SciPres II™

Pressure Sensor Monitor & Single-Use Sensor

Installation, Operating & Maintenance Instructions

ENGINEERING YOUR SUCCESS.

SciPres II™ is a registered trademark of Parker Hannifin Corporation.

Contents

Precautions 4
Introduction 6
Calibration 6
Warranty 7
Standards 7
Installation & Start-up 7
Maintenance & Cleaning 7
Quick Setup Guide 8
SciPres II Monitor Specifications 9
SciPres II Sensor Specifications 10
Documentation Software for PC 11

Part A

SciPres II Monitor Hardware Overview 13
Front Panel: Data Entry & Display 14
Back Panel: Interface Options 15
Single-Use Pressure Sensors 18

Part B

SciPres II Monitor Software Overview 19
Main Menu 20
Reduced Pump Pulsation: Improved Sensor Precision 23
SciPres II Printout Format 24
RS232 Settings 25
Appendix A: Sensor Performance Data 26

Revision History:

Revision:	Description:	Author:
A	Original, Based on SciLog SciPres Manual	Arthur Dawson
B	Images, formatting improved	A Dawson / G Benevento

Precautions

READ this manual BEFORE operating or servicing this equipment.
FOLLOW these instructions carefully.
SAVE this manual for future reference.
DO NOT allow untrained personnel to operate, clean, inspect, service or tamper with this equipment.
ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.
CALL Parker Customer Service for parts, information and service.

	**WARNING** DISCONNECT ALL POWER TO THIS UNIT BEFORE INSTALLING, SERVICING, CLEANING OR REMOVING THE FUSE. FAILURE TO DO SO COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.
	**CAUTION** OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.
	**WARNING** ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TEST AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.
	**WARNING** FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD, CONNECT TO PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.
	**CAUTION** **USE ONLY CLASS 2 LISTED AC/DC POWER SUPPLIES WITH THIS DEVICE.** Parker part number 070-017TOR, OR ITS EQUIVALENT IS RECOMMENDED.

Précautions

LISEZ ce manual AVANT de faire fonctionner ou d'entretenir cet équipment.
SUIVEZ attentivement ces instructions.
CONSERVEZ ce manuel pour future référence.
NE LAISSEZ PAS du personnel non qualifié utiliser, nettoyer, inspecter, entretenir, réparer ou manipuler cet équipement.
DÉBRANCHEZ TOUJOURS cet équipement de la source de courant avant de nettoyer ou d'exécuter l'entretien.
APPELEZ PARKER pour pièces détachées, renseignements et entretien.

	**⚠ ATTENTION** DÉBRANCHEZ TOUT COURANT DE CETTE UNITÉ AVANT DE FAIRE L'INSTALLATION, D'EFFECTUER L'ENTRETIEN, LE NETTOYAGE OU AVANT DE RETIRER LE FUSIBLE. NE PAS OBSERVER CES PRÉCAUTIONS RISQUERAIT DE CAUSER DES BLESSURES CORPORELLES OU/ET D'ENDOMMAGER L'ÉQUIPEMENT.
	**⚠ PRUDENCE** SOYEZ PRUDENT LORSQUE VOUS MANIPULEZ DES APPAREILS SENSIBLES À L'ÉLECTROSTATIQUE.
	**⚠ ATTENTION** AUTORISEZ SEULEMENT LE PERSONNEL QUALIFIÉ À ENTRETENIR CET ÉQUIPEMENT. SOYEZ PRUDENT LROSQUE DES VÉRIFICATIONS, TESTS ET AJUSTEMENTS DOIVENT ÊTRE EFFECTUÉS SOUS TENSIONS. NE PAS OBSERVER CES PRÉCAUTIONS RISQUERAIT DE CAUSER DES BLESSURES CORPORELLES.
	**⚠ ATTENTION** POUR ASSURER UNE PROTECTION CONTINUE CONTRE UNE DÉCHARGE ÉLECTRIQUE, BRANCHEZ UNIQUEMENT SUR UNE PRISE CORRECTEMENT RELIÉE Á LA TERRE. NE RETIREZ PAS LA FICHE DE TERRE.
	**⚠ PRUDENCE** **Utilisez la classe 2 énumérés AC / DC avec cet appareil.** Parker part number 070-017TOR, Ou son équivalent est recommandé.

Introduction

You will find the SciPres II system easy to use. The state-of-the-art hardware and software design of the SciPres II pressure sensor and monitor combination allows you to measure and document the pressure of many filtration / separation processes. With proper maintenance, the SciPres II pressure monitor will provide many years of excellent service and performance.

Please read the following instructions carefully!

Inspections: Remove the products carefully from the shipping container. Check the contents against the purchase order to verify that all parts are included and undamaged.

Please do the inspection now, even if the products are not used immediately. Many carriers must receive damage claims within seven days of delivery. Please retain all packing material so unit may be shipped safely, if necessary.

Customer Service: If assistance is required, please contact us at:

Parker Hannifin Corporation
Bioscience Filtration
2340 Eastman Avenue
Oxnard, California, USA 93030
toll free: 877 784 2234
phone: +1 805 604 3400
fax: +1 805 604 3401
email: bioscience.na@parker.com
www.parker.com/bioprocessing

Parker Hannifin Manufacturing Ltd
Bioscience Filtration
Durham Road
Birtley, Co. Durham
DH3 2SF, England
phone +44 (0)191 4105121
fax +44 (0)191 4105312
email: bioscience.emea@parker.com
www.parker.com/bioprocessing

Parker customer service personnel will be able to serve you more efficiently if you have the following information:

- Serial number and model name of the equipment
- Installation procedure being used
- Concise list of symptoms
- List of operating procedures and conditions in use when problem arose

Calibration

The SciPres II Monitor is a calibrated device and is calibrated with test equipment that is traceable to SI (International System of Units) through NIST (National Institute of Standards and Technology).

A Calibration Certificate is included with each unit, and has a one-year expiration date.

It is highly recommended that the monitor be calibrated on an annual basis or more often if your Metrology Department deems it necessary.

Parker provides this Calibration Service, complete with a new certificate, showing the "as found" and "as left" data. You may initiate an order for this online at solutions.parker.com/service

If a quote is needed, please contact your Parker Sales Representative.

Warranty

Country specific information can be found at: www.parker.com/termsandconditions

Standards

IEC 61326-1:2006, 2012/07/10 Ed:2

IEC 61000-3-2:2014 Ed.4

IEC 61000-3-3:2013 Ed.3

Conforms to UL STD 61010-1:2012 Ed.3+ R: 29Apr2016

Certified to CSA STD C22.2 No 61010-1-12:2012 Ed.3+U1;U2

Intertek
3187282

Installation & Start-Up

Installation of the SciPres II must be carried out only by trained personnel in accordance with the relevant regulations and this operation manual.

