

1K2K Dosing and Dispensing Private Limited Plot No. A-44/1/A-55, Rajmata Jijau Mahila Industrial Premises, Chakan MIDC Road, Phase II, Vasuli, Tal-Khed, Dist. Pune- 410501



ADoST PPS PRO Manual

ABSTRACT

This document provides step-by-step instructions for handling and maintaining the ADoST dispensing system. It covers every aspect of the equipment that an operator is expected to know and follow, ensuring proper usage and maintenance.



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ADoST-PPS-PRO

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USER MANUAL

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Industrial Premises, Chakan MIDC Road, Phase II, Vasuli, Tal-Khed, Dist. Pune- 410501

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Information Ownership

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1 DEFINITIONS

1.	User	The person using the system
2.	Adhesive	Dispensing Adhesive
3.	Recharge	Change the adhesive bottle
4.	MCU	Main Control Unit
5.	SCU	Sub Control Unit
6.	HMI	Human Machine Interface





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2 Introduction

ADOST PPS-PRO is an electro-pneumatically operated semi-automatic pressure-time system designed and developed to apply fixed volume of adhesive in a high-speed assembly line. ADOST PPS-PRO offers the industry leading repeatability and advanced features in dispensing single component adhesives. The system operates in both manual and timed modes, offering the flexibility to meet varying user needs. The volume of adhesive to be dispensed can be preset by adjusting the input pressure and dispense time. It includes a high performing non-contact low-level indicator for timely bottle changeovers, drop counter and operator lock-out features that enhances digital control and reduces manual intervention leading to little or no manual errors.

The system is designed to accommodate products packaged in 20gm, 50ml, 250ml and 500ml bottles. It can be supplied with an optional automatic part sensing and dispensing and its advanced features allow it to be integrated with desktop robots to fully automate gluing operations.





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3 GENERAL

This Handbook is divided into sections to make it useful to understand every information about the system life cycle and to easily find that information necessary for the end user.

This document is specifically developed for ADoST PPS-PRO model and the information given in this handbook can help users in achieving the best system performances while ensuring the long life-cycle to its components.

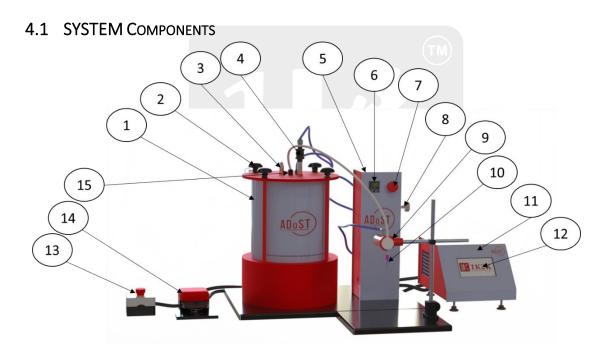
Due to ongoing developments and safety requirements and regulations system outfitting may be different from the one described in this document. In such a scenario, descriptions and procedures should be construed as generic. Quoted drawings and pictures are intended for example only.





4 SYSTEM'S SPECIFICATIONS

Model Number	ADoST-PPS-PRO-CY-23-2P	ADoST-PPS-PRO-AN-46-6P	ADoST-PPS-PRO-UV-46-6P
Power Supply	Min:1	00 VAC, Nominal:230 VAC, Ma	x 275VAC
Size (Metric)	MCU (300X19	96X138mm), SCU (500mm x 45	53mm x 350mm)
Weight		18Kg	
Ambient temperature		10°C to +45°C	
range			
Response time	0.02s		
Usage	Indoor use		
Operating Air Pressure	2 Bar (Max.)	6 Ba	r (Max.)
Minimum Dispense Size	0.007gm	0.0)18gm
Accuracy	+/-0.005gm		
Pinch Tube ID	2mm 4mm		lmm
Recommended adhesive	Cyanoacrylate Adhesive	Anaerobic Adhesive	UV Adhesive



- 1. **Reservoir:** pressure pot where the Adhesive bottle (variable bottle size up to 500ml) is stored and pressurized, allowing it to flow out of the pot through a pipe.
- 2. **Knob:** agronomically designed knobs use to open and close the reservoir for Adhesive bottle insertion or change.
- 3. **Safety relief valve:** release pressure automatically if it becomes higher than the preset value, ensuring the system's safety as our system maximum Limit is as defined for the system.
- 4. **Slide valve**: is used to relieve the pressure inside the pressure pot by providing a controlled release mechanism, ensuring the system operates safely and efficiently.
- 5. **SCU (Sub Control Unit):** Contains a pneumatic actuator and digital pressure switch for MCU to dispenser communication, managing and regulating system functions with precise control and monitoring.



