Installing PCS Software

PCS Software is supported in several different configurations. The most common configurations will be stand-alone installations on a single computer and client-server installations for sharing a networked database between multiple computers. Administrator permissions are required to install the software.

To begin installation: Plug in and power on the computer which will receive the PCS Software installation. Insert the USB drive with PCS Software. Open the PCS Software folder and double click "Install PCS Software.vbs".

In a stand-alone installation, where PCS Software is installed only on one computer, all items on the software installer should be installed, in order, from the PCS Database installation through the PCS Client installation. Note that in a stand-alone installation, this computer will need to be powered on with network connectivity for the PCS Email Notifications features to work.

SQL Server Express included

If a supported version of SQL Server is not found on the PC, the PCS Software installer will install SQL Server Express 2019 automatically.

In a client-server installation, where the PCS software will be used on multiple computers with a shared database on a separate computer, the PCS Database and PCS Email Notifications installs should be completed on the database server and the PCS Service and PCS Client installations should be completed on all of the other computers.
Signing in for the first time

PCS Software requires users to sign in for traceability and reporting. Settings can be configured for a variety of security needs, ranging from a single account for all operations through finely managed groups and permissions.

Close the installer window and double-click the PCS Software icon on the desktop to start the PCS Software.

PCS Software installs with a default administrator account preconfigured. To sign for the first time, use the user name PCSAdmin and password PCSAdmin@123.

Select the database to be used for the initial and subsequent connections.

Artel recommends changing the password on this account immediately and using it only to create your first named administrator account.

After clicking Sign in for the first time, PCS Software will require entry of a valid license key to continue.
Connecting system components – PCS Instrument

1. Connect power and USB cables to the rear of the instrument and the other end of the USB cable to the computer (Do not connect the PCS through a USB hub, it must be connected directly to the computer). Ensure the power cable locks into place.

2. Configure the label printer for use with the computer.

   a. Do not connect label printer to the computer yet. The printer driver software installer will specify when to make this connection. When prompted to connect the label printer, it must be connected directly to the computer and not through a USB hub.

   b. Install the appropriate Brother printer driver from the PCS Software installation media’s Support folder. Follow on-screen instructions for connecting the printer.

   c. Configure printer for PCS Software settings by following the instructions in the PCS User Guide, located within the PCS Software.

On first connection to the computer, Microsoft Windows will begin installing drivers for the integrated bar code reader and the PCS instrument. This process may take a few moments. The PCS instrument driver is also available on the PCS Software installation media if your version of Windows is unable to automatically install the driver.
1. Connect power and serial cables to the rear of the instrument.

2. Connect other system components to the computer.
   a. Connect the serial end of the USB-Serial adapter to the serial cable connected in Step 1 and the USB end to an available USB port on your computer (if required).
   b. Connect the USB bar code scanner to an available USB port on your computer.
   c. (Optional) Configure the label printer for use with the computer.
      - Do not connect label printer to the computer yet. The printer driver software installer will specify when to make this connection.
      - Install the appropriate Brother printer driver from the PCS Software installation media’s Support folder. Follow on-screen instructions for connecting the printer.
      - Configure printer for PCS Software settings by following the instructions in the PCS User Guide, located within the PCS Software.
Configuring PCS2/PCS3 Instruments for PCS Software use

PCS Instruments purchased prior to August, 2016 will require a replacement EEPROM card for use with PCS Software.

How to install the new EEPROM card:

1. With the power switch turned off and instrument unplugged from power outlet, loosen two quarter-turn fasteners on rear of instrument and gently lift off instrument rear cover.

2. Remove existing EEPROM card by gently pulling up on the card. Follow the placement instruction printed on the new EEPROM card. Carefully insert new EEPROM card by gently but fully pressing card into slot.

3. Place cover back on instrument, tighten quarter-turn fasteners, and power on the instrument.
Configuring PCS2/PCS3 Instrument for PCS Software use

All PCS2/PCS3 instruments need to be configured to Link to Computer mode for use with PCS software.

1. Turn the PCS instrument power switch ON and use the MENU SCROLL key on the PCS to advance the menu to Link to Computer.

2. Press YES to enter Link to Computer mode. This completes the link and the PCS instrument indicates that it is ready for use with the PCS software.

3. To leave Link to Computer mode at any time, press RESET but note that any unused reagent in the PCS will need to be discarded.
Using PCS Reagents

- Ensure all Blank and Sample Solutions belong to the same Lot Code.
- Transfer only an amount of Sample Solution to the aliquot container that will be used within 30 minutes.
- Always keep Sample Solution bottles and aliquot containers tightly capped when not in use.

