#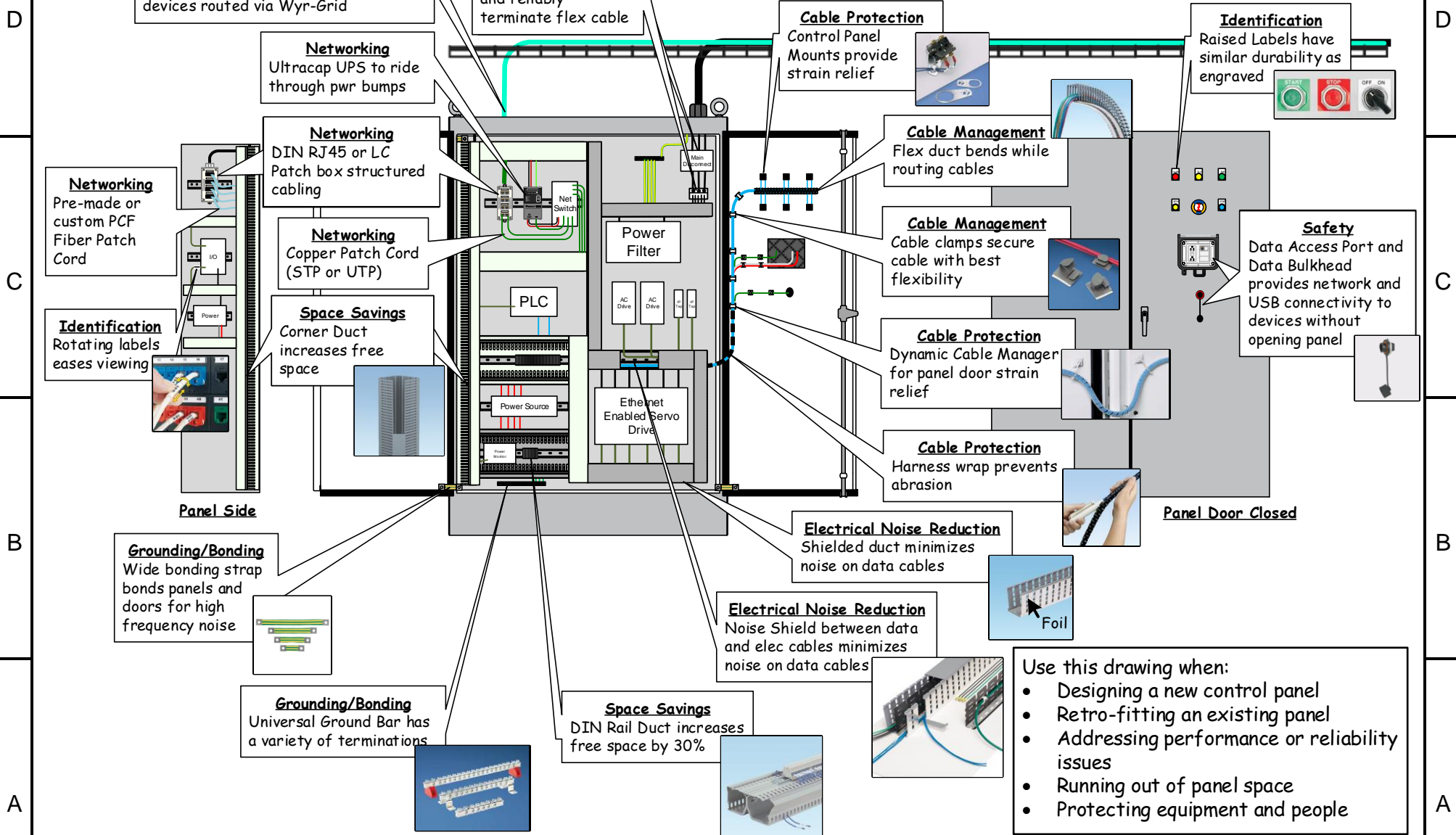 Control Panel Cable Management, Space Savings, Noise Reduction, Grounding/Bonding, Identification, Networking, Power and Safety

Networking
Armor Fiber or Marine Copper horizontal network cable to the field devices routed via Wyr-Grid

Networking
Ultracap UPS to ride through pwr bumps

Networking
DIN RJ45 or LC Patch box structured cabling

Networking
Pre-made or custom PCF Fiber Patch Cord

Networking
Copper Patch Cord (STP or UTP)

Power
Large ferrules safely and reliably terminate flex cable

Cable Protection
Control Panel Mounts provide strain relief

Identification
Raised Labels have similar durability as engraved

Cable Management
Flex duct bends while routing cables

Cable Management
Cable clamps secure cable with best flexibility

Cable Protection
Dynamic Cable Manager for panel door strain relief

Cable Protection
Harness wrap prevents abrasion

Safety
Data Access Port and Data Bulkhead provides network and USB connectivity to devices without opening panel

