



# Parker DINCon II, DINPres II, & DINTemp II Modules

Installation, Operating & Maintenance Instructions



ENGINEERING YOUR SUCCESS.

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Revision History:

| Rev. # | Date      | Author    | Description                                                 |
|--------|-----------|-----------|-------------------------------------------------------------|
| A      | 4/25/2019 | A. Dawson | Initial release, based on original SciLog DIN Module Manual |

# 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.

Contact your local Parker Division for parts, information and service.

|                                                                                     |                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |  <b>WARNING</b>                                                                                                                   |
|                                                                                     | 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.                                                |
|   |  <b>CAUTION</b>                                                                                                                  |
|                                                                                     | OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.                                                                                                                                                  |
|  |  <b>WARNING</b>                                                                                                                 |
|                                                                                     | 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. |
|  |  <b>WARNING</b>                                                                                                                 |
|                                                                                     | FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD, CONNECT TO PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.                                                                                           |
|  |  <b>CAUTION</b>                                                                                                                 |
|                                                                                     | USE ONLY CLASS 2 LISTED EXTERNAL 24 VDC POWER SUPPLY WITH THESE DEVICES.                                                                                                                                           |

# Précautions

LISEZ ce manuel AVANT de faire fonctionner ou d'entretenir cet équipement.

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.

|                                                                                     |                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |  <b>ATTENTION</b>                                                                                                                                                          |
|                                                                                     | 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. |
|  |  <b>PRUDENCE</b>                                                                                                                                                          |
|                                                                                     | SOYEZ PRUDENT LORSQUE VOUS MANIPULEZ DES APPAREILS SENSIBLES À L'ÉLECTROSTATIQUE.                                                                                                                                                                           |
|  |  <b>ATTENTION</b>                                                                                                                                                        |
|                                                                                     | 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.                                          |
|  |  <b>ATTENTION</b>                                                                                                                                                        |
|                                                                                     | POUR ASSURER UNE PROTECTION CONTINUE CONTRE UNE DÉCHARGE ÉLECTRIQUE, BRANCHEZ UNIQUEMENT SUR UNE PRISE CORRECTEMENT RELIÉE À LA TERRE. NE RETIREZ PAS LA FICHE DE TERRE.                                                                                    |
|  |  <b>PRUDENCE</b>                                                                                                                                                         |
|                                                                                     | N'UTILISER QUE DE L'ALIMENTATION ÉLECTRIQUE 24 VDC EXCLUSIVE DE CLASSE 2 AVEC CES DISPOSITIFS.                                                                                                                                                              |

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## Introduction

You will find the DINCon II, DINPres II and DINTemp II Modules and sensors easy to use. The state-of-the-art hardware and software design of the DIN Module and sensor combination allows you to measure and document the conductivity, pressure or temperature of many filtration / separation processes. With proper maintenance, the DIN II Modules 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:

Parker Hannifin Corporation  
Bioscience Filtration Division  
2340 Eastman Avenue  
Oxnard, California, USA 93030  
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Parker Hannifin Manufacturing Ltd  
Bioscience Filtration Division  
Durham Road  
Birtley, Co. Durham  
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phone +44 (0)191 4105121  
fax +44 (0)191 4105312  
email: [bioscience.emea@parker.com](mailto:bioscience.emea@parker.com)  
[www.parker.com/bioscience](http://www.parker.com/bioscience)

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 DIN II Modules are calibrated devices and are calibrated with test equipment that is traceable to SI through NIST.

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

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

Parker Bioscience Filtration provides this Calibration Service, complete with a new certificate, showing the “as found” and “as left” data.

Contact your local Parker Bioscience Filtration Territory Manager if a quote is needed for this service. Onsite calibration can be arranged.

## Warranty

Country specific information can be found at: [www.parker.com/termsandconditions](http://www.parker.com/termsandconditions)

## Standards

EN 61326-1:2006, Class B

EN 61010-1:2010 Ed.3+ C1; C2

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



**Caution:** The maximum recommended pressure for the sensors is 60 psi.  
If this is exceeded, problems with leakage and functionality can occur.

## Installation & Start Up

Installation of the DINCon II, DINPres II, and DINTemp II Modules 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 single-use sensors are observed. See the appropriate Sensor Specifications page.

The protection provided by this equipment may be impaired if the single-use sensors are used in a manner inconsistent with this manual or for purposes not specified by the manufacturer.

## Maintenance & Cleaning

The Parker DIN II Modules are maintenance free. The single-use Parker sensors come pre-calibrated from the factory and require no maintenance.

To remove dust, dirt and stains, the outer surfaces of the DIN II Modules 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 2-propanol. They may be autoclaved up to 2 times, or gamma-irradiated with exposure up to 45 kGy.

# Hardware

## Specifications – All Modules

|                      |                        |                                                                                                             |
|----------------------|------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Dimensions</b>    |                        | W: 0.875" (2.2 cm); Height 4.0" (10.2 cm); D: 4.75" (12.1 cm)                                               |
| <b>Weight</b>        |                        | 0.3 lb. (0.14 Kg)                                                                                           |
| <b>Enclosure</b>     |                        | Molded Plastic                                                                                              |
| <b>Electrical</b>    | <b>Power</b>           | 24 VDC, 250 mA. Use only Class 2 External Power Supply                                                      |
|                      | <b>Battery</b>         | CR1216, used for internal clock, not user serviceable                                                       |
|                      | <b>I/O Port Top</b>    | 8 pin Terminal Block, numbered from rear:                                                                   |
|                      |                        | 1: +24 VDC 2: 24 VDC Return 3: N/C 4: Signal GND (COM)<br>5: RS-232 RX 6: RS-232 TX 7: RS-485 A 8: RS-485 B |
|                      | <b>I/O Port – 2</b>    | RJ45, Ethernet Connection                                                                                   |
|                      | <b>I/O Port - 3</b>    | USB Connection                                                                                              |
|                      | <b>I/O Port Bottom</b> | 14 Pin Sensor Connection, DINCon has 1, DINPres and DINTemp have 3.                                         |
| <b>Software</b>      | <b>DISPLAY</b>         | Power Status LED, Sensor Status LED's                                                                       |
|                      | <b>Modbus</b>          | Modbus RTU via RS-232<br>Modbus RTU via RS-485                                                              |
|                      |                        | Modbus RTU via USB<br>Modbus TCP via Ethernet                                                               |
| <b>Environmental</b> | <b>Temperature</b>     | 4 – 60° C                                                                                                   |
|                      | <b>Altitude</b>        | Up to 2000 Meters                                                                                           |
|                      | <b>IP Rating</b>       | IP20, Indoor dry environments, unit is wipe-down only                                                       |
|                      | <b>Rel. Humidity</b>   | 0 – 95%                                                                                                     |
|                      | <b>Voltage</b>         | Fluctuation allowed: +/- 10%                                                                                |
|                      | <b>Pollution</b>       | Degree: 2                                                                                                   |

# Installation

## Overview:

The DINCon II, DINPres II, and DINTemp II Modules are designed to be installed as part of a control system inside a control cabinet that has a 24 VDC source available and has Modbus communication protocol capability.

The DIN II Modules are installed on standard DIN II rail. They are usually mounted with the red locking tab located at the bottom of the unit. This places the Power and Communication connections at the top of the Module and the Sensor connections at the bottom. They may be mounted upside-down if that proves useful.

## Wiring Power and Communication:

Connect 24 Volts DC, 250 mA power to Pins 1 (+) and 2 (-) of the 8 pin terminal block. (Note - pin 1 is at the rear, nearest the DIN rail.)

