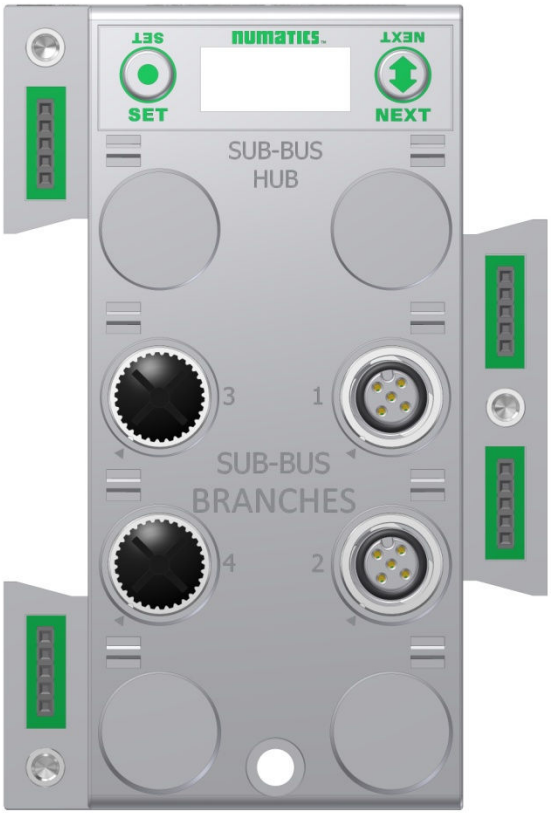
Data Sheet - G3 Series 4 Branch SUB-BUS HUB Module

G3 4 Branch SUB-BUS HUB Module

The G3 HUB module allows for branch distribution from the I/O side of the G3 System and can be integrated into the existing G3 Series Sub-Bus configuration. Auto Addressing allows for trouble free set up and configuration. Input, Output, as well as Valve manifolds can be attached to the available four Branches on a HUB module. Each G3 System can support up to two HUB modules, allowing for maximum flexibility. The HUB module is transparent to the I/O side of the G3 and does not reserve one of the potential sixteen positions. As with all other G3 I/O modules, standard G3 display and ARM functionality (storing of all parameters) is supported.

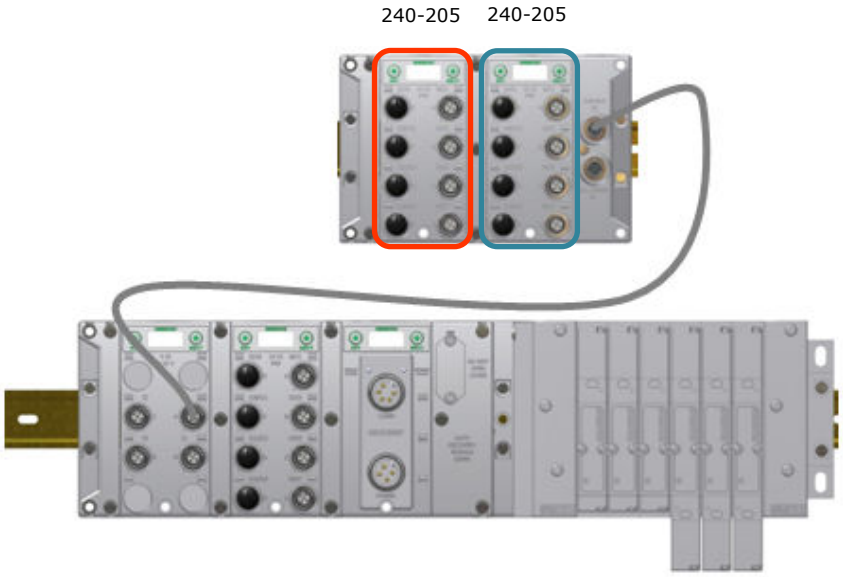


Technical Data

Electrical Data	
Voltage	24 VDC Module Supply
No. of HUB Branches	4 Per HUB Module, 2 HUB Modules per G3 System **(A HUB module cannot be connected to the branch of another HUB module)**
HUB Branch Length	30 Meters Per Branch
Addressing	Auto Addressing on Power Up (Branch I/O reserve capability)
Display / Diagnostics	Onboard LCD Multi Function Display
G3 System Integration	Integrated into existing G3 I/O Side
Topology	Star, Tree and Hybrid
Mechanical Data	
Branch Connector	M12 5 Pin Female
Mass	255 g / 9.0 oz
Operating Data	
Temperature Range	-10° to 115° F (-23° to 46° C)
Humidity	95% relative humidity: non-condensing
Ingress Protection	IP65 (with appropriate assembly and terminations)

Part Numbers and Mapping

Module Part No.	Module Type	Diagnostics	Input Size / Output Size	Branches
240-326	HUB	Sub-Bus Short Circuit	0 / 0 – See Note	4



NOTE!

