LOCTITE®

# *PULSE* EQ SD30 Precision Syringe Dispenser

## IDH 2974793

### Operating Manual


Henkel

# Table of Contents

# 1 Please Observe the Following

The WEEE symbol on this equipment indicates that this product may not be treated as household waste. By ensuring that this product is disposed of correctly you will help prevent potentially negative consequences for the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office or your waste disposal service.

## 1.1 Emphasized Sections

**⚠ Warning!**

Refers to safety regulations and requires safety measures that protect the operator or other persons from injury or danger to life.

**! Caution!**

Emphasizes what must be done or avoided so that the unit or other property is not damaged.

**☞ Notice:**

A notice gives recommendations for better handling of the unit during operation or adjustment as well as for service activities.

The numbers printed in bold in the text refer to the corresponding position numbers in the illustration on page 13-14.

● The point emphasizes an instruction step.

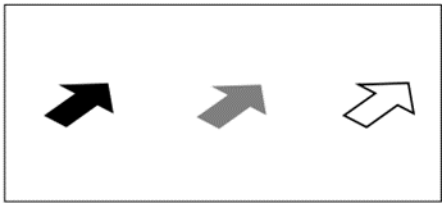
Instruction steps in the illustrations are indicated with arrows.

When several instruction steps are indicated in an illustration, the shading of the arrow has the following meaning:

Black arrow = 1st step

Grey arrow = 2nd step

White arrow = 3rd step



## 1.2 For Your Safety

Follow all safety and warning instructions unconditionally during operation. The manufacturer cannot be held responsible if the instructions are not being followed. If you experience any malfunctions, problems, or damage to the unit, contact your local Henkel equipment service immediately.

Please refer to the relevant Technical Data Sheet for the Loctite® product to be processed at https://www.henkel-adhesives.com or request the Technical Data Sheet and the Safety Data Sheet (in accordance with REACH Regulation (EC) No. 1907/2006) from your Henkel Technical Service.

**INSTRUCTIONS given in these data sheets must be strictly followed!**

⚠ Do not expose the connecting cable to heat, oil, or sharp edges.

⚠ Make sure the Unit stands stable and secure.

⚠ Use only original equipment replacement parts.

⚠ Damage to the power cord or the housing can result in contact with live electrical parts. Check the power cord and the unit before each use. If the power cord or the unit is damaged, do not operate!

⚠ Always disconnect the power supply before servicing the unit.

⚠ Observe general safety regulations for the handling of chemicals such as Loctite® adhesives and sealants. Observe the manufacturer's instructions as stated on the Safety Data Sheet.

☞ While under warranty, the unit may be repaired only by an authorized Loctite service representative.

## 1.3 Unpacking and Inspection

Carefully unpack the Loctite® Pulse EQ SD30 Precision Syringe Dispenser and examine the items contained in the carton. Inspect the unit for any damage that might have occurred in transit. If such damage has occurred, notify the carrier immediately.

Claims for damage must be made by the consignee to the carrier and should be reported to the manufacturer.

## 1.4 Packing List

- EQ SD30 Precision Syringe Dispenser (IDH 2974793) x 1
- Equipment Manual x 1
- Universal Power AC Adapter with Cord x 1
- 30/55ml Syringe Air Line Adapter x 1
- Footswitch x 1
- Syringe Holder x 1
- USB stick x 1
- Needle Sample Kit x 1

☞ As a result of technical development, the illustrations and descriptions in this operating manual can deviate from the actual unit delivered. Suggest using the provided USB for software upgrades if necessary.

## 1.5 Features

- Touch screen User Interface (UI) with color display and ease of use.
- Four operating modes: Timer, Continue, Cycle and Program.
- Equipped with a 0 to 7 bar (0-100psi) digital pressure regulator for precise dispensing application.
- Digital vacuum suck-back feature prevents dripping.
- Convenient “teach mode,” Unit will learn time required based on how long start signal is activated.
- Automatic pressure monitoring, Pressure alarm provides warning when dispensing pressure exceeds set tolerance.
- Password locking option for set-up parameters.
- Integrated with I/O communication interface.
- I4.0 function enables real time remote process monitoring through WiFi or Ethernet.

### 1.6 Field of Application (Intended Use)

The Loctite® Pulse EQ SD30 Precision Syringe Dispenser is a self-contained dispenser system and suitable for the precise application of Loctite brand products delivered in syringes at manual workstations such as in workshops, laboratories, and industrial installations. The system also includes an integrated industry 4.0 function that enables easy remote monitoring through Wi-Fi or ethernet.

With the Loctite® Pulse EQ SD30 Precision Syringe Dispenser, Loctite® brand anaerobic, UV Curing and gel cyanoacrylate adhesive as well as Loctite® brand chipbonder® adhesives and soldering flux can be dispensed.

# 2 Description

### 2.1 Theory of Operation

The Loctite® Pulse EQ SD30 Precision Syringe Dispenser is connected to an external pneumatic supply. The system is equipped with a 0 to 7 bar (0-100psi) digital pressure regulator that regulates the adjusted dispensing pressure and controls the dispensing during the selected dispensing time. An error is displayed on the screen if pressure varies more than specified on pressure range (see section 5.8.3). By means of air pressure on the plug in the syringe barrel, the product is transported to the dispensing needle. The built-in vacuum regulator prevents dripping of the product during pauses in dispensing.

Time Mode:
This mode of operation is used for dot shaped wetting or drop dispensing.
The dispensing time is controlled by the internal timer of the EQ SD30 Precision Syringe Dispenser. When started by the PLC, it is triggered by the starting edge of the signal. A short pulse of typically 100...500 is sufficient.
For details see chapter 5.6.1 ...

Continue Mode:
This mode of operation is used for wetting of varying lengths or for the application of

beads.
The dispensing time is controlled by the duration of the external start signal.
For details see chapter 5.6.2 ...

Cycle Mode:
This mode of operation is used for repeatable dispensing.
The dispensing time is controlled by the internal timer of the EQ SD30 Precision Syringe Dispenser. When triggered by start signal, The dispenser will repeat dispensing cycles of Dispensing Time and then Interval time. Once the dispenser is triggered again, the cycle will be interrupted immediately.
For details see chapter 5.6.3 ...

Program Mode:
This mode allows the operator pre-set different parameters under a specified program number.
The user can set a program number to record dispense and interval time. If interval time is set to 0 then the dispensing will work in time-controlled mode. else it will run in cycle mode under the selected program number.
For details see chapter 5.6.4 ...
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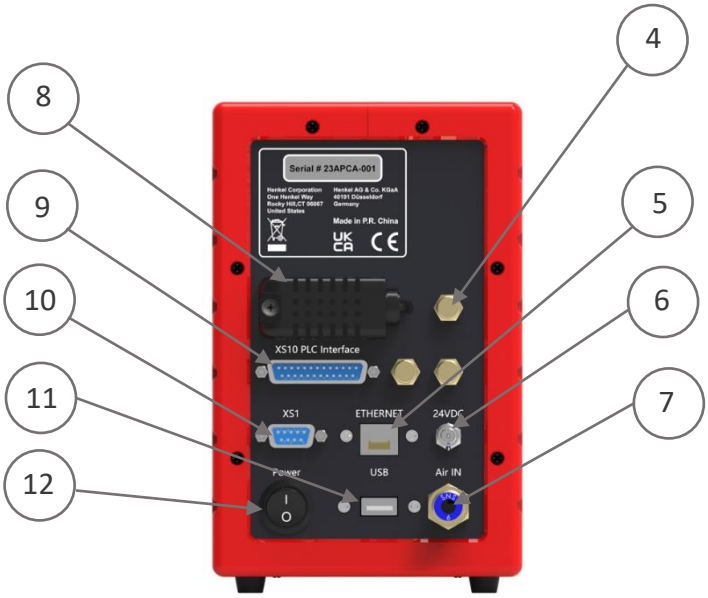
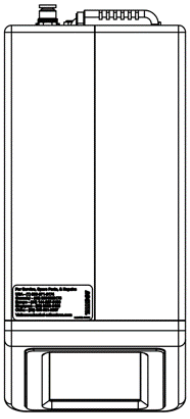
## 2.2 Display, operating elements, and connections

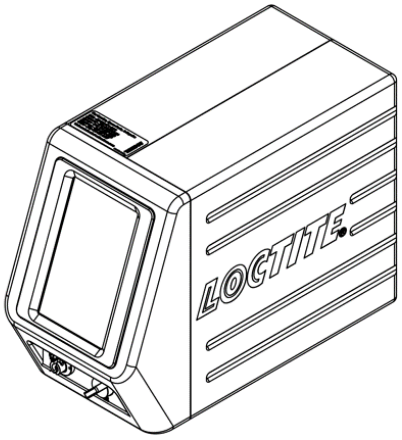



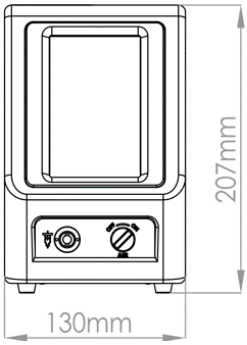

1. Air Pressure ON/OFF Switch
2. Air output for syringe adapter
3. User Interface
4. Silencers (three quantities)
5. ETHERNET
6. 24VDC Power In
7. Air Pressure In
8. Temperature & Humidity sensor
9. Socket XS9 PLC Interface
10. Socket XS1 Start
11. Socket XS8 USB
12. Power Switch ON/OFF

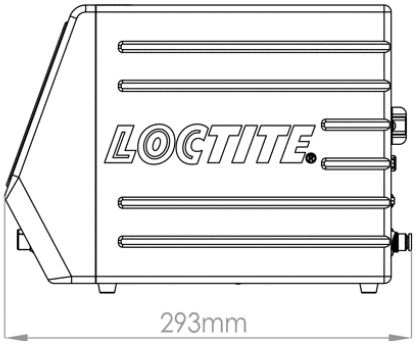
# 3 Technical Data

| | |
|---|---|
| Dimensions (W x H x D): | 130x207x293 mm |
| Total weight: Kg (lbs.) | 5.4 (11.9) |
| Power Supply: | 110~240 VAC 50/60Hz |
| Internal control voltages: | 24VDC |
| Power consumption: | Approx. 15 Watts |
| Pneumatic Supply: | Min. 5 bar (70 PSI), max. 8.5 bar (125 PSI) |
| Air Quality: | Filtered 10 µm, oil-free, non-condensing. (Reference to filter regulator if air quality cannot be achieved.) |
| Operating Temperature: | +10 ° C to +40 ° C (+50 ° F to +104 ° F) |
| Storage Temperature: | - 10 ° C to +60 ° C (+14 ° F to +140 ° F) |





# 4 Installation

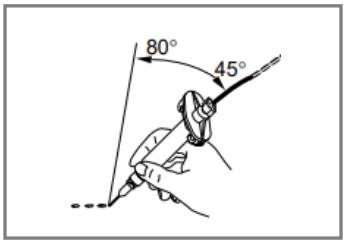
## 4.1 Environmental and Operating Conditions

- No direct sunlight, no UV light.
- No condensing humidity.
- No splashing waters.
- No high magnetic and intense electric field.
- Avoid kinking of air hoses.

