C. RVP8/RCP8 Packaging

A standard RVP8/RCP8 processor consists of three separate units:

- **Main Chassis** **Section C.1 RVP8 and RCP8**
- **Connector Panel** **Section C.2 RVP8 and RCP8**
- **IFD (IF Digitizer)** **Section C.3 RVP8 Only**

Because of the similarity of the packaging for the RVP8 and RCP8, both units are described here.

The main chassis and connector panel are located in a rack within 100m of the IFD. Typically the main chassis interfaces to a host computer via 100 BaseT Ethernet. For the RVP8, the IFD receiver module resides in the radar cabinet.

This section describes the general features of the packaging and the electrical specifications and cabling of these units. Please read ***CAREFULLY*** the following warnings before you apply power to your system.

⚠ **WARNING: The Main Chassis power supply modules are NOT auto ranging. These must be set by a switch on each module for either 115/230 VAC 60/50 Hz. Verify these before applying power to the system. See Section C.1.3.**

⚠ **WARNING: Turn off power to the main chassis before installing or removing any PCI boards. For safety, the line cord should be disconnected before opening either the IFD module or main chassis.**

Important: The circuit boards contain many static sensitive components. Do not handle the boards or open the IFD module unless a properly grounded wrist strap is worn.

C.1 Main Chassis General Description

SIGMET's standard main chassis is a 4U rackmount/table top enclosure (43.2 wide x 43.2 long x 17.8 cm high) or (17 wide x 17 long x 7.00 inch high) which fits a standard 19-inch EIA rack. The system comes standard with hot–swap redundant power supplies. The chassis may be equipped with either a mother board or a single-board computer depending on how the unit was purchased. The chassis is shown in the following figures.

- Front View **Figure C–1**
- Rear View **Figure C–2**
- Side view **Figure C–3**
- Internal Wiring **Figure C–4**

The front of the unit has a plasma matrix display that is used for status information. There is also a CDRW drive (for software installation and backup) and in most cases, a floppy drive as well (for configuration backup).

Two fans are mounted behind the door on the front of the enclosure. These draw ambient air in to the unit. The air flows through the unit and exits the rear. Do not block the slots or the exhaust grills on the fans. Check airflow now and then, and also check the board and fan screen for dust accumulation. If necessary, excessive dust accumulations on the board can be cleaned at a properly equipped static-free workstation with "canned air" or Chemtronics TF-Plus solvent, which can be purchased through electronics distributors.

The boards should be left in the chassis whenever the unit is shipped. This minimizes handling and static risk. Save the original packing provided for shipment.

Important: Prior to shipment, contact support@sigmet.com to obtain a returned materials authorization (RMA) and to coordinate the shipping.

A table top unit can be converted for rack mount by simply installing rack mount ears. The rack ears are installed with #8-32 flat head screws. It is strongly recommended that the rack mount slide brackets supplied with the unit should be installed in the rack for additional structural support.

The internal cabling diagram in **Figure C–4** shows how the various disk drives, power supplies, etc. are connected within the standard Main Chassis. A mother board example is shown. Use this as a guide if you have to replace internal components.

The remainder of this section describes the front and rear panel of the Main Chassis.