The data table represents what is physically attached to the HUB module. This will change as more modules are attached or removed.

Example I/O Mapping of Attached Modules								
BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
X (Required)	Input 7	Input 6	Input 5	Input 4	Input 3	Input 2	Input 1	Input 0
X + 1 (Required)	Input 15	Input 14	Input 13	Input 12	Input 11	Input 10	Input 9	Input 8
X + 2 (Selectable)	Conn. H SCP Status	Conn. G SCP Status	Conn. F SCP Status	Conn. E SCP Status	Conn. D SCP Status	Conn. C SCP Status	Conn. B SCP Status	Conn. A SCP Status
X + 3 (Required)	Input 7	Input 6	Input 5	Input 4	Input 3	Input 2	Input 1	Input 0
X + 4 (Required)	Input 15	Input 14	Input 13	Input 12	Input 11	Input 10	Input 9	Input 8
X + 5 (Selectable)	Conn. H SCP Status	Conn. G SCP Status	Conn. F SCP Status	Conn. E SCP Status	Conn. D SCP Status	Conn. C SCP Status	Conn. B SCP Status	Conn. A SCP Status

Where **X** = starting byte

Menu System

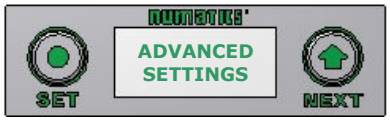
HUB MODULE IDENTIFICATION

1) Identifies HUB module in G3 System.

DESCRIPTION – MODULE TYPE

2) Identifies Module type.

ADVANCED SETTINGS



3) Allows the user to set/configure module parameters.

Press the SET button to advance to the first parameter/setting.

BRIGHTNESS

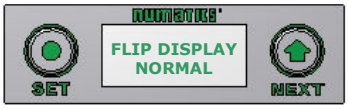
A) Press the SET button to enter the Set Brightness sub-menu and highlight the selection.

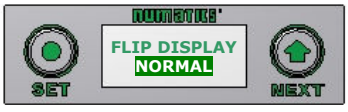
B) Press the NEXT button to select the desired Brightness selection, (**Low**, **Medium**, **High**).

C) Press the SET button to slect the desired Brightness level.

Screen Jumps to Next Parameter/Selection

FLIP DISPLAY





D) Press the SET button to enter the Flip Display sub-menu and highlight the selection.

E) Press the NEXT button to select the desired Flip Display selection, (**Normal**, **Flipped**).

F) Press the SET button to select the desired display orientation.

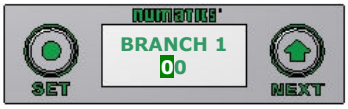
Press NEXT to advance to the next parameter selection.

RESERVE BRANCH I/O

G) Press the SET button to enter the Branch Reserve IO sub-menu.

H) Press the NEXT button to select the desired Branch to reserve I/O bytes.

I/O bytes can be reserved on each branch for future expansion within the G3 system. Space is reserved in Byte levels, and populates Input, Output, and Status depending on the protocol and configuration chosen (e.g. EtherNet/IP).



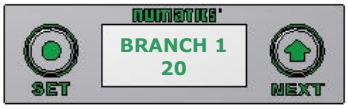
I) Press the SET button to enter the chosen Branch/Byte Selection screen.

J) Press the NEXT button to select the desired Tens value of reserved bytes.

K) Press the SET button to set the desired Tens value.

The screen will advance to the Ones selection

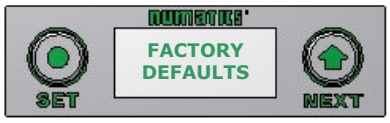
L) Press the NEXT button to select the desired Ones value for reserved bytes.



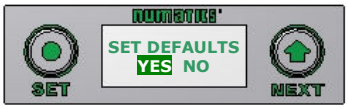
M) Press the SET button to set the desired Ones value.

Once the desired byte size is chosen for the selected Branch, the screen will jump to the next Branch. The same process is performed for the remaining Branches, if desired. Press the NEXT button to skip over Branches that do not require reserving I/O.

