JONSN
PUMPS & TECHNOLOGY

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JONSN
PUMPS & TECHNOLOGY



Smart Lab Dosing Solutions

MDC SERIES
DESKTOP MICRO DOSING STATION

One Control Station × Four Pump Head Series
= Your Benchtop Quantitative Dosing Solution

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DESKTOP MICRO DOSING STATION

In quantitative filling, ratio-based conveying, and precision metering, inaccurate flow, cumbersome operation, and high attended-labor cost have long been the hidden bottlenecks holding back production efficiency. The Gear Pump Servo Control Box is built around precise, closed-loop servo control — making flow control simple, accurate, and intelligent.

Features: Precision metering · Compact size · Quantitative conveying · Modular pairing with JONSN-MR and MPG series pump heads.
Composition: Servo motor + JONSN magnetic gear pump + communication control system
Dimensions: 310 × 200 × 240 mm.

Operating Modes:
① **Speed Mode** — Continuous operation at a set speed; flow calibration and fixed-speed runs.
② **Flow Mode** — Continuous conveying at a set flow rate (mL/min).
③ **Sample Dispensing Mode** — Cyclic quantitative dispensing by cycle count / interval / volume per sample.



1 Control Station

Desktop Micro Dosing Station

4 Series of Gear Pumps

MPG · MRA · MRB· MRC Series

3 Control Modes

Speed Mode / Flow Mode / Sample Dispensing Mode

Chemical Batching and Ratio-Based Conveying | Metered Lubrication and Cooling Supply | Precision Metering for Food and Pharmaceuticals | Laboratory and Pilot-Scale Systems | Quantitative Dosing of New-Energy Materials | Automated Production Line Integration

MDC SERIES

WHY MDC DOSING STATION?

Common Lab Pain Points

Manual dropwise dosing, judged by feel — poor batch-to-batch reproducibility

Hard to keep the flow rate stable when dosing in micro volumes

Speed and time logged by hand — no traceability

Cumbersome cleaning on media changeover — high risk of cross-contamination

The Value MDC Delivers

Stepper/servo motors deliver precise speed control — repeatable, quantitative dosing

Set flow rate and volume on the touchscreen — run with a single touch

Programmed dosing plus a communication interface — data can be logged and stored

Quick-change pump head design — one station drives multiple heads, easy to clean

TWO PRODUCT LINES

MDC-S Stepper Version



Cost-Effective Quantitative Dosing Solution

Stepper motor drive — lower cost

Speed adjustment / start-stop control

Ideal for routine lab dropwise addition

MDC-V Servo Version



High-Precision Metering Solution

Servo motor drive — smoother operation

Higher-precision flow control

Ideal for micro-volume precision dispensing

PUMP HEAD COMPATIBILITY

Control Station	MDC-S Stepper (Small Flow Range)	MDC-V Servo (Large Flow Range)
MPG Series	★ Routine dosing (micro-flow quantitative dispensing)	★★ Quantitative dispensing (micro-flow linear conveying and dispensing)
MRA Series	★ Routine dosing (tiny-flow quantitative dispensing)	★★ Quantitative dispensing (tiny-flow linear conveying and dispensing)
MRB Series	★ Low-flow, high-precision (small-flow quantitative dispensing)	★★★ Micro-volume precision metering (small-flow linear conveying and dispensing)
MRC Series	★ Routine dosing (large-flow quantitative dispensing)	★★ Quantitative dispensing (large-flow linear conveying and dispensing)

01

JONSN Manufacturing Quality Guaranteed

Dual optimization of materials and structure
20,000 hours of maintenance-free stable operation