Figure C–1: Main Chassis- Front Panel

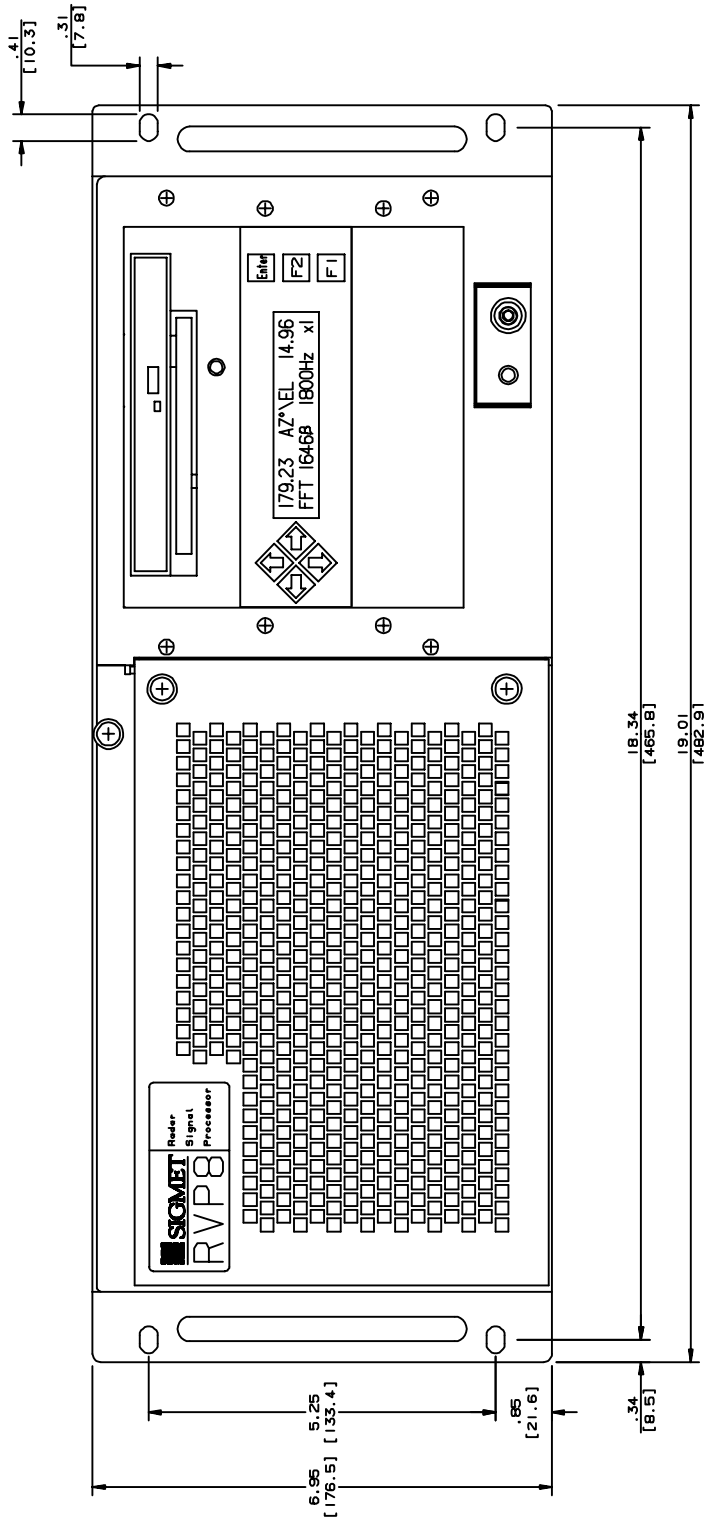


Figure C–2: Main Chassis- Back Panel

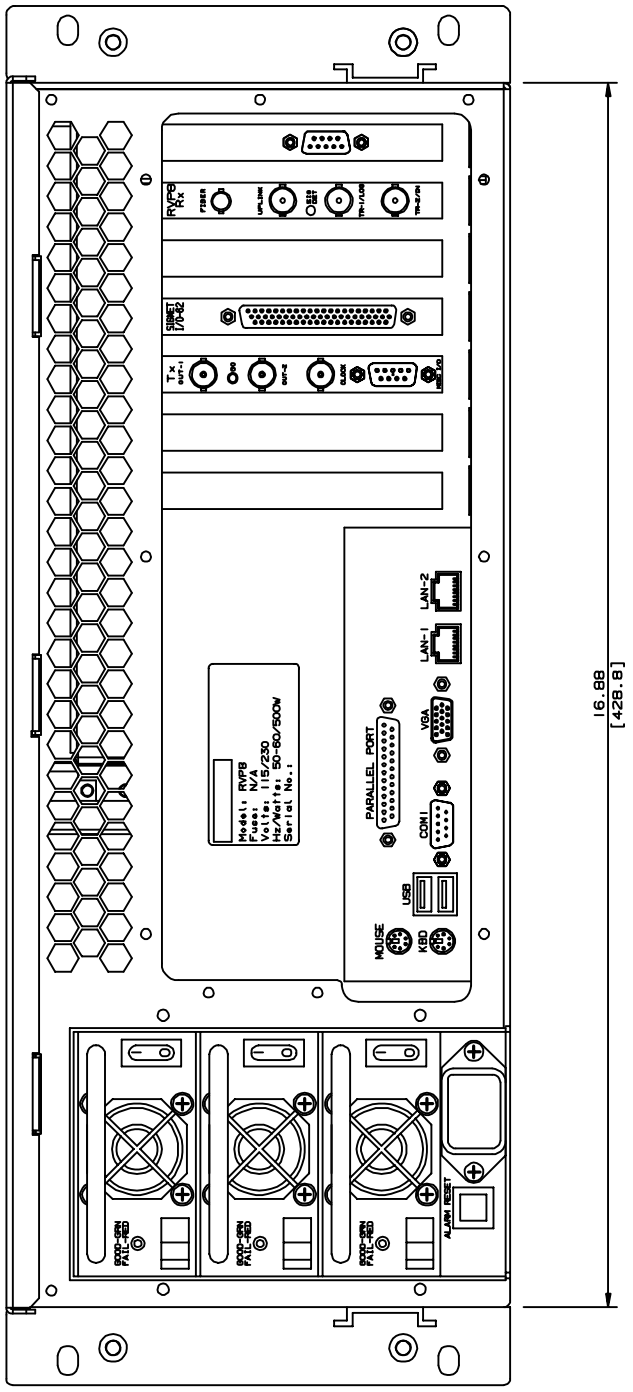


Figure C–3: Main Chassis- Right Side View

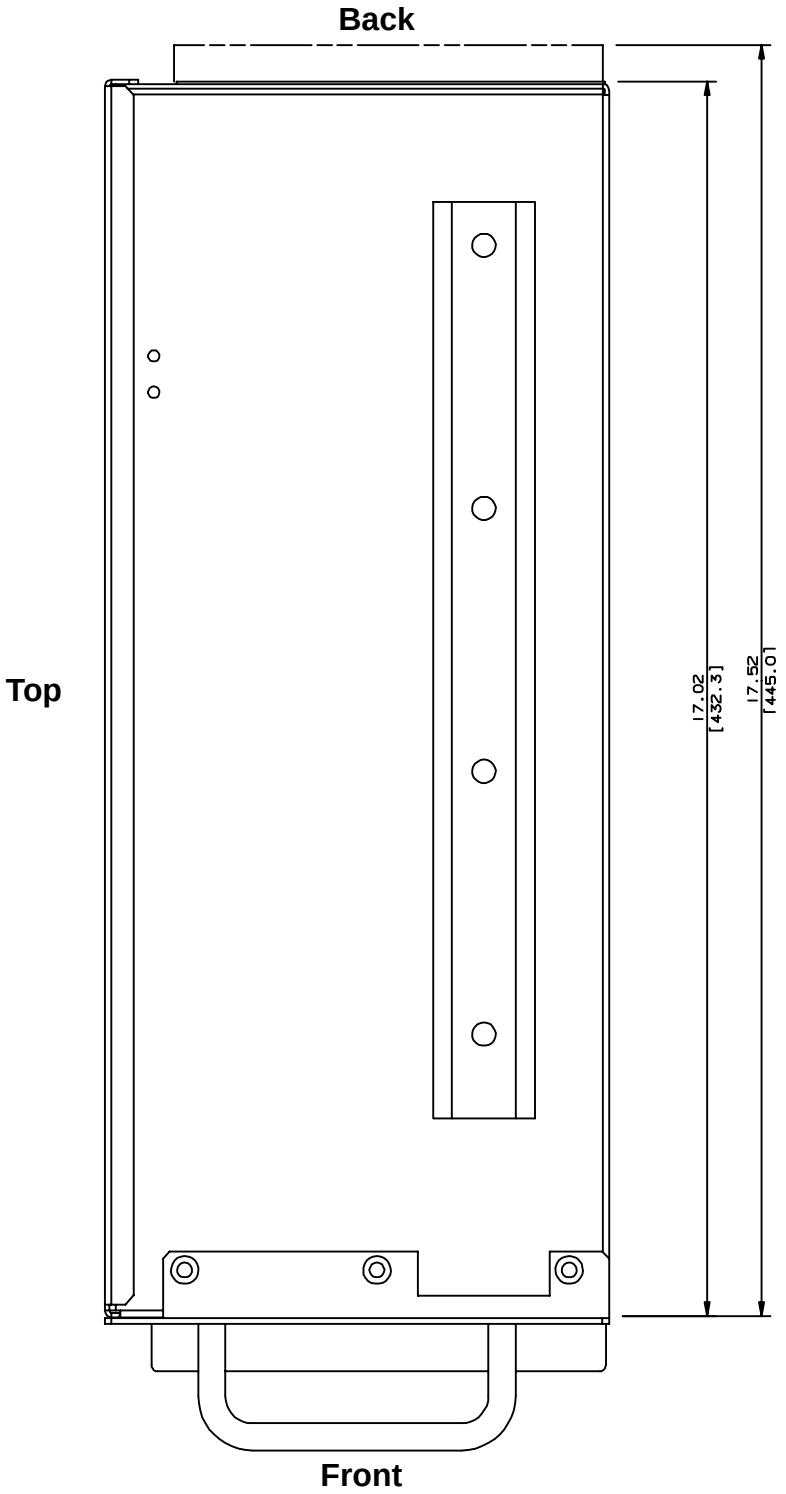
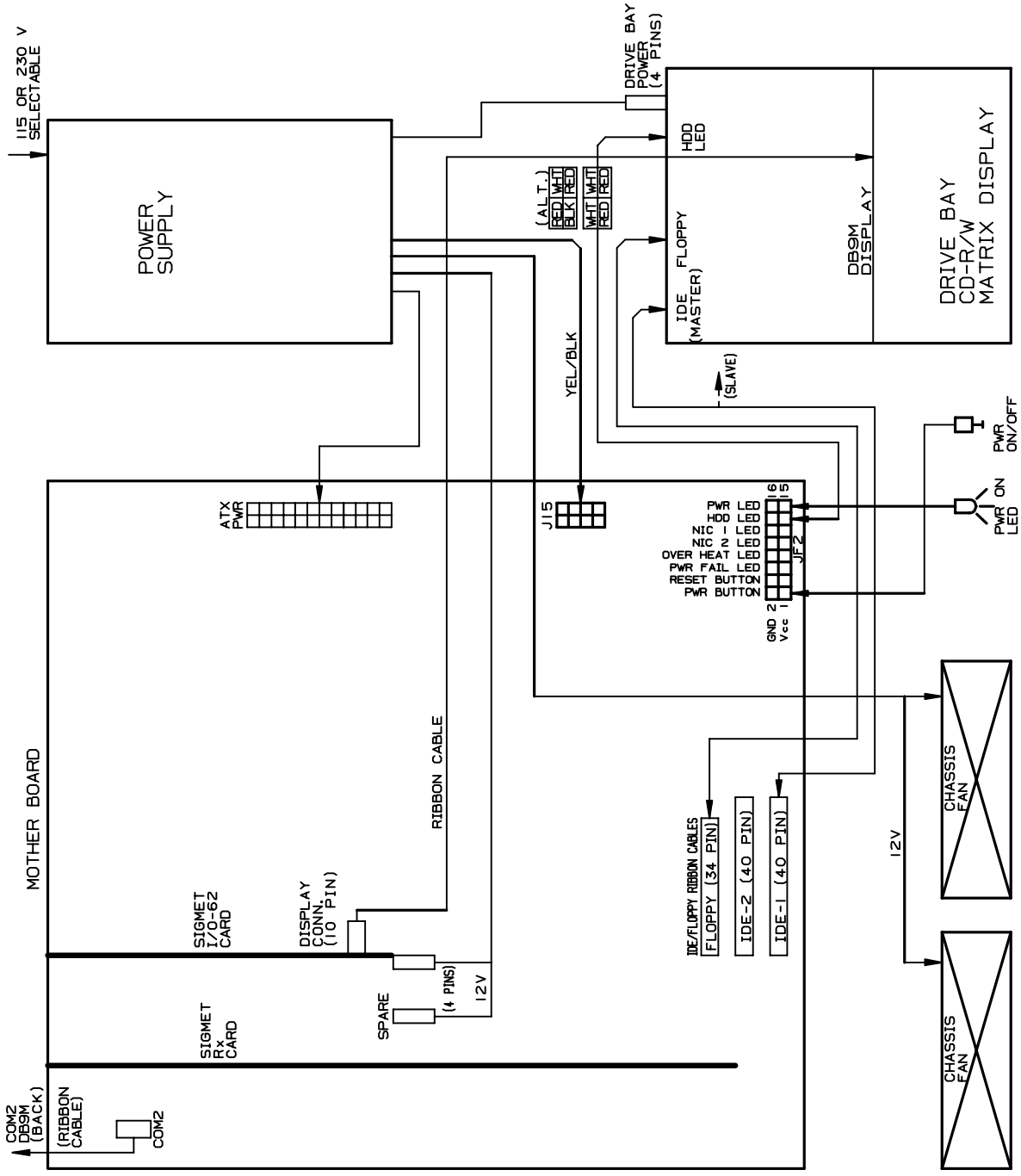
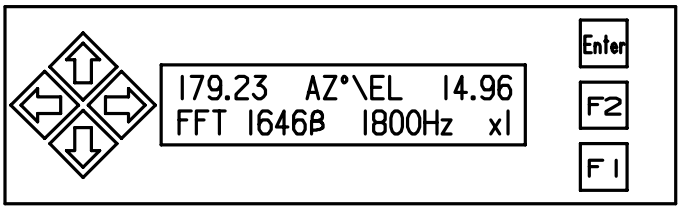


