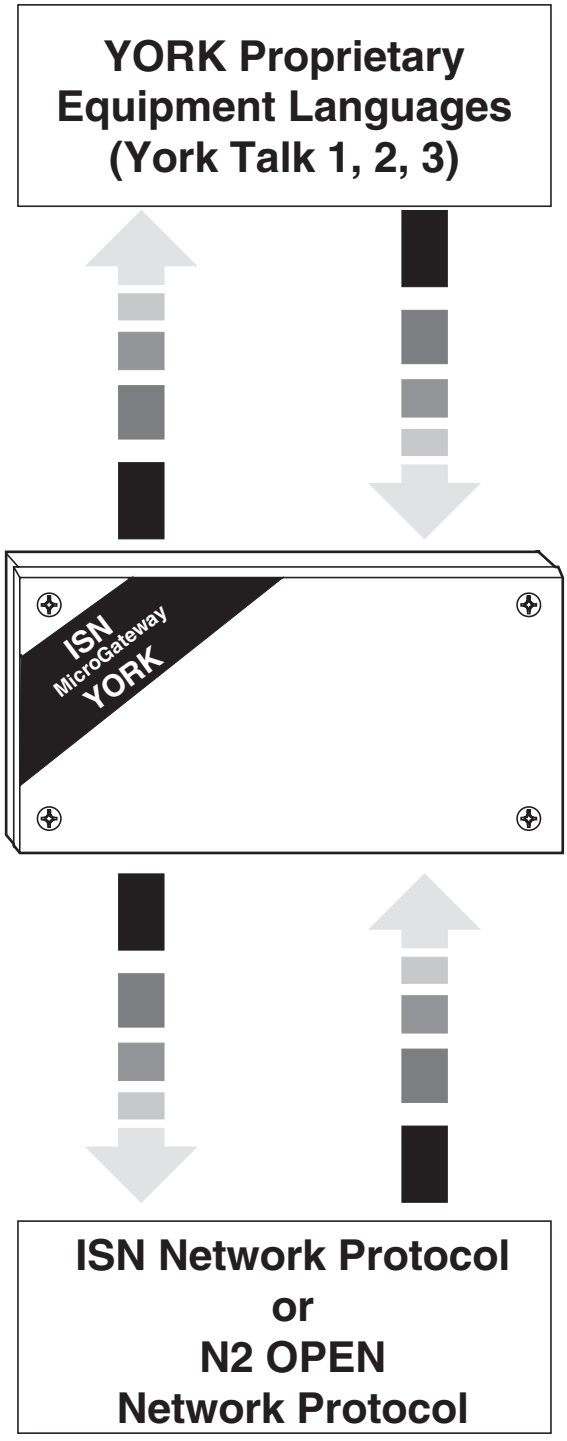
YORK®	ISN MICROGATEWAY	
INSTALLATION MANUAL	Supersedes: 450.20-NOM1 (500)	Form 450.20-NOM1 (702)

371-03609-001 MicroGateway OptiView Kit
371-02592-101 MicroGateway in an Enclosure (115 VAC)
371-02592-201 MicroGateway in an Enclosure (230 VAC)



IMPORTANT!

READ BEFORE PROCEEDING!

GENERAL SAFETY GUIDELINES

During installation, operation, maintenance or service, individuals may be exposed to certain components or conditions including, but not limited to: refrigerants, oils, materials under pressure, rotating components, and both high and low voltage. Each of these items has the potential, if misused or handled improperly, to cause bodily injury or death. It is the obligation and responsibility of operating/service personnel to identify and recognize these inherent hazards, protect themselves, and proceed safely in completing their tasks. Failure to comply with any of these requirements could result in serious damage to the equipment and the property in which it is situated, as well as severe personal injury or death to themselves and people at the site.

This document is intended for use by owner-authorized operating/service personnel. It is expected that this individual possesses independent training that will enable them to perform their assigned tasks properly and safely. It is essential that, prior to performing any task on this equipment, this individual shall have read and understood this document and any referenced materials. This individual shall also be familiar with and comply with all applicable governmental standards and regulations pertaining to the task in question.

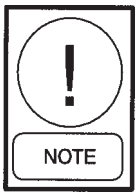
SAFETY SYMBOLS

The following symbols are used in this document to alert the reader to areas of potential hazard:

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

CAUTION identifies a hazard which could lead to damage to the machine, damage to other equipment and/or environmental pollution. Usually an instruction will be given, together with a brief explanation.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



NOTE is used to highlight additional information which may be helpful to you.

CHANGEABILITY OF THIS DOCUMENT

In complying with YORK's policy for continuous product improvement, the information contained in this document is subject to change without notice. While YORK makes no commitment to update or provide current information automatically to the manual owner, that information, if applicable, can be obtained by contacting the nearest YORK Engineered Systems Group office.

It is the responsibility of operating/service personnel as to the applicability of these documents. If there is any question in the mind of operating/service personnel as to the applicability of these documents, then, prior to working on the equipment, they should verify with the owner whether the equipment has been modified and if current documentation is available.

REFERENCE INSTRUCTIONS

DESCRIPTION	FORM NO.
ISN MicroGateway Specification	450.20-S06
Data Bridge for BACnet Specification	450.20-S20
Data Bridge for BACnet Installation	450.20-N19
Data Bridge for BACnet Operation	450.20-O5
ISN MicroGateway Revision 8.0 Software Reference Manual	450.20-CP1

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SECTION 1

GENERAL INFORMATION

Overview

The ISN MicroGateway is a communications device that allows any York chiller that supports one of the three York Talk protocols to be connected to an ISN network, N2 network or any device which can translate ASCII.

A Building Automation System (BAS) consists of numerous controllers networked together. For reliable communications between various pieces of equipment, common communications standards must be in place for each device to share information. A bridge device may be added when translations are needed between different standards and protocols.

Several MicroGateway units may be needed on particular BAS sites because of the MicroGateway two-port capabilities.

There are three variations of the MicroGateway, depending upon the type of input voltage and the chiller with which it will be connected to.

For chillers using the OptiView micro panel, the MicroGateway consists of a single circuit board which is attached to four studs inside the micro panel. The 12 volt DC input power is drawn directly from the OptiView panel, eliminating the need for an external power supply.

Table 1. MicroGateway Options

PN	INPUT VOLTAGE	TYPE
ISN MicroGateway		
371-03609-001*	12 VDC	OptiView Kit
371-02592-101	115 VAC	Enclosure
371-02592-201	230 VAC	Enclosure
Data Bridge MicroGateway		
371-03609-007*	12 VDC	OptiView Kit
371-02592-107	115 VAC	Enclosure
371-02592-207	230 VAC	Enclosure

** Includes card, power cable, chiller interface cable and mounting hardware (nylon washers and nuts).*

For other types of chillers, the MicroGateway comes with its own enclosure. In addition to the MicroGateway circuit board, a power board is included inside the enclosure to convert input AC power (115 or 230 volts) to 12 volt DC power.

A series of LEDs provide information about the MicroGateway's communication and operating status. Each of the two ports have a red transmission LED (TX) and a green receiving LED (RX). Between the two sets of port LED's is a STATUS LED. The STATUS LED provides information to verify proper setup selection, as well as indications of normal operation versus error modes.

For configuration purposes a VT100 terminal emulation program is required. While most software programs will work, YORK has available the MicroGateway Configurator. To aid in setup of the MicroGateway, macros have been developed which set the proper protocols for each port based on the chiller model selected.

Data Bridge MicroGateway

This manual also covers the Data Bridge MicroGateway. This version of MicroGateway is specifically configured to interface between a YORK chiller and the Data Bridge for BACnet gateway device. The only difference between the ISN MicroGateway and the Data Bridge MicroGateway is in Feature 6. This was done to maintain software compatibility with earlier BACnet XL products. Feature 6 in the Data Bridge MicroGateway uses the standard ISN Feature 6 (Switched Control) rather than the MicroGateway Feature 6 (Status Values), the same as Features 1 and 5.

For specific information on Features, refer to the Rev. 8.0 Software Reference Manual for all MicroGateway products except when referencing Feature 6 in a Data Bridge MicroGateway. For the Data Bridge MicroGateway, refer to the Rev. 7 Software Reference Manual.

