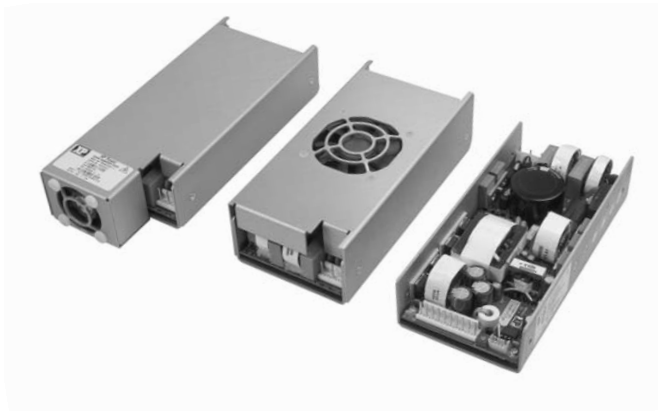


MFA350 Series



- U-Channel, Cover Fan & Hotswap Formats
- High Power Density - 11.1 W/in³
- Power Fail, DC OK & Active Current Share
- 5 V Standby & 12 V Fan Supply Outputs
- Screw Terminals Available
- 48 VDC Input Versions Available (DFA350)
- 3 Year Warranty

Specification

Input

Input Voltage	• 85-264 VAC (derate output power 10% below 90 VAC)
Input Frequency	• 47-63 Hz
Input Current	• Typically 3.6 A at 115 VAC & 1.8 A at 230 VAC
Inrush Current	• <60 A max at 230 VAC cold start
Power Factor	• EN61000-3-2 class A EN61000-3-2 class C for loads ≥20%
Earth Leakage Current	• Typically 1 mA at 230 VAC/50 Hz, 0.5 mA at 115 VAC/60 Hz
Input Protection	• T6.3 A/250 V internal in line fuse

Output

Output Voltage	• See tables
Output Voltage Trim	• ±10%
Initial Set Accuracy	• V1 ±1%, V2 ±5%, V3 ±3%
Minimum Load	• No minimum load required
Start Up Delay	• 2 s maximum, typically 1 s
Hold Up Time	• 16 ms minimum at 90 VAC full load
Drift	• ±0.2% after 20 min warm-up
Line Regulation	• V1 ±0.5%, V2 ±3.0%, V3 ±5.0%
Load Regulation	• V1 ±1.0%, V2 ±5.0%, V3 ±1.0%, 0-100% load V1 & V3, 10-100% load V2
Over/Undershoot	• <1% maximum
Transient Response	• <4% max deviation, with 50-75-50% load step. Recovery to within 1% <500 μs
Ripple & Noise	• V1 & V3: 1%, V2: 2% pk-pk, 20 MHz bandwidth
Overvoltage Protection	• 115-140% Vnom (output V1 only)
Overtemperature Protection	• Thermal sensor under PCB shuts unit down typically >+75 °C, restarts after cooling
Overload Protection	• 110-140%, I nom V1
Short Circuit Protection	• Continuous trip and restart (Hiccup mode)
Temperature Coefficient	• 0.05%/°C
Remote Sense	• Compensates for 0.5 V total voltage drop
Remote On/Off	• Short circuit or TTL Low turns PSU off, can also be configured as enable
Current Share	• Up to 3 supplies can be connected in parallel, derate total output current to 90%

General

Efficiency	• Typically 86%
Isolation	• 3000 VAC Input to Output 1500 VAC Input to Ground 100 VDC Output to Ground
Switching Frequency	• PFC 62 kHz typical, Main converter 157 kHz, typical
Power Density	• 11.1 W/in ³
Signals	• Power Fail - open collector, transistor off for AC good, ≥5 ms warning of loss of output. DC OK - open collector, transistor off for DC good
MTBF	• 460 kHrs to MIL-HDBK-217F, notice 2, at +25 °C, GB, typical

Environmental

Operating Temperature	• Forced cooled: -10 °C to +70 °C, derate linearly from +50 °C at 2.5%/°C to +70 °C
Cooling	• >13 CFM forced airflow required for U Channel Versions, '-H', '-TF' & '-EF' versions have integral fan
Operating Humidity	• 5-95% RH
Storage Temperature	• -20 °C to +85 °C
Operating Altitude	• 3000 m
Shock	• 30 g pk, half sine, 6 axes
Vibration	• Single axis 10-500 Hz at 2 g x 10 sweeps