Figure C–4: Main Chassis Internal Cabling

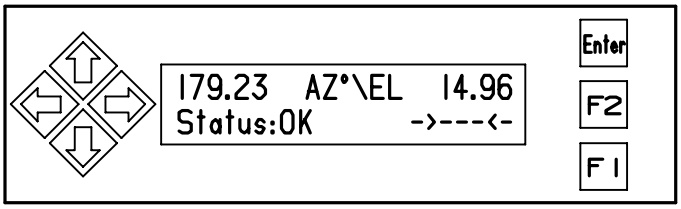


C.1.1 Main Chassis Front Panel

The front panel is shown in **Figure C–1**. The front panel matrix plasma display is typically connected internally by a ribbon cable to either an I/O-62 card or an RVP8/Rx card. The display is used to show status and power-up test results. The function keys beside the display are not currently used.



RVP8 Receiver/Signal Processor



RCP8 Radar Control Processor

In addition, the DVD+RW/CDRW are located on the front panel. The various activity lights are for the DVD (yellow), floppy drive (small green) and the hard disk drive (large red). The cabling diagram shows how to connect the activity lights. At the lower right of the unit is a power on/off switch and a green LED to indicate that power is on.

C.1.2 Main Chassis Back Panel

Figure C–2 shows an example of the main chassis back panel for the case of a motherboard system. There are three main sections to the Main Chassis back panel:

- **Power section**- on the left (looking from the rear) with the power entry module, alarm reset and three redundant hot-swap power supplies.
- **PC I/O section**- in the lower center with connectors for keyboard, mouse, monitor, network, etc. This is for a mother board example.
- **PCI card section**- on the right (looking from the rear) with standard PCI slots for the RVP8/RCP8 circuit cards as well as other standard commercial PCI cards that may be used (e.g., a four port serial card).

Note that depending on whether your system is using a mother board or single-board computer (SBC), the appearance of these sections may be different, but the functions are the same. These sections are described in detail in the sections below.

C.1.3 Main Chassis Back Panel Power Section

⚠ **WARNING: The Main Chassis power supply modules are NOT auto ranging. These must be set by a switch on each module for either 115/230 VAC 60/50 Hz. Verify these per the procedure below, before applying power to the system.**

The Main Chassis back panel is equipped with a modular AC power entry device. There are three hot-swap redundant power supply modules in the system. The procedure for setting/verifying the voltage on each one is as follows:

- The unit should be powered-off. This can be assured by simply not connecting the power input cord.
- Remove the top power supply module by shifting the black release button to the right.
- Use the handle to pull the module out.
- Check the red power selector switch on the right side (rear) of the module and set it as appropriate to your line voltage (115/230).
- Re–insert the module and push the chrome handle down. This switches the module in the on "1" position.
- Repeat this procedure for the middle and lower modules (the order is not critical)).

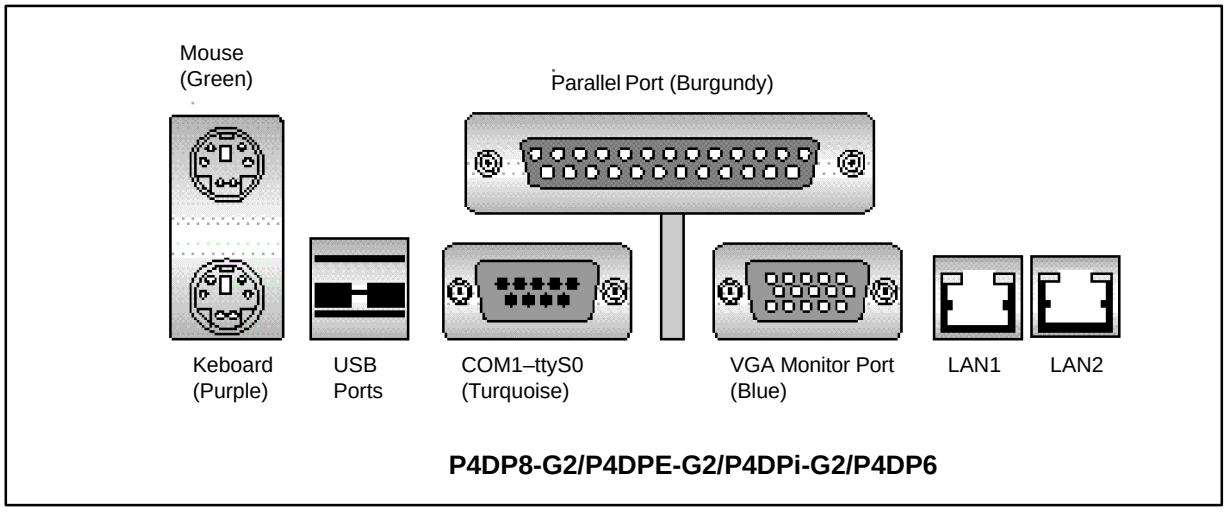
When the system is switched–on, the LED on each module shows green to indicate that it is functioning properly. A red light indicates a failure. There is an audio "buzzer" alarm in the event that a power module is turned-off, removed or fails.

i **Note: The red button next to the power entry module will reset the "buzzer" alarm.**

The system will function if there is failure of any one power module, but is not rated to function with only one module, i.e., if two modules fail. Each power module is equipped with internal protection for over-temperature and over-current. In the event that the protection is triggered, the module LED will show red. It can be reset by removing the module for a minute and then inserting the module back into the system. It is best to do this with power–off to the module.

i **Note: If a power module is switched on, but the LED indicator is red, then it is not functioning. The reset procedure is to turn the power off on the failed module, remove it for one minute and then re-insert it and power it back on.**

C.1.4 Main Chassis Back Panel PC I/O Section



The PC I/O section shown above is where you make all of your standard PC connections. Note pins (male) are indicated by filled black circles while sockets (female) are indicated by open circles.

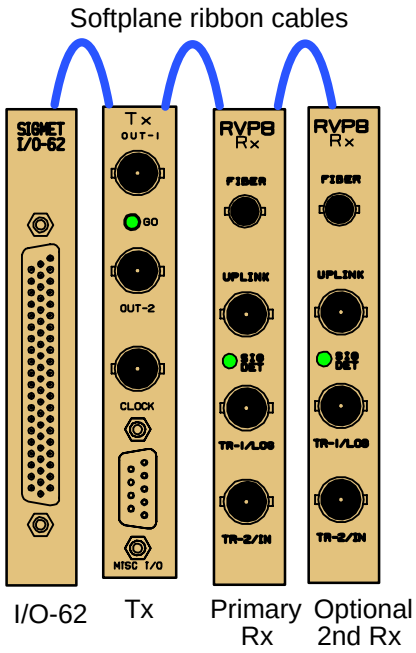
A standard keyboard and mouse are provided with the unit. VGA monitor is supplied by the customer or ordered as an option from SIGMET.