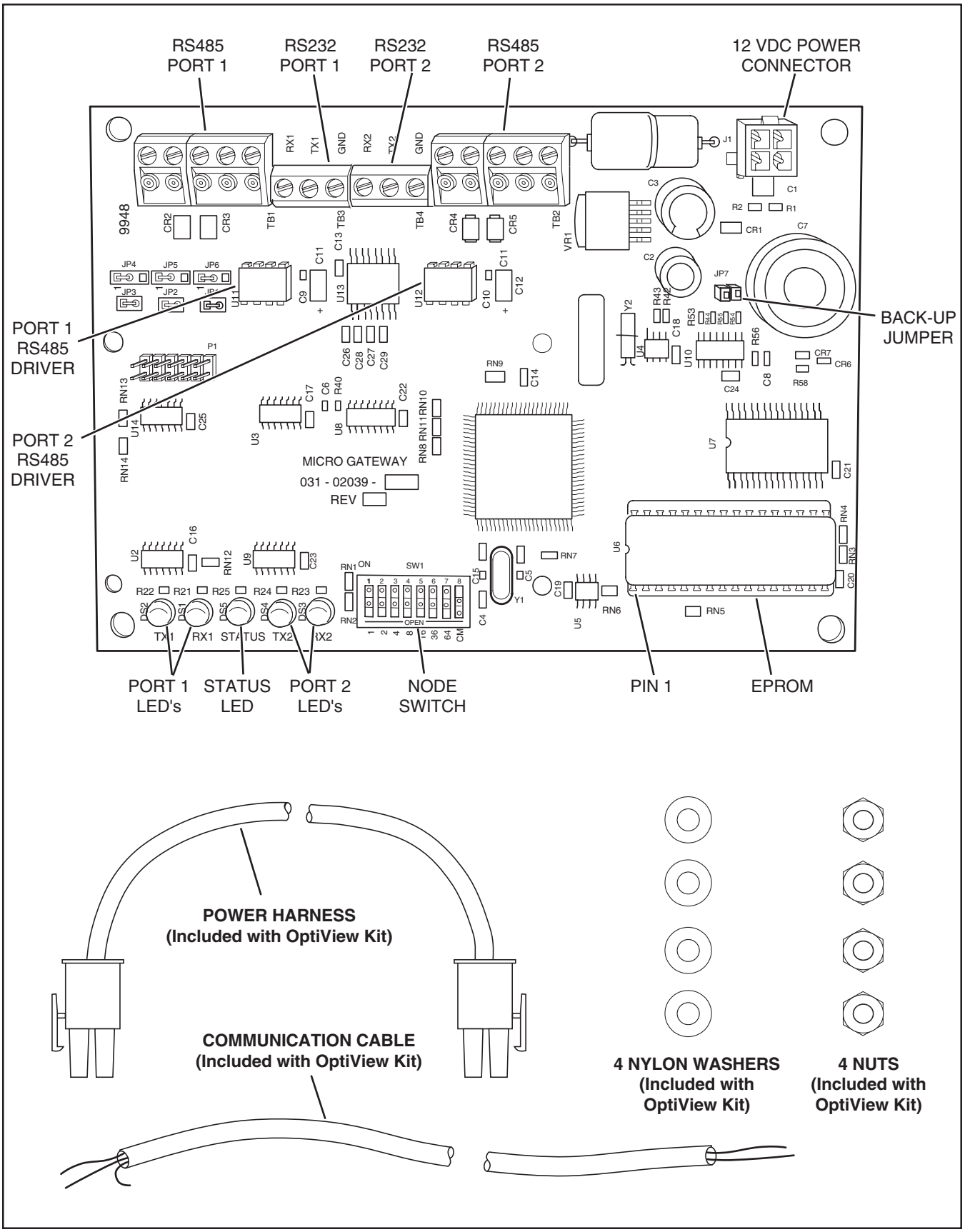


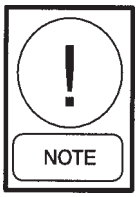
Figure 1 – MicroGateway OptiView Kit Components

SECTION 2

NETWORK TOPOLOGY

The MicroGateway essentially consists of two serial communication ports. Each of these ports (Port 1 and Port 2) may be used for either RS232 or RS485 operation. A connection to the appropriate set of terminals is used to make this selection (refer to Table 2).

There is always a one-to-one relationship between the MicroGateway and the chiller panel. It is possible to connect only one MicroGateway to one chiller panel. Two chillers require two MicroGateways, etc.



NOTE: Only one MicroGateway is required on chillers that make use of a master/slave panel arrangement.

When translating to a YORK ISN or JCI N2 network, the appropriate port of the MicroGateway is configured, using the MicroGateway Configurator, to communicate using the appropriate protocol. This also selects the communication parameters, i.e. baud rate, parity, etc., to match the protocol chosen.

In the case of a network using a protocol other than ISN or N2, the MicroGateway may be configured to communicate using ASCII. This allows the YORK products to communicate with any network for which an ASCII translator is available. The ASCII translator or network controller must be capable of sending and recieving pre-defined packets of ASCII text.

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Table 2. Communication Ports

