

N-SERIES CONTROLS



Sumitomo's N-Series control systems bring injection molders the best of both worlds — sophisticated capabilities and ease of use.

It starts with fast access to the most commonly used screens and simple page up/page down access to additional, related data screens. Extensive SPC and QC capabilities are designed to help the molder see and refine the process and monitor and document the quality. Machine optimization capabilities, such as user-friendly ramping programs, assist molders in decreasing cycle times and increasing productivity.

Additionally, Sumitomo maintains a consistent control platform for its all-electric machines, supporting operator confidence and ease of startup for new machine installations. Whether you're micromolding parts weighing 0.1 ounces or less, or large parts up to 75 ounces, you can walk up to an N-Series controller and immediately access the screen and data you need.

An overview of the features of the N-8 and N-9 control systems is provided below. On the pages that follow are screen photos from the N-9 control, with any features specific to the N-9 noted. To see additional screens for either the N-8 or N-9, please consult your Sumitomo Representative.

| FEATURES | N-8 | N-9 |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|
| Eye-level, platen-mounted control panel positioned for easy reading and operation | ▪ | ▪ |
| 12.1-inch, full-color, TFT flat display with touch-screen capability | ▪ | ▪ |
| Fast, one-touch access to the most commonly used screens | ▪ | ▪ |
| Screen-prompted setup assistance and auto-programming of initial molding conditions | ▪ | ▪ |
| Password-protected lockout capabilities | ▪ | ▪ |
| Storage of data on 100,000 shots for downloading | ▪ | ▪ |
| Display of the last 500 shots and various charting capabilities including histograms and dispersion diagrams | ▪ | ▪ |
| For visual trending over time, the capability to store and view molding profiles for the last 1000 shots | ▪ | ▪ |
| Change Log Screen that logs and stores the last 200 changes | ▪ | ▪ |
| 8 parameters (selectable from 20) can be graphically displayed on a single screen | ▪ | ▪ |
| PC-based system with USB port that can be used for print screen function and to download molding process, logging, analysis, and history data | | ▪ |
| Serial port, parallel port and five independent machine status signals (selectable from 24 possible signals) that are available for output | ▪ | ▪ |
| An external storage system for mold setups that uses optional memory cards | ▪ | |
| Convenient data storage capability in the control unit for 200 mold setups | ▪ | ▪ |
| Highly reliable keys that ensure fast, accurate data entry | ▪ | ▪ |
| Metric or English units available by selection | ▪ | ▪ |

SETUP

Main Dialog Ver. XGX02C000A [980kN C360M 36 - 0060] 05/11/24 13:36

Mold open limit Ejector retracted Interval Cooling Delay Hold Filling Plast. Plast.end
 Mold full close Nozzle touch

SET UP STANDBY [@1+ZP]

Mold open/close pos. [0.82]mm Fill time [0.00]sec Purge count [0]shots
 Mold space [409.3]mm Plast.time [23.21]sec Clamp force [36]kN
 Hold end pos. [0.00]mm Screw pos. [0.17]mm Screw Rev. [0]rpm

Resin change Hold pressure Filling Plast.

Screw [36] Nozzle [OPEN] Time [1.00]sec Pres. [5.0]MPa Pos. [5.00]mm Vel. [15.0]mm/sec Pres. [20.0]MPa Pull back Pos. [0.00]mm Back pres. [0.0]MPa Rev. [30]rpm

Mold change [Mold space remote] Clamp force [452]kN Correct [OFF]
 Mold space + α [410.0] + [0.0]mm

Monitor For Remain resin [ON] [15]min Lowered Temp switching time [15]min
 Purge mode [AUTO PURGE] No. of shots [OFF] [5]shots Plast.alarm time [ON] [60.0]sec

SET UP CLAMP INJECTION TEMP. OVERALL ANALYSIS Q'LTY CONT PROD CONT

The straightforward design of the Setup Screen assists in the setup of new resins and molds as well as defining the parameters for the purging process. Auto-programming of initial molding conditions is available on a separate screen. The N-9 screen, shown here, has the added ability for remote setting of mold space and an on/off switch for the Clamp Force Correcting System.

