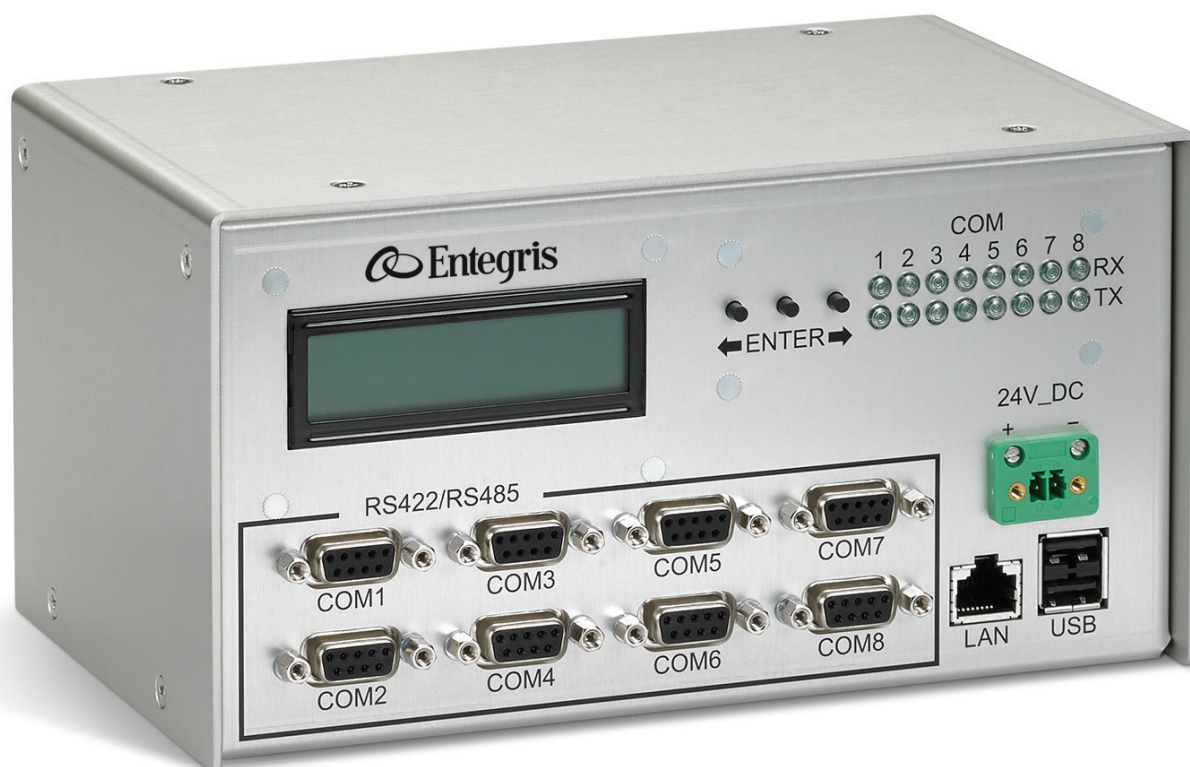


# IntelliGen<sup>®</sup> NCS Network Communication System

*Installation and use manual*





## TABLE OF CONTENTS

<b>Introduction .....</b>	<b>1</b>	<b>Appendix A .....</b>	<b>18</b>
Liability Ownership .....	1	Operating Flowchart .....	18
General Manual Notes .....	1	<b>Appendix B .....</b>	<b>19</b>
<b>Safety .....</b>	<b>2</b>	Http Methods for Dispense Information and Job Information on IntelliGen Mini .....	19
Handling .....	2	<b>Appendix C .....</b>	<b>20</b>
<b>System Overview .....</b>	<b>2</b>	General Terminology for SVIDS .....	20
Description .....	2	Manufacturing Information .....	20
Specifications .....	2	<b>Limited Warranty .....</b>	<b>22</b>
Dimensions .....	3	<b>For More Information .....</b>	<b>22</b>
IntelliGen NCS Content .....	4	<b>Terms and Conditions of Sale .....</b>	<b>22</b>
System Connections .....	5		
Backlit Character LCD .....	6		
Optional Settings .....	7		
Inner Switch .....	8		
<b>Installation .....</b>	<b>9</b>		
Required Equipment and Supplies .....	9		
<b>System Operation .....</b>	<b>10</b>		
Connections to the IntelliGen NCS .....	10		
End User License Agreement .....	11		
Network Settings .....	12		
User and Administrator Actions .....	13		
Running MMI Software .....	13		

## INTRODUCTION

Entegris, Inc. provides this product manual for your information.

Prior to using this manual, the user should verify with the product manufacturer that this is the most recent copy of the product manual.

This manual is owned by Entegris, Inc., an affiliated company for its suppliers and the title shall not pass to the user as a result of the use of the manual.

### LIABILITY OWNERSHIP

**NOTE:** Read the following carefully before continuing.

In no event shall Entegris or its suppliers be liable for any damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information or any pecuniary loss) arising out of the use of or inability to use this manual, even if Entegris has been advised of the possibility of such damages.

### GENERAL MANUAL NOTES

#### Changes to the Manual

The manufacturer reserves the right to make changes to the product covered in this manual to improve performance, reliability or manufacturability.


Although every effort has been made to ensure accuracy of the information contained in this manual, the manufacturer assumes no responsibility for inadvertent errors. Contents of the manual are subject to change without notice.

### INTENDED AUDIENCE

Users must also be familiar with installing and using software on a computer running the Windows® operating system.

### INTENDED USE AND SCOPE

This manual is intended to be used by experienced technicians for the planning, installation and operation of the described system. This manual contains basic safety information for the installation and use of the system. This manual covers this system only.

 **WARNING:** Mishandling products exposed to a hazardous substance may result in death or serious injury. Always follow the recommendations and guidelines provided by the chemical suppliers and manufacturers. Always appropriate personal protection equipment as required for the chemicals in use. Refer to the Material Safety Data Sheets (MSDS) for each chemical.

**SAFETY**

Entegris, Inc., requests that the manufacturer is notified by the user of equipment installation, usage and status, and provide appropriate contact information for safety alerts and information regarding the system. Please register usage with an Entegris, Inc., service center.

Please contact the manufacturer with any emergency safety and health concerns.

**⚠ DANGER:** Failure to follow these safety instructions may lead to fire, electric shock, chemical exposure, or other injuries, or damage to property. Read all safety information before usage.

**⚠ WARNING:** Safety is designed into every product. When followed, these minimum guidelines provide an acceptable level of safety for operating and maintaining the system, but are not a substitute for determining internal safety procedures.

Failure to comply with the safety precautions or warnings indicated in this manual violates the safety standards that form a part of the intended use of this equipment. The manufacturer assumes no liability for the user's failure to comply with these requirements.

**⚠ WARNING:** Use of controls, adjustments or procedures other than those specified in this manual without consulting a competent safety professional may result in exposure to potential hazards. Always follow established industrial safety practices when operating this equipment.