LABEL	PORT	PROTOCOL
TB1	1	RS485
TB2	2	RS485
TB3	1	RS232
TB4	2	RS232

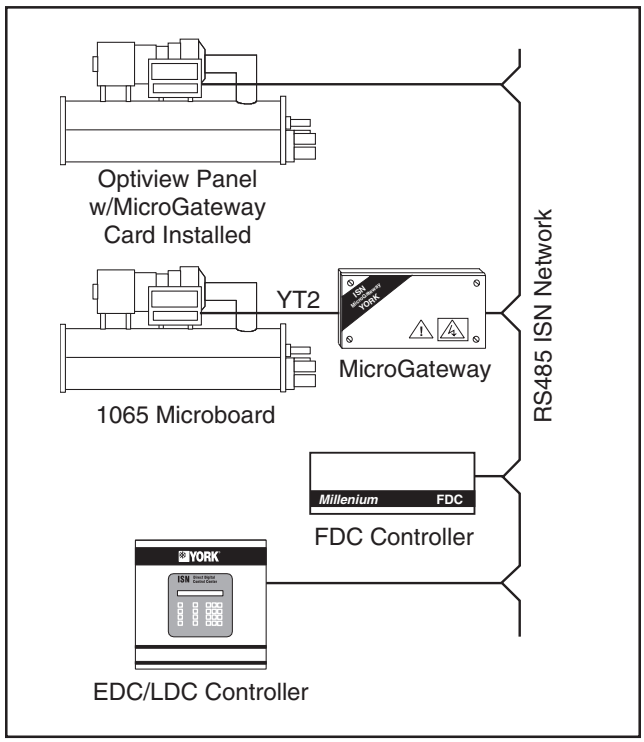


Figure 2 – ISN Network Interface

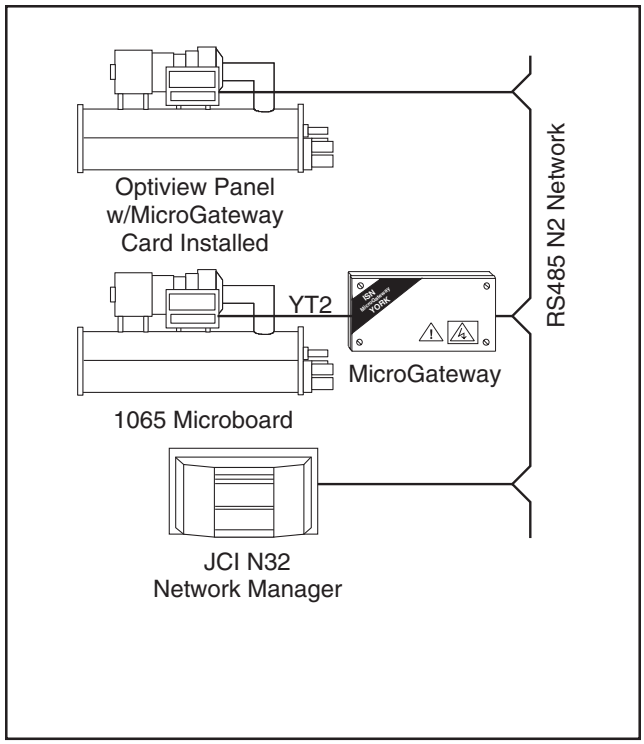


Figure 3 – N2 Network Interface

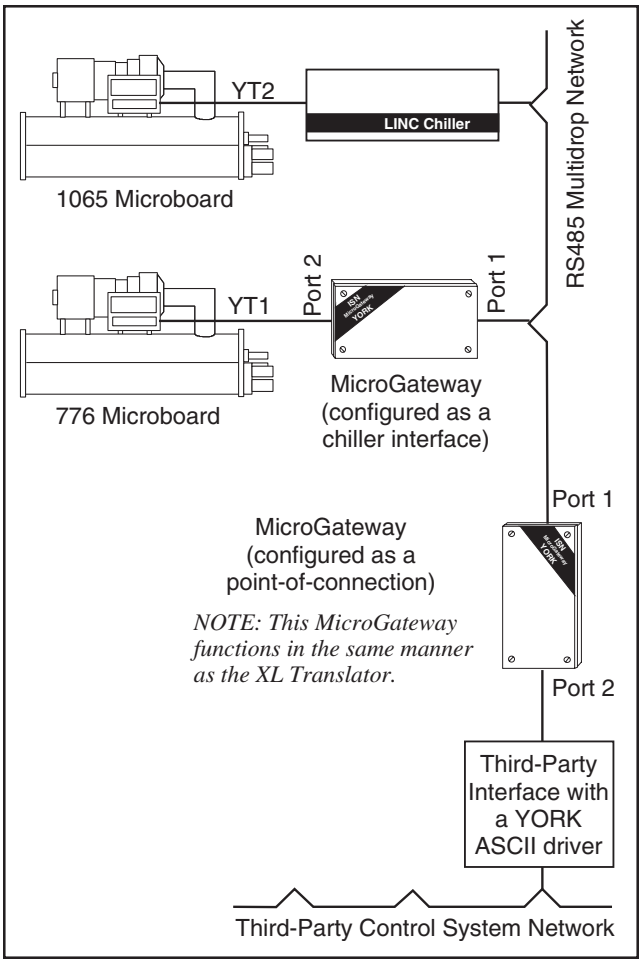


Figure 4 – ASCII Device Interface

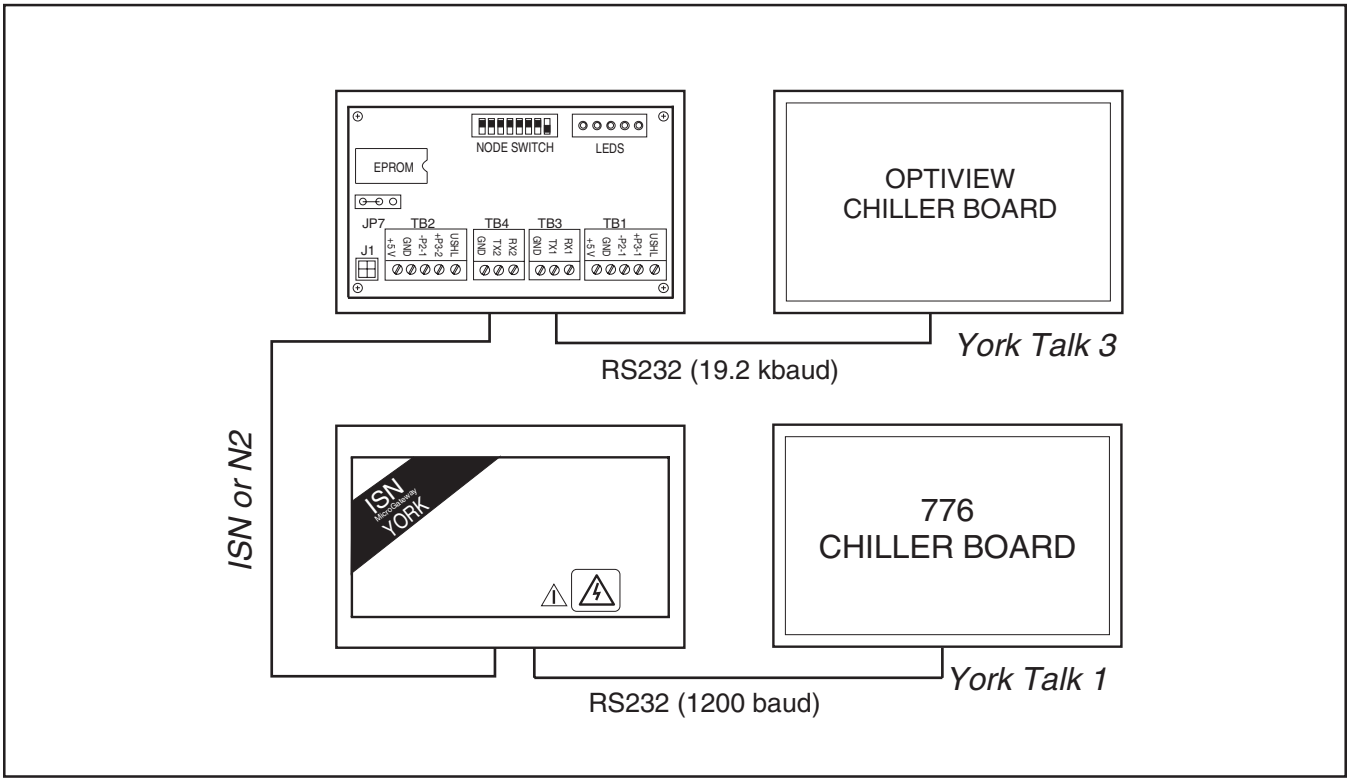


Figure 5 – Typical Board Topology

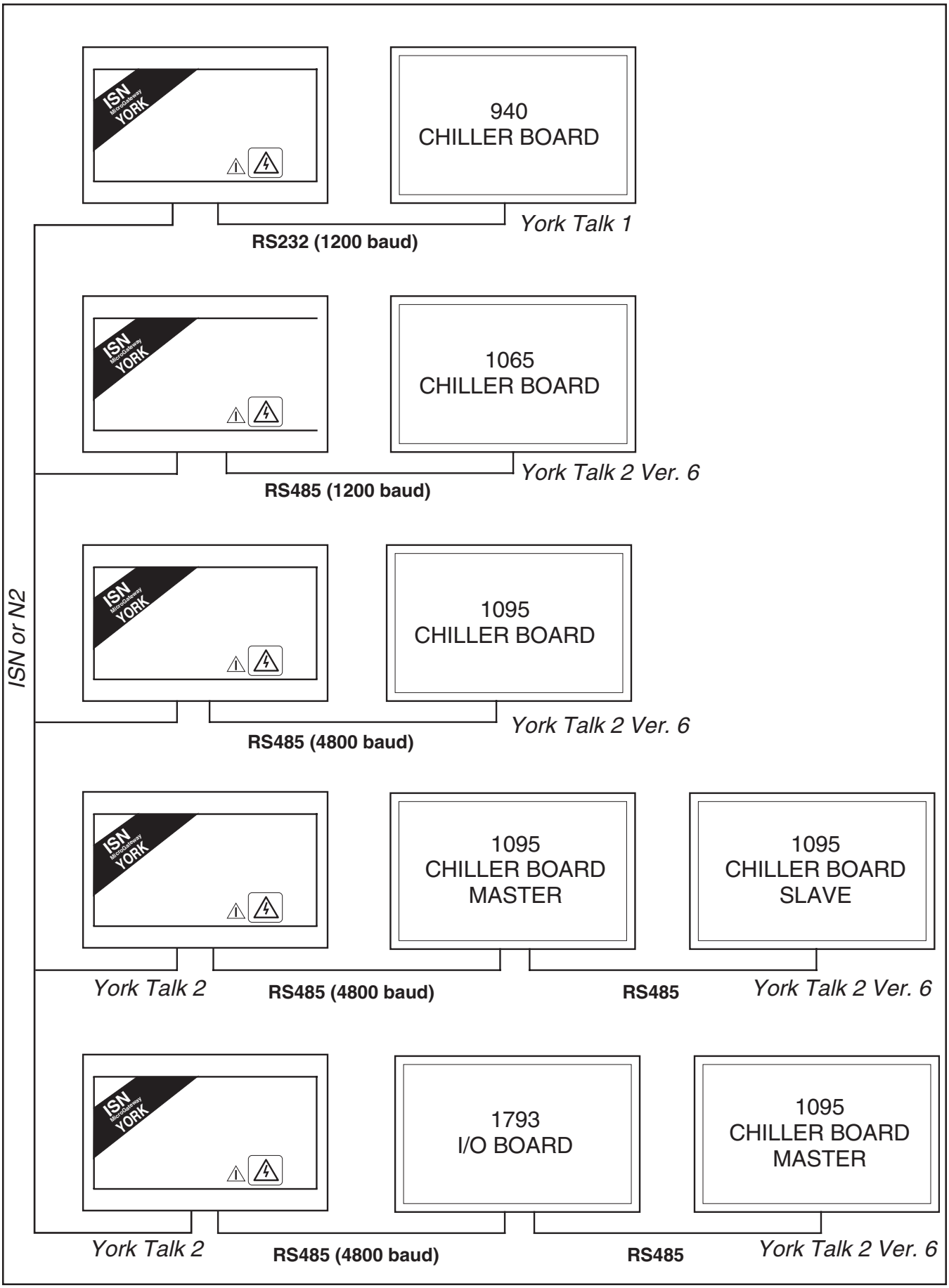


Figure 6 – Typical Board Topology

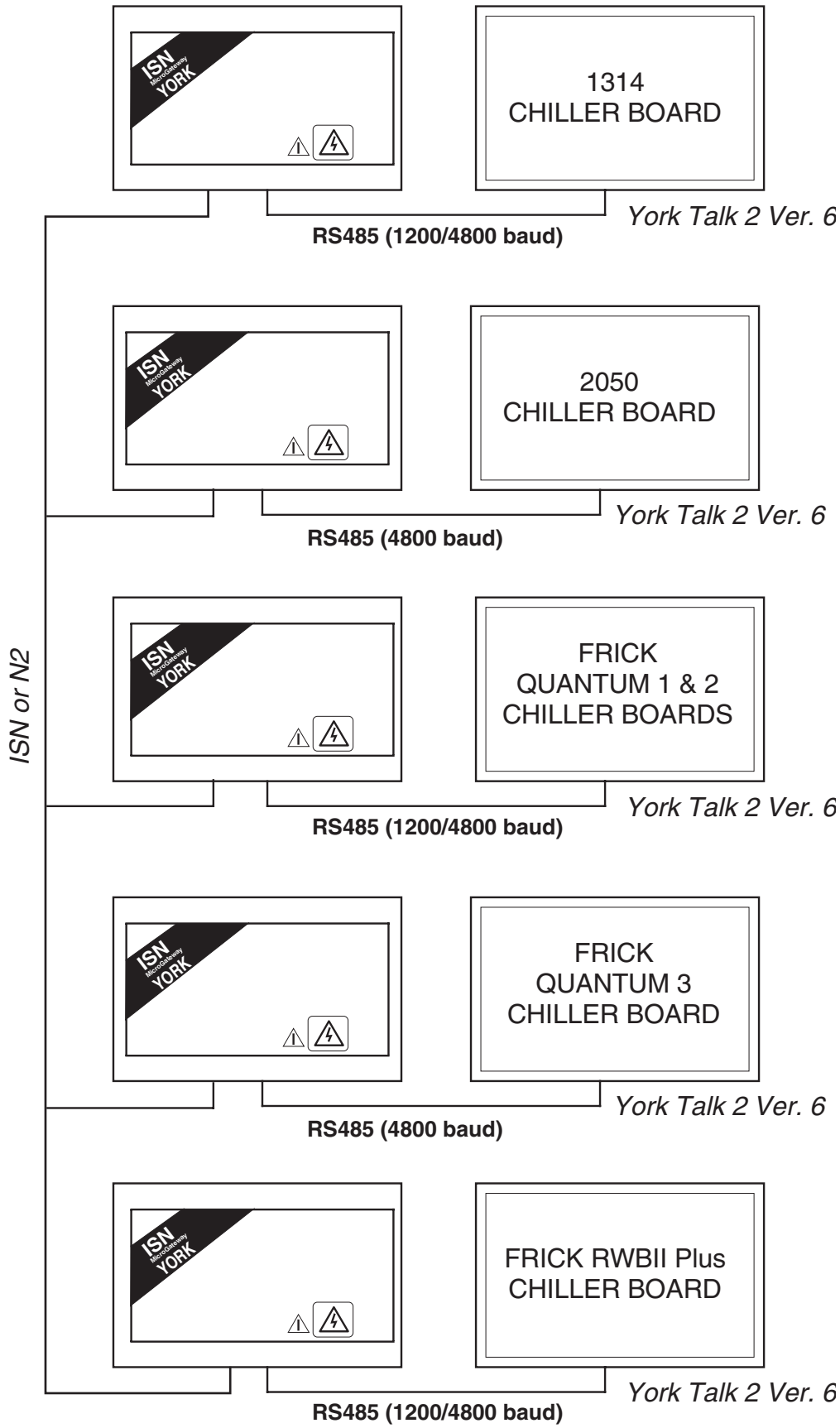


Figure 7 – Typical Board Topology

SECTION 3

INSTALLATION

General

This manual assumes the installer is competent in environments with moving machinery, and is able to recognize and protect against any inherent hazards, such as, but not limited to, refrigerants, oil, materials under pressure, rotating parts, and both high and low voltages. Each of these items has the potential, if misused or handled improperly, to cause bodily injury or death.

It is the obligation and responsibility of the operating/service personnel to identify and recognize inherent hazards, protect themselves, and proceed safely in completing their tasks. Failure to comply with any of these requirements could result in serious damage to the equipment, as well as severe personal injury or death. In addition to following standard local, state and country codes and procedures, it is recommended that a lockout procedure be used to prevent inadvertent start up of equipment during installation and maintenance procedures.

All wiring should be carried out in a safe and neat manner and should always comply in all respects to the latest edition of any local, state and country codes that may be applicable. The wiring should be installed in a manner that does not cause a hazard and is protected against electrical and mechanical damage.

Environment

The MicroGateway must be installed in an environment that is protected from the direct influence of the elements and is within the following:

Temperature: 32 to 122°F (0 to 50°C).

Humidity: 0% to 95% non-condensing.

The MicroGateway should never be mounted outside the confines of a building. If this cannot be avoided, it may be mounted inside an enclosure rated at IP65/NEMA 4X or greater. In addition to protection against the elements, the enclosure must be capable of maintaining the circuit boards at the required temperature and humidity. This may require the addition of a fan or heater to maintain the temperature and humidity inside the enclosure.

Some micro panels, such as the OptiView, provide a mounting location for the MicroGateway circuit board. These micro panels also provide a power supply for the MicroGateway and utilize a different part number, which does not include a separate power supply. Refer to the documentation included with the chiller.

Care should be taken when mounting the MicroGateway so as not to impede access to other equipment within the vicinity.

