

Compliance & Certifications

Planar Motor's S3 & S4-xS series Flyways and C-XXX PMCs (Planar Motor System) comply with applicable regulations, directives and standards. We are committed to ensuring the reliability of our products in industrial environments.

1. Global Safety Certification

Planar Motor Systems maintain global safety alignment through independent certification by the CSA Group—a globally recognized testing and certification body and accredited Nationally Recognized Testing Laboratory (NRTL). Our systems are certified to the following classifications:

1.1 Product Classifications

- **CSA Class 3883-81** — INDUSTRIAL ELECTRICAL MACHINERY - Certified to US Standards
- **CSA Class 3883-01** — INDUSTRIAL ELECTRICAL MACHINERY - Industrial Electrical Machinery

1.2 Applicable Standards

- **CSAC22.2 NO. 301:23** — Industrial electrical machinery - Second Edition
- **UL Subject 2011 (Issue 7)** — UL Outline of Investigation for Machinery

These CSA certifications confirm that the product has been tested to the applicable Canadian and U.S. safety standards referenced by the **Canadian Electrical Code (CEC)** and the **U.S. National Electrical Code (NEC)**, supporting its use in compliant industrial electrical installations.

2. Functional Safety Certification

Planar Motor Systems have been evaluated by **CSA Group** according to global functional safety standards used in machinery and industrial automation systems.

2.1 ISO 13849-1 — Safety of Machinery

- Performance Level: *d*; Category: 3

2.2 IEC 61508 — Functional Safety of E/E/PE Systems

- Safety Integrity Level: 2

These evaluations support the integration of Planar Motor Systems into safety-related control systems globally.

3. European Union (EU) CE Marking Compliance

When placed on the European market, Planar Motor Systems meet all requirements of the applicable EU directives.

3.1 CE Directives

- EMC Directive 2014/30/EU
- Machinery Directive 2006/42/EC
- Radio Equipment Directive (RED) 2014/53/EU (if wireless functionality applies)
- RoHS Directive 2011/65/EU, including 2015/863 amendment
- REACH Regulation (EC) 1907/2006

3.2 Harmonized Standards

- EN 300 330 V2.1.1
- EN 301 489-1 V1.9.2
- EN 61000-3-2:2014
- EN 61000-3-3:2013
- EN 61000-6-2:2005/AC:2005
- EN 61000-6-4:2007/A1:2011
- EN 61800-3:2004/A1:2012
- EN/ISO 13849-1:2023
- EN 61800-5-2:2007
- EN/IEC 63000:2018

A formal **CE Declaration of Conformity (DoC)** is issued for the Planar Motor System. See the [certification downloads page](#).

4. Environmental & Chemical Compliance

4.1 RoHS Compliance

Conforms to RoHS restrictions on hazardous substances under Directive **2011/65/EU + (EU) 2015/863**, standard **EN IEC 63000:2018**

4.2 REACH Compliance

Meets requirements under **REACH (EC) 1907/2006**, including SVHC reporting.

5. United States FCC Compliance (Part 15)

The Planar Motor System components, including the Flyways and Planar Motor Controllers (PMC), are classified as FCC Part 15 Class A Digital Devices intended strictly for use in industrial and commercial manufacturing environments.

5.1 General Class A Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

⚠ CAUTION: Changes or modifications to this equipment not expressly approved by Planar Motor Inc. could void the user's authority to operate the equipment under FCC regulations.

Note: *This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.*

5.2 Wireless & RF Exposure Information (3-Series Only)

The following specifications apply exclusively to installations utilizing **3-Series Flyway Stator Modules** featuring integrated wireless communication architecture:

- **FCC ID:** 2BTRTS3

5.2.1 Radiofrequency (RF) Radiation Exposure Notice

To comply with FCC RF exposure compliance requirements, 3-Series equipment must be installed and operated to provide a separation distance of at least **20 cm (roughly 8 inches)** from all persons during normal operation. The internal wireless transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Note: 4-Series Flyway Stator Modules do not utilize internal radio frequency wireless communication elements and are governed solely by the standard Class A unintentional emissions regulations listed above.