FACTORY DEFAULTS

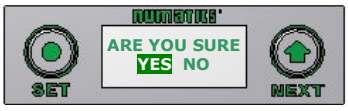


4) Allows all parameter settings to be set back to default values.



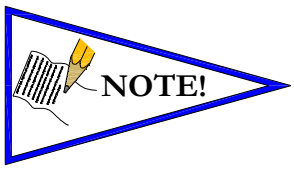
A) Press the SET button to enter the Factory Defaults sub menu.

B) Presss the NEXT button to choose Yes or No.



C) Press the SET button to confirm.

D) Press the SET button again.



Factory Default Settings	
Brightness	Medium
Flip Display	Normal
Reserve I/O	No Reserve (all Branches)

DIAGNOSTICS

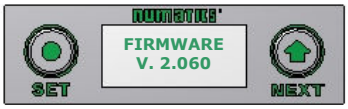
5) Allows the user to refernce Part No., Firmware Rev., and Branch Connections.

PART NUMBER

A) Press the NEXT button to enter the Diagnostics sub-menu.

The Part Number screen is displayed (reference only).

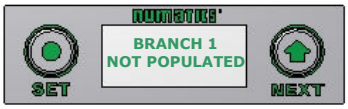
FIRMWARE REV.



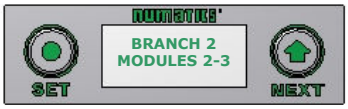
B) Press the NEXT button to advance to the Firmware revision screen (reference only).

BRANCH CONNECTIONS

C) Press the NEXT button to advance to the Branch Connections screen.



D) Press the SET button to enter the Branch Connections sub-menu.



E) Press the NEXT button to advance through the Branches.

Each Branch screen will indicate either "Not Populated", or identify the module numbers that are currently connected to that Branch.

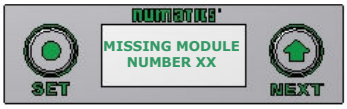
HELP

6) Directs the user to the Numatics website.

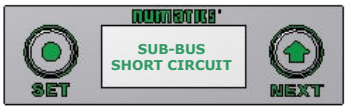
A) Press the SET button for website address.

Error/Event Messages

The following are error messages that are displayed when specific faults/events occur during operation:

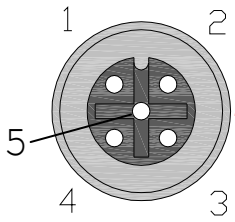


→ Displayed when a Sub-Bus module that had been previously installed becomes absent from the configuration

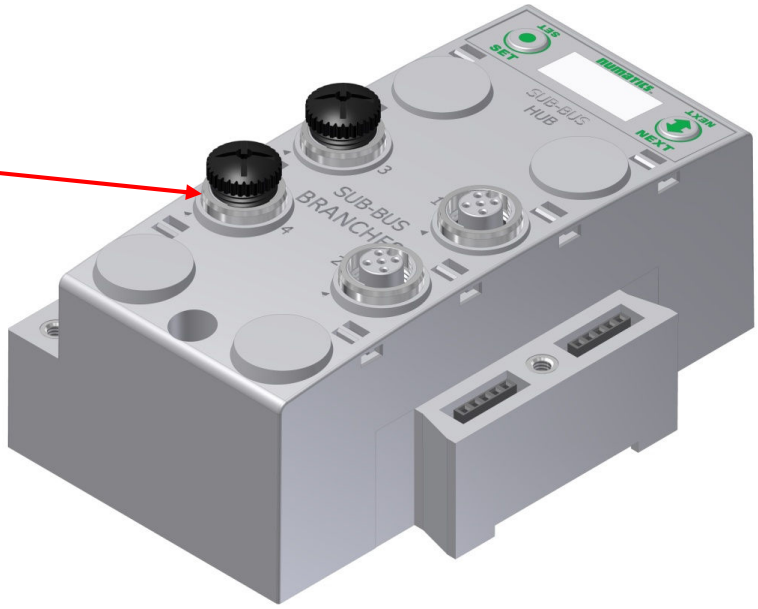


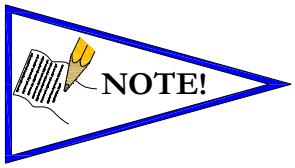
→ Displayed when a short circuit condition is detected on the Sub-Bus power lines.