Note that LAN 1 and LAN 2 are standard RJ45 connectors. For the –G2 style mother boards the LAN port speed is 100/1000 BaseT. For the –Q they are 10/100 BaseT.

The keyboard and mouse are standard PS/2. You can use an adapter to plug a USB mouse into the circular mouse connector.

COM1 (/dev/ttyS0) is the DBM9 connector. COM2 (/dev/ttyS1) is typically installed as a separate DBM9 connector in the PCI section.

C.1.5 Main Chassis Back Panel PCI Card Section



The PCI cards are installed vertically on the right of the chassis (looking from the back). Since there are many different RVP8/RCP8 configuration options that can be ordered, there is quite a bit of variability in what PCI cards are installed. The order of the cards in the slots IS important. The table below gives the required card sequence from right to left as viewed from the back of the chassis (like the figure). There can be blank slots in between the cards as long as the order is preserved. Note, all SIGMET cards require a softplane ribbon cable as shown in the figure, except for the case of a minimal system with only a single Rx card.

Note that COM2 is typically installed as a DBM9 connector on an otherwise blank panel in the PCI section.

PCI Card	Card Slot Order	Used on	Vendor	Functions
RVP8/Rx	1st	RVP8 Dual Pol System	SIGMET	Optional Secondary Rx Card. Used for vertical or cross–polarized receiver channel.
RVP8/Rx	2nd	RVP8 Standard	SIGMET	Primary Rx Card. Used for horizontal or co-polarized receiver channel.
RVP8/Tx	3rd	RVP8	SIGMET	Two waveform outputs, clock output/input, 4 RS422 lines
I/O –62	4th	RVP8 RCP8	SIGMET	I/O to radar system control and monitoring. Usually connected to an I/O-62 Connector Panel.
COM3–N	5th	RVP8 RCP8	Market	Additional RS232C serial card (typically 4 channels).
HPIB	6th	RVP8 RCP8	Market	HPIB control for signal generator or other test equipment

Card slot order is from right-to-left when viewed from the back.

The I/O-62 is used on both the RVP8 and RCP8. It is described in Section C.2, along with the standard connector panels for the RVP8 and RCP8. Please see **Section 2** of the ***RVP8 User's Manual*** for a description of the connectors on the RVP8 PCI cards. The jumper settings for the I/O-62, Rx and Tx Cards are described in the tables below. Note that the high-lighted entries correspond to the default factory jumper settings.

Table C–1: RVP8 and RCP8 I/O-62 Card Jumper Settings

Jumper	ID	Description	AB	BC	Not Installed
JP1	BOOT	Controls the card boot–up	X	X	Normal Boot
JP2	JTAG	Enables on-board "flash" re-programming for code version upgrades. Other settings are reserved for SIGMET maintenance functions.	Enable Flash	Maintenance	Maintenance
JP3	TTYX0/ RSV	These jumpers assign dedicated hardware I/O lines to pins on DBF62 connector on the back of the I/O-62. The selections are made among: 1.) The two RS232 lines (noted as TTY0 or 1 with transmit and receive for each). 2.) Four trigger output lines. 3.) The three contact positions of the onboard DIP relays (K1 and K2). Note the specific pins are listed in the AB column.	Pin 47 TTYX0	X	X
JP4	TRIG0/ TTYX0		Pin 49 TRIG0	TTYX0	X
JP5	TRIG1/ K1NC		Pin 51 TRIG1	K1 Normally Closed Contact	X
JP6	TRIG2/ K1NO		Pin 53 TRIG2	K1 Normally Open Contact	X
JP7	TRIG3/ K1CT		Pin 55 TRIG3	K1 Center Contact	X
JP8	TTYR0/ K2NC		Pin 57 TTYR0	K2 Normally Closed Contact	X
JP9	TTYX1/ K2NO		Pin 59 TTYX1	K2 Normally Open Contact	X
JP10	TTYR1/ K2CT		Pin 61 TTYR1	K2 Center Contact	X

Table C–2: RVP8/Rx Card Jumper Settings

Jumper	ID	Description	AB	BC	Not Installed
JP1	LOG	Select TRIG1 out or LOG out for card BNC labeled "TR-1/LOG"	LOG Out	TRIG1 Out	X
JP2	TGV	TRIG1 output voltage	5 V	12 V	X
JP3	TIN	Select TRIG2 out or TRIG-IN for card BNC labeled "TR-2/IN"	TRIG-IN	TRIG2 Out	X
JP4	TGV	TRIG2 output voltage	5 V	12 V	X
JP5	BOOT	Controls the card boot–up	X	X	Normal Boot
JP6	JTAG	Enables on-board "flash" re-programming for code version upgrades. Other settings are reserved for SIGMET maintenance functions.	Enable Flash	Maintenance	Maintenance
JP7	TERM	TRIG-IN Termination	Un-terminated	75 Ohm	X

Table C–3: RVP8/Tx Card Jumper Settings

Jumper	ID	Description	AB	BC	Not Installed
JP1	BOOT	Controls the card boot–up	X	X	Normal Boot
JP2	JTAG	Enables on-board "flash" re-programming for code version upgrades. Other settings are reserved for SIGMET maintenance functions.	Enable Flash	Maintenance	Maintenance
JP3A	—	Reserved for future use	Reserved	X	X
JP3B	—	Reserved for future use	Reserved	X	X

C.2 I/O-62 and Connector Panel

Figures C–5 and **C–6** show the I/0-62 Connector Panel for the RVP8 and RCP8. This is typically mounted on the same rack as the Main Chassis. A 1:1 62–position cable (standard 1.8 m/6 foot) connects the connector panel to the I/O-62. As shown in the figures, the cable can be connected to either the front or the back of the panel so that the cable run can be optimized. In most cases, it is recommended to connect the cable to the back of the panel to minimize the risk of physical damage to the cable.

The panel is electrically the same for both the RVP8 and RCP8.Indeed the circuit board is identical. However, the panel labelling and the softplane configurations are different.

The pin assignments to the various connectors are described in **Tables C–4** to **C–17** located at the end of this section. The tables show the basic electrical properties of each pin and the default signal assignment (if any) that is made in the factory softplane.conf file. The softplane approach provides a great deal of flexibility in assigning the I/O to the panel.

The I/O–62 PCI card provides forty multi–protocol digital interface lines at its 62–pin faceplate connector. These lines are grouped into five independent and identical blocks, each of which contains eight lines. Moreover, each of these blocks of eight lines can be further divided into four line pairs.

Each block of I/O lines can operate in one of the following modes:

- As eight TTL/CMOS single–ended outputs
- As eight TTL/CMOS single–ended inputs
- As N RS–422 differential transmitters or receivers, and (8–2N) TTL/CMOS single–ended inputs.

The assignment of electrical levels and signal directions are all made in the 'softplane.conf' file. Users do not have to worry about how to configure each block of lines because inconsistent signal assignments will be checked and reported when the file is loaded.

All forty I/O–62 digital lines are individually protected against both overvoltage and electrostatic discharge (ESD). You may safely apply voltages between –27V and +27V to any line regardless of whether it is configured for an input or output. Likewise, external ESD pulses of 15KV (Human body model) will be safely shunted to ground at the 62–pin connector point of entry.

This wide voltage tolerance effectively makes the TTL/CMOS inputs function as wide range comparators with a 2.5V logic threshold. These inputs could be connected directly to a 24V panel bulb, for example, in order to monitor its On/Off status. Note that the line protection circuitry has a side effect of raising the output impedance of the TTL/CMOS drivers to approximately 120–Ohms. This should not cause any trouble unless the signal is heavily terminated at the receiving end. The RS–422 drivers are not affected by the line protection, and have the standard very low output impedance.

The I/O–62 provides a variety of terminations for its digital I/O lines. The TTL/CMOS signals can optionally be pulled either to GND or to +5V through a 2.2K–Ohm resistor. Similarly, the RS–422 linepairs can optionally be terminated with a 100–Ohm resistor across each pair.