EMC & Safety

Emissions	• EN55022, Class B conducted EN55022, Class A radiated
Harmonic Currents	• EN61000-3-2 class A EN61000-3-2 class C for loads ≥20%
Voltage Flicker	• EN61000-3-3
Radiated Immunity	• EN61000-4-3, level 3 Perf Criteria A
EFT/Burst	• EN61000-4-4, level 3 Perf Criteria A
Surge	• EN61000-4-5, installation class 3 Perf Criteria A
Conducted Immunity	• EN61000-4-6, 10 V rms Perf Criteria A
Dips & Interruptions	• EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms, Perf Criteria A, B, B
Safety Approvals	• CB Report, IEC60950-1, CSA22.2 No. 60950-1-05, UL60950-1, TUV EN60950-1/A11

Models and Ratings

Output Voltage V1	Max Output Current V1	Fan Output V2 ⁽²⁾	Standby Supply V3	Max Power 13 CFM Airflow	Model Number ⁽¹⁾
12 VDC	29.0 A	12 V/1 A	5 V/0.3 A	361 W	MFA350PS12†^
24 VDC	14.5 A	12 V/1 A	5 V/0.3 A	361 W	MFA350PS24†^
48 VDC	7.3 A	12 V/1 A	5 V/0.3 A	364 W	MFA350PS48†^

Notes

1. Units supplied with Molex connections for J1 & J2 as standard. Add suffix '-S' to model number to replace with screw terminals. Add suffix '-TF' for covered version with top fan and suffix '-EF' for covered version with end fan. Example:- MFA350PS12-STF, 12 V unit fitted with screw terminals and top fan.

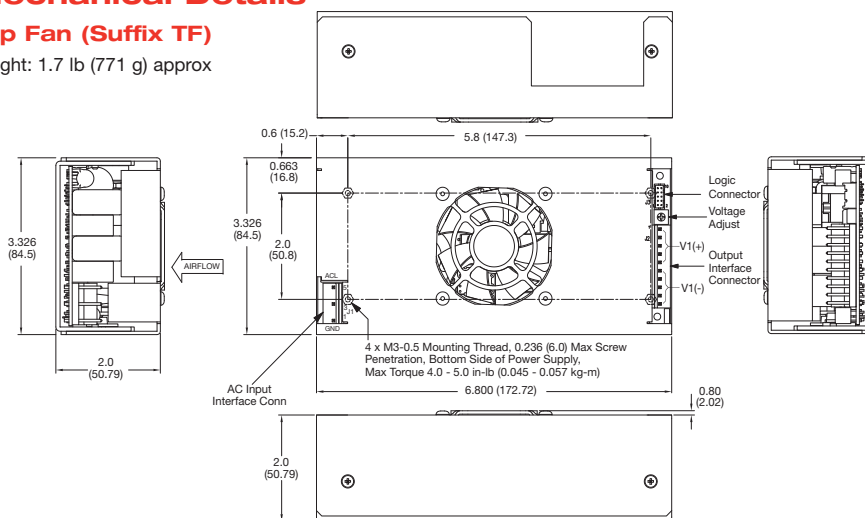
2. Not available for -TF & -EF versions.

† Available from Farnell. See pages 266-269. ^ Available from Newark. See pages 270-272.

Mechanical Details

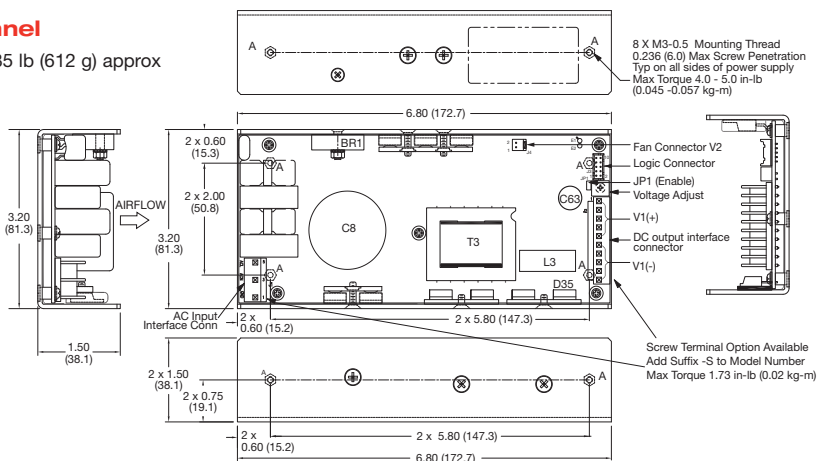
Top Fan (Suffix TF)