**⚠ CAUTION:** End of life statement. Decommissioning of the system, or any part of the system shall be in a manner that is consistent with appropriate regulations and guidelines.

**⚠ WARNING:** Chemicals are not supplied with this equipment. Refer to the chemical suppliers' MSDS for specific health and safety information.

**⚠ CAUTION:** Only technically qualified personnel should install the equipment.

**⚠ CAUTION:** DO NOT use this equipment in any manner not specified by the manufacturer. If the equipment is used in a manner other than specified in this document, the safety protections may be impaired.

**⚠ CAUTION:** EQUIPMENT DAMAGE HAZARD! Turn off power before connecting or disconnecting any cable to the device, or damage may occur.

**⚠ CAUTION:** Shock hazards can exist even when equipment is properly installed.

**⚠ CAUTION:** Do not loosen or remove any panel or cover unless specifically directed to do so by an Entegris service engineer.

**HANDLING**

**⚠ CAUTION:** The Network Communication System is a sensitive electronic device. Rough handling may cause damage. Do not drop!



**SYSTEM OVERVIEW**

**DESCRIPTION**

The Network Communication System (NCS) allows dispense systems to be connected to a Local Area Network (LAN). Once connected to a network, the systems can be accessed by one of more computers on the network, from inside or outside the factory (depending on the LAN firewall setting).

Use of the Network Communication System provides a rapid method to access, program, monitor and update multiple systems.

**SYSTEM SPECIFICATIONS**

Serial COM ports	(8) RS-422 ports
LAN access to network	RJ-45 10/100 Ethernet Connection supporting DHCP or static configuration
USB accessory	Extension USB (2) USB for future use
Electrical	Power range: 21.6 ~ 26.4 V Current rating: 600 mA
Dimensions	202.4 mm x 107.2 mm x 146.2 mm
Controls	Backlit 2 x 16 character LCD (3) Operating button (16) Activity LEDs

<b>Environment</b>	Indoor use only
	Altitude below 2000 m (2187.22 yd)
	Ambient temperature 5 – 40°C (41 – 104°F)
	Maximum relative humidity 80% for temperatures up to 31°C (88°F) decreasing linearly to 50% relative humidity at 40°C (104°F)
	Transient overvoltages category II
	Pollution degree 2

## DIMENSIONS

### Front View

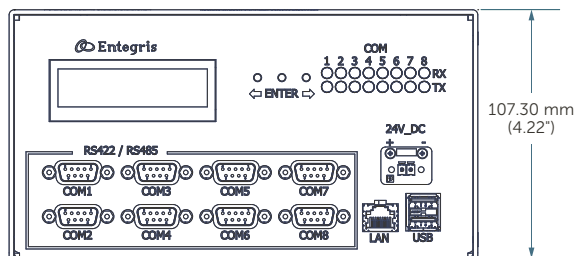
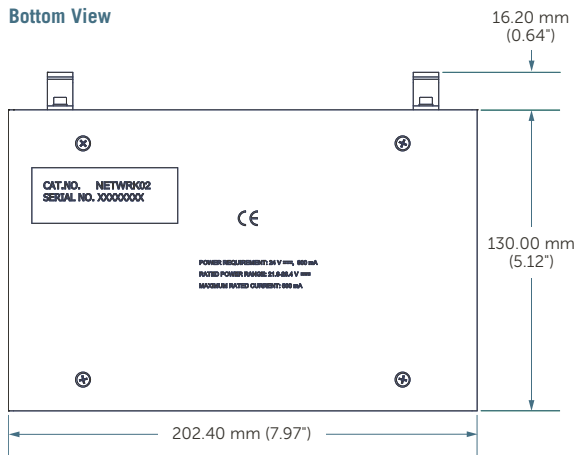
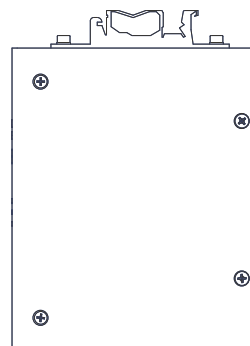


Figure 1. Dimensions

### Bottom View



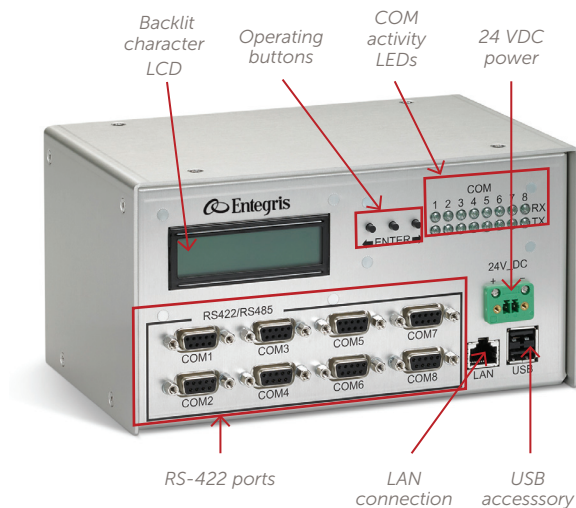
### Side View



## INTELLIGEN NCS CONTENTS

The IntelliGen NCS ships with the following items:

- IntelliGen NCS, Network Communication System (NETWRK02)



**NOTE: The following items are optional. Please purchase separately with NETWRK02**

- Optional: AC adapter cable for IntelliGen NCS (P/N NETWRK2SP01)



*AC power adapter cable (option)  
Input: AC100~240 V 50~60 Hz 1.62A  
Output: DC24V 2.7A*

- Optional: RS422 extension cable (3 m) for IntelliGen NCS (P/N NETWRK2SP02)
- Optional: DC power cable for IntelliGen NCS (P/N NETWRK2SP01)

*Figure 2. IntelliGen NCS contents*

## SYSTEM CONNECTIONS

### Pinout

Table 1. Pinout connections; 24 VDC power

Pin	Signal name
+	DC24V
-	GND

Table 1. Pinout connections; RS-422 ports (8 ports)

Pin	Signal name
1	ISO_GND
2	RS422_RX- (1-8)
3	RS422_TX+ (1-8)
4	ISO_GND
5	ISO_GND
6	ISO_GND
7	RS422_RX+ (1-8)
8	RS422_TX- (1-8)
9	ISO_GND

Table 1. Pinout connections; LAN connection

Pin	Signal name
1	TXD+
2	TXD-
3	RXD+
4	—
5	—
6	RXD-
7	—
8	—

Table 1. Pinout connections; USB accessory (2 ports)

Pin	Signal name
1	VBS
2	D- (1-2)
3	D+ (1-2)
4	GND



**BACKLIT CHARACTER LCD**

Table 2. Displayed contents on the LCD

Number	Displayed	Description
1	IntelliGen NSC	System version
2	IP Address	IP address
3	MAC ADDR	MAC address
4	Version	Version menu
5	Base Release	Base program version
6	sserver	Sserver program version
7	xserver	Xserver program version
8	Web server	Web server program version
9	LCD	LCD program version
10	Status	Status menu
11	Knl	Kernel version, disk space
12	xserver	Xserver status
13	Web server	Web server status
14	sserver	Sserver status
15	COM status	COM status menu
16	COM 1-8	Each COM status
17	Config	Configuration menu
18	Restart	Restart system
19	Halt	Halt system
20	Reset to DHCP	Reset to DHCP

## OPTIONAL SETTINGS

If necessary, open the cover and modify the following settings.