There are a few additional constraints that should be kept in mind when assigning electrical signals to a block of eight I/O–62 lines. These are:

- When TTL/CMOS pull-up/pull-down resistors are enabled, they are applied to the entire group of eight lines. This is somewhat inconsistent with using some of those same lines as RS–422.
- Similarly, when RS–422 terminators are enabled, they are applied to all four line pairs. This is completely inconsistent with using some of those same lines as TTL/CMOS.

Thus, if line termination is required, it is usually necessary to split the TTL/CMOS and RS–422 functions so that both do not appear within the same block of eight lines.

Figure C–5: RVP8 I/O-62 Connector Panel

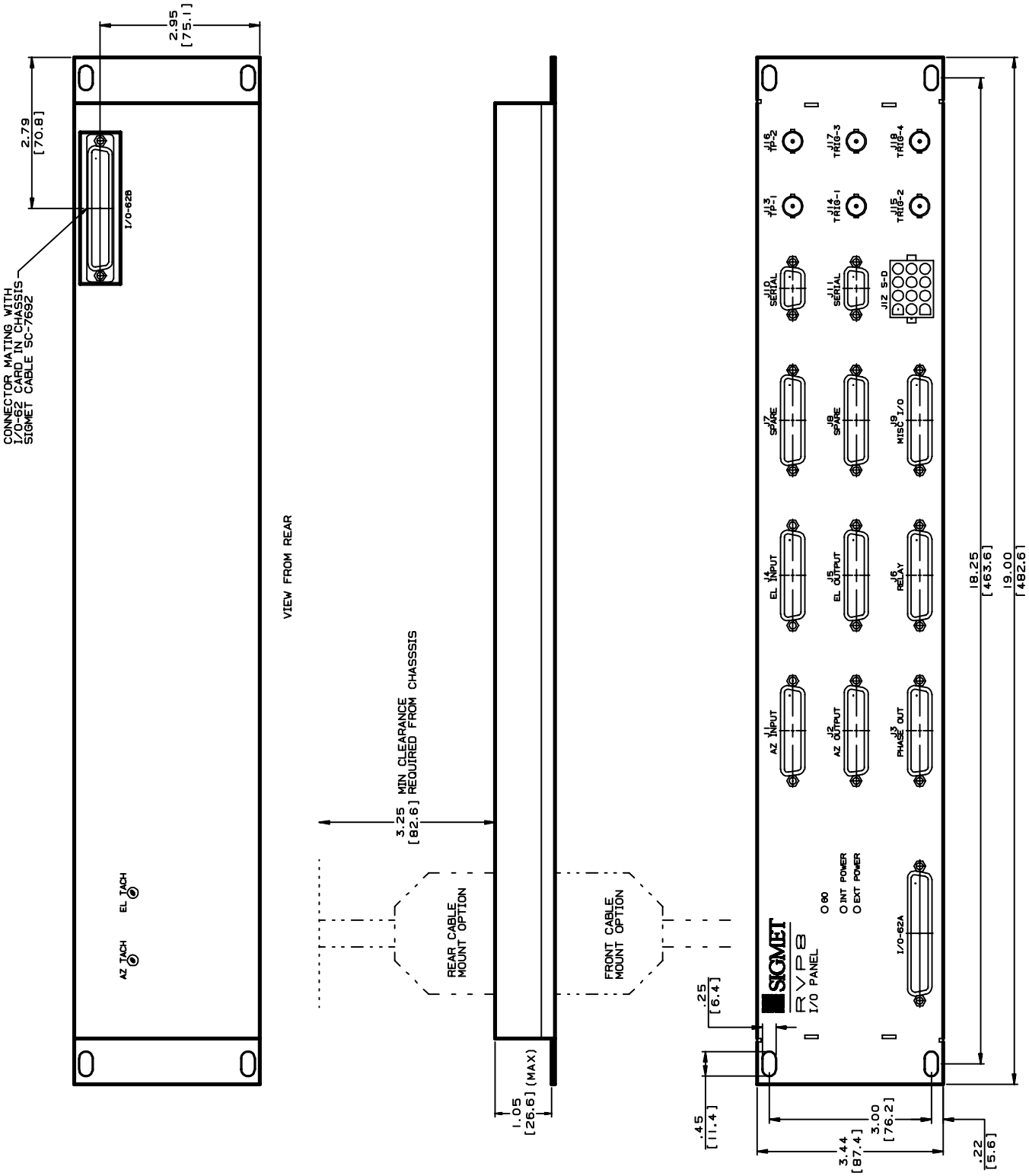


Figure C–6: RCP8 I/O-62 Connector Panel

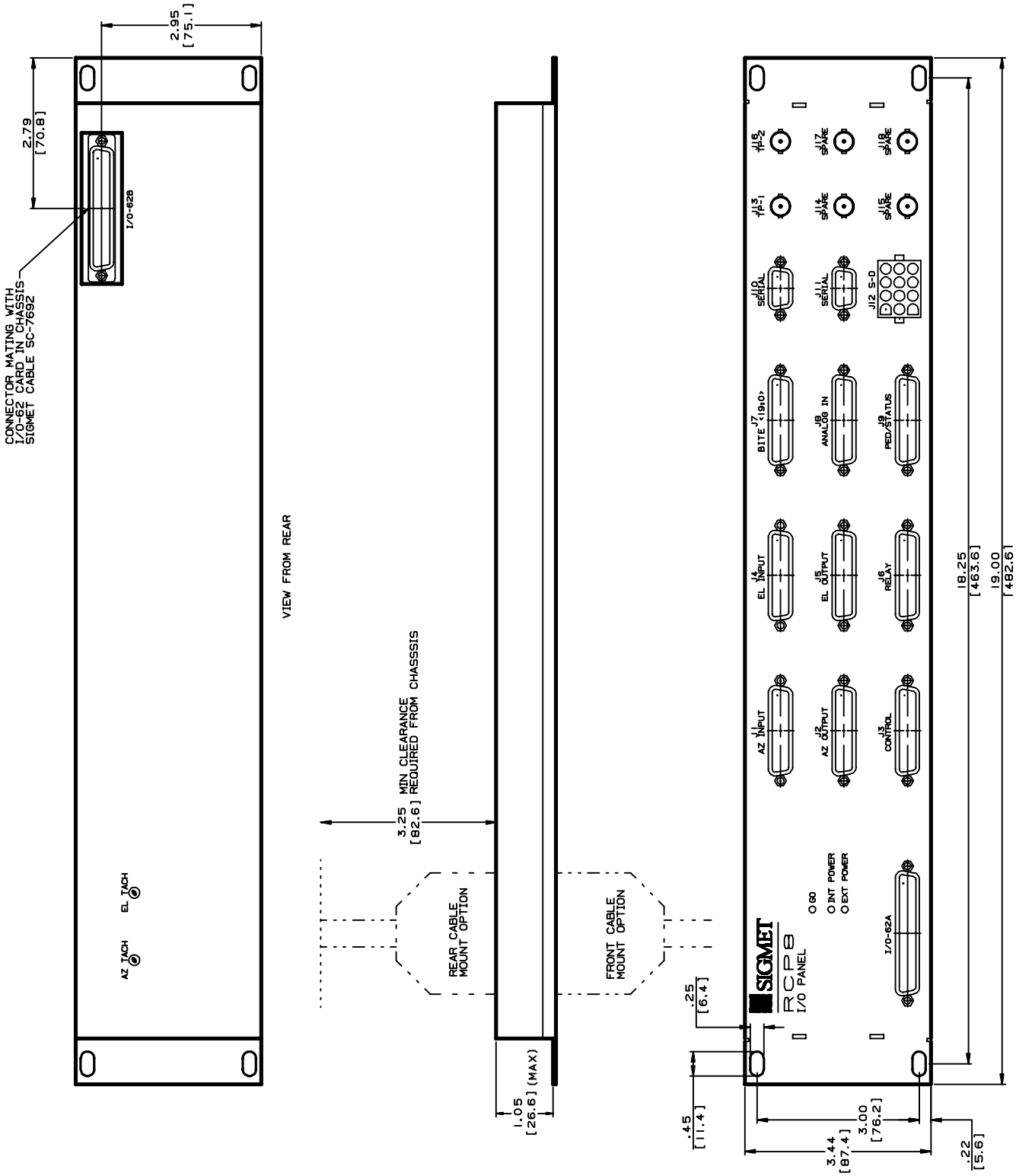


Table C–4: J1 "AZ INPUT"