Make sure that the technical specifications and input ratings of the SciPres II are observed. See "SciPres II Specifications"

The protection provided by this equipment may be impaired, if the SciPres II is used in a manner or for purposes not specified by the manufacturer, Parker Hannifin Corporation.

Maintenance & Cleaning

The SciPres II Pressure Monitor is maintenance free. The single-use sensors come pre-calibrated from the factory and require no maintenance.

To remove dust, dirt and stains, the outer surfaces of the SciPres II may be wiped using a soft, non-fluffing cloth moistened with water. If required, you may also use a mild detergent or 2-propanol.

The single-use sensors may be sanitized with 0.1 Molar NaOH, or isopropyl alcohol. They may be autoclaved once or may be gamma irradiated.

Quick Set-up Guide

The contents of your SciPres II Pressure Sensor Monitor & Single-Use Sensor include:

- 1 Monitor
- 3 sensor monitor cables (CBL-007)
- 1 power supply cord with 3 adapter clips (US, EU and UK version)



Set-up:

1. Connect the power supply using the applicable adapter clip (US is shown)
2. Connect the sensor cables to monitor ports
3. Connect sensors to cables
4. Connect power supply to outlet

This completes the SciPres II Quick Set-up.

SciPres II Monitor Specifications

Dimensions		W: 6.0¨ (15.2 cm); Height 2.75¨ (7.0 cm); D: 5.5¨ (14.0 cm)
Weight		1.5 lb (0.69 Kg)
Enclosure		Molded Plastic / Stainless Steel
Electrical	**Power**	100-240 V, 60/50 Hz AC Adaptor, 12 VDC, 500 ma Output, Center positive. Use only Class 2 listed power supplies.
	Battery	BR2032, used for internal clock only, not user serviceable.
	Sensor	Choice of five sizes: Luer, 3/8" Barb, 1/2" Barb, 3/4" Tri-Clamp (TC) Sanitary and 1" Tri-Clamp ('Ladish') Sanitary.
	I/O Port - 1	'P1, P2 and P3' Female Amphenol connectors
	I/O Port - 2	Output' - Female DB25, four TTL outputs for alarms, four 4-20 ma Analog output signals, 18 bit resolution.
	I/O Port - 3	'Printer / PC' - DB9FM, RS-232 output
	I/O Port - 3	'Serial I/O' - Female DB9 (disabled).
	I/O Port - 4	'12VDC 500ma' - DC Input for AC Adaptor.
	I/O Port - 5	'USB' RS-232 output, same data as "Printer /PC" port.
Software	**Pressure Mode**	Captures stored calibration data from the sensors, digital display of up to three pressure sensor values and either Differential or Trans Membrane pressure, with four user-definable alarms.
Environmental	**Temperature**	4 – 60° C
	Altitude	Up to 2000 Meters
	IP Rating	IP50, Indoor dry environments, unit is wipe-down only
	Rel. Humidity	0 – 95%
	Voltage	Fluctuation allowed: +/- 10%
	Pollution	Degree: 2

SciPres II Sensors Specifications

Power	5 VDC provided by SciPres II Monitor.
Fluid Connections	Choice of five sizes: Luer, 3/8" Barb, 1/2" Barb, 3/4" Tri-Clamp (TC) Sanitary and 1" Tri-Clamp ('Ladish') Sanitary.
Wetted Materials	Polysulfone transfer tube, Silicone gasket, and a Sensing element comprised of Polycarbonate and Medical Grade Dielectric Gel. All fluid path components are USP 88 Class VI. All fluid path components are animal derived component free.
Sensor Type	Medical grade, silicone piezoresistive sensing element with on-chip temperature compensation.
Sensor Isolation	Insoluble silicone dielectric gel isolates sensing element from process solution. The gel is a non-toxic, non-allergenic elastomeric system.
Pressure Range	-10 to 60 psi (-0.69 to 4.14 bar).
Accuracy	±0.3 psi, 0-30 psi ±3% of reading, >30-60 psi
Resolution	0.01 psi (0.001 bar)
Temperature Range	0 to 60 °C (0 to 140 °F)
Sensor Connector & Cables	Waterproof. When connected.

⚠ **CAUTION:** The maximum recommended pressure for the sensors is 60 psi.

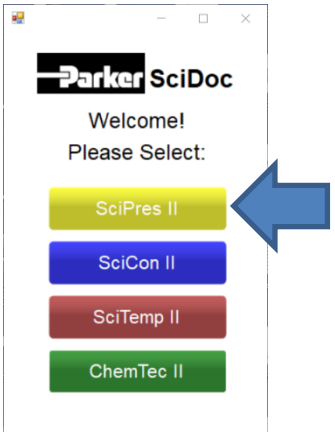
If this is exceeded, problems with leakage and functionality can occur.