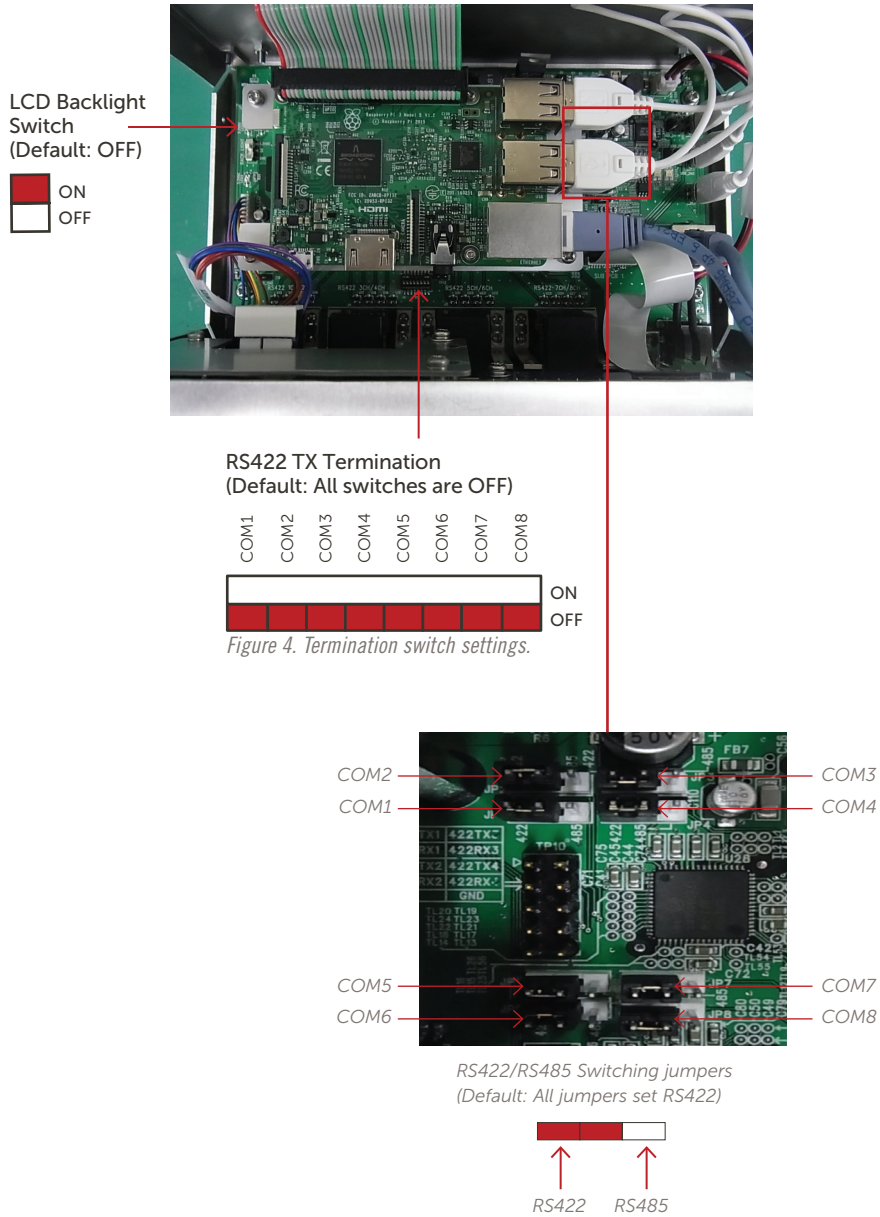


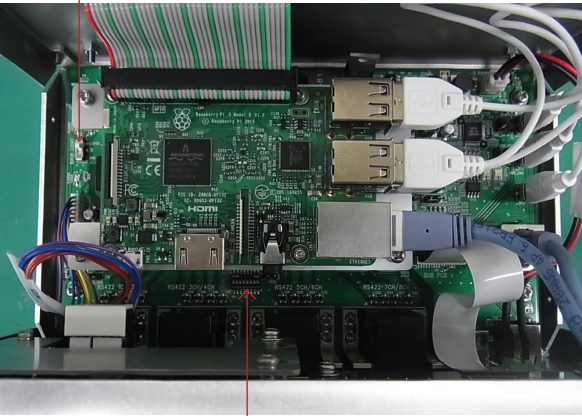
Figure 3. Termination switch settings

INNER SWITCH

LCD Backlight Switch

ON

OFF



RS422 TX Termination  
(Default: All switches are OFF)

COM1	COM2	COM3	COM4	COM5	COM6	COM7	COM8	
								ON
								OFF

Figure 4. Inner switch settings

## INSTALLATION

### REQUIRED EQUIPMENT AND SUPPLIES

Installation requires RS-422 extension cable for IntelliGen NCS (P/N NETWRK2SP02 or equivalent) to connect individual system units to the IntelliGen NCS.

**NOTE: Always use the shortest cables for communication purposes.**

#### Step 1. (Optional): Install IntelliGen NCS

1. Mount the IntelliGen NCS to mounting DIN rail by DIN rail bracket.

#### Step 2. Connect Wiring

1. Connect each device using RS422 cables.
2. Connect green connector of AC adapter cable to power supply connector labeled 24V\_DC.

**NOTE: Please purchase the "AC adapter cable for IntelliGen NCS" (P/N NETWRK2SP01 ) or "DC power cable for IntelliGen NCS" (P/N NETWRK2SP03 ).**

3. Connect plug of "AC adapter cable for IntelliGen NCS" (P/N NETWRK2SP01 ) to outlet (AC 100-240V).

4. OR Connect cables of "DC power cable for IntelliGen NCS" (P/N NETWRK02SP03 ) open end to your system DC 24 volt supply.

**NOTE: IntelliGen NCS should be initialized and available, typically in 30 seconds.**

5. Connect a standard CAT-5 or later RJ-45 network cable between the IntelliGen NCS to the factory LAN. The LEDs on the connector will light indicating LAN connection and activity.