Pin	Electrical Specification	RVP8 Signal Name	RCP8 Signal Name
1	TTL	sPedAZ[0]	sPedAZ[0]
2	TTL	sPedAZ[1]	sPedAZ[1]
3	TTL	sPedAZ[2]	sPedAZ[2]
4	TTL	sPedAZ[3]	sPedAZ[3]
5	TTL	sPedAZ[4]	sPedAZ[4]
6	TTL	sPedAZ[5]	sPedAZ[5]
7	TTL	sPedAZ[6]	sPedAZ[6]
8	TTL	sPedAZ[7]	sPedAZ[7]
9	TTL	sPedAZ[8]	sPedAZ[8]
10	TTL	sPedAZ[9]	sPedAZ[9]
11	TTL	sPedAZ[10]	sPedAZ[10]
12	TTL	sPedAZ[11]	sPedAZ[11]
13	TTL	sPedAZ[12]	sPedAZ[12]
14	TTL	sPedAZ[13]	sPedAZ[13]
15	TTL	sPedAZ[14]	sPedAZ[14]
16	TTL	sPedAZ[15]	sPedAZ[15]
17	TTL		
18	TTL		
19	TTL		
20	TTL		
21	GND		
22	GND		
23	GND		
24	GND		
25	GND		

Table C–5: J2 "AZ OUTPUT"

Pin	Electrical Specification	RVP8 Signal Name	RCP8 Signal Name
1	TTL	cEarthAZ[0]	cEarthAZ[0]
2	TTL	cEarthAZ[1]	cEarthAZ[1]
3	TTL	cEarthAZ[2]	cEarthAZ[2]
4	TTL	cEarthAZ[3]	cEarthAZ[3]
5	TTL	cEarthAZ[4]	cEarthAZ[4]
6	TTL	cEarthAZ[5]	cEarthAZ[5]
7	TTL	cEarthAZ[6]	cEarthAZ[6]
8	TTL	cEarthAZ[7]	cEarthAZ[7]
9	TTL	cEarthAZ[8]	cEarthAZ[8]
10	TTL	cEarthAZ[9]	cEarthAZ[9]
11	TTL	cEarthAZ[10]	cEarthAZ[10]
12	TTL	cEarthAZ[11]	cEarthAZ[11]
13	TTL	cEarthAZ[12]	cEarthAZ[12]
14	TTL	cEarthAZ[13]	cEarthAZ[13]
15	TTL	cEarthAZ[14]	cEarthAZ[14]
16	TTL	cEarthAZ[15]	cEarthAZ[15]
17	TTL		
18	TTL		
19	TTL		
20	TTL		
21	GND		
22	GND		
23	GND		
24	GND		
25	GND		

Table C–6: J3 RVP8: "PHASE OUT"; RCP8 "CONTROL"

Pin	Electrical Specification	RVP8 Signal Name	RCP8 Signal Name
1	Configurable I/O–62 Digital Lines:		cPWidth[0]
2			cRadiateOn
3			cServoPwr
4			cReset
5			sPWidth[0]
6			sRadiate
7			sServoPwr
8			sReset
9	RS422+	RS422+[0]	
10	RS422+	RS422+[1]	
11	GND		
12	GND		
13	GND		
14	Configurable I/O–62 Digital Lines:		cPWidth[1]
15			cRadiateOff
16			cTransmitPwr
17			
18			sPWidth[1]
19			
20			sTransmitPwr
21			
22	RS422–	RS422–[0]	
23	RS422–	RS422–[1]	
24	GND		
25	GND		

Notes:

1.) I/O-62 lines can be configured in **softplane.conf** in groups of 4 for the following options:
RS422 differential vs single–ended
Input or output sense
Input termination for single-ended lines can be pull-up (...Term=1), pull-down (...Term=–1) or un-terminated (...Term=0)

1.) All RCP8 status variables (starting with "s") are terminated with pull–up's in the default **softplane.conf.**

2.) All RCP8 control variables (starting with "c") are un-terminated (...Term=0).

Table C–7: J4 "EL INPUT"

Pin	Electrical Specification	RVP8 Signal Name	RCP8 Signal Name
1	TTL	sPedEL[0]	sPedEL[0]
2	TTL	sPedEL[1]	sPedEL[1]
3	TTL	sPedEL[2]	sPedEL[2]
4	TTL	sPedEL[3]	sPedEL[3]
5	TTL	sPedEL[4]	sPedEL[4]
6	TTL	sPedEL[5]	sPedEL[5]
7	TTL	sPedEL[6]	sPedEL[6]
8	TTL	sPedEL[7]	sPedEL[7]
9	TTL	sPedEL[8]	sPedEL[8]
10	TTL	sPedEL[9]	sPedEL[9]
11	TTL	sPedEL[10]	sPedEL[10]
12	TTL	sPedEL[11]	sPedEL[11]
13	TTL	sPedEL[12]	sPedEL[12]
14	TTL	sPedEL[13]	sPedEL[13]
15	TTL	sPedEL[14]	sPedEL[14]
16	TTL	sPedEL[15]	sPedEL[15]
17	TTL		
18	TTL		
19	TTL		
20	TTL		
21	GND		
22	GND		
23	GND		
24	GND		
25	GND		

Table C–8: J5 "EL OUTPUT"

Pin	Electrical Specification	RVP8 Signal Name	RCP8 Signal Name
1	TTL	cEarthEL[0]	cEarthEL[0]
2	TTL	cEarthEL[1]	cEarthEL[1]
3	TTL	cEarthEL[2]	cEarthEL[2]
4	TTL	cEarthEL[3]	cEarthEL[3]
5	TTL	cEarthEL[4]	cEarthEL[4]
6	TTL	cEarthEL[5]	cEarthEL[5]
7	TTL	cEarthEL[6]	cEarthEL[6]
8	TTL	cEarthEL[7]	cEarthEL[7]
9	TTL	cEarthEL[8]	cEarthEL[8]
10	TTL	cEarthEL[9]	cEarthEL[9]
11	TTL	cEarthEL[10]	cEarthEL[10]
12	TTL	cEarthEL[11]	cEarthEL[11]
13	TTL	cEarthEL[12]	cEarthEL[12]
14	TTL	cEarthEL[13]	cEarthEL[13]
15	TTL	cEarthEL[14]	cEarthEL[14]
16	TTL	cEarthEL[15]	cEarthEL[15]
17	TTL		
18	TTL		
19	TTL		
20	TTL		
21	GND		
22	GND		
23	GND		
24	GND		
25	GND		

Table C–9: J6 "RELAY"

Pin	Electrical Specification	RVP8 Signal Name	RCP8 Signal Name
1	Relay K1: CT		
2	Relay K1: NO	cPWidth[0]	cPWidth[0]
3	Relay K1: NC		
4	Relay K2: CT		
5	Relay K2: NO	cPWidth[1]	cPWidth[1]
6	Relay K2: NC		
7	Relay K3: CT		
8	Relay K3: NO		
9	Relay K3: NC		
10	—		
11	GND		
12	GND		
13	GND		
14	+12VDC	External	
15	+12VDC	Relay	
16	+12VDC	Control	
17	+12VDC	Power	
18	+12V Unreg		
19	Return14	External	
20	+12V Return15	Relay	
21	+12V Return16	Control	
22	+12V Return17	Returns	
23	—		
24	GND		
25	GND		

⚠ **WARNING: To avoid possible damage to the connector panel, all external relays must be equipped with diode protection against the back EMF generated when the external relay coil is opened. Relays can be purchased with a diode installed or a diode can be added to the relay across the coil supply and return.**

Notes: Internal relays K1, K2, K3 on the connector panel are dry contacts:

CT	Center contact
NO	Normally open contact
NC	Normally closed contact

Table C–10: J7: RVP8 "SPARE"; RCP8 "BITE 19:0"