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- 6. **Digital pressure display/ Digital Switch**: Indicates current pressure with 0.01 precision, provides actuator control signals, and sets upper and lower pressure limits for accurate output.
- 7. **Alarm: The** device alerts users to any abnormal conditions or malfunctions in the system, ensuring prompt attention and corrective action to maintain safety and efficiency. Also, provide an indication for low level of material in adhesive bottle kept in the reservoir.
- 8. **Air pressure regulator:** The primary function is to maintain steady pressure inside the reservoir, protecting the system from air supply variations to ensure consistent adhesive dispensing.
- Dispensing Valve (Pinch Valve): This pinch valve controls adhesive flow by squeezing a tube, includes a plug for secure tube output, and features a bolt to adjust the valve's stroke for precise adhesive dispensing.
- 10. Dispensing Nozzle: The dispensing nozzle precisely controls the adhesive flow, with larger diameters increasing output volume; replace when cured and consult our sales team for selection.
- 11. **MCU (Main Control Unit):** The Main Control Unit, the core of the cartridge dispenser system, initiates operation via a rear power switch. It coordinates all components through detachable connectors for seamless integration, offering various dispensing features and modes to meet diverse dispensing needs.
- 12. **HMI:** The 4.3" HMI provides intuitive user interaction, enabling easy operation and monitoring of system settings and status through visual feedback and controls.
- 13. **Emergency Switch:** The emergency switch immediately halts electrical operations to prevent hazards or damage in critical situations.
- 14. **Foot Switch:** Operated by foot, this hands-free control provides an alternative method to initiate dispensing via the primary control's HMI.
- 15. **Reservoir tube connector:** This connector allows the tube to pass through the reservoir, which is then placed inside the Adhesive bottle to allow seamless flow of adhesive from bottle.

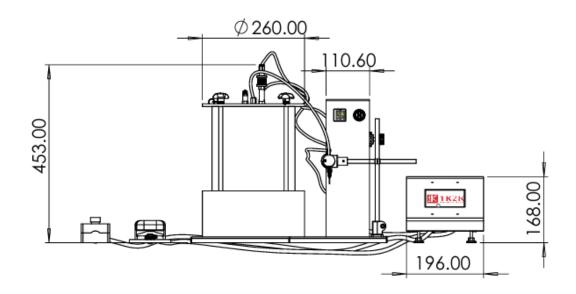


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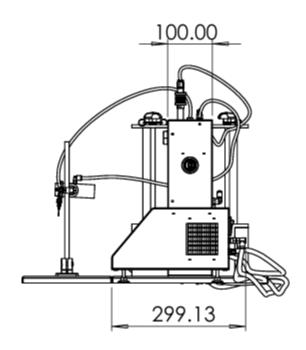
4.2 PPS-PRO DETAILED DIMENSIONS

All dimensions are in mm

4.2.1 Front View



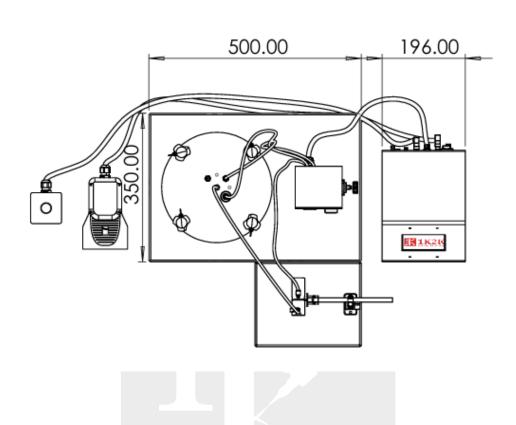
4.2.2 Side view





4.2.3 Top view

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5 SAFETY PRECAUTIONS

1.	Wear safety gloves	**
2.	Wear safety glasses	
3.	Wear face mask	
4.	Wear safety shoes	

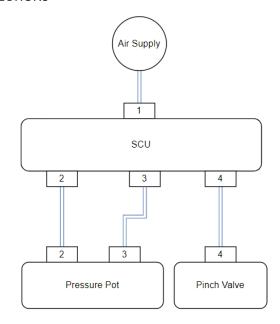




6 SYSTEM SETUP

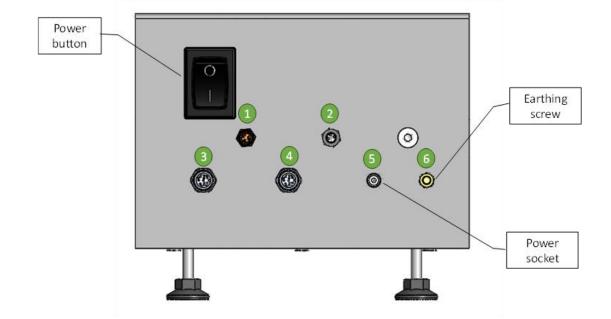
Below are the step-by-step instructions to be followed for setting up the system

6.1 PNEUMATIC CONNECTIONS



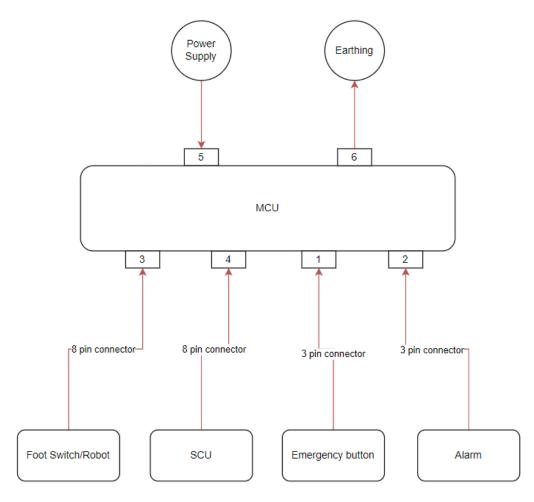
Note: Ensure that the air supply is free from dust and moisture. If the supplied air does not meet this condition, an FR (Filter, Regulator) unit must be used to maintain system performance.

