You have selected a reliable, high-quality dispensing system from Nordson EFD, the world leader in fluid dispensing. The 7197PCP-DIN Controller is designed specifically for industrial dispensing and will provide you with years of trouble-free, productive service.

This manual will help you maximize the usefulness of your 7197PCP-DIN Controller. Please spend a few minutes to become familiar with the controls and features. Follow our recommended testing procedures. Review the helpful information we have included, which is based on more than 50 years of industrial dispensing experience.

Most questions you will have are answered in this manual. However, if you need assistance, please do not hesitate to contact EFD or your authorized EFD distributor. Detailed contact information is provided on the last page of this document.

The Nordson EFD Pledge

Thank You!
You have just purchased the world’s finest precision dispensing equipment.
I want you to know that all of us at Nordson EFD value your business and will do everything in our power to make you a satisfied customer.
If at any time you are not fully satisfied with our equipment or the support provided by your Nordson EFD Product Application Specialist, please contact me personally at 800.556.3484 (US), 401.431.7000 (outside US), or Srini.Subramanian@nordsonefd.com.
I guarantee that we will resolve any problems to your satisfaction.
Thanks again for choosing Nordson EFD.

Srini Subramanian, General Manager
Contents

Contents........................................................................................................................................................................3
Introduction....................................................................................................................................................................5
Nordson EFD Product Safety Statement .....................................................................................................................6
Halogenated Hydrocarbon Solvent Hazards...............................................................................................................7
High Pressure Fluids.................................................................................................................................................7
Qualified Personnel....................................................................................................................................................7
Intended Use ..............................................................................................................................................................8
Regulations and Approvals........................................................................................................................................8
Personal Safety...........................................................................................................................................................8
Fire Safety..................................................................................................................................................................9
Preventive Maintenance.........................................................................................................................................9
Important Disposable Component Safety Information..........................................................................................10
Action in the Event of a Malfunction......................................................................................................................10
Disposal.....................................................................................................................................................................10
Specifications............................................................................................................................................................11
Operating Features...................................................................................................................................................12
Installation.................................................................................................................................................................13
Unpack the System Components.................................................................................................................................13
Install the 7197PCP-DIN Controller.........................................................................................................................14
Install the Other System Components.......................................................................................................................14
Connect Power .........................................................................................................................................................15
Connect the Pump Motor Cable................................................................................................................................15
Make the Cycle Initiate and Emergency Stop Connections.................................................................................16
Connect a Purge Initiate ..........................................................................................................................................17
Make the Ethernet Connection .................................................................................................................................17
Initial Startup and Calibration ................................................................................................................................18
Purge the Pump(s) ...................................................................................................................................................19
Installation Examples .............................................................................................................................................20
7197PCP-DIN Controller and 797PCP in a One-Component System.................................................................20
7197PCP-DIN Controller and 797PCP-2K in a 2K System.....................................................................................21
Programming..........................................................................................................................................................22
Opening the 7197PCP-DIN Application ....................................................................................................................22
Navigation..................................................................................................................................................................23
Status Indications ..................................................................................................................................................24
Flowchart of Controller Screens.............................................................................................................................25
Adjusting the Purge Speed Setting...........................................................................................................................26
Creating Programs...................................................................................................................................................27
Line Programs..........................................................................................................................................................29
Volume Programs....................................................................................................................................................30
Weight Programs ....................................................................................................................................................31
Teach Programs......................................................................................................................................................32
Timed Programs.......................................................................................................................................................33
Saving a Program to the Program Library (Save Screen).........................................................................................34
Opening a Saved Program (Load Screen)................................................................................................................35
Viewing the System Information ............................................................................................................................36
Changing the IP Address of a Controller ................................................................................................................37
Operation.................................................................................................................................................................38
Routine Startup........................................................................................................................................................38
Errors and Emergency Stops (ESTOP)....................................................................................................................38
Disabling a Pump......................................................................................................................................................39
Longterm Shutdown..................................................................................................................................................39

Continued on next page
Contents

Calibration .................................................................................................................................................................................... 40
Firmware Update ........................................................................................................................................................................... 41
Part Numbers ................................................................................................................................................................................ 42
7197PCP-DIN Controller .......................................................................................................................................................... 42
797PCPs and Pump Motor Cable .............................................................................................................................................. 42
Troubleshooting ........................................................................................................................................................................... 43
  Viewing the Log ............................................................................................................................................................................ 43
  Event Log Feedback Troubleshooting ..................................................................................................................................... 43
  General Troubleshooting ......................................................................................................................................................... 44
Technical Data ................................................................................................................................................................................ 45
  I/O Port Pin Assignments and Wiring Diagrams ....................................................................................................................... 45
    Sourcing Wiring Diagrams for Connecting the Cycle Initiate (Ex_Trig) .................................................................................. 46
    Sinking Wiring Diagrams for Connecting the Cycle Initiate (Ex_Trig) ..................................................................................... 47
    Wiring Diagrams for Connecting the Emergency Stop (ESTOP) Circuit ................................................................................ 48
    Wiring Diagrams for Connecting the PURGE Initiate Circuit ................................................................................................. 49
  Maximum Motor Speed Based on Viscosity .............................................................................................................................. 50
  Motor Port Pin Assignments ....................................................................................................................................................... 51
Appendix A, Changing the IP Address of a Computer ............................................................................................................... 52
Appendix B, Example Volume Program ...................................................................................................................................... 54
Introduction

This manual provides specifications, installation, setup, programming, and service information for the 7197PCP-DIN Controller. The 7197PCP-DIN Controller provides precise dispensing control for Nordson EFD 797PCP Series progressive cavity pumps. Refer to the applicable 797PCP operating manual for detailed information on the pump.

The 7197PCP-DIN Controller features an easy-to-use web interface for quick setup and operation of 797PCPs in either a one-component or two-component (2K) application. Dispense programs are created based on the way you want to control material output, including the following:

- By dispense time, in milliseconds
- By material volume, in milliliters
- By material weight, in grams

The controller also includes a Teach feature, which allows you to “teach” the controller the desired dispense time and volume settings.

As with all EFD products, the 7197PCP-DIN Controller has been produced to exacting specifications and thoroughly tested prior to shipment.

To obtain maximum performance from this equipment, read this manual carefully.
**Nordson EFD Product Safety Statement**

⚠️ **WARNING**
The safety message that follows has a WARNING level hazard. Failure to comply could result in death or serious injury.

**ELECTRIC SHOCK**
Risk of electric shock. Disconnect power before removing covers and/or disconnect, lock out, and tag switches before servicing electrical equipment. If you receive even a slight electrical shock, shut down all equipment immediately. Do not restart the equipment until the problem has been identified and corrected.

⚠️ **CAUTION**
The safety messages that follow have a CAUTION level hazard. Failure to comply may result in minor or moderate injury.

**READ MANUAL**
Read manual for proper use of this equipment. Follow all safety instructions. Task- and equipment-specific warnings, cautions, and instructions are included in equipment documentation where appropriate. Make sure these instructions and all other equipment documents are accessible to persons operating or servicing equipment.

**MAXIMUM AIR PRESSURE**
Unless otherwise noted in the product manual, the maximum air input pressure is 7.0 bar (100 psi). Excessive air input pressure may damage the equipment. Air input pressure is intended to be applied through an external air pressure regulator rated for 0 to 7.0 bar (0 to 100 psi).

**RELEASE PRESSURE**
Release hydraulic and pneumatic pressure before opening, adjusting, or servicing pressurized systems or components.

**BURNS**
Hot surfaces! Avoid contact with the hot metal surfaces of heated components. If contact can not be avoided, wear heat-protective gloves and clothing when working around heated equipment. Failure to avoid contact with hot metal surfaces can result in personal injury.
Nordson EFD Product Safety Statement (continued)

Halogenated Hydrocarbon Solvent Hazards

Do not use halogenated hydrocarbon solvents in a pressurized system that contains aluminum components. Under pressure, these solvents can react with aluminum and explode, causing injury, death, or property damage. Halogenated hydrocarbon solvents contain one or more of the following elements.

