

**01**  
VPRIM  
+28.0V

**02**  
VPRIM  
+28.0V

**03**  
TP\_1.1  
THERMISTOR

**04**  
ON\_CMD\_1.1  
ICU ON CMD

**05**  
OFF\_CMD\_1.1  
ICU OFF CMD

**06**  
ON\_OFF\_1.1  
ICU STATUS

**07**  
TX+  
UART LVDS

**8**  
SEC\_OV  
GND\_D

**09**  
RX+  
UART LVDS

**10**  
HSS TX+  
LVDS

**11**  
HSS RX+  
LVDS

**12**  
GND  
GND\_D

**13**  
CHASSIS

**14**  
VPRIM\_RTN  
0V

**15**  
VPRIM\_RTN  
0V

**16**  
TP\_1.2  
THERMISTOR

**17**  
ON\_CMD\_1.2  
ICU ON CMD

**18**  
OFF\_CMD\_1.2  
ICU OFF CMD

**19**  
ON\_OFF\_1.2  
ICU STATUS

**20**  
TX-  
UART LVDS

**21**  
SEC\_OV  
GND\_D

**22**  
RX-  
UART LVDS

**23**  
HSS TX-  
LVDS

**24**  
HSS RX-  
LVDS

**25**  
GND  
GND\_D

**01**  
SRVL\_TP\_1.1  
THERMISTOR

**02**  
HEAT\_A  
HEATER

**03**  
HEAT\_A  
HEATER

**04**  
SRVL\_TP\_2.1  
THERMISTOR

**05**  
SRVL\_TP\_3.1  
THERMISTOR

**06**  
HEAT\_B  
HEATER

**07**  
HEAT\_B  
HEATER

**08**  
CHASSIS

**09**  
SRVL\_TP\_1.2  
THERMISTOR

**10**  
HEAT\_A\_RTN  
HEATER

**11**  
HEAT\_A\_RTN  
HEATER

**12**  
SRVL\_TP\_2.2  
THERMISTOR

**13**  
SRVL\_TP\_3.2  
THERMISTOR

**14**  
HEAT\_B\_RTN  
HEATER

**15**  
HEAT\_B\_RTN  
HEATER

## MDM15

### Survival Heater & Thermistor

## MDM25

### Power And Data

<b>01</b> VPRIM +28.0V	<b>08</b> VPRIM +28.0V	<b>15</b> DAC_SYNC_P HV CTRL
<b>02</b> VPRIM_RTN 0V	<b>09</b> VPRIM_RTN 0V	<b>16</b> DAC_SYNC_N HV CTRL
<b>03</b> GND GND_D	<b>10</b> GND GND_D	<b>17</b> DAC_SCLK_P HV CTRL
<b>04</b> HK_HVPS1 HK ADC IN	<b>11</b> HK_HVPS2 HK ADC IN	<b>18</b> DAC_SCLK_N HV CTRL
<b>05</b> HK_HVPS3 HK ADC IN	<b>12</b> HK_HVPS4 HK ADC IN	<b>19</b> DAC_DIN_P HV CTRL
<b>06</b> HK_HVPS5 HK ADC IN	<b>13</b> HK_HVPS6 HK ADC IN	<b>20</b> DAC_DIN_N HV CTRL
<b>07</b> GND GND_D	<b>14</b> GND GND_D	<b>21</b> GND GND_D