## 4.2 Placement

**!** When the syringe piston is missing and the syringe is handled in an improper manner, the product can enter and contaminate the dispenser. Please, follow the instructions below to avoid contamination.

- Place the control unit in an elevated position above the syringe!
- Do not hold the syringe in an elevated position above the dispenser or with the tip pointing upward!
- In work pauses, press the Run/Stop button to disable the output of the unit!
- Hold the syringe correctly for uniform application of the product!
- When setting the vacuum, start a relatively low vacuum value then increase slowly to ensure product is not sucked back into the unit.



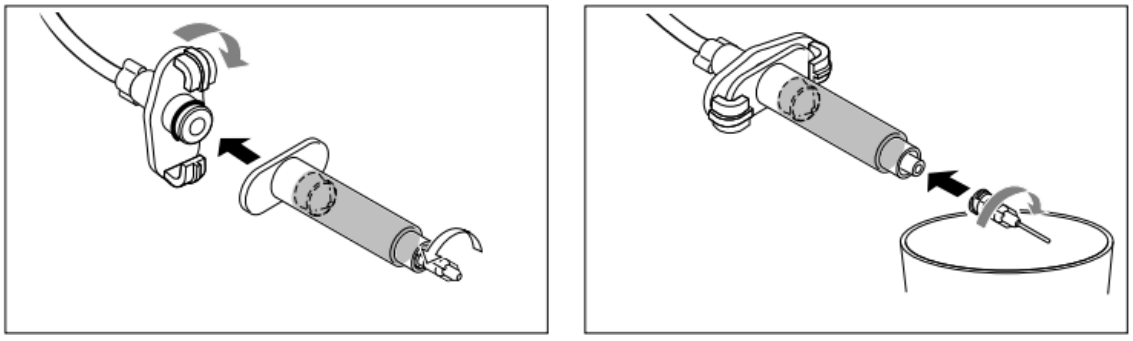

## 4.3 Connecting the Unit

- Connect power adapter with cord supplied to 24VDC power in connection (6).
- Connect air pressure supply to pneumatic connection (7).
- For manual operation, plug the footswitch into the 9 pin D-sub connector marked XS1, located on the rear panel of the EQ SD30 Precision Syringe Dispenser.
- For automated control, connect external PLC to XS9 connector.


## 4.4 Purging Air from the Syringe

To prevent air from impacting dispensing consistency, the tip of the syringe must be purged of air.

- For low to medium viscosity products, Hold the syringe with the tip end facing upward and tap the syringe, or place the syringe upwards and let it stand still for a period of time. Air bubbles will rise to the top. Next, remove the tip cap and push the piston slowly upward to remove large bubbles.
- For medium to high viscosity products, using a centrifuge to remove air prior to dispensing if product contain entrapped air.



- Attached a purged syringe to the air adapter as shown in the above figure.
- Hold the syringe over a container since product will flow out!

• Switch the power switch to the position I (ON).
• Ensure enable Pressure Enable button.
• Set appropriate pressure based on adhesive viscosity.
• Press the Purge button on the main screen to purge a small amount of product from syringe needle then press the Purge button again.

☞ If the product drips out of the dispense needle.
• Slowly increase the vacuum value until the dripping stops.

**! Do not continue to increase the vacuum value after the dripping has stopped. When air is sucked in, the syringe must again be purged of air and curing of the product can occur!**

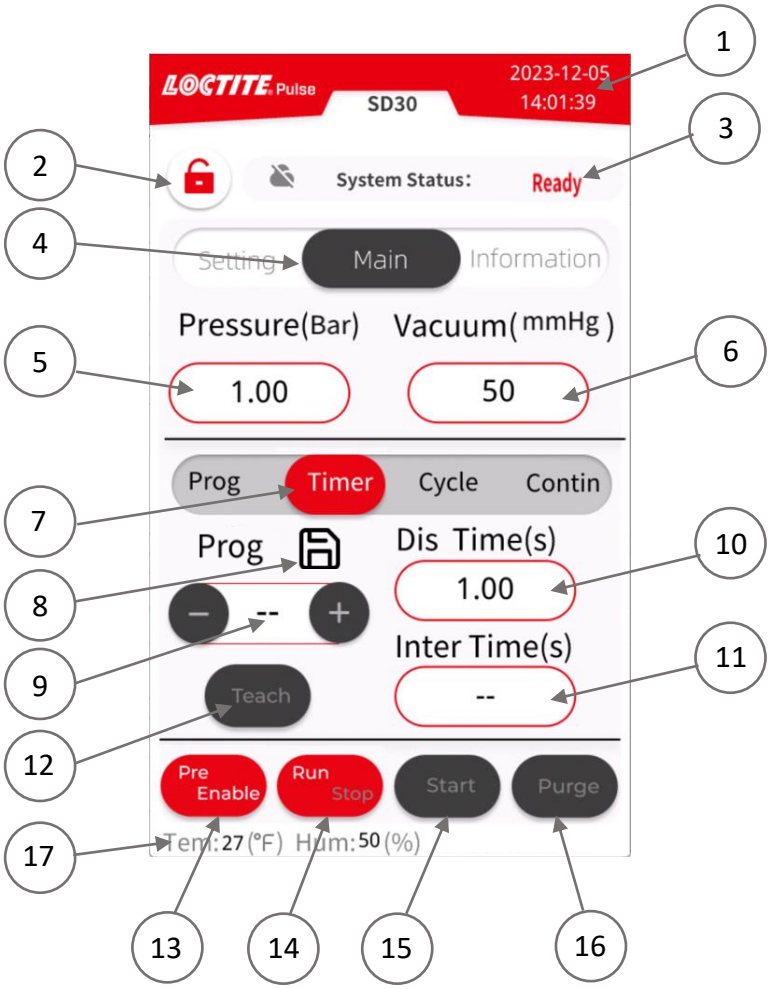
# 5 Operation

## 5.1 Turn on the Unit

! Observe the operating manual of the Loctite® Pulse EQ SD30 Precision Syringe Dispenser used.

• Turn the power switch (12) to ON.
• If necessary, open the valve or regulator that controls the air inlet to supply pneumatic pressure to the system.
• Turn the “AIR” on (the position ⏀) (1).

## 5.2 Main Page

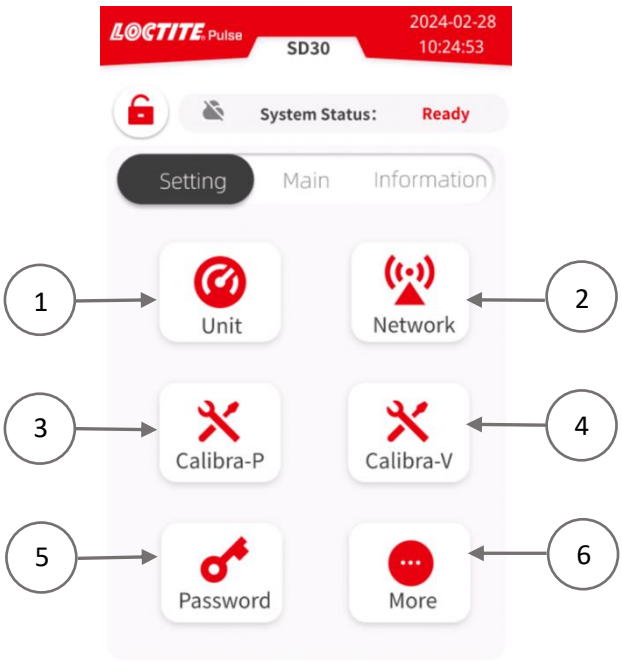



1. **System Date/Time**: Actual time for use with data collection and analysis. Operator can edit time and date. Refer to “Changing system Date and Time” on page 33.
2. **Lock Status**: locking of the parameter settings.
3. **Working Status**: Four state indicators, ‘Ready’ means system is awaiting a start signal, ‘Stop’ means the system disables the output, ‘Dispensing’ means the unit is activated to dispense adhesive in preselected Timer/Continue/Cycle/Program mode, ‘Alarm’ means the system has an error for example syringe pressure out of range.
4. **Page navigation** – To Main/Parameter Setting/Information Message Page
5. **Pressure (Bar)**: Displays syringe set pressure under pre-selected pressure units.
6. **Vacuum (Psi)**: Displays vacuum value with the syringe under pre-selected vacuum units.
7. **Mode Selection**: Continue/Timer/Cycle/Program operating mode selection.
8. **Parameter Saving**: Save all parameters and settings.

Note: Make sure to save the current settings before shutting off the unit. After restarting the unit, main screen backs to latest parameters and settings which “SAVE” was clicked.

9. **Program Number**: Set a program number to record dispense and interval time in Timer and Cycle mode. The program number can be 00-39.
10. **Dispense Time**: Set the dispensing time in “Time” or “Cycle” mode.
11. **Interval Time**: Set the interval time in “Cycle” mode.
12. **Teach mode:** Using the teach mode to set the dispense time.
13. **Syringe Pressure Disable/Enable**: ‘Enable’ pressurizes the syringe unit and ‘Disable’ de-pressurizes the syringe unit.
14. **Working Mode Selection**: Run/Stop. ‘Run’ working mode enables the output, the unit can be operated via external device, footswitch, and remote monitoring; ‘Stop’ working mode disables the output, only enable purge for the unit.
15. **Dispensing Start**: Manually start a dispensing sequence for the syringe dispenser in preselected operating mode.
    Note: Starting and stopping needs to be triggered by the same method. (e.g., Start using “Start” on screen. It is not possible to Stop using footswitch. Or vice-versa.)
16. **Purge**: Press the purge button to operate the syringe dispenser manually, for example to fill the needle or to purge the syringe after it has been idle for some time. This step proceeds independent of the adjusted dispense time.
17. **Temperature & Humidity** -Displays temperature & humidity value at the syringe housing.

### 5.3 Function Setting Page

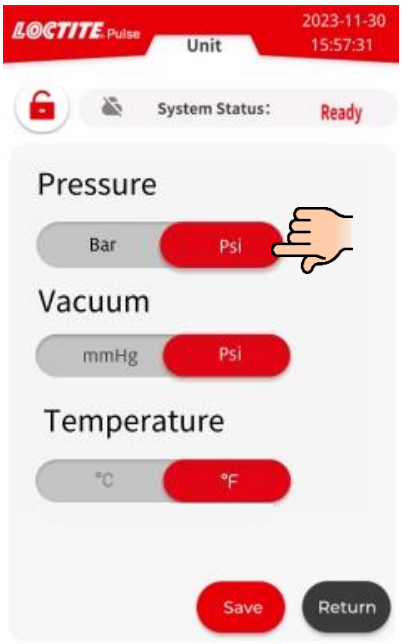



1. Unit setting
2. Communication setting
   (For details see section 5.4.)
3. Pressure Calibration
4. Vacuum Calibration
5. Password setting
6. More settings
   (For details see section 5.8.)