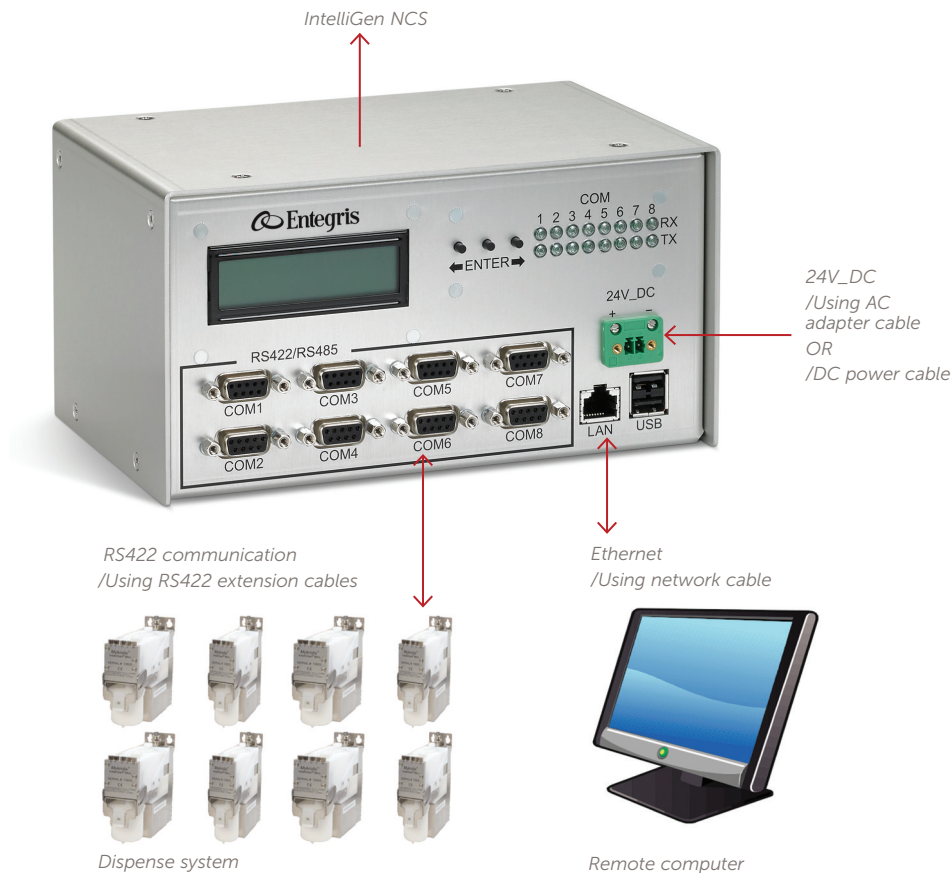


Figure 5. Required equipment

## SYSTEM OPERATION

This section covers the main tasks of installing and using the system.

### CONNECTING TO THE INTELLIGEN NCS

1. Open the browser on your remote computer.
2. Enter the IP Address into the browser's address bar.

The IP Address is the one shown on the backlit character LCD on the IntelliGen NCS.

**NOTE:** Long push decrement button ( ) when other item is shown or after power up, the LCD displays the IP address. The LCD contents are shown below in this order after power up.

**NOTE:** The default configuration of the IntelliGen NCS uses DHCP address resolution. If DHCP is not supported in your network, consult your IT department to get the static address assigned for each IntelliGen NCS .

The address show on the following are just examples. The address will be different from the one you need to put into the IntelliGen NCS.

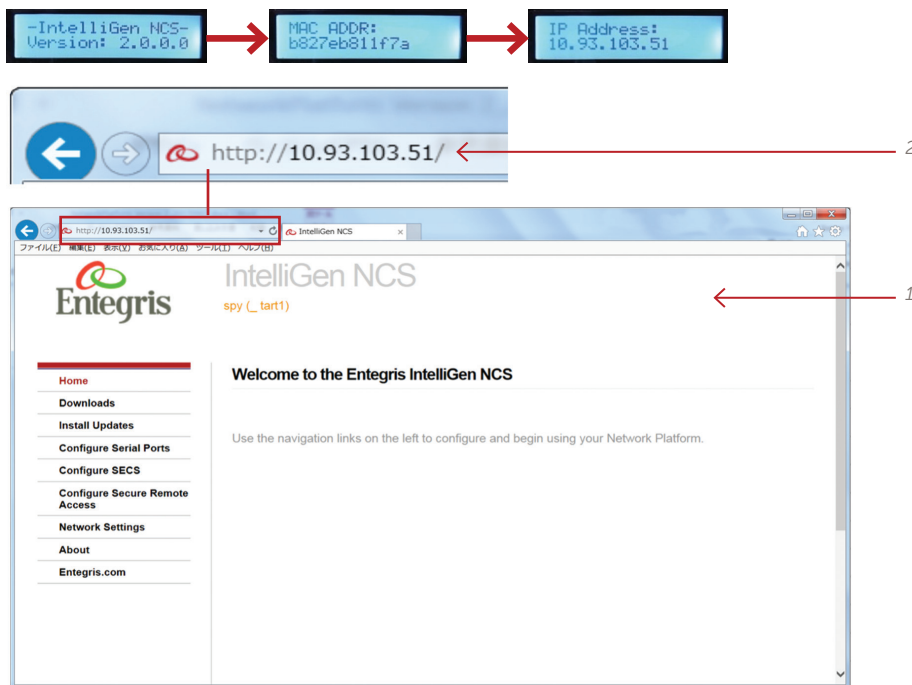


Figure 6. IP address location

## END USER LICENSE AGREEMENT

1. Click on the Entegris logo. The first time you connect to the IntelliGen NCS with your computer, the End User License Agreement will appear.
2. Read the end user license agreement, and select "Yes" to continue. The message will not appear again until you install upgrades in the future.