6.2 ELECTRICAL SETUP





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6.3 ADHESIVE BOTTLE PLACEMENT/REPLACEMENT FROM THE RESERVOIR

- 1. Move the "Slide Valve" to "OFF" position to ensure that "Reservoir" is depressurized.
- 2. Open the "Reservoir" lid by turning the "knobs" in anti-clock wise direction.
- 3. Clean the "Reservoir" from inside.
- 4. Be sure that no water, oil or any other foreign object is spilled inside the "Reservoir" tank.
- 5. Check the condition of O-rings on top and bottom lid and if necessary, apply ADoST Grease 900
- 6. Place the adhesive bottle into the bottle holder located at the front of the sensor, inside the reservoir.
- 7. Insert the adhesive tube (pinch tube) inside the bottle. Make sure the pipe is reaching the bottom (Should it be touching the bottom).
- 8. Close the lid properly. Tighten all the "knobs" and make sure the O-rings are fitting properly.
- 9. Now move the "slide valve" to "ON" position to pressurize the reservoir.

Note: Please refer to Fig 5.1 for quoted text to identify the parts.

6.4 System power on

Power on the system after making necessary electrical connection as explained in sections above



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6.5 PROCEDURE TO FIX/REPLACE THE PINCH TUBE ON VALVE

- 1. Dispensing should be stopped while changing the pinch tube.
- 2. Connect the nozzle to the pinch tube in indicated place by rotating it clockwise.
- 3. Follow Settings screen in screen flow diagram section to open the Pinch Valve, allowing you to remove the existing pinch tube if any and insert the new pinch tube prepared in step above.
- 4. For more details, follow the ADoST Pinch valve manual
- 5. If you are using ADoST Pen, then please follow the steps in ADoST Pen manual for tube installation and removal





7 Initial system configuration & standard operating procedure

Before starting the dispensing, it is required to configure few parameters. Dispensing time settings is minimal settings that is expected to be complete before starting the dispensing of adhesive. Please follow the instructions below to complete the basic setting procedure.

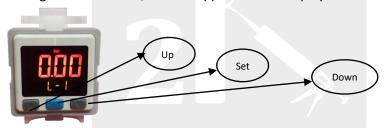
7.1 AIR PRESSURE REGULATOR SETTINGS

- 1. Loosen the nut of the pressure regulator.
- 2. Rotate the knob clockwise to increase the pressure
- 3. Rotate the knob anti-clockwise to reduce the pressure
- 4. The Knob dial will show the set pressure.
- 5. Once digital pressure gauge shows required pressure, lock the nut to set the pressure.
- 6. Make sure Digital Pressure switch lower limit is set as same or little lower than the pressure set through pressure regulator

7.2 AIR PRESSURE SWITCH SETTINGS

- 1. To set the lower and upper pressure limits-There are 3 buttons on the pressure switch.
 - Up
 - Set
 - Down

On pressing the 'UP' button, 'L1' will appear on the display.



Enter the required pressure using UP, DOWN key and press SET.



Please note: Quoted pictures are intended for example only.

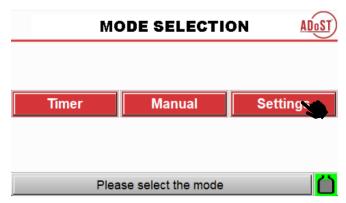
7.3 TIMER SETTINGS

Timer setting allows user to set upto 50 programs, which can be used for setting different dispensing amount. You need to configure at least one program and select to proceed with dispensing.

Follow the steps below to configure the dispense time settings.

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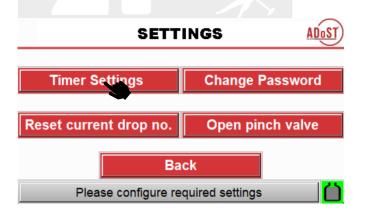
1) Click on settings on the screen below



2) Provide the login & password. The default account is 00 and default password is 00000000. The authenticated person may like to change the password. Please follow the process in screen flow diagram to change the password if required.



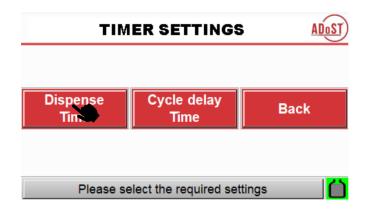
3) Select timer settings from settings screen.



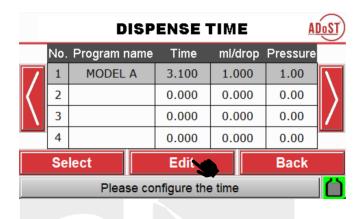
4) Select dispense time.



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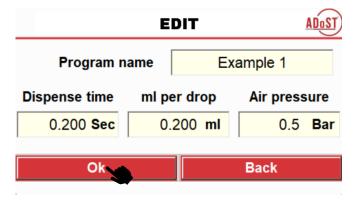
5) Following screen will appear, select the 1st program and click on Edit.



6) Enter the program name, which can be any word helps you make correct selection while shifting over programs.

If this is the 1st time you are configuring, then use the pressure time graph provided in TDS to decide a possible combination of dispense time, ml/drop, and air pressure. Once the actual dispensing amount is achieved, this data is expected to be updated.

Press OK after entering tentative values for dispense time, ml/drop and air pressure



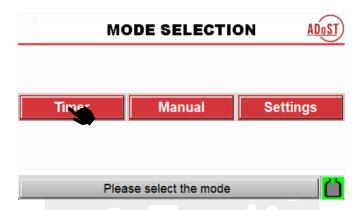




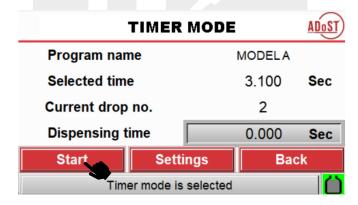
7.4 System calibration for dispensing amount

Before starting the system calibration, keep a weighing machine ready to dispense the adhesive dispensed by the system. The weighing machine should be able to provide up to 3 decimals of precision. Keep a cup/small vessel which can be used for dispensing adhesive and dispensed measurements.

