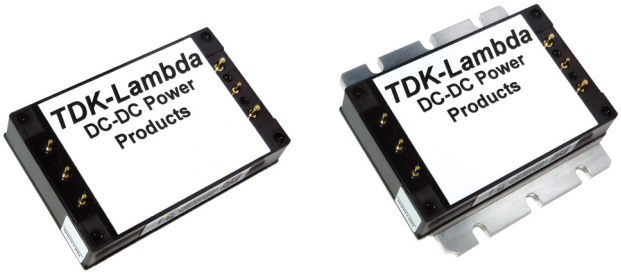
MIL-COTS 20A, 40Vdc Passive EMC Filters

https://product.tdk.com/en/power/fqa
www.emea.lambda.tdk.com/fqa



COTS

The FQA filter modules have been designed to reduce differential and common mode conducted emissions from dc-dc switching converters. The series takes advantage of TDK technologies to simplify system level compliance to MILSTD-461. The encapsulated rugged package design and a choice of baseplate options make the FQA modules suitable for use in a wide variety of harsh and demanding environments, including MIL-COTS.

Features	Benefits
• Filtering for Compliance to MIL-STD-461G	• Simplifies the system EMC filter
• Input Spike suppression per MIL-STD-1275D and RTCA/DO-160G	• Suitable for vehicle and airborne use
• High Differential and Common Mode Noise Attenuation	• Reduces system EMI
• -55 to 115°C Temperature Range (M-Grade)	• For operation in harsh environments
• Standard (S-Grade) or Enhanced Screening (M-Grade) Options	• Reduces cost for COTS applications
• Quarter Brick Size	• Industry standard mounting and heatsinks

Model Selector

Model	Input Voltage (Vdc)	Maximum Current (A)	Flanged Baseplate	Non-Flanged Baseplate	Standard Screening (-S)	Enhanced Screening (-M)
FQA020ADC-007-S	-40 to +40	20	X		X	
FQA020ADC-N07-S	-40 to +40	20		X	X	
FQA020ADC-007-M	-40 to +40	20	X			X
FQA020ADC-N07-M	-40 to +40	20		X		X

Screening Options

Operation	S-Grade (Standard Screening)	M-Grade (Enhanced Screening)
Functional Test	Room and Hot Test	Cold, Room, and Hot Test
Burn in	Yes	Extended, 96 hour
Temperature Cycling	No	10 Cycles
Hi-Pot	2250VDC	2250VDC
Visual Inspection	Yes	Yes

Evaluation Kit

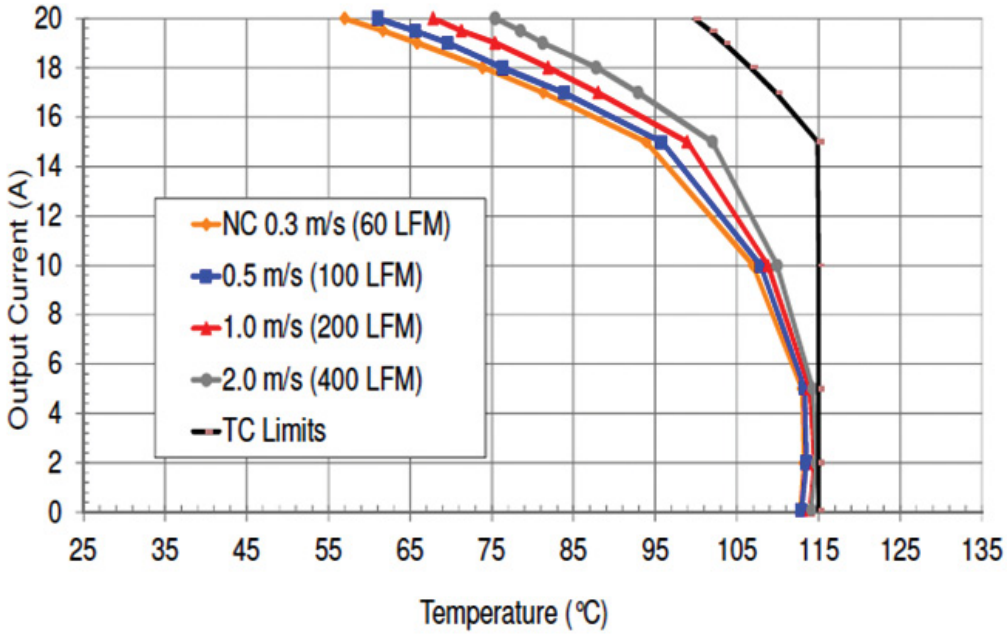
Type	Part Number	Description
Evaluation Kit	FQX-HQA-EVK-D0	Evaluation board for FQA or FQB filter plus two (2) HQA DC-DC quarter brick modules. Fitler and DC-DC modules are not included.