02

ZEISS CMM

Full-dimension precision inspection of core gear components

03

Precision Manufacturing Department

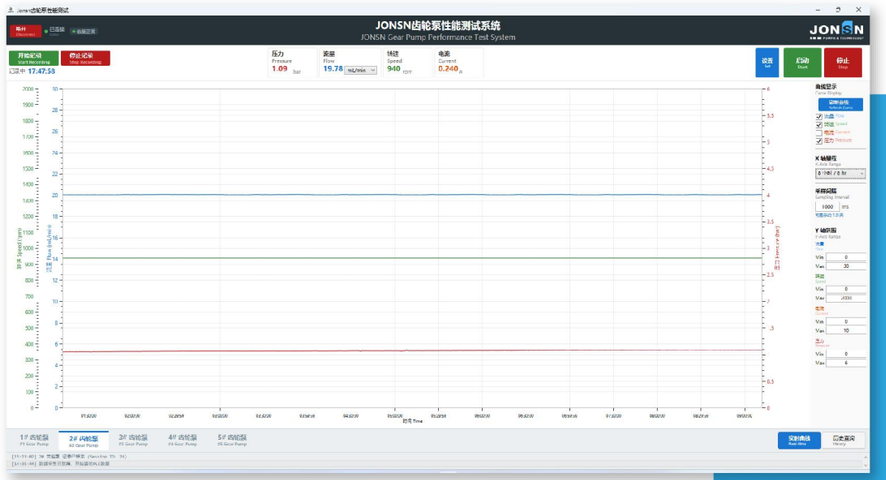
In-house machining and assembly with full-process quality control

04

86.5%

Repeat customer rate, validated in long-term laboratory use

MEASURED CURVE GRAPH

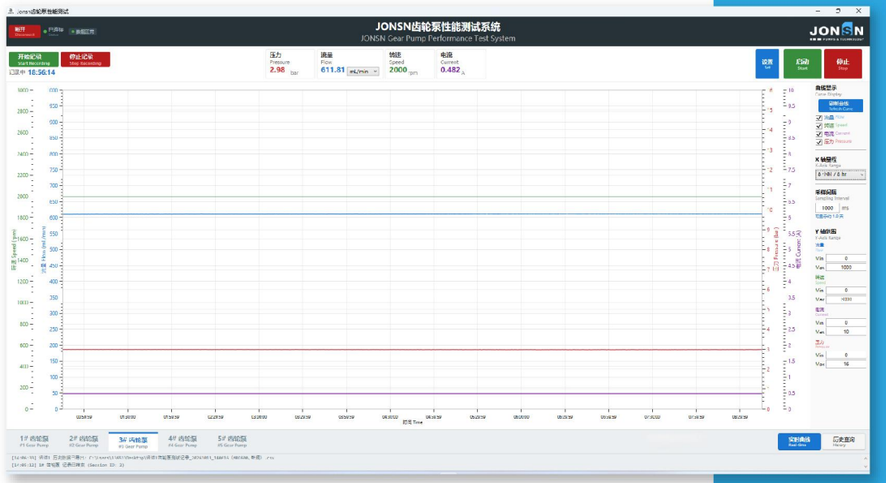


MPGA004

1 bar

200W Servo Motor

8-hour Continuous Test Data



MRA7/13

3 bar

200W Servo Motor

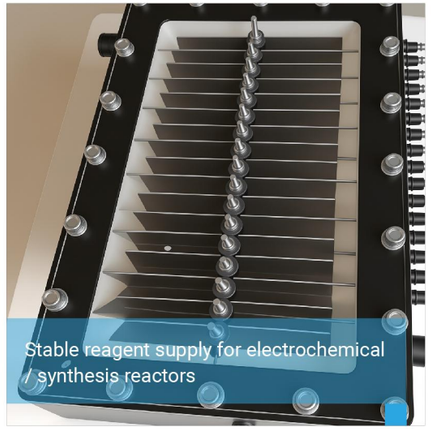
8-hour Continuous Test Data

MODEL CODE EXPLANATION

Example: MDCV02BMRA0 = 200 W Servo Motor · Basic Version · with MRA Pump Head · Standard