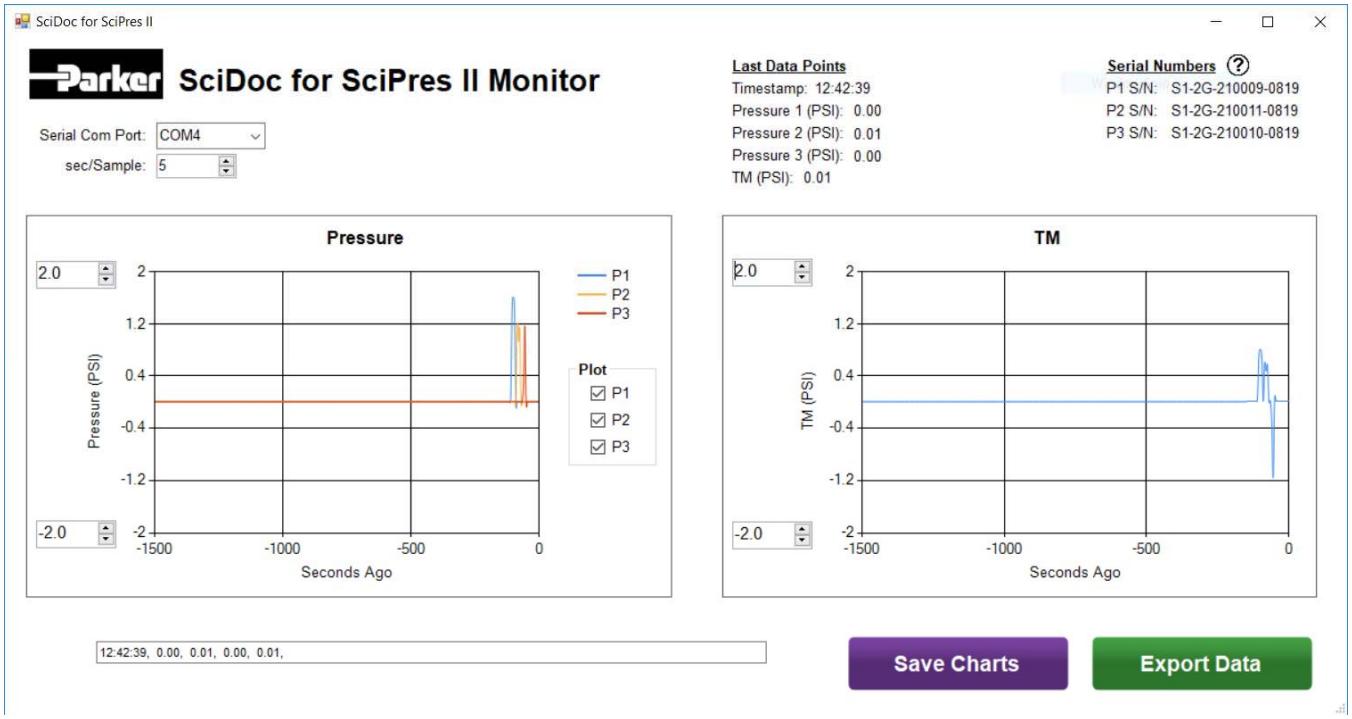
Documentation Software for PC

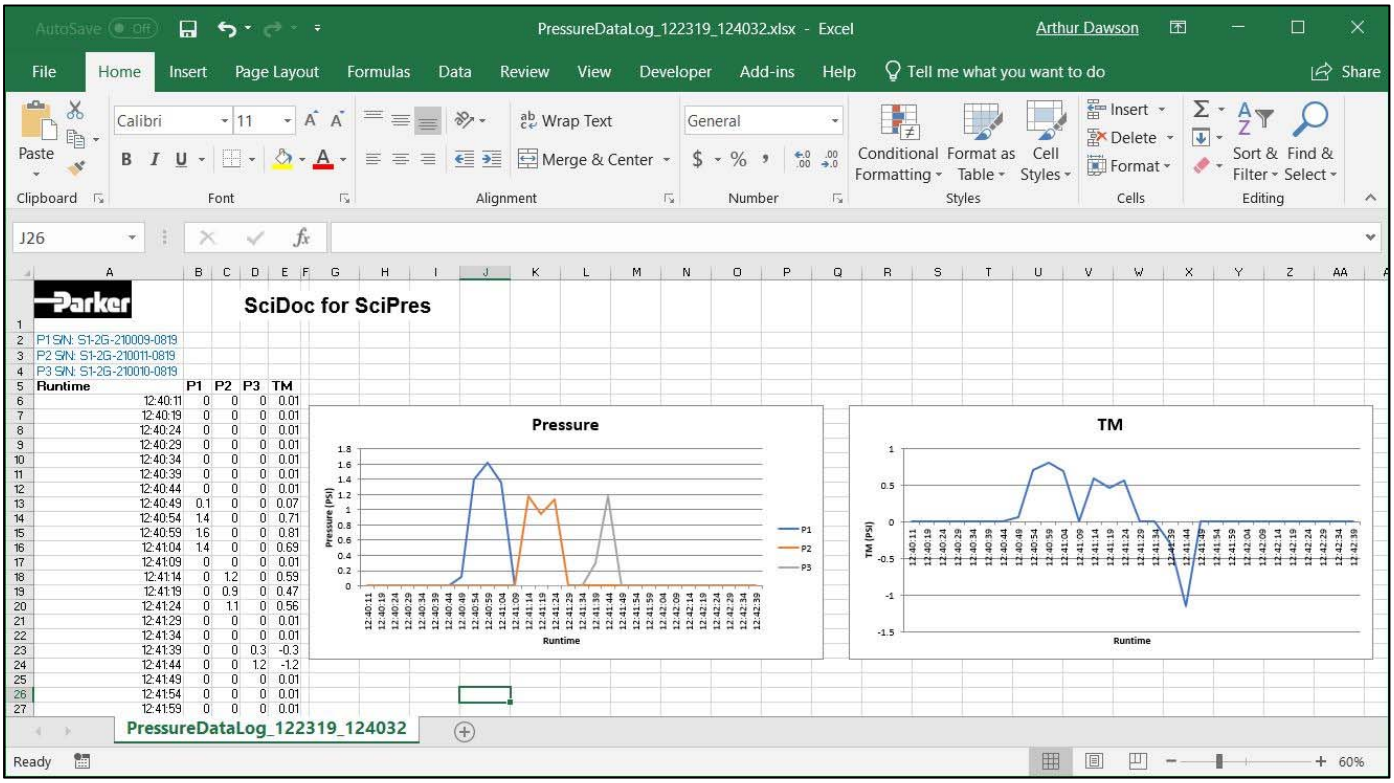
SciPres II SciDoc Software Package

The SciDoc software package provides complete process analysis with graphing of data and real-time verification and documentation of process parameters.

- Download SciDoc software from http://discover.parker.com/sensor-monitor-support-gen2 **Run Setup.exe** to automatically install
- Plug in the SciPres II monitor
- Place in standby mode by pressing the **ON/STBY** button
- Connect a SciPres II Sensor using the cables provided
- Use enclosed USB cable to connect with a PC to automatically create a USB Serial Device with an assigned Com Port in the Device Manager
- Go to **START** – All programs
- In the SciDoc folder on your PC, click on **SciDoc** to launch the program
- Click on the yellow **SciPres II** button for the next screen to appear
- Choose the detected or assigned **Com Port** and set the **sec/Sample** time to match the Print Time setting on the Monitor (Default = 5 seconds)
- Take the Monitor out of Standby mode and the serial numbers of the sensors will be captured along with the associated data







The **Save Charts** button saves .jpg images of the charts at that time.

The **Export Data** button exports the data and charts as both an .xls file and a .txt file.

Files are saved at C:\Serial Data Loggers by Monitor type. All files can be readily turned into PDFs.

NOTE: The charts are do not adjust their range automatically. You must manually adjust the low and high limits to assure you have visibility of the entire data range!

Part A: SciPres II™ Hardware Overview

The SciPres II consists of two major components, the SciPres II Pressure Monitor, with its power supply, and the SciPres II Single-Use Sensors and cables.

The Monitor is a small desktop package with a backlit display and seven buttons for easy interface and menu selections. It displays pressure for up to 3 sensors in real time, along with one of two calculated pressures if desired, digital format. The monitor's output is also available in digital and analog formats, RS-232 and 4-20 mA. It comes with a small 100-240 VAC wall adapter as a power supply.