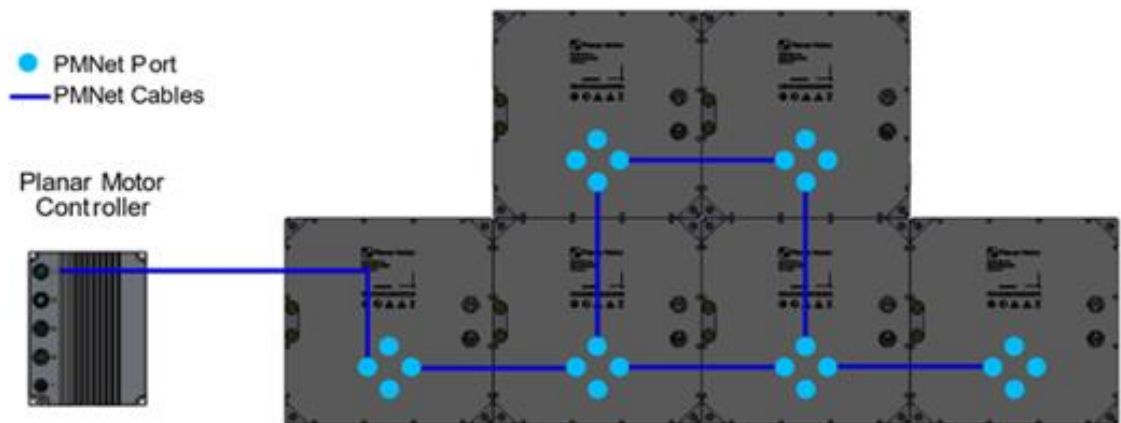
Electrical Setup

This guide is for the wiring setup of the PMC and Flyways.

WARNING

Maintenance work on a Planar Motor System that is still connected to the power source may result in injury or death. Before performing any work on the Planar Motor System, they must first be disconnected from the power system and prevented from being switched on again. Only qualified electrical personnel are permitted to carry out maintenance work on a Planar Motor System.