PCS Calibrator Kit

- PCS2/PCS3 instruments do not have an integrated infrared temperature sensor and require all PCS vials to be equilibrated within the vial block for 15 minutes before use.
- If the reagents have been moved from another location, additional time may be required.
- Components of the PCS Calibrator Kit should not be exposed to light for more than 5 minutes. Keep them in the box until ready to use. This does not apply to PCS2/PCS3 where the ambient vials may be equilibrated in the vial block since they are protected from light when in the block.

Storage

- The Reagent Kit should be stored at room temperature (15 °C to 25 °C).
- Kits should be stored in the dark to the extent practical.
- If the solutions freeze, they should be allowed to equilibrate at room temperature for several hours (or overnight), mixed by vigorously inverting the bottle at least 20 times, and checking for precipitate. If no precipitate is visible, the solutions can be used without limitation for the specified shelf life. If precipitate remains, repeat mixing.

Using PCS Reagents

- Ensure all Blank and Sample Solutions belong to the same Lot Code.
- Transfer only an amount of Sample Solution to the aliquot container that will be used within 30 minutes.
- Always keep Sample Solution bottles and aliquot containers tightly capped when not in use.

PCS Calibrator Kit

- PCS2/PCS3 instruments do not have an integrated infrared temperature sensor and require all PCS vials to be equilibrated within the vial block for 15 minutes before use.
- If the reagents have been moved from another location, additional time may be required.
- Components of the PCS Calibrator Kit should not be exposed to light for more than 5 minutes. Keep them in the box until ready to use. This does not apply to PCS2/PCS3 where the ambient vials may be equilibrated in the vial block since they are protected from light when in the block.

Disposal

Dispose of PCS reagents in accordance with local, state, and federal regulations.

Vial Cleaning

To ensure accurate results, all vials should be free of fingerprints and smudges prior to use.

- To clean the vials, hold by the cap and gently wipe the lower portion of the vial by rotating the vial against a lint-free wipe.
- If there are visible smudges on the vial use HPLC grade isopropyl alcohol on the lint-free wipe to remove them.
Get Started with the Home screen

### Easy navigation
Quick access to the Home, Administration, Configuration, Calibration, and Results screens.

### Primary actions
Jump right into calibrating or training directly from the home screen. Scan a Pipette to immediately select it for an action.

### Need help?
Context-sensitive help is available to answer any questions on any screen.

### Quick setup
Use the Get Started bar to quickly get up and running by following the numbered steps in order.

### Review notifications
Quickly view, approve, or reject calibration results as soon as they are completed and calibration plans as soon as they are created.

### No more guessing
PCS Software notifies you directly on the Home screen what is required right now.

### Useful shortcuts
Customize the shortcuts to have your common tasks right at your finger tips.

### Status bar
Displays status messages about actions performed, warnings or errors which occurred, the signed-in user, connected server, database name, and current server time.
Pipettes are assigned an Owner and Location to facilitate email notifications and filtering views of due items and results. At least one user and location must be created before pipettes can be added.

Add User and Add Location can be started directly from the Home screen. Click on the shortcut in the Get Started bar to launch the edit screen and then click the Home icon to return.

Users need a Full Name, Email Address, an Initial Group, unique User Name, and an initial Password (users will need to set a new password on first sign-in).

Locations only require a Location Name.
Get Started - Adding Pipettes

PCS Software includes a catalog of over 2000 pipette models, including manufacturer and ISO tolerances for those pipettes. Start adding a pipette into the software by browsing by Manufacturer and Model. New models can be added to the catalog through the Pipette Catalog tab on the Data Import/Export screen.

It is important that the Manufacturer/Model are correct as they cannot be changed once a calibration has been completed.

Pipette ID is the unique identifier for the pipette for traceability through history and results. Once the pipette ID is entered and saved, it cannot be edited.

All pipettes in PCS Software have an assigned Location and Owner. Locations are used to filter views on due items and results. Owners are also used for filtering and can receive automatic notifications when tasks are due or completed.
Calibration Plans are used to describe the calibration procedures in PCS Software. Each calibration requires the selection of a Calibration Plan.

**Name**
Artel recommends that the name of the calibration plan reference the target volume.

**Replicates**
Enter the number of replicates or data points to be taken for the calibration.

**Evaluation criteria**
Choose inaccuracy, imprecision, or inaccuracy and imprecision. These can be recorded as absolute or relative values.