**CMM320-021**

01	31	61
VBIAS_SD 24VAC1	VBIAS_SD 24VAC1	VBIAS_SD 24VAC1
02	32	62
VBIAS_SD 24VAC2	VBIAS_SD 24VAC2	VBIAS_SD 24VAC2
03	33	63
VBIAS_PO_RTN GND_A	VBIAS_PO -80V	VBIAS_PO -80V
04	34	64
HK_HVPS1 HK ADC IN	HK_HVPS2 HK ADC IN	HK_HVPS3 HK ADC IN
05	35	65
HK_HVPS4 HK ADC IN	HK_HVPS5 HK ADC IN	HK_HVPS6 HK ADC IN
06	36	66
HK_LVPS1 HK ADC IN	HK_LVPS2 HK ADC IN	HK_LVPS3 HK ADC IN
07	37	67
HK_LVPS4 HK ADC IN	HK_LVPS5 HK ADC IN	HK_LVPS6 HK ADC IN
08	38	68
GND GND_D	DAC_SYNC_P HV CTRL	DAC_SYNC_N HV CTRL
09	39	69
GND GND_D	DAC_SCLX_P HV CTRL	DAC_SCLX_N HV CTRL
10	40	70
GND GND_D	DAC_DIN_P HV CTRL	DAC_DIN_N HV CTRL
11	41	71
GND GND_D	BUS_A MIL-1553 BUS	BUS_A_TRN MIL-1553 BUS
12	42	72
GND GND_D	BUS_B MIL-1553 BUS	BUS_B_TRN MIL-1553 BUS
13	43	73
GND GND_D	IN_P LVDS_HSS	IN_N LVDS_HSS
14	44	74
GND GND_D	OUT_P LVDS_HSS	OUT_N LVDS_HSS
15	45	75
GND GND_D	GND GND_D	GND GND_D
16	46	76
GND GND_D	VCORE_DIG +1.5VD	VCORE_DIG +1.5VD
17	47	77
GND GND_D	VCORE_DIG +1.5VD	VCORE_DIG +1.5VD
18	48	78
GND GND_D	VDIO +3.3VD	VDIO +3.3VD
19	49	79
GND GND_D	VDIO +3.3VD	VDIO +3.3VD
20	50	80
GND GND_D	VCORE_ANA +1.5VD	VCORE_ANA +1.5VD
21	51	81
GND GND_D	VCORE_ANA +1.5VD	VCORE_ANA +1.5VD
22	52	82
GND GND_D	GND GND_D	GND GND_D
23	53	83
VADC_RTN GND_A	VADC +3.3VA	VADC +3.3VA
24	54	84
VADC_RTN GND_A	VADC +3.3VA	VADC +3.3VA
25	55	85
VADC_RTN GND_A	VADC_RTN GND_A	VADC_RTN GND_A
26	56	86
VANAPOS_RTN GND_A	VANAPOS +6.0VA	VANAPOS +6.0VA
27	57	87
VANAPOS_RTN GND_A	VANAPOS +6.0VA	VANAPOS +6.0VA
28	58	88
VANAPOS_RTN GND_A	VANAPOS_RTN GND_A	VANANEG_RTN GND_A
29	59	89
VANANEG_RTN GND_A	VANANEG -6.0VA	VANANEG -6.0VA
30	60	90
VANANEG_RTN GND_A	VANANEG -6.0VA	VANANEG -6.0VA