Pin	Electrical Specification	RVP8 Signal Name	RCP8 Signal Name
1	TTL		sAux[0]
2	TTL		sAux[1]
3	TTL		sAux[2]
4	TTL		sAux[3]
5	TTL		sAux[4]
6	TTL		sAux[5]
7	TTL		sAux[6]
8	TTL		sAux[7]
9	TTL		sAux[8]
10	TTL		sAux[9]
11	TTL		sAux[10]
12	TTL		sAux[11]
13	TTL		sAux[12]
14	TTL		sAux[13]
15	TTL		sAux[14]
16	TTL		sAux[15]
17	TTL		sAux[16]
18	TTL		sAux[17]
19	TTL		sAux[18]
20	TTL		sAux[19]
21	GND		
22	GND		
23	GND		
24	GND		
25	GND		

Table C–11: J8: RVP8 "SPARE"; RCP8 "ANALOG IN"

Pin	Electrical Specification	RVP8 Signal Name	RCP8 Signal Name
1	±20VDC Differential Analog Inputs Positive Side	Amux0+	Amux0+
2		Amux1+	Amux1+
3		Amux2+	Amux2+
4		Amux3+	Amux3+
5		Amux4+	Amux4+
6		Amux5+	Amux5+
7		Amux6+	Amux6+
8		Amux7+	Amux7+
9		Amux8+	Amux8+
10		Amux9+	Amux9+
11	GND		
12	GND		
13	GND		
14	±20VDC Differential Analog Inputs Negative Side	Amux0–	Amux0–
15		Amux1–	Amux1–
16		Amux2–	Amux2–
17		Amux3–	Amux3–
18		Amux4–	Amux4–
19		Amux5–	Amux5–
20		Amux6–	Amux6–
21		Amux7–	Amux7–
22		Amux8–	Amux8–
23		Amux9–	Amux9–
24	GND		
25	GND		

Table C–12: J9 RVP8: "MISC I/O" ; RCP8: "PED/STATUS"

Pin	Electrical Specification	RVP8 Signal Name	RCP8 Signal Name
1	Configurable I/O–62 Digital Lines:		sWavegpFlt
2			sInterlockFlt
3			sLocal
4			sLowerEL
5			
6			
7			
8	±6 to ±70 VDC Input		AzTach+
9	±6 to ±70 VDC Input		ElTach+
10	±10 VDC Output		AzDrive
11	GND		
12	GND		
13	GND		
14	Configurable I/O-62 Digital Lines:		sAirflowFlt
15			sMagCurrentFlt
16			sStandby
17			sUpperEL
18			
19			
20			
21	±6 to ±70 VDC Input		AzTach–
22	±6 to ±70 VDC Input		ElTach–
23	±10 VDC Output		ElDrive
24	GND		
25	GND		

Notes:

1.) I/O-62 lines can be configured in **softplane.conf** in groups of 4 for the following options:
RS422 differential vs single–ended
Input or output sense
Input termination for single–ended lines, pull-up (...Term=1),
pull-down (...Term=–1) or un-terminated (...Term=0)

2.) All RCP8 status variables (starting with "s") are terminated with pull–up's in the default **softplane.conf.**

3.) Antenna pedestal tachometer inputs are adjusted by a pot on back of the Connector Panel. The tach and drive signals are not configured in **softplane.conf**.

Table C–13: J10 "SERIAL"

Pin	Electrical Specification	Comment
1	GND	
2	RS232C Rx	
3	RS232C Tx	
4	—	
5	GND	
6	—	
7	—	
8	—	
9	—	

Table C–14: J11 "SERIAL"

Pin	Electrical Specification	Comment
1	GND	
2	RS232C Rx	Channel 0
3	RS232C Tx	Channel 0
4	RS232C Rx	Channel 1
5	GND	
6	RS232C Tx	Channel 1
7	–12VDC @ 50mA max regulated	Regulated power supply
8	+12VDC @ 50mA max	Regulated power supply
9	+5VDC @ 50mA max	Regulated power supply

Table C–15: J12 "S–D"

Pin	Electrical Specification	RVP8 Signal Name	RVP8 Signal Name
1	Nominal 90V 60Hz Synchro Signals	RefEL+	RefEL+
2		RefEL–	RefEL–
3		SyEL1	SyEL1
4		SyEL2	SyEL2
5		SyEL3	SyEL3
6	GND		
7	Nominal 90V 60Hz Synchro Signals	RefAZ+	RefAZ+
8		RefAZ–	RefAZ–
9		SyAZ1	SyAZ1
10		SyAZ2	SyAZ2
11		SyAZ3	SyAZ3
12	GND		

The pin numbers are embossed on the J12 plastic connector but can be hard to read by eye. Facing the backpanel connector the pin arrangement is:

```
1 RefEL+    4 SynEL2    7 RefAZ+    10 SynAZ2
2 RefEL–    5 SynEL3    8 RefAZ–    11 SynAZ3
3 SynEL1    6 Ground    9 SynAZ1    12 Ground
```

The mating plug is AMP 350735–1 using Amplatch pins 350547–1. The corresponding hood comes in two identical pieces: AMP 640717–1, along with #6 x 1/2" self-tapping screw. You must use two hoods and two screws per plug.

The following table lists the maximum RMS voltage that can be applied to the backpanel's Molex SYNCHRO connector for each value of plug-in SIP resistor. The AZ channel voltages are set by SIP S1, whereas S2 sets the EL voltage levels. These resistors are socketed, and can be changed by removing the back cover of the IO62–CP panel

S1 or S2	Max Ref(RMS)	Max S–S(RMS)
47K	56V	31V
68K	81V	45V
100K	118V	66V
150K	178V	99V
220K	261V	145V

Note that the 'Ref' inputs have somewhat lower gain than the three 'S' inputs. This is because the precision of the S/D angle conversion is affected primarily by the precision at which the three 'S' voltages can be measured. The backpanel therefore biases the gains so that the 'S' voltages can be made as large as possible, i.e., without the 'Ref' voltages first filling the A/D conversion range.

The appropriate resistor is the smallest value such that the maximum S-to-S voltage of the synchro (which is angle dependent) still fits within the table range. The reference voltage should then fit easily into its corresponding maximum range. Don't worry if it doesn't; the important thing is to match the 'S' line voltages.

For example, a traditional 90Vrms 1:1 synchro would best use the 150K resistor, whereas a 105Vrms unit would require the 220K value. Note that you can check for proper A/D conversion levels of the synchro inputs using the 'help view' menu of the RCP8.

Important: The synchro voltage input feature is only available on Rev.B and higher backpanels. If you are running an RCP8 with a Rev.A backpanel and would like to switch to synchro inputs, SIGMET will be happy to upgrade your panel at no cost.

Table C–16: RVP8 BNC Connector Pin Assignments

Ref Designator	Label	Electrical Specification	Signal Name
J13	TP1	5V 75Ohm	
J14	TRIG–1	12V 75Ohm	Trigger[1]
J15	TRIG–2	12V 75Ohm	Trigger[2]
J16	TP2	5V 75Ohm	
J17	TRIG–3	12V 75Ohm	Trigger[3]
J18	TRIG–4	12V 75Ohm	Trigger[4]

Table C–17: RCP8 BNC Connector Pin Assignments

Ref Designator	Label	Electrical Specification	Signal
J13	TP1	5V 75Ohm	
J14	SPARE		
J15	SPARE		
J16	TP2	5V 75Ohm	
J17	SPARE		
J18	SPARE		

C.3 IFD Module (RVP8 Only)

The IFD module is a small metal box which can be mounted inside the receiver cabinet. The IFD is shown in Figures C–7 and C–8. Cooling of the inside components is accomplished by direct conduction to the case. It is desirable to place the module in an environment that allows external convective cooling.

The IFD is equipped with its own auto ranging power supply (110 to 240 VAC 50/60 Hz) which is mounted on the side of the IFD. On the other side of the IFD are two anti-aliasing filters. These analog filters must be specified for the radar IF frequency. The filters have an 8 MHz bandwidth centered about the IF frequency.