<table>
<thead>
<tr>
<th>Element</th>
<th>Symbol</th>
<th>Prefix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluorine</td>
<td>F</td>
<td>“Fluoro-”</td>
</tr>
<tr>
<td>Chlorine</td>
<td>Cl</td>
<td>“Chloro-”</td>
</tr>
<tr>
<td>Bromine</td>
<td>Br</td>
<td>“Bromo-”</td>
</tr>
<tr>
<td>Iodine</td>
<td>I</td>
<td>“Iodo-”</td>
</tr>
</tbody>
</table>

Check the Safety Data Sheet (SDS) or contact your material supplier for more information. If you must use halogenated hydrocarbon solvents, contact your EFD representative for compatible EFD components.

High Pressure Fluids

High pressure fluids, unless they are safely contained, are extremely hazardous. Always release fluid pressure before adjusting or servicing high pressure equipment. A jet of high pressure fluid can cut like a knife and cause serious bodily injury, amputation, or death. Fluids penetrating the skin can also cause toxic poisoning.

⚠️ WARNING

Any injury caused by high pressure liquid can be serious. If you are injured or even suspect an injury:

- Go to an emergency room immediately.
- Tell the doctor that you suspect an injection injury.
- Show the doctor the following note.
- Tell the doctor what kind of material you were dispensing.

Medical Alert — Airless Spray Wounds: Note to Physician

Injection in the skin is a serious traumatic injury. It is important to treat the injury surgically as soon as possible. Do not delay treatment to research toxicity. Toxicity is a concern with some exotic coatings injected directly into the bloodstream.

Qualified Personnel

Equipment owners are responsible for making sure that EFD equipment is installed, operated, and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.
Nordson EFD Product Safety Statement (continued)

Intended Use

Use of EFD equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property. Some examples of unintended use of equipment include:

- Using incompatible materials.
- Making unauthorized modifications.
- Removing or bypassing safety guards or interlocks.
- Using incompatible or damaged parts.
- Using unapproved auxiliary equipment.
- Operating equipment in excess of maximum ratings.
- Operating equipment in an explosive atmosphere.

Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for Nordson EFD equipment will be voided if instructions for installation, operation, and service are not followed. If the equipment is used in a manner not specified by Nordson EFD, the protection provided by the equipment may be impaired.

Personal Safety

To prevent injury, follow these instructions:

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors, and covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Make sure spray areas and other work areas are adequately ventilated.
- When using a syringe barrel, always keep the dispensing end of the tip pointing towards the work and away from the body or face. Store syringe barrels with the tip pointing down when they are not in use.
- Obtain and read the Safety Data Sheet (SDS) for all materials used. Follow the manufacturer’s instructions for safe handling and use of materials and use recommended personal protection devices.
- Be aware of less-obvious dangers in the workplace that often cannot be completely eliminated, such as hot surfaces, sharp edges, energized electrical circuits, and moving parts that cannot be enclosed or otherwise guarded for practical reasons.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located.
- Wear hearing protection to protect against hearing loss that can be caused by exposure to vacuum exhaust port noise over long periods of time.
Nordson EFD Product Safety Statement (continued)

Fire Safety

To prevent a fire or explosion, follow these instructions:

- Shut down all equipment immediately if you notice static sparking or arcing. Do not restart the equipment until the cause has been identified and corrected.
- Do not smoke, weld, grind, or use open flames where flammable materials are being used or stored.
- Do not heat materials to temperatures above those recommended by the manufacturer. Make sure heat monitoring and limiting devices are working properly.
- Provide adequate ventilation to prevent dangerous concentrations of volatile particles or vapors. Refer to local codes or the SDS for guidance.
- Do not disconnect live electrical circuits when working with flammable materials. Shut off power at a disconnect switch first to prevent sparking.
- Know where emergency stop buttons, shutoff valves, and fire extinguishers are located.

Preventive Maintenance

As part of maintaining continuous trouble-free use of this product, Nordson EFD recommends the following simple preventive maintenance checks:

- Periodically inspect tube-to-fitting connections for proper fit. Secure as necessary.
- Check tubing for cracks and contamination. Replace tubing as necessary.
- Check all wiring connections for looseness. Tighten as necessary.
- Clean: If a front panel requires cleaning, use a clean, soft, damp rag with a mild detergent cleaner. DO NOT USE strong solvents (MEK, acetone, THF, etc.) as they will damage the front panel material.
- Maintain: Use only a clean, dry air supply to the unit. The equipment does not require any other regular maintenance.
- Test: Verify the operation of features and the performance of equipment using the appropriate sections of this manual. Return faulty or defective units to Nordson EFD for replacement.
- Use only replacement parts that are designed for use with the original equipment. Contact your Nordson EFD representative for information and advice.
Nordson EFD Product Safety Statement (continued)

Important Disposable Component Safety Information

All Nordson EFD disposable components, including syringe barrels, cartridges, pistons, tip caps, end caps, and dispense tips, are precision engineered for one-time use. Attempting to clean and re-use components will compromise dispensing accuracy and may increase the risk of personal injury.

Always wear appropriate protective equipment and clothing suitable for your dispensing application and adhere to the following guidelines:

- Do not heat syringe barrels or cartridges to a temperature greater than 38° C (100° F).
- Dispose of components according to local regulations after one-time use.
- Do not clean components with strong solvents (MEK, acetone, THF, etc.).
- Clean cartridge retainer systems and barrel loaders with mild detergents only.
- To prevent fluid waste, use Nordson EFD SmoothFlow™ pistons.

Action in the Event of a Malfunction

If a system or any equipment in a system malfunctions, shut off the system immediately and perform the following steps:

1. Disconnect and lock out system electrical power. If using hydraulic and pneumatic shutoff valves, close and relieve pressure.
2. For Nordson EFD air-powered dispensers, remove the syringe barrel from the adapter assembly. For Nordson EFD electro-mechanical dispensers, slowly unscrew the barrel retainer and remove the barrel from the actuator.
3. Identify the reason for the malfunction and correct it before restarting the system.

Disposal

Dispose of equipment and materials used in operation and servicing according to local codes.
## Specifications

**NOTE:** Specifications and technical details are subject to change without prior notification.

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabinet size</td>
<td>3.2W × 9.4H × 14.6D cm (1.27W × 3.70H × 5.75D&quot;)</td>
</tr>
<tr>
<td>Weight</td>
<td>0.7 kg (1.5 lb)</td>
</tr>
<tr>
<td>Rotor speed</td>
<td>10–150 RPM</td>
</tr>
<tr>
<td>Time range</td>
<td>0.001–600,000 ms (1 s to 10 min)</td>
</tr>
<tr>
<td>Electrical power input</td>
<td>24 VDC (±2%), 1.33 Amp maximum</td>
</tr>
<tr>
<td>Feedback circuits</td>
<td>Electronic switch, 24 VDC, 100 mA maximum</td>
</tr>
<tr>
<td>Initiate circuit</td>
<td>24 VDC signal</td>
</tr>
</tbody>
</table>
| Ambient operating conditions | Temperature: 5–45° C (41–113° F)  
                          | Humidity: 85% RH at 30° C, 40% at 45° C non-condensing                       |
|                       | Height above sea level: 2,000 meters max (6,562 feet)                         |
| Product classification| Installation Category II                                                      |
| Approvals             | CE, TUV, RoHS, China RoHS, WEEE                                               |

### RoHS标准相关声明 (China RoHS Hazardous Material Declaration)

<table>
<thead>
<tr>
<th>Part Name</th>
<th>Toxic or Hazardous Substances and Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lead (Pb)</td>
</tr>
<tr>
<td></td>
<td>Mercury (Hg)</td>
</tr>
<tr>
<td></td>
<td>Cadmium (Cd)</td>
</tr>
<tr>
<td></td>
<td>Hexavalent Chromium (Cr6)</td>
</tr>
<tr>
<td></td>
<td>Polybrominated Biphenyls (PBB)</td>
</tr>
<tr>
<td></td>
<td>Polybrominated Dipheryl Ethers (PBDE)</td>
</tr>
</tbody>
</table>

- **X**: 表示该产品所含有的危险成分或有害物质含量依照EIP-A，EIP-B，EIP-C的标准低于SJ/T11363-2006限定要求。
- **0**: 表示该产品所含有的危险成分或有害物质含量依照EIP-A，EIP-B，EIP-C的标准高于SJ/T11363-2006限定要求。

### WEEE Directive

This equipment is regulated by the European Union under WEEE Directive (2012/19/EU). Refer to [www.nordsonefd.com/WEEE](http://www.nordsonefd.com/WEEE) for information about how to properly dispose of this equipment.
Operating Features

Power / fault LED

Power and ground connections

I/O port

Ethernet port

Pump motor cable port
Installation

Use this section in tandem with the quick start guide and any other system component operating manuals to install all components of the system.