**Add a target volume**
PCS Software will direct you to perform the pipette calibration in the same order as the tolerances are entered here.
Get Started - Creating Schedules

Schedule Type
You can schedule:
- Pipette Calibrations
- Operator Trainings
- Instrument Calibrations
- External calibration

Repetition Options
Decide how frequently the schedule needs to be completed and how date rescheduling is determined.

Due Date rescheduling stays true to the first due date and Completion Date rescheduling adds the repetition cycle to the latest date once the schedule has been completed.

Scheduled Items
Select the pipettes, operators, or instruments which need to follow the schedule.
Get Started - Creating Schedules

First Due By
Select the date when the schedule must first be completed.
Get Started – Adding PCS Instrument

Ensure the PCS Instrument is powered on and connected to the PC. From the Home screen, click the Add Instrument button.

Select the Instrument Type, provide a unique Instrument ID, select the COM Port where the PCS is connected, and click Test Connection. The Serial Number will be automatically read from the instrument if communication is established with the PCS.

(Recommended) Return to Create Schedule and create an instrument calibration schedule for every 30 days.

Confirm PCS instrument is mapped to the correct driver:
Under Control Panel > Driver Manager, expand Ports. The PCS instrument should be linked to STMicroelectronics. If it is not, right-click on the PCS Instrument USB listing, select Update Driver, navigate to C:\Program Files (x86)\STMicroelectronics, then click OK and accept all screens.
Integrated Bar Code Scanner

During calibrations and operator trainings, the integrated bar code scanner will activate, and the software screen will indicate which consumable to scan.

When scanning vials and reagents, position the item to be scanned within the green light target of the scanner **between 2 and 5 inches** (5 to 13 cm) from the scan window.

Status Light Bar

The light bar displays system status.

- Solid illumination indicates that the instrument is connected to the host PC and idle.
- Fast pulsing illumination indicates that the instrument is connected to the host PC and performing a reading.
- Slow pulsing illumination indicates that the instrument is not connected to the host PC or has an error.

Touch Bar

Touch anywhere on this bar to close the PCS lid after dispensing reagent, replacing vials, or as instructed on screen by the PCS Software.
Calibrating Instruments

PCS Software requires a valid instrument calibration before performing pipette calibrations or operator trainings. Artel recommends creating an Instrument Calibration schedule for every 30 days.

1. From the Home screen, click any Due instruments, or click Calibrate Instrument to select an instrument which is not scheduled for calibration.

2. Select the instrument from the instrument list and click Start Calibration.

3. Follow the on-screen instructions to scan and insert PCS Instrument Calibrator Kit vials A through D.
Calibrating the PCS Instrument – Report Overview

Imprecision Results
The Instrument Calibration Report shows the calculated standard deviation and the specified allowable limit. Any failed results are highlighted.

Inaccuracy Results
The Instrument Calibration Report shows the measured absorbance ratios and the values scanned from the instrument calibrator kit. Any failed results are highlighted.

Overall Result
The Instrument Calibration Report displays the overall pass/fail status at the top of the report.

Materials
The report shows the lot code and expiration date of the PCS Instrument Calibrator Kit used for the calibration. The PCS Software enforces the use of valid instrument calibrator kit vials through bar code scanning.
Shortcuts – Scan Pipette

The **Scan Pipette** shortcut provides quick access to routine tasks for a pipette. Click the **Scan Pipette** shortcut, scan the pipette, and a window similar to the one below will appear.

**Pipette Details**
After a pipette is scanned, PCS Software looks for a matching record in the pipette list and shows the pipette details.

**Calibrations Due**
If the scanned pipette is due for calibration, this button will navigate to a list of due schedules for this pipette.

**Shortcuts**
These buttons navigate to common pipette tasks.

---

**Ready for Review**
- Pipette ID: D73310474106
- Serial Number: US12345
- Last Calibrated: 13-Apr-2017
- Next Due: 12-May-2017

**Review Completed**
- Instrument Due in 60 days
- 2 Calibrations Due

**Due**
- Instrument
- Location
- Last Calibrated
- Next Due

**View Results**
- Measure Volume
- Scan Pipette

---

19
Calibrating Pipettes with PCS

1. From the Home screen, click any Due pipettes, or click Calibrate Pipette to select a pipette which is not scheduled for calibration.

2. Select the connected PCS instrument or choose to manually enter data acquired by other instruments.

3. Follow the on-screen instructions to complete the pipette calibration.
Calibrating Pipettes Externally

Pipette calibrations completed outside of PCS Software can be uploaded as an External Pipette Calibration.