Connector Pin Out



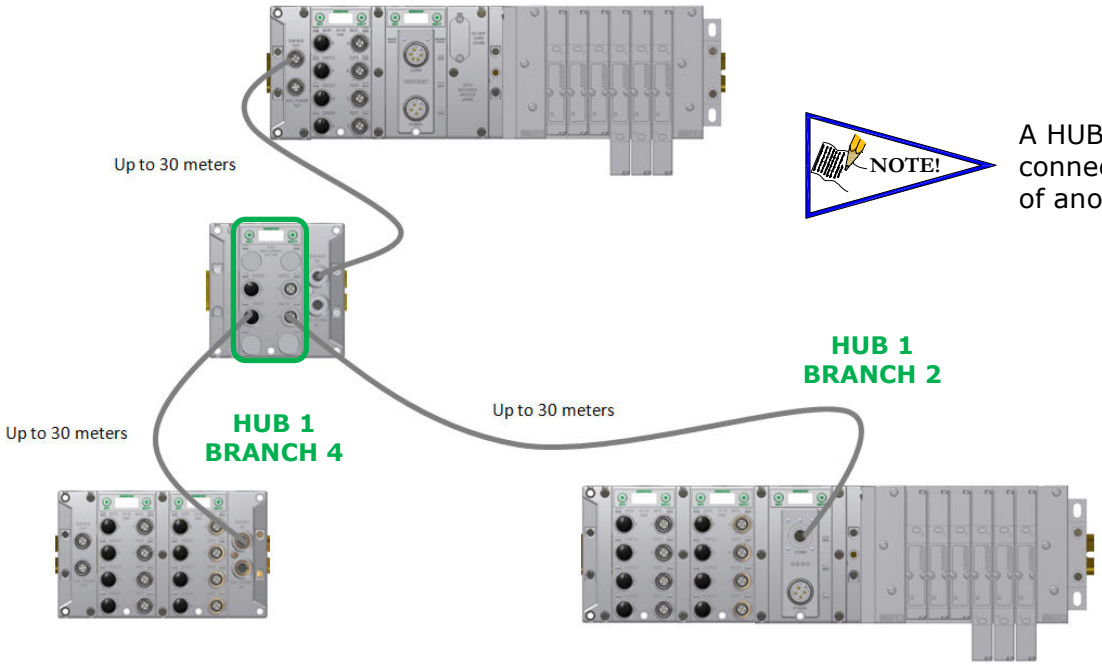
FEMALE
PIN 1 = Shield
PIN 2 = V+
PIN 3 = V-
PIN 4 = CAN_H
PIN 5 = CAN_L





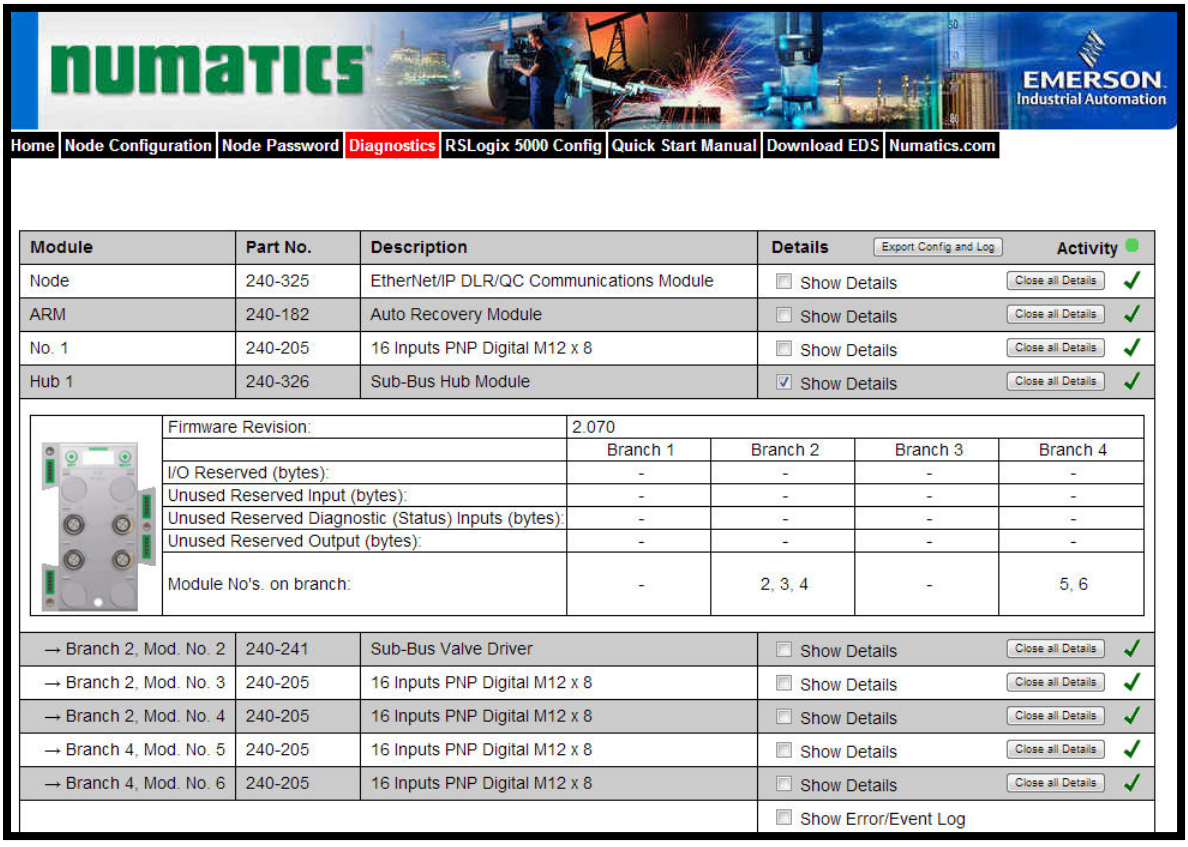
Length of molded or field wired Sub-Bus Branch cables should not exceed the maximum length of 30 meters per Sub-Bus Branch communication link. See appropriate Technical Manual for Sub-Bus length requirements. The molded cable assemblies and bulk cable are the only approved cables for the G3 Sub-Bus and Branch Link. Please refer to the G3 Electronics catalog (LT-G3Catalog), for Sub-Bus cable and connectors options. See Technical Document TDG3SBWD1-0EN for proper installation and wiring of field wireable connectors.