Unpack the System Components

1  7197PCP-DIN Controller
2  DB-15 cable, 1.6 m (5.2 ft) (for the cycle initiate, emergency stop, and purge initiate connections)
3  DB-15 breakout board (for the cycle initiate, emergency stop, and purge initiate connections)

(Not shown)
797PCP or 797PCP-2K (ordered separately)
797PCP pump motor cable(s) (ordered separately)
Quick start guide
Installation (continued)

Install the 7197PCP-DIN Controller

**NOTE:** Refer to “Installation Examples” on page 20 for system layout images of typical installations.

You will need the following items:
- 7197PCP-DIN Controller
- DB-15 breakout board

1. Integrate the 7197PCP-DIN Controller(s) into your existing machinery, observing the following guidelines:
   - Ensure that each controller is mounted close enough to connecting devices to route wiring to it without straining or kinking the wiring.
   - Ensure that the Ethernet connection on the bottom of each controller is easily accessible. This connection will be used to program the controller via the 7197PCP-DIN web application.
   - Ensure that the power / fault LEDs on the front of each controller are visible to operators.

2. Integrate each DB-15 breakout board into your existing machinery, ensuring that each board is mounted close enough to its associated controller to easily route wiring to it without straining or kinking the wiring.

   **NOTES:**
   - All digital I/Os are 24 VDC.
   - The analog input is 0–10 VDC.

Install the Other System Components

1. Install the 797PCP(s). For pump installation instructions, refer to the applicable 797PCP manual.

2. Install any system components (other than the controller and pumps) that will comprise the complete dispensing system.

   **NOTE:** For example, if you are using a fluid reservoir, position and install all the fluid reservoir components. For all ancillary components, refer to the quick start guide and / or operating manual provided with those components for installation and setup instructions.
Installation (continued)

Connect Power
You will need the following items:
• Wire
• Wire cutters / strippers
• Customer-supplied power cable and ground wire

1. Connect 24 VDC power to each controller in the system, observing the marked polarity.

2. In accordance with all state and local electrical codes, connect an equipment grounding conductor to the green ground screw.

Connect the Pump Motor Cable
For each 797PCP, connect the pump motor cable to the MOTOR port on its controller. The cable is shipped with the pump.
Installation (continued)

Make the Cycle Initiate and Emergency Stop Connections

A dispensing cycle can be initiated by a 24 VDC signal from a device such as a mechanical start button, a PLC, or a foot pedal. For the dispense cycle to start, the emergency stop (ESTOP) circuit must be closed (as shown under “I/O Port Pin Assignments and Wiring Diagrams” on page 45). Both of these signals are connected to the applicable pins on the I/O port through the supplied DB-15 breakout board.

You will need the following items:
• Wire
• Wire cutters / strippers
• DB-15 cable

1. Connect the DB-15 cable to the I/O port on the controller and to the associated breakout board. For a 2K system, do this for both controllers.

2. For each controller in the system, connect a cycle initiate signal to pins 5 and 6 (Ex_Trig + and Ex_Trig -) on the DB-15 breakout board as described in the table below.

   **NOTE:** Refer to “I/O Port Pin Assignments and Wiring Diagrams” on page 45 for details.

<table>
<thead>
<tr>
<th>Application</th>
<th>How to Connect the Cycle Initiate to the I/O Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-component</td>
<td>• Connect an input signal to pins 5 and 6, Ex_Trig (+) and Ex_Trig (-).</td>
</tr>
<tr>
<td>Two-component (2K)</td>
<td>• Connecting both pin 5s [Ex_Trig (+)] and both pin 6s [Ex_Trig (-)] together, connect an input signal to both controllers.</td>
</tr>
<tr>
<td></td>
<td>• Use one 24V source, but connect both ground pins (pin 9) together.</td>
</tr>
</tbody>
</table>

   **NOTES:**
   - Never connect the system ground (pin 9) and the analog ground (pin 13) together.
   - Do not connect either the system ground (pin 9) or the analog ground (pin 13) to a chassis or to an equipment ground connection.

3. For each controller in the system, connect an emergency stop input to pins 1 and 2 (Estop_H and Estop_L) on the DB-15 breakout board through a normally closed relay that opens upon an emergency stop condition.

   **NOTES:**
   - Refer to “I/O Port Pin Assignments and Wiring Diagrams” on page 45 for details.
   - If an emergency stop circuit is not needed, connect pins 1 and 2 together. The pump will dispense only if these pins are connected.
   - When an emergency stop circuit is restored to normal, the controller will begin operation again.
Installation (continued)

Connect a Purge Initiate

For each controller in the system, connect a purge initiate signal to pins 10 and 11 (Purge + and Purge -) on the DB-15 breakout board. The purge signal allows operators to purge the pump(s) by pressing a button or other purge-initiate device.

NOTE: Refer to “I/O Port Pin Assignments and Wiring Diagrams” on page 45 for details.

Make the Ethernet Connection

Each controller in the system must be connected to the Ethernet in order to access the 7197PCP-DIN application. You will need the following items:

- Two (2) Category 5e Ethernet cables (or similar), or one Ethernet crossover cable
- Ethernet switch (if you have an Ethernet crossover cable, this switch is unnecessary)

1. As applicable for your installation, make the Ethernet connection to the 7197PCP-DIN Controller(s) and to a personal computer.

2. Enable the 24 VDC power supply to the 7197PCP-DIN Controller(s).

3. Ensure that your computer is on the same network plane as the 7197PCP-DIN Controller(s).

NOTE: A 7197PCP-DIN Controller’s preprogrammed IP address is 192.168.10.51. If there are multiple 7197PCP-DIN Controllers on the same network, they each need a unique IP address:

- To change the IP address of a 7197PCP-DIN Controller, refer to “Changing the IP Address of a Controller” on page 37.
- To change the IP address of a computer, refer to “Appendix A, Changing the IP Address of a Computer” on page 52.

4. Open a web browser (Chrome or Firefox are preferred) and go to the following URL for a one-component system: http://192.168.10.51:8088/Iface.php. For a multi-component system, open the unique URL(s) assigned to each pump.

The Main screen appears.
Initial Startup and Calibration

Before a pump is purged for the first time, it must be calibrated to the controller. Calibration allows the controller to determine a baseline for the resistance between the rotor and the stator.

**NOTE:** If a pump is not calibrated before its first purge, the purge initiate will not work.

1. Switch on the controller. The Main screen appears.

2. **Refer to the pump manual to bleed each 797PCP in the system. Return here to continue.** Bleeding introduces fluid into the pump.

3. Select CALIBRATE.

4. Select the CALIBRATE radio button.

5. Select SUBMIT. The system runs until calibration is complete.

6. Select REFRESH to return to the Main screen.

   **NOTE:** When you select a program, the Calibrate button automatically deselects.

7. Continue to “Purge the Pump(s)” on page 19.
Installation (continued)

Purge the Pump(s)

Before creating any programs or placing the system into operation for the first time, purge each pump without a tip or mixer installed.

⚠️ CAUTION

Risk of equipment damage. Do not operate a 797PCP without material. Excessive friction of dry components can damage the pump.