### 5.3.1 Unit Setting

Sets how the system displays pressure/vacuum/temperature units.

- Click the Unit button to enter the unit settings page.
- Select the desired units of measure for Pressure, Vacuum or Temperature.
- Press Save button to save the setting and return to the setting screen.



### 5.3.2 Pressure Calibration

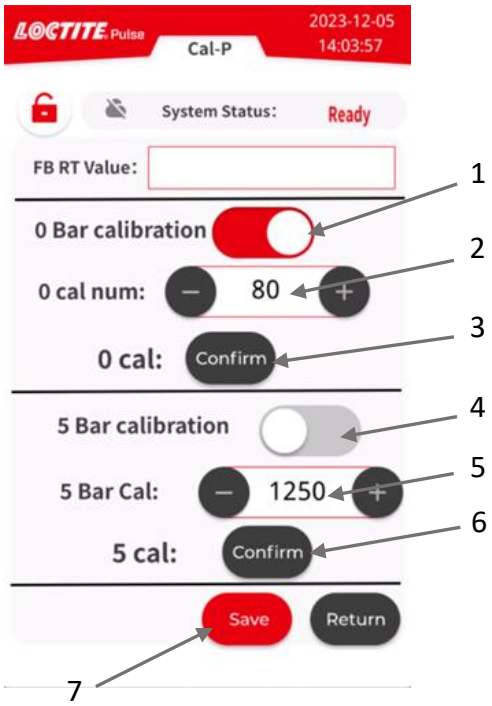
This is to calibrate the displayed pressure value with the value from the internal proportional valve. This calibration is done during the manufacturing process. Therefore, it is only required to be calibrated if the set pressure differs from the measured pressure, the internal PCB is changed, or the firmware is updated. Instructions are shown below.

Connect air pressure supply to pneumatic connection (7) and switch it ON. Note that the syringe will be pressurized and vented during the procedure. Remove the two screws then gently draw out the right-side cover backward of the reservoir shown in the picture below.


Ensure syringe pressure is disabled (button is grey) 

in the Main screen before the pressure calibration. Follow the below steps for pressure calibration.

Enter Setting screen




- Select 0 bar Calibration, click the switch bar (**1**) until it changes the color from grey to red, that means it will tell MCU to start the 0-bar calibration.
- Check the actual value of digital regulator (internal parts inside the housing of syringe dispenser, see the right figure). Compared the difference between the actual value of digital regulator and '0 bar', then click "+"/"-"(**2**) 

to increase/decrease the value until the reading of "actual value of digital regulator" is "0" bar. For larger changes, touch the number field and enter a new value directly.

Note that the 0 bar setting is the critical one, there is a range of about 0 – 800 of the number, where the reading is close to 0(the prop reading always shows a small increase, it is acceptable that there is some uncertainty of the display reading of about +/- 0.02bar(0.002Mpa) considering the accuracy of pressure regulator.). The correct adjustment is achieved by increasing the number field (**2**) 

until the prop regulator starts to increase from zero point.

- Click the confirm button **(3)** 

to record the actual reading as 1st "reference" point.
- Select 5 bar Calibration, click the switch bar (**4**) until it changes the color from grey to red, that means it will tell MCU to start the 5-bar calibration. it will take several seconds for the pressure to stabilize after setting to 5 bar. then check the actual value of digital regulator.
- Compared the difference between the actual value of the digital regulator and preset '5 bar', then click "+"/ "- "(**5**) 

to increase/decrease the value until the reading of "actual value of digital regulator" is "5 bar". For larger changes, touch the number field and enter a new value directly.
- Click the confirm button **(6)** 

to record the actual reading as 2nd "reference" point.
- Press button Save 

to save all adjusted parameters.

Note: The display reading is in bar and prop. regulator is in mPa (factor of 10, e.g., 5 bar = 0.5 mPa). If a difference in the calibration values is displayed, repeat the calibration procedure to do calibration again.

### 5.3.3 Vacuum Calibration

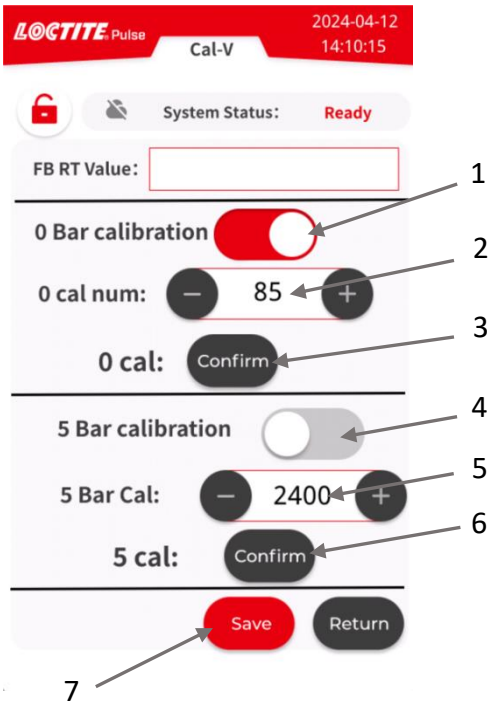
This is to calibrate the displayed vacuum value with the value from the internal vacuum generator. This calibration is done during the manufacturing process therefore it is only required to be calibrated if the actual vacuum differs from the setting vacuum in the main screen, the internal PCB is changed, or the firmware is updated. There is a certain correspondence between the outlet flow rate of the positive pressure proportional regulator and the vacuum value, so here the vacuum value is indirectly calibrated by calibrating the positive pressure proportional regulator. Instructions are shown below.

Connect air pressure supply to pneumatic connection (7) and switch it ON. Note that the syringe will be pressurized and vented during the procedure. Remove the two screws then gently draw out the right-side cover backward of the reservoir shown in the picture below.


Ensure syringe pressure is disabled (button is grey) 

in the Main screen before the vacuum calibration. For ease of operation, it is recommended to set the vacuum unit to PSI. Follow the steps below for vacuum calibration.

Enter Setting screen




- Select 0 bar Calibration, click the switch bar (**1**) until it changes the color from grey to red, that means it will tell MCU to start the 0-bar calibration.

- Check the actual value of digital regulator (internal parts inside the housing of syringe dispenser, see the right figure). Compared the difference between the actual value of digital regulator and ‘0 bar’, then click “+”/ “-“(**2**) 

to increase/decrease the value until the reading of “actual value of digital regulator” is “0” bar. For larger changes, touch the number field and enter a new value directly.

  Note that the 0 bar setting is the critical one, there is a range of about 0 – 800 of the number, where the reading is close to 0(the prop reading always shows a small increase, it is acceptable that there is some uncertainty of the display reading of about +/- 0.02bar(0.0002Mpa) considering the accuracy of pressure regulator.). The correct adjustment is achieved by increasing the number field (**2**) 

until the prop regulator starts to increase from zero point.
- Click the confirm button **(3)** 

to record the actual reading as 1st “reference” point.
- Select 5 bar Calibration, click the switch bar (**4**) until it changes the color from grey to red, that means it will tell MCU to start the 5-bar calibration. It will take several seconds for the pressure to stabilize after setting to 5 bar. then check the actual value of digital regulator.
- Compared the difference between the actual value of the digital regulator and preset ‘5 bar’, then click “+”/ “- “(**5**) 

to increase/decrease the value until the reading of “actual value of digital regulator” is “5 bar”. For larger changes, touch the number field and enter a new value directly.
- Click the confirm button **(6)** 

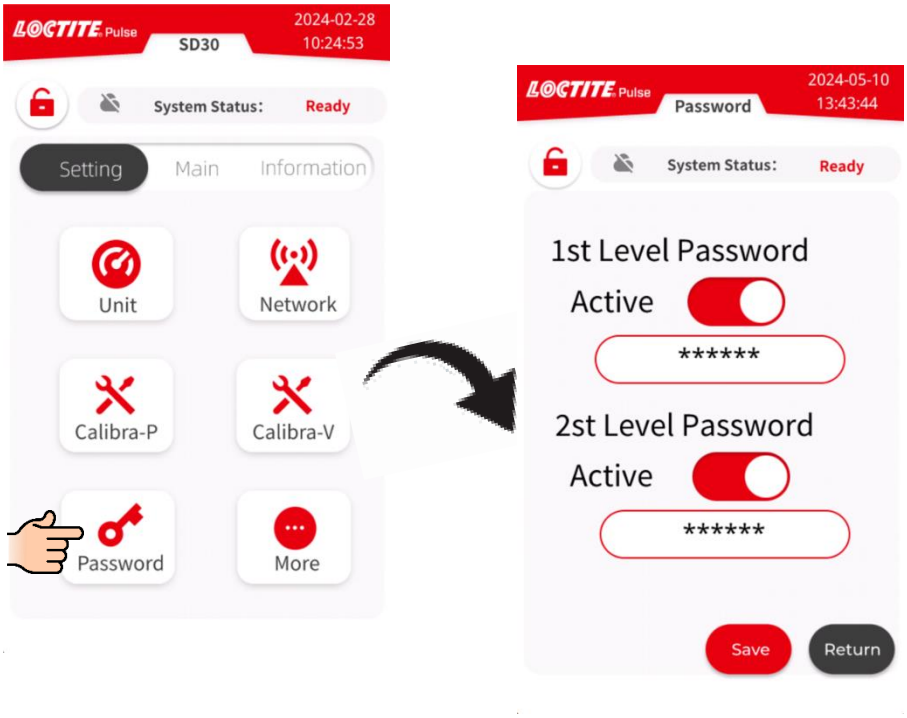
to record the actual reading as 2nd “reference” point.
- Press button Save 

to save all adjusted parameters.

Note: The display reading is in bar and prop. regulator is in mPa (factor of 10, e.g., 5 bar = 0.5 mPa). If a difference in the calibration values is displayed, repeat the calibration procedure to do calibration again.

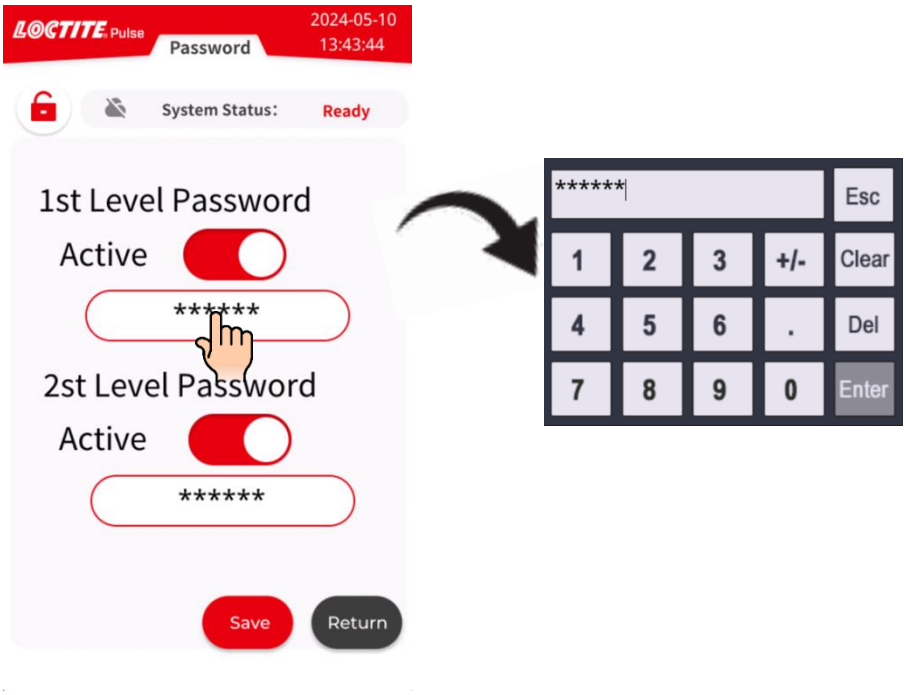
### 5.3.4 Password Setting

The EQ SD30 Precision Syringe Dispenser can set two level passwords, Click the password button in the setting page to enter the password setting page as shown below.