1) Select the timer mode (to understand the timer mode in detail, please read section with heading **Timer Mode.**)



2) Select start or use accessory/foot switch for dispensing. Ensure you are ready for measurement of dispensed amount.



- 3) Measure the dispense amount, if it's not expected, change the pressure using regulator or time from settings menu and repeat step 2
- 4) Repeat steps 2 and 3 above until you achieve the desired measured output.
- 5) Once desired measured output is achieved, follow the timer setting in section above to update the dispensing amount.

7.5 CYCLE DELAY TIME

The cycle delay time is required when it's desired to keep the delay between two dispenses. This feature is required to be set when using the system with sensors. This is to avoid multiple sensing of same component in short duration by the system and so avoiding more than once dispensing on same component.

Follow the button selection to reach cycle delay time settings



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Settings -> Timer Settings -> Cycle Delay time

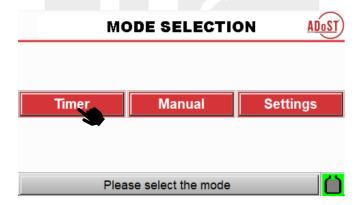
Users will be able to see following screen



Enter required delay time and press OK to process else back to cancel the changes made.

7.6 TIMER MODE

In timer mode, the system will dispense the fixed adhesive volume for a pre-set time and pressure. The system is designed to store 50 programs in the settings. Users can select a particular pre-set timer depending on the application requirement. The minimum and maximum time for dispensing is 0.1 and 32.7 seconds respectively.

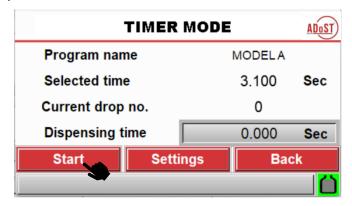


Make sure that the program name, time configuration and pressure settings are done. Then click on 'Timer' button from mode selection screen. If not configured, then the HMI may show an error.

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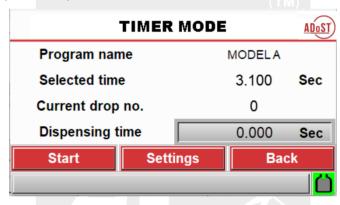


7.6.1 Timer Mode by HMI commands

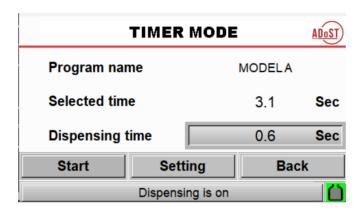


- 1. Touch the 'Start' button on the screen to start the dispensing and click on back button to exit the screen.
- 2. The dispensing will stop by itself once cycle is completed.

7.6.2 Timer Mode by Accessory



- 1. Accessory could be a sensor, foot switch, robot or a user specific device.
- 2. If the connected accessory is a sensor, keep the part on the fixture to dispense for the preset time and stop automatically.
- 3. If the connected accessory is a foot switch, pressing it once will start the dispensing and end after preset time.
- 4. If the accessory is a robot or user specific device then upon getting an impulse dispensing will start for the preset time and stop automatically.



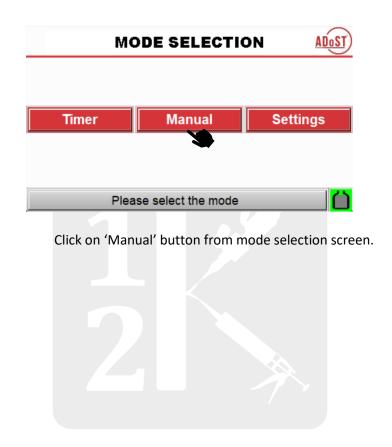


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7.7 MANUAL MODE

In manual mode, the dispensing is controlled manually by the user. System will dispense the adhesive till the user's command. Manual mode is designed for applications where time based dispensing is not desired. In this mode, dispensing will continue till the user stops it. The maximum dispensing time in manual mode is 32.70 seconds. If the dispensing process continues till the maximum time, dispensing will stop automatically. There are two operating options. By HMI commands and by foot switch/accessory connected.

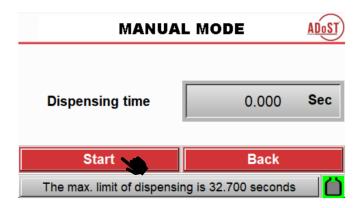




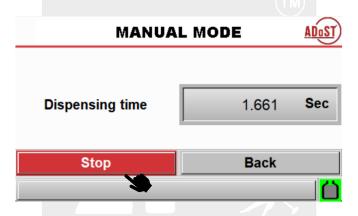
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7.7.1 Manual mode by HMI commands or by accessory

1. Press the 'Start' button on the screen to start the dispensing or use accessory to dispense.

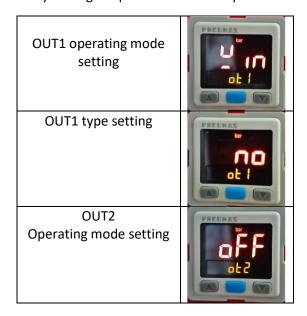


2. If on screen button is used to start dispensing then 'Stop' will be available to stop the dispensing.

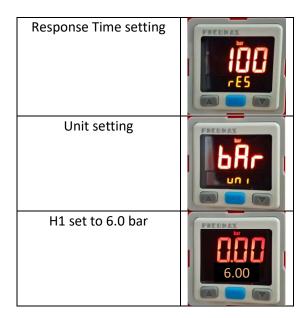


7.7.2 Air pressure switch factory settings

Following are the default factory settings required for desired operation of the machine.