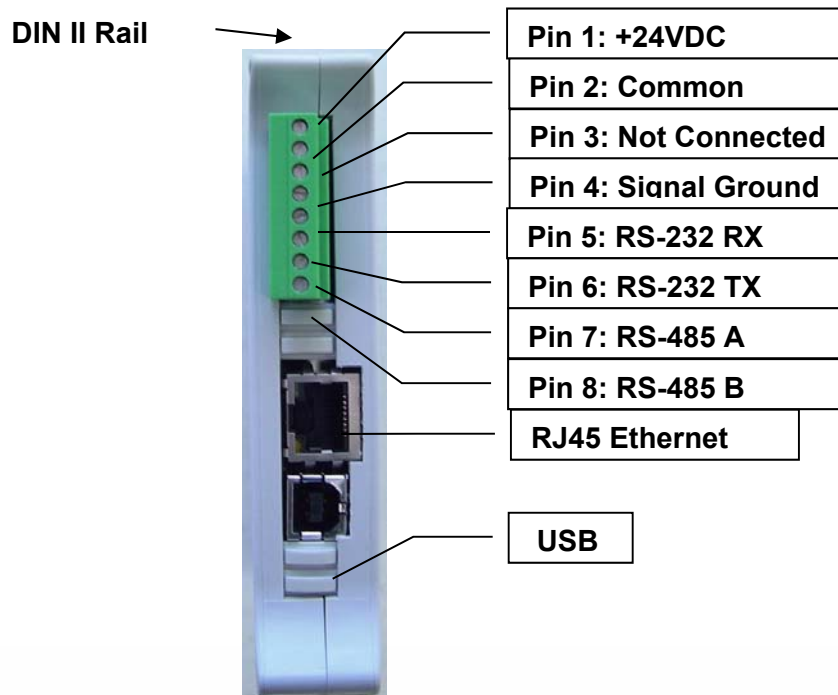
All data acquisition is via Modbus registers in either RTU or ASCII. The available physical layers are RS-232, RS-485, Ethernet and USB. The recommended physical layer for installation of *multiple units* is Modbus/RTU over RS-485 with Modbus/TCP via Ethernet a close second.

For RS-232, connect to the following: Pin 4 = Signal Ground, Pin 5 = RX, Pin 6 = TX.

For RS-485, connect to the following: Pin 7 = RS485-A, Pin 8 = RS485-B.

For Ethernet connect an Ethernet cable to the provided RJ45 jack.

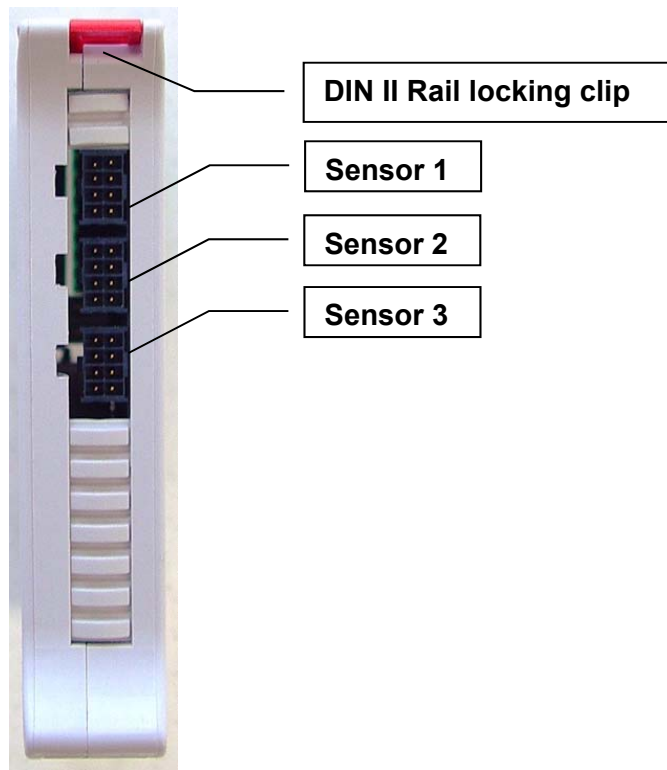
For USB connect to the provided USB Type A jack.



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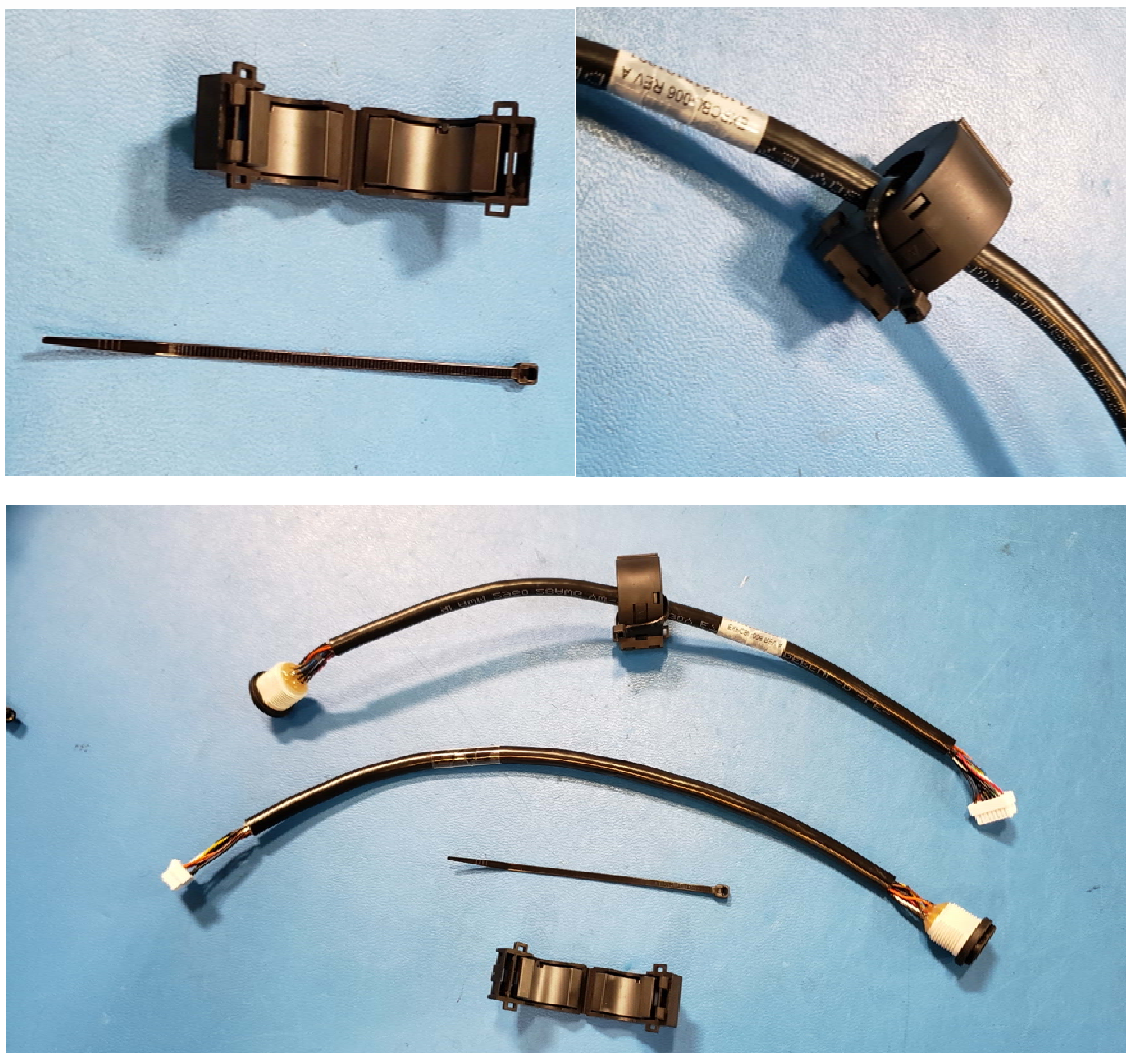
## Connecting Sensors:

All sensors, SciCon II for use with the DINCon II Module, SciPres II for use with the DINPres II Module, and SciTemp II for use with the DINTemp II Module are disposable flow through sensors that are purchased separately from Parker and come pre-calibrated.