INJECTION

Main Dialog Ver. XGX02C000A [980kN C360M 36 - 0060] 05/11/24 13:37

Mold open limit Ejector retracted Interval Cooling Delay Hold Filling Plast. Plast.end
 Mold full close Nozzle touch

INJECTION IJ.OPT INJ.DETAIL [@1+ZP]

Fill start pos. [1.86]mm Peak INJ. pres. ALL [0.0]MPa Cycle time [23.6]sec
 V-P switch pos. [1.86]mm Hold end pos. [0.00]mm Fill time [0.00]sec Screw rev. [0]rpm
 Cushion pos. [0.00]mm Screw pos. [0.17]mm Plast time [23.21]sec Screw rev. load [- 0.3]%
 Peak Pres. Surv. [0 / 10]shots Remaining for correction [0]shots SK cont./ Density [OFF]

Hold pres. Vel. [25.0]mm/s No. of stages [2V-2P] Filling time [1.00]sec Filling

Time [OFF] [10.00]sec Pres. [0.0] [85.0]MPa V-P 1st stg Pos. [15.00]mm Vel. [50.0] [0.0]mm/s Pres. [100.0] [0.0]MPa

WP switch [POSITION] Plast.mode [SHARP] Pull back [0.00]mm Pos. [15.00] [16.00]mm Plast. [1.00]mm
 Cooling [3.0]sec Synchron [NORMAL] Back pres. [25.0]MPa Rev. [80] [30]rpm Remove [OFF] Delay [OFF]

Interval [5.0]sec

SET UP CLAMP INJECTION TEMP. OVERALL ANALYSIS Q'LTY CONT PROD CONT

The Injection Screen allows a 2 velocity/2 hold pressure basic profile or a 5 velocity/4 hold pressure profile for applications where multi-step injection is preferred or required. Sharp, standard or soft screw speed acceleration can also be selected on this screen. Digital readout of screw position is provided to 25 microns (.001 inch). The N-9 screen, shown here, adds the ability to set the pressure for 1st stage V-P switchover.

CLAMP

Main Dialog Ver. XGX02C000A [980KN C360M 36-0060] 05/11/24 13:36

Mold open limit Ejector retracted Interval Cooling Delay Hold Filling Plast. Plast.end
 Mold full close Nozzle touch

CLAMP UP CLAMP:OPT 99MD PROTECT [@1+ZP]

Mold open/close pos. [0.82]mm Mold opening time [4.56]sec Cycle time [23.6]sec
 Ejector pos. [0.0]mm Mold closing time [0.00]sec Total Ejection time [0.61]sec

Open/Close speed **STANDARD** Chg. paras. **3 STAGE** Mold close

| | | | | | | | |
|-----------|-------|-------|------|-------|------|-------|----------------|
| Mold open | Limit | 2nd | 1st | 1st | 2nd | Clamp | Low pres.clamp |
| Pos | 350.0 | 180.0 | 10.0 | 220.0 | 60.0 | 2.00 | 10.0 |
| Vel | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 20 |

Ejector Mode **OFF** Interval 5.0 sec Ej.count 0 cnt

| | | | |
|---------|----------|-----|----|
| Retract | Position | 0.0 | mm |
| | Velocity | 0.0 | % |
| | Pressure | 0 | % |

| | | | | |
|-----|-------|----------|-----|----|
| 1st | Eject | Position | 0.0 | mm |
| | | Velocity | 0.0 | % |
| | | Pressure | 0 | % |

SET UP **CLAMP** INJECTION TEMP. OVERALL ANALYSIS Q'LTY CONT PROD CONT

The Clamp Screen displays settings for velocities, positions and pressures for mold open/close, and ejector retract and eject. High precision settings include: low pressure mold protection to 0.1mm; and mold open/close positions to 0.01mm. For precision of actual operating values, refer to values in yellow at left. Multi-stage mold open/close speed control is settable on a percentage basis.