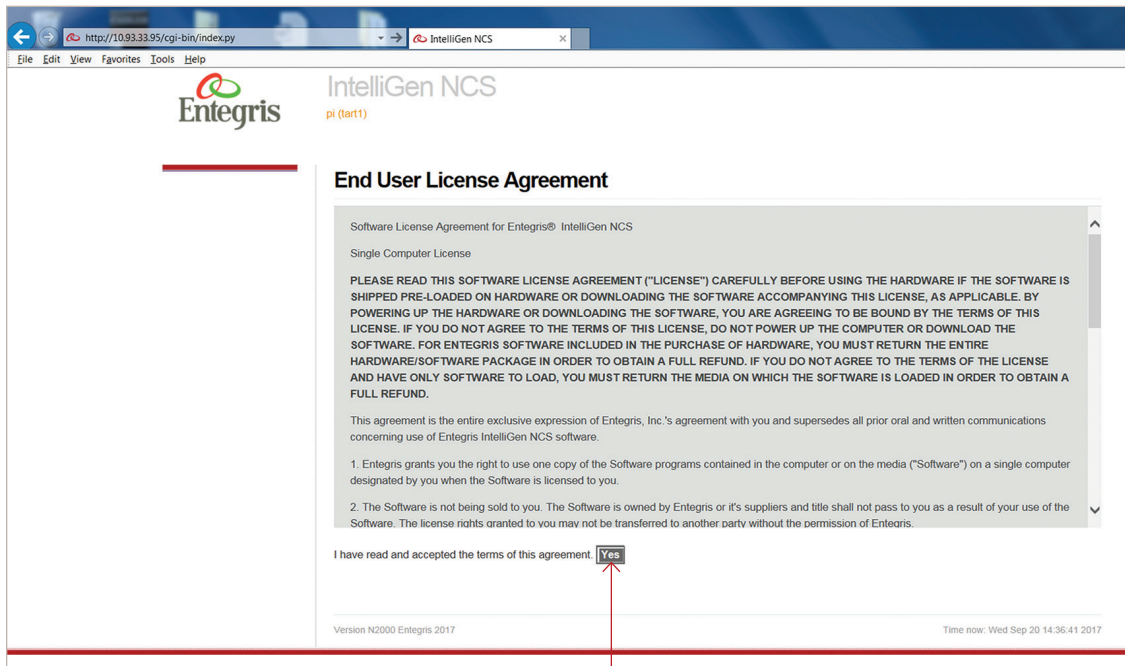


Figure 7. License agreement

## NETWORK SETTINGS

1. Click "Network Settings."

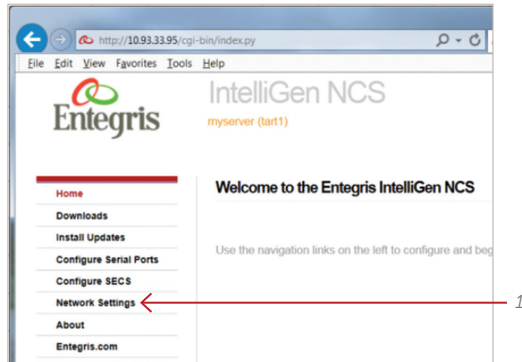


Figure 8. Network settings

2. Consult your IT department for network configuration and advice. The default DHCP works automatically in most networks but you may have additional settings and static IP assigned. Many times they will require or ask for the unique MAC address which is available on the LCD.

3. Enter your hostname, select static or DHCP (automatic) and click "Apply."

If you have a static IP addressed assigned by default, you can configure it here.

4. The default port is a logical TCP/IP connection used for accessing Entegris devices connected to your IntelliGen NCS. The default value (8888) should be fine unless you have a specific need to change it. Depending on firewall and routing issues, you may need to provide this number to your IT department.

**NOTE: Because the network settings of the IntelliGen NCS are potentially changing you may lose your connection and have to enter the new IP address or name again in the browser.**

**The default port is 8888 and should be left untouched unless you are certain you are using an alternate port number.**

5. Click "Apply" to take the values affected in the IntelliGen NCS.

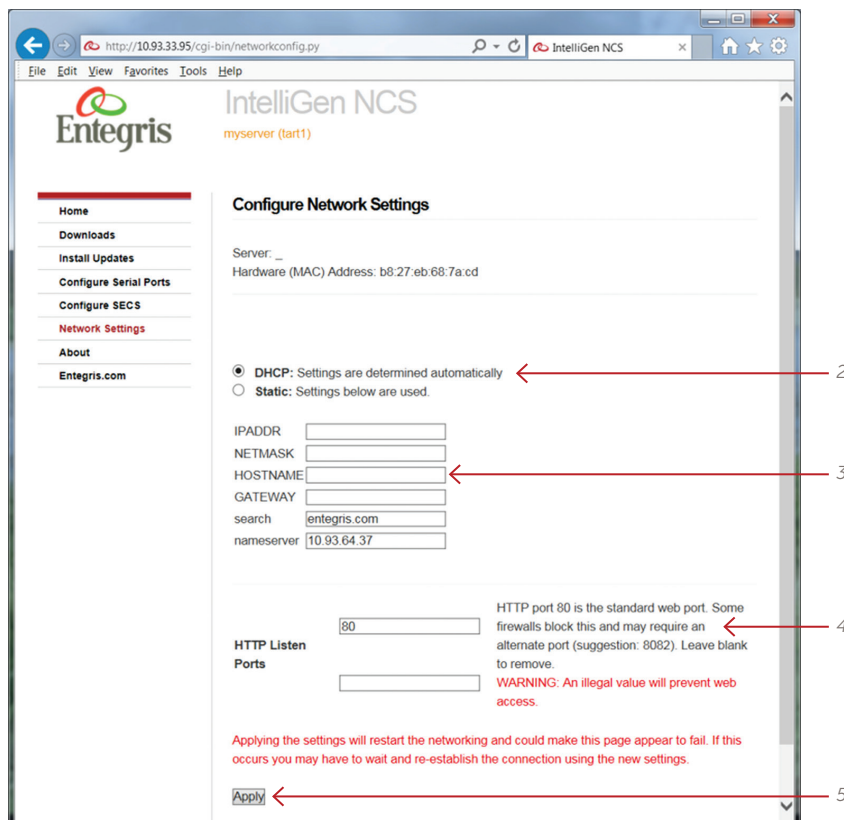


Figure 9. Setting up the network



## USER AND ADMINISTRATOR ACTIONS

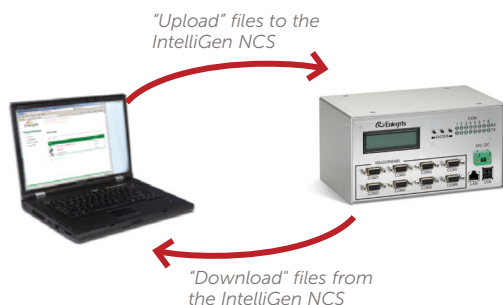
Typical tasks performed with the IntelliGen NCS include:

- User downloads an MMI from the IntelliGen NCS. See *After you have connected your computer to the network through the IntelliGen NCS software, run the appropriate MMI software for your dispense system* on this page.
- Connecting to a dispense system and running the MMI software to program or control the dispense system. See *How to run MMI Software* on page 14.
- Administrator uploads MMI or documentation to the IntelliGen NCS or upgrades IntelliGen NCS. See *Installing Updates and Uploading Files* on page 15.

### Uploading and Downloading Files

We use the industry software standard terms "Upload" and "Download" in this manual to describe the process of sending files to the IntelliGen NCS or copying files from the IntelliGen NCS, as explained below:

- Download: Obtain copies of software, files, and manuals from the IntelliGen NCS using the "Downloads" function to download (place copies of) files to your networked computer. See *After you have connected your computer to the network through the IntelliGen NCS software, run the appropriate MMI software for your dispense system* on this page.
- Upload: Place copies of software, files, and manuals from your networked computer to the IntelliGen NCS using the "Install Updates" function to "upload" data to the IntelliGen NCS. Placing copies of files such as MMI software on the IntelliGen NCS can allow easy access to the MMI software from any networked computer. See *Installing Updates and Uploading Files* on page 15.



## RUNNING MMI SOFTWARE

After you have connected your computer to the network through the IntelliGen NCS software, run the appropriate MMI software for your dispense system. Obtaining a copy of MMI software once you have connected your computer to the network through the IntelliGen NCS software, you can run MMI software to control or program an individual device. MMI software is provided with compatible Entegris devices and all MMI software functions are detailed in your device's installation and use manual. If you do not have a copy of the MMI software, you can get a copy:

- From the "Download" page on the IntelliGen NCS interface if you have previously uploaded one.

