Network Interface Unit

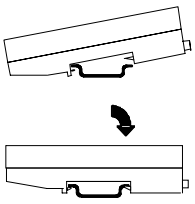
January 1999 GFK-1551A

Preinstallation Check

Carefully inspect all shipping containers for damage. If any equipment is damaged, notify the delivery service immediately. Save the damaged shipping container for inspection by the delivery service. After unpacking the equipment, record all serial numbers. Save the shipping containers and packing material in case it is necessary to transport or ship any part of the system.

Quick Start Guide

1. **Install the NIU on the DIN Rail** by simply clicking it into place.

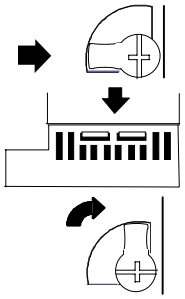


Note: The NIU and connecting carriers must be installed on the same section of 35mm x 7.5mm DIN rail.

The DIN rail must have a conductive (unpainted) finish for proper grounding.

(*Refer to the heading* **Module Installation** *for information about space requirements or module orientation, or if you are installing the NIU in an area of excessive vibration).*

2. **Install the Power Supply on the NIU**.



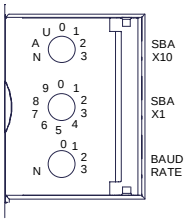
The latch on the power supply must be in the unlocked position.

Align the connectors and the latch post and press the power supply module down until the two tabs on the bottom of the power supply click into place.

Turn the latch to the locked position to secure the power supply to the top of the NIU.

Complete the power supply wiring as described in the installation instructions provided with the Power Supply**.**

3. **Adjust the rotary switches** on the front of the NIU using a 2.44mm (3/32in) flat screwdriver. *(Refer to the NIU User's Manual if the NIU is being configured using datagrams.*

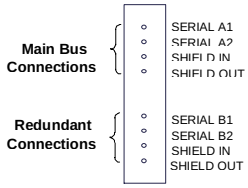


Select the serial bus address with the two upper rotary switches, SBA X10 (for the tens digit) and SBA X1(for the ones digit). Each device on a bus must have a unique serial bus address in the range 0 - 31.

Select the baud rate to match that used by the other devices on the bus by setting the bottom rotary switch: (3) 153.6 Kbaud extended, (2) 153.6 Kbaud standard, (1) 76.8 Kbaud, or (0) 38.4 Kbaud.

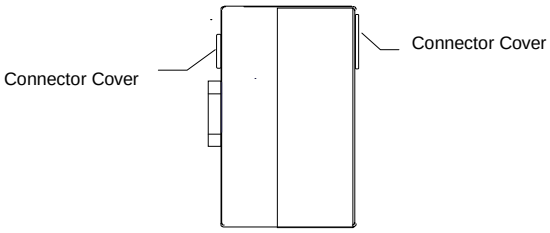
Cycle power to the NIU after changing the switch settings.

4. **Connect the communications bus to the NIU**. (*Refer to the heading* **Bus Installation Guidelines** *if the NIU is at the end of the bus, or for detailed bus installation instructions.)*

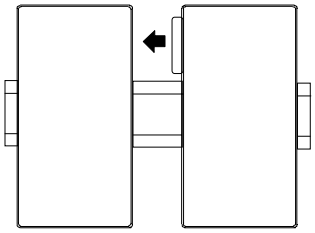


The NIU has two sets of bus terminals. The upper terminals are for the main bus cable. The lower bus terminals are for an optional redundant (dual) bus cable.

5. **Remove the connector cover on the righthand side of the NIU**. Do not discard this cover; you will need to install it on the last carrier. It protects the connector pins from damage and ESD during handling and use. Do not remove the connector cover on the lefthand side.



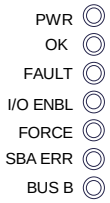
6. **Install additional modules** by mounting modules on their carriers and sliding them along the DIN rail to fully engage the connectors in the sides of the carriers.



7. **Power up the NIU**. The modules in the I/O station will automatically be configured, starting at slot 1. Autoconfiguration stops at the first empty slot or faulted module.