1. Ensure that each pump has been calibrated. Initial purging will work only after a calibration has been performed.

2. Select PURGE.

3. Select the UPDATE PURGE radio button.

   NOTE: The default purge speed is 10 RPM. To change the purge speed, enter a new purge RPM (from 10–150) and click SUBMIT.

4. Refer to “Purge the Pump” in the installation section of the pump manual to purge each 797PCP in the system. Return here to continue.

   The system is now ready for routine operation. Continue to “Programming” on page 22 to create dispense programs for pump operation.
Installation Examples

7197PCP-DIN Controller and 797PCP in a One-Component System

For pump installation instructions, refer to the 797PCP operating manual.
Installation Examples (continued)

7197PCP-DIN Controller and 797PCP-2K in a 2K System

For pump installation instructions, refer to the 797PCP-2K operating manual.
Programming

The 7197PCP-DIN Controller is operated via the 7197PCP-DIN web application. This section provides instructions for opening the application and using it to create programs to control your 797PCP applications.

Opening the 7197PCP-DIN Application

Each controller in the system must be properly connected to the Ethernet in order to access the 7197PCP-DIN application. Refer to "Make the Ethernet Connection" on page 17 for details.

1. Enable the 24 VDC power supply to the 7197PCP-DIN Controller(s).

2. Open a web browser (Chrome or Firefox are preferred) and go to the following URL: http://192.168.10.51:8088/Iface.php, or, for a multi-component system, open the unique URL(s) assigned to each pump.

   The Main screen appears. Continue to the next sections of this manual to create programs to control the operation of a pump.

Single-component application

2K application
Programming (continued)

Navigation

From the Main screen, you can access all other screens. The navigation buttons are present on most screens, allowing you to easily switch to other screens.

The variable table at the top right of the screen changes based on the open program. For the Line, Volume, Weight, Teach, and Timed program screens, the variable table shows the currently entered value of the variables. For example, when you select the Line Program screen, the table changes to show the current values for the Line Program settings.

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Relevant Section in this Manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refresh</td>
<td>Refreshes the current screen</td>
<td>n/a</td>
</tr>
<tr>
<td>Log</td>
<td>Opens the Log screen</td>
<td>“Viewing the Log” on page 43</td>
</tr>
<tr>
<td>Load</td>
<td>Opens the Load screen</td>
<td>“Opening a Saved Program (Load Screen)” on page 35</td>
</tr>
<tr>
<td>Save</td>
<td>Opens the Save screen</td>
<td>“Saving a Program to the Program Library (Save Screen)” on page 34</td>
</tr>
<tr>
<td>Line</td>
<td>Displays the Line program variables</td>
<td>“Line Programs” on page 29</td>
</tr>
<tr>
<td>Volume</td>
<td>Displays the Volume program variables</td>
<td>“Volume Programs” on page 30</td>
</tr>
<tr>
<td>Weight</td>
<td>Displays the Weight program variables</td>
<td>“Weight Programs” on page 31</td>
</tr>
<tr>
<td>Teach</td>
<td>Displays the Teach program variables</td>
<td>“Teach Programs” on page 32</td>
</tr>
<tr>
<td>Timed</td>
<td>Displays the Timed program variables</td>
<td>“Timed Programs” on page 33</td>
</tr>
<tr>
<td>Purge</td>
<td>Displays the Purge screen to allow adjustment of the purge speed</td>
<td>“Adjusting the Purge Speed Setting” on page 26</td>
</tr>
<tr>
<td>Calibrate</td>
<td>Displays the Calibrate screen</td>
<td>“Calibration” on page 40</td>
</tr>
</tbody>
</table>
Programming (continued)

Status Indications
The status indications shown below are present on most screens.

<table>
<thead>
<tr>
<th>Operating Mode</th>
<th>Indicator Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume program running</td>
<td>Shows what percentage of the dispense cycle remains</td>
</tr>
<tr>
<td>Weight program running</td>
<td></td>
</tr>
<tr>
<td>Timed program running</td>
<td></td>
</tr>
<tr>
<td>Teach program OFF</td>
<td></td>
</tr>
<tr>
<td>Teach program ON</td>
<td>Shows how long the dispense cycle has been triggered</td>
</tr>
<tr>
<td>Line program running</td>
<td>Empty (no indication)</td>
</tr>
</tbody>
</table>

7197PCP-DIN Controller

7197PCP Progressive Cavity Pump Controller

Main screen

<table>
<thead>
<tr>
<th>Status</th>
<th>Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>Dark gray</td>
<td>The pump is not running.</td>
</tr>
<tr>
<td>Running</td>
<td>Green</td>
<td>The system is running normally.</td>
</tr>
<tr>
<td>ESTOP</td>
<td>Red</td>
<td>An emergency stop has occurred.</td>
</tr>
<tr>
<td>Error</td>
<td>Yellow</td>
<td>An error has occurred. Refer to “Troubleshooting” on page 43.</td>
</tr>
</tbody>
</table>

Variable Selection
<table>
<thead>
<tr>
<th>Program</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump Size</td>
<td>0.01</td>
</tr>
<tr>
<td>Dispense Volume</td>
<td>1</td>
</tr>
<tr>
<td>RPM</td>
<td>10</td>
</tr>
<tr>
<td>Reverse %</td>
<td>4</td>
</tr>
<tr>
<td>Correction Factor</td>
<td>1.3</td>
</tr>
<tr>
<td>Calibration</td>
<td>1</td>
</tr>
<tr>
<td>IP Address</td>
<td>192.168.10.54</td>
</tr>
</tbody>
</table>

7197PCP-DIN Controller
Programming (continued)

Flowchart of Controller Screens

Load screen

Save screen

Purge screen

Log screen

Calibrate screen

Main screen

Line Program screen

Weight Program screen

Timed Program screen

Volume Program screen

Teach Program screen
Programming (continued)

Adjusting the Purge Speed Setting

Before placing the system into operation, or anytime that purging is required, refer to the pump manual for the purging procedure. Use this procedure only to change the purge RPM, ensuring that the maximum allowable motor speed is not exceeded. Refer to “Maximum Motor Speed Based on Viscosity” on page 50.

1. Select PURGE.

2. Enter the desired RPM setting, ensuring that the maximum allowable motor speed is not exceeded. Refer to “Maximum Motor Speed Based on Viscosity” on page 50.
   
   **NOTE:** Values must be within the specified range limits, or they will not save.

3. Select SUBMIT. The Purge RPM speed updates, and the saved purge RPM is displayed in the Variable table next to RPM.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPM</td>
<td>10–150 (RPM)</td>
<td>Sets the purge motor speed in RPM; for guidance on setting the RPM, refer to “Maximum Motor Speed Based on Viscosity” on page 50.</td>
</tr>
<tr>
<td>INFO</td>
<td>n/a</td>
<td>Select to view information about the current screen, including the range limits for settings.</td>
</tr>
</tbody>
</table>
Programming (continued)

Creating Programs

The controller allows you to create five types of program: Line, Volume, Weight, Teach, and Timed. A general programming procedure is provided on the next page. Specific programming procedures, including detailed information on all settings, are provided in the sections shown under “Detailed Information.”

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Description</th>
<th>Typical Application</th>
<th>Detailed Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line</td>
<td>Use a Line program to dispense material continuously, for as long as the dispense cycle is activated.</td>
<td>Continuous lines, all viscosities</td>
<td>Refer to “Line Programs” on page 29.</td>
</tr>
<tr>
<td>Volume</td>
<td>Use a Volume program to dispense a specified amount of material in milliliters.</td>
<td>Filling a known volume</td>
<td>Refer to “Volume Programs” on page 30.</td>
</tr>
<tr>
<td>Weight</td>
<td>Use a Weight program to dispense a specified amount of material in grams.</td>
<td>Dispensing based on weight</td>
<td>Refer to “Weight Programs” on page 31.</td>
</tr>
<tr>
<td>Teach</td>
<td>Use Teach program to “Teach” the system the desired dispense time and volume.</td>
<td>Filling an unknown volume</td>
<td>Refer to “Teach Programs” on page 32.</td>
</tr>
<tr>
<td>Timed</td>
<td>Use a Timed program to dispense for a specified amount of time, in milliseconds per cycle.</td>
<td>Dispensing for a known period of time</td>
<td>Refer to “Timed Programs” on page 33.</td>
</tr>
</tbody>
</table>

Variable table: The content of this table changes based on the selected program / variables.
Programming (continued)

Creating Programs (continued)

Follow this general procedure to enter settings for a program. A task-specific procedure is also provided for each program type later in this section.