The sensors connect to a provided cable that has an Amphenol bulkhead watertight connector on the sensor end and a 14 pin connector on the other end that plugs into a matching port on the bottom of the Module. The DINCon II has only one port, and uses only one SciCon II Sensor. The DINPres II and DINTemp II have 3 ports, can support up to 3 SciPres II or SciTemp II Sensors, and they are referred to as P1 – P3 or T1 – T3 beginning with P1 and T1 at the rear, or the closest connector to the DIN rail. These cables are 12” long providing flexibility in where the bulkhead fittings are installed on the control cabinet.

These cables ship with a ferrite clamp included that should be attached and secured to the cable as shown below: (anywhere along the cable is fine.)



When powered up and connected the Sensor Status LEDs on the front of the Module are colored as follows:

- Green = Connected
- Red = Disconnected
- Yellow = Connected but not calibrated.

If the LED shows Yellow, it's time to replace the affected Sensor with a new one. Connecting the wrong type of Sensor to the module also results in a Yellow indication.

# Operating Instructions:

## Modbus Overview:

The Parker DIN II modules communicate via the Modbus protocol. All data is transferred using the Modbus holding registers. The default connection is RS-485 at 115,200 baud, 8 bits, even parity and one stop bit.



**Note:** If parity setting (register 109) is changed to “none” then two stop bits must be used.

The default Modbus mode is RTU. The Default Modbus addresses (register 105) for the various Modules are:

DINCon II: 10

DINPres II: 20

DINTemp II: 30

Four physical layer interfaces are available for DIN II Module communications:

RS232 – Modbus/RTU or Modbus/ASCII

RS485 – Modbus/RTU or Modbus/ASCII

Ethernet - Modbus/TCP

USB - Modbus/RTU or Modbus/ASCII

The active Modbus interface is selected by connecting to the modules built-in web server. Connect using an Ethernet patch cable and a hub on your network, or directly to the unit with an Ethernet crossover cable. The default IP addresses are 192.168.0.142 for the DINCon II, 192.168.0.143 for the DINPres II, and 192.168.0.144 for the DINTemp II. It may be necessary to create a new connection or modify an existing one. Make any changes required to configuration and click on “Submit” to save them to the module.

A screenshot of a web browser window displaying the 'SciLog DINPress Setup' interface. The browser's address bar shows 'http://192.168.0.143/'. The page has a yellow background and contains two main sections: 'Network IP Address' and 'Modbus Settings'. The 'Network IP Address' section includes input fields for IP Address (192.168.0.143), IP Subnet Mask (255.255.255.000), and IP Gateway (192.168.0.001). The 'Modbus Settings' section includes a 'Communication Mode' dropdown (set to 0), a 'Modbus TCP Port' input field (000502), a 'Modbus RTU/ASCII Address' input field (20), a 'Baud Rate' dropdown (set to 8), a 'Word Length' dropdown (set to 8), and a 'Parity' dropdown (set to 2). A 'Submit' button is located at the bottom center of the form.

Any changes made via this interface require a power cycle of the module to take effect.

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Modbus register definitions are listed below for each type – DINCon II, DINPres II, and DINTemp II.

For floating point values, the DIN II modules use the standard IEEE-754 format. To read these via a Modbus test application such as Modbus Poll, set the format to little endian byte swapped.

Depending on the controller in use, the registers may need to be offset by one.

The Modbus address and communication parameters for a module can be changed by writing to registers 104-109 as a block (at the same time).

The Modules contain a Real Time Clock that will be set to the current date and the end users time zone prior to shipment from Parker. If re-setting the Real Time Clock is needed, the data must also be written in one continuous Modbus multi-register write operation to registers 130-137.

The DINPres II Module has a selectable Data Refresh Rate, with the default of 13 milliseconds being raw data. (Register 143) If the default setting is not used, a conditioned signal is provided.

The Sensors have individual ID numbers and calibration information stored in, and printed on them. Values relating to the ID numbers can be found in registers 201-206 for Sensor 1, 241-246 for Sensor 2 and 281-286 for Sensor 3. (Note: The first letter of this ID number, a “C”, “S” or “A”, is not in any of the registers.)

## Units and Alarm Limits:

The Modules provide the ability to set the desired Units for the outputs, as well as appropriate High and Low Alarm Limits. The alarms are absolute and not dependent upon signal direction (i.e. The signal does not have to be above the low alarm limit value first to trip it). The register list in section C below lists the available units for each Module. All Alarm Limits default to 0.0 and are thereby initially disabled.

### DINCon II:

|                      |                       |                   |
|----------------------|-----------------------|-------------------|
| Conductivity Units:  | Default: $\mu$ S      | Register 140      |
| Temperature Units:   | Default: $^{\circ}$ C | Register 143      |
| Conductivity Limits: | Low:                  | Registers 160-161 |
|                      | High:                 | Registers 162-163 |
| Temperature Limits:  | Low:                  | Registers 164-165 |
|                      | High:                 | Registers 166-167 |

### DINPres II:

|                     |              |                   |
|---------------------|--------------|-------------------|
| Pressure Units:     | Default: psi | Register 140      |
| P1 Pressure Limits: | Low:         | Registers 160-161 |
|                     | High:        | Registers 162-163 |
| P2 Pressure Limits: | Low:         | Registers 164-165 |
|                     | High:        | Registers 166-167 |
| P3 Pressure Limits: | Low:         | Registers 168-169 |
|                     | High:        | Registers 170-171 |

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#### DINTemp II:

|                        |             |                   |
|------------------------|-------------|-------------------|
| Temperature Units:     | Default: °C | Register 140      |
| T1 Temperature Limits: | Low:        | Registers 160-161 |
|                        | High:       | Registers 162-163 |
| T2 Temperature Limits: | Low:        | Registers 164-165 |
|                        | High:       | Registers 166-167 |
| T3 Temperature Limits: | Low:        | Registers 168-169 |
|                        | High:       | Registers 170-171 |

## Hardware Calibration:

The factory hardware calibration data is available as read only values and is only performed on new modules with a special test fixture at the time of manufacture.

## Note on use of SciPres II Sensors:

The DINPres II 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 a Max Pressure Watchdog feature.

The Max Pressure Watchdog feature records in the sensor's memory the maximum pressure seen by the sensor while it is connected to the DINPres II. The maximum recommended pressure for the sensors is 60 psi. If this is exceeded, problems with leakage and functionality can occur. This value is available in the appropriate register; see the list in the next section.

**Please Note:** If the company Metrology Department tests the sensors using a regulated air source, care must be taken to avoid high inrush pressure. Much like inrush current in electronics, if the valve to the regulator is opened too fast, this can expose the sensor to higher pressures than the regulator is set for. This will be reflected in the Max Pressure value, and may risk damage to the sensor. This can be reset or cleared if desired.