To obtain a copy through the "Downloads" screen:

1. Click "Downloads".
2. From the "File" menu, select an MMI and press "Run" for operation or "Save" to save a copy to your computer. You can use the "Install Updates" to add .exe and .pdf files to be downloaded as needed.

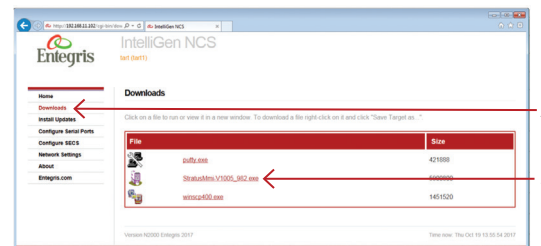


Figure 10. Download MMI software



## How to Run MMI Software

1. Open the MMI.
2. You can enter the IntelliGen NCS name or IP address in the "Server" field.
3. Select the COM port.
4. Then you can scan for pumps on that port or enter the address of the pump you wish to access.
5. Select a pump to open.
6. Click "Connect" to start the MMI software.

### NOTE: Network Cautions:

Once connected to a dispense system, note the following precautions:

Other people could potentially be accessing the same dispense system.

The amount of data transferred through a serial COM port is limited. When multiple MMI windows are open to the Realtime display or downloading dispense profiles, the response may be slow and show gaps in Realtime display.

7. If you use old MMI, click "Add New" and follow step 2-4 above, then click "Add".
8. Select the item and click "Open" to start MMI.

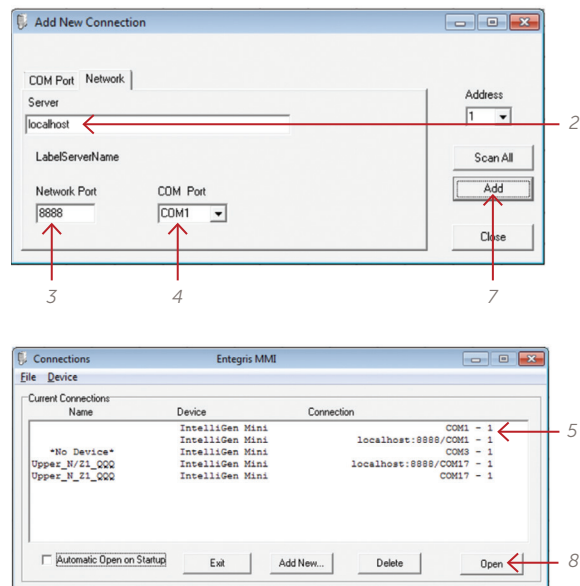


Figure 12. Making the connection with old MMI software

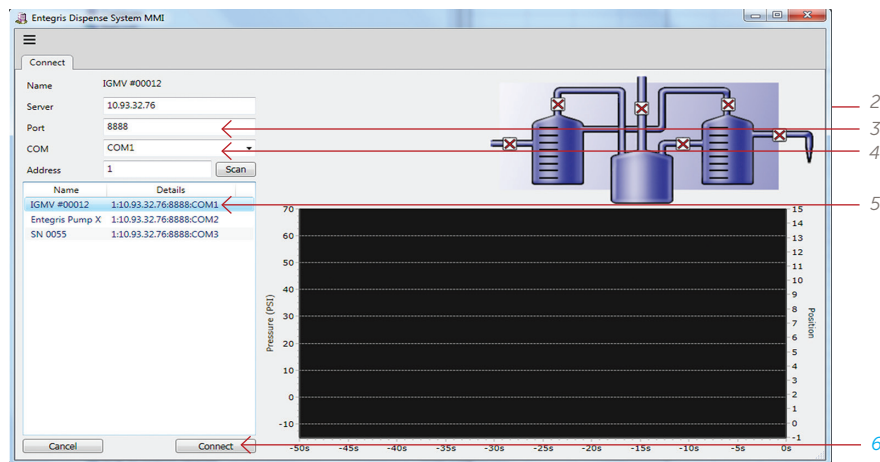


Figure 11. Making the connection with new MMI software

## Install Updates and Uploading Files

This option will upgrade the IntelliGen NCS firmware and can also be used to install versions of the MMI, PDF documentation, and zip files onto the IntelliGen NCS to make these files available to anyone using the IntelliGen.

**NOTE: Current version does not support deleting MMI and PDF files.**

1. Select "Install Updates"
2. Press "Browse" to locate the file and find the ENTEGRIS file extension to upload from the menu.
3. Press "Install".

**NOTE: When updating software, it is recommended that system units be at idle.**

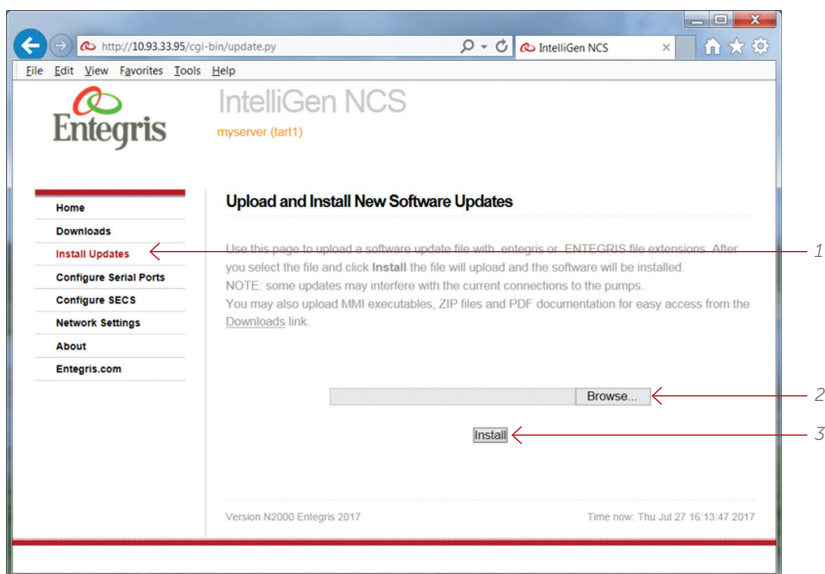


Figure 13. Installing software updates

## Configure Serial Ports

1. Select "Configure Serial Ports."
2. Put your access port number into "Internet Port."  
Default is 8888, but consult your IT department and choose an appropriate value.
3. Select the appropriate Baud Rate to communicate with the pump connected to the COM port.
4. Leave "Direction" to "OUTPUT to Pumps" if it is connected to the the pump interface.

If you wish to redirect specific COM port to another COM port internally, select the COM port you wish to redirect.