Specifications

Model		FQA		
Input/Output				
Input Voltage Range	Vdc	-40 to +40		
Input Current (max)	A	20		
DC Resistance (typical)	mΩ	Positive Leg: 7.5, Negative Leg: 5		
Power Loss	W	5 @ 20 A		
Differential Mode Attenuation at 300 kHz	dB	50 (50 Ω source & load impedance)		
Common Mode Attenuation at 30 MHz	dB	50 (50 Ω source & load impedance)		
Qualification Methods	-	Consistent with MIL-STD-883F and MIL-STD-202G		
Compliance Matrix (Tested with FQX-HQA-EVK-D0 evaluation board: FQA filter + 2X HQA DC-DC Converter, 200W resistive load)		Radiated Emmisions	RE101	Navy
		Radiated Emmisions	RE102	10kHz to 18GHz Fixed Wing internal, >25m Nose to Tail
		Conducted Emissions	CE101	Surface ships and submarines
		Conducted Emissions	CE102	Basic Curve
		Conducted Susceptibility	CS101	Curve 2, Imax=10A
		Conducted Susceptibility	CS114	Curve 5
		Conducted Susceptibility	CS115	Basic Test Signal
		Conducted Susceptibility	CS116	10kHz to 100MHz
Safety Agency Certifications	-	IEC/UL/CSA/EN62368-1, 60950-1, CE Mark		
Environmental				
Operating Baseplate Temperature	°C	Standard screening (-S): -40 to 115; Enhanced screening (-M): -55 to 115		
Storage Temperature	°C	-65 to 125		
Operating Humidity (non condensing)	%RH	MIL-STD-883 Method 1004.7		
Cooling	-	Conduction, convection or forced air		
Withstand Voltage (1 minute)	Vdc	2250 (Terminals to Case)		
Vibration	-	MIL-STD-202G, Method 201A, Unpowered, sweep 1: 5 to 50 Hz at 05.g, sweep 2: 50 to 500 Hz at 1.5g, three axis		
Shock	-	MIL-STD-202G, Method 213B, Table 213-1, Test Condition I, Unpowered, 50G half sine 6ms, three axis		
Other				
Weight (Typ)	g	100		
Size (LxWxH)	mm	Flanged version (-007-x): 60.6 x 55.9 x 12.7, Non-flanged version (-N07-x): 60.6 x 39.5 x 12.7		
Size (LxWxH)	Inches	Flanged version (-007-x): 2.39 x 2.20 x 0.50, Non-flanged version (-N07-x): 2.39 x 1.56 x 0.50		
MTBF - Telcordia SR-332	Hrs	15 M @ 50 °C ambient; full load		
Warranty	yrs	3		

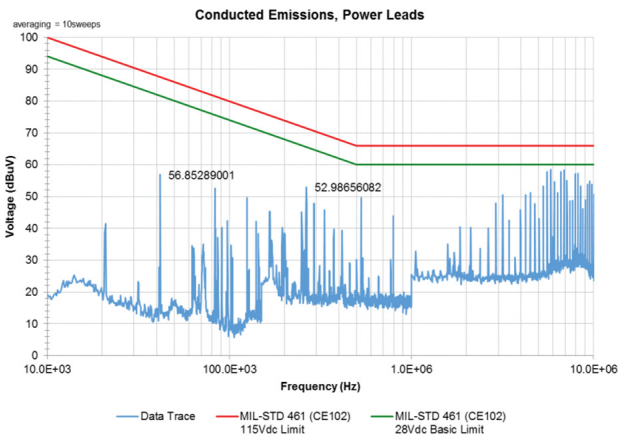
Notes
See website for detailed specifications
1. See thermal performance section

Thermal Performance

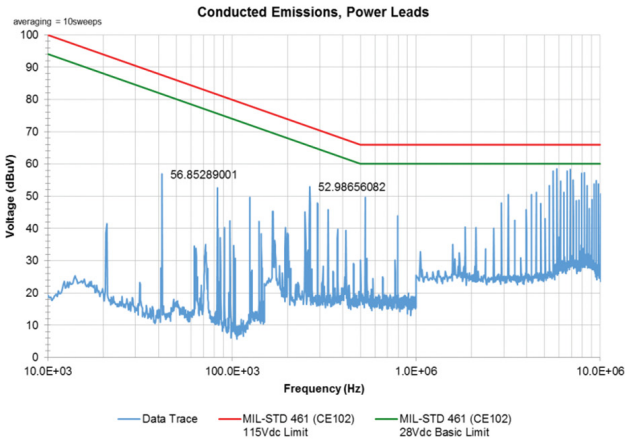


Maxmum output current vs. ambient temperature at nominal input voltage for natural convection (60 LFM) to 400 LFM with airflow from pin 1 to pin 3.