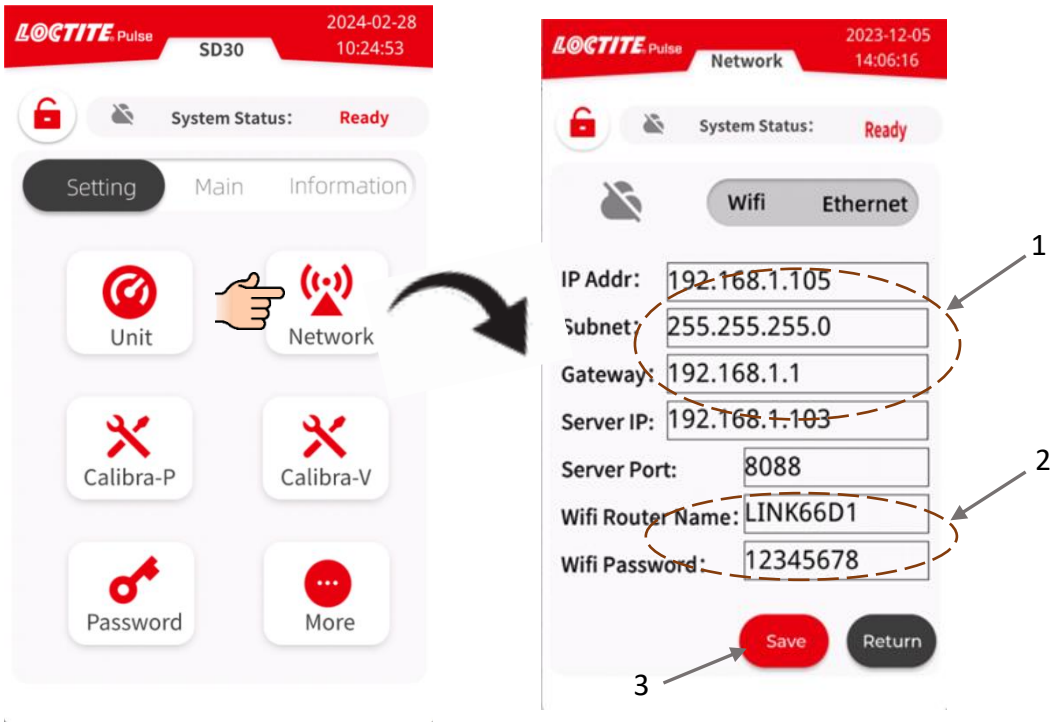

The first level password is to protect the entry to change the parameters and work mode in the Main page. Factory password – 888888.

The second level is to protect entry to the function options in the setting page. Factory password – 654321.




The password must be created using up to 20 numbers (or blank). It is important to record any changes to the password. If the password is forgotten, the Firmware must be reloaded via Loctite equipment Services to unlock the Settings functions. The new password is created. When the system is locked, the password is required to unlock the system.

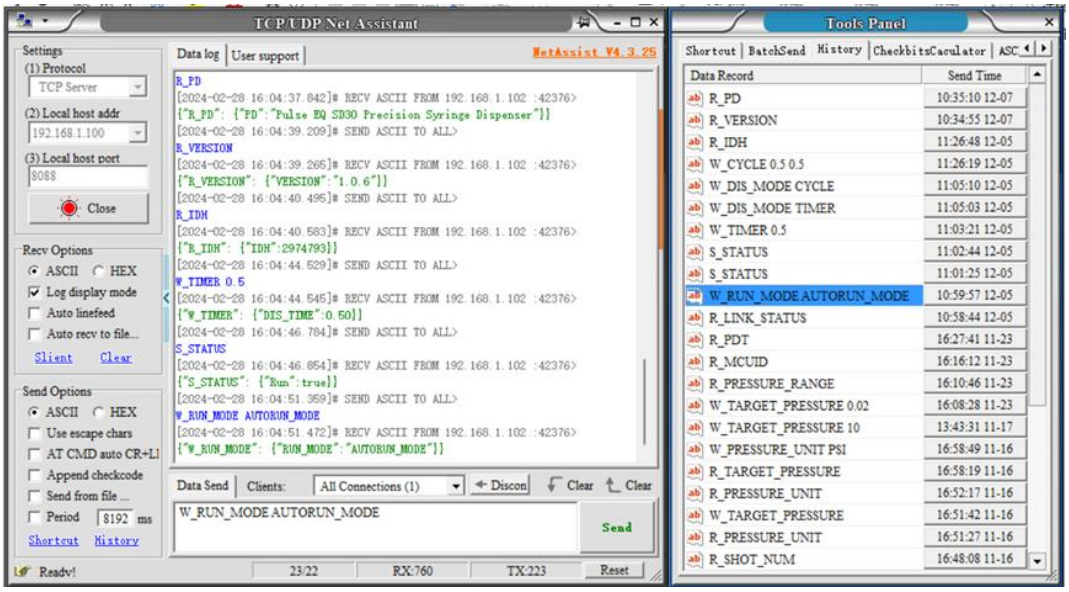
### 5.4 Communication Setting Page



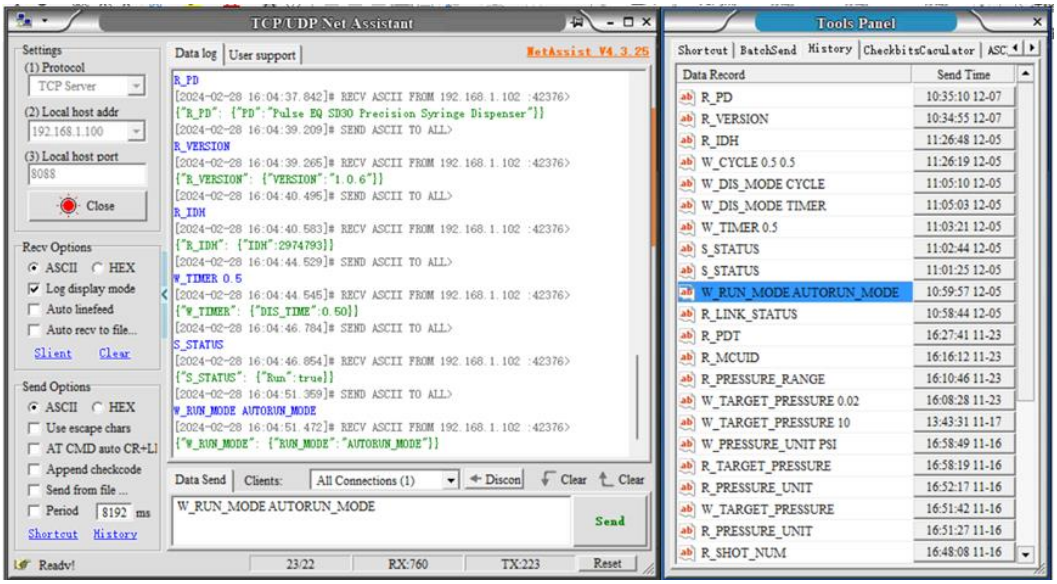

The syringe dispensing system includes an integrated industry 4.0 function that enables easy remote monitoring by Wi-Fi or ethernet.

Introduction to the set-up and configuration using an example based on the NetAssist program to test the I-4.0 function for the EQ SD30 Precision Syringe Dispenser. NetAssist network debugging assistant is a network testing tool integrating TCP server + client. It is a common and necessary professional tool in network application development and testing. For technical support for NetAssist, please contact Henkel Equipment Service.

1. Ethernet communication function testing
    - Setup the laptop as a server (specify static IP address for server), connect laptop to router, build a LAN.
    - Connect Syringe dispenser to LAN via ethernet (Using crossline connect directly to the laptop if there is no router), specify IP address/ subnet mask, gateway for EQ SD30 Precision Syringe Dispenser.
    - Open software NetAssist on laptop, select server IP address and specify host port 8088 for Local host. Then enable connection on software.
    - Send command on software page, check the status or response on EQ SD30 Precision Syringe Dispenser I-4.0 user Interface.




2. WiFi communication function testing
    - Setup the laptop as a server (specify static IP address for server), connect laptop to router, build a LAN.
    - Connect Syringe dispenser to LAN via WiFi, specify WiFi name for EQ SD30 Precision Syringe dispenser.
    - Open software NetAssist on laptop, select server IP address and specify host port 8088 for Local host, enable connection on software.
    - Send command on software page, check the status or response on EQ SD30 Precision Syringe Dispenser I-4.0 User Interface.