Weight: 1.7 lb (771 g) approx



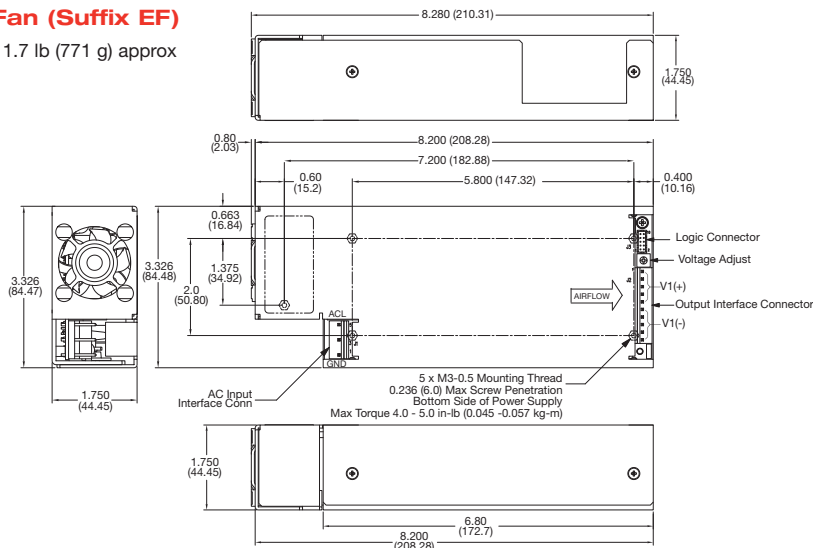
U Channel

Weight: 1.35 lb (612 g) approx



End Fan (Suffix EF)

Weight: 1.7 lb (771 g) approx



**PIN CONNECTIONS AC INPUT
J1 Molex 26-60-4050**

PIN	FUNCTION
1	GND
3	Neutral
5	Line

Mating Parts: Molex, Housing 43061-0005
Contact 08-70-1030,
Option '-S' screw terminals
Phoenix Contact: MKDS 1/5-3.81 or similar
accepts 26-16 AWG wire (contacts 2 & 4 removed)
Max Torque 1.73 in-lb (0.02 kg-m)

**PIN CONNECTIONS DC OUTPUT
J2 Molex 26-60-4100**

PIN	FUNCTION	PIN	FUNCTION
1	+V1	6	-V1
2	+V1	7	-V1
3	+V1	8	-V1
4	+V1	9	-V1
5	+V1	10	-V1

Mating Parts: Molex, Housing 43061-0010
Contact 08-70-1030,
Option '-S' screw terminals
2 x Phoenix Contact: MKDS 1/5-3.81 or similar
accepts 26-16 AWG wire
Max Torque 1.73 in-lb (0.02 kg-m)

**PIN CONNECTIONS FAN OUTPUT
J4 Molex 22-04-1021**

PIN	FUNCTION
1	+V2
2	-V2

Mating Parts: Molex, Housing 22-01-1024
Contact 08-70-0057

**PIN CONNECTIONS LOGIC CONNECTOR
J3 JST B10B-PHDSS (LF) (SN)**

PIN	FUNCTION	PIN	FUNCTION
1	AC OK	6	+Sense
2	ROF (Inhibit/Enable)	7	-Sense
3	Current Share	8	Not Used
4	DC OK	9	5 V Standby V3
5	Not used	10	5 V Standby Return V3

Mating Parts: JST, Housing PHDR-10VS
Contact SPHD-001T-P0.5

Notes

1. All dimensions in inches (mm).
2. Tolerance: .xx=±0.02 (±0.50); .xxx=±0.01 (±0.25)



Models and Ratings

Output Voltage V1	Maximum Output Current	Standby Supply V3	Max Power	Model Number
12.0 VDC	29.0 A	5 V/0.3 A	350 W	MFA350PS12-H
24.0 VDC	14.5 A	5 V/0.3 A	350 W	MFA350PS24-H
48.0 VDC	7.3 A	5 V/0.3 A	352 W	MFA350PS48-H

