

2 Watts

- Single and Dual output
- SIP and DIP package (on request)
- Remote on/off option
- Up to 3KV Isolation
- -40 to +85°C Operation
- Traco TMR equivalent pin out option for dual outputs
- 3 year warranty



The FH series of low cost DC/DC converters come in both single and dual outputs in either a SIP 8 pin or DIP 16 pin package. Inputs are available in 5, 12, 24 & 48V versions and outputs from 3.3 to 24V single and dual. The units operate from -40 to +85°C. Traco TMR equivalent option. All models have a FIDUS 3 year warranty.

Dimensions:

SIP: 0.86 x 0.36 x 0.44" (21.85 x 9.2 x 11.10mm)
DIP: 0.92 x 0.55 x 0.40" (23.4 x 14.0 x 10.16mm)

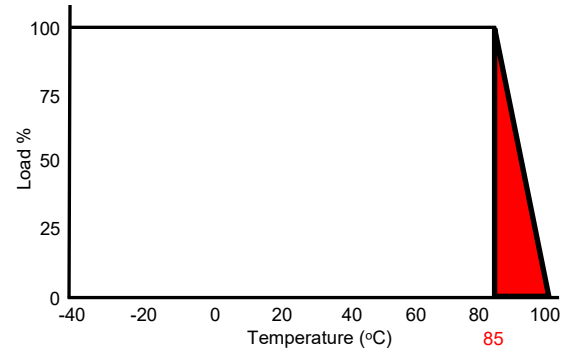
Models & Ratings

Model Number ⁽¹⁾⁽²⁾⁽³⁾⁽⁴⁾	Input Voltage	Output Voltage	Output Current		Input Current		Maximum Capacitive Load	Efficiency
			Min. Load	Full Load	No Load	Full Load		
FH0503S	4.5-9V	3.3V	125mA	500mA	15mA	492mA	3300uF	67%
FH0505S		5V	100mA	400mA	15mA	571mA	3300uF	70%
FH0509S		9V	56mA	222mA	30mA	555mA	470uF	72%
FH0512S		12V	42mA	167mA	30mA	555mA	470uF	72%
FH0515S		15V	33mA	133mA	30mA	547mA	470uF	73%
FH0524S		24V	21mA	83mA	60mA	533mA	220uF	75%
FH0503SD		±3.3V	±63mA	±250mA	20mA	471mA	±1000uF	70%
FH0505SD		±5V	±50mA	±200mA	20mA	571mA	±1000uF	70%
FH0509SD		±9V	±28mA	±111mA	20mA	540mA	±220uF	74%
FH0512SD		±12V	±21mA	±83mA	25mA	533mA	±220uF	75%
FH0515SD		±15V	±17mA	±67mA	25mA	533mA	±220uF	75%
FH0524SD		±24V	±10mA	±42mA	60mA	563mA	±100uF	71%
FH1203S		9-18V	3.3V	125mA	500mA	15mA	205mA	3300uF
FH1205S	5V		100mA	400mA	15mA	216mA	3300uF	77%
FH1209S	9V		56mA	222mA	15mA	213mA	470uF	78%
FH1212S	12V		42mA	167mA	15mA	208mA	470uF	80%
FH1215S	15V		33mA	133mA	15mA	213mA	470uF	78%
FH1224S	24V		21mA	83mA	15mA	208mA	220uF	80%
FH1203SD	±3.3V		±63mA	±250mA	15mA	188mA	±1000uF	73%
FH1205SD	±5V		±50mA	±200mA	15mA	222mA	±1000uF	75%
FH1209SD	±9V		±28mA	±111mA	15mA	210mA	±220uF	79%
FH1212SD	±12V		±21mA	±83mA	15mA	208mA	±220uF	80%
FH1215SD	±15V		±17mA	±67mA	15mA	210mA	±220uF	79%
FH1224SD	±24V		±10mA	±42mA	30mA	219mA	±100uF	76%
FH2403S	18-36V		3.3V	125mA	500mA	8mA	98mA	3300uF
FH2405S		5V	100mA	400mA	8mA	108mA	3300uF	77%
FH2409S		9V	56mA	222mA	8mA	104mA	470uF	80%
FH2412S		12V	42mA	167mA	8mA	104mA	470uF	80%
FH2415S		15V	33mA	133mA	8mA	104mA	470uF	80%
FH2424S		24V	21mA	83mA	8mA	104mA	220uF	80%
FH2403SD		±3.3V	±63mA	±250mA	8mA	94mA	±1000uF	73%
FH2405SD		±5V	±50mA	±200mA	8mA	106mA	±1000uF	78%
FH2409SD		±9V	±28mA	±111mA	8mA	105mA	±220uF	79%
FH2412SD		±12V	±21mA	±83mA	8mA	104mA	±220uF	80%
FH2415SD		±15V	±17mA	±67mA	8mA	104mA	±220uF	80%
FH2424SD		±24V	±10mA	±42mA	20mA	106mA	±100uF	78%
FH4803S		36-72V	3.3V	125mA	500mA	6mA	48mA	3300uF
FH4805S	5V		100mA	400mA	6mA	56mA	3300uF	74%
FH4809S	9V		56mA	222mA	6mA	53mA	470uF	78%
FH4812S	12V		42mA	167mA	6mA	53mA	470uF	78%
FH4815S	15V		33mA	133mA	6mA	53mA	470uF	78%
FH4824S	24V		21mA	83mA	6mA	52mA	220uF	80%
FH4803SD	±3.3V		±63mA	±250mA	6mA	47mA	±1000uF	73%
FH4805SD	±5V		±50mA	±200mA	6mA	56mA	±1000uF	74%
FH4809SD	±9V		±28mA	±111mA	6mA	53mA	±220uF	79%
FH4812SD	±12V		±21mA	±83mA	6mA	53mA	±220uF	79%
FH4815SD	±15V		±17mA	±67mA	6mA	52mA	±220uF	80%
FH4824SD	±24V		±10mA	±42mA	12mA	55mA	±100uF	75%