Attenuation Characteristics



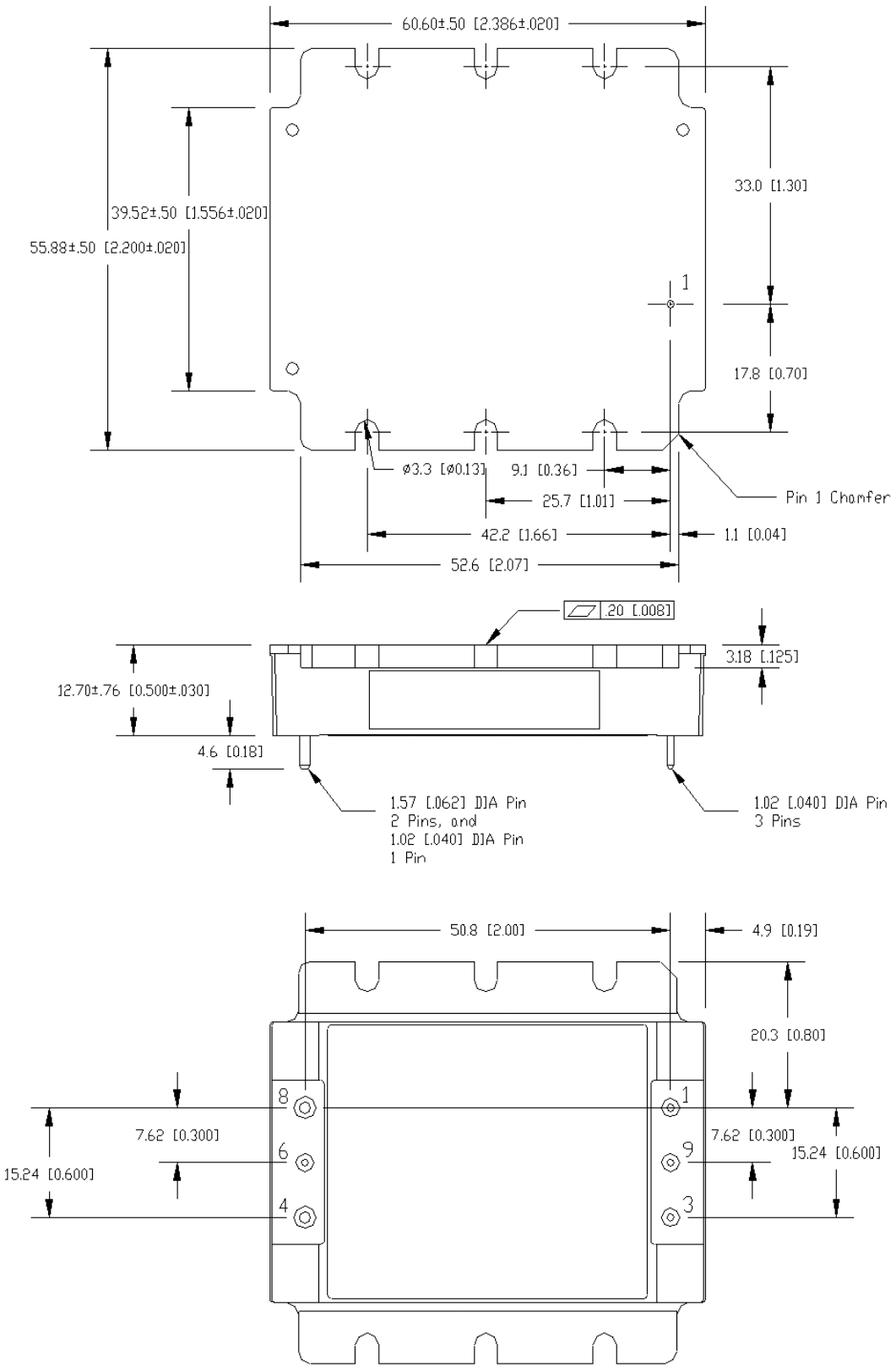
HQA2W120W280V-007-S typical conducted emissions with FQA filter module and 0.01uF common mode capacitors.



HQA2W120W120V-007-S typical conducted emissions with FQA filter module and 0.01uF common mode capacitors.