## INT HEATER PWM

## SENSORHEAD HEATER

01 VBIAS_SD 24VAC1	31 VBIAS_SD 24VAC1	61 VBIAS_SD 24VAC1
02 VBIAS_SD 24VAC2	32 VBIAS_SD 24VAC2	62 VBIAS_SD 24VAC2
03 VBIAS_PD 80V	33 VBIAS_PD 80V	63 VBIAS_PD 80V
04 VBIAS_PD_RTN GND_A	34 VBIAS_PD_RTN GND_A	64 VBIAS_PD_RTN GND_A
05 HK_HVPS1 HK ADC IN	35 HK_HVPS2 HK ADC IN	65 HK_HVPS3 HK ADC IN
06 HK_HVPS4 HK ADC IN	36 HK_HVPS5 HK ADC IN	66 HK_HVPS6 HK ADC IN
07 HK_LVPS1 HK ADC IN	37 HK_LVPS2 HK ADC IN	67 HK_LVPS3 HK ADC IN
08 HK_LVPS4 HK ADC IN	38 HK_LVPS5 HK ADC IN	68 HK_LVPS6 HK ADC IN
09 HK_DIG1 HK ADC IN	39 HK_DIG1 HK ADC IN	69 GND GND D
10 GND GND D	40 GND GND D	70 GND GND D
11 GND GND D	41 GND GND D	71 TXCLK_N FPGA COM
12 VCORE_ANA +1.5VD	42 VCORE_ANA +1.5VD	72 TXCLK_P FPGA COM
13 VCORE_ANA +1.5VD	43 VCORE_ANA +1.5VD	73 TXD_N FPGA COM
14 GND GND D	44 GND GND D	74 TXD_P FPGA COM
15 GND GND D	45 GND GND D	75 RXCLK_N FPGA COM
16 VDIO +3.3VD	46 VDIO +3.3VD	76 RXCLK_P FPGA COM
17 VDIO +3.3VD	47 VDIO +3.3VD	77 RXD_N FPGA COM
18 GND GND D	48 GND GND D	78 RXD_P FPGA COM
19 GND GND D	49 GND GND D	79 GND GND D
20 GND GND D	50 GND GND D	80 GND GND D
21 VADC_RTN GND_A	51 VADC_RTN GND_A	81 VADC_RTN GND_A
22 VADC_RTN GND_A	52 VADC +3.3VA	82 VADC +3.3VA
23 VADC_RTN GND_A	53 VADC +3.3VA	83 VADC +3.3VA
24 VADC_RTN GND_A	54 VADC_RTN GND_A	84 VADC_RTN GND_A
25 VANAPOS_RTN GND_A	55 VANAPOS +6.0VA	85 VANAPOS +6.0VA
26 VANAPOS_RTN GND_A	56 VANAPOS +6.0VA	86 VANAPOS +6.0VA
27 VANAPOS_RTN GND_A	57 VANAPOS_RTN GND_A	87 VANAPOS_RTN GND_A
28 VANANEG_RTN GND_A	58 VANANEG -6.0VA	88 VANANEG -6.0VA
29 VANANEG_RTN GND_A	59 VANANEG -6.0VA	89 VANANEG -6.0VA
30 VANANEG_RTN GND_A	60 VANANEG_RTN GND_A	90 VANANEG_RTN GND_A

01	VBIAS_SD 24VAC1	27	VBIAS_SD_RTN GND_A
02	CHASSIS TSP SHIELD	28	VADC_RTN GND_A
03	VADC +3.3VA	29	VADC_RET GND_A
04	VADC +3.3VA	30	VANA_RET GND_A
05	VANAPOS +6.0VA	31	VANA_RET GND_A
06	VANAPOS +6.0VA	32	VANA_RTN GND_A
07	VANANEG -6.0VA	33	VANA_RTN GND_A
08	VANANEG -6.0VA	34	VDIO_RTN GND_D
09	VDIO +3.3VD	35	VDIO_RTN GND_D
10	VDIO +3.3VD	36	SCLK_N ADC CLOCK
11	SCLK_P ADC CLOCK	37	ICCS_T ADC CHIP SELECT
12	ICCS_P ADC CHIP SELECT	38	DIN_N ADC DATA IN
13	DIN_P ADC DATA IN	39	GND GND_D
14	DOUT_A ADC DATA OUT	40	GND GND_D
15	DOUT_B ADC DATA OUT	41	GND GND_D
16	DOUT_C ADC DATA OUT	42	GND GND_D
17	DOUT_D ADC DATA OUT	43	GND GND_D
18	DOUT_E ADC DATA OUT	44	GND GND_D
19	DOUT_F ADC DATA OUT	45	GND GND_D
20	DOUT_G ADC DATA OUT	46	GND GND_D
21	DOUT_H ADC DATA OUT	47	GND GND_D
22	GND GND_D	48	GND GND_D
23	HK_IN_1 HK ADC IN	49	HK_IN_2 HK ADC IN
24	HK_IN_3 HK ADC IN	50	HK_IN_4 HK ADC IN
25	CHASSIS TSP SHIELD	51	VBIAS_PD_RTN GND_A
26	VBIAS_PD -80V		



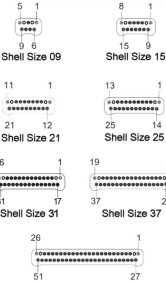
4.5.3.1.4 Wire Type

Two wire types are available; they are codified and indicated as follows:

Code	Description of Wire Type
W1	Single wire per ESCC 3901/012, Variant 01
W2	Two shielded twisted pairs per ESCC 3901/012, Variant 51, with the remaining wiring being single wire per ESCC 3901/012, Variant 01

Jumper Wiring For Wire Type Code 012

(shown viewing the mating face of the receptacle)



W2 option

Pin 01 and Pin 27 are shielded twisted pairs — (26, 51) shield on Pin 02 — (25)

Pin 26 and Pin 51 are shielded twisted pairs — (01, 27) shield on Pin 25 — (02)



4.5.3.1.3 Wiring Method

Two wiring methods are available; they are codified and indicated as follows:

Code Letter	Wiring Method
I	Indirect Wiring
D	Direct Wiring

Note that indirectly-wired PP Jumpers and directly-wired PS Jumpers have straight, "flat" wiring and therefore have no cross-overs.