Notes

1. For DIP package change 'S' for 'D'.DIP details on request.
2. Add 'H' to model number for 3000VDC isolation.
3. Remote on/off option available. Add 'C' to part number
4. Dual outputs power-trade
5. Under no load conditions the unit may not meet all specifications—see minimum load in table
6. Do not operate continuously in the red area of derating curve
7. To match Traco Power's TMR add 'T' to dual output models

Derating curve



Input	
Parameter	Rating
Input voltage range	See ratings table
Input reflected ripple current	35mA pk-pk through 12uH inductor
Input current no load/ full load	See ratings table
Input surge (100mS max)	5V Models 12VDC Max. 12V Models 24VDC Max. 24V Models 40VDC Max. 48V Models 80VDC Max.

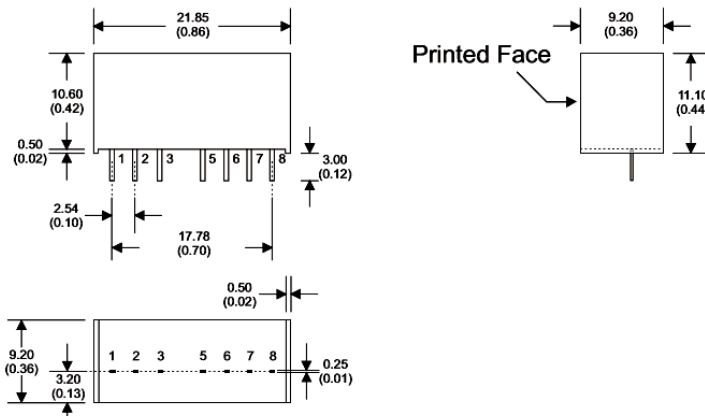
Output	
Parameter	Rating
Output voltage	See model ratings table
Line regulation	±0.5% max.
Load regulation	±1% (25 - 100% load change)
Set point accuracy	±2%
Minimum load	See ratings table
Ripple & noise	80mV pk-pk. 20MHz bandwidth
Maximum capacitive load	See ratings table

General	
Parameter	Rating
Efficiency	See model ratings table
Isolation voltage	1000VDC. Optional to 3000VDC
Isolation resistance	1000M Ohm
Isolation capacitance	60pF typical
Switching frequency	Variable. 100-650KHz typical
MTBF	>1.61 Mhrs
Soldering temperature	260°C

Environmental	
Parameter	Rating
Operating temperature	-40 - 85°C (See derating curve)
Storage temperature	-40 - 125°C
Case temperature	100°C
Cooling	Convection
Humidity	95% RH non-condensing

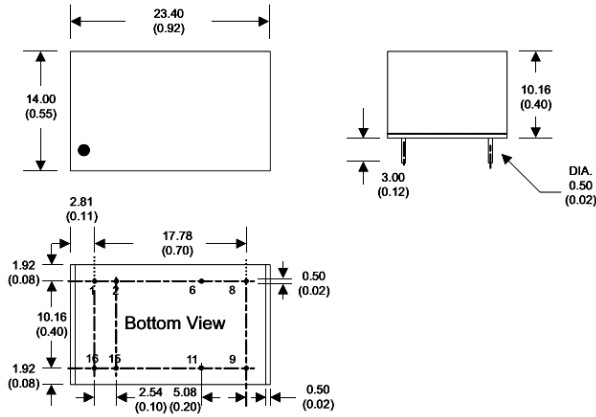
Physical	
Parameter	Rating
Case material	Non-conductive black plastic (UL94V-0)
Pin material	SIP Case Alloy42 solder coated. DIP Case 0.5mm Brass solder coated.
Potting material	Epoxy (UL94V-0)
Weight	Plastic 4.5g (SIP) - 6g (DIP) Metal 6.5g (SIP) - 8g (DIP)
Dimensions	SIP 0.86 x 0.36x 0.44" DIP 0.92 x 0.55x 0.40"

Mechanical Details



SIP Pin Connections (Optional remote on/off)			
Pin	Single	Dual	Dual 'T'
1	-Vin	-Vin	-Vin
2	+Vin	+Vin	+Vin
3	Remote on/off	Remote on/off	Remote on/off
5	N.C.	N.C.	N.C.
6	+Vout	+Vout	+Vout
7	-Vout	-Vout	0V
8	N.C.	0V	-Vout

SIP Pin Connections			
Pin	Single	Dual	Dual 'T'
1	-Vin	-Vin	-Vin
2	+Vin	+Vin	+Vin
3	N.P.	N.C.	N.C.
5	N.P.	N.C.	N.C.
6	+Vout	+Vout	+Vout
7	-Vout	-Vout	0V
8	N.C.	0V	-Vout



DIP Pin Connections		
Pin	Single	Dual
1	-Vin	-Vin
2	-Vin	-Vin
6	N.C	0V
8	N.C	-Vout
9	+Vout	+Vout
11	-Vout	0V
15	+Vin	+Vin
16	+Vin	+Vin

Dimension notes

- All dimensions shown in millimetres (inches)
- Pin diameter 0.5 ± 0.05 (0.02 ± 0.002)
- Case tolerance ± 0.5 (± 0.002)

EMC Filter

The following EMC filter may be used to assist in conducted EMC compliance. Please place the components as closely as possible to the FH DC-DC converter:

$C1 = 100\mu\text{f} / 100\text{V}$ and $L = 12\mu\text{H}$