Enter the Calibration Date and the Calibration Result. Optionally enter Summary Statistics to appear on PCS Software's Calibration Report.

Click Browse to select a calibration document exported from Artel Data Manager, Artel Pipette Tracker, or from a third-party service or instrument.
Calibrating Pipettes Externally

PCS Software creates an External Pipette Calibration Report with information about the external calibration and any related approvals. View the original uploaded document by clicking the attachment icon on the calibration report.

Original Calibration Certificate – Stored in PCS Software.

Artel Calibration Report Generated from Original Calibration Certificate.
Calibrating Pipettes – Report Overview

Pipette Info
Pipette ID, manufacturer, model, serial number (if entered), nominal volume, owner, and location of the pipette.

Replicates
Displayed by target volume and pipette channel, this table shows each data point collected during the calibration as well as any added comments.

Materials
The PCS consumables used including lot number and expiration date.

PCS Info
The serial number, firmware version, last calibration ID, and next calibration date (if scheduled).

Approval Status
Shows whether the calibration is pending review or has been reviewed and is approved or rejected.

Overall Result
The overall pass/fail status of the calibration, completion time stamp, calibration plan used, and unique calibration result ID.

Target Volume Results
Pass/fail results by target volume as well as relevant statistics for the replicates collected at each target volume.

Environment
The temperature, pressure, and humidity, if entered by the operator during the calibration.

Operator/Reviewer
The operator who performed the calibration and the reviewer who reviewed the calibration. If electronic signature is used, the signature line will be completed, otherwise a blank signature line will be shown along with the date field.
Creating Training Plans

**IMPORTANT NOTE:** Separate training plans must be created for each pipette that will be used for operator assessment.

**NEW TRAINING PLAN**

- **Name:** Operator Assessment using 20 µL pipette
- **Replicates:** 10
- **Status:** Draft

**Evaluation Criteria**
Choose inaccuracy, imprecision or inaccuracy and imprecision. These can be recorded as absolute or relative values.

**NEW TRAINING PLAN**

- **Tolerance Source:** User Defined
- **Evaluation Criteria:** Inaccuracy and Imprecision
- **Report values as absolute volumes instead of percent:**
  - Target Volume: 2.000 µL
    - Inaccuracy: <= 5 %
    - Imprecision: <= 5 %
  - Target Volume: 10,000 µL
    - Inaccuracy: <= 4 %
    - Imprecision: <= 2 %
  - Target Volume: 20,000 µL
    - Inaccuracy: <= 2 %
    - Imprecision: <= 1 %

**Add a target volume**
PCS Software will direct you to perform the operator assessment in the same order as the tolerances are entered in this screen.

**Replicates**
Enter the number of replicates or data points to be taken for the operator assessment.

**Name**
Artel recommends that the name of the training plan reference the (nominal) target volume that will be used in the assessment.
Creating an Operator Training Schedule

**Type**
Select operator training.

**Name**
Artel recommends that the name of the training schedule reference the (nominal) target volume that will be used in the assessment.

**Scheduled Operators**
Select the operators and training plan that should follow the schedule.

**IMPORTANT NOTE:** Each training plan will require its own training schedule.
Performing Operator Trainings – As Trainer

1. From the **Home** screen, click any **Due** operators, or click **Train Operator** to select an operator who is not scheduled for training.

2. Select the connected PCS instrument, the pipette to be used for the training, and have the operator provide their login credentials to begin.

3. Follow the on-screen instructions to complete the training.
Performing Operator Trainings – As Self Assessment

1. From the Home screen, click Self Assessment if an assessment is due.

2. Select the connected PCS instrument and the pipette to be used for the self assessment.

3. Follow the on-screen instructions to complete the self assessment.
Performing Unscheduled Volume Measurements

To measure a volume dispensed by a device without requiring a calibration plan, use the Measure Volume option from the Home screen. Measurements made with this option do not get recorded in the system database, no report is generated and results are discarded after ending the measurement cycle.

1. From the Home screen, click Measure Volume.

2. Enter the expected target volume in µL, the number of replicates to dispense, and make a selection to display statistics as relative or absolute error.

3. Select the instrument to use, click OK and then follow the on-screen instructions for completing the volume measurement session.
Migrating from Artel Pipette Tracker™ - Exporting Data

Artel has created migration tools to reduce the amount of effort required to configure PCS Software. Users, groups, pipettes, locations, methods and test plans, and schedules* can all be automatically created to shorten your setup time with PCS Software.