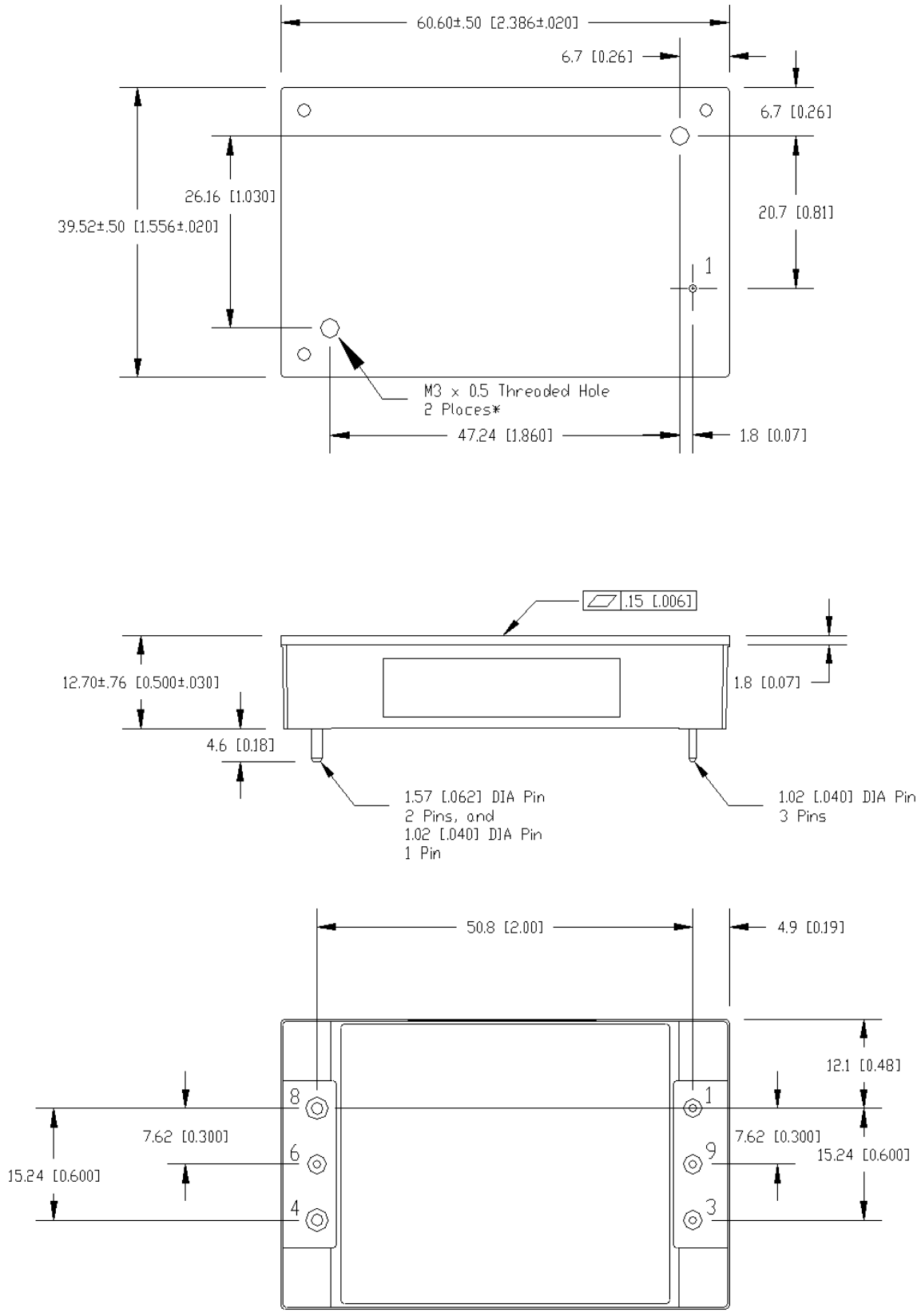
Outline Drawing

007 option (flange baseplate)



Outline Drawing

N07 option (non flange baseplate)



Pinout

PIN	Function
1	VIN (+)
2	Not populated
3	VIN (-)
4	VOUT (-)
5	Not populated
6	Common mode out*
7	Not populated
8	VOUT (+)
9	Common mode in*

* In a typical application pin 6 would be connected to the Vout-/ground plane and pin 9 to chassis/ground for EMI measurement

Pin base material is Tellurium Copper with gold over nickel plating.

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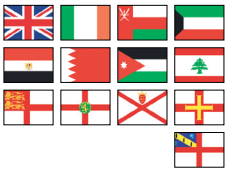

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For Additional Information, please visit
https://product.tdk.com/en/power/