The monitor reads and utilizes calibration data from SciPres II sensors that have been calibrated to two points, 0 and 30 psi. It has also been equipped with a Supervisor Password, a Max Pressure Watchdog, and a Noise Filter setting.

The **"Max Pressure Watchdog"** feature records in the sensor's memory the maximum pressure seen by the sensor while it is connected to the SciPres II Monitor. This value is displayed for a few seconds along with the Sensor ID and calibration information when the Monitor is powered up after a sensor is connected.

Caution: The maximum recommended pressure for the sensors is 60 psi.

If this is exceeded, problems with leakage and functionality can occur.

A Filter setting is used to average the pressure signals when peristaltic pump heads are used. This makes the display readings easier to interpret, and produces cleaner graphs that are easier to read. At the lowest setting, the data is "live", and at the highest, it is averaged over a four second period.

The SciPres pressure sensors utilize a silicone piezoresistive sensing element in a polysulfone tube available in five sizes: Luer, 3/8" or 1/2" Barb, 3/4" and 1" 'Ladish' Sanitary TC connections.

All sensors are pre-calibrated at the factory, and retain the calibration data on a small chip embedded in the sensor body. The following information is retained and is accessed upon connection to the sensor:

- ID number (Contains Size, Index, Unique Identifier, and Calibration date)
- Calibration Factor
- Pressure Zero Offset
- Max Pressure Value

Front Panel: Data Entry & Display

The front panel consists of a user interface, which includes an alphanumeric display and a membrane keypad to select operational modes and alarm settings. The display is a two-line, 20-character, liquid crystal display (LCD). The display is backlit to allow easy viewing over a wide range of lighting conditions.

The keypad consists of seven keys whose function does not change. These keys are used for basic control and programming of the SciPres II. The basic key definitions are:

MENU Allows entry into the parameter settings menu.

ENTER Accepts the selected parameter setting.

EXIT Exits the menu, returning to the main operational screen.

SENSOR Recaptures the factory calibration settings stored on the sensor.

ON/STBY Turns the monitor on and off.

▲ ▼ Up and Down arrows used to change parameters within the menus.

One LED is also on the front panel, on the ON/STBY key. This indicates the monitor is connected to power.

Back Panel: Interface Options

The SciPres II back panel provides interfacing ports for:

Sensor P1, P2 and P3: Connect Single-Use SciPres II Sensors here with the provided cables.

Output: Female DB25, Provides two 4-20 mA analog outputs, (18-bit resolution) for Pressure, and TTL outputs for the 4 alarms, Hi/Low P1, P2, P3 and TM or DP. TTL outputs provide a 5 VDC control signal, carry minimal current. (See Pin out on next page.)

Printer/PC Port: RS-232 output, Female DB9. The printer PN or PC can be connected to the SciPres II via this port.

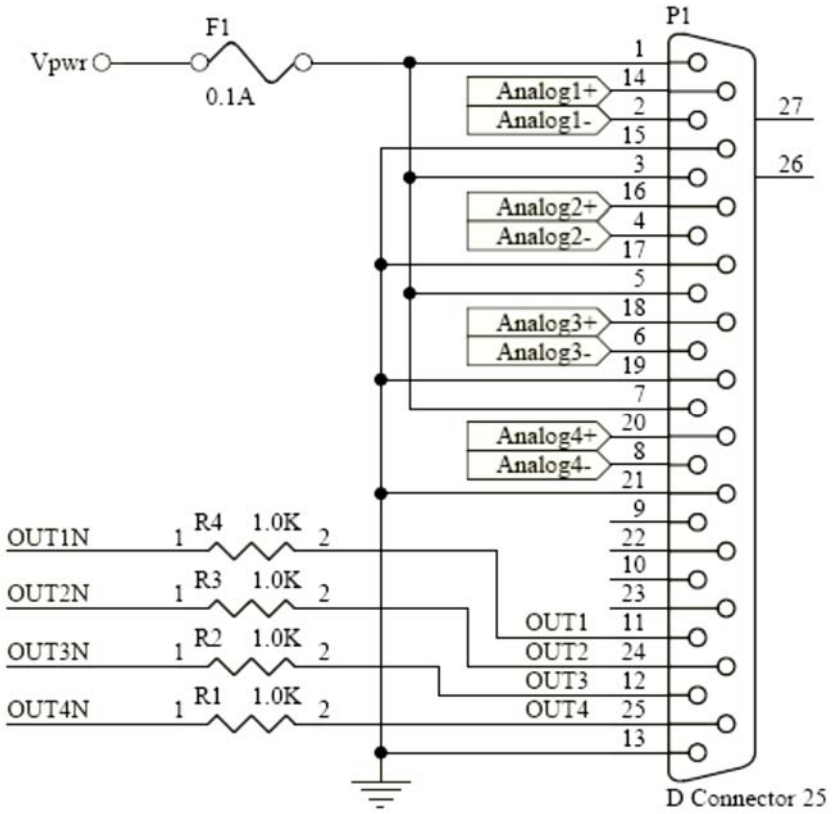
A printer cable (P/N 080-096) is required to make the connection between the printer and the SciPres II, or a Parker RS-232 to USB adapter cable (P/N 080-USB) to connect the SciPres II to a PC for data archival.

Serial I/O: Female DB9, Reserved for future use.

USB: RS-232 output identical to Printer / PC port. A standard A/B USB cable is used with this port. If needed, one may be purchased from Parker, PN 090-158.

12 VDC/500 mA: Input power**:** Round connector for AC power supply.

Pin Out of the DB25 female "Output" connector:



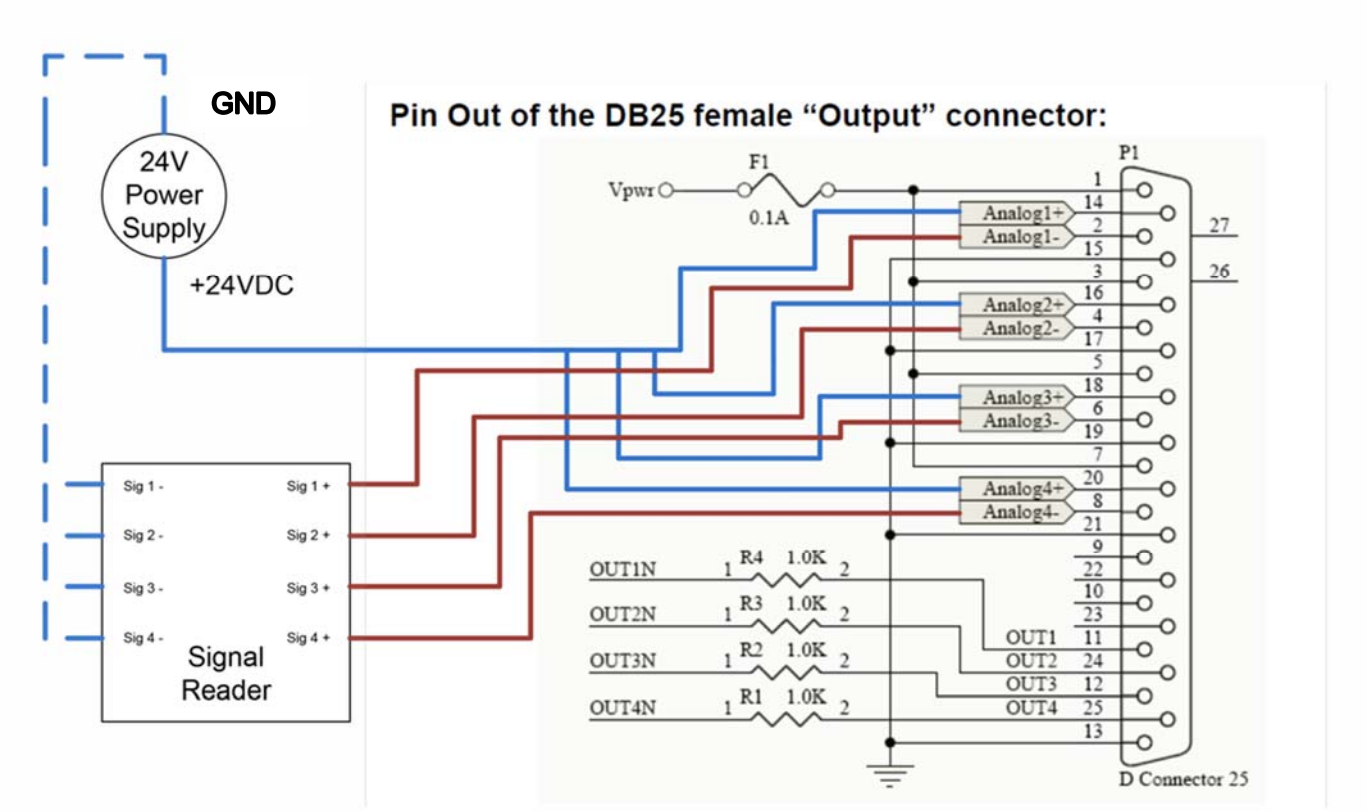
For 4-20 ma output of Pressure at P1 (Analog 1), use pins 2 (4-20 -) and 14 (4-20 +). If excitation is needed in the loop, connect pin 1 (Vpwr) to pin 14 (4-20 +), and connect the output (signal) cable to pin 2 (4-20 -) and pin 15 (Gnd).

For 4-20 ma output of Pressure at P2 (Analog 2), use pins 4 (4-20 -) and 16 (4-20 +). If excitation is needed in the loop, connect pin 3 (Vpwr) to pin 16 (4-20 +), and connect the output (signal) cable to pin 4 (4-20 -) and pin 17 (Gnd).

For 4-20 ma output of Pressure at P3 (Analog 3), use pins 6 (4-20 -) and 18 (4-20 +). If excitation is needed in the loop, connect pin 5 (Vpwr) to pin 18 (4-20 +), and connect the output cable to pin 6 (4-20 -) and pin 19 (Gnd).

For 4-20 ma output of Pressure at TM or DP (Analog 4), use pins 8 (4-20 -) and 20 (4-20 +). If excitation is needed in the loop, connect pin 7 (Vpwr) to pin 20 (4-20 +), and connect the output cable to pin 8 (4-20 -) and pin 21(Gnd).

The use of an end-user supplied analog loop power source is presented below:



TTL Outputs:

Hi / Low P1 Alarm: TTL 1	Pins 11 (Out0) and 13 (Gnd)
Hi / Low P2 Alarm: TTL 2	Pins 24 (Out1) and 13 (Gnd)
Hi / Low P3 Alarm: TTL 3	Pins 12 (Out2) and 13 (Gnd)
Hi / Low TM Alarm: TTL 4	Pins 25 (Out3) and 13 (Gnd)

TTL outputs are either 0 or 5 VDC, and carry minimal current. They are for TTL inputs on a PLC, or control of a 5 VDC solid state electronic relay.

SciPres II Single-Use Pressure Sensors

Connector Type	Part Number (Packs of 5)	Compatible Tubing Sizes	Max. Flow Rate*			Max. Operating Pressure
			(L / min)	(gpm / psi)	(m3 / h / bar)	
Luer	206-251	ID 0.03¨ to 0.31¨	1.0	0.26	0.23	60 psi
3/8¨ Barb	206-252	ID 0.31¨ to 0.38¨	8.0	2.11	1.81	60 psi
1/2¨ Barb	206-253	ID 0.50¨	17.0	4.49	3.86	60 psi
3/4¨ Tri-Clamp (TC)	206-254	Tubing with 3/4¨ TC	31.0	8.19	7.03	60 psi
1¨ Tri-Clamp 'Ladish'	206-255	Tubing with 1¨ TC Ladish	60.0	15.9	13.6	60 psi

Specifications for all SciPres II Flow Thru Pressure Sensors	
Material, Fluid Contact:	Polysulfone transfer tube, Silicone gasket, and a Sensing element comprised of Polycarbonate and Medical Grade Dielectric Gel. All fluid path components are USP 88 Class VI. All fluid path components are animal derived component free.
Sensor Type:	Medical grade, silicone piezoresistive sensing element with on-chip temperature compensation.
Pressure Range:	-10 to 60 psi (-0.69 to 4.14 bar).
Accuracy:	±0.3 psi, 0-30 psi ±3% of reading, >30-60 psi
Temperature Range:	0 to 60 °C (0 to 140 °F)
Sensor Microchip:	Gamma stable EPROM, stores Device ID, Calibration factors

Part B: SciPres II Software Overview

The SciPres II pressure monitor digitally displays inputs from up to three SciPres II pressure sensors simultaneously, while also calculating and displaying either trans-membrane or differential pressure.

It has also been equipped with a **"Supervisor Password"**, a **"Max Pressure Watchdog"**, and a **"Filter"** setting.