1. Select any program type button to display the variables for that selection.

   **NOTE:** The navigation buttons are present on most screens, allowing you to easily switch to other screens.

2. To view information about the currently displayed screen, select INFO.

3. To enable a program, select the ENABLE [program type] PROGRAM radio button.

   **NOTE:** If you don’t enable the program, the system will not save any entered settings.

4. Make the desired radio button selections and / or enter settings inside the value fields. Refer to the applicable sections of this manual as noted in the table above for detailed information about each program type, including setting ranges.

5. When all variables are at the desired setting, select SUBMIT. The system saves the settings.

6. To save the values you entered as a program in the Program Library, refer to “Saving a Program to the Program Library (Save Screen)” on page 34.

---

Example of general programming steps (Line program screen shown)
Programming (continued)

Line Programs

Use a Line program to dispense a continuous line of material. When a Line program is run, the pump dispenses for as long as the dispense cycle is initiated. You can enable Analog On to fine-tune the motor speed while running a Line program. Refer to “Make the Cycle Initiate and Emergency Stop Connections” on page 16 to connect the cycle initiate signal.

1. On the Main screen, select LINE.

2. Select the ENABLE LINE PROGRAM radio button.

   **NOTE:** If you don’t enable the program, the system will not save any entered settings.

3. Enter the desired settings, referring to the table below for detailed information on each variable.

4. Select SUBMIT to save the settings. The variable table shows the saved settings.

5. To save the values you entered as a program in the Program Library, refer to “Saving a Program to the Program Library (Save Screen)” on page 34.

### Variable Table

<table>
<thead>
<tr>
<th>Variable</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPM</td>
<td>10–150 (RPM)</td>
<td>Sets the motor speed in RPM; for guidance on setting the RPM, refer to “Maximum Motor Speed Based on Viscosity” on page 50.</td>
</tr>
<tr>
<td>Reverse %</td>
<td>0–200 (%)</td>
<td>Based on the percentage of rotation, sets the suck-back to reverse the motor at the end of a dispense cycle to prevent drooling.</td>
</tr>
<tr>
<td>Correction Factor</td>
<td>0.1–2.00</td>
<td>Because rotors and stators may not be perfectly matched, the Correction Factor linearly scales the output to ensure that the expected amount is deposited every time.</td>
</tr>
<tr>
<td>Analog On / Analog Off</td>
<td>n/a</td>
<td>Select Analog On to use the “RPM: 10V” and “RPM: 0V” fields to change the motor speed on-the-fly. When Analog Off is selected, the “RPM: 10V” and “RPM: 0V” fields are disabled.</td>
</tr>
<tr>
<td>RPM: 10V</td>
<td>0–10</td>
<td>Scales the output RPM linearly from 0–10V based on the input analog voltage (pins 12 and 13 of the I/O port; refer to “I/O Port Pin Assignments and Wiring Diagrams” on page 45 as needed).</td>
</tr>
<tr>
<td>RPM: 0V</td>
<td>0–10</td>
<td></td>
</tr>
<tr>
<td>INFO</td>
<td>n/a</td>
<td>Select to view information about the current screen, including the range limits for settings.</td>
</tr>
</tbody>
</table>

Line program screen
Programming (continued)

Volume Programs

Use a Volume program to dispense primarily based on volume. When a Volume program is used, the pump dispenses until the specified amount (in milliliters) has been deposited. Refer to “Make the Cycle Initiate and Emergency Stop Connections” on page 16 to connect the cycle initiate signal.

NOTE: For an example of how to create a Volume program, including how to use Correction Factor and Reverse %, refer to “Appendix B, Example Volume Program” on page 54.

1. On the Main screen, select VOLUME.
2. Select the ENABLE VOLUME PROGRAM radio button.
   NOTE: If you don’t enable the program, the system will not save any entered settings.
3. Enter the desired settings, referring to the table below for detailed information on each variable.
4. Select SUBMIT to save the settings. The variable table shows the saved settings.
5. To save the values you entered as a program in the Program Library, refer to “Saving a Program to the Program Library (Save Screen)” on page 34.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump Size</td>
<td>0.01 mL, 0.05 mL, or 0.15 mL</td>
<td>Select the size of the pump for which you are creating the program.</td>
</tr>
<tr>
<td>Dispense Volume (mL)</td>
<td>0.001–15000.00 (mL) (adjustable in increments of 0.001)</td>
<td>Sets the amount of material (in mL) that will be dispensed for each cycle of the pump.</td>
</tr>
<tr>
<td>RPM</td>
<td>10–150 (RPM)</td>
<td>Sets the motor speed in RPM; for guidance on setting the RPM, refer to “Maximum Motor Speed Based on Viscosity” on page 50.</td>
</tr>
<tr>
<td>Reverse %</td>
<td>0–200 (%) (adjustable in increments of 1%)</td>
<td>Based on the percentage of rotation, sets the suck-back to reverse the motor at the end of a dispense cycle to prevent drooling.</td>
</tr>
<tr>
<td>Correction Factor</td>
<td>0.1–2.00 (adjustable in increments of 0.01)</td>
<td>Because rotors and stators may not be perfectly matched, the Correction Factor linearly scales the output to ensure that the expected amount is deposited every time.</td>
</tr>
<tr>
<td>INFO</td>
<td>n/a</td>
<td>Select to view information about the current screen, including the range limits for settings.</td>
</tr>
</tbody>
</table>
Programming (continued)

Weight Programs

Use a Weight program to dispense primarily based on weight. When a Weight program is used, the pump dispenses until the specified material weight (in grams) has been deposited. Refer to “Make the Cycle Initiate and Emergency Stop Connections” on page 16 to connect the cycle initiate signal.

1. On the Main screen, select WEIGHT.

2. Select the ENABLE WEIGHT PROGRAM radio button.

   NOTE: If you don’t enable the program, the system will not save any entered settings.

3. Enter the desired settings, referring to the table below for detailed information on each variable.

4. Select SUBMIT to save the settings. The variable table shows the saved settings.

5. To save the values you entered as a program in the Program Library, refer to “Saving a Program to the Program Library (Save Screen)” on page 34.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pump Size</td>
<td>0.01 mL, 0.05 mL, or 0.15 mL</td>
<td>Select the size of the pump for which you are creating the program.</td>
</tr>
<tr>
<td>Weight</td>
<td>0–600 (g) (adjustable in increments of 0.001 g)</td>
<td>Sets the amount of material (in g) that will be dispensed for each cycle of the pump.</td>
</tr>
<tr>
<td>Density</td>
<td>0–11000 (g/cm³) (adjustable in increments of 0.01 g/cm³)</td>
<td>Sets the density of the material (in g/cm³) to be dispensed.</td>
</tr>
<tr>
<td>Reverse %</td>
<td>0–200 (%) (adjustable in increments of 1%)</td>
<td>Based on the percentage of rotation, sets the suck-back to reverse the motor at the end of a dispense cycle to prevent drooling.</td>
</tr>
<tr>
<td>Correction Factor</td>
<td>0.1–2.00 (adjustable in increments of 0.01)</td>
<td>Because rotors and stators may not be perfectly matched, the Correction Factor linearly scales the output to ensure that the expected amount is deposited every time.</td>
</tr>
<tr>
<td>RPM</td>
<td>10–150 (RPM)</td>
<td>Sets the motor speed in RPM; for guidance on setting the RPM, refer to “Maximum Motor Speed Based on Viscosity” on page 50.</td>
</tr>
<tr>
<td>INFO</td>
<td>n/a</td>
<td>Select to view information about the current screen, including the range limits for settings.</td>
</tr>
</tbody>
</table>
**Programming (continued)**

**Teach Programs**

The Teach program allows you to “Teach” the system how long to run at the specified speed. When a Teach program is selected and the dispense cycle is activated, the pump dispenses for the amount of time determined by the Teach program.