HUB Integration - Example #1



NOTE!

A HUB module cannot be connected to the branch of another HUB module.

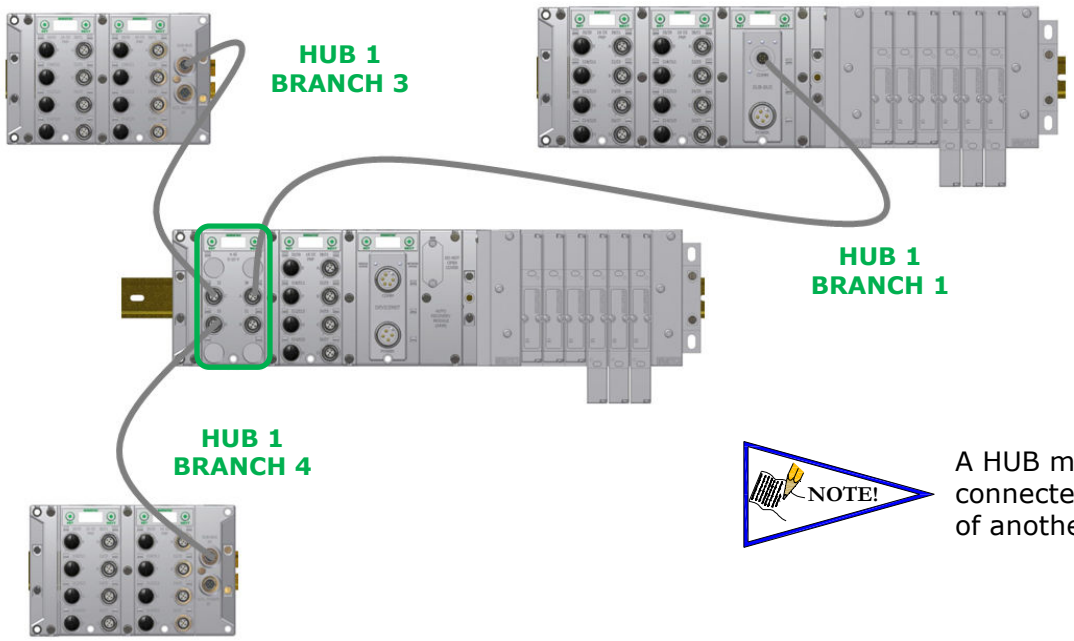


Module	Part No.	Description	Details	Activity
Node	240-325	EtherNet/IP DLR/QC Communications Module	Show Details	✓
ARM	240-182	Auto Recovery Module	Show Details	✓
No. 1	240-205	16 Inputs PNP Digital M12 x 8	Show Details	✓
Hub 1	240-326	Sub-Bus Hub Module	Show Details	✓