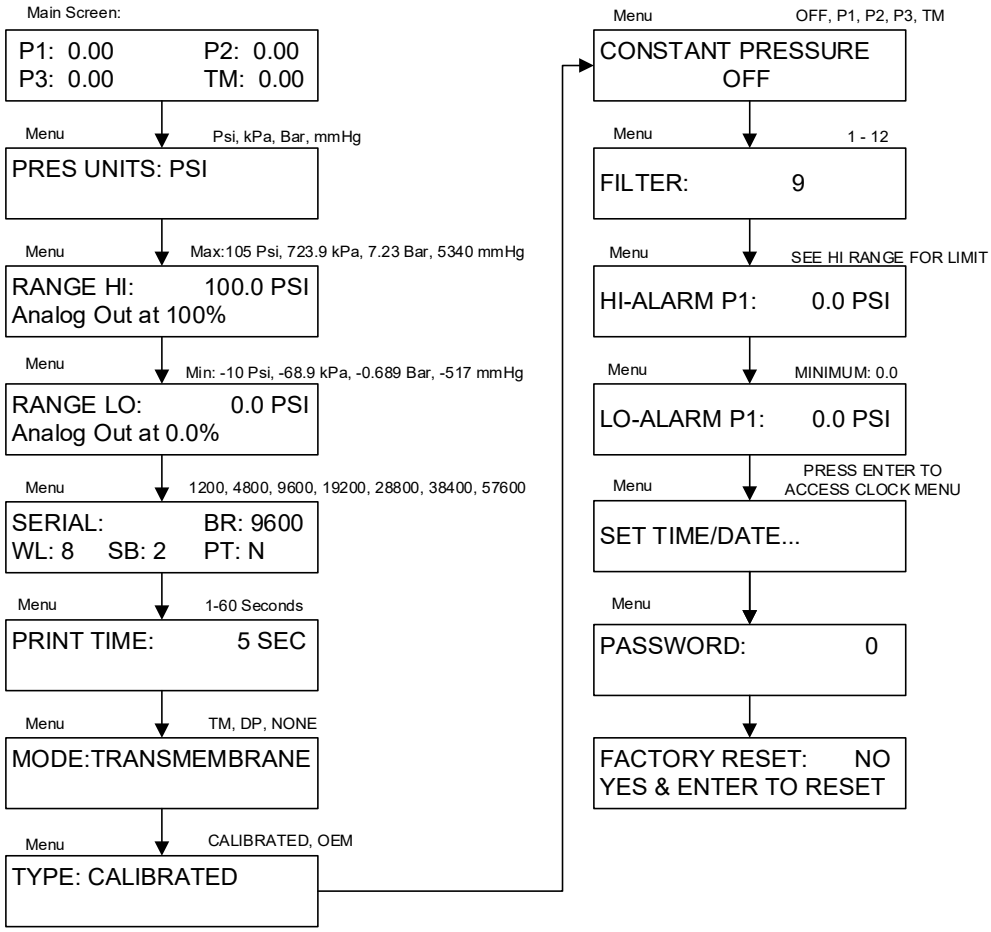
The **"Max Pressure Watchdog"** feature records in the sensor's memory the maximum pressure seen by the sensor while it is connected to the SciPres II monitor. The maximum recommended pressure for the sensors is 60 psi (4.14 bar). If this is exceeded, problems with leakage and functionality can occur. This value is displayed for a few seconds along with the Sensor ID and Cal information when the monitor is powered up and a sensor connected.

The **"Filter"** setting is used to average the pressure signals when peristaltic pump heads are used. This increases the sensor precision as well as accuracy and makes the display readings easier to interpret when compared to ever changing values caused by pulsation. Thus, it produces cleaner graphs that are easier to read. At the lowest setting, the data is 'live', and at the highest, it is averaged over a 4 second period. Please refer to the graph in section 4.0.

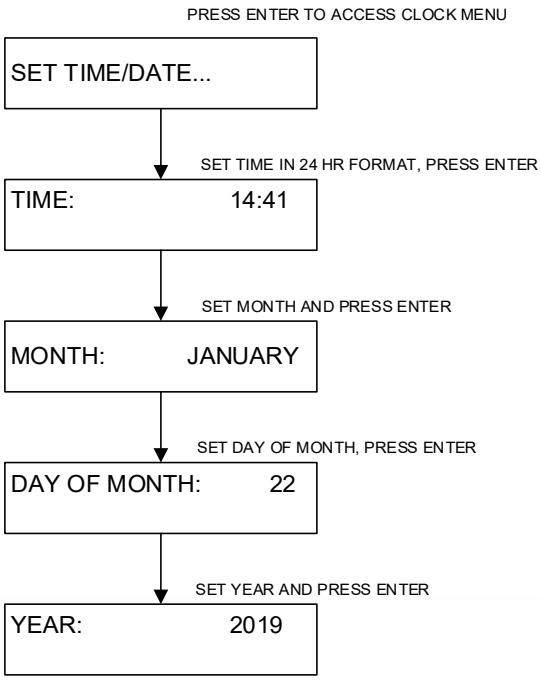
The **"Supervisor Password"** is a number between 1 and 9999 that must be entered to access the Menu and its settings. Setting the password to 0 disables it.

The **"Main Menu"** allows you to change the pressure units, (psi, kPa, bar, mmHg are available) the high and low analog range settings, adjust the baud rate and print time, change the mode between trans-membrane, differential and none, adjust the **"Filter"** setting, as well as configure user-defined hi / low pressure alarms for all four displayed values.

