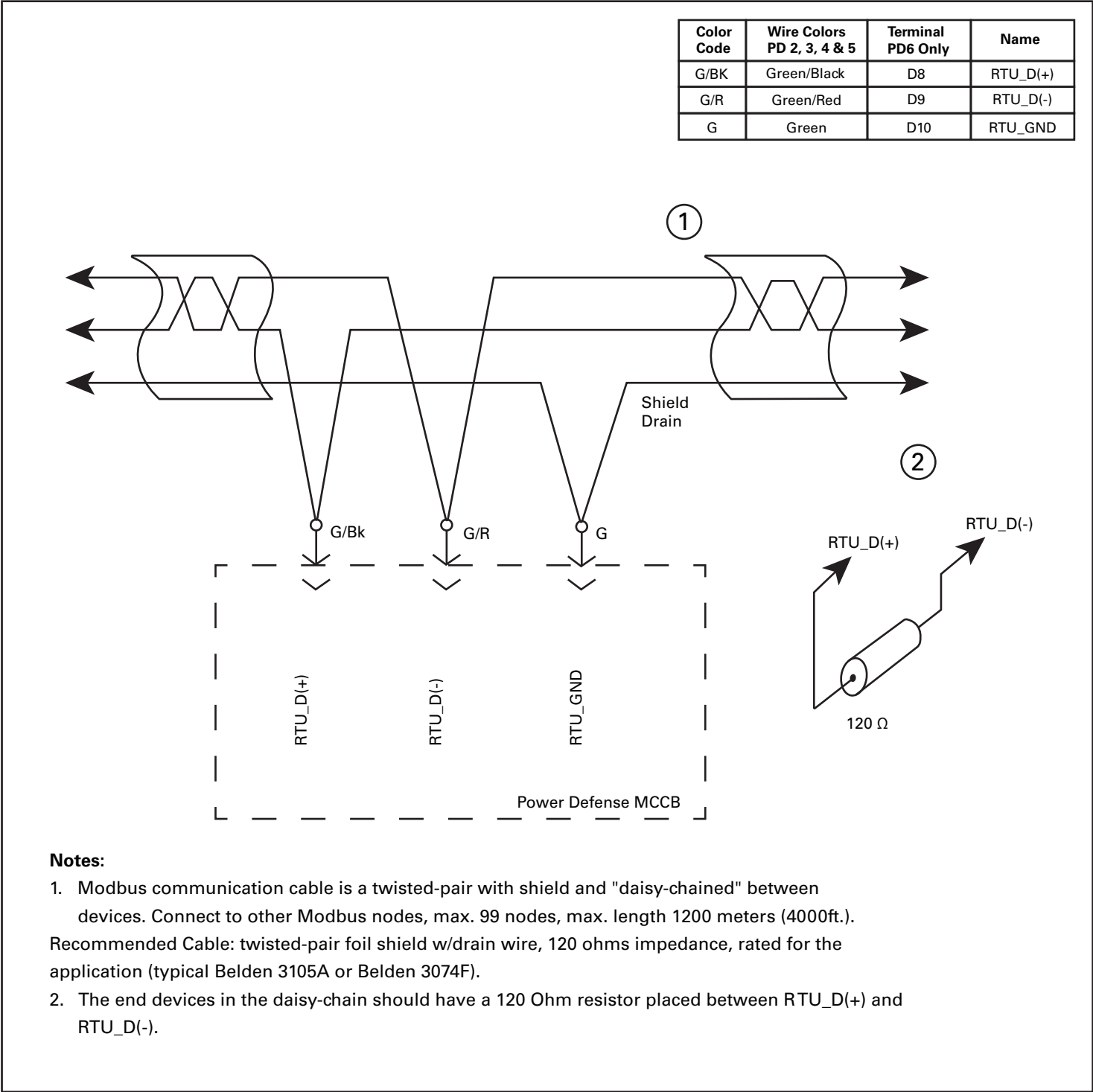


Figure 6. Modbus RTU Wiring

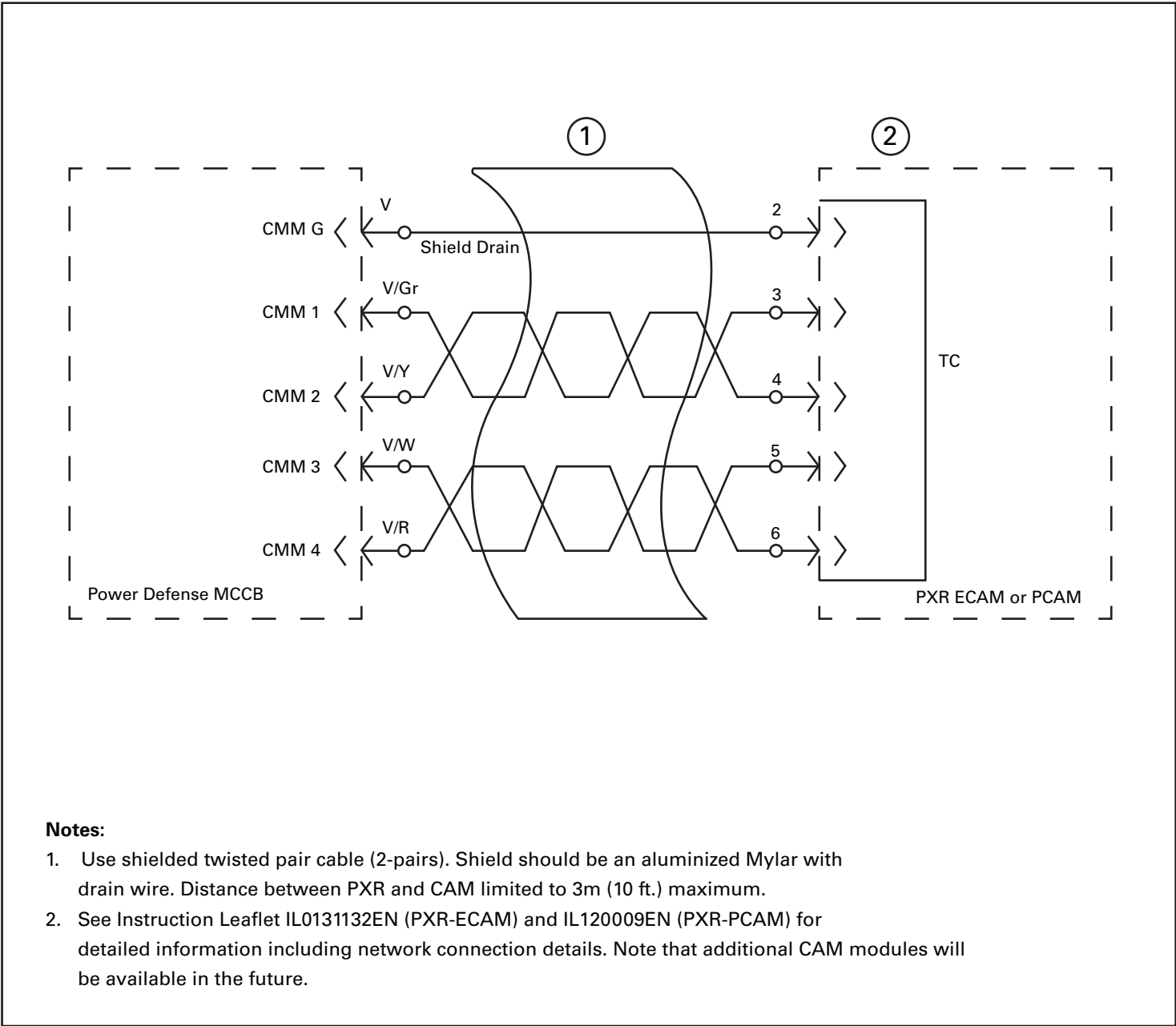


Figure 7. PXR to ECAM or PCAM Wiring

Color Code	Wire Colors PD 2, 3, 4 & 5	Terminal PD6	Name
V/Gr	Violet/Green	C7	CMM 1
V/Y	Violet/Yellow	C6	CMM 2
V/W	Violet/White	C3	CMM 3
V/R	Violet/Red	C4	CMM 4
V	Violet	C5	CMM G

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