	Branch 1	Branch 2	Branch 3	Branch 4
Firmware Revision:	2.070			
I/O Reserved (bytes):	-	-	-	-
Unused Reserved Input (bytes):	-	-	-	-
Unused Reserved Diagnostic (Status) Inputs (bytes):	-	-	-	-
Unused Reserved Output (bytes):	-	-	-	-
Module No's. on branch:	-	2, 3, 4	-	5, 6

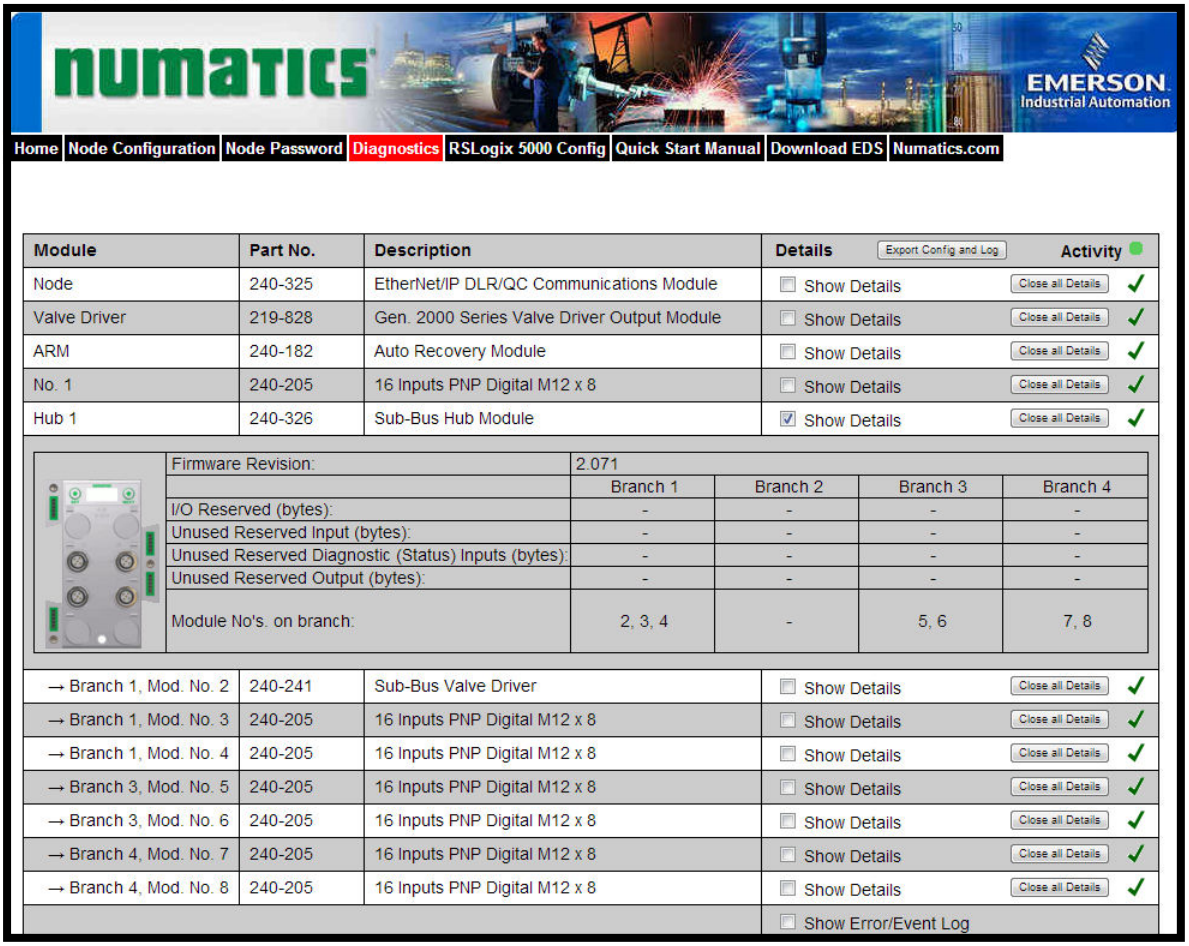
→ Branch 2, Mod. No. 2	240-241	Sub-Bus Valve Driver	Show Details	✓
→ Branch 2, Mod. No. 3	240-205	16 Inputs PNP Digital M12 x 8	Show Details	✓
→ Branch 2, Mod. No. 4	240-205	16 Inputs PNP Digital M12 x 8	Show Details	✓
→ Branch 4, Mod. No. 5	240-205	16 Inputs PNP Digital M12 x 8	Show Details	✓
→ Branch 4, Mod. No. 6	240-205	16 Inputs PNP Digital M12 x 8	Show Details	✓
			Show Error/Event Log	

HUB Integration - Example #2



NOTE!