Identification
Rotating labels eases viewing

Space Savings
Corner Duct increases free space

Grounding/Bonding
Wide bonding strap bonds panels and doors for high frequency noise

Grounding/Bonding
Universal Ground Bar has a variety of terminations

Space Savings
DIN Rail Duct increases free space by 30%

Electrical Noise Reduction
Shielded duct minimizes noise on data cables

Electrical Noise Reduction
Noise Shield between data and elec cables minimizes noise on data cables

Panel Side

Panel Door Closed

Net Switch

Power Filter

PLC

AC Drive

AC Drive

Power Source

Power Monitor

Ethernet Enabled Servo Drive

Main Disconect

I/O

Power

Foil

START STOP OFF ON

Use this drawing when:
- Designing a new control panel
- Retro-fitting an existing panel
- Addressing performance or reliability issues
- Running out of panel space
- Protecting equipment and people

* Other Panduit products shown but not called out include duct, lugs, terminals, ferrules, labels, cable ties, mounts, overhead cable tray and more

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PANDUIT™

Control Panel Reference Design

Panduit Bill of Material

Part Number	Description
Cable Protection and Management	
CPM122S-C	Control Panel Switch Cable Tie Mount
FL12X12LG-A	Slotted sidewall, open finger flexible wiring duct.
ARC.68-A-C	Adjustable and Releasable Clamp
ABDCM30-A-C	Dynamic Cable Manager for Panel Strain Relief
PW38F-TL	3/8" Pan-Wrap Split Harness Wrap
Electrical Noise Reduction and Space Savings	
G2X2LG6EMI	2" x 2" PanelMax Shielded Wiring Duct; 6-foot.
SD2EMI	EMI noise shield kit for 2" height Panduit wiring duct; two 3-foot sections, four bonding clips, and anti-oxidizing paste.
DRD22LG6	2" height PanelMax DIN Rail Wiring Duct with dual wiring channels. Base, covers, and DIN rail fasteners included (DIN sold separately)
CWD2LG6	One-piece corner wiring duct base for use with 2" height wiring duct.
Grounding/Bonding & Power	
UGB2/0-414-12	Universal ground bar accepts #14 – #4 AWG wire in 12 wire ports and up to a 2/0 AWG main equipment grounding conductor with a compression or mechanical connector
BS100445	Braided Bonding Strap, one-hole, insulated, 4.00" length x 1.06" width
F91-40-L	Ferrule, non-insulated, 4/0 AWG wire range
Identification & Safety	
C120X150APT-22	Raised Panel Label, Keyhole, 1.2"W x 1.5"H
R050X075V1T	Thermal Transfer, Vinyl, 0.50" W x 0.75" H,
IAPNG5EWH	IndustrialNet GFCI Data Access Port, Cat 5e
IAEBH6	Category 6, RJ45, 8-position, 8-wire black industrial bulkhead connector with cover.

For More Information

For more information, contact your local distributor or Panduit Sales rep.
www.panduit.com/ia
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About this Configuration

Control panels are being packed with more gear causing challenges with over crowding, susceptibility to noise, and challenging moves/adds/changes. This drawing lays out options to address these concerns.

Cable Protection and Management

Minimizing chaffing, cuts and strains is paramount to achieve high reliability and designed performance. The key is securing, covering, and separating cables from hazards.

Electrical Noise Reduction and Space Savings

Mitigating electrical noise and utilizing 3D panel space facilitates higher density device designs to fit into tight panel layouts or lead to smaller panel footprint.

Grounding & Bonding

Grounding and bonding is critical for reliable network communication, especially dissipating high frequency noise . Utilizing ground bars and bonding straps is a best practice for grounding.

Identification & Safety

Moves, adds, and changes need to be done correctly, efficiently and safely. Identification is critical to guide personnel to make the right connections and prevent erroneous disconnects. Protect personnel by preventing contact with hazards while providing same capability

Networking

Ethernet enabled controls, drives, sensing hardware is proliferating. Panels need to manage network cabling and devices minimizing environmental impacts like heat, elec noise, vibration ,etc.

Panduit Bill of Material (cont.)

Part Number	Description
Networking	
FI2D204	OM2 4-fiber PCF multimode low smoke zero halogen riser rated indoor breakout cable
UTP28SP1	Cat 6, 28 AWG (small dia) UTP patch cord with TX6 Modular Plugs
CDPP8RG & FDME8RG	8-port DIN rail mount copper or fiber patch panel. Mounting latches securely attach unit to DIN rail
UPS003024024015	Uninterruptible Power Supply (UPS), 35 Watts for 5 minutes, 24 VDC in/out, DIN rail mount
FSPD504	OM2 4-fiber dielectric conduited, LSZH-Riser rated, multimode indoor distribution cable for backbones
PSM7004BU-KD	Cat 7, LSZH, 4-pair, stranded, S/FTP shielded marine copper cable, oil- and fuel-resistant

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