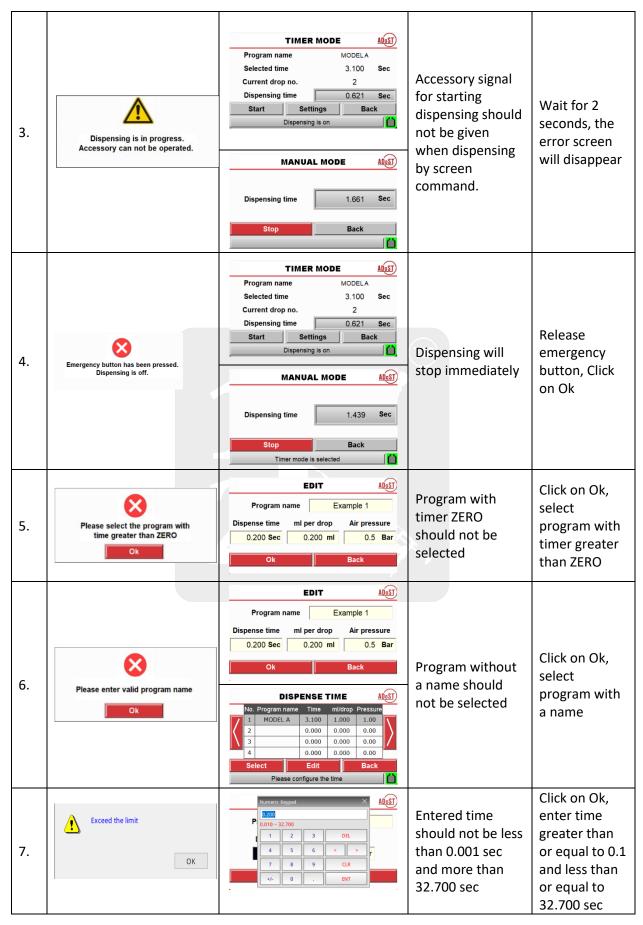
8 OPERATING ERRORS AND TROUBLESHOOTING

Sr. No.	Error	Troubleshooting
1	There are air bubbles in the Adhesive pipe while dispensing	Check whether the Adhesive pipe is inserted correctly in the Adhesive bottle. If not, insert it correctly
2	The Adhesive is not able to come out of the nozzle	Change the nozzle. Check Pinch Tube If cure replace it. Check the Air Pressure if Low Increase.
3	If there is an air leakage from the system	Immediately turn off the air pressure supply and contact the supplier.
4	There is a short circuit in MCU	Immediately turn off the power supply and contact the supplier.

If a function does not work, the screen will deliver an error message. When this happens, follow the following table to troubleshoot.

Sr. No.	Error	Screen where the error will appear	Why am I getting this error?	Trouble- shooting
1.	Please configure the program	MODE SELECTION Timer Manual Settings Please select the mode	Timer/Manual button should not be pressed without configuring the program	Click on Ok, configure the program
2.	Invalid Input	MODE SELECTION ADST Timer Manual Settings Please select the mode SETTINGS Timer Settings Change Password Reset current drop no. Open pinch valve Back Please configure required settings	Accessory signal for starting dispense or emergency button should not be pressed.	Wait for 2 seconds, the error screen will disappear







		Numeric Keypad 200	Entered ml/drop should not be less than 0.01 ml and more than 10ml	Click on Ok, enter ml/drop greater than or equal to 0.010 and less than equal to 10ml
		Numeric Keypad ADDST 200 0.010 - 32.700 1 2 3 DEL 4 5 6 < > 7 8 9 CLR 4/- 0 . ENT	The entered pressure range should not be less than 0.1 bar and greater than 6 bar	Click OK and enter pressure greater than or equal to 0.1 and less than or equal to 6.0bar
		Numeric Keypad Alight 200 0.010 - 32.700 1 2 3 DEL 4 5 6 < > 7 8 9 CLR 4/- 0 . ENT	The Entered time should not be more than 3 digits after a decimal point	Click on Ok, enter less than 4 digits after the decimal point
8.	Fractional format error OK	Numeric Keypad P 0.010 - 32.700 1 2 3 DEL 4 5 6 < > 7 8 9 CLR -/- 0 . ENT	The Entered ml/drop should not be more than 3 digits after decimal point	Click on OK, enter less than 4 digits after the decimal point
		Numeric Keypad	Entered pressure should not be more than 1 digit after decimal point	Click on OK, enter only 1 digit after the decimal point
		Any screen when pressure required is not as per the setting of Pressure sensor	The air pressure has changed.	Press Ok and Set the air pressure within the given range.
9.	The air pressure has changed, dispense volume may vary. Please change the air pressure back to 1.00 bar Ok	All the screens with yellow at the right bottom corner	The air pressure has changed. Warning to change the air pressure when click on yellow button.	Press Ok and Set the air pressure within the given range.