1. On the Main screen, select TEACH.
2. Select the ENABLE TEACH PROGRAM radio button.
   - **NOTE:** If you don’t enable the program, the system will not save any entered settings.
3. Enter the desired settings, referring to the table below for detailed information on each variable.
   - **NOTE:** Values must be within the specified range limits, or they will not save.
4. Select the START TEACH TIME radio button, then select SUBMIT.
5. Start the dispense cycle by activating the external trigger.
   - **NOTE:** As long as the dispense cycle is activated, the controller tracks the dispense time. If the dispense cycle is stopped and restarted, the controller erases the previous time and starts tracking again.
6. When the desired amount of material has been dispensed, select the STOP TEACH TIME radio button, then select SUBMIT.
   - The system saves the settings.
7. Select REFRESH to see the new Teach Time (ms) in the variable table.
8. To save the values you entered as a program in the Program Library, refer to “Saving a Program to the Program Library (Save Screen)” on page 34.

---

### Variable Table

<table>
<thead>
<tr>
<th>Variable</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPM</td>
<td>10–150 (RPM)</td>
<td>Sets the motor speed in RPM; for guidance on setting the RPM, refer to “Maximum Motor Speed Based on Viscosity” on page 50.</td>
</tr>
<tr>
<td>Reverse %</td>
<td>0–200 (%) (adjustable in increments of 1%)</td>
<td>Based on the percentage of rotation, sets the suck-back to reverse the motor at the end of a dispense cycle to prevent drooling.</td>
</tr>
<tr>
<td>Correction Factor</td>
<td>0.1–2.00 (adjustable in increments of 0.01)</td>
<td>Because rotors and stators may not be perfectly matched, the Correction Factor linearly scales the output to ensure that the expected amount is deposited every time.</td>
</tr>
<tr>
<td>INFO</td>
<td>n/a</td>
<td>Select to view information about the current screen, including the range limits for settings.</td>
</tr>
</tbody>
</table>
Programming (continued)

Timed Programs

Use a Timed program to dispense primarily based on time. When a Timed program is run, the pump dispenses for the specified time (in milliseconds) for each dispense cycle. Refer to “Make the Cycle Initiate and Emergency Stop Connections” on page 16 to connect the cycle initiate signal.

1. On the Main screen, select TIMED.
2. Select the ENABLE TIMED PROGRAM radio button.
   NOTE: If you don’t enable the program, the system will not save any entered settings.
3. Enter the desired settings, referring to the table below for detailed information on each variable.
4. Select SUBMIT to save the settings. The variable table shows the saved settings.
5. To save the values you entered as a program in the Program Library, refer to “Saving a Program to the Program Library (Save Screen)” on page 34.
6. Select REFRESH to return to the Main screen.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispense Time (ms)</td>
<td>0.001–600,000 (ms) (adjustable in increments of 0.001 ms)</td>
<td>Sets the amount of time (in ms) to open the pump for each dispense cycle. <strong>NOTE:</strong> In other words, the Dispense Time is adjustable between 1 ms (0.001 s) and 10 minutes (600,000 ms).</td>
</tr>
<tr>
<td>RPM</td>
<td>10–150 (RPM)</td>
<td>Sets the motor speed in RPM; for guidance on setting the RPM, refer to “Maximum Motor Speed Based on Viscosity” on page 50.</td>
</tr>
<tr>
<td>Reverse %</td>
<td>0–25 (%) (adjustable in increments of 1%)</td>
<td>Based on the percentage of rotation, sets the suck-back to reverse the motor at the end of a dispense cycle to prevent drooling.</td>
</tr>
<tr>
<td>Correction Factor</td>
<td>0–200 (adjustable in increments of 0.01)</td>
<td>Because rotors and stators may not be perfectly matched, the Correction Factor linearly scales the output to ensure that the expected amount is deposited every time.</td>
</tr>
<tr>
<td>INFO</td>
<td>n/a</td>
<td>Select to view information about the current screen, including the range limits for settings.</td>
</tr>
</tbody>
</table>
Programming (continued)

Saving a Program to the Program Library (Save Screen)

Follow this procedure to save a program to the Program Library.

1. Ensure that the program you want to save is displayed, and that the variable settings are correct.

2. On the Main screen, select SAVE. The Save screen opens.

3. Enter a program number next to “Save current program as program number.”

   Up to 10 programs can be saved. The program shown in the variable table is saved to the selected program number.

4. Select SUBMIT. The system saves the program in the Program Library.

5. Select HOME to return to the Main screen.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Save current program as program number:</td>
<td>Used to save a program to the Program Library.</td>
</tr>
<tr>
<td>Change IP address: 192.168.10.</td>
<td>Used to change the IP address of the controller. Refer to “Changing the IP Address of a Controller” on page 37.</td>
</tr>
</tbody>
</table>
Programming (continued)

Opening a Saved Program (Load Screen)

If you have saved a program to the Program Library, follow this procedure to load the program at any time.

**NOTE:** This screen also includes a radio button to disable the pump. Refer to “Disabling a Pump” on page 39 for details.

1. On the Main screen, select LOAD. The Load screen opens.
2. Select the radio button of the program number you want to load.
3. Select SUBMIT. The selected program loads into the variable table.
4. Select HOME to return to the Main screen.
Programming (continued)

Viewing the System Information

Follow this procedure to view the following information about the controller:

- Serial number
- Model number
- Firmware version

**NOTE:** The Update button on this screen is used to update the controller firmware. Refer to “Firmware Update” on page 41 for details.

1. On the Main screen, select SAVE. The Save screen opens.
   - The system information is displayed on the Save screen.
2. Select HOME to return to the Main screen.
Programming (continued)

Changing the IP Address of a Controller

A 7197PCP-DIN Controller must have a unique IP address. If a controller is connected to a network that includes another device with the same IP address, follow this procedure to change the IP address of a 7197PCP-DIN Controller.

**NOTE:** Each computer in a 797PCP system must also have a unique IP address. Refer to “Appendix A, Changing the IP Address of a Computer” on page 52 to change the IP address of a computer.

1. On the Main screen, select SAVE. The Save screen opens.
2. Enter the desired IP address (1–255) next to “Change IP address.”
3. Select SUBMIT.
4. Select REFRESH to confirm that the IP address was saved.
5. Cycle the controller power to make the IP address live.

The new IP address is reflected on the Main screen as `192.168.19.xxx:8088/Iface.php`, where the `xxx` represents the changed digits.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Save current program as program number:</td>
<td>Used to save a program to the Program Library. Refer to “Saving a Program to the Program Library (Save Screen)” on page 34.</td>
</tr>
<tr>
<td>Change IP address:</td>
<td>Used to change the IP address of the controller</td>
</tr>
</tbody>
</table>
Operation

After the dispensing system is fully installed and the desired dispensing programs are created, the system is ready for routine operation. Follow these recommended procedures for daily / routine startup and shutdown to obtain the best performance from your system.

Routine Startup

1. Switch on the power source for all 7197PCP-DIN Controllers in the system.

   **CAUTION**

   Risk of equipment damage. **Do not operate a 797PCP without material.** Excessive friction of dry components can damage the pump.

2. Create or load the program to run. To load a saved program, refer to “Opening a Saved Program (Load Screen)” on page 35.

3. Start your process.

   When the system is operating normally:
   - The green LED on the front of the controller illuminates when the pump cycles.
   - The green status indicator on the 7197PCP-DIN application indicates “Running.”

   **NOTE:** Refer to “Status Indications” on page 24 for an explanation of all status indications provided on the Main screen.