A HUB module cannot be connected to the branch of another HUB module.

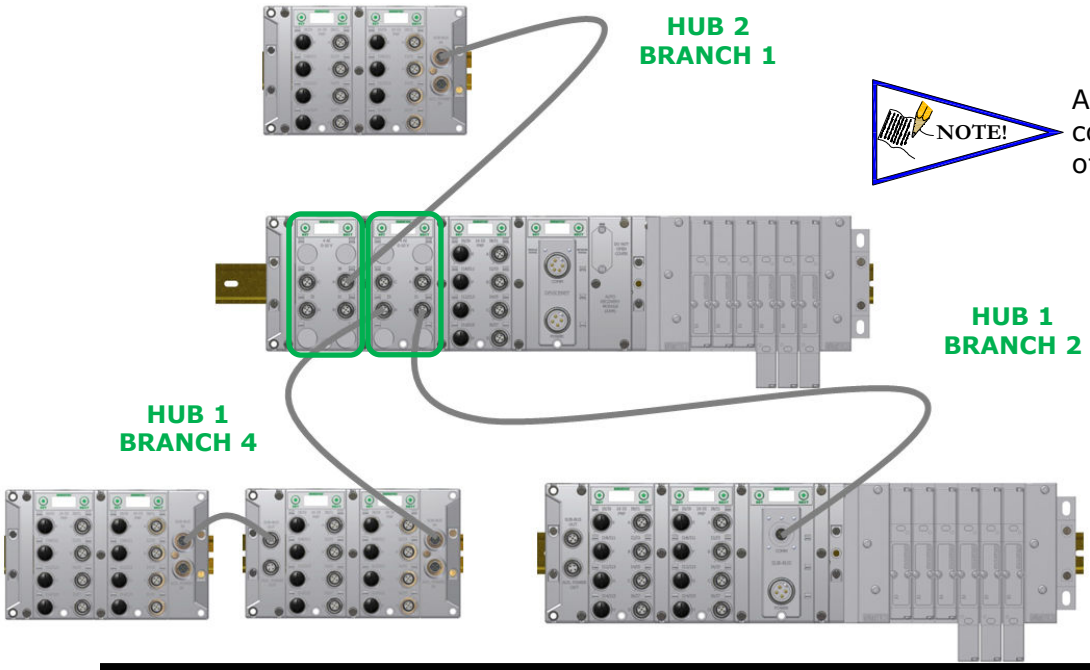


Module	Part No.	Description	Details (Export Config and Log)	Activity
Node	240-325	EtherNet/IP DLR/QC Communications Module	Show Details	Close all Details ✓
Valve Driver	219-828	Gen. 2000 Series Valve Driver Output Module	Show Details	Close all Details ✓
ARM	240-182	Auto Recovery Module	Show Details	Close all Details ✓
No. 1	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
Hub 1	240-326	Sub-Bus Hub Module	Show Details	Close all Details ✓

	Branch 1	Branch 2	Branch 3	Branch 4
Firmware Revision:	2.071			
I/O Reserved (bytes):	-	-	-	-
Unused Reserved Input (bytes):	-	-	-	-
Unused Reserved Diagnostic (Status) Inputs (bytes):	-	-	-	-
Unused Reserved Output (bytes):	-	-	-	-
Module No's. on branch:	2, 3, 4	-	5, 6	7, 8