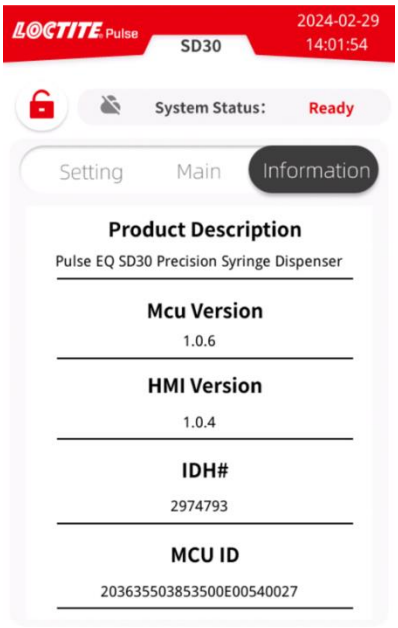
Refer to the table below for the test commands used to remote monitor by Wi-Fi or ethernet.

| Command | Keying Command | Feedback on Page | Data type | Note |
|---|---|---|---|---|
| **System Status Request Command** | | | | |
| S_STATUS | S_STATUS | {“S_STATUS”: {“Run”: true}} | ✓ | Connection built |
| | | | | |
| | | | | |
| **Parameter Edit Command** | | | | |
| W_PRESSURE_STATUS | W_PRESSURE_STATUS POWER_ON /W_PRESSURE_STATUS POWER_OFF | {“W_PRESSURE_STATUS”:{W_PRESSURE_STATUS”XX}} | %s | |
| W_RUN_MODE | W_RUN_MODE AUTORUN_MODE/ W_RUN_MODE STOP_MODE | {“W_RUN_MODE”:{RUN_MODE”:XX}} | %s | |
| W_DIS_MODE | W_DIS_MODE TIMER/W_DIS_MODE CONTINUE/W_DIS_MODE PRO_NO/W_DIS_MODE CYCLE | {“W_DIS_MODE”: {“DIS_MODE”:XX}} | %s | operate mode setting, shows on page (see section 5.2). |
| W_TIMER | W_TIMER XX.XX | {“W_TIMER”:{“DIS_TIME”:XX.XX}} | %.2f | |
| W_CYCLE | W_CYCLE XX.XX XX.XX | {“W_CYCLE”:{“DISTIMER”: XX.XX},{“INTERTIMER”:XX.XX}} | %.2f %.2f | |
| W_PRO_NO | W_PRO_NO XX XX.XX XX.XX | {“W_PRO_NO”:{“INTER_TIM”:XX},{“INTER_TIME”:XX.XX},{“INTER_TIME”:XX.XX}} | %D%.2f%.2f | |
| W_TARGET_PRESSURE | W_TARGET_PRESSURE XX.XX | {“W_TARGET_PRESSURE”:{“TARGET_PRESSURE”:XX.XX}} | %.2f | |
| W_PRESSURE_UNIT | W_PRESSURE_UNIT BAR/W_PRESSURE_UNIT PSI | {“W_PRESSURE_UNIT”:{PRESSURE_UNIT”:XX}} | %s | |

| | | | | |
|---|---|---|---|---|
| W_TARGER_VACUUM | W_TARGET_VACUUM XX.XX | {“W_TARGET_VACUUM”:{TARGET_VACUUM”:XX.XX}} | %.2f | |
| W_VACUUM_UNIT | W_VACUUM_UNIT PSI/W_VACUUM_UNIT mmHg | {“W_VACUUM_UNIT”:{“VACUUM_UNIT”:XX}} | %s | |
| W_SUPERAD | W_SUPERAD POWER_ON/W_SUPERAD POWER_OFF | {“W_SUPERAD”:{“SUPERAD”:XX}} | %s | |
| W_TEACH | W_TEACH POWER_ON/W_TEACH POWER_OFF | {“W_TEACH”:{“TEACH”:XX}} | %s | |
| W_SHOT | W_SHOT POWER_ON/W_SHOT POWER_OFF | {“W_SHOT”:{“SHOT”:XX}} | %s | please keep the pre and run power on before using this command |
| W_PURGE | W_PURGE POWER_ON/W_PURGE POWER_OFF | {“W_PURGE”:{“PURGE”:XX}} | %s | please power off the run mode before using this command |
| | | | | |
| | | | | |
| **Status/Parameter Reading Command** | | | | |
| R_RUN_MODE | R_RUN_MODE | {“R_RUN_MODEMODE”:{“RUN_MODEMODE”:”XX”}} | %s | XX represents AUTORUN_MODE or STOP_MODE |
| R_DIS_MODE | R_DIS_MODE | {“R_DIS_MODE”:{“DIS_MODE”:”XX”}} | %s | |
| R_MCUID | R_MCUID | {“R_MCUID”:{“MCUID”:”XXXXX”}} | %s | |
| R_PRO_NO | R_PRO_NO | {“PRO_NO”:X}<{“DIS_TIME”:XX.XX},{“INTER_TIME”:XX.XX}} | %d,%.2f,%.2f | If dispense mode is not PRO_NO, Sd unit will reply “ERROR” |
| R_TIMER | R_TIMER | {“R_TIMER”:{“DIS_TIME”:XX.XX}} | %.2f | If dispense mode is not TIMER, Sd unit will reply “ERROR” |

| | | | | |
|---|---|---|---|---|
| R_CYCLE | R_CYCLE | {“R_CYCLE”:{“DIS_TIM”:XX.XX},{“INTER_TIME”:XX.XX}} | %.2f, %.2f | If dispense mode is not CYCLE, Sd unit will reply “ERROR” |
| R_TARGET_PRESSURE | R_TARGER_PRESSURE | {“R_TARGET_PRESSURE”:{“TARGET_PRESSURE”:XX.XX}} | %.2f | |
| R_PRESSURE_UNIT | R_PRESSURE_UNIT | {“R_PRESSURE_UNIT”:{“PRESSURE_UNIT”:XX}} | %s | XX represents BAR or PSI |
| R_TARGET_VACUUM | R_TARGET_VACUUM | {“R_TARGET_VACUUM”:{“TARGET_VACUUM”:XX.XX}} | %.2f | |
| R_VACUUM_UNIT | R_VACUUM_UNIT | {“R_VACUUM_UNIT”:{“VACUUM_UNIT”:XX} | %s | XX represents mmHg or PSI |
| R_PRESSURE_STATUS | R_PRESSURE_STATUS | {R_PRESSURE_STATUS”:{PRESSURE_STATUS”:XX}} | %s | |
| R_TEM_HUM | R_TEM_HUM | {“R_TEM_HUM”:{“TEM”:XX.XX,”HUM”:XX.XX}} | %.2f, %.2f | |
| R_SHOT_NUM | R_SHOT_NUM | {“R_SHOT_NUM”:SHOT_NUM”:XX}} | %d | |
| R_SYS_COUNT | R_SYS_COUNT | {“R_SYS_COUNT”:{“SYS_COUNT”:XX}} | %s | |
| R_SUPERAD | R_SUPERAD | {“R_SUPERAD”:{“SUPERAD”:XX}} | %s | |
| R_TEACH | R_TEACH | {“R_TEACH”:{“TEACH”:XX}} | %s | |
| R_SHOT | R_SHOT | {“R_SHOT”:{“SHOT”:XX}} | %s | |
| R_PURGE | R_PURGE | {“R_PURGE”:{“PURGE”:XX}} | %s | |
| R_VERSION | R_VERSION | {“R_VERSION”:{“VERSION”:0.0.7}} | %s | |
| R_IDH | R_IDH | {“R_IDH”:{“IDH”:???}} | %s | |
| R_PD | R_PD | {\“R_PD\”:{\”PD\”:%s}} | %s | |
| | | | | |
| | | | | |

## 5.5 Equipment Information Page



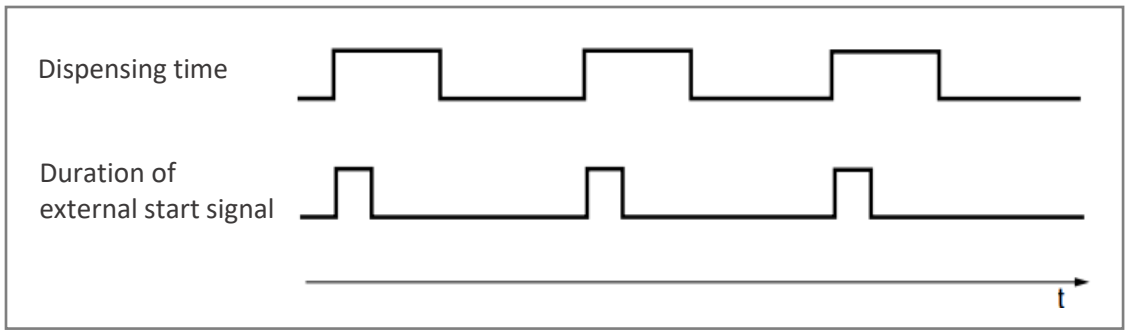

1. Product Description – Pulse EQ SD30 Precision Syringe Dispenser
2. MCU software version – MCU 1.0.6
3. HMI software version – HMI 1.0.4
4. Product IDH number – 2974793
5. MCU ID number

## 5.6 Set-up Configurations

### 5.6.1 Timer Mode

This mode of operation is used for dot or drop dispensing. Operator can setup timer from 0~999s. The dispensing time is controlled by the internal timer of the EQ SD30. When started by the PLC, it is triggered by the starting edge of the signal. A short pulse of typically 100...500ms is sufficient.

Functional Sequence for Time controlled mode as below.

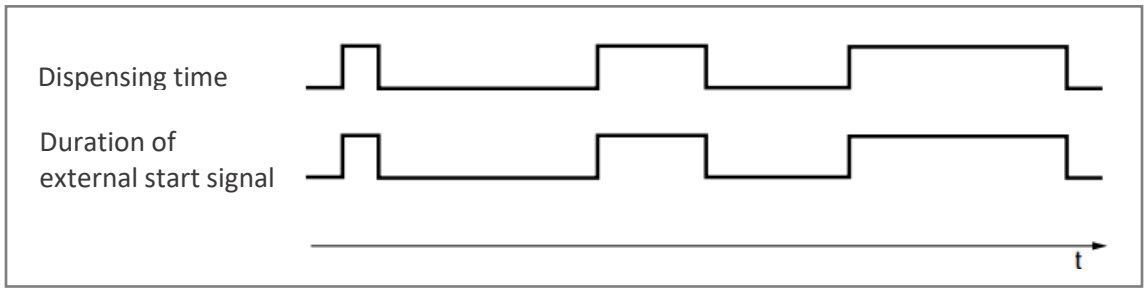



- Connect electrical and pneumatic supplies as described in section 4.3
- Connect airline adapter to syringe as described in section 4.4
- Select “ Prog Timer Cycle Contin ” operate mode in Main page.
- Click the value Dis Time(s) 1.00 , this can be performed using the direct numerical input function to set dispensing time for the unit. The dispensing time is adjustable from 0.00 to 999.99s.
- Set the appropriate syringe pressure, the pressure can be changed from 0.00 to 7.00 bar. Optionally set the pressure unit bar/psi if necessary.
- Set the vacuum for syringe to ensure no dripping, the vacuum can be changed from 0.0 to 4.0 psi. Optionally set the vacuum unit psi/mmHg if necessary.
- Click “ Pre Enable ” button to pressurize the syringe and select “ Run Stop ” run working mode. The system is ready for dispensing in “Time” mode.

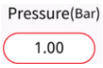
### 5.6.2 Continue Mode

This mode of operation is used for the application of beads. The dispensing time is controlled by the duration of the external start signal.

Functional Sequence for Continue mode as below.