10.	The material bottle is empty. Please replace the material bottle and set the level Ok	Any screen when system identifies the bottle is getting empty	The Adhesive bottle is empty.	Change the Adhesive bottle
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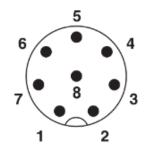
9 CONNECTING WITH PLC/ROBO

It's possible to connect ADoST PPS-PRO with a PLC or Robo to control the dispensing. It is expected to use following connection to achieve the expected results.

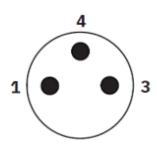
Please connect with sales team or numbers given in contact list if you need the connectors.

9.1 CONNECTION DETAILS

Dispensing control and feedback connector C1



Alarm connector C2



Dispensing control and feedback connector C1

Pin and signal			
Pin number	Signal	Signal type	
1	24VDC	Reference ground for Input	
8	0VDC	Reference ground for Output	
2	Dispense on	Input	
3	Dispense feedback	Output	
4	Alarm	Output	
5 - 6	Not used		

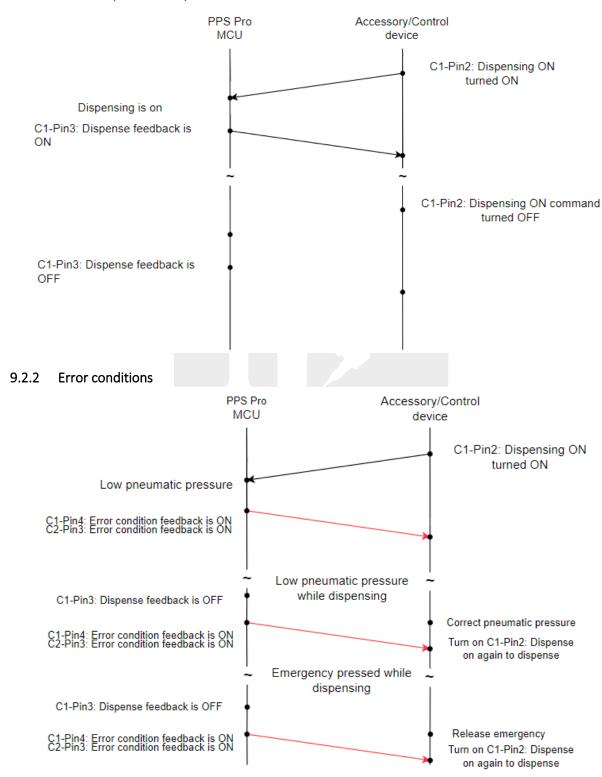
Alarm connector C2

Pin and signal			
Pin number Signal Signal type		Signal type	
1	0VDC	Reference ground for Output	
3	Error condition	Output	
4	Not used		

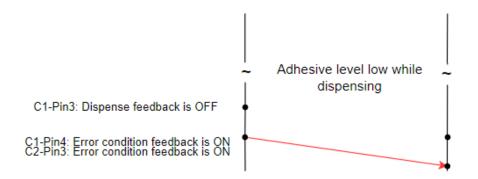
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9.2 CONTROL SEQUENCE DIAGRAM

9.2.1 Normal operation sequence











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10 FAQs

1. What is a dispensing system and what does it do? A dispensing system is an equipment that digitally controls the volume of liquid to be dispensed. The system ensures repeatability in every subsequent shot.

- 2. What types of Adhesive systems are compatible with ADoST PPS PRO? ADOST PPS NXT is designed to work perfectly with Cyanoacrylates, Anaerobic and UV Adhesives
- 3. How do I refill the system?

De-pressurize the system. Open the knobs and open the lid. Put the adhesive bottle inside the reservoir tank in the fixture. Place the tube inside the bottle, while closing the lid, ensure the tube is straight and remains straight. If tube is not straight or does not touch the bottom of bottle, you may get bubbles before getting warning of empty bottle from system.

- 4. How often should I clean the system? It is important to clean the nozzle and reservoir to prevent any type of contamination and to prevent the clogging of valve. The exact cleaning frequency will depend dispenser's intended use, but it is generally recommended to clean daily.
- 5. What pack size can be used? As per the standard adhesive bottle, suggested pack sizes are 250ml, 500ml & 2lts.
- 6. For how much time should I keep the Adhesive unused in system/ what is the cure time for the Adhesive? Anaerobic and UV adhesives do not cure in the bottle so they are not expected to cure or

dry when left unused for a long period. However, it is specifically suggested that the pipes and nozzle are cleaned when the machine has to be left unused for a period exceeding 24 hours

- 7. Can I use a dispenser for outdoor applications? ADOST PPS PRO is designed to be used indoors, System may get affected by outdoor dust, air, etc
- 8. Can the system work without air pressure? No. The system needs a minimum air pressure of 0.05 bars for Cyanoacrylates and 0.1 for UV and Anaerobic adhesive system.
- 9. What is the min and max operating Air pressure? Its min 0.05bars, max 2bar for Cyanoacrylate PPS machine and min 0.1 bar, max 6bar for UV/Anaerobic PPS machine
- 10. Is the system battery operated? No. The system needs AC power supply between 100-275 volts AC.



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11 SYSTEM MAINTENANCE

To ensure smooth functioning and a long service life, perform following maintenance operations as needed.

- 1. Clean the MCU to protect it from dust or liquid etc.
- 2. Clean the dispensing nozzle after use.
- 3. To flush out the adhesive in pipe-

Release the reservoir tank pressure, open the lid and remove the adhesive bottle. Close the lid tightly. Now air will flow in pipes. Operate the manual mode to flush out the existing adhesive in the pipe.