Main Menu



Set Time/Date Menu



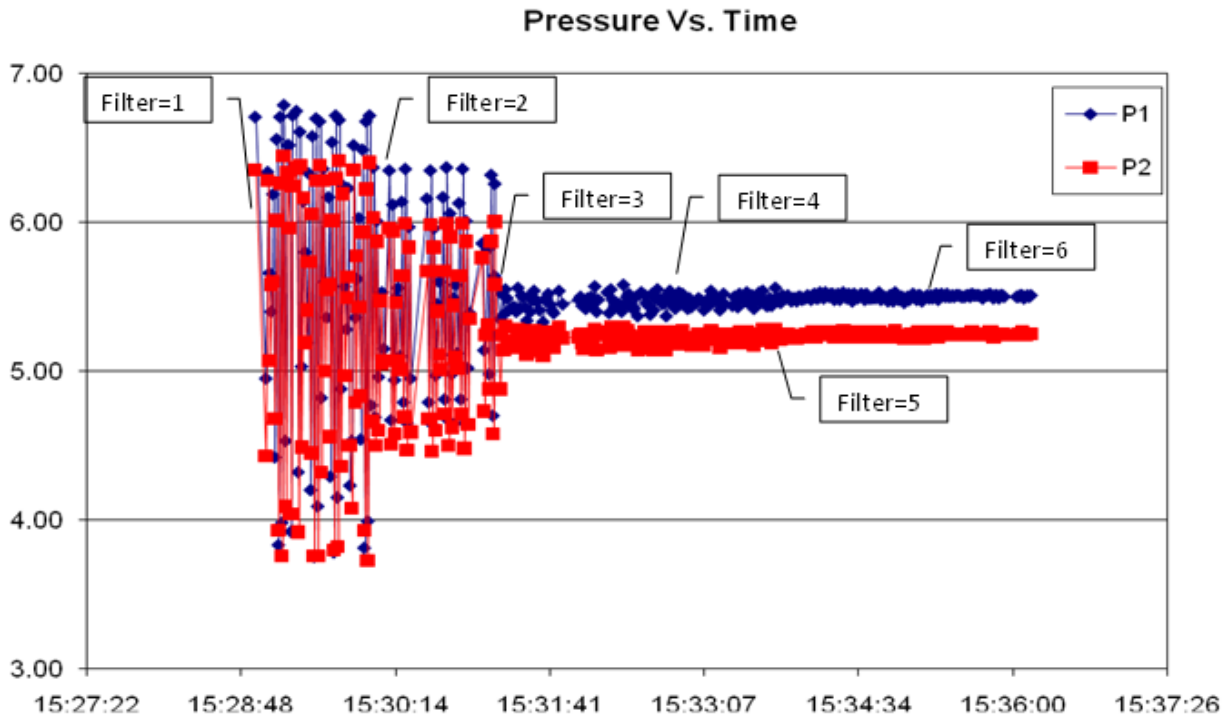
Main Menu

SUMMARY: This menu allows the setting of various parameters as they relate to your process. Use "Menu" to scroll through the menu, the up/down arrow keys to scroll through choices, and "Enter" to select the choice.

- **MAIN SCREEN**: Displays all three pressures, P1, P2, P3 and the calculated Trans-Membrane pressure, TM, or Differential pressure DP.
- **PRESSURE UNITS**: Use the up / down arrows to select between psi (pounds/square inch), kPa (kilo Pascal), bar, or mmHg (millimeters of Mercury). Default = psi.
- **RANGE HI**: Use to set the upper range limit of the Analog output signal (100% full scale). Allowable maximums are 105 psi, 723.9 kPa, 7.23 bar, 5430 mmHg. Default = 100.0 psi. Do Not pressurize beyond 60 psi. (This setting is to make replacing a 0-100 psi transmitter easy to replace without having to re-scale the interface.)
- **RANGE LO**: Use to set lower range limit of the Analog output signal (0.0% of full scale). Default minimum is 0.0 regardless of unit. Can be set to as low as: -10.0 Psi, -68.94 kPa, -0.69 bar, -517.2 mmHg
- **SERIAL**: Displays the RS-232 serial output parameters. Only baud rate can be changed. Available rates are 1200, 2400, 4800, 9600, 19200, 28800, 38400 and 57600. Default = 9600.
- **PRINT TIME**: Used to set the data output interval, 1 to 60 sec. Default = 5 sec.
- **MODE**: Use to set display and output mode. Trans-membrane will display and output TM, Differential will display and output DP, None will only display and output P1, P2 and P3. Default = TM.
- **TYPE**: Sets type of pressure sensor in use, Default is Calibrated. OEM is under development.
- **CONSTANT PRESSURE**: Controls 4-20 ma Analog Output 4 inversely as the pressure source changes between the Hi and Lo Alarm settings. Default = OFF.
- **FILTER**: Used to filter out (average) pulsations from peristaltic pumps. Pressure changes are delayed slightly based on setting. Range is 1-12, with 1 = No filter, 12 = Max filter. Default = 9.
- **HI-ALARM P1**: Used to set High Pressure Alarm, Max value of 60.0 psi. Hi-Alarms exist for all four pressure outputs. Default = 0.0 psi. P2, P3, TM or DP Alarms are configured in the same manner.
- **LO-ALARM P1**: Used to set Low Pressure Alarm. Lo-Alarms exist for all four pressure outputs. Default = 0.0 psi. P2, P3, TM or DP Alarms are configured in the same manner.
- **SET TIME / DATE**: Press "Enter" to enter this submenu, press Menu to bypass to Password.
- **TIME**: Use up / down arrows to set current time in 24-hour format, HH:mm, and press "Enter".
- **MONTH**: Use up / down arrows to set current Month, and press "Enter".
- **DAY OF MONTH**: Use up / down arrows to set current Date, and press "Enter".

- **YEAR**: Use up / down arrows to set current Year, and press "Enter".
- **FACTORY RESET**: Used to restore the SciPres pressure sensor pressure monitor to the factory default values. Change No to Yes using the arrow keys and press "Enter" to reset, change No to Yes on the "Are You Sure?" screen and press "Enter" again to finish the process.
- **PASSWORD**: Used to set a Supervisor password. Requires entry of the password to enter the Menus. Choose a number from 1-9999, setting of 0 disables the password feature.

Reduced Pump Pulsation: Improved Sensor Precision



This graph shows the effects of the Filter setting on the SciPres II monitor and the incoming signal from the SciPres II sensors.

This provides the added benefit of improving the precision and accuracy of the sensor readingby eliminating the need to interpret between ever changing high and low values caused by pump-generated pulsation. It makes the processes easier to control and the cleaner graphs are easier to read.

Data was collected at 1 second intervals. A peristaltic pump running at 100 mL / min was connected to the SciPres II sensors and back pressure was applied.

The Filter setting was changed from 1 through 6 over the course of the run. Data was stable at that point, and it was not increased further due to lack of noticeable effect at these flows and pressures.

As the Filter setting is increased, a small delay occurs in the response of the filtered data when the pressure is changing. The maximum delay at a setting of 12 is 4 seconds. A setting of 1 yields "live" data with no delay and no filtering.