# Modbus Register List:

## DINCon II Register List:

| ADDRESS | ACCESS | FORMAT       | VALUE                                               | Default       |
|---------|--------|--------------|-----------------------------------------------------|---------------|
| 90-99   | R      | ASCII String | DINCon Serial Number                                |               |
| 100     | R      | 16 bit       | Model Number                                        | <b>0</b>      |
|         |        |              | 0 = DINCon                                          |               |
| 101-102 | R      | IEEE Float   | Software Version                                    |               |
| 103     | R/W    | 16 bit       | Reset Control                                       |               |
|         |        |              | bit 0 = System Reset                                |               |
|         |        |              | bit 1 = Reset to Defaults                           |               |
|         |        |              | bit 2 = Alarm Reset                                 |               |
| 104-105 | R/W    | 16 bit       | Modbus Address                                      |               |
|         |        |              | 104 may need be set to 0xa55a (hex)                 | <b>0xa55a</b> |
|         |        |              | <b>registers 104-109 must be written as a block</b> |               |
|         |        |              | 105 contains Modbus address                         | <b>10</b>     |
| 106     | R/W    | 16 bit       | Modbus Mode                                         | <b>0</b>      |
|         |        |              | 0 = RS485 RTU                                       |               |
|         |        |              | 1 = RS485 ASCII                                     |               |
|         |        |              | 2 = RS232 RTU                                       |               |
|         |        |              | 3 = RS232 ASCII                                     |               |
|         |        |              | 4 = USB RTU                                         |               |
|         |        |              | 5 = USB ASCII                                       |               |
|         |        |              | 6 = TCP                                             |               |
| 107     | R/W    | 16 bit       | Modbus Baud Rate (38400 default)                    | <b>6</b>      |
|         |        |              | 0 = 1200                                            |               |
|         |        |              | 1 = 2400                                            |               |
|         |        |              | 2 = 4800                                            |               |
|         |        |              | 3 = 9600                                            |               |
|         |        |              | 4 = 19200                                           |               |
|         |        |              | 5 = 28800                                           |               |
|         |        |              | 6 = 38400                                           |               |
|         |        |              | 7 = 57600                                           |               |
|         |        |              | 8 = 115200                                          |               |
| 108     | R/W    | 16 bit       | Modbus Serial Word Length ( 7 or 8)                 | <b>8</b>      |
| 109     | R/W    | 16 bit       | Modbus Serial Parity (Even, 1 Stop Bit default)     | <b>2</b>      |
|         |        |              | 0 = none, 2 Stop Bits                               |               |
|         |        |              | 1 = odd, 1 Stop Bit                                 |               |
|         |        |              | 2 = even, 1 Stop Bit                                |               |
| 110     | R/W    | 16 bit       | TCP Address P1                                      | <b>192</b>    |
| 111     |        |              | TCP Address P2                                      | <b>168</b>    |

## DINCon II Register List, Continued

| ADDRESS | ACCESS | FORMAT     | VALUE                                               | Default |
|---------|--------|------------|-----------------------------------------------------|---------|
| 112     |        |            | TCP Address P3                                      | 0       |
| 113     |        |            | TCP Address P4                                      | 142     |
| 114     | R/W    | 16 bit     | TCP Mask P1                                         | 255     |
| 115     |        |            | TCP Mask P2                                         | 255     |
| 116     |        |            | TCP Mask P3                                         | 255     |
| 117     |        |            | TCP Mask P4                                         | 0       |
| 118     | R/W    | 16 bit     | TCP Gateway P1                                      | 192     |
| 119     |        |            | TCP Gateway P2                                      | 168     |
| 120     |        |            | TCP Gateway P3                                      | 0       |
| 121     |        |            | TCP Gateway P4                                      | 1       |
| 130     | R/W    | 16 bit     | RTCC Control                                        |         |
|         |        |            | bit0: Set Clock Values                              |         |
|         |        |            | <b>Registers 130-137 must be written as a block</b> |         |
| 131     | R/W    | 16 bit     | Day of Week (1-7)                                   |         |
| 132     | R/W    | 16 bit     | Month                                               |         |
| 133     | R/W    | 16 bit     | Day                                                 |         |
| 134     | R/W    | 16 bit     | Year                                                |         |
| 135     | R/W    | 16 bit     | Hour (24)                                           |         |
| 136     | R/W    | 16 bit     | Minute                                              |         |
| 137     | R/W    | 16 bit     | Second                                              |         |
| 140     | R/W    | 16 bit     | Conductivity Units                                  | 0       |
|         |        |            | 0 = uS                                              |         |
|         |        |            | 1 = mS                                              |         |
|         |        |            | 2 = ppm KCl                                         |         |
|         |        |            | 3 = ppm NaCl                                        |         |
|         |        |            | 4 = ppm 442                                         |         |
| 141-142 | R/W    | IEEE Float | Cal Concentration (default 12.88mS)                 | 12.88   |
| 143     | R/W    | 16 bit     | Temperature Units                                   | 0       |
|         |        |            | 0 = C                                               |         |
|         |        |            | 1 = F                                               |         |
| 144-145 | R/W    | IEEE Float | Cal Temperature (default 25.0C)                     | 25.0    |
| 150     | R      | 16 bit     | Conductivity Status                                 |         |
|         |        |            | bit0 = Set means disconnected                       |         |
|         |        |            | bit1 = Set means uncalibrated                       |         |
|         |        |            | bit2 = Set means low alarm                          |         |
|         |        |            | bit3 = Set means high alarm                         |         |
| 151-152 | R      | IEEE Float | Conductivity Value                                  |         |
| 153     | R      | 16 bit     | Temperature Status                                  |         |
|         |        |            | bit0 = Set means disconnected                       |         |
|         |        |            | bit1 = Set means uncalibrated                       |         |

## DINCon II Register List, Continued

| ADDRESS | ACCESS | FORMAT     | VALUE                           | Default     |
|---------|--------|------------|---------------------------------|-------------|
|         |        |            | bit2 = Set means low alarm      |             |
|         |        |            | bit3 = Set means high alarm     |             |
| 154-155 | R      | IEEE Float | Temperature Value               |             |
| 160-161 | R/W    | IEEE Float | Conductivity Alarm Limit - Low  | <b>0.0</b>  |
| 162-163 | R/W    | IEEE Float | Conductivity Alarm Limit - High | <b>0.0</b>  |
| 164-165 | R/W    | IEEE Float | Temperature Alarm Limit - Low   | <b>0.0</b>  |
| 166-167 | R/W    | IEEE Float | Temperature Alarm Limit - High  | <b>0.0</b>  |
| 180     | R/W    | IEEE Float | Temperature Reference           | <b>25.0</b> |
| 201     | R/W    | 16 bit     | Sensor ID Type                  |             |
|         |        |            | 0 = Luer                        |             |
|         |        |            | 1 = 3/8" Barb                   |             |
|         |        |            | 2 = 1/2" Barb                   |             |
|         |        |            | 3 = 3/4" TC                     |             |
|         |        |            | 4 = 1" TC                       |             |
|         |        |            | 100 = Cal Fixture               |             |
| 202     | R/W    | 16 bit     | Sensor ID Material              |             |
|         |        |            | 0 = N/A                         |             |
|         |        |            | 1 = Polysulfone                 |             |
| 203     | R/W    | 16 bit     | Sensor ID Month                 |             |
| 204     | R/W    | 16 bit     | Sensor ID Year                  |             |
| 205     | R/W    | 16 bit     | Sensor ID Lot                   |             |
| 206     | R/W    | 16 bit     | Sensor ID Unit Number           |             |
| 208     | R/W    | IEEE Float | Sensor Temperature Offset (TO)  |             |
| 210     | R/W    | IEEE Float | Sensor Cal Factor (CF)          |             |