- 4. Clean the sensor using clean, dry cotton during every bottle changeover from the pressure not.
- 5. To clean the reservoir tank-Release the reservoir tank pressure, open the lid and remove the adhesive bottle. Clean the tank with cotton.
- 6. Inspect the inside of the pressure pot for any moisture droplets. If moisture is detected, immediately alert the concerned authority to take necessary corrective action.
- 7. Change the nozzle periodically





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12 System Do's and Don'ts

Do's

- 1. Depressurizing the reservoir before opening it
- 2. Depressurizing the reservoir while taking a break
- 3. Keep bottles aside after use. Upon accumulation of 8 bottles, transfer the leftover adhesive to a single bottle and use again
- 4. Change plastic nozzle as and when necessary. Over a period of time dispensing quality gets affected
- 5. Use ADoST Grease-900 on both the O-rings at least once a week
- 6. Switch off the air supply when not in use
- 7. Keep the system in such a way, that any dust or water molecules enter in air pipe and reservoir tank.
- 8. Ensure that pinch tube is replaced after every 4000 shots.
- 9. During lunch and day break, apply Loxeal Grease-9 on the nozzle tip, when using with cyanoacrylate adhesive.
- 10. If gel formation is found at the nozzle tip, while using with cyanoacrylate adhesive, pull and clean it manually using tissue before starting work.
- 11. Change the needle at least once every day, while using with cyanoacrylate.

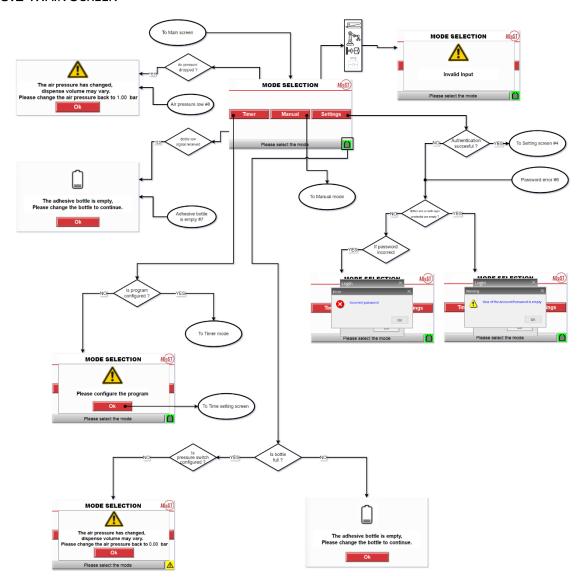
Don'ts

- 1. Don't open the reservoir without depressurizing.
- 2. Don't turn the pressure regulator knob, once setting is finished
- 3. Don't change software settings while using same bottle
- 4. Don't change the bottle before low level buzzer rings
- 5. Don't fill the leftover adhesive in a new bottle and charge the reservoir
- 6. Don't operate machine without training
- 7. Don't keep the foot switch pressed in timer mode even after dispensing is in the process
- 8. Don't spill any kind of liquid on the MCU, reservoir tank and Pinch Valve.
- 9. Don't keep the emergency button pressed without any emergency condition
- 10. Don't pour the Adhesive inside the reservoir, the bottle filled with adhesive is expected to be placed inside the reservoir

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13 SCREEN FLOW DIAGRAM

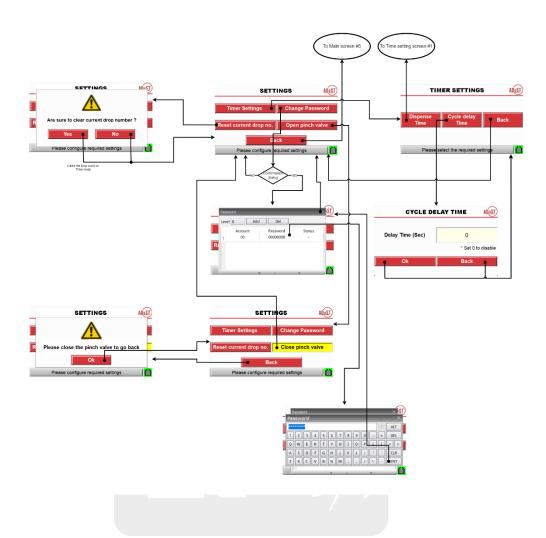
13.1 MAIN SCREEN





13.2 SETTINGS

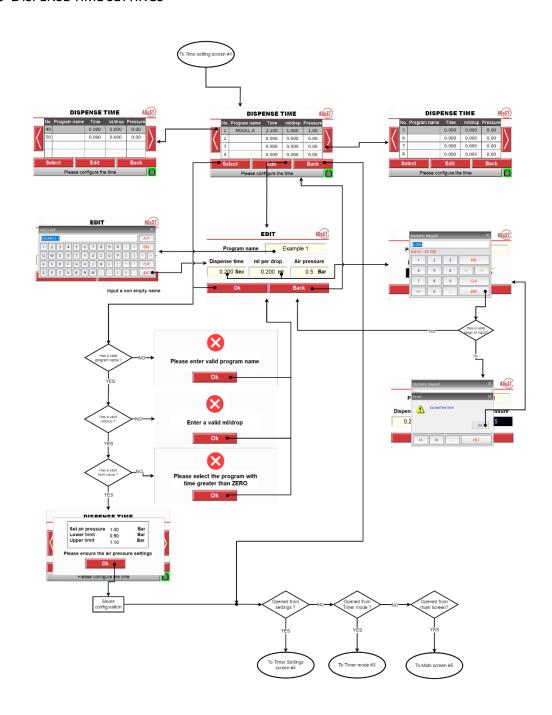
1K2K Dosing and Dispensing Private Limited