Power

The MicroGateway circuit board is powered from a 12 volt DC supply. When used with an OptiView, this voltage is obtained directly from the micro panel through a power harness supplied with the kit.

If the MicroGateway circuit board is installed in its own enclosure, a power supply board is included in the enclosure. Line voltage may be supplied using an external power source or drawn from the input voltage terminal strip inside the chiller micro panel, which is recommended. On all 115 VAC micro panels, the line wire is connected to terminal L and the neutral wire connected to terminal 2. A ground strip or ground points are also located within the micro panel to ensure a common ground. For other micro panels, refer to the chiller documentation.

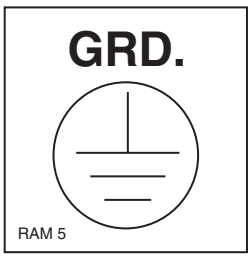
Be sure the VA capacity of the line supplying the chiller micro panel is rated sufficiently for the additional power required by the MicroGateway.

Use a suitably-sized wire (refer to the table titled “Recommended Cable Specifications”) to connect the line voltage feed to the MicroGateway. The line voltage power source should be “clean”, separately fused (for either 110 or 220 VAC), and isolated, (using a control transformer) from other equipment in the plant room that may generate EMI interference.

All high voltage wiring (>75 volts) must be run in conduit and kept separate from low voltage communications wiring. This will greatly reduce network communication problems.

Grounding

For the enclosure style of MicroGateway a ground wire must be connected directly to the chassis at the point of entry. This ensures that the enclosure remains grounded when the power plug is removed.



There is a small label that identifies the ground point. This should be connected through a continuous ground circuit to the incoming ground at the source transformer.

High Noise Environments

Electrical equipment which employs high speed switching circuits (variable speed drives, solid state starters and computing equipment) generate Electro-Magnetic Noise (EMI) and Radio Frequency Interference (RFI). When excessive, this noise can effect the way electronics behave and, ultimately communication.

Noisy environments often show up as varying ground potentials, i.e. the electrical reference points at different nodes are different. This is referred to as "common mode" noise. The RS485 circuitry is designed to withstand a certain defference between varying ground sources. However, if this difference becomes too great and exceeds certain voltage limits, the RS485 circuitry can be permanently damaged and require replacement.

To combat these possible problems follow good wiring practices:

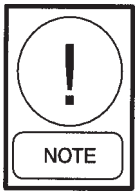
- Care should be taken to ensure that the micro panel and MicroGateway are powered from a source with true earth ground.
- The communication cable should be shielded with the shield terminated at one end only.
- Communication cables should not be run in close proximity to or parallel with power cables.

The pathways for noise, and therefore the likelihood of common mode noise, are greatly reduced if the MicroGateway is close-coupled to the micro panel (as shown in Figure 10). Close-coupling requires that the MicroGateway and micro panel share the same line voltage power source and are physically close to one another. Typically the MicroGateway is mounted on the micro panel enclosure. This ensures a short communication cable which is usually protected entirely within the two enclosures.

The RS485 standard requires three conductors when connecting network nodes together; 2 signal wires and a signal return path. YORK has typically used a twisted-pair cable for the signal wires with the building infrastructure (ground) functioning as the return path.

When an application requires the MicroGateway to be mounted remotely from the micro panel and the line voltage power supply obtained from a different location, the building ground may be affected by noise and the signal lost along the return path. In these situations, a separate conductor (outside the shielding) should always be run alongside the standard twisted-pair cable in case there are communication problems. This avoids future installation costs should an additional conductor be required to address communication problems. If communication problems do occur, the additional conductor can be connected to equalize the ground potential. If communication operates as expected, the additional conductor is not connected and the building infrastructure operates as the signal return path.

CAUTION: Do not connect the additional conductor unless communication problems have been verified.



NOTE: The initial purchase and installation cost of an additional conductor is minimal compared to the cost of installation at a later date. The additional conductor is recommended due to the frequency of communication problems experienced with remotely mounted equipment.

When connecting the conductor to the ground, a small resistor (approximately 100 ohm, 2 watt) should be installed at one end to reduce the magnitude of current flow in the conductor.

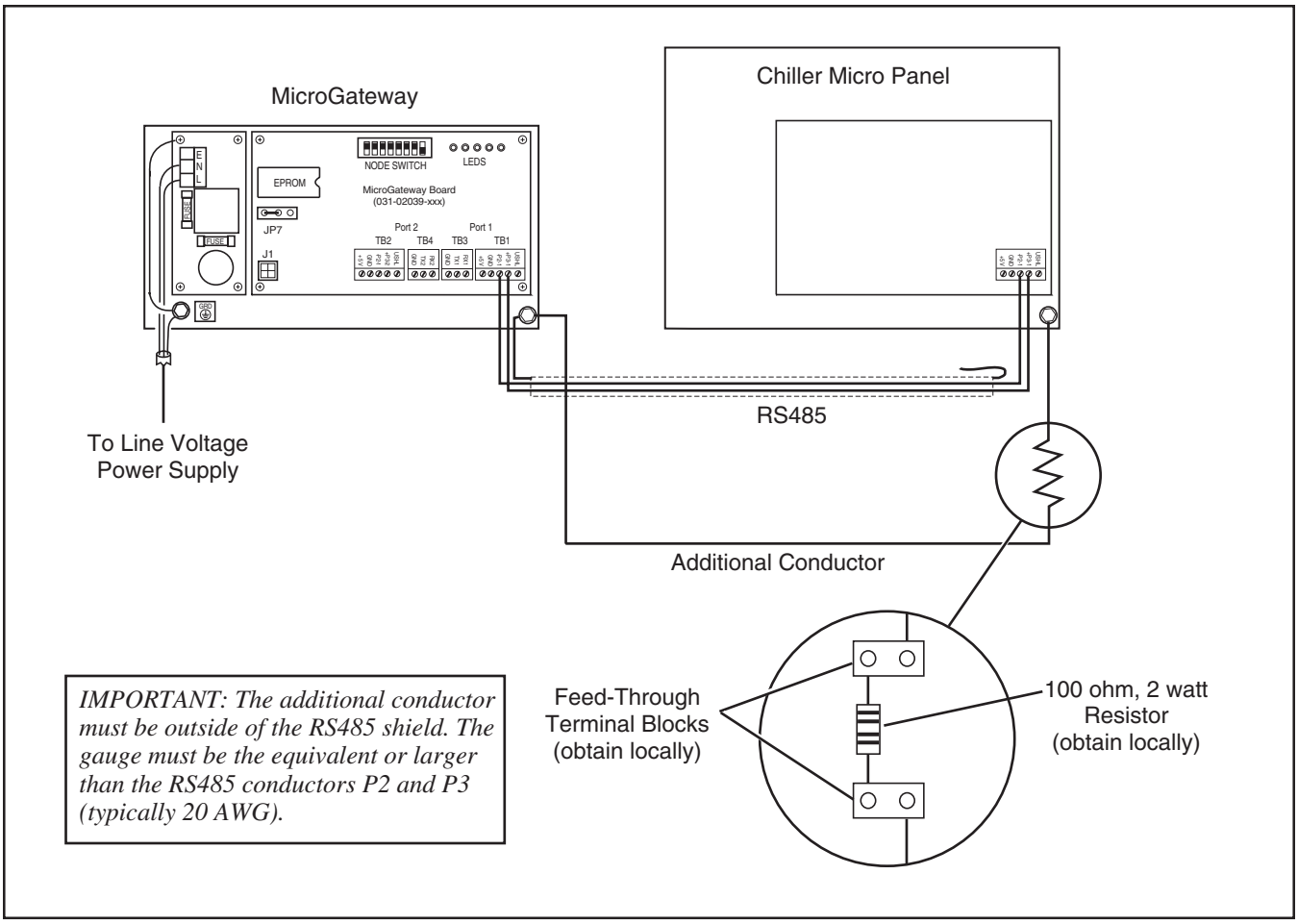


Figure 8 – Additional Ground Conductor

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Termination

On an ISN network (between MicroGateways) a Terminator Module (Part Number 031-01488-000) is required at each network end device. (An end of LAN device can be identified as one that has only one set of ISN LAN wires connected to it.) This provides biasing of the network and assists in returning the signal to a normal state in the event of voltage transients.

Protection of Communication Ports

When using RS485 technology it is possible that electrical disturbances, such as voltage spikes or stray voltage, can damage a circuit board. The MicroGateway includes tranzorbs at the RS485 ports to protect against these spikes. Not all micro panels include tranzorbs. Refer to the chiller documentation for recommendations on installing tranzorb protection.

Cable Specifications

Power Cables

CAUTION: Aluminum wire is absolutely not acceptable.

For an enclosure style MicroGateway the power cable should be at least an 18 AWG copper wire rated for 10 amps per core at 250 volt AC. If the power cable uses three conductors, the ground conductor must be, as a minimum, the same size with the same current carrying capacity as the live and neutral conductors.

Table 3. Recommended Cable Specifications

	Digital Outputs	Analog, Digital, Pulse Inputs and Analog Outputs	RS485 (ISN & York Talk 2 Networks)	RS232 (Devices to LINCs and Controllers, York Talk 1 & 3 Networks)	Line Voltage Power Supply
Number of Cores	2 (or n for multicore)	2 (or n for multicore)	2 (Twisted-Pair)	3	3
Minimum Conductor Gauge – AWG (CSA)	22 (0.34 mm^2)	22 (0.34 mm^2)	20 (0.52 mm^2)	24 (0.20 mm^2)	18 (1.00 mm^2)
Conductor Material	Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper	Plain Copper
Strand/Strand gauge AWG (CSA)	7/30 (7/0.1 mm)	7/30 (7/0.1 mm)	7/28 (7/0.12 mm)	7/32 (7/0.08 mm)	16/30 (16/0.1)
Voltage Rating – Uo/U	300	300	300	300	300/600
Nominal Current per Core – amps	1	2.5	N.A.	N.A.	10
Shield	Unshielded	100% Overall Beldfoil	100% Overall Beldfoil or 93% Braided	100% Overall Beldfoil	N.A.
Conductor Insulation	Round PVC	Round PVC	Round PVC	Round PVC	PVC
Core Insulation	PVC	PVC	PVC	PVC	PVC
Nominal Capacitance between Conductors – pF/m	N.A.	80	64.6	108	N.A.
Characteristic Impedance – ohms	N.A.	N.A.	78	N.A.	N.A.
Maximum Run Length – ft (m)	1000 (305)	1000 (305)	Refer to Network Section	32 (10)	N.A.
Belden Number	8442	8761	9272	9533	NA

N.A. – Not Applicable

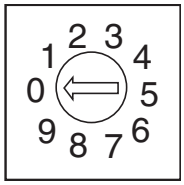
NOTE: The characteristics listed are the minimum requirements. Whenever possible, use wiring which meets or exceeds the equivalent of the Belden wire specification.