OVERALL

Main Dialog Ver. XGX02C000A [980KN C360M 36-0060] 05/11/24 13:38

Mold open limit Ejector retracted Interval Cooling Delay Hold Filling Plast. Plast.end
 Mold full close Nozzle touch

OVERALL [@1+ZP]

| | | | | | | | | | | | | | | |
|-----------|-----|-----|------------|------|-----|---------|------|-----|----------|-------|-----|-----------------|------|----|
| Peak INJ. | 0.0 | MPa | V-P Pos. | 1.86 | mm | Cushion | 0.00 | mm | Hold end | 0.00 | mm | Mold close/open | 0.82 | mm |
| pres. ALL | 0.0 | MPa | Cycle time | 23.6 | sec | Filling | 0.00 | sec | Plast. | 23.21 | sec | Screw | 0.17 | mm |

Temperature Actual Melt. 15(15b) 5(16a) 4 3 2 1 Water 22.0 °C
 Process temp. 200.0 200.0 200.0 190.0 180.0 40.0

2V-2P Vel. 25.0 mm/sec Filling time 1.00 sec Delay 0.0 sec

| | | | | | | | | |
|------------|-------|-----|-------|-----|-------|-------|-----|--------|
| Hold Pres. | Time | OFF | 10.00 | sec | Pos. | 15.00 | OFF | mm |
| | Pres. | 0.0 | 35.0 | MPa | Vel. | 50.0 | 0.0 | mm/sec |
| | | | | | Pres. | 100.0 | 0.0 | MPa |

VP switch **POSITION** Pull back 0.00 mm 25.0 mm/sec

| | | | |
|------------|--------|-------------|-----|
| 1st | Plast. | Plast.delay | 0.0 |
| Pos. | 15.00 | 16.00 | mm |
| Back pres. | 10.0 | 0.0 | MPa |
| Rev. | 80 | 30 | rpm |

Cooling 3.0 sec Plast.mode **SHARP** Pull back 1.00 mm Remove + 25.0 mm/s

Interval 5.0 sec Synchron **NORMAL**

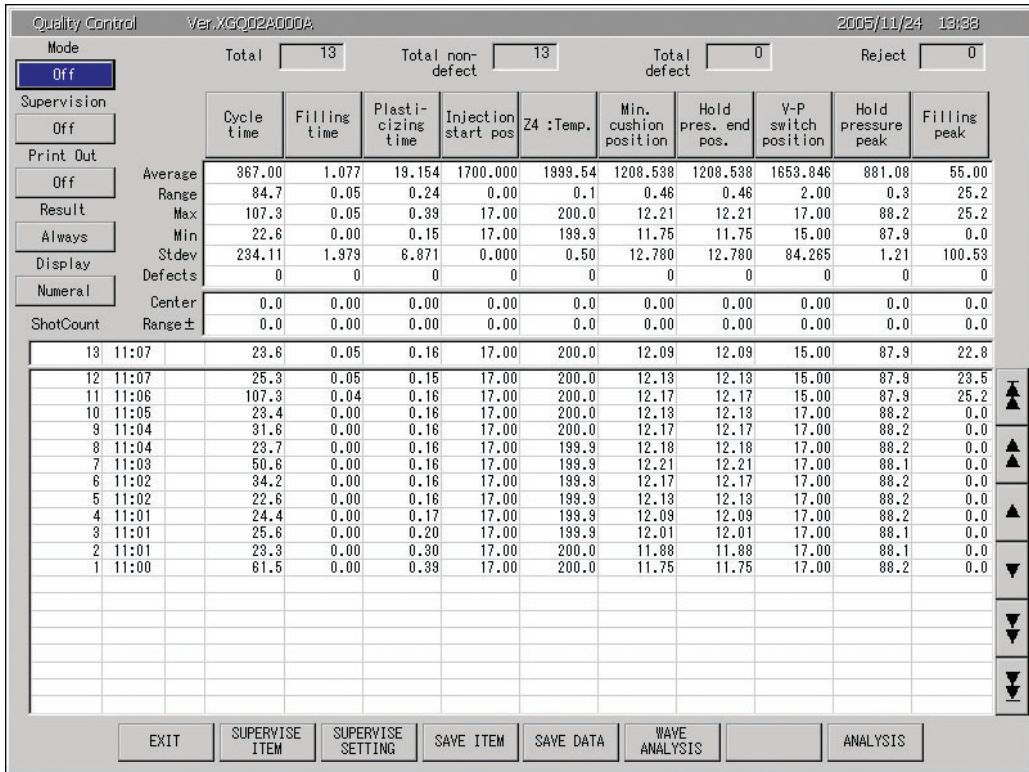
| | | | | | | | |
|-----------|-------|-------|------|-------|------|-------|----------------|
| Mold open | Limit | 2nd | 1st | 1st | 2nd | Clamp | Low pres.clamp |
| Pos. | 350.0 | 180.0 | 10.0 | 220.0 | 60.0 | 2.00 | 10.0 |
| Vel. | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 | 20 |