## DINPres II Register List:

| ADDRESS | ACCESS | FORMAT       | VALUE                                               | DEFAULT       |
|---------|--------|--------------|-----------------------------------------------------|---------------|
| 90-99   | R      | ASCII String | DINPres Serial Number                               |               |
| 100     | R      | 16 bit       | Model Number                                        | <b>1</b>      |
|         |        |              | 1 = DINPres                                         |               |
| 101-102 | R      | IEEE Float   | Software Version                                    |               |
| 103     | R/W    | 16 bit       | Reset Control                                       |               |
|         |        |              | bit 0 = System Reset                                |               |
|         |        |              | bit 1 = Reset to Defaults                           |               |
|         |        |              | bit 2 = Alarm Reset                                 |               |
| 104-105 | R/W    | 16 bit       | Modbus Address                                      |               |
|         |        |              | 104 may need to be set to 0xa55a                    | <b>0xa55a</b> |
|         |        |              | <b>registers 104-109 must be written as a block</b> |               |
|         |        |              | 105 contains Modbus address                         | <b>20</b>     |
| 106     | R/W    | 16 bit       | Modbus Mode                                         | <b>0</b>      |
|         |        |              | 0 = RS485 RTU                                       |               |
|         |        |              | 1 = RS485 ASCII                                     |               |
|         |        |              | 2 = RS232 RTU                                       |               |
|         |        |              | 3 = RS232 ASCII                                     |               |
|         |        |              | 4 = USB RTU                                         |               |
|         |        |              | 5 = USB ASCII                                       |               |
|         |        |              | 6 = TCP                                             |               |
| 107     | R/W    | 16 bit       | Modbus Baud Rate (38400 Default)                    | <b>6</b>      |
|         |        |              | 0 = 1200                                            |               |
|         |        |              | 1 = 2400                                            |               |
|         |        |              | 2 = 4800                                            |               |
|         |        |              | 3 = 9600                                            |               |
|         |        |              | 4 = 19200                                           |               |
|         |        |              | 5 = 28800                                           |               |
|         |        |              | 6 = 38400                                           |               |
|         |        |              | 7 = 57600                                           |               |
|         |        |              | 8 = 115200                                          |               |
| 108     | R/W    | 16 bit       | Modbus Serial Word Length (7 or 8)                  | <b>8</b>      |
| 109     | R/W    | 16 bit       | Modbus Serial Parity (Even, 1 Stop Bit default)     | <b>2</b>      |
|         |        |              | 0 = none, 2 Stop Bits                               |               |
|         |        |              | 1 = odd, 1 Stop Bit                                 |               |
|         |        |              | 2 = even, 1 Stop Bit                                |               |
| 110     | R/W    | 16 bit       | TCP Address P1                                      | <b>192</b>    |
| 111     |        |              | TCP Address P2                                      | <b>168</b>    |
| 112     |        |              | TCP Address P3                                      | <b>0</b>      |
| 113     |        |              | TCP Address P4                                      | <b>143</b>    |

### DINPres II Register List, Continued

| ADDRESS | ACCESS | FORMAT     | VALUE                                               | DEFAULT     |
|---------|--------|------------|-----------------------------------------------------|-------------|
| 114     | R/W    | 16 bit     | TCP Mask P1                                         | <b>255</b>  |
| 115     |        |            | TCP Mask P2                                         | <b>255</b>  |
| 116     |        |            | TCP Mask P3                                         | <b>255</b>  |
| 117     |        |            | TCP Mask P4                                         | <b>0</b>    |
| 118     | R/W    | 16 bit     | TCP Gateway P1                                      | <b>192</b>  |
| 119     |        |            | TCP Gateway P2                                      | <b>168</b>  |
| 120     |        |            | TCP Gateway P3                                      | <b>0</b>    |
| 121     |        |            | TCP Gateway P4                                      | <b>1</b>    |
| 130     | R/W    | 16 bit     | RTCC Control                                        |             |
|         |        |            | bit0: Set Clock Values                              |             |
|         |        |            | <b>Registers 130-137 must be written as a block</b> |             |
| 131     | R/W    | 16 bit     | Day of Week (1-7)                                   |             |
| 132     | R/W    | 16 bit     | Month                                               |             |
| 133     | R/W    | 16 bit     | Day                                                 |             |
| 134     | R/W    | 16 bit     | Year                                                |             |
| 135     | R/W    | 16 bit     | Hour (24)                                           |             |
| 136     | R/W    | 16 bit     | Minute                                              |             |
| 137     | R/W    | 16 bit     | Second                                              |             |
| 140     | R/W    | 16 bit     | Pressure Units                                      | <b>0</b>    |
|         |        |            | 0 = psi                                             |             |
|         |        |            | 1 = kPa                                             |             |
|         |        |            | 2 = bar                                             |             |
|         |        |            | 3 = mmHg                                            |             |
| 141-142 | R/W    | IEEE Float | Cal Pressure (Default 30psi)                        | <b>30.0</b> |
| 143     | R/W    | 16 bit     | Data Refresh Rate                                   | <b>6</b>    |
|         |        |            | 0 = 13 milliseconds                                 |             |
|         |        |            | 1 = 25 ms                                           |             |
|         |        |            | 2 = 50 ms                                           |             |
|         |        |            | 3 = 125 ms                                          |             |
|         |        |            | 4 = 250 ms                                          |             |
|         |        |            | 5 = 350 ms                                          |             |
|         |        |            | 6 = 500 ms                                          |             |
|         |        |            | 7 = 750 ms                                          |             |
|         |        |            | 8 = 1 second                                        |             |
|         |        |            | 9 = 1.5 seconds                                     |             |
|         |        |            | 10 = 2 seconds                                      |             |
|         |        |            | 11 = 4 seconds                                      |             |
| 150     | R      | 16 bit     | P1 Status                                           |             |
|         |        |            | bit 0 = Set means Disconnected                      |             |
|         |        |            | bit 1 = Set means Uncalibrated                      |             |
|         |        |            | bit 2 = Set means Low Alarm                         |             |

| DINPres II Register List, Continued |        |            |                                |         |
|-------------------------------------|--------|------------|--------------------------------|---------|
| ADDRESS                             | ACCESS | FORMAT     | VALUE                          | DEFAULT |
|                                     |        |            | bit 3 = Set means High Alarm   |         |
| 151-152                             | R      | IEEE Float | P1 Pressure Value              |         |
| 153                                 | R      | 16 bit     | P2 Status                      |         |
|                                     |        |            | bit 0 = Set means Disconnected |         |
|                                     |        |            | bit 1 = Set means Uncalibrated |         |
|                                     |        |            | bit 2 = Set means Low Alarm    |         |
|                                     |        |            | bit 3 = Set means High Alarm   |         |
| 154-155                             | R      | IEEE Float | P2 Pressure Value              |         |
| 156                                 | R      | 16 bit     | P3 Status                      |         |
|                                     |        |            | bit 0 = Set means Disconnected |         |
|                                     |        |            | bit 1 = Set means Uncalibrated |         |
|                                     |        |            | bit 2 = Set means Low Alarm    |         |
|                                     |        |            | bit 3 = Set means High Alarm   |         |
| 157-158                             | R      | IEEE Float | P3 Pressure Value              |         |
| 160-161                             | R/W    | IEEE Float | P1 Pressure Alarm Limit - Low  | 0.0     |
| 162-163                             | R/W    | IEEE Float | P1 Pressure Alarm Limit - High | 0.0     |
| 164-165                             | R/W    | IEEE Float | P2 Pressure Alarm Limit - Low  | 0.0     |
| 166-167                             | R/W    | IEEE Float | P2 Pressure Alarm Limit - High | 0.0     |
| 168-169                             | R/W    | IEEE Float | P3 Pressure Alarm Limit - Low  | 0.0     |
| 170-171                             | R/W    | IEEE Float | P3 Pressure Alarm Limit - High | 0.0     |
| 201                                 | R/W    | 16 bit     | P1 Sensor ID Type              |         |
|                                     |        |            | 0 = Luer                       |         |
|                                     |        |            | 1 = 3/8" Barb                  |         |
|                                     |        |            | 2 = 1/2" Barb                  |         |
|                                     |        |            | 3 = 3/4" TC                    |         |
|                                     |        |            | 4 = 1" TC                      |         |
|                                     |        |            | 100 = Cal Fixture              |         |
| 202                                 | R/W    | 16 bit     | P1 Sensor ID Material          |         |
|                                     |        |            | 0 = N/A                        |         |
|                                     |        |            | 1 = Polysulfone                |         |
| 203                                 | R/W    | 16 bit     | P1 Sensor ID Month             |         |
| 204                                 | R/W    | 16 bit     | P1 Sensor ID Year              |         |
| 205                                 | R/W    | 16 bit     | P1 Sensor ID Lot               |         |
| 206                                 | R/W    | 16 bit     | P1 Sensor ID Unit Number       |         |
| 208                                 | R/W    | IEEE Float | P1 Sensor Pressure Offset (PZ) |         |
| 210                                 | R/W    | IEEE Float | P1 Sensor Cal Factor (CF)      |         |
| 212                                 | R/W    | IEEE Float | P1 Sensor Cal Pressure (CP1)   |         |
| 214                                 | R/W    | IEEE Float | P1 Sensor Cal Factor 2 (CF2)   |         |
| 216                                 | R/W    | IEEE Float | P1 Sensor Cal Pressure 2 (CP2) |         |
| 235                                 | R/W    | IEEE Float | P1 Sensor Max Pressure         |         |
| 237                                 | R/W    | 16 bit     | P1 Sensor MaxP, Day            |         |