How to export your configuration settings from Artel Pipette Tracker (versions 3.2 and 3.3) into an import format for PCS Software:

1. Connect the PCS Software installation USB drive to the computer running Artel Pipette Tracker. Open the APT Data Export Tool located in the Support\Artel\Artel Pipette Tracker Support. Create a new subfolder in this folder to contain the exported data.

2. Select the appropriate Artel Pipette Tracker (APT) software version in the Data Export Tool. For version 3.2, browse to the Access database files as prompted. For version 3.3, enter the database server information, database names, and provide a login account. Click Export Data to begin the export.

3. When prompted to save the exported Artel Pipette Tracker data, select the folder on the USB drive created during the first step. The export process will begin and an export result log will be displayed with information about the export.

*Artel is unable to move previous calibration results or audit trail entries from Artel Pipette Tracker into PCS Software. Your current instance of Artel Pipette Tracker should be used in the event of an audit of existing records.
Migrating from Artel Pipette Tracker™ - Importing Data

How to import your configuration settings from Artel Pipette Tracker data exported during the previous step:

1. Connect the PCS Software installation USB drive to the computer running PCS Software. Open the APT Data Import Tool located in the Support\Artel\Artel Pipette Tracker Support folder of the USB drive.

2. Click Select exported data from APT and select the location on the USB drive where data was saved during the export step to begin importing the data into PCS Software.

3. An import result log will be displayed at the end of the import process. If PCS Software is open, you may need to Refresh the active screen.
Setting up Accessory Hardware

PCS Software supports the following label printers for printing of pipette identification and calibration labels. To configure the appropriate label sizes, refer to the steps detailed in the PCS User Guide.

Brother PT-P900W  
Brother PT-9700PC  
Brother PT-9500PC

The Artel PCS Instrument has an integrated bar code scanner, preconfigured for use with the PCS Software.

**For PCS2/PCS3 Instruments** purchased prior to PCS Software, the following previous bar code scanners can be used by scanning the bar code below.

HHP/Honeywell 4600G  
MVS-113
<table>
<thead>
<tr>
<th>To...</th>
<th>Click...</th>
<th>And then click...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add a new model of pipette into the system</td>
<td>![Lock Icon]</td>
<td>DATA IMPORT/EXPORT, enter pipette details and manufacturer limits, click Add Pipette to Catalog.</td>
</tr>
<tr>
<td>Assign permissions to users</td>
<td>![Lock Icon]</td>
<td>GROUPS, edit an existing group to include a new user, or create a new group and add the appropriate permissions and users to the group.</td>
</tr>
<tr>
<td>Reset a user’s password / unlock user’s account</td>
<td>![Lock Icon]</td>
<td>RESET ACCOUNT, select the user name from the drop down list, enter a new password for the account, and click Apply.</td>
</tr>
<tr>
<td>Create pipette calibration intervals</td>
<td>![Gears Icon]</td>
<td>SCHEDULES, click +, then Select Plan to choose a calibration plan, make selections for the due date and repetition settings, and click + to add pipettes to the schedule. Click Save when completed.</td>
</tr>
<tr>
<td>Activate/Deactivate a pipette</td>
<td>![Gears Icon]</td>
<td>PIPETTES, find and select the pipette in the pipette list, and click to deactivate the pipette temporarily in the system. Repeat steps to reactivate.</td>
</tr>
<tr>
<td>Retire a pipette permanently</td>
<td>![Gears Icon]</td>
<td>PIPETTES, find and select the pipette in the pipette list, and click to permanently retire the pipette from the system.</td>
</tr>
<tr>
<td>Print a pipette inventory label</td>
<td>![Gears Icon]</td>
<td>PIPETTES, find and select the pipette in the pipette list, click and select Pipette Label from the drop down menu.</td>
</tr>
<tr>
<td>Print a pipette calibration label</td>
<td>![Gears Icon]</td>
<td>PIPETTES, find and select the pipette in the pipette list, click and select Calibration Label from the drop down menu.</td>
</tr>
<tr>
<td>Limit what shows on the Home screen as due for calibration</td>
<td>![Home Icon]</td>
<td>In the Due bar and choose a filter option based on Time (Days), Location Name, and/or Owner Name.</td>
</tr>
</tbody>
</table>
More questions about the PCS?

Click the Help button to access topic-specific help or expand and see the full user guide.

Visit artel.co for Artel Lab Reports and 10 Tips to Improve Your Pipetting to get the most out of your new system and operators.

Host an Artel Pipetting Proficiency Certification training at your facility or attend an Artel Pipette Quality Management Certification seminar at Artel.