- Connect electrical and pneumatic supplies as described in section 4.3
- Connect airline adapter to syringe as described in section 4.4
- Select “ 

” operate mode on the Main page.
- Click the value 

, this can be performed using the direct numerical input function to set the pressure for syringe. the dispense pressure can be changed from 0.00 to 7.00 bar. Optionally set the pressure unit bar/psi if necessary.
- Click the value of vacuum to set the vacuum for syringe to ensure no dripping, the vacuum can be changed from 0.0 to 4.0 psi. Optionally set the vacuum unit psi/mmHg if necessary.
- Click “ 

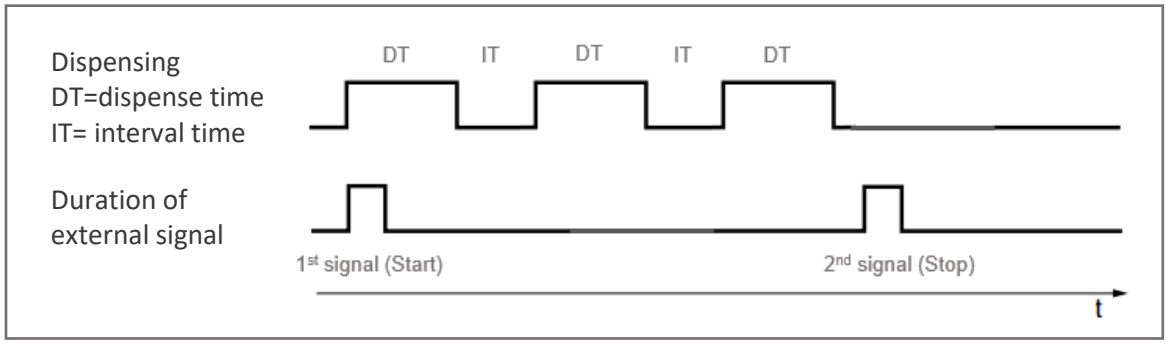
” button to pressurize the syringe and select “ 

” run working mode. The system is ready for dispensing in “Continue” mode.

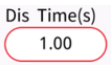
### 5.6.3 Cycle Mode

This mode of operation is used for repeatable dispensing. In Cycle mode, the operator needs to setup interval and dispensing time. Dispenser will repeat dispensing cycles of Dispensing time and then Interval time.

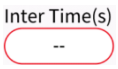
Functional Sequence for Cycle mode as below.

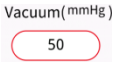



- Connect electrical and pneumatic supplies as described in section 4.3
- Connect airline adapter to syringe as described in section 4.4
- Select “ 

” operate mode on the Main page.
- Click the value 

, this can be performed using the direct numerical input function to set dispensing time for the unit. the dispensing time is adjustable from 0.00 to 999.99s.

- Click the value 

to set the interval time for the unit. The interval time is adjustable from 0.00 to 999.99s.
- Set the appropriate syringe pressure, the pressure can be changed from 0.00 to 7.00 bar. Optionally set the pressure unit bar/psi if necessary.
- Set the vacuum for syringe to ensure no dripping, the vacuum 

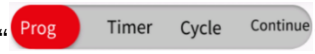
can be changed from 0.0 to 4.0 psi. Optionally set the vacuum unit psi/mmHg if necessary.
- Click “ 

” button to pressurize the syringe and select “ 

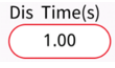
” run working mode. The system is ready for dispensing in “Cycle” mode.

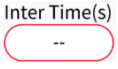
### 5.6.4 Program Mode

This mode of operation is used for pre-setting different parameters and running mode in a specified program. It is possible to set different pressure and Vacuum units. If the interval time is set to 0, the dispenser will run in timed controlled mode. If not, it will run in cycle mode under the selected program number. When starting to edit running parameters, the operator needs to define a program number first. This mode can save 40 different programs.

- Connect electrical and pneumatic supplies as described in section 4.3
- Connect airline adapter to syringe as described in section 4.4
- Select “ 

” operate mode on the Main page.
- Click the value 

and enter direct numerical input or click the “+”/”-“increase/reduce the value to set program number for the unit. The program number is adjustable from 0 to 39.
- Click the value 

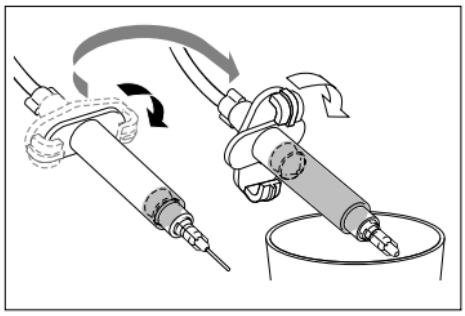
to set dispensing time for the unit. the dispensing time is adjustable from 0.00 to 999.99s.
- Click the value 

to set the interval time for the unit. The interval time is adjustable from 0.00 to 999.99s.

- Click the value Pressure(Bar) 1.00 to set the appropriate syringe pressure, the dispense pressure can be changed from 0.00 to 7.00 bar. Optionally set the pressure unit bar/psi if necessary.
- Set the vacuum for syringe to ensure no dripping, the vacuum Vacuum(mmHg) 50 can be changed from 0.0 to 4.0 psi. Optionally set the vacuum unit psi/mmHg if necessary.
- Click " " button to save all the parameters and setting in the pre-selected program number.
- Click " Pre Enable " button to pressurize the syringe and select " Run Stop " run working mode. The system is ready for dispensing in "Program" mode.

## 5.7 Changing the Syringe

• Replace the Luer-Lock tip cap on the new syringe with a dispensing needle.
• Replace the syringe.



☞ To avoid air bubbles during dispensing, the tip of the syringe must be purged of air. (See section 4.4)

**! Hold the syringe over a container since product will flow out!**

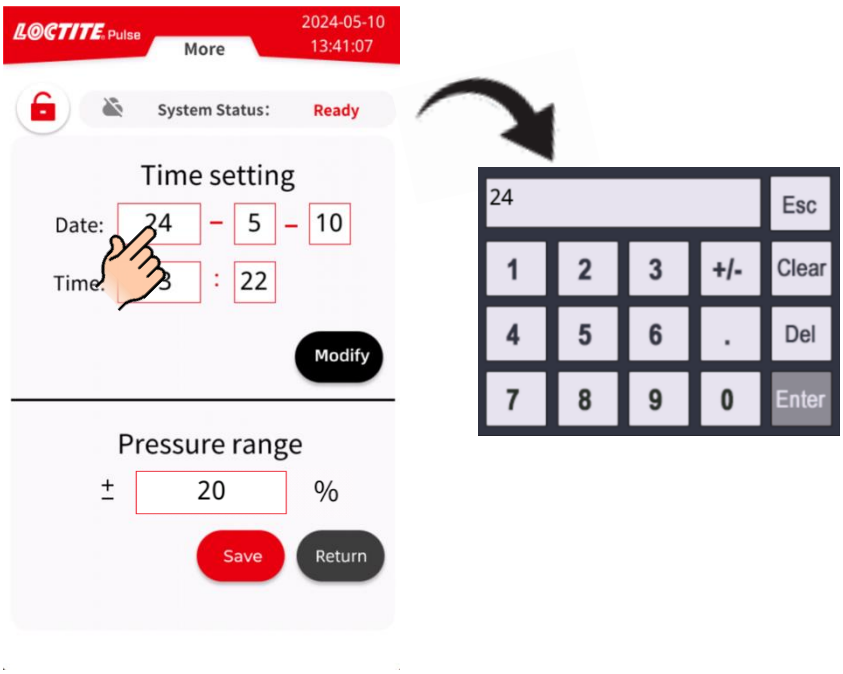
• Ensure to enable the Pressure button " Pre Enable ".
• Press the Purge button " Purge " on the main screen to purge product from the dispensing needle, then press the Purge button again.
• Press the System Run button " Run Stop " to enable output.
• Select the desired operate mode in main page.
• Continue dispensing with the stored values or readjust the dispense quantity.

**! For a change in the type of product, readjust the dispense quantity according to Section 5.6.**

## 5.8 More settings

### 5.8.1 Changing System Date and Time

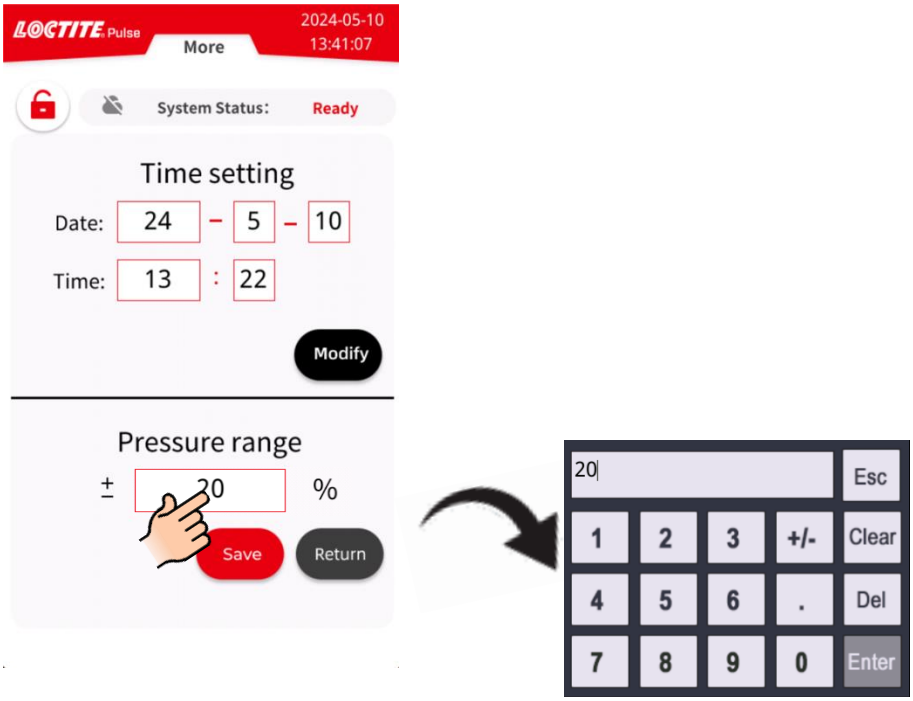
Enters System Date and Time setting. The value is shown on the More setting page.




Operator can edit time and date by clicking the value inside the box. Enter date or time using keypad shown on the screen. Type in digits only to replace original value. Date format ISO, yy-mm-dd. Press button Modify to save the adjusted date and time.

### 5.8.3 Pressure range setting

Enters pressure range setting. The value is shown on the More setting page.




Clicking the pressure range value inside the box to set an appropriate range value. The pressure error message will be shown on the screen once the syringe pressure out of range. The setting of the pressure range should be determined according to the actual application requirements. e.g., Recommended the pressure range is ±10% of the set pressure if the set pressure is greater than 1bar, the range is ±20% or more if the set pressure is lower than 1bar.

# 6 Application Hints

As with all adhesives, performance depends on conditions of use. Suggestions or recommendations contained herein are for guidance only since actual conditions of use are outside the supplier's control.

## 6.1 Shutdown for Longer Periods of Non-use

- Switch the power switch (12) to the position O (OFF).
- Switch the depressurizing valve (1) to "OFF" position.

- Disconnect the pneumatic supply (7).
- Remove the syringe.

**! Store filled syringes only with Luer-Lock tip caps and end caps. Dispose of the used syringes and dispensing needles in an environmentally correct manner!**

## 6.2 Returning to Operation after Longer Periods of Non-use

- Reconnect the pneumatic supply to the controller.
- Check the installation according to Chapter 4.
- Return to operation according to Section 5.1.~5.8.

## 6.3 Selecting Dispensing Needle

- Straight Stainless-steel needles are recommended for products with low to medium viscosity.
- Conical needles are recommended for products with Medium to High viscosity.