Network Cables

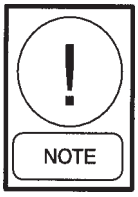
In most cases the network cables are specified and provided by a third-party integrator. For the Micro-Gateway to chiller interface, a twisted-pair cable, with an overall shield and drain wire, with conductors being at least 24 AWG is the minimum. For the ISN network (between MicroGateways) a 20 AWG twisted-pair cable with overall shield and drain wire is recommended.

User Selections

Setting the Rotary Switch



Many micro panels use a small rotary switch to set the address of the chiller micro panel on a York Talk network, (York Talk ID address = Rotary Switch + 1). Since the MicroGateway uses a one to one relationship with the chiller panel, this switch is normally set to 0 (York Talk ID address 1) in all cases but that of a master/slave configuration. In this case the master micro panel rotary switch should be set to 0 (York Talk ID address = 1) and the slave micro panel to 1 (York Talk ID address =2).



NOTE: The MicroGateway can be programmed to communicate to chillers with different network addresses. Refer to the **Operation Manual.**

If the chiller micro panel is not equipped with a rotary switch, the York Talk ID address (chiller ID) is embedded in the software. In most cases this is user configurable. Some models of chiller use a fixed chiller panel ID which cannot be changed. Refer to the chiller documentation for information on software configuration of the York Talk ID address or chiller ID.

MicroGateway Jumpers

The MicroGateway is equipped with a jumper (J7) to provide a means of disconnecting the capacitor from the backup circuitry. The jumper should be installed at all times. If removed without power connected, all configurations and setup parameters will be lost.

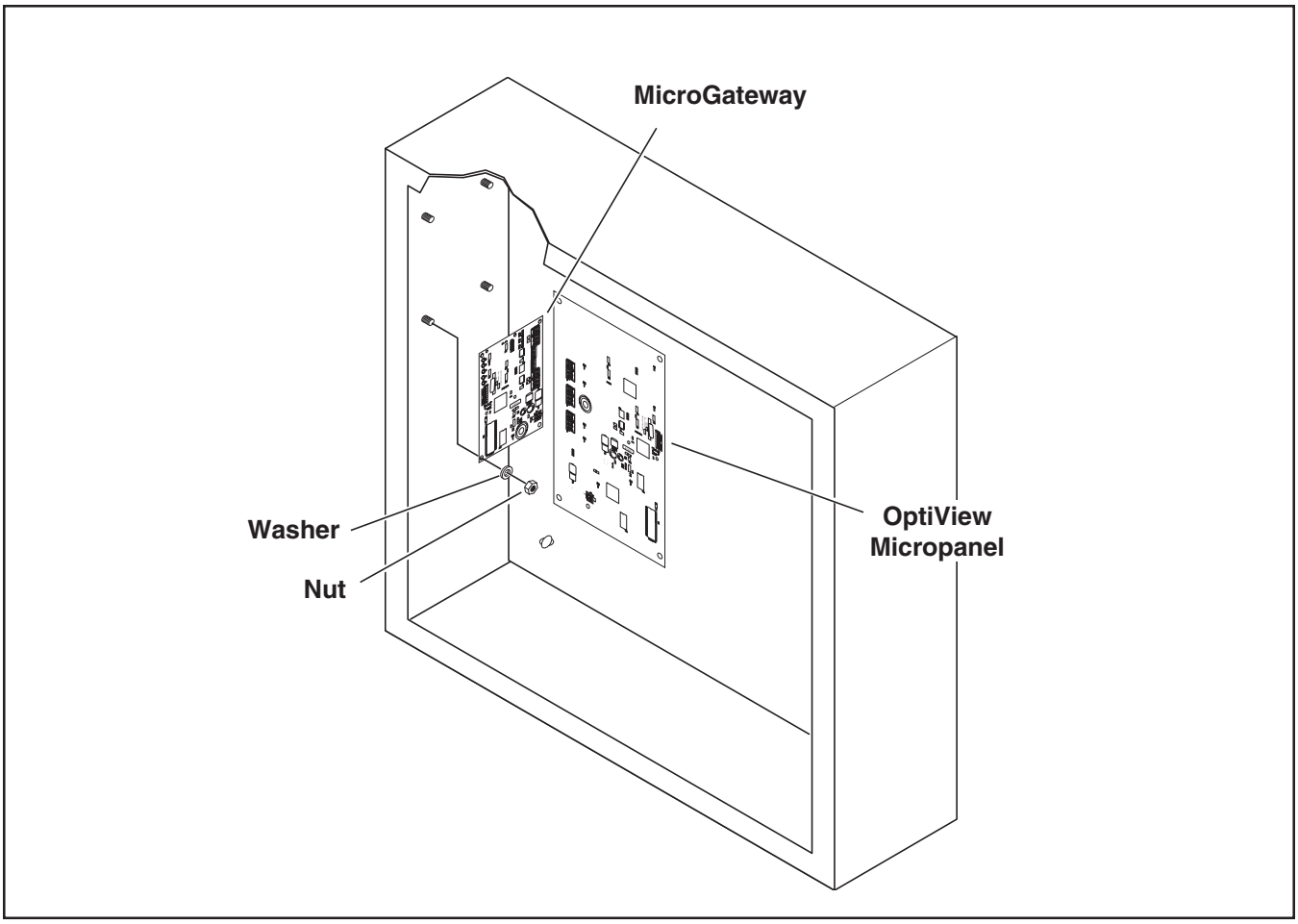
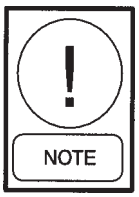


Figure 9 – OptiView Mounting

OptiView Installation

When installed in an OptiView enclosure, the MicroGateway is typically used to translate the chiller data, in a York Talk format, to either an ISN or N2 format.

CAUTION: Always disconnect power to the chiller panel when working inside. Dropped tools and metal chips from drilling can cause short circuits.



NOTE: If a previously installed GPIC is determined to be faulty, a MicroGateway should be installed in its place. The mounting location of the MicroGateway is the same as the GPIC.

1. Disconnect power to the chiller micro panel and follow standard lock out procedures to prevent electrocution and inadvertent activation.
2. Attach the MicroGateway board to the studs in the upper left corner of the OptiView enclosure using the four screws and washers provided.
3. Ensure jumper J27 is set for RS232 (refer to Figure 6 OptiView Connections).
4. Connect the power harness (included with the kit) from J1 on the MicroGateway to J21 on the OptiView micro panel. (Refer to Figure 6 for connection details.)
5. Check for frayed wire strands which could cause a short circuit. Ensure that all components are secure.

Refer to the “Connecting the Communications Wiring” for information on connecting the MicroGateway to the network.

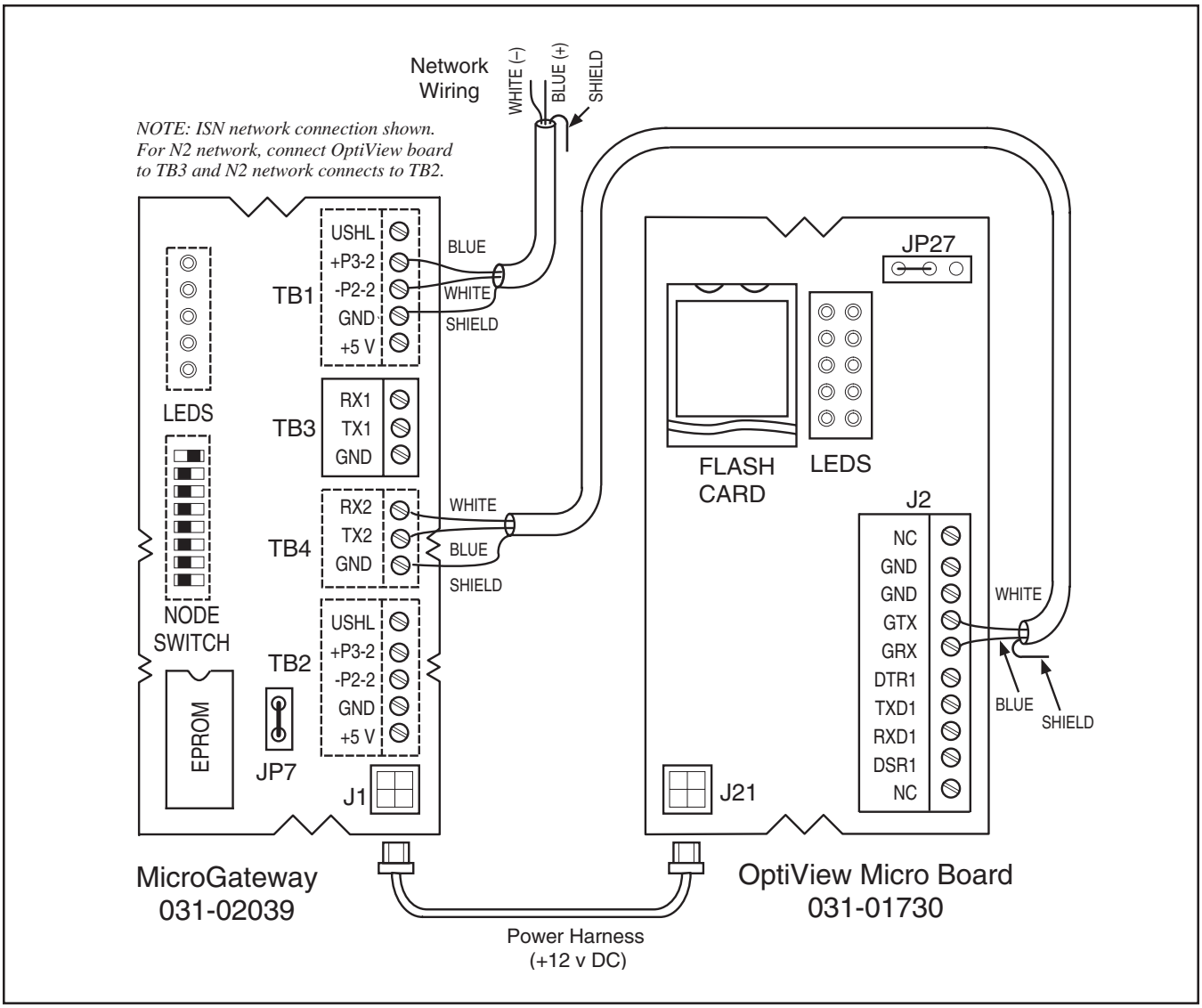


Figure 10 – OptiView Connections

Other Chiller Panels

CAUTION: Never install the MicroGateway outside the confines of a building unless mounted within another enclosure rated at IP 65/ NEMA 4X or higher.