MDC	V02	B	MRA	0

Series Code	MDC
Drive Type	S = Closed-loop stepper motor (economy) S57=57-frame stepper motor(economy) S42=42-frame stepper motor(economy) V = Servo motor (high-precision) V01=100 W servo motor (high-precision) V02=200 W servo motor (high-precision)
Control Version	B = Basic (speed adjustment / start-stop) P=Pro (metering programs / RS-485 / foot pedal)
Compatible Pump Head	0 = No pump head (control station only) MPG MRA MRB MRC
Variant Code	0 = Standard EX = Explosion-proof D2 = Dual-channel C = Custom (non-standard)



Stable reagent supply for electrochemical / synthesis reactors



Micro-volume quantitative feeding and sampling at lab and pilot scale



Standard solution preparation for analytical sample pre-treatment



Continuous feeding and catalyst dropwise addition in chemistry labs

TYPICAL APPLICATIONS



Automated dosing for teaching labs and R&D platforms

TECHNICAL SPECIFICATIONS

Item	MDC-S Stepper	MDC-V Servo
Drive Type	Stepper motor	Servo motor
Speed Range	0 – 1500 r/min	0 – 3000 r/min
Flow Rate Range	1mL – 5000 mL/min	1mL – 10000 mL/min
Control Accuracy	≤ ±1 %	≤ ±0.5 %
HMI	Touchscreen	Touchscreen
Communication	Modbus TCP	Modbus RTU/TCP
Compatible Pump Heads	MPG / MRA / MRB / MRC series	MPG / MRA / MRB / MRC series
Power Supply	AC 220V / DC 24V	AC 220V / DC 24V
Dimensions	310×200×240 mm	310×200×240 mm
Weight	≈ 7.38 kg	≈ 7.38 kg



PRECISION IN EVERY DROP

Mdc Series
Desktop Micro Dosing Station

One-Stop Intelligent Dosing
Precision Within Reach

System Accessories

Drive Unit	1
Filter (terminal type)	1
7-inch touchscreen (bare panel)	1
Power cable	1
Motor	1

OPERATING INSTRUCTIONS

The Desktop Micro Dosing Station is a precision quantitative dosing device that pairs a control station with a magnetic gear pump. Set speed, flow, and sample-dispensing parameters on the touchscreen to achieve controlled, repeatable liquid conveying. On power-up, the device enters the main operation screen; tap “System Settings” at the bottom right to open the function menu.

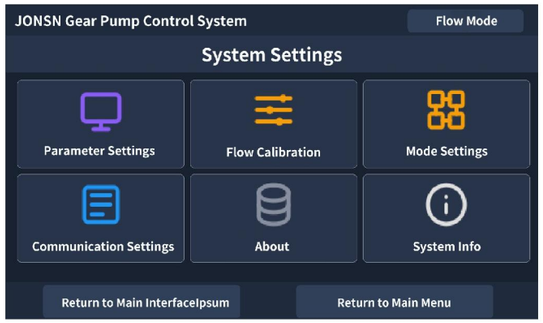
Power-on and Status Recognition

The main operation screen shows four status indicator lights at the bottom left — always check the lights before operating. If the red “Fault / Error” light is on, never force a start; tap “Stop” first to clear the fault and reset.

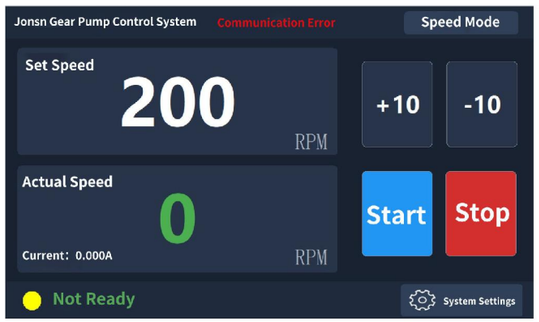
Color	Status Label	Meaning
Yellow	Not Ready	Run conditions not met; do not start
Pink	Ready (s-off)	Standby; ready to run — tap “Start”
Green	Running (s-on)	In operation
Red	Fault / Error	Fault alarm — stop and troubleshoot first

How to use the three modes

The main operation screen has the same layout across all three modes: the left side shows setpoints and status, the right side has “Start / Stop” , and the bottom right is the “System Settings” entry. Switch modes via the main menu first, then enter the target value on the corresponding screen. When the status light turns pink “Ready (s-off)” , tap “Start” ; tap “Stop” to finish.