## 6.4 Micro dot Application

- For very small quantities is recommended to use “Time” mode and transfer the amount of adhesive accumulated on the tip of the dispensing needle to the surface after dispensing time has stopped.

## 6.5 Best practices for dispensing

- The best accuracy is achieved with low pressure and long dispensing time. It is known that due to productivity, you may not always keep the dispensing time long, find a compromise between pressure and time which suits your application as best as possible.
- Start with a low pressure (0.1 bar for low viscous, not more than 0.5 bar for high viscous products) and a little to no vacuum, medium time. Increase pressure or time to achieve desired quantity. Increase vacuum if at the end of the dispense products drops out of the tip.

# 7 Troubleshooting

⚠ Before proceeding with any repair or maintenance operation, disconnect the Loctite® Pulse EQ SD30 Precision Syringe Dispenser from the main electricity supply.

| Malfunction | Possible Cause | Corrective |
|---|---|---|
| No display appears on the screen | Main power cable is disconnected | Check that the main power cable is connected to an AC source. |
| | Main switch is not turned on | Turn on the main switch, located on the base of the Back panel. |
| | Control unit is defective. | Contact Henkel Equipment Service. |
| System cannot be pressurized. | Pneumatic supply not connected | Check pneumatic supply and connections |
| | The air line adapter is not inserted properly. | Check connection. |
| | Pressure range not set correctly. | Check pressure range setting. |
| | Digital pressure regulator defective. | Check Digital pressure regulator and do pressure calibration. |
| No start signal | XS1 cable connection is not secure. | Switch the power switch to the position O (OFF). Tighten the screws of the plug. Switch the power switch to the position I (ON). |
| | Footswitch defective. | Replace the Footswitch |
| | No communication. | Check the networking or call Henkel Equipment Service. |

| Malfunction | Possible Cause | Corrective |
|---|---|---|
| No product, too little or too much product | Dispensing pressure not set correctly. | Adjust dispensing pressure setting. |
| | Air hose not properly connected. | Connect air pressure hose correctly. |
| | Syringe is not properly connected. | Attach syringe correctly. |
| | Luer lock tip cap is not removed. | Replace Luer lock tip cap with a dispense needle. |
| | Dispensing needle clogged, too small or too large. | Replace dispensing needle. |
| | Syringe dispenser not switched on. | Check the work mode of syringe dispenser is on. |
| | Control unit is defective. | Contact Henkel Equipment Service. |
| Product drips. | Vacuum is set too low. | Adjust the vacuum setting. |
| | | Check the vacuum regulator and do vacuum calibration. |
| | Exhaust air silencer is clogged. | Replace the silencer. |

# 8 Care and Maintenance

### 8.1 Care

-Occasionally the O-ring at the syringe adapter should be lubricated with silicone grease. This will prolong the life of the O-ring.

☞ **Notice:** Clean hands after application of grease to ensure surfaces to be bonded are clean.

### 8.2 Cleaning

⚠ If cleaning agents are not properly handled, damage to health can result!

- Observe general safety regulations for the handling of chemicals!
- Observe manufacturer's instructions! Request a safety data sheet for the product used!

Recommended cleaning agent: Isopropanol (IPA)

☞ **Notice:** Acetone will damage the plastic housing and paint of the equipment.

### 8.3 Maintenance

-The unit requires no special maintenance.

☞ **Notice:** If the required air quality is not achieved, install a Loctite® filter regulator. In the US order a 5 μm filter using Part Number 478603. In Europe or Asia, order a 10 μm filter using Part Number 88649. The unit requires no special care or maintenance.

# 9 Accessories and Spare Parts

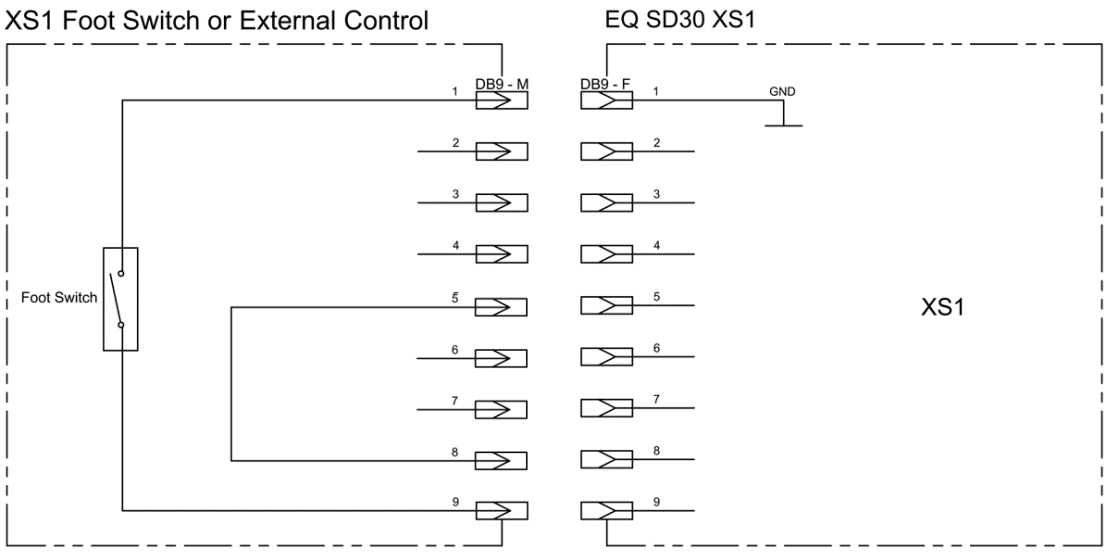
| Item | Description | IDH# |
|---|---|---|
| **Spare Parts** | | |
| 1 | 10ml Air Line Adapter (2 pcs/box) | 88657 |
| 2 | 10ml Clear Syringe barrel kit (40 pcs/box) | 88656 |
| 3 | 10ml Black Syringe barrel kit (40 pcs/box) | 218287 |
| 4 | 30ml Air Line Adapter (2 pcs/box) | 88678 |
| 5 | 30ml Clear Syringe barrel kit (20 pcs/box) | 88677 |
| 6 | 30ml Black Syringe barrel kit (20 pcs/box) | 218286 |
| 7 | Foot Switch | 88653 |
| 8 | Syringe holder | 2974794 |
| 9 | Finger switch | 735225 |
| 10 | Silicone Grease, 6 Gram Tube | 88722 |
| **Accessories** | | |
| 1 | Loctite Air Filter, Regulator, Gauge (Mechanical version) - US<br>Loctite Air Filter, Regulator, Gauge (Mechanical version) – EU/Asia | 478603<br>88649 |

# 10 Diagrams

XS1: Start

**⚠ Warning!**

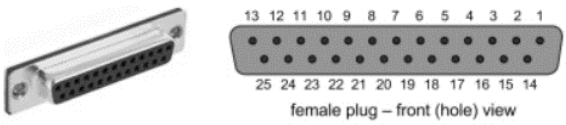
Never connect external voltage on pin1 or pin9! Permanent board damage will result.