For non-OptiView applications the MicroGateway includes an enclosure with power supply. It does not include communication cables due to the variety of types and lengths which may be required.

WARNING: Under no circumstance should the MicroGateway be installed inside a high voltage enclosure (>75 volts). This configuration will result in unreliable operation.

The MicroGateway enclosure may be mounted inside the chiller micro panel's low voltage section, if sufficient clearance is available and no local, state or federal codes are violated. Care must be taken to separate the low voltage wiring from the high voltage wiring within the micro panel.

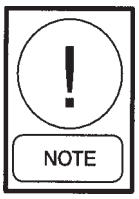
The MicroGateway can also be mounted as a stand-alone enclosure, either on the outside surface of the chiller micro panel (close coupled) or on a smooth surface within close proximity of the chiller panel enclosure.

If mounting the MicroGateway on a wall, ensure that the power source is within 3 ft. (0.9 m) of the MicroGateway to easily disconnect the power.

For mounting on or inside a micro panel, the line voltage power is typically drawn from inside the micro panel. Ensure that the line voltage is sufficient to supply the required power for the MicroGateway and micro panel.

Mounting on a Micro Panel

CAUTION: Always disconnect power to the chiller micro panel when working inside. Dropped tools and metal chips from drilling can cause short circuits.

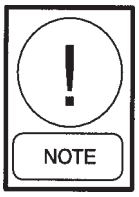


NOTE: When attaching the MicroGateway to a micro panel, make sure the MicroGateway does not impede access to other components around the micro panel.

1. Disconnect power to the chiller micro panel and follow standard lock out procedures to prevent electrocution and inadvertent activation.
2. Make sure the MicroGateway enclosure will fit properly and that no obstructions, such as internal boards, switches or external conduit, prevent mounting or servicing of the micro panel.
3. Locate and remove the two plastic caps in the bottom of the MicroGateway enclosure.
4. Mark an appropriate place on the enclosure for a matching set of knock out holes. Mark and drill or punch two holes in the micro panel.

CAUTION: Be careful not to damage the circuit cards in the MicroGateway or micro panel during installation. Protect all circuit boards from metal chips which may cause short circuits if left on the boards at start-up.

5. Using two bulkhead pipe couplers (PN 025-14158), attach the MicroGateway enclosure to the micro panel.



NOTE: Use of the bulkhead pipe couplers will provide sufficient clearance to allow removal of the MicroGateway cover.

6. Complete the wiring as outlined in “Connecting Power” and “Connecting the Communications Wiring.”

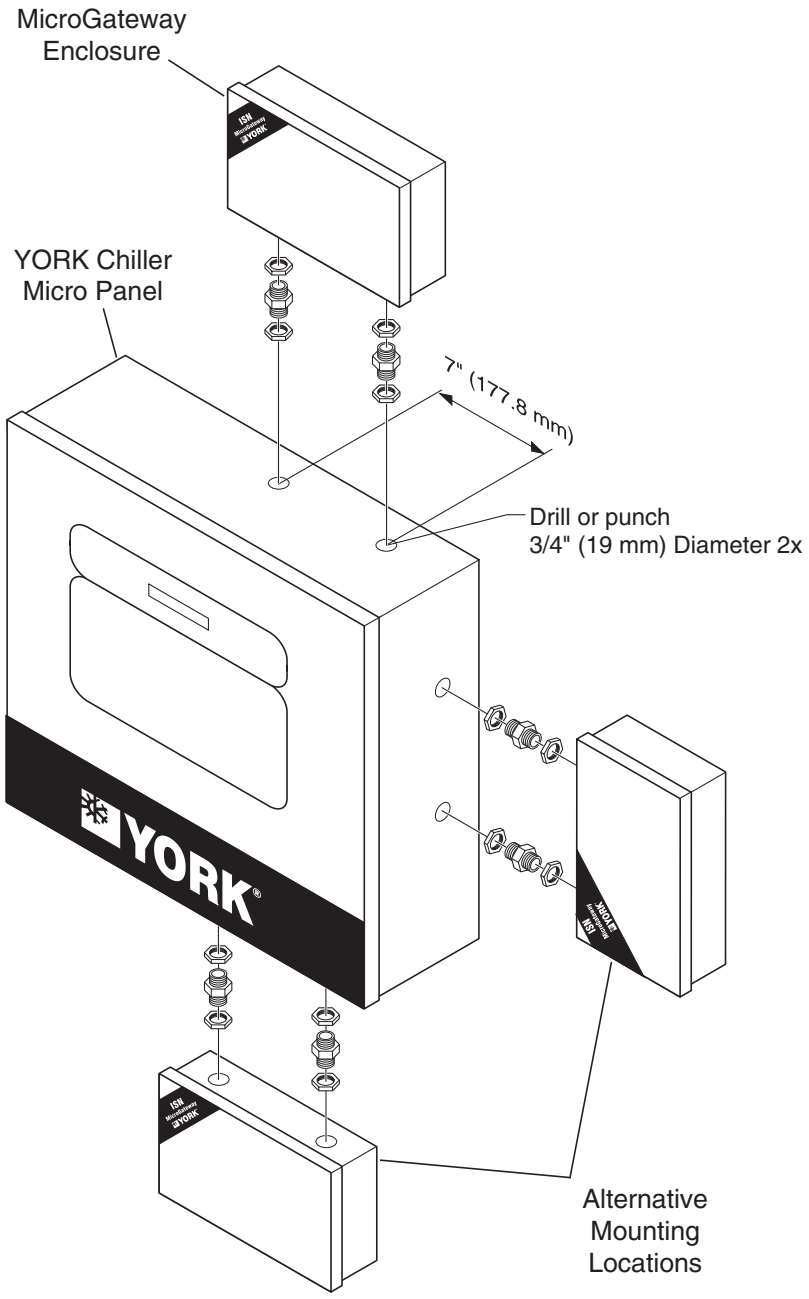


Figure 11 – Enclosure Mounting

Wall Mounting

NOTE: When wall mounting the MicroGateway make sure there is no interference with other components in the near vicinity. Use appropriate conduit to connect the power and communications wiring to the Micro-Gateway.

1. Check for proper clearances for the necessary electrical and communications cable runs.

   Power and communications wiring must comply with all local ordinances and customer requirements.

2. Select a suitable location and mark the anchor points. Ensure that the enclosure will be level.

3. Drill the appropriate holes in accordance with the type of wall anchor being used.

4. Install the enclosure on the wall. Be careful not to damage the circuit cards during installation.

5. Check that the mounting is secure and the wiring connections are correct and tight. Check that there are no loose wire strands or other metal objects that could cause a short circuit on the circuit board.

6. Complete the wiring as described in "Connecting Power" and "Connecting the Communications Wiring."

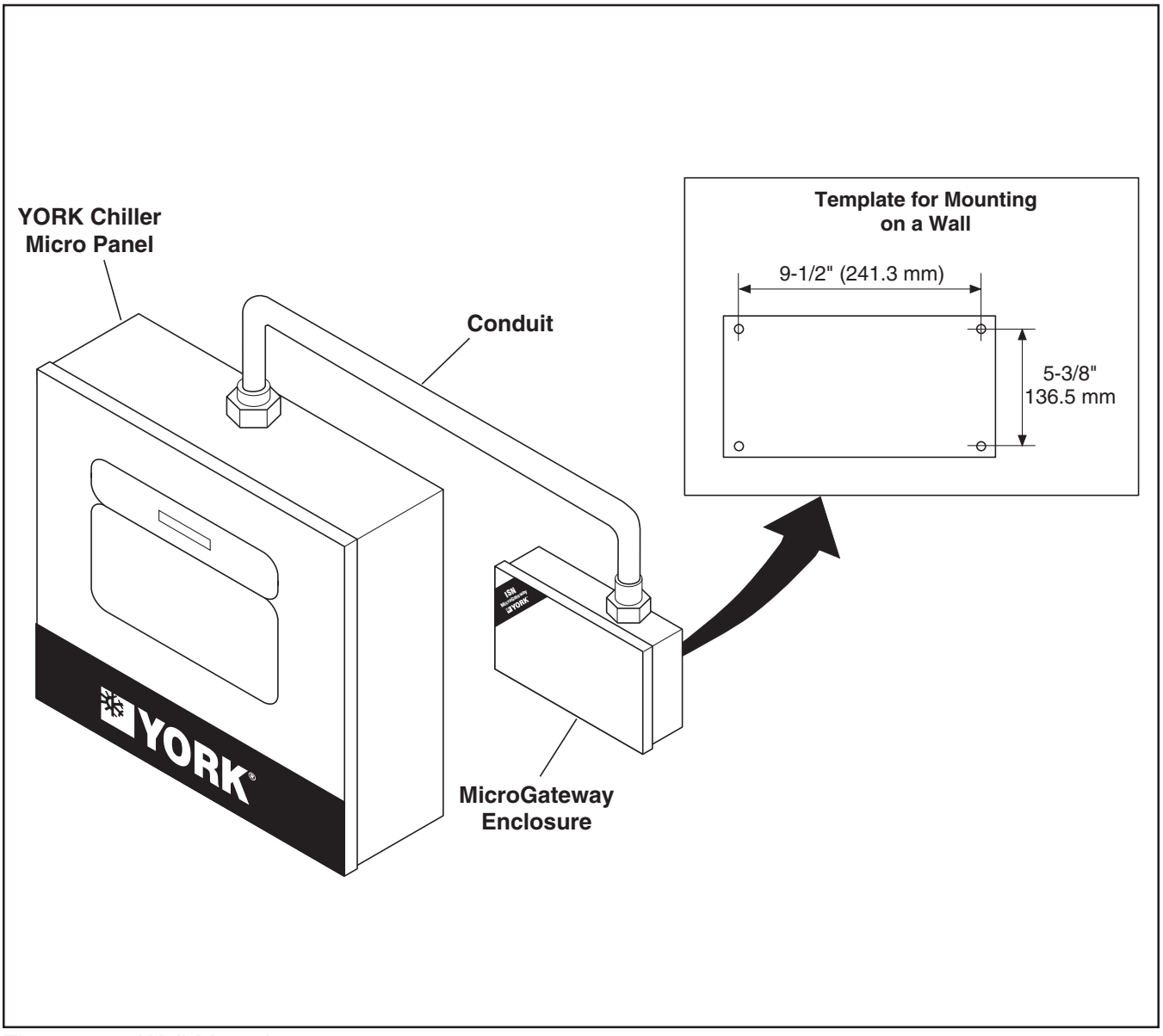


Figure 12 – Wall Mounting

Connecting Power

When using an enclosure type of MicroGateway, power can be drawn from either a separate power supply or from the main terminal strip in the chiller micro panel. When connecting to a power strip in the chiller micro panel, refer to the chiller documentation to confirm a correct location for connecting.

