

Vaisala PTB220 Barometer

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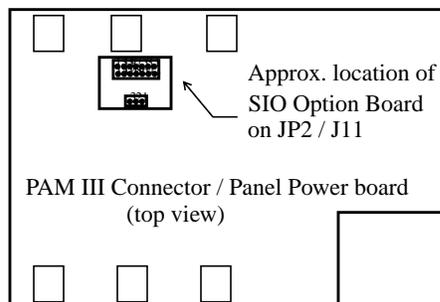
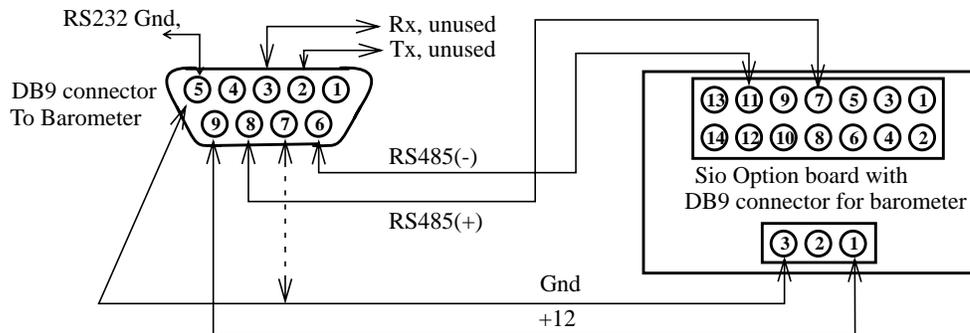
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1) Description:

The Vaisala PTB220 pressure sensor is housed in the PAM electronics box. The sensor has a serial port and a pressure inlet. The serial port provides both RS232 and RS485 communication as well as power from the electronics box. The pressure inlet is routed via a small hose to a fitting on the bottom of the electronics box. From the bottom of the electronics box another hose connects the inlet to a static pressure plate mounted on the lower crossarm of the 'pam mast' at 2-m. There is a small hole in the bottom of this plate which must remain unobstructed for proper equalization with the atmosphere.

2) RS485 Serial Communications:

The RS485 mode of communications on the PAM Sensor Bus frees up an EVE serial port, however, operational limitations exist and some barometers appear more likely to fail in this mode. To connect the barometer to the Sensor Bus, a modified SIO Option board which includes a short cable for the barometer is inserted on the PAM III front panel board in between JP2 and J11.



Note on PTB220 Wiring:

PTB220 Power Gnd is on Pin-7, which is normally RS232 RTS. This non-standard wiring can cause problems if other sensors are on the bus.

Instead, wire ground (pwr/232) to pin-5 (rs232 standard).

The PTB220 commons its grounds 5 (rs232) and 7 (power) internally

EVE communicates with the PTB220 using a poll command that is distinct from the Sbus message protocol defined by NCAR. Likewise the barometers must ignore all other messages that are not addressed to them. The EVE configuration file declarations for RS485 communications:

```

# EVE Configuration File config.dat declarations for using PTB220 on SBUS:
# Sensor bus port declaration/protocol:
SIO: /tyCo/1 9600 none 8 rs485
.....
#Vaisala Barometer
POLL: VAIS /tyCo/1 5sec TIMEOUT=.5sec
\rSEND 1\r
B%u %f %f
/ID
PRES F
BOX_TEMP F

```

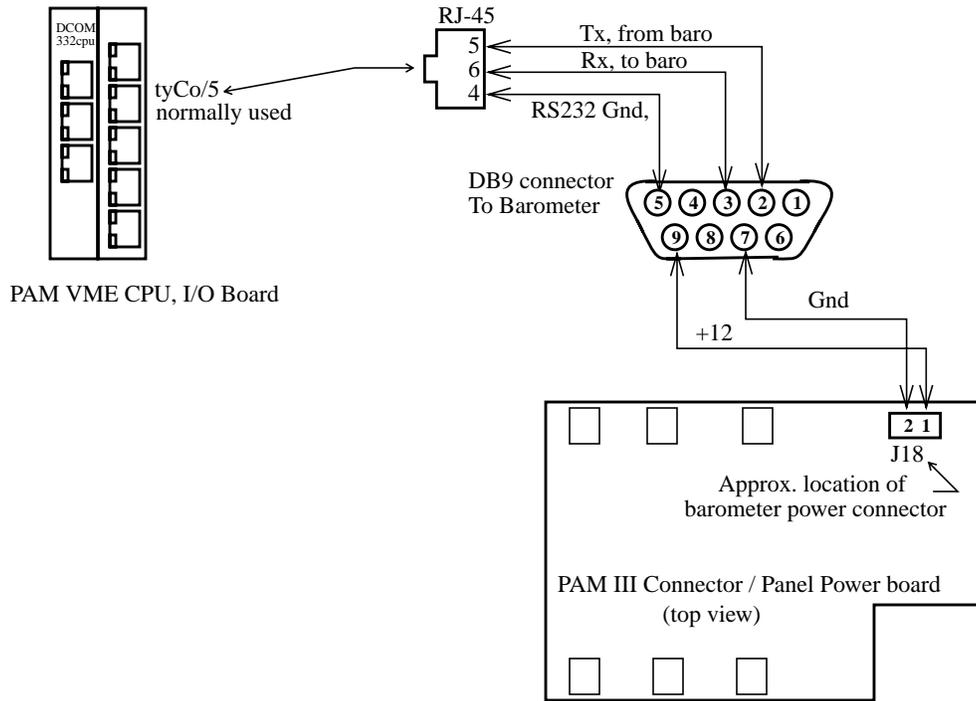
The PTB220 is operated in the 'POLL' mode using the default 'SEND 1' command. With RS485 communications, the PTB220 must be setup with the same protocol as all of the other sensors operating on the bus. This setup can be accomplished using the EVE 'talk' facility or with a PC:

The following commands setup the barometer for RS485:

<pre> OPEN 1 </pre>	<pre> puts barometer into stop mode and initiates command prompt requests NOTE: the internal address may be something other than 1 before it gets reassigned. If no prompt is echoed after the open command, try it again using the sensor's serial number. </pre>
<pre> SMODE POLL ECHO OFF ADDR 1 FORM "B1 " 4.2 P1 " " 3.1 T1 #r #n SERI 9600 N 8 1 F SERI 9600 N 8 1 H RESET </pre>	<pre> same as RS232 inhibits echo of ">" prompt set the internal address sets the output format. same as RS232 sets the communications rate: typical use Half Duplex is recommended by Vaisala closes / restarts barometer with new setup </pre>

3) RS232 Serial Communications:

The Vaisala PTB220 can be operated on a dedicated RS232 serial line using a y-cable which provides both RS232 Tx/Rx and Power. A DE9 connector plugs into the barometer on one end and the others connect to EVE's VME serial port via a RJ45 connector and a power drop on the front panel.



With RS232 Operations, more reliable operations can be expected. The barometer can be operated either in polled, or in automatic message output modes. The sensor baud rate can also be reduced to help improve data system interrupt handling margins, however for convenience it is probably better to retain the same baud rate as with RS485 to prevent confusion when switching back and forth between methods.

For *automatic message output in RS232*, the EVE configuration file declarations are:

```
# EVE Configuration File config.dat declarations for using PTB220 on individual serial port:
#Vaisala Barometer
SIO: /tyCo/5 1200 even 7
SENSOR: VAIS asyncIn /tyCo/5
B%u %f %f
/ID
PRES F
BOX_TEMP F
```

With the following commands to setup the barometer:

OPEN 1	puts barometer into stop mode and initiates command prompt requests
SMODE RUN	automatic message output mode
ECHO OFF	
ADDR 1	set the internal address
INTV 5	sets the output interval to 5 seconds
AVGR 5	sets the averaging interval
FORM "B1 " 4.2 P1 " " 3.1 T1 #r #n	sets the output format. same as RS232

SERI 1200 E 7 1 F
RESET

sets the communications protocol
restarts barometer with the new settings

For *polled mode output in RS232*, the EVE configuration file declarations and barometer setup commands are the same as shown for RS485 above, with the exception that 'seri' protocol can be adjusted as desired.

Command Summary (*See the complete Vaisala manual for more*):

S	To stop output while in the Run mode
R	To start output in the Run mode
These commands are available after typing the 'S' for stop while in the Run mode. Note that the Stop mode Command Prompt = ">")	
OPEN 1	Opens command communications while in stopped/pollled mode....Note id# may be different
ADDR x	Sets id# other than 1
SMODE	Show the default mode setting
SMODE RUN	Set the auto-sending mode for the barometer. In RUN mode continuous outputting begins from power-up.
?	Shows all basic barometer settings.
SERI 1200, E, 7, 1, f (b,p,d,s,x)	Set or inspect serial bus settings.
FORM	Shows the output format.
FORM "B1 " 4.2 P1 " " 3.1 T1 " #r #n	Sets the output format of the barometer. Note: The spaces in the statement are needed.
UNIT mbar, C	Sets the pressure and temperature units
AVRG 5	Sets averaging time in seconds, 0 .. 60
SCOM	Allows unique poll command other than 'send'
INTV 5	Sets message output interval in seconds for asynchronous communications: 0 .. 225

4) Problems / Trouble Shooting Hints:

The most likely problem is bad communications. If the sensor does not respond via the EVE talk program at 1200 baud, try 9600 baud.

If a message is output but is rejected by EVE, then the wrong format is probably being used. Try using the EVE talk facility to examine the output and either use the "FORM" command above to change the format or adjust the EVE configuration.