Errors and Emergency Stops (ESTOP)

If the system indicates an error or emergency stop, check the Log screen and correct the problem that caused the error or stop. Refer to “Viewing the Log” on page 43 and to “Troubleshooting” on page 43.
Operation (continued)

Disabling a Pump

Follow this procedure to disable a pump, whether for service or to test the output of only one pump in a 2K system.

1. On the Main screen, select LOAD. The Load screen opens.

2. Select the DISABLE PUMP radio button. The pump associated with the IP address of the open 7197PCP-DIN application is now disabled.

To re-enable the pump, select a program to run by creating one on the Main screen or by selecting a program from the Load screen.

Longterm Shutdown

For long periods of downtime or for storage, refer to the applicable pump manual to remove the pump stator(s). Removing the stator prevents rotor deformation.
Calibration

Calibration allows the controller to determine a baseline for the resistance between the rotor and the stator. Perform a calibration as follows:

- Before the initial purge of a pump during installation
- After replacing a cable

**NOTE:** Calibration allows the use of cable lengths up to 50 m (164 ft) without the loss of accuracy and repeatability.

- After every rotor or stator replacement

1. Ensure that there is fluid in the pump.
2. On the Main screen, select CALIBRATE.
3. Select the Calibrate radio button.
4. Select SUBMIT. The system runs until calibration is complete.

**NOTE:** When you select a program, the Calibrate button automatically deselects.
Firmware Update

Follow this procedure to update the 7197PCP-DIN application.

1. Go to www.nordsonefd.com/7197PCP-DINFirmware to download the latest firmware.

2. On the Main screen, select SAVE. The Save screen opens.

3. Select UPDATE. The firmware update screen opens.

4. Refer to the instructions provided with the downloaded firmware to complete the update.
Part Numbers

7197PCP-DIN Controller

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7364116</td>
<td>7197PCP-DIN Controller (includes the DB-15 breakout board and DB-15 cable)</td>
</tr>
</tbody>
</table>

797PCPs and Pump Motor Cable

797PCPs and the pump motor cable are ordered separately. Refer to the 797PCP / 797PCP-2K manuals for part numbers.
## Troubleshooting

Use the troubleshooting table in this section, along with the system error log, to troubleshoot the dispensing system. Contact your Nordson EFD representative for assistance as needed.

## Viewing the Log

The log is a list of notable system events. Events are listed in ascending order, starting with the most recent event. The system stores up to 50 events before it starts to overwrite the oldest ones.

**NOTE:** Log entries are in English only.

1. On the Main screen, select LOG. The Log screen opens.
   - The event number is shown in the left column. The event is described in the right column.
2. Select HOME to return to the Main screen.

### Event Log Feedback Troubleshooting

<table>
<thead>
<tr>
<th>Feedback</th>
<th>Possible Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>No motor feedback</td>
<td>Pump motor cable not connected, loose, or damaged</td>
<td>Disconnect and lock out power to the controller. Ensure that the pump motor cable is properly connected. Replace the cable if it is damaged.</td>
</tr>
<tr>
<td>No counter feedback</td>
<td>Faulty printed circuit board</td>
<td>Cycle the controller power. If the problem persists, contact your Nordson EFD representative for assistance.</td>
</tr>
<tr>
<td></td>
<td>Encoder feedback error</td>
<td></td>
</tr>
</tbody>
</table>

![Image of the Log screen with entries and actions described in the text.]
## General Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controller not powering on</td>
<td>Power supply not connected</td>
<td>Connect a customer-supplied power cable to the power input port. Refer to “Connect Power” on page 15.</td>
</tr>
<tr>
<td>Pump not dispensing</td>
<td>ESTOP signal not connected</td>
<td>If the red LED on the controller is illuminated, the ESTOP circuit is open. Ensure that the ESTOP circuit is properly connected. Refer to “Wiring Diagrams for Connecting the Emergency Stop (ESTOP) Circuit” on page 48. If an emergency stop circuit is not needed, connect pins 1 and 2 (Estop_H and Estop_L) together. The pump will dispense only if these pins are connected.</td>
</tr>
<tr>
<td>Initiate signal (Ex_Trig) not connected</td>
<td></td>
<td>Check the initiate signal connections. Refer to “I/O Port Pin Assignments and Wiring Diagrams” on page 45.</td>
</tr>
<tr>
<td>Pump motor cable not connected, loose, or damaged</td>
<td></td>
<td>Disconnect and lock out power to the controller. Ensure that the pump motor cable is properly connected. Replace the cable if it is damaged.</td>
</tr>
<tr>
<td>Entered value will not save</td>
<td>Value not within range limits</td>
<td>The values entered for program variables must be within the specified range limits. Refer to the information table for each program type for range limits.</td>
</tr>
<tr>
<td></td>
<td>Program not enabled</td>
<td>Ensure that the program is enabled by selected the enable / disable radio button; program variables can be changed only after a program is enabled.</td>
</tr>
</tbody>
</table>
# Technical Data

## I/O Port Pin Assignments and Wiring Diagrams

- All outputs are rated at 70 mA.
- Inputs / outputs can be wired as either sinking or sourcing.
- Inputs / outputs can use either the courtesy 24 VDC power source at pin 15 or an external 24 VDC source.
- All inputs can be wired as shown in this section. Outputs are configured only for 24 VDC sourcing, but the source can be either pin 15 or an external source. To use the courtesy 24 VDC power source for the output signals, connect to pins 14 and 15. To use an external power source, connect to pin 14.

### I/O Port Pin Assignments

**NOTE:** Do not connect the system ground (pin 9) and the analog ground (pin 13) together.

<table>
<thead>
<tr>
<th>I/O Pin</th>
<th>Direction</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Source</td>
<td>Estop_H</td>
</tr>
<tr>
<td>2</td>
<td>Input</td>
<td>Estop_L</td>
</tr>
<tr>
<td>3</td>
<td>Input</td>
<td>NC (not connected)</td>
</tr>
<tr>
<td>4</td>
<td>Input</td>
<td>NC (not connected)</td>
</tr>
<tr>
<td>5</td>
<td>Input</td>
<td>Ex_Trig (+)</td>
</tr>
<tr>
<td>6</td>
<td>Input</td>
<td>Ex_Trig (-)</td>
</tr>
<tr>
<td>7</td>
<td>Output</td>
<td>Error (output)</td>
</tr>
<tr>
<td>8</td>
<td>Output</td>
<td>Running (out)</td>
</tr>
<tr>
<td>9</td>
<td>n/a</td>
<td>GND</td>
</tr>
<tr>
<td>10</td>
<td>Input</td>
<td>Purge (+)</td>
</tr>
<tr>
<td>11</td>
<td>Input</td>
<td>Purge (-)</td>
</tr>
<tr>
<td>12</td>
<td>Input</td>
<td>Analog in (0–10V)</td>
</tr>
<tr>
<td>13</td>
<td>n/a</td>
<td>Analog GND</td>
</tr>
<tr>
<td>14</td>
<td>Input</td>
<td>External 24V input</td>
</tr>
<tr>
<td>15</td>
<td>Output</td>
<td>24 VDC (100 mA) out</td>
</tr>
</tbody>
</table>

---

**I/O Port Pin Assignments and Wiring Diagrams**

- All outputs are rated at 70 mA.
- Inputs / outputs can be wired as either sinking or sourcing.
- Inputs / outputs can use either the courtesy 24 VDC power source at pin 15 or an external 24 VDC source.
- All inputs can be wired as shown in this section. Outputs are configured only for 24 VDC sourcing, but the source can be either pin 15 or an external source. To use the courtesy 24 VDC power source for the output signals, connect to pins 14 and 15. To use an external power source, connect to pin 14.
Technical Data (continued)

I/O Port Pin Assignments and Wiring Diagrams (continued)

Sourcing Wiring Diagrams for Connecting the Cycle Initiate (Ex_Trig)

**Sourcing, One-Component Systems**

- Pin 15: 25 VDC source
- Pin 9: GND
- Pin 6: Ex_Trig (-)
- Pin 5: Ex_Trig (+)
- NO (normally open)

**Sourcing, 2K Systems**

- Pin 15: 25 VDC source
- Pin 9: GND
- Pin 6: Ex_Trig (-)
- Pin 5: Ex_Trig (+)
- External contact
- NO (normally open)
Technical Data (continued)

Sinking Wiring Diagrams for Connecting the Cycle Initiate (Ex_Trig)

Sinking, One-Component Systems

Sinking, 2K Systems
Technical Data (continued)

I/O Port Pin Assignments and Wiring Diagrams (continued)

Wiring Diagrams for Connecting the Emergency Stop (ESTOP) Circuit

One-Component Systems

2K Systems
Technical Data (continued)

Wiring Diagrams for Connecting the PURGE Initiate Circuit

Sourcing, One-Component Systems

Sinking, One-Component Systems
Technical Data (continued)

Maximum Motor Speed Based on Viscosity

Based on the viscosity of the dispensing material, ensure that the motor speed does not exceed the maximum RPM based on the table and graph below.