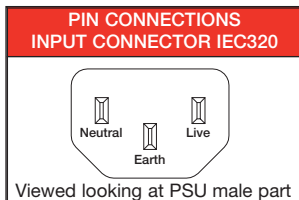
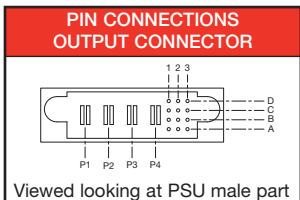
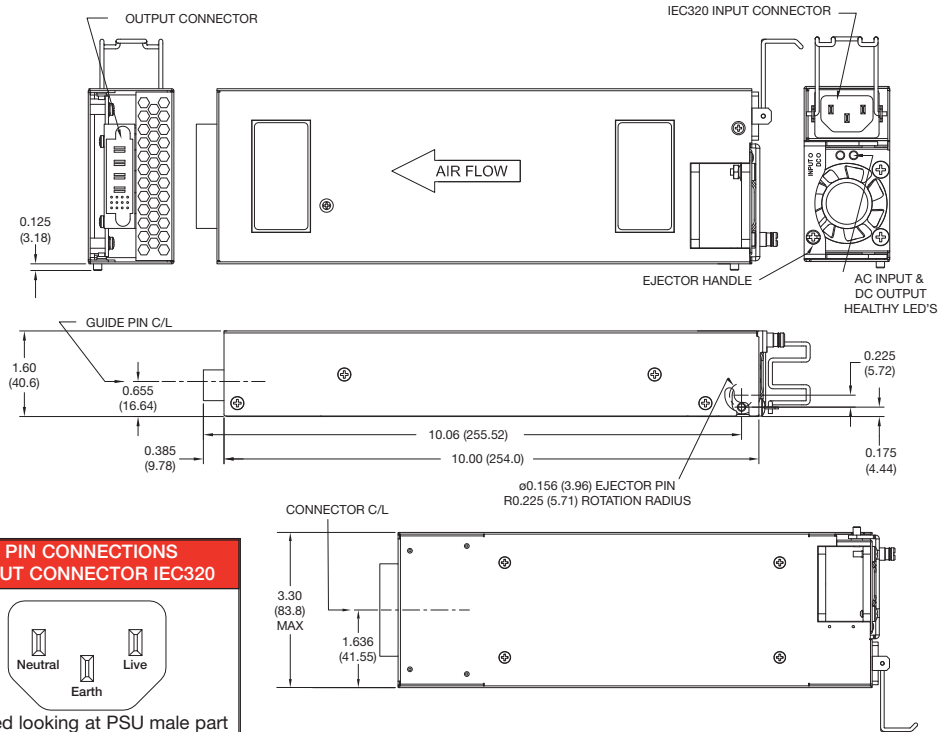
Mechanical Details

-H Hotswap

Weight: 2.65 lb (1202 g) approx

Pin Connections

PIN CON. OUTPUT CON. FCI 51732-035-LF	
A1	+Sense
A2	Not Used
A3	DC OK
B1	-Sense
B2	Not Used
B3	AC OK
C1	Current Share
C2	Not Used
C3	5 V Standby V3
D1	Not Used
D2	ROF (Inhibit/Enable)
D3	5 V Standby Return V3
P1	-V1
P2	-V1
P3	+V1
P4	+V1



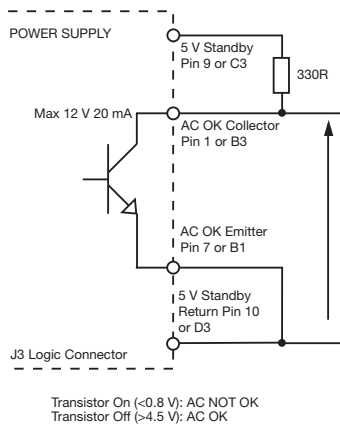
Notes

1. All dimensions in inches (mm).
2. Tolerance: .xx=±0.02 (±0.50); .xxx=±0.01 (±0.25)

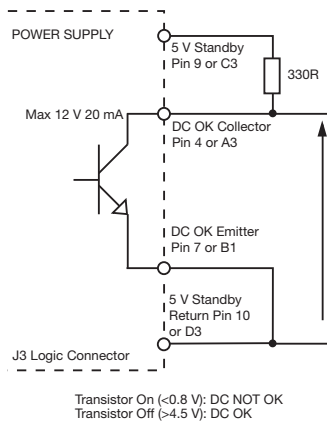
Mating parts: FCI 51762-10401200AA-LF

Signals MFA350 & MFA350-H

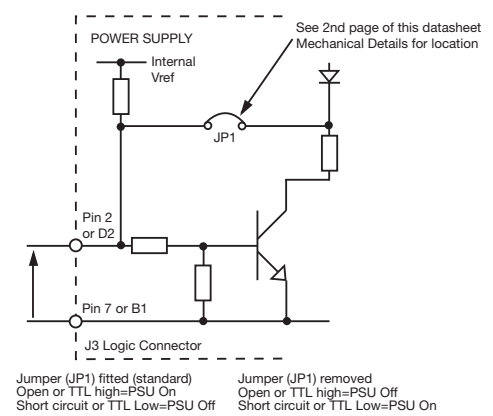
AC OK/Power Fail



DC OK



Remote On/Off (Inhibit/Enable)



Thermal Considerations (U Channel)

In order to ensure safe operation of the PSU in the end-use equipment, the temperature of the components listed in the table below must not be exceeded. See mechanical details for component locations. The temperature should be monitored using K type thermocouples placed on the hottest part of the component (out of any direct air flow). See longform datasheet for further information of service life.