Planar Motor Network (PMNet) Wiring

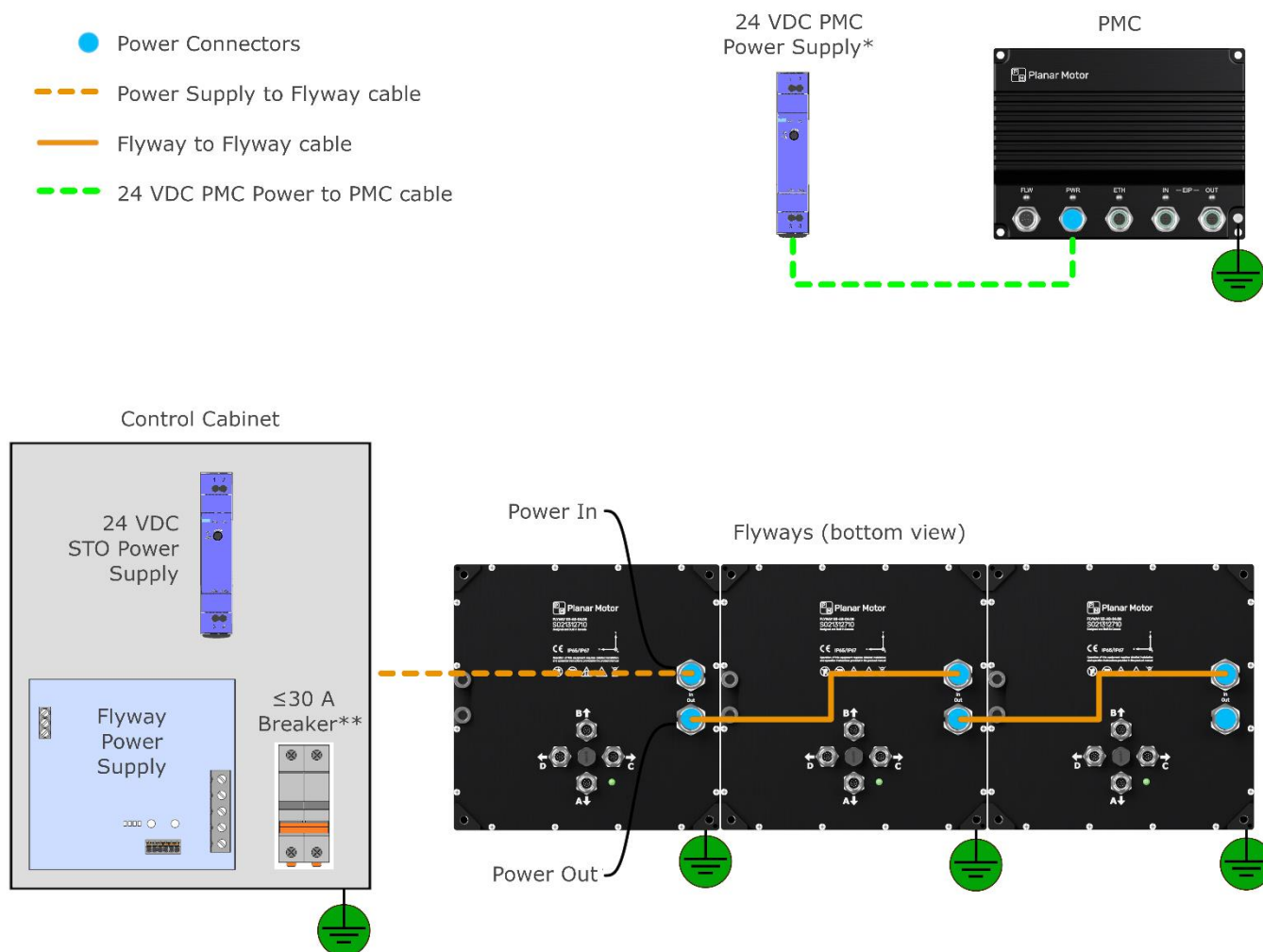


One data cable is installed between every two adjacent Flyways, using the two closest ports as shown. The Planar Motor Controller (PMC) can be connected to any of the PMNet ports.

NOTICE!

Make sure the PMNet cables are fully inserted, and the rotating collar locks onto the cable properly.

Flyway Power and PMC Power Cable Wiring



* The nominal power supply voltage for the PMC is 24 VDC. The PMC is capable of operating from a power supply voltage between 18-58 VDC.

** Breaker is not required if using PS-1500-DIN or PS-1500-XX-YY-Z

Flyway Series	Nominal Flyway Power Supply Voltage
S3	48 VDC
S4	54 VDC

Flyway power cables can be daisy-chained as shown above. In most applications, a 1kW power supply can power up to eight 3-Series (or five 4-Series) Flyways and eight XBots. Contact the manufacturer for assistance in determining your power supply requirements.



Right-angle power cables connected



Straight power cables connected

Each power cable has a female end (to be connected to PWR IN on the Flyway) and a male end (to be connected to PWR OUT on the Flyway).

NOTICE!

The Flyway power connector is equipped with a rotating spring latch. Make sure the latch is fully rotated after installing the cable to ensure the cable is properly secured to the Flyway.

CAUTION

Damage can occur due to improper wiring. Power connectors are only permitted to be connected in a voltage-free state. Wiring under voltage will irreparably damage connected devices.

