

F6 Power Supply Requirements & Options

Aviom's AllFrame Multi-Modular I/O System offers unique flexibility in installation. In addition to supporting multiple I/O complements and physical form factors, AllFrame devices can be powered in a number of ways. This paper details the electrical requirements that must be met by any power supplies used with AllFrame devices and provides critical guidelines for ensuring proper performance.



POWER CONNECTOR OPTIONS

The F6 Modular I/O Frame features three power inlets: a two-pin Euroblock and a four-pin XLR for use with external DC power supplies, as well as an RJ-45 A-Net® jack which can accept power injected on the Cat-5e cable.

POWER SUPPLY OPTIONS

The F6 does not ship with a power supply. Third-party power supplies purchased for use with the F6 may be bench-top models, DIN rail supplies, or in-line bricks, as long as the minimum electrical specifications are met. In order to prevent the F6's case from sitting above ground due to voltage drop on the cable, a separate power supply must be used to power each F6 in a system. Power supplies must be installed in accordance with the manufacturer's instructions and adhering to all local electrical codes. Aviom has tested and approved the *TDK-Lambda DPP120-48-1* and *Mean Well DR-120-48* DIN rail power supplies.

All three power sources may be used simultaneously with the F6 to create a redundant power sub-system.

POWER OVER A-NET

Because the power requirements of the F6 exceed standard PoE and PoE+, standard PoE/PoE+ power injectors are not suitable for use in AllFrame systems. Users who wish to power AllFrame units through the RJ45 jack must purchase the Aviom POA80 Power Over A-Net power supply assembly. No other power supplies have been approved for powering AllFrame units in this manner.

While the POA80 provides certain protections against power irregularities that are common when cables are connected or disconnected, Aviom recommends against plugging or unplugging a network cable utilizing Power Over A-Net while the POA80 is on.

Note that only the A-Net B port can accept PoA and no other A-Net ports should be connected to the powered port of the POA80. The B port on the F6 may be used to supply power but not network data if the installation layout so requires.

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POWER VIA XLR OR EUROBLOCK

DC Power supplies used with the F6 and connected to the Euroblock terminal connector or the 4-pin XLR jack must meet the following requirements:

Power Supply Rating	Requires a UL60950-1 Certified/Listed ITE power supply having a SELV (Safety Extra Low Voltage) rated output voltage between 22 and 60V DC
Voltage (measured at the input of the F6 Modular I/O Frame)	22-60VDC, inclusive of tolerance
Maximum Current (varies with input voltage) (voltage at the input of the F6 Modular I/O Frame)	1.08A @ 60VDC 1.16A @ 56VDC 1.35A @ 48VDC 1.41A @ 44VDC 2.70A @ 24VDC 2.95A @ 22VDC

In order to meet emissions standards, an inline filter such as the Cosel NAC-10-472, may be required for installations that use external switching power supplies. For proper filtering, the power supply and filter should be separated by twelve inches or more.

CABLE LENGTH & VOLTAGE DROP

Maximum usable lengths for DC power cables used with the F6 and connected to the 4-pin XLR or Euroblock terminal block connectors will vary based on the gauge of the wire and the voltage and power rating of the supply. The cable will dissipate some of the power as heat, resulting in a voltage drop on the cable that increases with cable length.

The table below presents power cable length as a function of wire gauge and supply voltage/power rating.

Maximum Cable Distance For Various Power Supplies

Wire Gauge	24V, +/-5% @ 100 Watts	48V, +/-5% @ 100 Watts	48V, +/-5% @ 120 Watts
12	75 feet, 23 meters	900 feet, 274 meters	1800 feet, 548.5 meters
14	48 feet, 15 meters	550 feet, 168 meters	1150 feet, 350.5 meters
16	30 feet, 9 meters	450 feet, 137 meters	725 feet, 221 meters
18	18 feet, 5.5 meters	300 feet, 91.5 meters	450 feet, 137 meters
Power Dissipation Of Cable			
	2.4 Watts	8 Watts	20 Watts

Connector Specifications

Connector Type	Pinout	Terminal Blocks
2-pin terminal block	Pin 1: 22-60VDC (+) Pin 2: Ground (-)	Phoenix Contact part number 17 54 44 9 Size: 5mm; 2 contacts per unit
4-pin XLR	Pin 1: Ground Pin 2/3: No Connect Pin 4: 22-60VDC	

Refer to the F6 User Guide for complete requirements and safety warnings.

All Aviom products are designed and manufactured in the USA.