Note: If the I/O station includes any additional power supplies, those power supplies must be turned on either before the NIU Power Supply or at the same time to assure accurate autoconfiguration.

8. **Observe the Module LEDs**. The LEDs indicate the presence of power and show the operating mode and status of the NIU.



PWR	Indicates that the NIU is receiving power.
OK	Indicates diagnostics executed successfully.
FAULT	Is ON if there are one of more faults.
I/O ENBL	This bicolor LED is green if the I/O scan is enabled and data is being received from the bus. Otherwise, this LED is amber.
FORCE	Is ON if one of more I/O points is forced.
SBA ERR	Is ON if a duplicate device SBA or no SBA exists.
BUS B	Is ON if bus B is active.

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Product Description

Revision Letter:	AA
Firmware version:	1.00
Firmware upgrades:	none

Specifications

Number of Modules	8 per NIU/station
Network inputs per bus scan	128 bytes
Network outputs per bus scan	128 bytes
Discrete Input Memory	1024 points
Discrete Output Memory	1024 points
Analog Input Memory	128 bytes
Analog Output Memory	128 bytes
Power Consumption	+5V@250mA, +3.3V@10mA
Serial Bus Address	0 to 31
Network data rate	153.6 Kbaud extended, 153.6 Kbaud standard, 76.8 Kbaud, or 38.4 Kbaud.

Features of this NIU Version

- Powerup diagnostics.
- Autoconfiguration of I/O modules.
- Non-volatile memory storage of configuration to preserve configuration during power cycles.
- Ability to receive configuration from the bus that will override autoconfiguration.
- Hot insertion and removal of I/O modules.

Operating Notes for this NIU Version

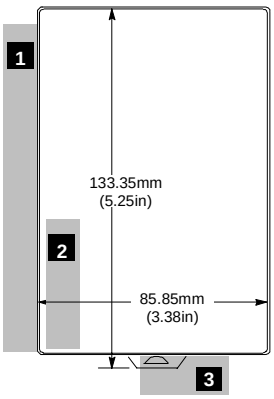
- Does not support use of “intelligent modules”.
- Does not support use of expansion transmitter/receiver modules.
- Does not support “non-contiguous” I/O mapping between modules. Modules should be mapped into the beginning of the I/O memories.
- If the NIU is configured via datagrams from the bus, the value of the Force BSM bit must not be changed.
- If the NIU is configured for Duplex CPU Redundancy, analog modules must not be used in the I/O station. Analog modules must not be included in a Duplex Redundancy system.
- If the NIU is powered up with autoconfiguration enabled via the NIU rotary switches, and the NIU was previously configured for Hot Standby CPU Redundancy, the I/O Enabled LED lights green even if there is an address error.
- If the NIU powers up with faults, the Fault LED does not light until the NIU receives outputs from a controller.
- When configuring the Bus Controller module in the host PLC, the timeout for the NIU to log onto the bus should be increased from 2.5 to 10 seconds.

Compatibility

Any type of PLC or computer capable of controlling the bus can be used as the host. This Network Interface Unit is compatible with:

- For an IC697 PLC
  - CPU firmware, release 3.0 or later.
  - Bus Controller release 5.4 or later
  - If the IC641SWP701/704 programming and configuration software is used, it must be release 3.0 or later.
- For an IC693 PLC
  - CPU firmware: any version.
  - Bus Controller: any version.
- For an IC600PLC:
  - CPU: rev. 105 or later
  - Programming Software: Release 4.02 or later
  - Bus Controllers: CBB902 or 903, version 1.7 or later

Module Installation



Modules must be mounted on a horizontal DIN rail.

1. Allow sufficient finger clearance for opening NIU door.
2. Allow adequate clearance for serial port cables.
3. Allow adequate space for power wiring.

The NIU with power supply attached fits into a 70mm deep enclosure.

Rated thermal specifications are based on a clearance of 5.1cm (2in) above and below the equipment and 2.54cm (1in) to the left of the NIU module.