The table below details the wiring configurations for indirectly-wired PP Jumpers:

Shell Size	Connector	Pin Numbers
9	1 <sup>st</sup> Connector	1 2 3 4 5 6 7 8 9
	2 <sup>nd</sup> Connector	5 4 3 2 1 9 8 7 6
15	1 <sup>st</sup> Connector	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
	2 <sup>nd</sup> Connector	8 7 6 5 4 3 2 1 15 14 13 12 11 10 9
21	1 <sup>st</sup> Connector	1 2 3 ... 9 10 11 12 13 14 ... 19 20 21
	2 <sup>nd</sup> Connector	11 10 9 ... 3 2 1 21 20 19 ... 14 13 12
25	1 <sup>st</sup> Connector	1 2 3 ... 11 12 13 14 15 16 ... 23 24 25
	2 <sup>nd</sup> Connector	13 12 11 ... 3 2 1 25 24 23 ... 16 15 14
31	1 <sup>st</sup> Connector	1 2 3 ... 14 15 16 17 18 19 ... 29 30 31
	2 <sup>nd</sup> Connector	16 15 14 ... 3 2 1 31 30 29 ... 19 18 17
37	1 <sup>st</sup> Connector	1 2 3 ... 17 18 19 20 21 22 ... 35 36 37
	2 <sup>nd</sup> Connector	19 18 17 ... 3 2 1 37 36 35 ... 22 21 20
51	1 <sup>st</sup> Connector	1 2 3 ... 24 25 26 27 28 29 ... 49 50 51
	2 <sup>nd</sup> Connector	26 25 24 ... 3 2 1 51 50 49 ... 29 28 27

I option

indirect wiring — harness jumper cable with two plugs

ANALOG-to-ADC A:

- HK\_HVPS1 VMPA
- HK\_HVPS2 VMPB
- HK\_HVPS3 VOULT\_TRANSFORMER
- HK\_HVPS4 TEMPERATURE HVPS PCB

ANALOG-to-ADC B:

- HK\_HVPS5 CURRENT\_TRANSFORMER
- HK\_HVPS6 DAC\_OUT
- HK\_LVPS1 PRIM\_INPUT\_VOLTAGE (28V)
- HK\_LVPS2 PRIM\_INPUT\_CURRENT

ANALOG-to-ADC C:

- HK\_LVPS3 TEMPERATURE LVPS PCB
- HK\_LVPS4 V\_ANA\_POS (+6V)
- HK\_LVPS5 V\_ANA\_NEG (-6V)
- HK\_LVPS6 V\_HEATER

ANALOG-to-ADC D:

- HK\_DIG1 V\_FPGA\_CORE (1.5V)
- HK\_DIG1 TEMPERATURE DIG PCB
- HK\_ANA1 V\_FPGA\_CORE (1.5V)
- HK\_ANA1 TEMPERATURE DIG PCB



SHIELDED DUAL ROW PIGTAIL & JUMPER

- Reliability for micro-miniature operating systems.
- High performance metal connector and ETE crosslinked wire.
- Panel mount available for receptacle connector.
- 360° screen termination.
- Operating temperature: -55°C / +200°C.
- 7 contact arrangements (9 to 51 contacts).