Chg. paras. **3 STAGE** Mold close

SET UP **OVERALL** INJECTION TEMP. ANALYSIS Q'LTY CONT PROD CONT

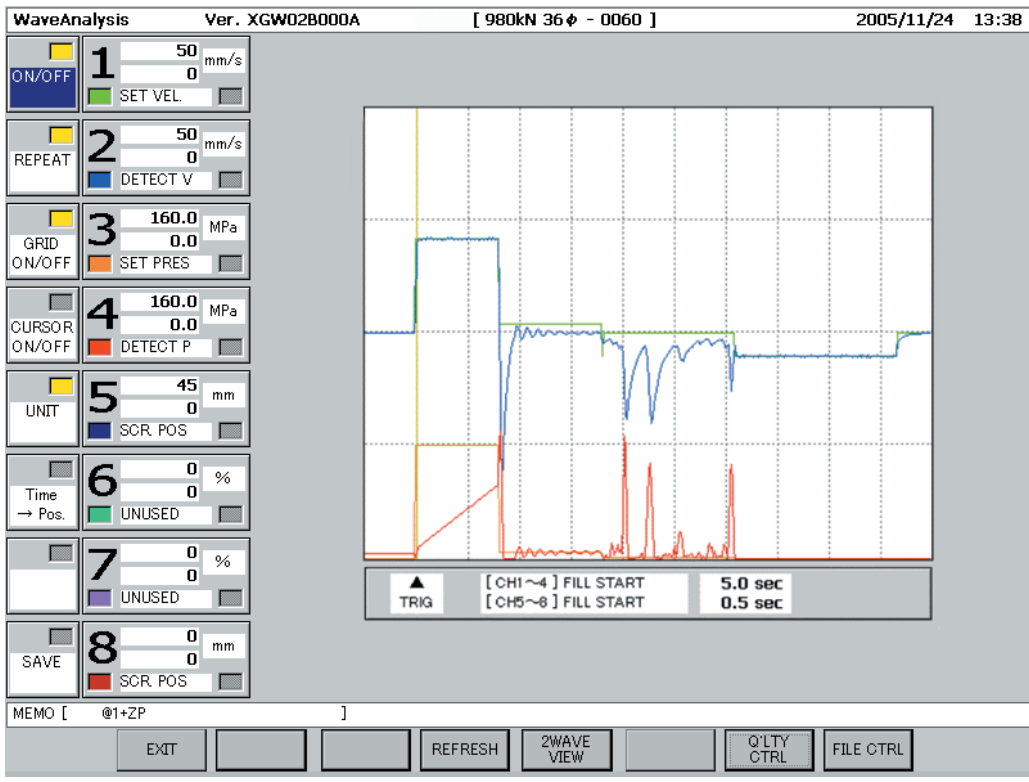
The Overall Screen provides a convenient, single-screen overview where all the main settings are combined and displayed on one screen. Data from the temperature, injection and clamp screens are available at a glance, allowing the operator to set and change process critical conditions without switching to other screens. Because of its convenience, many operators choose to run the machine from this single screen. The Overall Screen also permits quick setup of similar applications.