Grounding Requirement

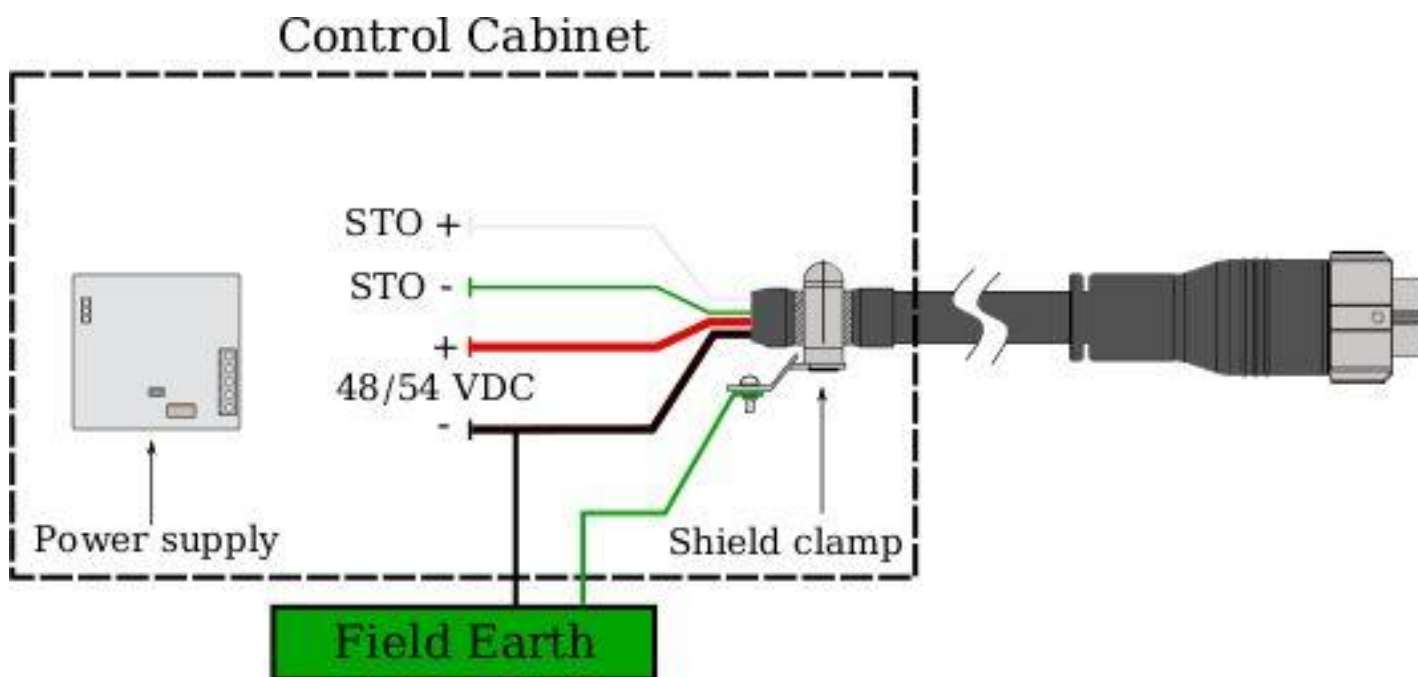
- Each Flyway and the PMC should be grounded.
 - For the Flyways, any of the four threaded mounting holes can be used as a ground connection point.
 - For the PMC, a separate grounding hole is provided on the aluminum body of the PMC
- An adequate ground path should be provided for each piece of hardware, such as using a grounded mounting plate to mount the Flyways at the site.

Control Cabinet Flyway Power Wiring

A Planar Motor System can be provided with the power supply wired and enclosed.

When wiring the power supply cables to the power supply unit, the following instructions should be followed.

▼ See instructions



Function	Cable Wire Colour	Cable Cross-Section Area	Connection
Power Supply. 48/54 VDC relative to Power Supply Return	Red	AWG 10, 6mm ²	48/54 VDC on the power supply unit
Power Supply Return	Black	AWG 10, 6mm ²	48/54 VDC Return on the power supply unit
STO+	White	AWG 22, 0.34mm ²	STO device high side
STO-	Green	AWG 22, 0.34mm ²	STO device low side

Field Earth (FE)	Green	AWG 14, 2.5mm ²	Field Earth
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Wiring Steps:

1. Connect the red wire to 48/54 VDC
2. Connect the black wire to 48/54 VDC Return
3. Connect the white wire to high side of STO device
4. Connect the green wire (AWG 22) to low side of STO device
5. Connect the green wire (AWG 14) to the field earth
6. Connect 48/54 VDC Return to the field earth

