

# 400/600 Watts

## MCC Series



- Baseplate-cooled
- Up to 4 Regulated Outputs
- Optional 200 W Conditioned Output
- MIL-STD 1275 and DEF-STAN 61-5
- MIL-STD 461 and DEF-STAN 59-411
- Rugged Construction to MIL-STD 810F
- 3 Year Warranty

### Specification

#### Input

Input Voltage Range	• 18.5-34 VDC steady state
Input Current	• 27 A at 18.5 V max
Inrush Current	• <60 A
Input Reverse Voltage Protection	• Continuous
Input Transient	• MIL-STD-1275A/B/C/D
Undervoltage Lockout	• $V_{in} < 18$ VDC

#### Output

Output Voltage	• O/P 1-4: regulated outputs 2-48 VDC
Output Voltage Adjustment	• O/P 1-4: 10-110% factory set A minimum load of 10% is required for outputs below 90% of nominal voltage
Optional Aux. Output Rail Voltage	• $V_{in} - 2$ VDC <sup>(1)</sup>
Optional Aux. Output Power	• 200 W for MCC600 (9 A max)
Maximum Aux. Output	• $V_{out}$ clamped <36 VDC
Minimum Load	• No minimum load (output ripple increased at $P_{out} < 10\%$ $P_{out}$ max)
Line Regulation	• 1% max
Load Regulation	• 1% max
Cross Regulation	• Outputs 1-4 individually regulated, no cross regulation
Output Set Tolerance	• $\pm 100$ mV
External Hold Up	• External connection for additional hold up capacitance, see longform datasheet
Ripple & Noise	• 50 mV or 1% pk-pk, whichever is the greater, 20 MHz bandwidth
Low Noise (Option 'Q')	• Outputs 1 & 2: 25 mV reduction Outputs 3 & 4: 45 mV reduction
Temperature Coefficient	• $\pm 0.05\%/^{\circ}\text{C}$
Overvoltage Protection	• 110-120% of nominal output, recycle input to restart
Overcurrent Protection	• 110-120% of nominal output, auto recovery
Short Circuit Protection	• Continuous, with auto restart
Overtemperature Protection	• $> +90^{\circ}\text{C}$ baseplate temperature, auto restart
Remote Sense	• Outputs 1 & 2, Compensate for 0.5 V total voltage drop

#### General

Efficiency	• 75% typical
Isolation Voltage	• 500 VDC Input to Output, 500 VDC Output to Chassis, 500 VDC Input to Chassis
Material and Finish	• Aluminium baseplate and safety cover
Input Inhibit	• Global enable and disable function, short to negative input to inhibit
Output Inhibit	• Each regulated output has independent inhibit, TTL high to inhibit
Inhibited Input Current	• <5 mA when input inhibit function is used
DC OK Signal	• Optional on output voltages $\geq 5$ VDC Isolated opto-coupler transistor output
MTBF	• 517 kHrs to MIL-HDBK-217F at $40^{\circ}\text{C}$ , GB

#### Environmental

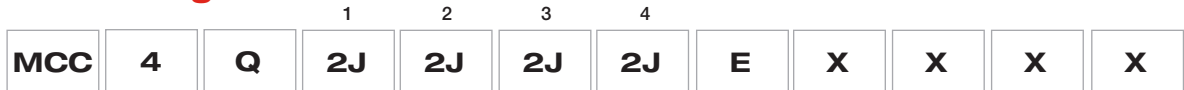
Operating Temperature	• $-40^{\circ}\text{C}$ to $+70^{\circ}\text{C}$ ambient with baseplate temperature within $-40^{\circ}\text{C}$ to $+90^{\circ}\text{C}$
Extended Temperature	• $-55^{\circ}\text{C}$ to $+90^{\circ}\text{C}$ baseplate temperature, (see note 4)
Cooling	• Baseplate-cooled. It is recommended that a thermal pad or compound is fitted between the MCC baseplate and any heatsink
Operating Humidity	• 20-95% non-condensing
Storage Temperature	• $-55^{\circ}\text{C}$ to $+90^{\circ}\text{C}$
Storage Humidity	• 20-95% non-condensing
Shock	• 40 g MIL-STD-810F, method 516.5-1
Vibration	• MIL-STD-810F, method 514.5C-17 minimum integrity test for military equipment

#### EMC

Emissions	• EN55022 Level B conducted MIL-STD-461E/F army ground use CE101 & CE102 DEF-STAN 59-411, DCE01/DCE02
Conducted Immunity	• MIL-STD-1275A/B/C/D, MIL-STD-461E/F CS101, CS114, CS115, CS116 DEF-STAN 61-5 part 6 issue 5

<sup>(1)</sup>  $V_{in} - 2$  VDC minimum 36 VDC (clamped) maximum

**Model Number & Ratings**



Chassis Designations, Power & Sizes		
Code	Power	Slots
MCC4	400 W	4
MCC6	400 W + 200 W Aux	4

