

ANALOG OUTPUT RUBY-MM-4/8



12-BIT D/A, 4 OR 8 CHANNELS INCLUDES 24 DIGITAL I/O

SPECIFICATIONS

ANALOG OUTPUTS	
Number of outputs	4 or 8, voltage output
Resolution	12 bits (1 part in 4096)
Fixed output ranges	±10V, ±5V, 0-10V, 0-5V
Adjustable ranges	Preset to 2.5V for ±2.5V, 0-2.5V ranges Adjustment range 0-2.5V
External reference	0V min, 10V max
Settling time	6ms max to ±0.1%
Accuracy	±1LSB
Integral nonlinearity	±1LSB max
Differential nonlinearity	±1LSB max, guaranteed monotonic
Output current	±5mA max per channel
Minimum load	2K Ω
Update method	Simultaneous update
D/A reset voltage	0V for bipolar ranges, mid-scale for unipolar ranges
DIGITAL I/O	
Number of lines	24, CMOS / TTL compatible (82C55)
Input voltage	Logic 0: -0.5V min, 0.8V max Logic 1: 2.0V min, 5.5V max
Output voltage	Logic 0: 0.0V min, 0.4V max Logic 1: 3.0V min, Vcc - 0.4V max
Output current	±2.5mA max per line
Pull-up resistor	10KΩ on each I/O line
External trigger	Active high edge
GENERAL	
Power supply (Vcc)	+5VDC ±10%
Required current	RMM-4: 220mA typical, outputs open RMM-8: 290mA typical, outputs open
Operating temp.	-40 to +85°C
Size	3.55" x 3.775"
Data bus	8 bits
Weight	-4: 2.5oz / 71g -8: 2.7oz / 76g

Ruby-MM offers 4 or 8 full-featured analog outputs using quad 12-bit D/A converter chips. Each chip has its own user-configurable full-scale references, so each group of 4 channels can have its own output range (see table). The 2.5V range can be adjusted anywhere between 0V and 2.5V. Calibration circuitry is provided on board to ensure maximum accuracy of the analog outputs to ±1LSB. Analog output specifications include 6μs settling time and ±5mA max output current per channel.

The board contains an 82C55 chip to provide 3 8-bit digital I/O ports with programmable direction. Each digital I/O line has a 10KΩ pull-up resistor.



ANALOG OUTPUT RANGES	
OUTPUT RANGE	RESOLUTION (1 LSB)
0 - 10V	2.44mV
0 - 5V	1.22mV
0 - 2.5V	0.61mV
±10V	4.88mV
±5V	2.44mV
±2.5V	1.22mV

The output range can be configured independently for each group of 4 output channels.

- ◆ 12-bit D/A resolution (1/4096)
- ◆ 4 and 8 channel versions
- ◆ Unipolar and bipolar output ranges
- ◆ User-adjustable output range
- ◆ External reference input capability
- ◆ Simultaneous update of all channels
- ◆ 24 digital I/O lines (82C55)
- ◆ -40 to +85°C operating temperature
- ◆ FREE Universal Driver software included

ORDERING GUIDE

- RMM-4-XT** 4 12-bit D/A channels, 24 digital I/O
RMM-8-XT 8 12-bit D/A channels, 24 digital I/O
 For cables and accessories, see pages 46-47.

I / O HEADER		
ANALOG GND	1 2	VOUT 0
ANALOG GND	3 4	VOUT 1
ANALOG GND	5 6	VOUT 2
ANALOG GND	7 8	VOUT 3
ANALOG GND	9 10	VOUT 4
ANALOG GND	11 12	VOUT 5
ANALOG GND	13 14	VOUT 6
ANALOG GND	15 16	VOUT 7
EXTE REF A	17 18	EXT REF 8
ANALOG GND	19 20	+15V
-15V	21 22	ANALOG GND
DIGITAL GND	23 24	EXT TRIGGER
A7	25 26	A6
A5	27 28	A4
A3	29 30	A2
A1	31 32	A0
C7	33 34	C6
C5	35 36	C4
C3	37 38	C2
C1	39 40	C0
B7	41 42	B6
B5	43 44	B4
B3	45 46	B2
B1	47 48	B0
+5V	49 50	DIGITAL GND