Control Cabinet PMC Power Wiring

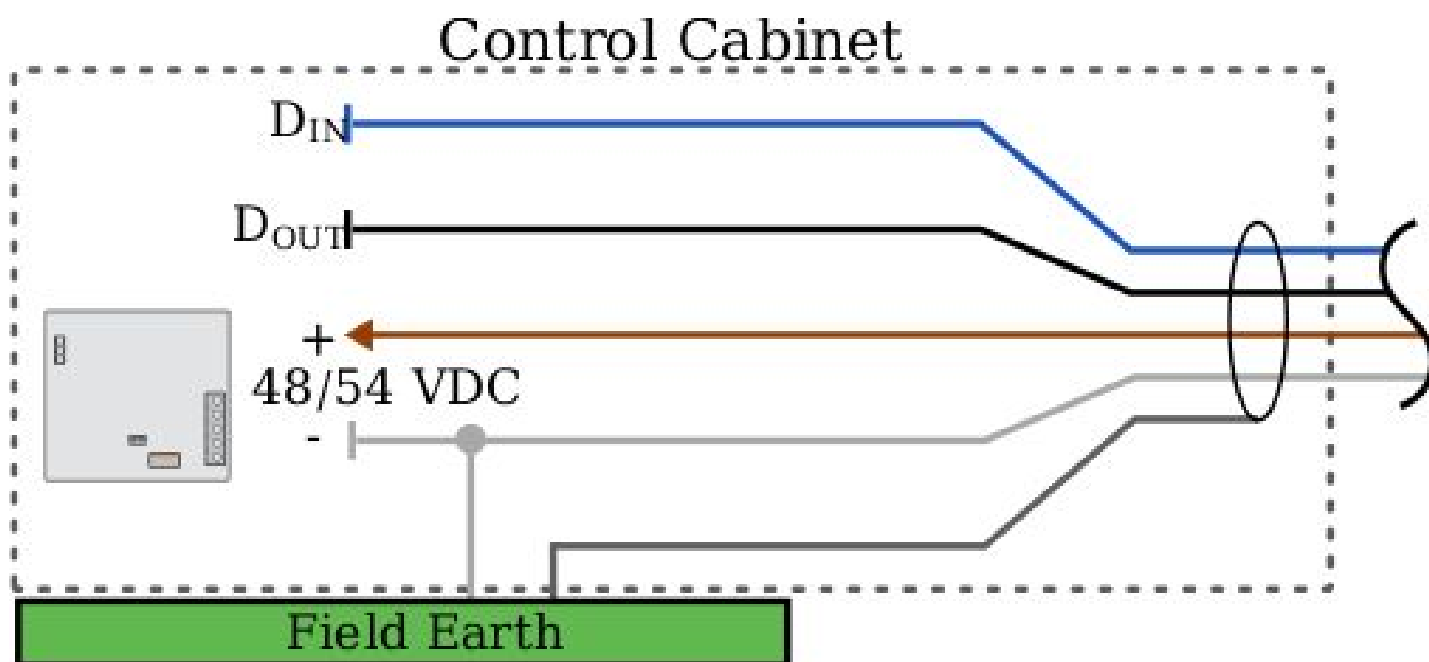
The PMC is typically powered in one of the following two ways:

- 24 VDC Power Supply
- 48/54 VDC Flyway Power Supply

The PMC power cables also contain a single digital input and a single digital output channel, which can be wired to an auxiliary digital I/O device. The digital I/O capabilities of the PMC can be used to trigger actions to and from the Planar Motor System. For more information on implementing the digital I/O capabilities of the PMC, please contact the manufacturer.

For customers wiring the PMC power cable to a power supply unit, the following instructions should be used.