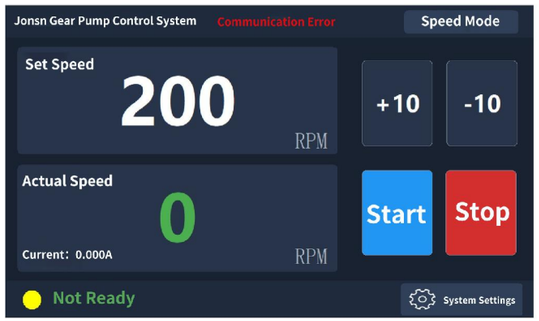
System Settings Main Menu — Mode Switching Entry



01 Speed Mode

Runs continuously at the set speed; suitable for flow calibration and fixed-speed operation.

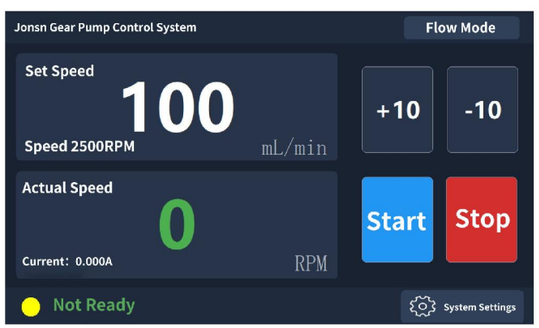
Set Speed: Target speed; fine-tune with +10 / -10
Actual Speed / Current: Real-time motor speed feedback and operating current
Start / Stop: Blue and red buttons control pump start and stop



02 Flow Mode

Converts flow to speed based on the flow calibration coefficient; after starting, conveys continuously at the set flow.

Set Flow: Target flow; fine-tune with +10 / -10. Corresponding speed shown below.
Actual Speed / Current: Real-time speed and operating current converted by the calibration curve
Start / Stop: Continuous operation / stop at the set flow



03 Sample Dispensing Mode

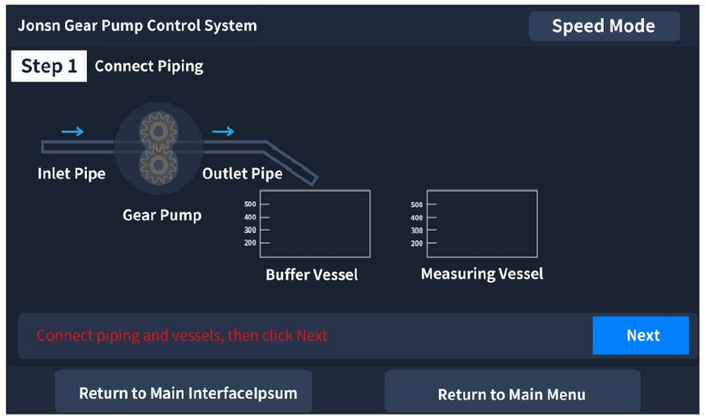
Runs according to set flow, number of dispensing cycles, sample volume, and interval time. Stops when the single-sample volume is reached, then repeats until the set count is completed.

Set Flow: Target flow; corresponding speed shown below
Cycles / Interval: Planned number of dispensing cycles and interval between each
Single-Sample Volume: Target volume per dispense
≈ Duration / Current Count: Estimated total time for all dispensing; real-time count of completed / total cycles

Flow Calibration

After installing a new pump or replacing the pump head, perform flow calibration first to improve metering accuracy. Calibration is done in Speed Mode, establishing the “speed–flow” relationship through several calibration points.