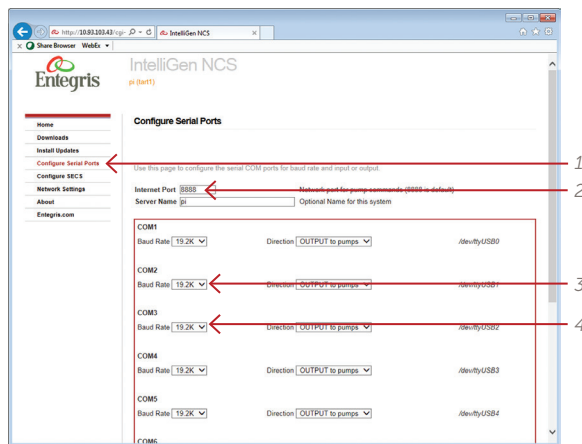


Figure 14. Accessing serial ports and setting baud rates

## Configure SECS

1. Select "Configure SECS" from the menu.
2. This is the port used by the SECS HSMS server and must be different from the port assigned to the Serial Server. The default is 5000.
3. Enter the SECS Device ID. The default is 255.
4. Press "Apply".



Figure 15. Accessing SECS screen

## About Screen

The About screen displays the Entegris Network Communication System release version, the serial server (COM ports) version, system and software information.

1. Select "About" from the menu.

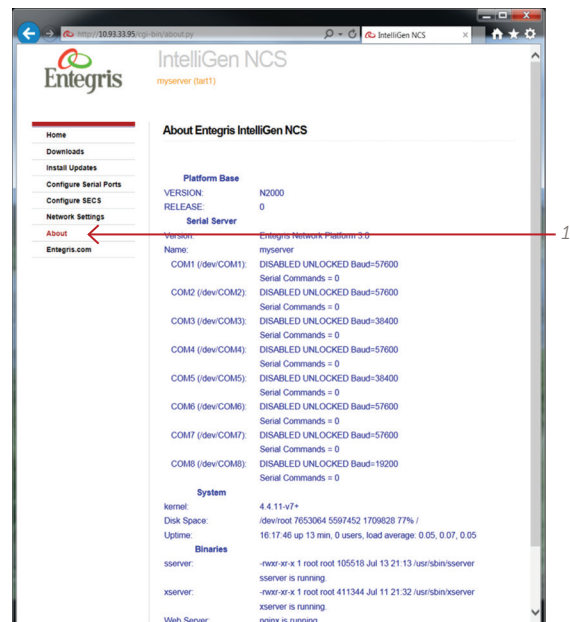


Figure 16. Locating the "About" screen

## Entegris Web Page

This page provides link to Entegris.

- 1 Select "Entegris.com" from the menu.

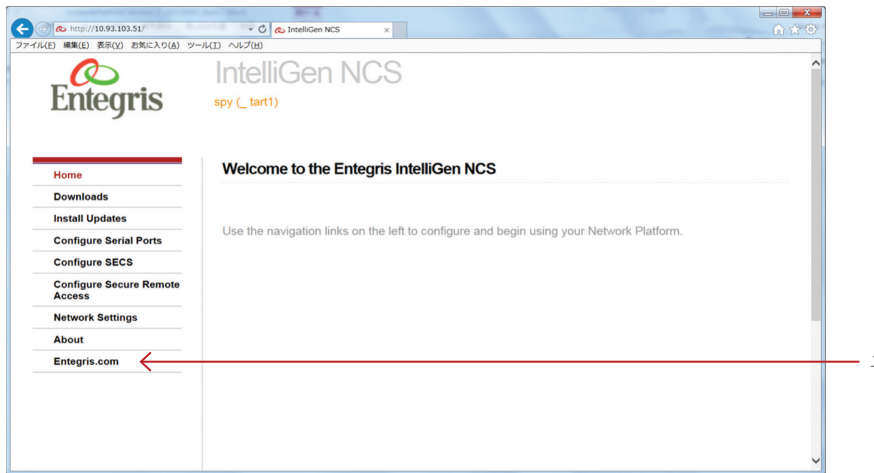


Figure 17. Locating the "About" screen

Link to Entegris will be shown.

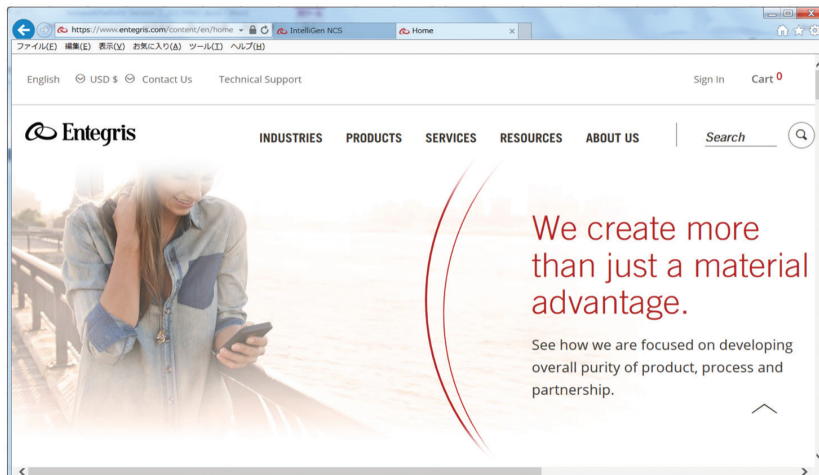
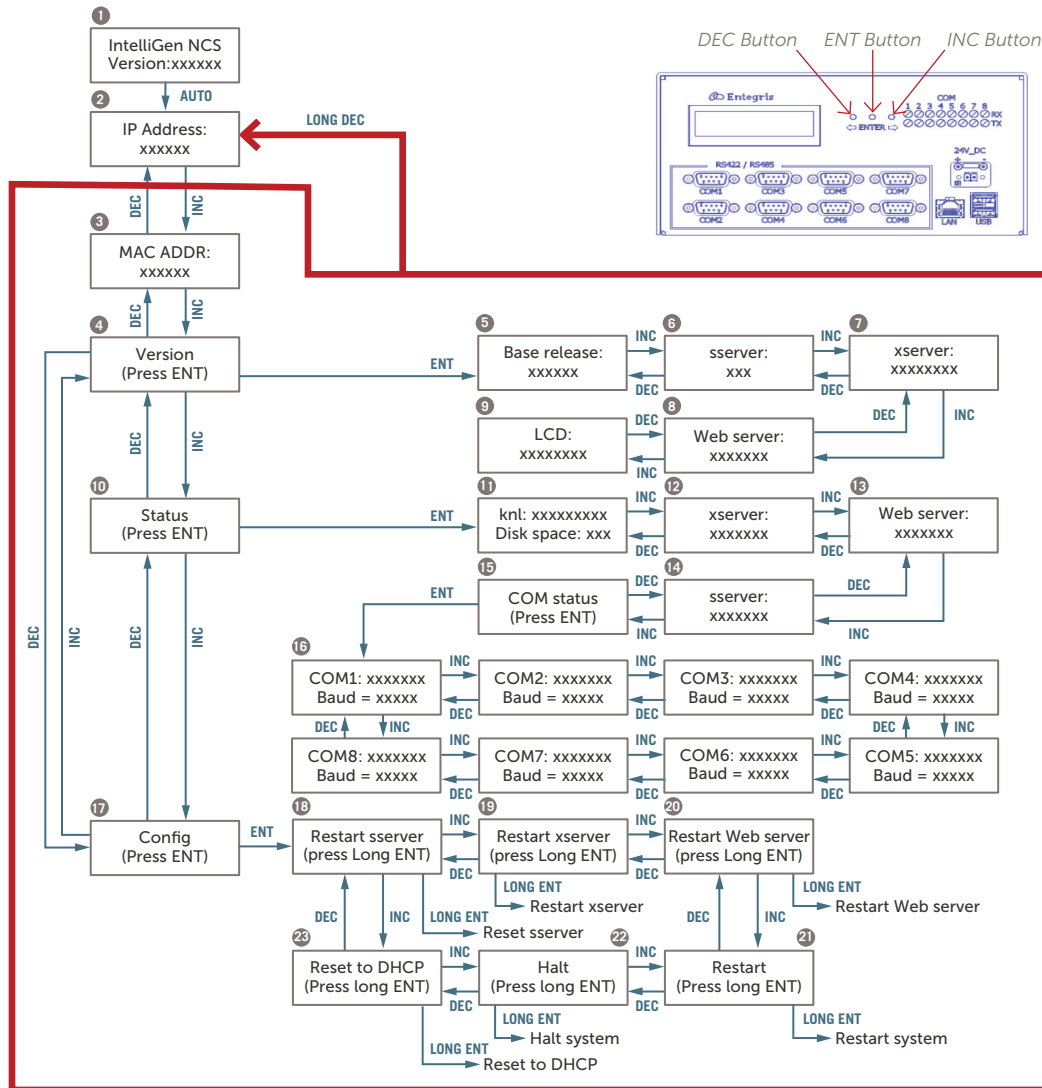