**Example:** If the dispensing material has a viscosity of 8,000 mPa s, the RPM setting should be no higher than 135 RPM (90% of the allowable maximum setting of 150 RPM).

<table>
<thead>
<tr>
<th>Viscosity</th>
<th>Percentage of Maximum RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–800 mPa s</td>
<td>100%</td>
</tr>
<tr>
<td>800–10,000 mPa s</td>
<td>90%</td>
</tr>
<tr>
<td>10,000–25,000 mPa s</td>
<td>70%</td>
</tr>
<tr>
<td>25,000–50,000 mPa s</td>
<td>50%</td>
</tr>
<tr>
<td>50,000–150,000 mPa s</td>
<td>25%</td>
</tr>
</tbody>
</table>

![Graph showing viscosity vs. speed relationship]
Motor Port Pin Assignments

Sensor power supply

5 VDC +/-0.5 V — 17 mA
Brown to red

Motor power supply
Violet to red to +J5-1
Red to black to +J5-2

Motor Port Pin Assignments

Gray to white — Channel C — index

Channel A
White to blue
Green to green
A

Channel B
Pink to brown
Yellow to yellow

Channel C
Black to white / black
Appendix A, Changing the IP Address of a Computer

Each computer in a 797PCP system must have a unique IP address. Follow this procedure to change the IP address of a computer.

**NOTE:** To change the IP address of the 7197PCP-DIN controller, refer to “Changing the IP Address of a Controller” on page 37.

1. On your computer, navigate to the “Network and Sharing Center.”
2. Click “Change Adapter Settings.”

3. Select “Local Area Connection” (Windows 7) or “Ethernet” (Windows 10).

4. Double-click (Windows 7) or right-click (Windows 10) to select “Properties.”
Appendix A, Changing the IP Address of a Computer (continued)


6. Click “Use the following IP address” and then enter the desired IP address.

   **NOTE:** In this example, the entered IP address is 192.168.10.55. Because the IP address of the controller is 192.168.10.51, no IP conflicts can occur because the IP addresses are different. If you want to set up multiple controllers on one network, each controller and computer must have a unique IP address. The digit range for each field is 1–255.

7. Click OK > OK to save the new IP address.
Appendix B, Example Volume Program

This appendix provides an example setup of a Volume program, including how to determine the amount of fluid dispensed and then how to use the Correction Factor and Reverse % variables to fine-tune the deposit size.

**Determine the Maximum Motor Speed**

To achieve the most repeatable deposit amount for an unknown fluid density, first consult the table below to determine the maximum operating RPM is based on the fluid viscosity:

**NOTE:** Refer to “Maximum Motor Speed Based on Viscosity” on page 50 for a graph.

<table>
<thead>
<tr>
<th>Viscosity</th>
<th>Percentage of Maximum RPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–800 mPa s</td>
<td>100%</td>
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<td>90%</td>
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<td>70%</td>
</tr>
<tr>
<td>25,000–50,000 mPa s</td>
<td>50%</td>
</tr>
<tr>
<td>50,000–150,000 mPa s</td>
<td>25%</td>
</tr>
</tbody>
</table>

The maximum allowable RPM setting is 150 RPM.

Based on a viscosity of 9,000 mPa s, the maximum motor speed should be $0.9 \times 150 = \textbf{135 RPM}$.

**Ensure the System is Free of Trapped Air**

Trapped air in the system can cause drooling of the fluid. Follow these steps to remove trapped air.

1. If a tip is installed, remove the tip.
2. Ensure that pressurized fluid is flowing into the fluid cavity of the pump.
3. Open the bleed valve hex screw and keep it open until fluid exists the bleed valve.
4. Install the tip and then turn the pump upside down.
5. Do one of the following:
   - Select the Line program and set the RPM to 50
   - Open the Purge screen and set the RPM to 50. (The Purge initiate input trigger must be connected.)
6. Run the pump until a steady stream of bubble-free fluid is exiting the tip.
Appendix B, Example Volume Program (continued)

Determine the Deposit Weight After One Rotation

For an unknown density, follow these steps to determine the weight of the pump output after one (1) rotation. For example, if using a 0.01 mL/rev rotor / stator, one revolution of the motor should dispense approximately 0.01 mL of fluid.

1. Open the Volume screen and enter the following variables:
   - Dispense volume (mL): 0.01
   - RPM = 50
   - Reverse % = 0
   - Correction Factor = 1

   **NOTE:** Volume and Weight programs are the most accurate and repeatable programs for this determination because they actively use the encoder to judge how many rotations the motor has made.

2. Make five (5) deposits and then determine the average amount of fluid dispensed for those five deposits. This provides the average amount of fluid dispensed in mg/rev.

3. Using this one-revolution average, calculate the closest revolutions to the amount you want to dispense.
   
   For example, if the average amount of fluid dispensed was 25 mg/rev, but you want to dispense 48 mg/rev, then the closest number of full revolutions required would be 2.

4. In the Volume program, change the Dispense Volume to 0.02 (because this represents 0.02 mL of fluid and should be the closest to the 48 mg/rev of dispense weight needed).
Appendix B, Example Volume Program (continued)

Use Correction Factor and Reverse % to Fine Tune the Deposit Size

1. Make five more deposits using the new setting, then again determine the average amount of fluid dispensed.
   If, at these settings, the average dispensed is 51 mg/rev (as compared to the desired 48 mg/rev), you can use the Correction Factor to reduce the target weight to 48 mg/rev.

2. To determine the Correction Factor, use the following equation:

   \[ \text{Correction Factor} = \frac{\text{Target Weight}}{\text{Measured Weight}} \]

   So, for this example the resulting Correction Factor is:  \[ \text{Correction Factor} = \frac{48 \text{ mg}}{51 \text{ mg}} = 0.94 \]

3. Enter the new 0.94 Correction Factor in the Volume program.

4. Make a few more deposits. If needed, increase Reverse % to eliminate drooling.

   *NOTE:* Contact your Nordson EFD representative for assistance as needed to determine the best values for your application.
Notes
NORDSON EFD ONE YEAR LIMITED WARRANTY

This Nordson EFD product is warranted for one year from the date of purchase to be free from defects in material and workmanship (but not against damage caused by misuse, abrasion, corrosion, negligence, accident, faulty installation, or by dispensing material incompatible with equipment) when the equipment is installed and operated in accordance with factory recommendations and instructions.

Nordson EFD will repair or replace free of charge any defective part upon authorized return of the part prepaid to our factory during the warranty period. The only exceptions are those parts which normally wear and must be replaced routinely, such as, but not limited to, valve diaphragms, seals, valve heads, needles, and nozzles.

In no event shall any liability or obligation of Nordson EFD arising from this warranty exceed the purchase price of the equipment.

Before operation, the user shall determine the suitability of this product for its intended use, and the user assumes all risk and liability whatsoever in connection therewith. Nordson EFD makes no warranty of merchantability or fitness for a particular purpose. In no event shall Nordson EFD be liable for incidental or consequential damages.

This warranty is valid only when oil-free, clean, dry, filtered air is used, where applicable.

To register your equipment, please go to www.nordsonefd.com/warranty/controllers