Figure C–7: RVP8/IFD Module

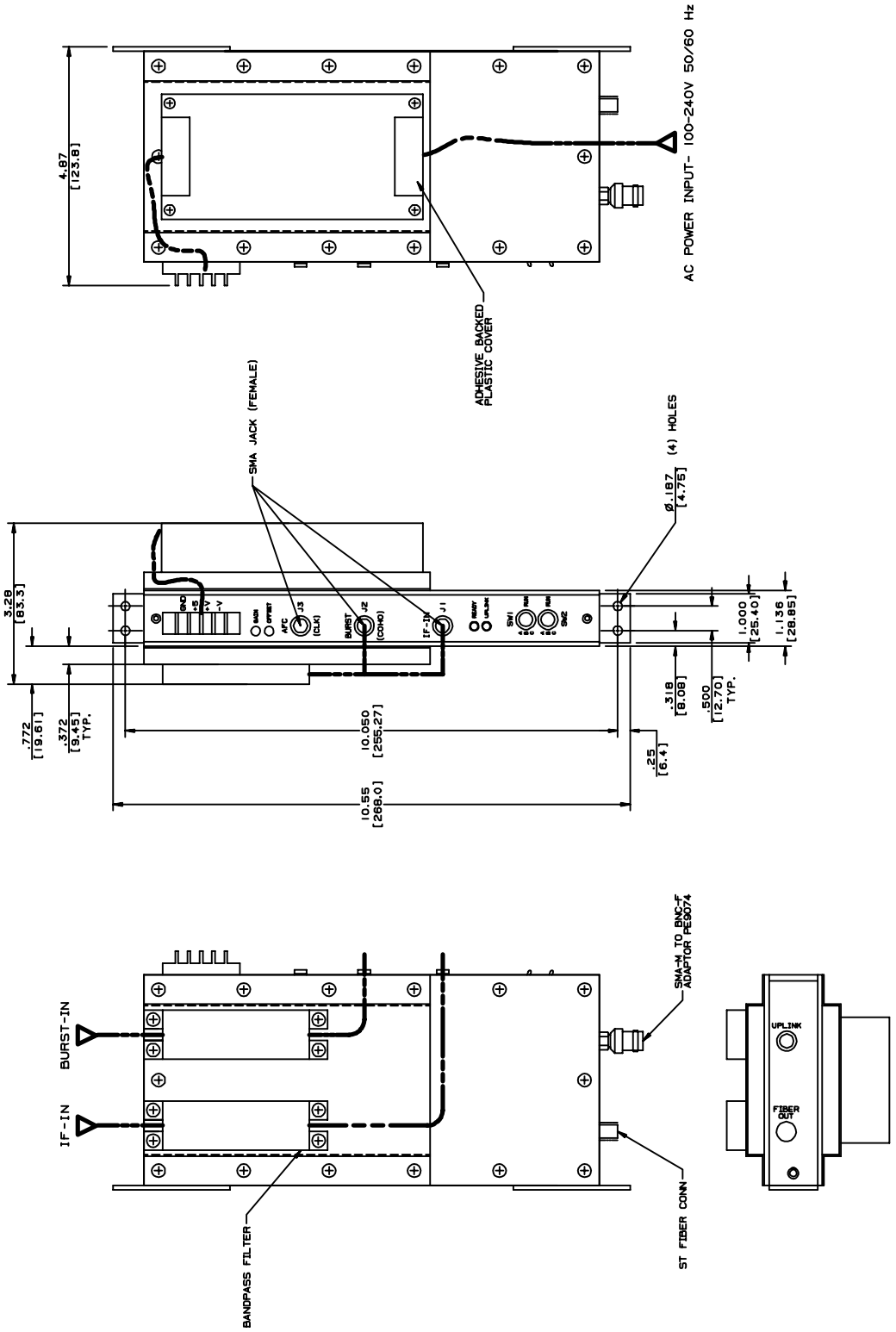
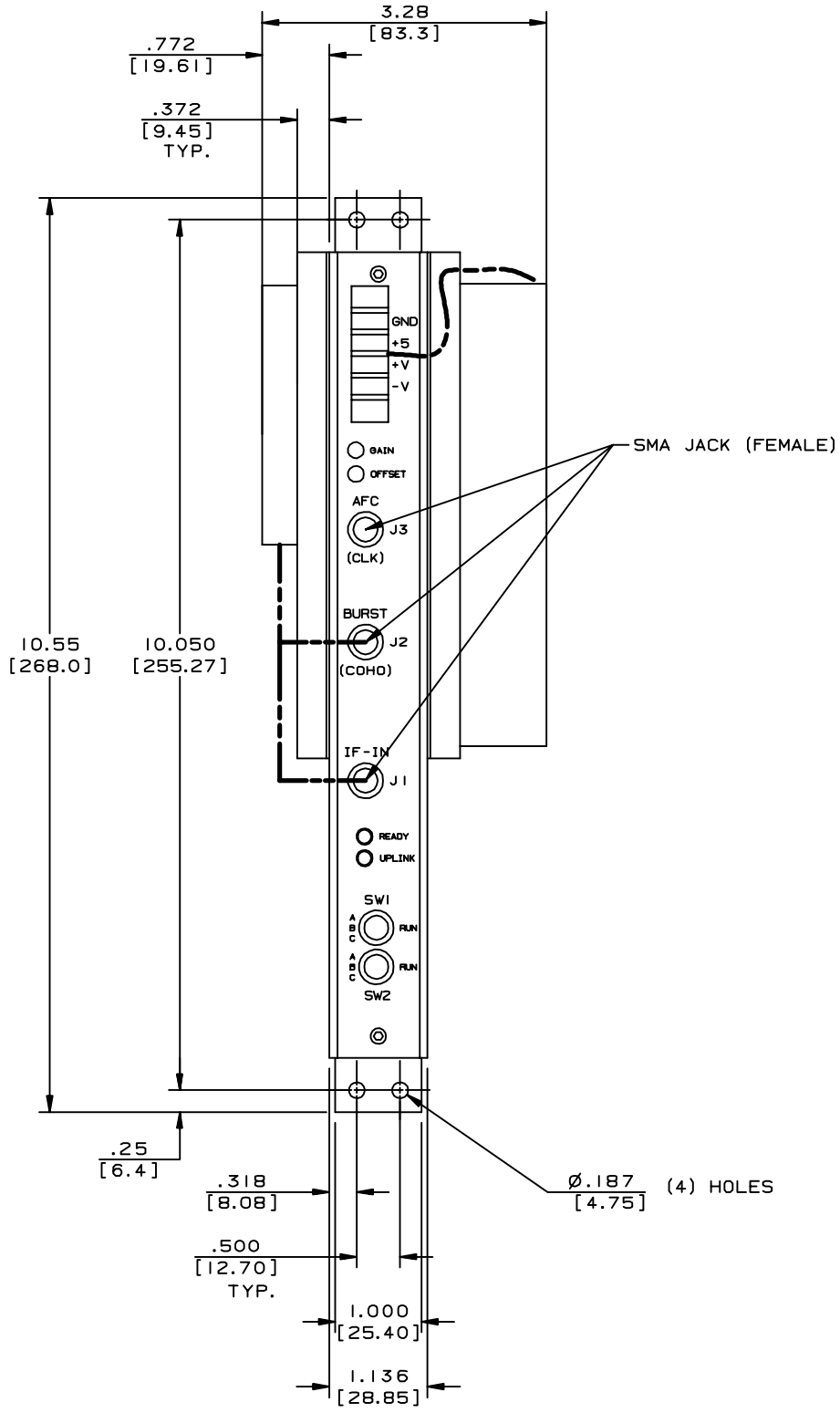


Figure C–8: IFD Front Panel



C.4 DAFC Module (RVP8 only)

The Digital AFC (DAFC) module is used on RVP8 for magnetron systems to interface to a digitally controlled STALO. The DAFC "T's" off the coax uplink cable. Power can be provided by running discrete wires from the IFD. Note that +5 VDC is all that is required to run the DAFC. If you want to supply the STALO power over the ribbon cable to the IFD, you can connect the +24 VDC input to an appropriate power supply. Otherwise, you can power the STALO directly.

The DAFC outputs up to 24 TTL lines to the STALO digital control/interface. Since these are TTL, the DAFC should be mounted within 10 to 30cm of the STALO if possible. For details on the DAFC, including pin assignment examples for some commercial STALO's, please refer to the RVP8's Installation chapter.

Figure C–9: View of DAFC Module