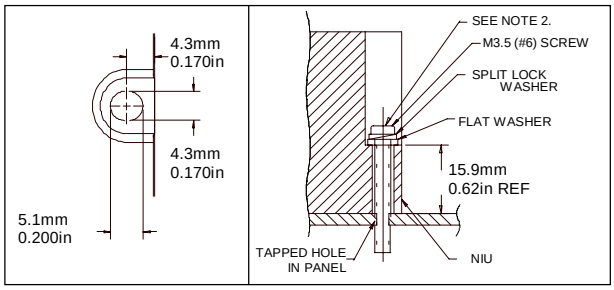
Panel-Mounting

For best stability, the DIN rail should be installed on a panel using screws spaced approximately 5.24cm (6in) apart.

If excessive vibration is a factor the NIU should also be screwed down to the mounting panel.

Note 1. Tolerances are +/- 0.13mm (0.005in) non-cumulative.

Note 2. 1.1-1.4Nm (10-12 in/lbs) of torque should be applied to M3.5 (#6-32) steel screw threaded into material containing internal threads and having a minimum thickness of 2.4mm (0.093in).



Removing the NIU from the DIN Rail

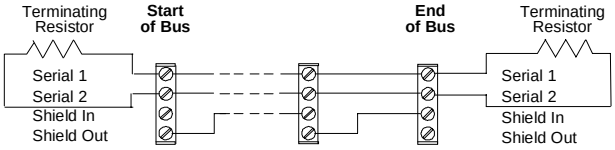
1. Turn off power to the power supply.
2. (If the NIU is attached to the panel with a screw) remove the power supply module. Remove the panel-mount screw.
3. Slide the NIU away from the other modules until the connector on the right side disengages from the next carrier.
4. With a small flathead screwdriver, pull the DIN rail latch out while tilting the other end of the NIU down to disengage it from the DIN rail.

Bus Installation Guidelines

The maximum exposed length of unshielded wires should be 5cm (2in). For added protection, each shield drain wire should be insulated with spaghetti tubing to prevent the Shield In and Shield Out wires from touching each other, or the signal wires.

1. Connect Serial 1 to the Serial 1 terminals of the previous device and the next device.
2. Connect Serial 2 to the Serial 2 terminals of the previous device and the next device.
3. Connect Shield In to Shield Out of the preceding device. Connect Shield Out to Shield In of the next device. If the NIU is the first device on a bus, Shield In can be left unconnected. If it is the last device on a bus, Shield Out can be left unconnected.
4. When inserting two wires into the same terminal block position, the wire size must be 0.86mm^2 (18AWG) or smaller. Both wires should be of the same size and style. Do not mix stranded with solid wire in the same position.

Terminating the Bus



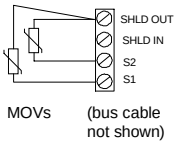
If either bus will terminate at the NIU, connect a 75, 100, 120, or 150-ohm terminating resistor across the Serial 1 and Serial 2 terminals. The use of a ferrule is recommended to crimp each resistor lead to the corresponding serial line. If ferrules are not used, twist each resister lead with the corresponding serial line and solder them together before inserting the wires into the terminal block.

System Bus Installation Guidelines

The serial bus can be treated as a Class 2 circuit when appropriate wiring practices are followed. Maximum bus lengths may be affected when installation requires the high-voltage rated CM rating. CM types can replace CL2, but not vice versa.

Do not mix cables of different impedance, regardless of cable run length. Do not mix cable types in long and/or noisy installations. Other, small-size twisted pair shielded wire of unspecified impedance can be used for short runs of 50 feet or less, using 75 ohm terminations. Selection of wire type may be limited by local and national codes and industry standards. Consult the cable manufacturer to determine the cable's suitability for a particular type of installation.

Installing Suppression at the Communications Line



For an individual NIU, suppression can be supplied by connecting two small MOVs from Serial 1 and Serial 2 to the Shield Out terminal. Suitable MOVs include Harris part number V220MA2A, Panasonic ERZ-CO5FK221U, and Siemens 505K140. Higher energy-rated devices can also be used. Follow the wiring instructions above for installing MOVs. Be sure the MOV leads do not cause shorts between the serial data and shield connectors.