▼ See instructions



Function	Cable Wire Colour	Cable Cross-Section Area	Connection
Power Supply. 48/54 VDC relative to Power Supply Return	Brown	AWG 22, 0.34mm ²	48/54 VDC on the power supply unit
Power Supply Return	White	AWG 22, 0.34mm ²	48/54 VDC Return on the power supply unit
Digital Input to PMC	Black	AWG 22, 0.34mm ²	Output of Digital I/O Device or Field Earth
Digital Output from PMC	Blue	AWG 22, 0.34mm ²	Input of Digital I/O Device or leave unconnected
Field Earth (FE)	Grey	AWG 22, 0.34mm ²	Field Earth

Wiring Steps:

1. Connect the brown wire to 48/54 VDC
2. Connect the white wire to 48/54 VDC Return

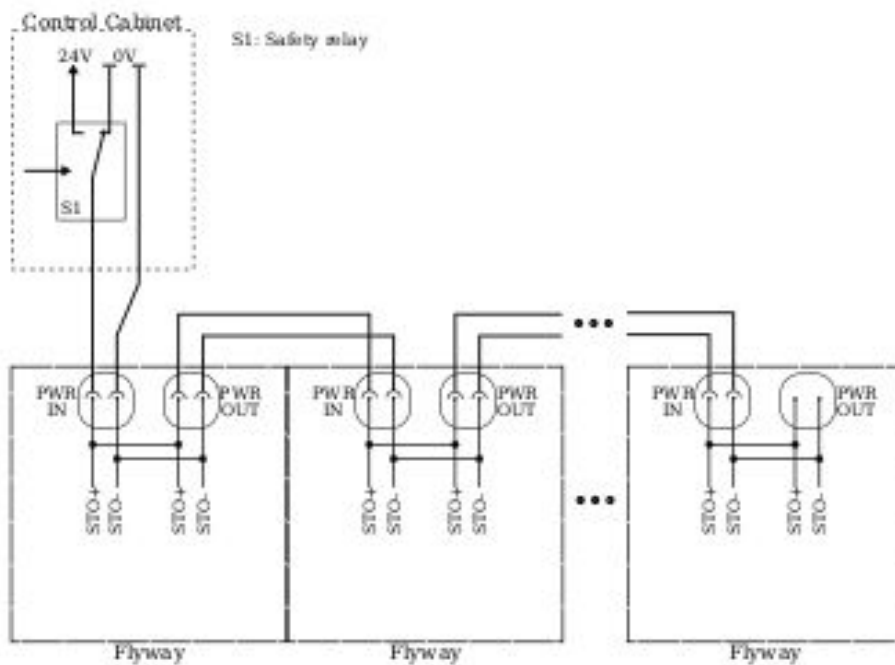
3. If using, connect the blue wire to input of external Digital I/O device, this will be connected to the digital output signal of the PMC. Otherwise protect wire conductor with heat shrink and leave unconnected.
4. If using, connect the black wire to output of external Digital I/O device, this will be connected to the digital input signal of the PMC. Otherwise connect to 48/54 VDC Return.
5. Connect the grey wire to the field earth
6. Connect 48/54 VDC Return to the field earth

 DANGER

All safety circuits should be designed and implemented according to the relevant SIL / PL standards. This document provides instruction on how to integrate the STO signal into the safety circuit, but does not determine auxiliary safety devices.

STO Wiring

The STO+ signal can be connected to safety switches or digital outputs to enable or disable the Flyway motor power under specific circumstances. If the STO+ signal is set to low, the power stage is disabled. For instance, a positively driven switching off relay can be used to disable the motor power when the safety circuit is opened.



Cable Shielding Requirements for FCC Compliance

To maintain compliance with FCC Part 15 Class A emission limits, installers must adhere strictly to the following wiring configurations:

- **PMNet and Fieldbus Cabling:** Only manufacturer-specified, double-shielded EtherCAT/PMNet data cables (e.g., NC-006-CS, NC-028-CR series) may be used for internal Flyway communication.
- **Shield Grounding:** Ensure that all cable shielding braids are fully bonded to the common functional earth or machine frame ground at the entry point of the main control cabinet.
- **Power Cabling:** Flyway power cables must be routed away from sensitive low-voltage signal lines to minimize inductive electromagnetic coupling.