MFA Temperature Measurements (Ambient ≤50 °C)	
Component	Max Temperature °C
T3	90 °C
BR1	105 °C
D35	85 °C
L3	90 °C
C8	105 °C
C63	105 °C

DFA Temperature Measurements (Ambient ≤50 °C)	
Component	Max Temperature °C
L1	90 °C
Q1	105 °C
HS1	85 °C
C25	75 °C
Q2	105 °C



Models and Ratings



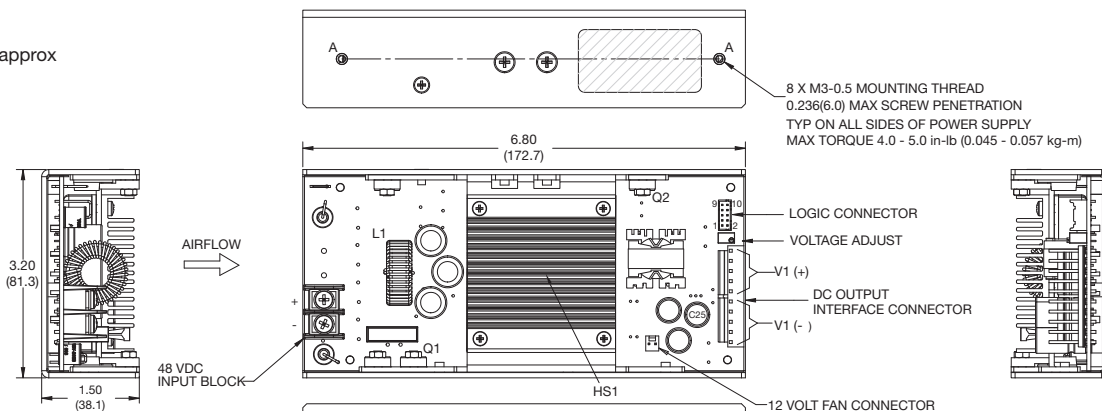
Input Voltage	Input Current	UVLO	Output Voltage V1	Max Output Current V1	Fan Output V2	Standby Supply V3	Max Power 20 CFM Airflow	Model Number
48 VDC (36-75 VDC)	9.2 A typical 12.5 A max	32-36 VDC	12 VDC	29.0 A	12 V/1 A	5 V/1 A	365 W	DFA35048S12
			24 VDC	14.5 A	12 V/1 A	5 V/1 A	365 W	DFA35048S24
			12.0 VDC	29.0 A		5 V/1 A	365 W	DFA35048S12-H
			24.0 VDC	14.5 A		5 V/1 A	365 W	DFA35048S24-H

For all models the input reverse voltage protection is continuous with automatic recovery

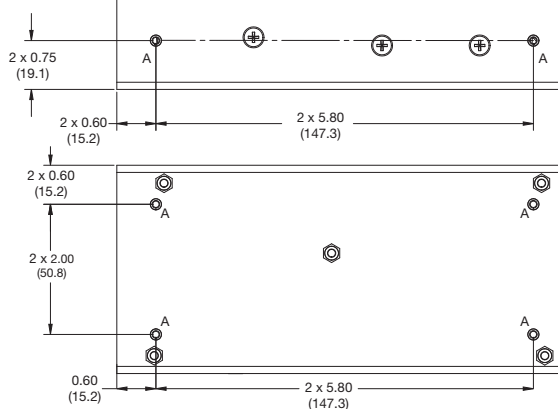
Mechanical Details

U Channel

Weight: 1.2 lb (544 g) approx



Logic Connector	
Pin	Function
1	DC IN OK
2	Inhibit / Enable
3	Not used
4	DC OK
5	Not used
6	+Sense
7	-Sense
8	Not used
9	5 V Standby
10	5 V Standby Return



Logic Connector: JST PN B10B-PHDSS(LF)(SN)
Mating Plug: JST PN PHDR-10VS
Contact, 26-22 AWG: JST PN SPHD-001T-P0.5

Notes

1. All dimensions in inches (mm).
2. Tolerance: .xx±0.02 (±0.50); .xxx±0.01 (±0.25)

-H Hotswap

Weight: 2.5 lbs (1133 g) approx