The power source should be protected with a suitable fuse or circuit breaker. Ensure the power is from an uninterrupted source, i.e. not controlled by a programmed switch.

If the enclosure is mounted on a wall, the wiring from the power source to the MicroGateway must always be run in a suitable conduit. To obtain the best EMI and EMC performance, care should be taken to ensure that the conduit is bonded to the metal of both enclosures. Scrape the paint around the knockouts, if necessary to provide a better electrical connection between the joining parts.

CAUTION: Make sure the power source, whether an external power source or from a chiller panel, is rated sufficiently to support the MicroGateway's load.

3

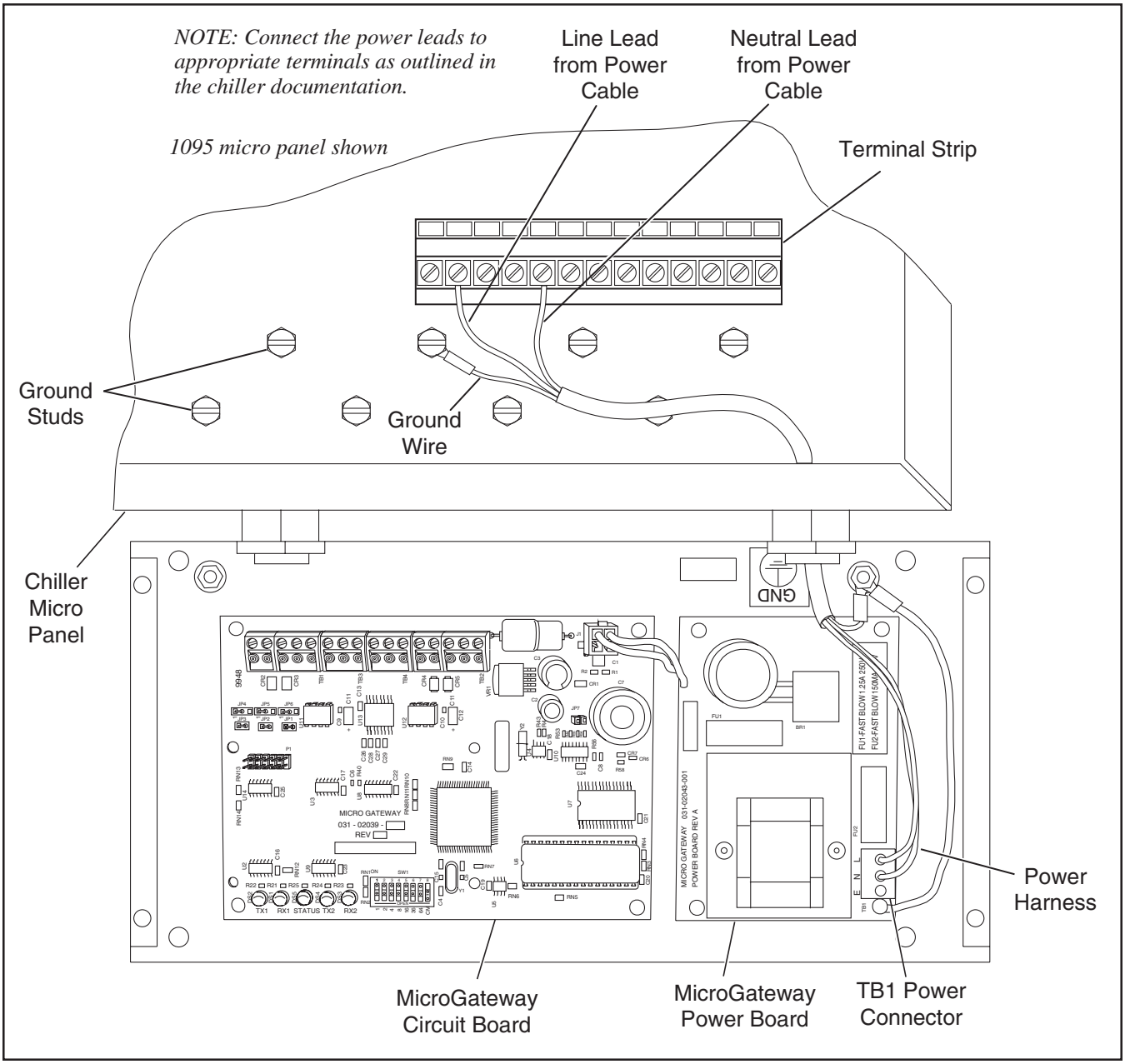


Figure 13 – Power Connections

1. Disconnect power to the chiller micro panel and follow standard lock out procedures to prevent electrocution and inadvertent activation.
2. Connect a 16 - 18 AWG wire from a reliable ground reference to the grounding lug in the MicroGateway's enclosure using a suitable crimp. Do not remove the existing wire that connects the grounding lug to the power board (031-2043).
3. Remove the input connector at TB1 from the power board. Using a screwdriver or a similar tool, depress the small tabs on the side of the connector and insert the proper wires as labelled on the board (N, L).

CAUTION: The ground wire must be connected to the ground stud to ensure the enclosure is grounded if the power plug is disconnected.

4. Check for loose wire strands. Reinsert the connector into the power board.

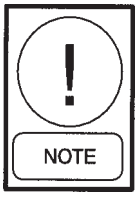
Connecting the Communications Wiring

The ports used to connect the MicroGateway depend upon the type of network and the purpose of the MicroGateway. Both ports include connectors for RS232 and RS485.

If an ISN network is used, Port 1 connects to the ISN network and the chiller connects to Port 2.

If an N2 network is used, Port 2 connects to the N2 network and the chiller connects to Port 1.

If the MicroGateway is used as a point-of-connection to an ASCII device, the "chiller network" must be ISN and connected to Port 1. Port 2 then connects to the ASCII device.



NOTE: Due to the variety of cables and lengths required, communication cables are not included with any enclosure-style MicroGateways. Be sure the cables used meet standard RS232 or RS485 specifications.

The ISN network connections are daisy-chained between devices using RS485 technology. The polarity of each device must be maintained with P3 of one device connected to P3 of the next device and P2 connected to P2.

Table 4. Available F45 Port Configurations

Port 1 RS485 (TB1)	Port 1 RS232 (TB3)	Port 2 RS485 (TB2)	Port 2 RS232 (TB4)
ISN LAN		York Talk 2	
ISN LAN*		N2*	
York Talk 2		N2	
	York Talk 1 or 3	N2	
ISN LAN			York Talk 1 or 3
ISN LAN			ASCII
	York Talk 1 or 3		ASCII
York Talk 2			ASCII

* *Due to communication conflicts this port configuration should not be used and is not supported.*

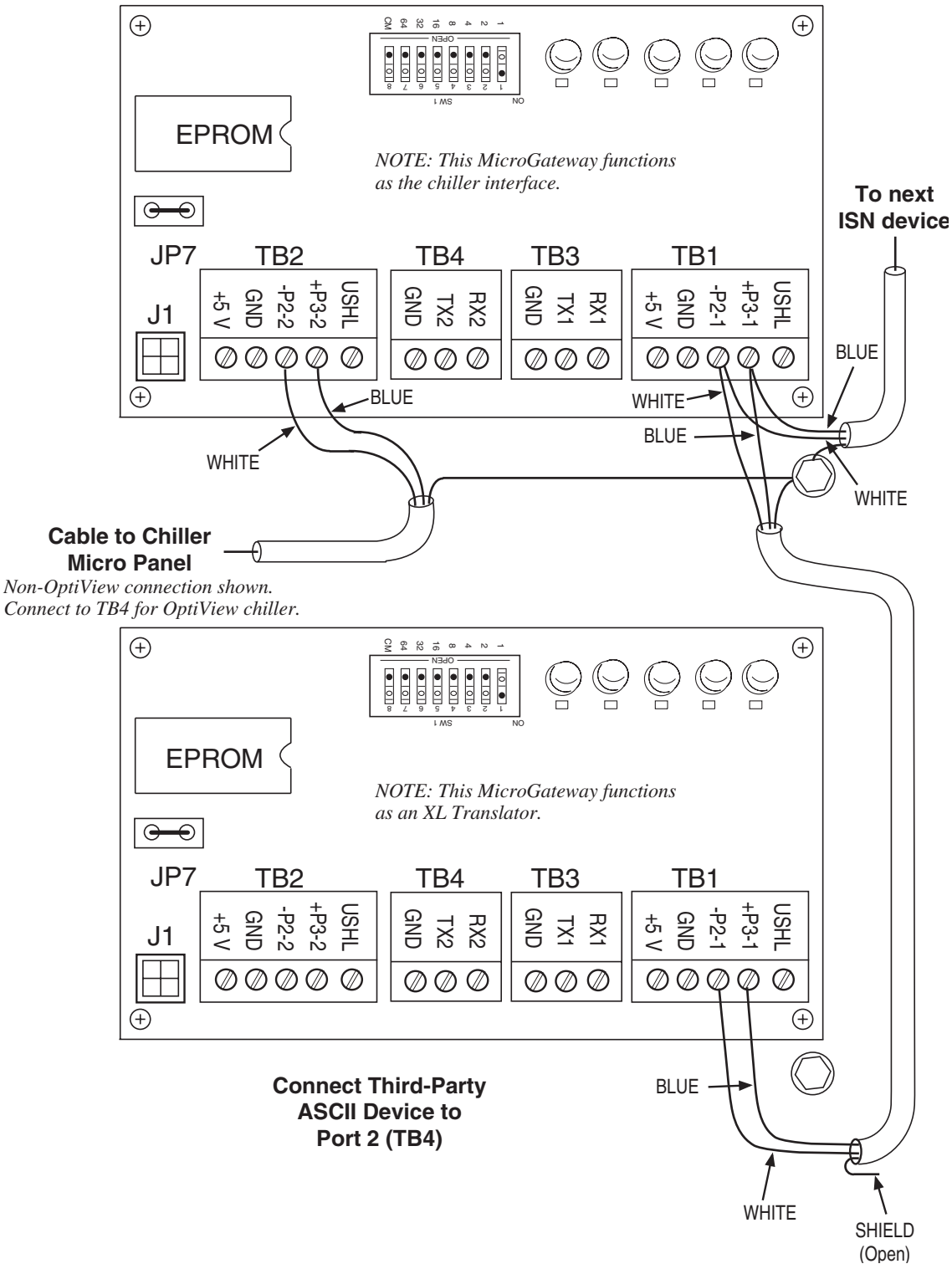
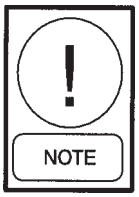


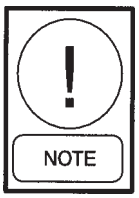
Figure 14 – Point-of-Connection for ASCII Interface

The drain wire of the communication cable must be connected to the equipment ground at one end only. The other end should be connected to either the Unshielded terminal or remain unconnected.