| DINPres II Register List, Continued |        |            |                                |         |
|-------------------------------------|--------|------------|--------------------------------|---------|
| ADDRESS                             | ACCESS | FORMAT     | VALUE                          | DEFAULT |
| 238                                 | R/W    | 16 bit     | P1 Sensor MaxP, Month          |         |
| 239                                 | R/W    | 16 bit     | P1 Sensor MaxP, Year           |         |
| 241                                 | R/W    | 16 bit     | P2 Sensor ID Type              |         |
|                                     |        |            | 0 = Luer                       |         |
|                                     |        |            | 1 = 3/8" Barb                  |         |
|                                     |        |            | 2 = 1/2" Barb                  |         |
|                                     |        |            | 3 = 3/4" TC                    |         |
|                                     |        |            | 4 = 1" TC                      |         |
|                                     |        |            | 100 = Cal Fixture              |         |
| 242                                 | R/W    | 16 bit     | P2 Sensor ID Material          |         |
|                                     |        |            | 0 = N/A                        |         |
|                                     |        |            | 1 = Polysulfone                |         |
| 243                                 | R/W    | 16 bit     | P2 Sensor ID Month             |         |
| 244                                 | R/W    | 16 bit     | P2 Sensor ID Year              |         |
| 245                                 | R/W    | 16 bit     | P2 Sensor ID Lot               |         |
| 246                                 | R/W    | 16 bit     | P2 Sensor ID Unit Number       |         |
| 248                                 | R/W    | IEEE Float | P2 Sensor Pressure Offset (PZ) |         |
| 250                                 | R/W    | IEEE Float | P2 Sensor Cal Factor (CF)      |         |
| 252                                 | R/W    | IEEE Float | P2 Sensor Cal Pressure (CP1)   |         |
| 254                                 | R/W    | IEEE Float | P2 Sensor Cal Factor 2 (CF2)   |         |
| 256                                 | R/W    | IEEE Float | P2 Sensor Cal Pressure 2 (CP2) |         |
| 275                                 | R/W    | IEEE Float | P2 Sensor Max Pressure         |         |
| 277                                 | R/W    | 16 bit     | P2 Sensor MaxP, Day            |         |
| 278                                 | R/W    | 16 bit     | P2 Sensor MaxP, Month          |         |
| 279                                 | R/W    | 16 bit     | P2 Sensor MaxP, Year           |         |
| 281                                 | R/W    | 16 bit     | P3 Sensor ID Type              |         |
|                                     |        |            | 0 = Luer                       |         |
|                                     |        |            | 1 = 3/8" Barb                  |         |
|                                     |        |            | 2 = 1/2" Barb                  |         |
|                                     |        |            | 3 = 3/4" TC                    |         |
|                                     |        |            | 4 = 1" TC                      |         |
|                                     |        |            | 100 = Cal Fixture              |         |
| 282                                 | R/W    | 16 bit     | P3 Sensor ID Material          |         |
|                                     |        |            | 0 = N/A                        |         |
|                                     |        |            | 1 = Polysulfone                |         |
| 283                                 | R/W    | 16 bit     | P3 Sensor ID Month             |         |
| 284                                 | R/W    | 16 bit     | P3 Sensor ID Year              |         |
| 285                                 | R/W    | 16 bit     | P3 Sensor ID Lot               |         |
| 286                                 | R/W    | 16 bit     | P3 Sensor ID Unit Number       |         |
| 288                                 | R/W    | IEEE Float | P3 Sensor Pressure Offset (PZ) |         |
| 290                                 | R/W    | IEEE Float | P3 Sensor Cal Factor (CF)      |         |

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| DINPres II Register List, Continued |        |            |                                |         |
|-------------------------------------|--------|------------|--------------------------------|---------|
| ADDRESS                             | ACCESS | FORMAT     | VALUE                          | DEFAULT |
| 292                                 | R/W    | IEEE Float | P3 Sensor Cal Pressure (CP1)   |         |
| 294                                 | R/W    | IEEE Float | P3 Sensor Cal Factor 2 (CF2)   |         |
| 296                                 | R/W    | IEEE Float | P3 Sensor Cal Pressure 2 (CP2) |         |
| 315                                 | R/W    | IEEE Float | P3 Sensor Max Pressure         |         |
| 317                                 | R/W    | 16 bit     | P3 Sensor MaxP, Day            |         |
| 318                                 | R/W    | 16 bit     | P3 Sensor MaxP, Month          |         |
| 319                                 | R/W    | 16 bit     | P3 Sensor MaxP, Year           |         |

