nuGate® Product Catalog
Pneumatic activeGate® Control

Stabilize your Process

CAT-16-0019_EN-Rev03  06/2017
Product Description

nuGate® Hot Runner System
Proportionally controlled Pneumatically Actuated Valve Gate system that provides individual pin position and velocity control.

1) IMM Interface
2) Position Sensor and PPCV Junction boxes
3) Pneumatic Valve Assembly with Air Filters
4) nuGate® Controller
5) Pendant
6) IMM Interface Tester
7) eShop® Software

Operation
♦ nuGate® is a state of the art servo valve driven Pneumatic Valve-Gate with controlled open/ close and motion/position profile.
♦ Variable stroke length and speed of each valve pin.
♦ Individual pin position, repeatable to within +/- 0.5 mm

Areas of Application:
♦ Clean room environment.
♦ Optimizing balance in multi-cavity and family molding.
♦ Optimizing surface quality of sequential or cascade injection molding.

NOTE
nuGate® functionality requires an interface on the customer’s Injection Molding Machine according to Synventive specifications.
nuGate® is available for use with three Pneumatic Actuators displayed on this page. Each Actuator has a Position Sensor that sends a signal to the Controller providing closed loop position control.

1. **PB4008**
   - **Function Specification**
     - Pin Size: 2 mm, 3 mm
     - Max Pressure: 13.5 bar
     - Needle Stroke: 8 mm
     - Min Air Flow: 2.5 dm$^3$/s per cylinder
     - Rec’d Pressure for nuGate® Application: 8 Bar

2. **PB8016**
   - **Function Specification**
     - Pin Size: 6 mm, 8 mm
     - Max Pressure: 13.5 Bar
     - Needle Stroke: 16 mm
     - Min Air Flow: 5 dm$^3$/s per cylinder
     - Rec’d Pressure for nuGate® Application: 8 Bar

3. **PNC4512B**
   - **Function Specification**
     - Pin Size: 3.8 mm
     - Pressure: 14 bar
     - Needle Stroke: 13.5 mm
     - Min Air Flow: 2.5 dm$^3$/s per cylinder
     - Rec’d Pressure for nuGate® Application: 8 Bar

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
nuGate® Hot Runner System
Junction Boxes

1. Combo Junction Box (NU100-4000-CB-01)

Each nuGate® Controller uses one PPCV Junction Box and one Position Sensor Junction Box. One for incoming information and the second for outgoing information. They are used in pairs. The top box is used as a connection to the Position Sensor; the bottom box is used for the valve output. The boxes are protected with a shroud that encompasses the cabling.

2. Junction Box Shrouds

Shrouds are provided to protect the smaller cables connected to the back of the Junction Boxes. Shrouds are available in two sizes depending on the number of zones used. Long (335 mm, shown), and short (235 mm).

<table>
<thead>
<tr>
<th>Combo Box</th>
<th>Short Shroud</th>
<th>Long Shroud</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length “L”</td>
<td>235 mm</td>
<td>335 mm</td>
</tr>
<tr>
<td>Width</td>
<td>245 mm</td>
<td>245 mm</td>
</tr>
<tr>
<td>Height</td>
<td>165 mm</td>
<td>165 mm</td>
</tr>
</tbody>
</table>
IMM Controller Interface Kit

IMM Interface Kit (ELAIMMCK04)
The IMM Interface Kit is used to establish a connection between the Injection Molding Machine (IMM) and the Control Unit.

1. Face Plate Assembly
The Face Plate assembly is installed on the operator side of the injection molding machine. It represents the interface between the IMM and Control Unit.

a) Status LED Yellow indicate IMM mode
b) Interface Mode Switch
c) Status LED Green indicates nuGate® mode
d) Interface Connector

The Face Plate assembly is supplied as part of the IMM Interface Kit ELAIMMCK04.

NOTE
The IMM Interface Kit ELAIMMCK04 MUST be installed on the IMM BEFORE the mold trial with nuGate®. Customer is responsible for coordinating this installation with electrical and/or mechanical IMM manufacturer.

2. IMM Relay Box
The IMM interface connector is a self-contained opto-isolated circuit that is interfaced to the IMM signals required to properly sequence the actuators and handle all of the safety related interlocks. All signals work on 24V.
The IMM Relay Box is mounted inside the IMM cabinet. The signals from the IMM are wired directly to the provided terminal strip.

3. Face Plate to Relay Box Cable
The provided DB26 male-to-male cable is used to connect the Face Plate to the Relay Box.
Standard length: 1.5 m

4. “Controller Injection Machine Interface Wiring Instructions”
SVC-16-0023_EN-Rev##

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
1. nuGate® Control Unit
The nuGate® Control Unit (NU100-1000-NC-01) can be used with up to 8 control zones.

Technical Data

<table>
<thead>
<tr>
<th>Power</th>
<th>100 / 240 VAC 1 Phase / N / PE (+/- 10 %) 50/60 Hz 2.0 - 1.0 A max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>0 – 50 °C</td>
</tr>
<tr>
<td>Humidity</td>
<td>&lt;95% No condensation</td>
</tr>
<tr>
<td>Form Factor</td>
<td>2u Open Rack Enclosure</td>
</tr>
<tr>
<td>Dimension</td>
<td>90 h x 462 d x 483 w</td>
</tr>
</tbody>
</table>

2. nuGate® Control Rear Views
Stationary screws are not intended to support the Controller.