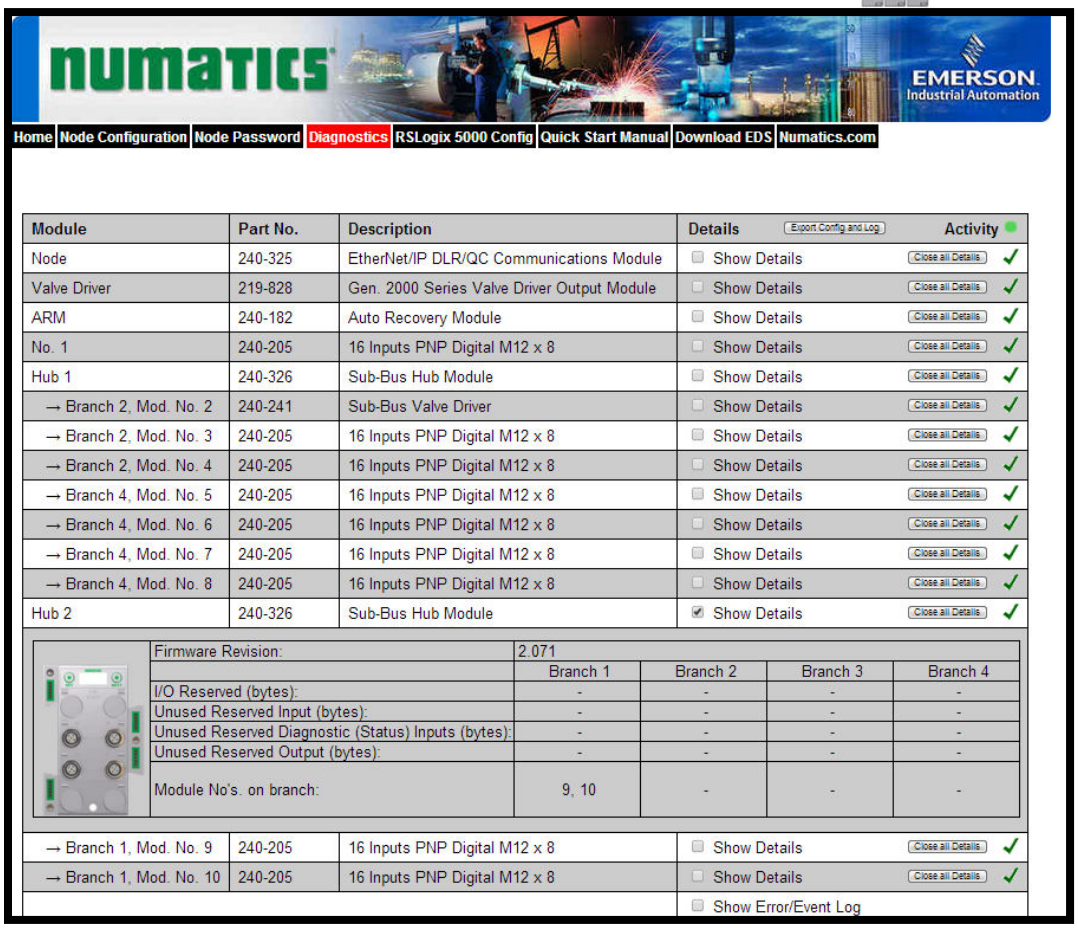
→ Branch 1, Mod. No. 2	240-241	Sub-Bus Valve Driver	Show Details	Close all Details ✓
→ Branch 1, Mod. No. 3	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
→ Branch 1, Mod. No. 4	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
→ Branch 3, Mod. No. 5	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
→ Branch 3, Mod. No. 6	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
→ Branch 4, Mod. No. 7	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
→ Branch 4, Mod. No. 8	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
			Show Error/Event Log	

HUB Integration - Example #3



NOTE!

A HUB module cannot be connected to the branch of another HUB module.



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Module	Part No.	Description	Details (Export Config and Log)	Activity
Node	240-325	EtherNet/IP DLR/QC Communications Module	Show Details	Close all Details ✓
Valve Driver	219-828	Gen. 2000 Series Valve Driver Output Module	Show Details	Close all Details ✓
ARM	240-182	Auto Recovery Module	Show Details	Close all Details ✓
No. 1	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
Hub 1	240-326	Sub-Bus Hub Module	Show Details	Close all Details ✓
→ Branch 2, Mod. No. 2	240-241	Sub-Bus Valve Driver	Show Details	Close all Details ✓
→ Branch 2, Mod. No. 3	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
→ Branch 2, Mod. No. 4	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
→ Branch 4, Mod. No. 5	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
→ Branch 4, Mod. No. 6	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
→ Branch 4, Mod. No. 7	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
→ Branch 4, Mod. No. 8	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
Hub 2	240-326	Sub-Bus Hub Module	Show Details	Close all Details ✓

Firmware Revision:	2.071			
	Branch 1	Branch 2	Branch 3	Branch 4
I/O Reserved (bytes):	-	-	-	-
Unused Reserved Input (bytes):	-	-	-	-
Unused Reserved Diagnostic (Status) Inputs (bytes):	-	-	-	-
Unused Reserved Output (bytes):	-	-	-	-
Module No's. on branch:	9, 10	-	-	-

→ Branch 1, Mod. No. 9	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
→ Branch 1, Mod. No. 10	240-205	16 Inputs PNP Digital M12 x 8	Show Details	Close all Details ✓
			Show Error/Event Log	