

**Pike Aerospace Research Corporation**  
420 Cross Street  
Sudbury, Ontario  
Canada, P3E-3W1

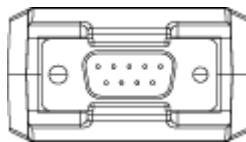
Phone: (705) 586-2255  
Skype: pikeaero

email [info@pikeaero.com](mailto:info@pikeaero.com)  
web: <http://www.pikeaero.com>

---

**Model PA10/T2 Serial Temperature / Humidity Sensor**

***User's Manual***  
Rev 2.2 2012



## **PA10/x Specifications**

**Temperature Range:** -55 ° C to +125 ° C (-67 ° F to +257 ° F)

**Dimensions:** 9.1 cm (3.6") x 4.2 cm (1.7") x 2 cm (0.8")

**Housing Material:** injection molded ABS plastic

**Housing Colour:** bone white

**Power source:** Data Cable (DTR/RTS) or (OPTIONAL +5VDC Power Source).

**Current Consumption:** ~10 mA

**Communications Interface:** RS232.

**Maximum RS232 extension cable length:** 152.5 m (950 ft.). .

**Communications Protocol:** 16-bit error detecting and correcting protocol.

## Communication

The PA10/x sensor communicates at **2400 baud, 8 data bits, no parity, one stop bit (8N1)**.

For data-line powered operation, both DTR (Data Terminal Ready) and RTS (Request To Send) shall be asserted by the host at all times while communications are taking place. The PA10/x requires approximately 200 microseconds from the time that DTR+RTS are asserted, until the time it is ready for receiving data.

The communication between the host and the PA10/x is a simple master/slave style of protocol. The host (computer or device server) register queries, and the PA10/x responds. The fields in each query and response packet are separated by a ':' (colon) character, and the packet is terminated with a carriage-return (Hex 0D) character, or a carriage-return/line-feed pair (Hex 0D/0A).

REGISTER	VARIABLE	DESCRIPTION
R0	VAR_S	Number of Registers.
R1	PRODUCT	Product Name.
R2	SERIAL	Unit Serial Number.
R3	VENDOR	Vendor Identification Data.
R4	VERSION	Firmware Version.
R5	CELCIUS	Celcius Reading.
R6	FAHRENHEIT	Fahrenheit Reading.
R7	HUMIDITY	Humidity Reading (PA10/HT Only).

## Command Packet Format

rr<CR>

rr	A register name.
<CR>	The carriage-return character. (0D Hex). <CR><LF> is also acceptable.

## Response Packet:

rr:t:a:xxxx:s:yyyy:zzzz<CR><LF>

rr	The register name.
t	The data type (I=integer,R=real,S=string,B=boolean).
a	Access Mode (R=read,W=read/write).
xxxx	Contains the value for the register.
s	Unit of measure.
yyyy	Register name.
zzzz	16-Bit hexadecimal 2's compliment checksum.

## Response Packet Examples:

R0:I:R:7\*:VARS:FBE9  
R1:S:R:PA10/T2\*:PRODUCT:F989  
R2:S:R:X110000\*:SERIAL:FA5C  
R3:S:R:www.pikeaero.com\*:VENDOR:F531  
R4:S:R:2.2\*:VERSION:FA96  
R5:R:R:22.625:C:CELCIUS:F9FE  
R6:R:R:72.725:F:FAHRENHEIT:F91E

#### **CHECKSUM CALCULATION**

The checksum is the hexadecimal representation of the the 2's compliment of the sum of all of the data up to and including the last field separator (:).

## DB9F RS232 Pinout

PI N	SIGNAL	IN/OUT *	DESCRIPTION
1	DCD	N/C	Data Carrier Detect
2	RxD	OUT	Receive Data
3	TxD	IN	Transmit Data
4	DTR **	IN	Data Terminal Ready
5	GND	-	Signal Ground
6	DSR ***	OUT	Data Set Ready
7	RTS **	IN	Request To Send
8	CTS ***	OUT	Clear To Send
9	RI	N/C	Ring Indicator

- \* IN/OUT Relative to the PA10/x device.
- \*\* DTR and RTS are required as a power source and must be asserted for data-line powered operation.
- Optimal external +5VDC power supply is available.