## DINTemp II Register List:

| ADDRESS | ACCESS | FORMAT       | VALUE                                               | DEFAULT       |
|---------|--------|--------------|-----------------------------------------------------|---------------|
| 90-99   | R      | ASCII String | DINTemp Serial Number                               |               |
| 100     | R      | 16 bit       | Model Number                                        | <b>2</b>      |
|         |        |              | 2 = DINTemp                                         |               |
| 101-102 | R      | IEEE Float   | Software Version                                    |               |
| 103     | R/W    | 16 bit       | Reset Control                                       |               |
|         |        |              | bit 0 = System Reset                                |               |
|         |        |              | bit 1 = Reset to Defaults                           |               |
|         |        |              | bit 2 = Alarm Reset                                 |               |
| 104-105 | R/W    | 16 bit       | Modbus Address                                      |               |
|         |        |              | 104 May need to be set to 0xa55a                    | <b>0xa55a</b> |
|         |        |              | <b>registers 104-109 must be written as a block</b> |               |
|         |        |              | 105 contains Modbus address                         | <b>30</b>     |
| 106     | R/W    | 16 bit       | Modbus Mode                                         | <b>0</b>      |
|         |        |              | 0 = RS485 RTU                                       |               |
|         |        |              | 1 = RS485 ASCII                                     |               |
|         |        |              | 2 = RS232 RTU                                       |               |
|         |        |              | 3 = RS232 ASCII                                     |               |
|         |        |              | 4 = USB RTU                                         |               |
|         |        |              | 5 = USB ASCII                                       |               |
|         |        |              | 6 = TCP                                             |               |
| 107     | R/W    | 16 bit       | Modbus Baud Rate (38400 Default)                    | <b>6</b>      |
|         |        |              | 0 = 1200                                            |               |
|         |        |              | 1 = 2400                                            |               |
|         |        |              | 2 = 4800                                            |               |
|         |        |              | 3 = 9600                                            |               |
|         |        |              | 4 = 19200                                           |               |
|         |        |              | 5 = 28800                                           |               |
|         |        |              | 6 = 38400                                           |               |
|         |        |              | 7 = 57600                                           |               |
|         |        |              | 8 = 115200                                          |               |
| 108     | R/W    | 16 bit       | Modbus Serial Word Length (7 or 8)                  | <b>8</b>      |
| 109     | R/W    | 16 bit       | Modbus Serial Parity (Even, 1 Stop Bit default)     | <b>2</b>      |
|         |        |              | 0 = none, 2 Stop Bits                               |               |
|         |        |              | 1 = odd, 1 Stop Bit                                 |               |
|         |        |              | 2 = even, 1 Stop Bit                                |               |
| 110     | R/W    | 16 bit       | TCP Address P1                                      | <b>192</b>    |
| 111     |        |              | TCP Address P2                                      | <b>168</b>    |
| 112     |        |              | TCP Address P3                                      | <b>0</b>      |
| 113     |        |              | TCP Address P4                                      | <b>144</b>    |

| DINTemp II Register List, Continued |        |            |                                                     |         |
|-------------------------------------|--------|------------|-----------------------------------------------------|---------|
| ADDRESS                             | ACCESS | FORMAT     | VALUE                                               | DEFAULT |
| 114                                 | R/W    | 16 bit     | TCP Mask P1                                         | 255     |
| 115                                 |        |            | TCP Mask P2                                         | 255     |
| 116                                 |        |            | TCP Mask P3                                         | 255     |
| 117                                 |        |            | TCP Mask P4                                         | 0       |
| 118                                 | R/W    | 16 bit     | TCP Gateway P1                                      | 192     |
| 119                                 |        |            | TCP Gateway P2                                      | 168     |
| 120                                 |        |            | TCP Gateway P3                                      | 0       |
| 121                                 |        |            | TCP Gateway P4                                      | 1       |
| 130                                 | R/W    | 16 bit     | RTCC Control                                        |         |
|                                     |        |            | bit 0 = Set Clock Values                            |         |
|                                     |        |            | <b>Registers 130-137 must be written as a block</b> |         |
| 131                                 | R/W    | 16 bit     | Day of Week (1-7)                                   |         |
| 132                                 | R/W    | 16 bit     | Month                                               |         |
| 133                                 | R/W    | 16 bit     | Day                                                 |         |
| 134                                 | R/W    | 16 bit     | Year                                                |         |
| 135                                 | R/W    | 16 bit     | Hour (24)                                           |         |
| 136                                 | R/W    | 16 bit     | Minute                                              |         |
| 137                                 | R/W    | 16 bit     | Second                                              |         |
| 140                                 | R/W    | 16 bit     | Temperature Unit                                    | 0       |
|                                     |        |            | 0 = C                                               |         |
|                                     |        |            | 1 = F                                               |         |
| 141-142                             | R/W    | IEEE Float | Calm Temperature (Default 25C)                      | 25.0    |
| 150                                 | R      | 16 bit     | T1 Status                                           |         |
|                                     |        |            | bit 0 = Set means Disconnected                      |         |
|                                     |        |            | bit 1 = Set means Uncalibrated                      |         |
|                                     |        |            | bit 2 = Set means Low Alarm                         |         |
|                                     |        |            | bit 3 = Set means High Alarm                        |         |
| 151-152                             | R      | IEEE Float | T1 Temperature Value                                |         |
| 153                                 | R      | 16 bit     | T2 Status                                           |         |
|                                     |        |            | bit 0 = Set means Disconnected                      |         |
|                                     |        |            | bit 1 = Set means Uncalibrated                      |         |
|                                     |        |            | bit 2 = Set means Low Alarm                         |         |
|                                     |        |            | bit 3 = Set means High Alarm                        |         |
| 154-155                             | R      | IEEE Float | T2 Temperature Value                                |         |
| 156                                 | R      | 16 bit     | T3 Status                                           |         |
|                                     |        |            | bit 0 = Set means Disconnected                      |         |
|                                     |        |            | bit 1 = Set means Uncalibrated                      |         |
|                                     |        |            | bit 2 = Set means Low Alarm                         |         |
|                                     |        |            | bit 3 = Set means High Alarm                        |         |
| 157-158                             | R      | IEEE Float | T3 Temperature Value                                |         |
| 160-161                             | R/W    | IEEE Float | T1 Temperature Alarm Limit - Low                    | 0.0     |

| DINTemp II Register List, Continued |        |            |                                   |         |
|-------------------------------------|--------|------------|-----------------------------------|---------|
| ADDRESS                             | ACCESS | FORMAT     | VALUE                             | DEFAULT |
| 162-163                             | R/W    | IEEE Float | T1 Temperature Alarm Limit - High | 0.0     |
| 164-165                             | R/W    | IEEE Float | T2 Temperature Alarm Limit - Low  | 0.0     |
| 166-167                             | R/W    | IEEE Float | T2 Temperature Alarm Limit - High | 0.0     |
| 168-169                             | R/W    | IEEE Float | T3 Temperature Alarm Limit - Low  | 0.0     |
| 170-171                             | R/W    | IEEE Float | T3 Temperature Alarm Limit - High | 0.0     |
| 201                                 | R/W    | 16 bit     | T1 Sensor ID Type                 |         |
|                                     |        |            | 0 = Luer                          |         |
|                                     |        |            | 1 = 3/8" Barb                     |         |
|                                     |        |            | 2 = 1/2" Barb                     |         |
|                                     |        |            | 3 = 3/4" TC                       |         |
|                                     |        |            | 4 = 1" TC                         |         |
|                                     |        |            | 100 = Cal Fixture                 |         |
| 202                                 | R/W    | 16 bit     | T1 Sensor ID Material             |         |
|                                     |        |            | 0 = N/A                           |         |
|                                     |        |            | 1 = Polysulfone                   |         |
| 203                                 | R/W    | 16 bit     | T1 Sensor ID Month                |         |
| 204                                 | R/W    | 16 bit     | T1 Sensor ID Year                 |         |
| 205                                 | R/W    | 16 bit     | T1 Sensor ID Lot                  |         |
| 206                                 | R/W    | 16 bit     | T1 Sensor ID Unit Number          |         |
| 210                                 | R/W    | IEEE Float | T1 Sensor Cal Factor (CF)         |         |
| 241                                 | R/W    | 16 bit     | T2 Sensor ID Type                 |         |
|                                     |        |            | 0 = Luer                          |         |
|                                     |        |            | 1 = 3/8" Barb                     |         |
|                                     |        |            | 2 = 1/2" Barb                     |         |
|                                     |        |            | 3 = 3/4" TC                       |         |
|                                     |        |            | 4 = 1" TC                         |         |
|                                     |        |            | 100 = Cal Fixture                 |         |
| 242                                 | R/W    | 16 bit     | T2 Sensor ID Material             |         |
|                                     |        |            | 0 = N/A                           |         |
|                                     |        |            | 1 = Polysulfone                   |         |
| 243                                 | R/W    | 16 bit     | T2 Sensor ID Month                |         |
| 244                                 | R/W    | 16 bit     | T2 Sensor ID Year                 |         |
| 245                                 | R/W    | 16 bit     | T2 Sensor ID Lot                  |         |
| 246                                 | R/W    | 16 bit     | T2 Sensor ID Unit Number          |         |
| 250                                 | R/W    | IEEE Float | T2 Sensor Cal Factor (CF)         |         |
| 281                                 | R/W    | 16 bit     | T3 Sensor ID Type                 |         |
|                                     |        |            | 0 = Luer                          |         |
|                                     |        |            | 1 = 3/8" Barb                     |         |
|                                     |        |            | 2 = 1/2" Barb                     |         |
|                                     |        |            | 3 = 3/4" TC                       |         |
|                                     |        |            | 4 = 1" TC                         |         |