Measured Flow = Meter Reading (mL) ÷ Calibration Time (min) × 60
Example: 50 mL metered in 60 s → 50 ÷ 1 × 60 = 3000 mL/min

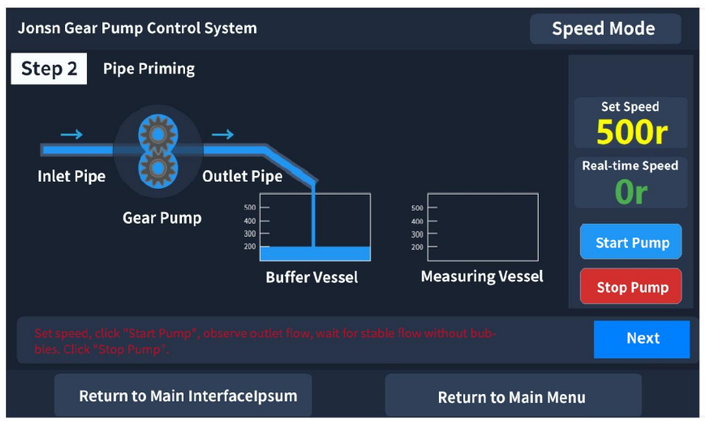


Step 1

Connect the tubing

inlet pipe → gear pump → outlet pipe. The outlet pipe branches to a buffer tank and a metering container; confirm all connections are correct before powering on.

Pre-Start Check: No leakage · Containers in place

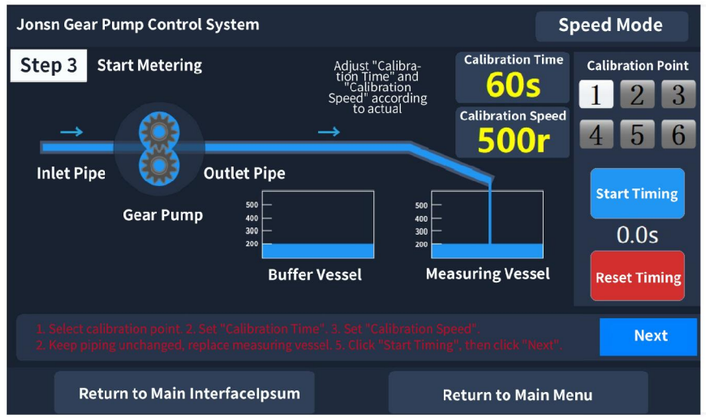


Step 2

Prime the Line

Set the speed (default 500 rpm), then start the pump to purge air bubbles. Stop once the flow is stable and bubble-free.

Critical: Ensure no air bubbles remain in the tubing before dosing.

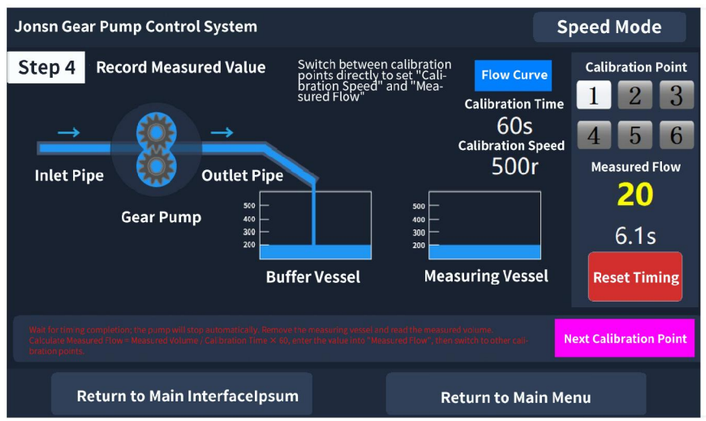


Step 3

Select the calibration points set the time and speed then start the timer.