51	VBIAS_SD_RTN GND_A	26	VBIAS_SD 24VAC1
50	VADC_RTN GND_A	25	CHASSIS TSP SHIELD
49	VADC_RET GND_A	24	VADC +3.3VA
48	VANA_RET GND_A	23	VADC +3.3VA
47	VANA_RET GND_A	22	VANAPOS +6.0VA
46	VANA_RTN GND_A	21	VANAPOS +6.0VA
45	VANA_RTN GND_A	20	VANANEG -6.0VA
44	VDIO_RTN GND_D	19	VANANEG -6.0VA
43	VDIO_RTN GND_D	18	VDIO +3.3VD
42	SCLK_N ADC CLOCK	17	VDIO +3.3VD
41	ICCS_T ADC CHIP SELECT	16	SCLK_P ADC CLOCK
40	DIN_N ADC DATA IN	15	ICCS_P ADC CHIP SELECT
39	GND GND_D	14	DIN_P ADC DATA IN
38	GND GND_D	13	DOUT_A ADC DATA OUT
37	GND GND_D	12	DOUT_B ADC DATA OUT
36	GND GND_D	11	DOUT_C ADC DATA OUT
35	GND GND_D	10	DOUT_D ADC DATA OUT
34	GND GND_D	9	DOUT_E ADC DATA OUT
33	GND GND_D	8	DOUT_F ADC DATA OUT
32	GND GND_D	7	DOUT_G ADC DATA OUT
31	GND GND_D	6	DOUT_H ADC DATA OUT
30	GND GND_D	5	GND GND_D
29	HK_IN_2 HK ADC IN	4	HK_IN_1 HK ADC IN
28	HK_IN_4 HK ADC IN	3	HK_IN_3 HK ADC IN
27	VBIAS_PD_RTN GND_A	2	CHASSIS TSP SHIELD
		01	VBIAS_PD -80V

NANO-D 51

ADC SK PCB

NANO-D 51

ANALOG PCB

01 VBIAS_SD -200V	31 VBIAS_SD -200V	61 VBIAS_SD_RET GND
02 VBIAS_PD -80V	32 VBIAS_PD -80V	62 VBIAS_PD_RET GND
03 VANAPOS +6V	33 VANAPOS +6V	63 GND GND
04 VANA_RET GND	34 VANA_RET GND	64 GND GND
05 VANANEG -6V	35 VANANEG -6V	65 GND GND
06 01_CM ANA SIGNAL	36 01_HG ANA SIGNAL	66 GND GND
07 01_LG ANA SIGNAL	37 02_CM ANA SIGNAL	67 GND GND
08 02_HG ANA SIGNAL	38 02_LG ANA SIGNAL	68 GND GND
09 03_CM ana signal	39 03_HG ana signal	69 GND GND
10 03_LG ANA SIGNAL	40 04_CM ANA SIGNAL	70 GND GND
11 04_HG ANA SIGNAL	41 04_LG ANA SIGNAL	71 GND GND
12 05_CM ANA SIGNAL	42 05_HG ANA SIGNAL	72 GND GND
13 05_LG ANA SIGNAL	43 06_CM ANA SIGNAL	73 GND GND
14 06_HG ANA SIGNAL	44 06_LG ANA SIGNAL	74 GND GND
15 07_CM ANA SIGNAL	45 07_HG ANA SIGNAL	75 GND GND
16 07_LG ANA SIGNAL	46 08_CM ANA SIGNAL	76 GND GND
17 09_HG ANA SIGNAL	47 08_LG ANA SIGNAL	77 GND GND
18 09_CM ANA SIGNAL	48 09_HG ANA SIGNAL	78 GND GND
19 09_LG ANA SIGNAL	49 10_CM ANA SIGNAL	79 GND GND
20 10_HG ANA SIGNAL	50 10_LG ANA SIGNAL	80 GND GND
21 11_CM ANA SIGNAL	51 11_HG ANA SIGNAL	81 GND GND
22 11_LG ANA SIGNAL	52 12_CM ANA SIGNAL	82 GND GND
23 12_HG ANA SIGNAL	53 12_LG ANA SIGNAL	83 GND GND
24 13_CM_e8 ANA SIGNAL	54 13_CM_e7 ANA SIGNAL	84 GND GND
25 13_CM_e6 ANA SIGNAL	55 13_CM_e5 ANA SIGNAL	85 GND GND
26 13_CM_e4 ANA SIGNAL	56 13_CM_e3 ANA SIGNAL	86 GND GND
27 13_CM_e2 ANA SIGNAL	57 13_CM_e1 ANA SIGNAL	87 GND GND
28 13_HG ANA SIGNAL	58 13_LG ANA SIGNAL	88 GND GND
29 HV_VBIAS HK ADC IN	59 TP_PA HK ADC IN	89 GND GND
30 TP_EXT1 HK ADC IN	60 TP_EXT2 HK ADC IN	90 GND GND