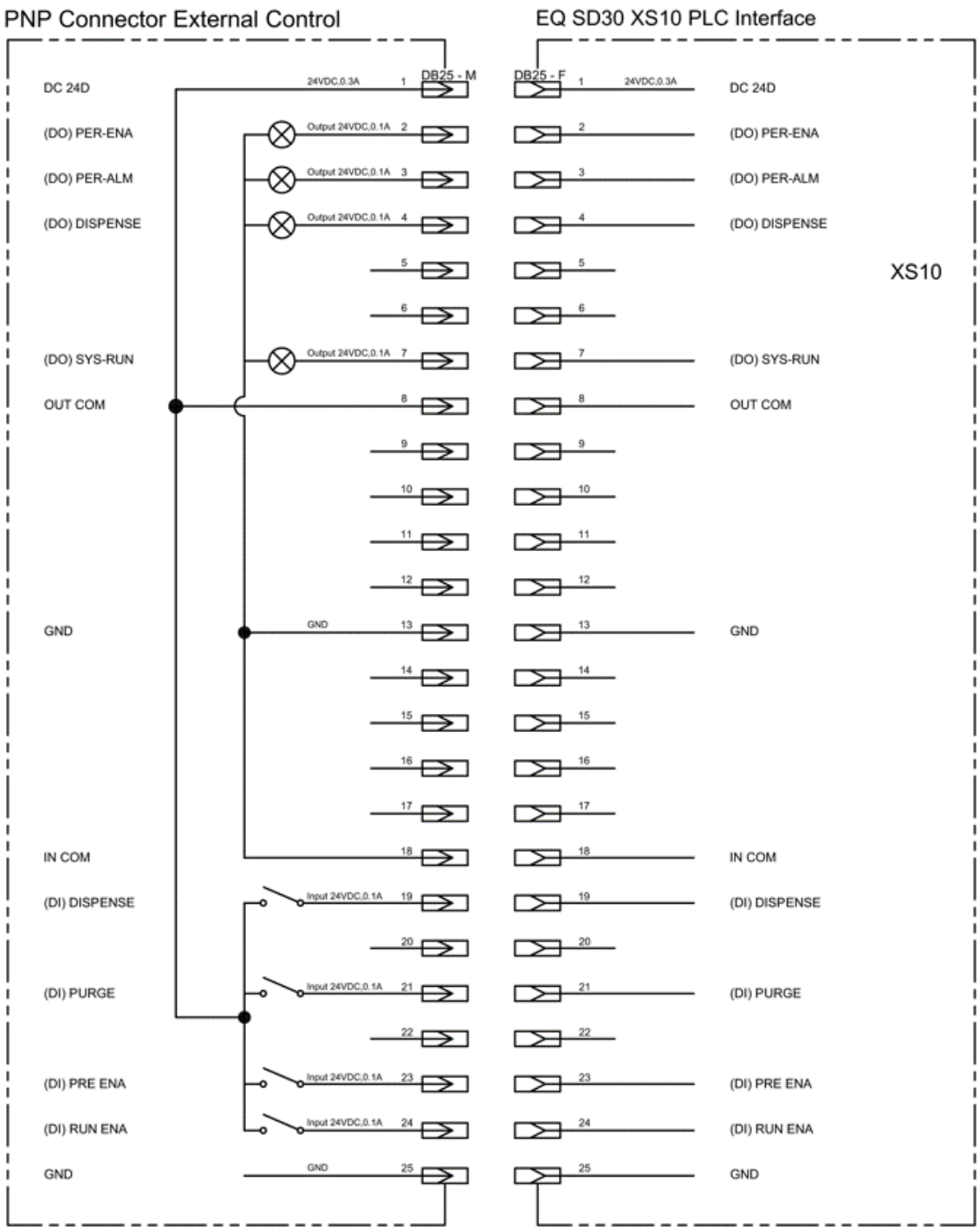


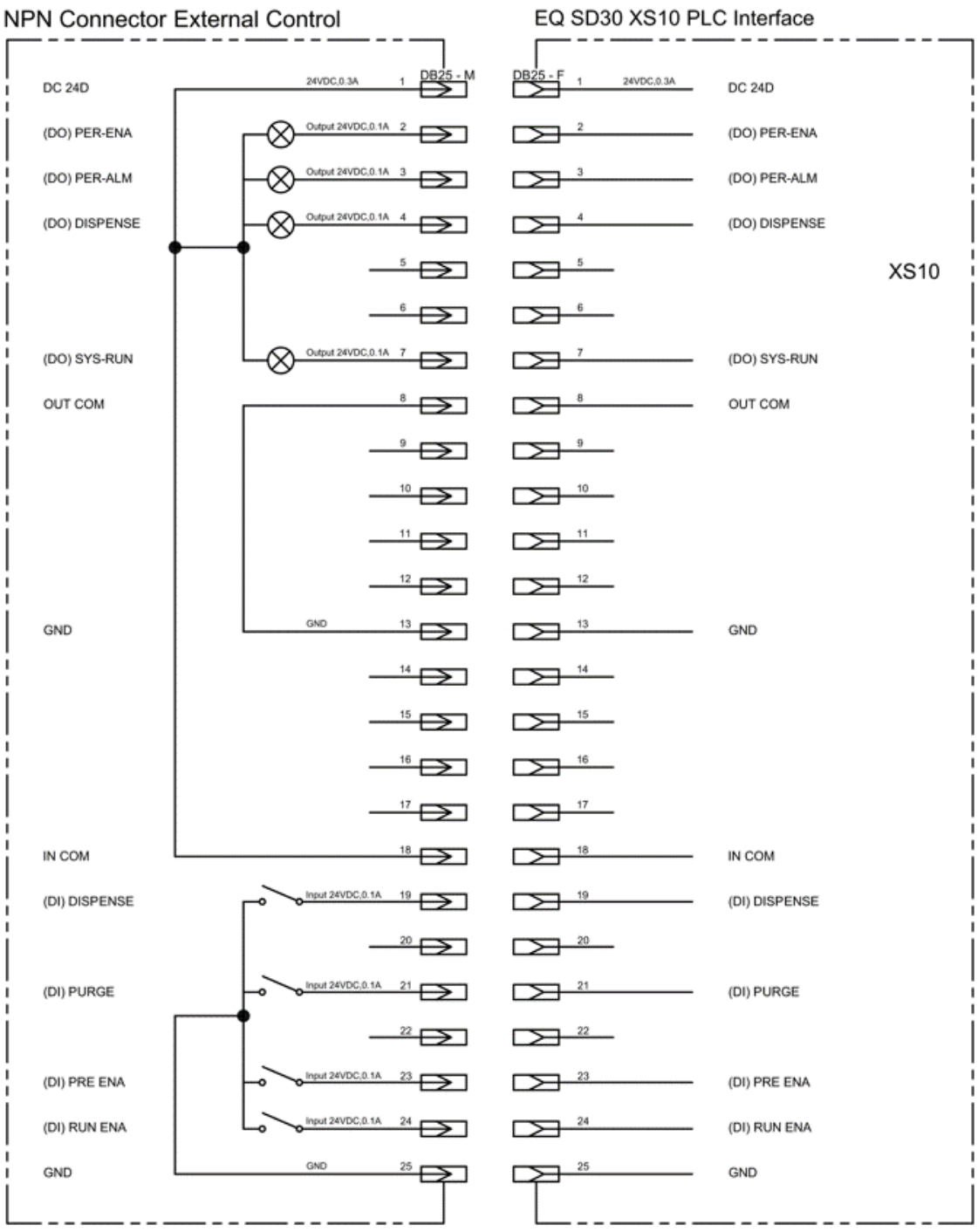
XS9: PLC Interface

- All outputs are 24 VDC, 100 mA maximum.
- Max. total current consumption of the internal 24 V DC supply at pin 1 is 0.3A.
- Inputs/outputs can use either internal 24VDC at pin 1 or an external 24VDC supply.
- Failsafe output: Contact open = No alarm, contact closed = alarm on.
- For Inputs have the same function as the corresponding elements on the touch screen and can be used alternatively. Outputs provide feedback of the status.

| I/O Pin No. | Function | Assignment |
|---|---|---|
| 1 | internal +24V supply | +24V PWR |
| 2 | Output PER-ENA | Pressure Enable -Optocoupler output |
| 3 | Output PER-ALM | Pressure alarm -Optocoupler output |
| 4 | Output DISPENSE | Dispensing -Optocoupler output |
| 5 | n/a | |
| 6 | n/a | |
| 7 | Output SYS-RUN | System Run -Optocoupler output |
| 8 | OUT COM | for all outputs (common) |
| 9 | n/a | |
| 10 | n/a | |
| 11 | n/a | |
| 12 | n/a | |
| 13 | internal Ground output | 0 VDC |
| 14 | n/a | |
| 15 | n/a | |
| 16 | n/a | |
| 17 | n/a | |
| 18 | IN COM | for all optocoupler inputs (common) |
| 19 | Input DISPENSE | Start -Optocoupler input |
| 20 | n/a | |
| 21 | Input PURGE | Purge -Optocoupler input |
| 22 | n/a | |
| 23 | Input PRE ENA | Pressure Enable -Optocoupler input |
| 24 | Input RUN ENA | System Run -Optocoupler input |
| 25 | internal Ground output | 0 VDC |




PNP Connector External Control
EQ SD30 XS10 PLC Interface
DB25 - M
DB25 - F
XS10
DC 24D
(DO) PER-ENA
(DO) PER-ALM
(DO) DISPENSE
(DO) SYS-RUN
OUT COM
GND
IN COM
(DI) DISPENSE
(DI) PURGE
(DI) PRE ENA
(DI) RUN ENA
GND
24VDC,0.3A
Output 24VDC,0.1A
Input 24VDC,0.1A


NPN Connector External Control
EQ SD30 XS10 PLC Interface
DB25 - M
DB25 - F
XS10
DC 24D
(DO) PER-ENA
(DO) PER-ALM
(DO) DISPENSE
(DO) SYS-RUN
OUT COM
GND
IN COM
(DI) DISPENSE
(DI) PURGE
(DI) PRE ENA
(DI) RUN ENA
GND
24VDC,0.3A
Output 24VDC,0.1A
Input 24VDC,0.1A
GND

# 11 Warranty

Henkel expressly warrants that all products referred to in this Instruction Manual for Loctite® Pulse EQ SD30 Precision Syringe Dispenser(hereafter called “Products”) shall be free from defects in materials and workmanship. Liability for Henkel shall be limited, as its option, to replacing those Products which are shown to be defective in either materials or workmanship or to credit the purchaser the amount of the purchase price thereof (plus freight and insurance charges paid therefor by the user). The purchaser’s sole and exclusive remedy for breach of warranty shall be such replacement or credit.

A claim of defect in materials or workmanship in any Products shall be allowed only when it is submitted in writing within one month after discovery of the defect or after the time the defect should reasonably have been discovered and in any event, within (12) months after the delivery of the Products to the purchaser. This warranty does not apply to perishable items, such as fuses, filters, lights, etc.. No such claim shall be allowed in respect of products which have been neglected or improperly stored, transported, handled, installed, connected, operated, used or maintained. In the event of unauthorized modification of the Products including, where products, parts or attachments for use in connection with the Products are available from Henkel, the use of products, parts or attachments which are not manufactured by Henkel, no claim shall be allowed.

No Products shall be returned to Henkel for any reason without prior written approval from Henkel. Products shall be returned freight prepaid, in accordance with instructions from Henkel.

NO WARRANTY IS EXTENDED TO ANY EQUIPMENT WHICH HAS BEEN ALTERED, MISUSED, NEGLECTED, OR DAMAGED BY ACCIDENT.

EXCEPT FOR THE EXPRESS WARRANTY CONTAINED IN THIS SECTION, HENKEL MAKES NO WARRANTY OF ANY KIND WHATSOEVER, EXPRESS OR IMPLIED, WITH RESPECT TO THE PRODUCTS.

ALL WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND OTHER WARRANTIES OF WHATEVER KIND (INCLUDING AGAINST PATENT OR TRADEMARK INFRINGEMENT) ARE HEREBY DISCLAIMED BY HENKEL AND WAIVED BY THE PURCHASER.

THIS SECTION SETS FORTH EXCLUSIVELY ALL OF  LIABILITY FOR HENKEL TO THE PURCHASER IN CONTRACT, IN TORT OR OTHERWISE IN THE EVENT OF DEFECTIVE PRODUCTS.

WITHOUT LIMITATION OF THE FOREGOING, TO THE FULLEST EXTENT POSSIBLE UNDER APPLICABLE LAWS, HENKEL EXPRESSLY DISCLAIMS ANY LIABILITY WHATSOEVER FOR ANY DAMAGES INCURRED DIRECTLY OR INDIRECTLY IN CONNECTION WITH THE SALE OR USE OF, OR OTHERWISE IN CONNECTION WITH, THE PRODUCTS, INCLUDING, WITHOUT LIMITATION, LOSS OF PROFITS AND SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER CAUSED BY NEGLIGENCE FROM HENKEL OR OTHERWISE.

# 12 Declaration of Conformity

| CE | EU Declaration of Conformity |
|---|---|
| Designation of the unit: | Pulse EQ SD30 Precision Syringe Dispenser |
| Unit number: | Order no. (IDH): 2974793 |
| Manufacturer: | Henkel AG & Co. KGaA<br>Henkelstraße 67<br>40589 Düsseldorf<br>Germany |
| This declaration of conformity is issued under the sole responsibility of the manufacturer. The object of the declaration described above is in conformity with the relevant Union harmonisation legislations: | |
| Applicable EC regulations: | Directive 2014/53/EU Radio Equipment<br>Directive 2011/65/EU RoHS |
| Applicable harmonised standards: | EN IEC 62368-1:2020+A11:2020<br>EN IEC 62311:2020<br>ETSI EN 301 489-1: V2.2.3 (2019-11)<br>ETSI EN 301 489-17: V3.2.4 (2020-09)<br>ETSI EN 300 328: V2.2.2 (2019-07)<br>EN 55032:2015+A11:2020+A1:2020<br>EN 55035:2017+A11:2020<br>EN IEC 61000-3-2:2019/A1:2021<br>EN 61000-3-3:2013/A2:2021/AC:2022<br>EN IEC 63000:2018 |
| The notified body | Ente Certificazione Macchine SRL<br>Via Ca‘ Bella 243/A<br>Loc. Castello di Serravalle<br>40053 Valsamoggia (BO)<br>Italy |
| with the body number 1282 has performed the EU type examination in accordance with directive 2014/35/EU, annex III, module B, and issued the EU type examination certificate no. ECM RED 2024-UU62 rev. 0. | |
| Place and date of issue:<br><br>Düsseldorf,<br>2024-04-10 | Signed for and on behalf of Henkel AG & Co. KGaA:<br><br>  <br>Michael Brunner<br>Business Development Manager Equipment |

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