Modules Output Voltage / Current Rating					
V	I	W	Slots	Code	
3.3	22.7 A	75 W	1	2C	
3.3	45.4 A	150 W	2	3C	
3.3	80.0 A	264 W	4	4C <sup>(2)</sup>	
5	20.0 A	100 W	1	2D	
5	40.0 A	200 W	2	3D	
5	80.0 A	400 W	4	4D <sup>(2)</sup>	
12	8.3 A	100 W	1	2J	
12	16.6 A	200 W	2	3J	
12	33.3 A	400 W	4	4J <sup>(2)</sup>	
15	6.6 A	100 W	1	2L	
15	13.3 A	200 W	2	3L	
15	26.7 A	400 W	4	4L <sup>(2)</sup>	
24	4.1 A	100 W	1	2P	
24	8.3 A	200 W	2	3P	
24	16.7 A	400 W	4	4P <sup>(2)</sup>	
28	3.5 A	100 W	1	2Q	
28	7.1 A	200 W	2	3Q	
28	14.3 A	400 W	4	4Q <sup>(2)</sup>	
36	2.78 A	100 W	1	2T	
36	5.56 A	200 W	2	3T	
36	11.11 A	400 W	4	4T	
48	2.1 A	100 W	1	2W	
48	4.1 A	200 W	2	3W	
48	8.3 A	400 W	4	4W <sup>(2)</sup>	

MCC400/600:  
Single (S), Dual (D), Triple (T) or Quad (Q)  
(4 slots max where all slots must be filled)

D - DC OK, leave blank if not required  
L - Low noise output  
Q - Passive filtering only<sup>(4)</sup>  
P - Conformal coating

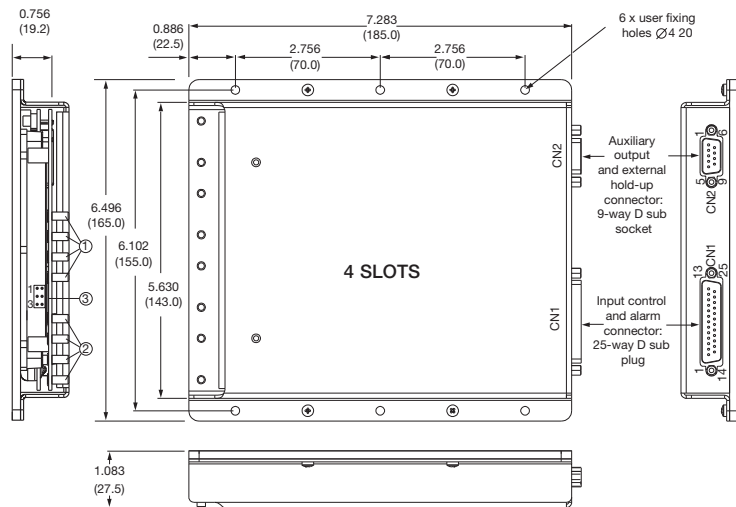
S - Standard  
E - Screening option<sup>(3)</sup>  
A - Auxiliary Turn Off<sup>(3)</sup>

**Notes**

1. Modules 1 to 4 available for MCC400/600 e.g. MCC4Q2D2J2L2PED.
2. 4 series output modules to be used with single MCC400/600 models only.
3. DC-DC output modules are stress-screened for -55 °C to +90 °C operation.
4. Low cost option with passive EMI filtering only. No auxiliary output, EMI to EN55022 level B only.
5. Global inhibit will also turn off the auxiliary output - Option A.

**Mechanical Details**

**MCC400-600**



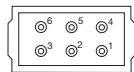
MCC400-600: Signals Connector			
Pin	Function	Pin	Function
1	Disable	4	DC OK RTN
2	+sense	5	Disable RTN
3	-sense	6	DC OK

MCC400-600: CN1 25-Pin Input Connector			
Pin	Function	Pin	Function
1	DC OK	14	DC OK RTN
2	Global Inhibit	15	Global Inhibit RTN
3	N/C	16	Negative Input
4	Negative Input	17	Negative Input
5	Negative Input	18	Negative Input
6	Negative Input	19	Negative Input
7	Negative Input	20	Negative Input
8	Negative Input	21	Positive Input
9	Positive Input	22	Positive Input
10	Positive Input	23	Positive Input
11	Positive Input	24	Positive Input
12	Positive Input	25	Positive Input
13	Positive Input		

MCC400-600: CN2 9-Pin Aux Output Connector			
Pin	Function	Pin	Function
1	External Holdup Positive	6	External Holdup Negative
2	External Holdup Positive	7	External Holdup Negative
3	N/C	8	Aux Output Negative
4	Aux Output Positive	9	Aux Output Negative
5	Aux Output Positive		

① ② = M4 output studs polarity marked on PCB silk screen. Output polarity varies for multiple outputs.

③ Signal Connector



Harwin 2mm Datamate Connector.  
Horizontal male latched, p/n: M80-8680642  
Mates with p/n: M80-8890605

**Notes**

1. All dimensions are in inches (mm).
2. Weight: MCC400/600: 2.31 lb (1.05kg) max.
3. Tolerance: ±0.008 in (±0.2 mm).
4. Max Torque: M4 studs 17.7 lbs-in (2.0 Nm)
5. For mating signal connector kit order part number MCC 6SIG CON KIT