Institut de RadioAstronomie Millimétrique

VMIVME-3113A

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Keywords:

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Content

1   VMIVME-3113A 64-channel 12-bit ADC

1.1   Description:

The VMIVME-3113A is a 64-channel 12-bit analog input board with program-controlled built-in test. The board has many features, as AUTO-SCANNING Mode on power-up. In that mode, each channel is continuously scanned, digitized and stored in a dual port register.

1.2   Internal organization:

The board is divided into following blocks:
-VME interface.
-A-D converter.
-Analog input filters and multiplexers.
-Bus interrupter.
-Board ID register.

1.3   VME interface:

The registers are mapped as 128 contiguous words. The board may be configured to respond to short supervisory access or short non-privileged access or both.

1.4   ADC control and timing:

The contents of the CSR register define the operating mode:

CSR Control bits	D8	D7	D6
Auto scanning mode	**0**	**0**	**0**
Random Poll mode	0	0	1
Random Interrupt mode	0	1	0
Scanning Poll mode	0	1	1
Scanning Interrupt mode	1	0	0
Auto scanning mode with bit	1	1	1

1.4.1   Auto scanning mode:

This mode performs an automatic scan of **at least** 16 inputs. The amplifier gain **must** be set to a value of 1 in that mode.

1.5   Analog inputs:

64 differential or single-ended analog input channels are available from 2 front-panel connectors. The maximum common-mode voltage of the inputs must not exceed +/- 12 V from the VME ground.
Each input has a single-pole low-pass filter.
Differential or single-ended input is selected by the location of SIP resistors.
The gain value is selectable: 1, 10, 100, 200 and 500.With a gain value of 500, the GAIN DELAY bit of the CSR must be set.

1.6   Registers:

All addresses are relative to the Base Address:

Relative address(Hexa)	Register name
00	Board ID
02	CSR
04	CFR
06-0E	Reserved
10	ICR
12-16	Reserved
18	IVR
1A-1E	Reserved
20	TR0
22	TR1
24	TR2
26	TCR
28-2E	Reserved
30	RCDR
32-7E	Reserved
80	Channel 0
82-FC	Channels 1-62
FE	Channel 63

1.6.1   CSR:

D9(r/w): Software reset.
D12(r/w): When '0', data is encoded as offset binary, when "1" as 2's complement.
D14(r/w): When '0', Led FAIL will turn on.
D15(r/w): GAIN DELAY.

1.6.2   CFR:

The CFR **only** allows reading the options set with jumpers.
D0-D2: Gain, as set with jumper J6.
D3: "0" = +/- 5V inputs, 0/10V inputs.
    "1" = +/- 10V inputs.
D4: "0" = Unipolar inputs.
    "1" = Bipolar inputs.

1.7   Jumpers for board configuration:

J9: Base Address (jumper removed==address bit = 1

J9 1-2	A08
J9 3-4	A09
J9 5-6	A10
J9 7-8	A11
J9 9-10	A12
J9 11-12	A13
J9 13-14	A14
J9 15-16	A15

J9: Address Modifiers (when removing both, AM = 2D)

J9 17-18	29 + 2D
J9 19-20	29

J6: Gain value

GAIN VALUE	Jumper installed
1	None
10	J6 1-2
100	J6 3-4
200	J6 5-6
500	J6 7-8

J4: Input range

Jumper	Full scale range
J4 1-2	20 V
J4 3-4	10 V

J3: Input Polarity

Jumper	Polarity
J3 1-2	Bipolar
J3 3-4	Unipolar

1.8   Front-panel analog input connectors:

P4: Pin 1 is on the bottom of the connector!

PIN number	Row a	Row b	Row c
1	CH0+	AGND	CH0-
2	CH1+	AGND	CH1-
3	CH2+	AGND	CH2-
4	CH3+	AGND	CH3-
5	CH4+	AGND	CH4-
6	CH5+	AGND	CH5-
7	CH6+	AGND	CH6-
8	CH7+	AGND	CH7-
9	CH8+	AGND	CH8-
10	CH9+	AGND	CH9-
11	CH10+	AGND	CH10-
12	CH11+	AGND	CH11-
13	CH12+	AGND	CH12-
14	CH13+	AGND	CH13-
15	CH14+	AGND	CH14-
16	CH15+	AGND	CH15-
17	CH16+	AGND	CH16-
18	CH17+	AGND	CH17-
19	CH18+	AGND	CH18-
20	CH19+	AGND	CH19-
21	CH20+	AGND	CH20-
22	CH21+	AGND	CH21-
23	CH22+	AGND	CH22-
24	CH23+	AGND	CH23-
25	CH24+	AGND	CH24-
26	CH25+	AGND	CH25-
27	CH26+	AGND	CH26-
28	CH27+	AGND	CH27-
29	CH28+	AGND	CH28-
30	CH29+	AGND	CH29-
31	CH30+	AGND	CH30-
32	CH31+	AGND	CH31-

P3: Pin 1 is on the bottom of the connector!

PIN number	Row a	Row b	Row c
1	CH32+	AGND	CH32-
2	CH33+	AGND	CH33-
3	CH34+	AGND	CH34-
4	CH35+	AGND	CH35-
5	CH36+	AGND	CH36-
6	CH37+	AGND	CH37-
7	CH38+	AGND	CH38-
8	CH39+	AGND	CH39-
9	CH40+	AGND	CH40-
10	CH41+	AGND	CH41-
11	CH42+	AGND	CH42-
12	CH43+	AGND	CH43-
13	CH44+	AGND	CH44-
14	CH45+	AGND	CH45-
15	CH46+	AGND	CH46-
16	CH47+	AGND	CH47-
17	CH48+	AGND	CH48-
18	CH49+	AGND	CH49-
19	CH50+	AGND	CH50-
20	CH51+	AGND	CH51-
21	CH52+	AGND	CH52-
22	CH53+	AGND	CH53-
23	CH54+	AGND	CH54-
24	CH55+	AGND	CH55-
25	CH56+	AGND	CH56-
26	CH57+	AGND	CH57-
27	CH58+	AGND	CH58-
28	CH59+	AGND	CH59-
29	CH60+	AGND	CH60-
30	CH61+	AGND	CH61-
31	CH62+	AGND	CH62-
32	CH63+	AGND	CH63-