3. Controller Ventilation Front View
In order to ensure sufficient ventilation of the Controller please ensure a minimum installation space according to the illustration in view three.
Ensure that mold release spray and residue from plastic grinding do not come in proximity of Controller.

4. Controller Connection
Clearance Side View

NOTE
Reference nuGate® User Documentation for detailed information regarding the Controller status indicators, I/O ports and user Interface signals.

Customer supplied laptop required for initial setup and any process adjustments or changes.
1. Pendant ELACHP01

The Pendant enables users to start the system from a cold start, open pins for purging, actuate pins manually and enable or disable any of the zones.

The Pendant cable is 4.0 m

2. Pendant with Control Unit

This graphic depicts the Pendant connected to a nuGate® Control Unit.
nuGate® Controller Cable Set

The nuGate® Controller Cable set is used to establish a connection between the nuGate® Controller and other nuGate® components. The cable connectors are coded with symbols that assist in the identification of cables thereby facilitating correct connectivity. The symbols are printed at each end of the cable. Each cable set is designed for use one Controller.

Cables Sets

All cables are available in 4.5 m (standard) and 7.6 m lengths (optional).

Length 4.5 m   NU100-1000-CBK-45
Length 7.6 m   NU100-1000-CBK-76

1. PPCV Cable

This cable is used to provide power to the PPCVs.

Connections
PPCV Junction Box
nuGate® Controller

2. Position Sensor Cable

The Position Sensor cable is the conduit through which the Actuators position is communicated to the Controller.

Connections
Position Sensor Junction Box
nuGate® Controller

3. IMM Connector Cable

The IMM cable establishes a connection with the Injection Molding Machine

Connections
Injection Molding Machine Interface
nuGate® Controller

Note
Cables NOT sold individually.
## Connectivity

### Additional Cables

1. **USB Cable (Q364-ND)**

   The USB cable connects the customer supplied laptop to the nuGate® Controller. One USB cable is required to support up to 24 zones.

   Standard Cable Length: 4.5 m

2. **Ethernet Cable (AE9969-ND)**

   10/100 Ethernet cable is used to establish a connection between a customer supplied laptop (with eShop® Software) and the customer’s network. One Ethernet cable is required for each Controller. Ethernet Hub supplied by customer as required.

   Standard Length: 1.5 m

3. **Daisy Chain Cable (CHD44MM-2.5)**

   Connection cable to establish a connection for up to three nuGate® Controllers.

   Standard Length 0.7 m

   A network daisy chain scheme is used to link multiple nuGate® Controllers.

   A total of three nuGate® Control Units can be linked together via this interface. The Pendant is plugged into the front panel of any Controller in the stack.

   The Pendant’s signals are shared by all eight systems via the rear network daisy chain connection on the back of the control units.
IMM Interface Tester (ELAIMMTK01)

The IMM Interface Tester Kit is used to check the Injection Molding Machine Interface prior to the installation of the nuGate® System. These signals must be tested prior to Mold Trials.

IMM Interface Tester

The IMM Interface Tester is used to confirm that the wiring of the implemented interface is correct and all signals are working. Contact Synventive Customer Service for information regarding the tester.

1) Emergency Stop
2) Restart
3) Safety Gates
4) Mold Closed
5) Temperature Set Point
6) Screw Forward 1
7) Screw Forward 2 for two shot and co-injection applications
8) Screw Forward 3 for three shot applications
9) Error Signal Output
10) Injection Inhibit Output
11) Set Mode Switch Up
12) LED Test Switch DOWN

Connections

nuGate® IMM Interface Tester
nuGate® IMM Connector Cable
nuGate® IMM Face Plate Connector

Face Plate Assembly

Interface between IMM and nuGate® Control Unit.

Illustrations simplified, schematically drawn and not to scale. All dimensions in mm.
nuGate® Controller Kit

A Controller Kit part number is used on Synventive Sales Orders. The part number for the 8-zone Controller is NU100-1000-NCK-45-01, and includes:

1) Pendant (ELACHP01)
2) 8-zone Controller (NU100-1000-NC-01)
3) 4.5 m Cable Set (NU100-1000-CBK-45)
4) USB Cable (Q364-ND)
5) Ethernet Cable (AE9969-ND)

The part number for an 8-zone Controller that includes an alternative 7.6 m Long Cable Set (NU100-1000-CBK-76) is (NU100-1000-NCK-76-01).

Controllers are available in 8-zone increments. Any system having more than 8 zones, will require multiple Controllers. A hub (customer supplied) is required for more than one Controller. Standard kit part numbers have been set up accordingly. A 24-zone Controller Kit part number (NU100-1000-NCK-45-03) includes:

1) Qty 1 - Pendant (ELACHP01)
2) Qty 3 - 8-Zone nuGate® Controllers (NU100-1000-NC-01)
3) Qty 3 - 4.5 m Cable Sets (NU100-1000-CBK-45)
4) Qty 1 - USB Cable (Q364-ND)
5) Qty 3 - Ethernet Cables (AE9969-ND)
6) Qty 2 - Daisy Chain Cables (CHD44MM - 2.5)