Select calibration points 1–6, set the calibration time (default 60 s) and calibration speed, switch to the metering container, then tap “Start Timing” .

Calibration Points 1–6 · Default 60 s



Step 4

Wait for the timer to finish then calculate and enter the measured value.

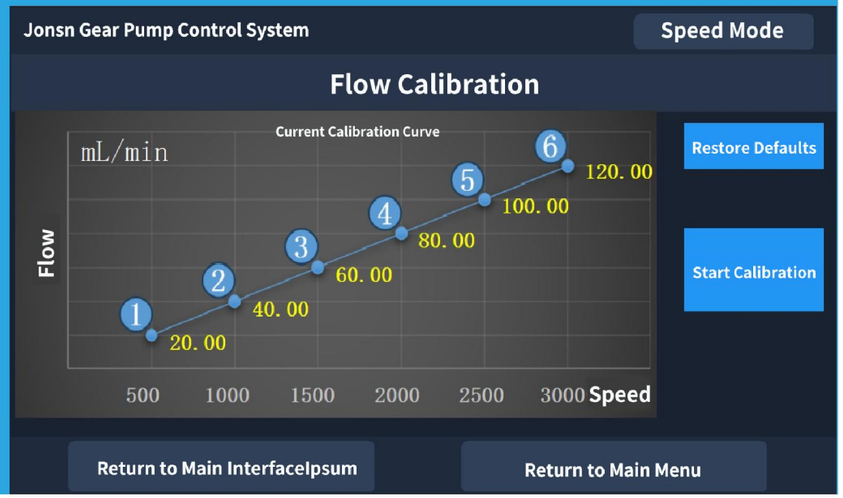
When the timer ends, the pump stops automatically. Read the metered volume, calculate the measured flow using the formula, and enter the value. Then tap “Next Point Calibration” to continue, or tap “End Calibration” to finish.

If more calibration points remain, repeat Step 3
if none, end the calibration.

Calibration curve

Once all calibration points are completed, the interface fits a “speed–flow” calibration curve for use in Flow Mode conversion.

The system stores multiple sets of calibration data. Once the curve is fitted, the gear pump precisely matches the set flow based on that curve. A one-touch restore to the default curve is supported for quick parameter reset.



Important Notes

Before starting, confirm all tubing connections are correct and the containers are bubble-free; otherwise, the pump may run dry or lose metering accuracy.

Before operation, confirm that tubing, power, and communication are normal. If “Not Ready / Fault Error” appears, troubleshoot first — do not force a start.

After replacing the pump head or extended downtime, perform flow calibration again to ensure metering accuracy.

ABOUT JONSN

Concentrate and focus on making every precision gear pump well.

JONSN is a technology-driven company focused on the R&D and manufacturing of precision gear pumps. For years it has specialized in the field of micro-volume fluid transfer. Its core product range covers the MR Series micro magnetic gear pumps and the DP Series precision gear metering pumps: the MR Series uses PEEK engineering-plastic gears with a magnetic coupling drive structure, delivering leak-free, contamination-free, quiet fluid transfer; the DP Series is known for its high-precision metering performance, with stable output and excellent repeatability.

The two product series are positioned against European and American imported brands, offering more competitive quality and cost advantages. They are widely used in industries with stringent fluid-control requirements — chemical processing, pharmaceutical manufacturing, analytical instruments, and new materials — and our customers span more than a dozen fields including semiconductors, hydrogen energy, liquid cooling, and aerospace. Responding to the trend toward smarter laboratories, JONSN launched the MDC Desktop Micro Dosing Station — an all-in-one intelligent dosing solution that integrates a precision pump body, intelligent control, and human-machine interaction, enabling researchers to achieve precise, stable micro-volume dosing without complex setup, and unlocking new possibilities for laboratory automation.