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13.3 DISPENSE TIME SETTINGS

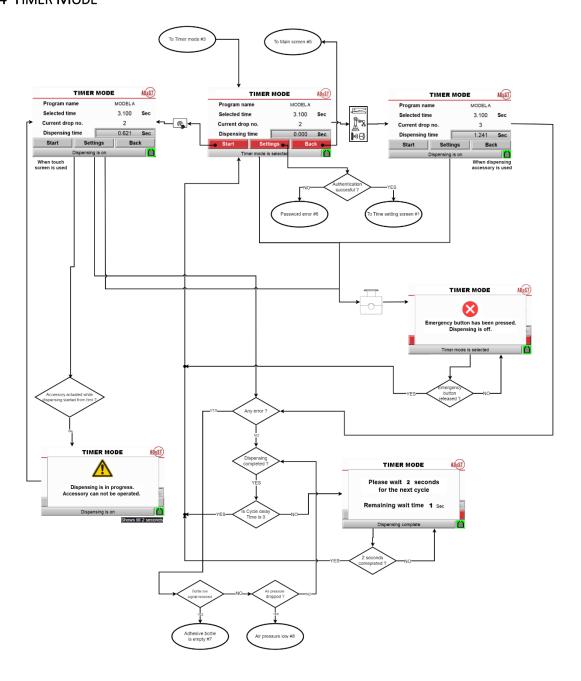




13.4 TIMER MODE

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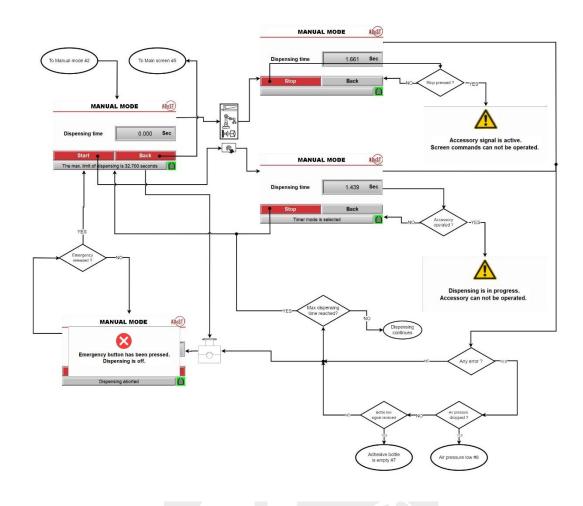
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13.5 MANUAL MODE

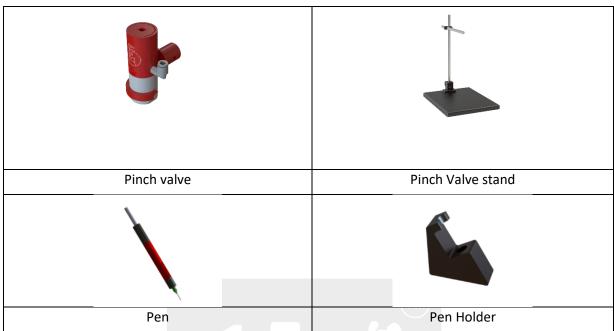
1K2K Dosing and Dispensing Private LimitedPlot No. A-44/1/A-55, Rajmata Jijau Mahila Industrial Premises, Chakan MIDC Road, Phase II, Vasuli, Tal-Khed, Dist. Pune- 410501

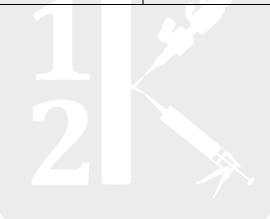




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14 ACCESSORIES



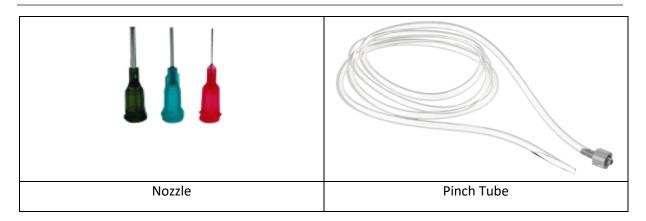




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15 CONSUMABLES







1K2K Dosing and Dispensing Private Limited Plot No. A-44/1/A-55, Rajmata Jijau Mahila

Industrial Premises, Chakan MIDC Road, Phase II, Vasuli, Tal-Khed, Dist. Pune- 410501

16 DISCLAIMERS

- 1. Adhesive dispensing behaviour may be unexpected and some components may behave inconsistently if the air pressure is not maintained as mentioned in TDS (The air pressure required to dispense the adhesive is directly proportional to viscosity of the adhesive)
- 2. The system will not be able to boot if the electrical power supply is less than 100V AC.
- 3. System may not handle the power and cause danger if the electrical power supply is more than 275V AC.
- 4. The emergency button will stop the dispensing when all pipes and wires are connected properly. If any of the pipes are loose, or any of the wires are cut, emergency conditions will not work.
- 5. The system may not work properly, if system is damaged by any external cause like falling, hitting by any object, excessive heat, etc.
- 6. Dispensing cannot be done if the connector cord is not connected to MCU's female connector.