SciPres II Printout Format

RS-232 Output as sent to Serial Printer (Parker PN 080-095A) or a terminal program:

05/09/19 0.60

12/23/19; Pressure v0.60; UNITS=psi; ALARMS: HP1= 0.00; LP1= 0.00; HP2= 0.00; LP2= 0.00; HP3= 0.00; LP3= 0.00; HTM= 0.00; LTM= 0.00;

Sensor 1 ID=S1-2G-210009-0819; MAXP=59.97; 08/20/19; PZ=-0004; CF1= 1.007; CF2=--.---; CP1=30.00; CP2=---.-; CCF= 1.000; CPZ=00000

Sensor 2 ID=S1-2G-210011-0819; MAXP=61.50; 08/20/19; PZ=-0004; CF1= 1.002; CF2=--.---; CP1=30.00; CP2=---.-; CCF= 1.000; CPZ=00000

Sensor 3 ID=S1-2G-210010-0819; MAXP=61.07; 08/20/19; PZ=-0004; CF1= 1.007; CF2=--.---; CP1=30.00; CP2=---.-; CCF= 1.000; CPZ=00000

RT, P1, P2, P3, TM

11:46:40, 0.00, 0.01, 0.00, 0.01,

11:46:45, 0.00, 0.01, 0.00, 0.01,

11:46:50, 0.00, 0.01, 0.00, 0.01,

11:46:55, 0.00, 0.01, 0.00, 0.01,

11:47:00, 0.00, 0.01, 0.00, 0.01,

11:47:05, 0.00, 0.01, 0.00, 0.01,

Abbreviation	Description
RT	Real Time
P2	Pressure at Sensor P2
TM	Trans-Membrane Pressure
CF1	Calibration Factor 1
CF2	Calibration Factor 2
PZ	Zero Offset
CP1	Calibration Point 1 (High point)
CP2	Calibration Point 2 (Low Point)
P1	Pressure at Sensor P
P3	Pressure at Sensor P3
DP	Differential Pressure (P1 - P2)
-.—	Indicates a disconnected sensor

Alarms:	Description
HP1 / LP1	Hi / Low Pressure @ P1
HP2 / LP2	Hi / Low Pressure @ P2
HP3 / LP3	Hi / Low Pressure @ P3
HTM/ LTM	Hi / Low Pressure @ TM or DP

RS-232 Settings

SciPres II to PC: PC communications via the Serial Port labeled "Printer / PC" or the USB port. For the Printer port to PC a Parker RS-232 Cable (P/N: 080-073) is needed. For USB connection, a standard A/B style cable (Parker P/N 080-158) is needed. As there are two ports, one can send data from the Monitor to both a PC and a Serial Printer (Parker P/N 080-095A). An RS232 to USB adapter, Parker PN 080-USB, may also be used on the Printer/PC port if desired.

The following RS-232 settings are required on the PC and the program used.

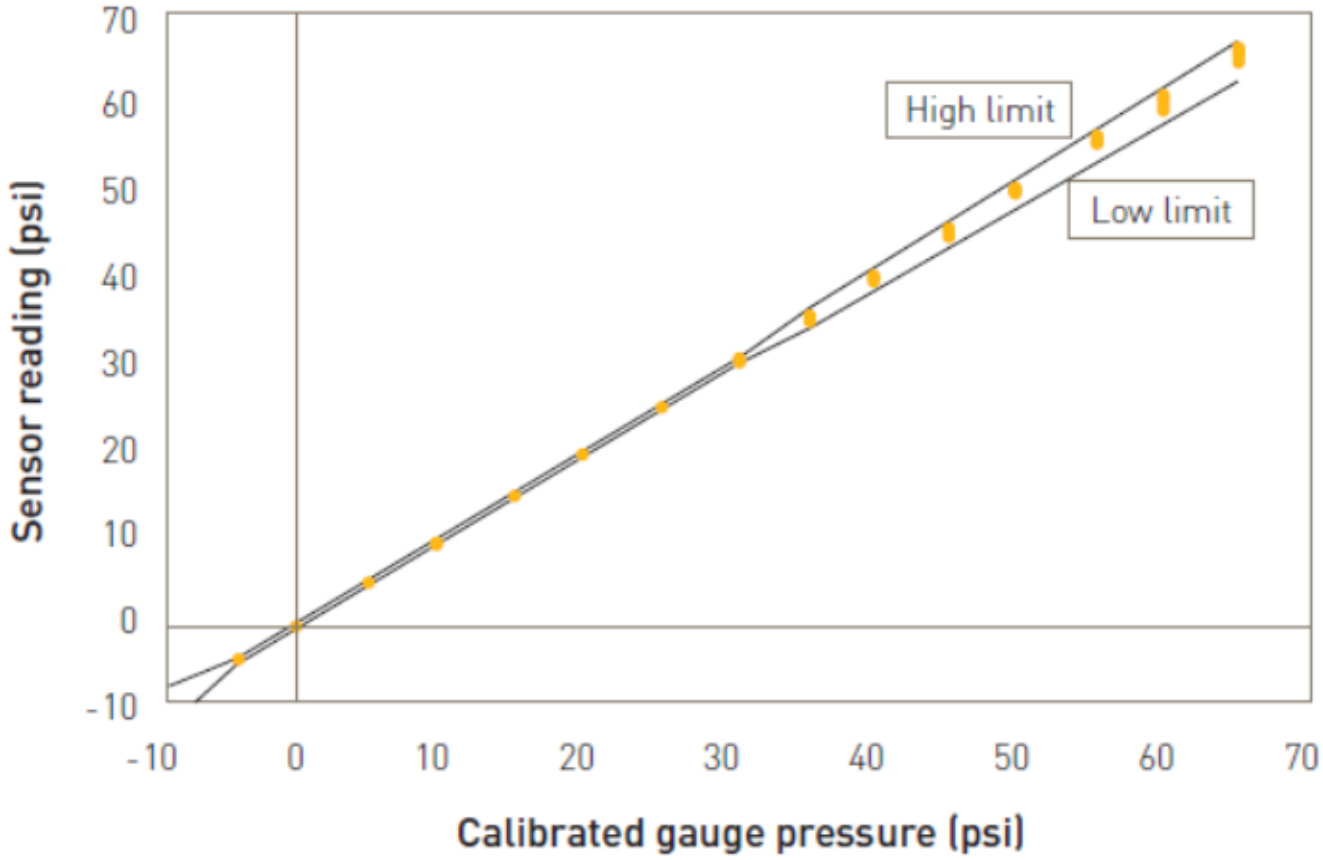
Bits per Second:	9600	Stop Bits:	2
Data Bits:	8	Flow Control:	None
Parity:	None		

Appendix A: Sensor Performance Data

- Pressure range: -10 to 60 psi*
- Pressure accuracy

  ±0.3 psi, 0-30 psi

  ±3% of reading, >30-60 psi



SciPres II Pressure Sensor Data (60 sensors)

Notes

Parker Hannifin Corporation
Bioscience Filtration
2340 Eastman Avenue
Oxnard, California, USA 93030
toll free: 877 784 2234
phone: +1 805 604 3400
fax: +1 805 604 3401
email: bioscience.na@parker.com

Parker Hannifin Manufacturing Ltd
Bioscience Filtration
Durham Road
Birtley, Co. Durham
DH3 2SF, England
phone +44 (0)191 4105121
fax +44 (0)191 4105312
email: bioscience.emea@parker.com