| DINTemp II Register List, Continued |        |            |                                   |         |
|-------------------------------------|--------|------------|-----------------------------------|---------|
| ADDRESS                             | ACCESS | FORMAT     | VALUE                             | DEFAULT |
|                                     |        |            | 100 = Cal Fixture                 |         |
| 282                                 | R/W    | 16 bit     | T3 Sensor ID Material             |         |
|                                     |        |            | 0 = N/A                           |         |
|                                     |        |            | 1 = Polysulfone                   |         |
| 283                                 | R/W    | 16 bit     | T3 Sensor ID Month                |         |
| 284                                 | R/W    | 16 bit     | T3 Sensor ID Year                 |         |
| 285                                 | R/W    | 16 bit     | T3 Sensor ID Lot                  |         |
| 286                                 | R/W    | 16 bit     | T3 Sensor ID Material             |         |
| 290                                 | R/W    | IEEE Float | T3 Sensor Calibration Factor (CF) |         |

**PRELIMINARY**

## Disposable Conductivity / Temperature Sensors:



| Connector Type | Max Flow Rate   | Max Pressure | Nominal Cell Volume |
|----------------|-----------------|--------------|---------------------|
| Luer           | 2 liters/min    | 60 psi       | 80 $\mu$ l          |
| 3/8" Barb      | 8 liters/min    | 60 psi       | 0.5 ml              |
| 1/2" Barb      | 17 liters/min   | 60 psi       | 0.8 ml              |
| 3/4" TC        | 31 liters/min   | 60 psi       | 1.2 ml              |
| 1" Ladish TC   | > 50 liters/min | 60 psi       | 2.3 ml              |

| Specifications for all SciCon II Flow Thru Conductivity/Temperature Sensors |                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wetted Materials:                                                           | <p>Polysulfone transfer tube, Silicone gasket, and a Sensing element composed of four gold plated pins.</p> <p>The four pins are of synthetic origin and animal derived material free to the best of our knowledge. All other fluid path components are animal derived component free.</p> <p>The pins have not been tested to USP 88 Class VI. All other fluid path components are USP 88 Class VI.</p> |
| Sensor Type:                                                                | 4-Electrode Conductivity Cell, gold plated pins.                                                                                                                                                                                                                                                                                                                                                         |
| Conductivity Range:                                                         | 1 $\mu$ S/cm to 200 mS/cm, Resolution: 0.1 $\mu$ S                                                                                                                                                                                                                                                                                                                                                       |
| Accuracy:                                                                   | <p>High range:</p> <p>With 95% confidence, measurement will be <math>\pm 5\%</math> of reading for 100 <math>\mu</math>S - 150 mS (extended to 200 mS)</p> <p>Low range:</p> <p>With 95% confidence, measurement will be <math>\pm 4</math> <math>\mu</math>S for 0-100 <math>\mu</math>S</p>                                                                                                            |
| Temperature Range:                                                          | 4 - 50° C                                                                                                                                                                                                                                                                                                                                                                                                |
| Temperature Probe:                                                          | Thermistor, Factory Calibrated                                                                                                                                                                                                                                                                                                                                                                           |
| Temp. Accuracy:                                                             | $\pm 0.5$ Celsius (At ambient)                                                                                                                                                                                                                                                                                                                                                                           |
| Sensor Microchip:                                                           | Gamma stable EPROM, stores Device ID, Calibration factors                                                                                                                                                                                                                                                                                                                                                |

## SciPres II Disposable 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.<br><br>All fluid path components are USP 88 Class VI.<br>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<br>±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                                                                                                                                                                                            |



**The maximum recommended pressure for the sensors is 60 psi. If this is exceeded, problems with leakage and functionality can occur.**

## SciTemp II Disposable Pressure Sensors:



| CONNECTOR TYPE                                                                       | Max FLOW RATE *                                                                                                                                                                                                                                                                          | Max Pressure |  |
|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--|
| Luer                                                                                 | 1 liter/min                                                                                                                                                                                                                                                                              | 60 psi       |  |
| 3/8" Barb                                                                            | 8 liters/min                                                                                                                                                                                                                                                                             | 60 psi       |  |
| 1/2" Barb                                                                            | 17 liters/min                                                                                                                                                                                                                                                                            | 60 psi       |  |
| 3/4" TC                                                                              | 31 liters/min                                                                                                                                                                                                                                                                            | 60 psi       |  |
| 1" Ladish TC                                                                         | 60 liters/min                                                                                                                                                                                                                                                                            | 60 psi       |  |
|                                                                                      | *At a 1.0 psi drop across the sensor                                                                                                                                                                                                                                                     |              |  |
|                                                                                      |                                                                                                                                                                                                                                                                                          |              |  |
| Specifications for all SciTemp™ Temperature Sensor and Flow Thru Temperature Sensors |                                                                                                                                                                                                                                                                                          |              |  |
|                                                                                      |                                                                                                                                                                                                                                                                                          |              |  |
| Material, Fluid Contact:                                                             | Natural EPDM meets USP Class VI and FDA 21 CFR 177.1520<br>Medical Grade Polysulfone meets USP Class VI and FDA 21CFR177.1520.<br>All Wetted Materials are made of Animal-Free Compounds. Compatible with<br>Most Cleaning Agents such as NaOH, Hypochlorite. Sensors can be autoclaved. |              |  |
|                                                                                      |                                                                                                                                                                                                                                                                                          |              |  |
| Sensor Type:                                                                         | Thermistor, Epoxy Coated, 2252 ohm.                                                                                                                                                                                                                                                      |              |  |
|                                                                                      |                                                                                                                                                                                                                                                                                          |              |  |
| Temperature Sensor Range:                                                            | -40 to +150 ° C for all sizes.                                                                                                                                                                                                                                                           |              |  |
|                                                                                      |                                                                                                                                                                                                                                                                                          |              |  |
| Temperature Sensor Accuracy:                                                         | 0.01° C In the 4.0 to 70.0° C Range.                                                                                                                                                                                                                                                     |              |  |
|                                                                                      |                                                                                                                                                                                                                                                                                          |              |  |
| Temperature Sensor Resolution:                                                       | 0.01° C.                                                                                                                                                                                                                                                                                 |              |  |
|                                                                                      |                                                                                                                                                                                                                                                                                          |              |  |
| Temperature Sensor Microchip:                                                        | EPROM, stores Device ID & Factory Cal Data                                                                                                                                                                                                                                               |              |  |
|                                                                                      |                                                                                                                                                                                                                                                                                          |              |  |
| Temperature Sensor Cleaning:                                                         | Sensors may be flushed with Alcohol, 0.1M or 0.5M NaOH, dilute Bleach, or Formaldehyde for inline sanitization several times. The Sensors may also be autoclaved.                                                                                                                        |              |  |
| Sensor Connector and Cables: Lockable & Waterproof                                   |                                                                                                                                                                                                                                                                                          |              |  |

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# Notes





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