**5**  
VADC  
+3.3VA

**33**  
VANA\_RET  
GND\_A

**01**  
VBIAS\_SD  
24VAC

**37**  
VDIO\_RTN  
GND\_D

**03**  
VBIAS\_PD  
-80V

**13**  
SCLK\_P  
ADC clock

**8**  
VANAPOS  
+6.0VA

**24**  
HK\_IN\_1  
HK ADC IN

**9**  
VANANEG  
-6.0VA

**26**  
CHASSIS

**11**  
VDIO  
+3.3VD

**11**  
VCORE-D  
+1.5VD





01	VBIAS_SD 24VAC1	27	VBIAS_SD_RTN GND_A
02	VBIAS_SD 24VAC1	28	VBIAS_SD_RTN GND_A
03	VBIAS_PD -80V	29	VBIAS_PD_RTN GND_A
04	VBIAS_PD -80V	30	VBIAS_PD_RTN GND_A
05	VADC +3.3VA	31	VADC_RTN GND_A
06	VADC +3.3VA	32	VADC_RET GND_A
07	VANAPOS +6.0VA	33	VANA_RET GND_A
08	VANAPOS +6.0VA	34	VANA_RET GND_A
09	VANANEG -6.0VA	35	VANA_RTN GND_A
10	VANANEG -6.0VA	36	VANA_RTN GND_A
11	VDIO +3.3VD	37	VDIO_RTN GND_D
12	VDIO +3.3VD	38	VDIO_RTN GND_D
13	SCLK_P ADC CLOCK	39	SCLK_N ADC CLOCK
14	$\overline{\text{RCS}}_P$ ADC CHIP SELECT	40	$\overline{\text{RCS}}_N$ ADC CHIP SELECT
15	DIN_P ADC DATA IN	41	DIN_N ADC DATA IN
16	DOUT_A ADC DATA OUT	42	GND GND_D
17	DOUT_B ADC DATA OUT	43	GND GND_D
18	DOUT_C ADC DATA OUT	44	GND GND_D
19	DOUT_D ADC DATA OUT	45	GND GND_D
20	DOUT_E ADC DATA OUT	46	GND GND_D
21	DOUT_F ADC DATA OUT	47	GND GND_D
22	DOUT_G ADC DATA OUT	48	GND GND_D
23	DOUT_H ADC DATA OUT	49	GND GND_D
24	HK_IN_1 HK ADC IN	50	HK_IN_2 HK ADC IN
25	HK_IN_3 HK ADC IN	51	HK_IN_4 HK ADC IN
26	CHASSIS		

**ANALOG-to-ADC A:**

HK\_HVPS1 VMPA  
HK\_HVPS2 VMPB  
HK\_HVPS3 VOUT\_TRANSFORMER  
HK\_HVPS4 TEMPERATURE HVPS PCB

**ANALOG-to-ADC B:**

HK\_HVPS5 CURRENT\_TRANSFORMER  
HK\_HVPS6 DAC\_OUT  
HK\_LVPS1 PRIM\_INPUT\_VOLTAGE (28V)  
HK\_LVPS2 PRIM\_INPUT\_CURRENT

**ANALOG-to-ADC C:**

HK\_LVPS3 TEMPERATURE LVPS PCB  
HK\_LVPS4 V\_ANA\_POS (+6V)  
HK\_LVPS5 V\_ANA\_NEG (-6V)  
HK\_LVPS6 V\_HEATER

**ANALOG-to-ADC D:**

HK\_DIG1 V\_FPGA\_CORE (1.5V)  
HK\_DIG1 TEMPERATURE DIG PCB  
HK\_ANA1 V\_FPGA\_CORE (1.5V)  
HK\_ANA1 TEMPERATURE DIG PCB