Figure 18. Entegris.com screen

## APPENDIX A

## OPERATING FLOWCHART

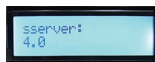


## Example

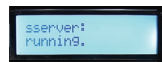
## 2 IP Address



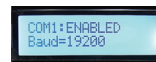
## 6 Sserver Version



## 12 Xserver Status



## 16 COM Status



## APPENDIX B

### HTTP METHODS FOR DISPENSE INFORMATION AND JOB INFORMATION ON INTELLIGEN MINI

HTTP POST or GET methods although GET method is preferred. The following URL-encoded variables are used with each to identify a specific pump (the default value is shown in braces):

COM= [1]  
ADDRESS= [1]

In the following examples HOST is the hostname or IP address of the NP querying.

#### **job\_info.py**

##### **Description**

This method is used to set the JobInfo in the pump for the next dispense. A descriptive string (31 characters plus null terminator) can be specified and a 16 bit unsigned integer SlotID number. This information is held in the pump until the next dispense and then attached to the profile information for that dispense and cleared. It must be set before each dispense.

##### **Additional Variable**

JOB-INFO= ["None"]  
SLOT-ID= [0]

##### **Example**

*http://HOST/cgi-bin/jobinfo.py?COM=2&JOB\_INFO=Wafer%20Info%20String&SLOT\_ID=1234*

#### **profile\_info.py**

##### **Description**

This method queries the pump for the profile information of the most recent dispense profile for the user profile (0) or dispense confirmation profile (256). This information includes JobInfo and Slot ID as well as the RecipeRSQ value (recipe=RecipeRSQ/256 and DispenseConfirmation=RecipeRSQmod256).

##### **Additional Variable**

PROFILE-NUM= [0]

##### **Example**

*'http://bil-pumplab/cgi-bin/profile\_info.py?COM=2*

##### **Returns**

ProfileNum = 0  
Cycle = 10924  
Size = 6052  
  
Interval = 5  
Traces = 7  
OutletOpen = 1  
OutletClosed = 202  
RecipeRSQ = 356  
VentTime = 500  
Trigger = 40  
ReferenceCycle = 6138  
ReferenceProfile = 1  
JobInfo = "Wafer Info String"  
SlotID = 1234

## APPENDIX C

---

### GENERAL TERMINOLOGY FOR SVIDS

#### Pump Timeout

If a pump times out, it will not respond to subsequent inquiries from SVIDs for 10 seconds (the pump will reply with an abort response until 10 seconds have elapsed). After 10 seconds, the pump will again attempt to respond to any inquiry.

#### Command Timeout

If the pump does not respond to an SVID inquiry in 1 second, the system determines that is a command time-out event.

#### Invalid SVIDs

An invalid SVID will return an empty list from the pump.

#### COM Port and Address

An SVID includes the COM Port and Address for a given pump. A single S1F3 message (SECS/GEM SVID inquiry), uses the COM Port and Address of the first SVID in the list. To make inquiries to multiple pumps, send separate S1F3 messages for each pump. Only one pump can be inquired in an SVID send. Contact Entegris Technical Support for the correct SVID list for your pump or device.

### MANUFACTURING INFORMATION

#### System Relocation Notice

If a CE marked system that corresponds to this technical manual is moved from the original designated country of installation to another country, please contact Entegris, Inc.

#### Technical Support

For technical support, contact Entegris at +1 800 394-4084.

For product information, quote request, etc, visit [www.entegris.com](http://www.entegris.com) and send us your request through "Contact Us" page.





#### LIMITED WARRANTY

Entegris' products are subject to the Entegris, Inc. General Limited Warranty. To view and print this information, visit [entegris.com](http://entegris.com) and select the [Legal & Trademark Notices](#) link in the footer. Entegris does not warrant any failure in the case of customers using unapproved foreign components.

#### FOR MORE INFORMATION

Please call your Regional Customer Service Center today to learn what Entegris can do for you. Visit [entegris.com](http://entegris.com) and select the [Contact Us](#) link to find the customer service center nearest you.

#### TERMS AND CONDITIONS OF SALE

All purchases are subject to Entegris' Terms and Conditions of Sale. To view and print this information, visit [entegris.com](http://entegris.com) and select the [Terms & Conditions](#) link in the footer.



#### Corporate Headquarters

129 Concord Road  
Billerica, MA 01821  
USA

#### Customer Service

Tel +1 952 556 4181  
Fax +1 952 556 8022  
Toll Free 800 394 4083

Entegris®, the Entegris Rings Design®, and other product names are trademarks of Entegris, Inc. as listed on [entegris.com/trademarks](http://entegris.com/trademarks). All third-party product names, logos, and company names are trademarks or registered trademarks of their respective owners. Use of them does not imply any affiliation, sponsorship, or endorsement by the trademark owner.

©2018-2023 Entegris, Inc. | All rights reserved. | Printed in the USA | 6362-8441ENT-0823