QUALITY



The Quality Control Screen displays 10 parameters (selectable from 20). Average values for the last 500 shots are displayed across the top; actual values can be viewed using the scroll bar. Using the Display button, actual values can be viewed in a graph. QC data logging can be performed for 20 parameters (selectable from 50). Logged information can also be selected for display in a dispersion diagram, histogram, or correlation data format for analysis.

ANALYSIS



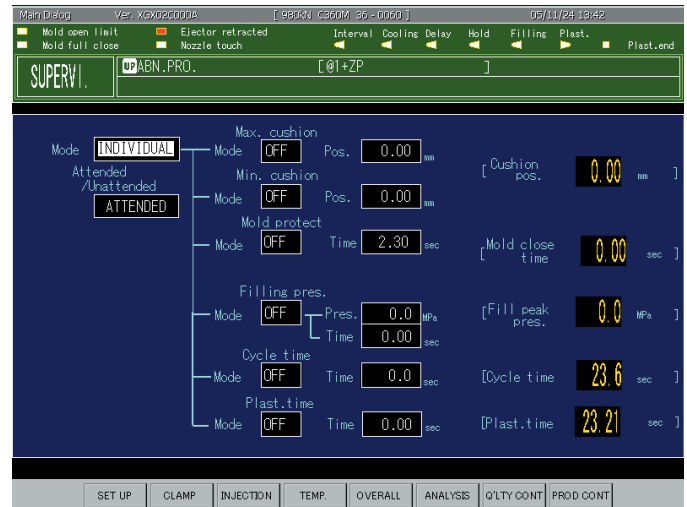
The Analysis Screen can be used to analyze initial molding conditions and changes made in process parameters. It can also be used to assist in Quality Control. Up to 8 parameters can be selected (from a list of 20 possible parameters) to be graphically displayed on a single screen. Using the 2-Wave button at the bottom, the second-level Analysis Screen can display two separate graphs.



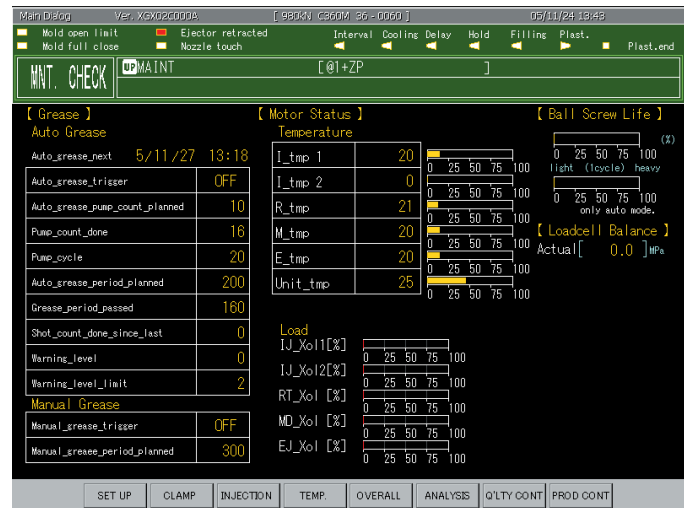
STANDBY: In addition to the clamp and injection settings found on the Setup Screen, the N-9's Standby Screen displays settings for clamp force revision and adjustment, plasticizing fill speed, manual plasticizing back pressure, and velocity and pressure percentages for mold open/close and ejection.



STOCKER: This 2nd-level Production Control Screen provides a quick overview of the production status including the time remaining. The main Production Control screen replaces the Stoker Counter readings with on/off switches for machine stop and end warning, plus a setting for the shot count to trigger the warning.



SUPERVISION: The Supervision Screen tracks the min./max. cushion position, fill pressure, plasticizing time, overall cycle time and the mold close time (for mold protection) to provide for machine shutdown in either attended or unattended operation.



MAINTENANCE CHECK: This 2nd-level Maintenance Screen on the N-9 displays data and settings for the auto grease system, temperature and percentage load readings for the motors, and other pertinent maintenance data such as the ball screw life percentage.

On the cover: The Temperature Screen provides easy temperature setup and monitoring for multiple barrel zones to ensure optimum melt conditions.



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