Each port has two connectors, one for RS232 and one for RS485. It is possible to connect to two connectors for the same port at the same time but the protocol must be changed to reflect the purpose of the device. For the York Talk protocols, the physical layer is determined by the version of York Talk. Refer to Table for a list of possible connection configurations.

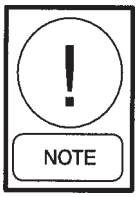


NOTE: Figures 14 through 24 show the wiring and jumper settings for specific micro panels. Only the applicable details, i.e. jumpers, connectors, rotary switch, are shown for each board. Each figure shows the LAN network as if connected to an RS485 cable. RS232 can also be used.



NOTE: When installing a Micro-Gateway on an older micro panel, please contact York Service Engineering to ensure that the software resident in the micro panel is capable of supporting York Talk communications. Some older units were not York Talk-ready and may require a software update.

1. Connect the proper type of communications cable to the appropriate ports on the MicroGateway and route them is a safe manner to the other devices according to all local, state and country codes.
2. Check for frayed wire strands which could cause a short circuit. Ensure that all components are secure.
3. Verify that the chiller ID switch (rotary switch) on the micro panel is set to 0 if the chiller is the master or to 1 if the chiller panel is a slave.



NOTE: For York chillers, when the chiller ID is set to 0, the chiller network address is 1. When the chiller ID is set to 1, the chiller network address is 2. For Frick chillers, the chiller ID and the chiller network address are the same.

4. Check the jumpers on any devices, such as the micro panel or controller, for proper settings.

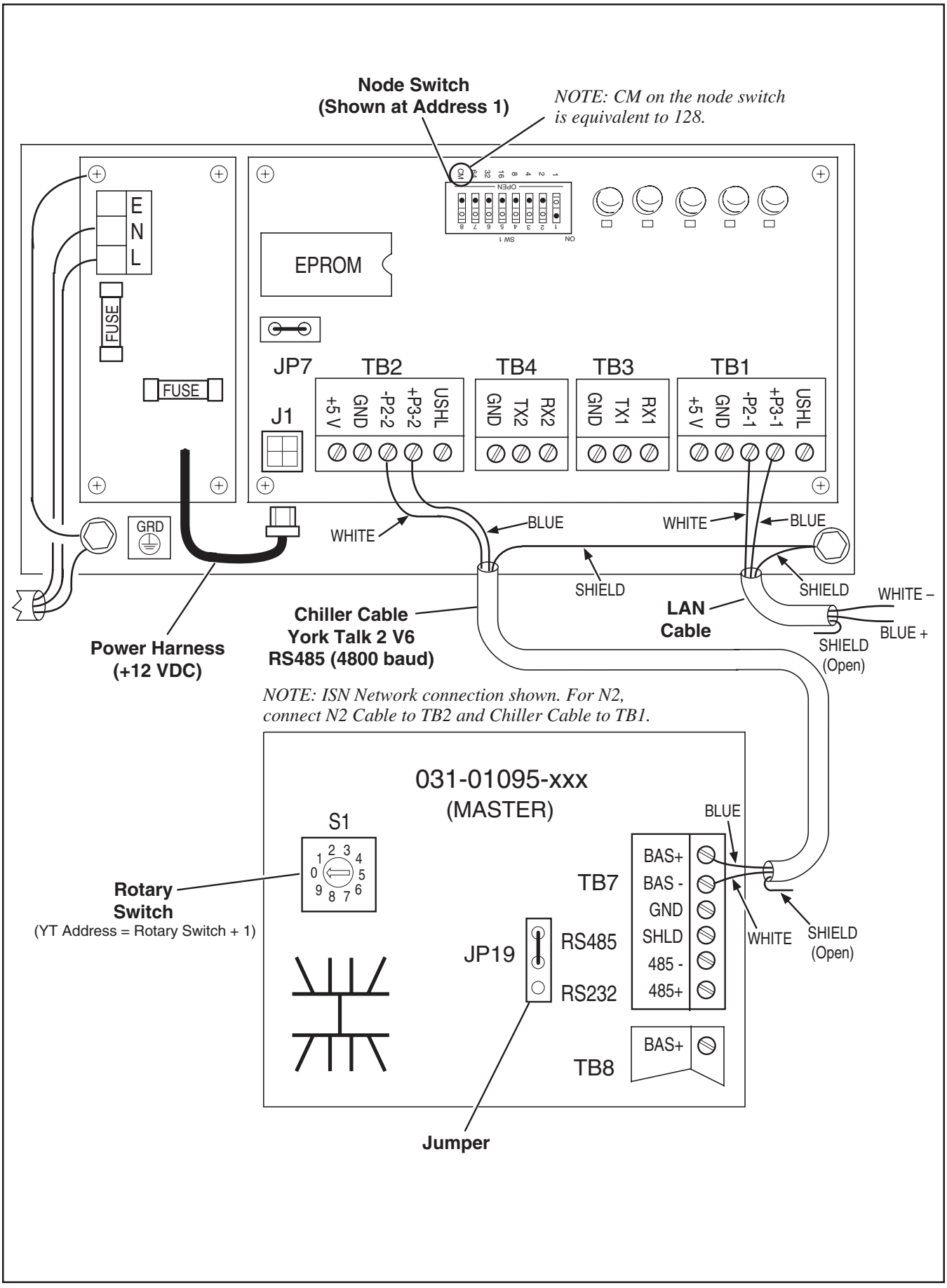


Figure 15 – 1095 Master Board Connections

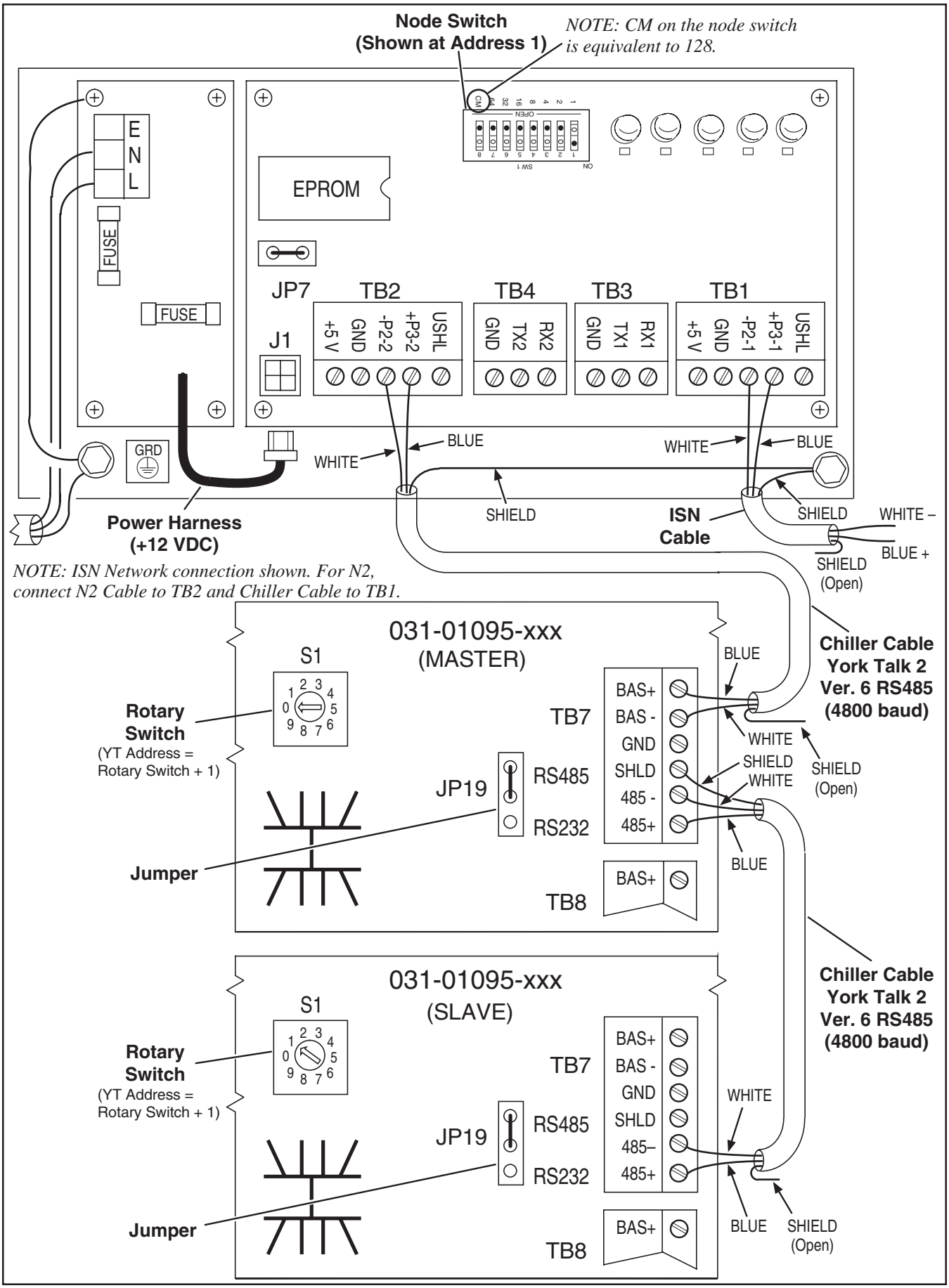


Figure 16 – 1095 Master/Slave Board Connections

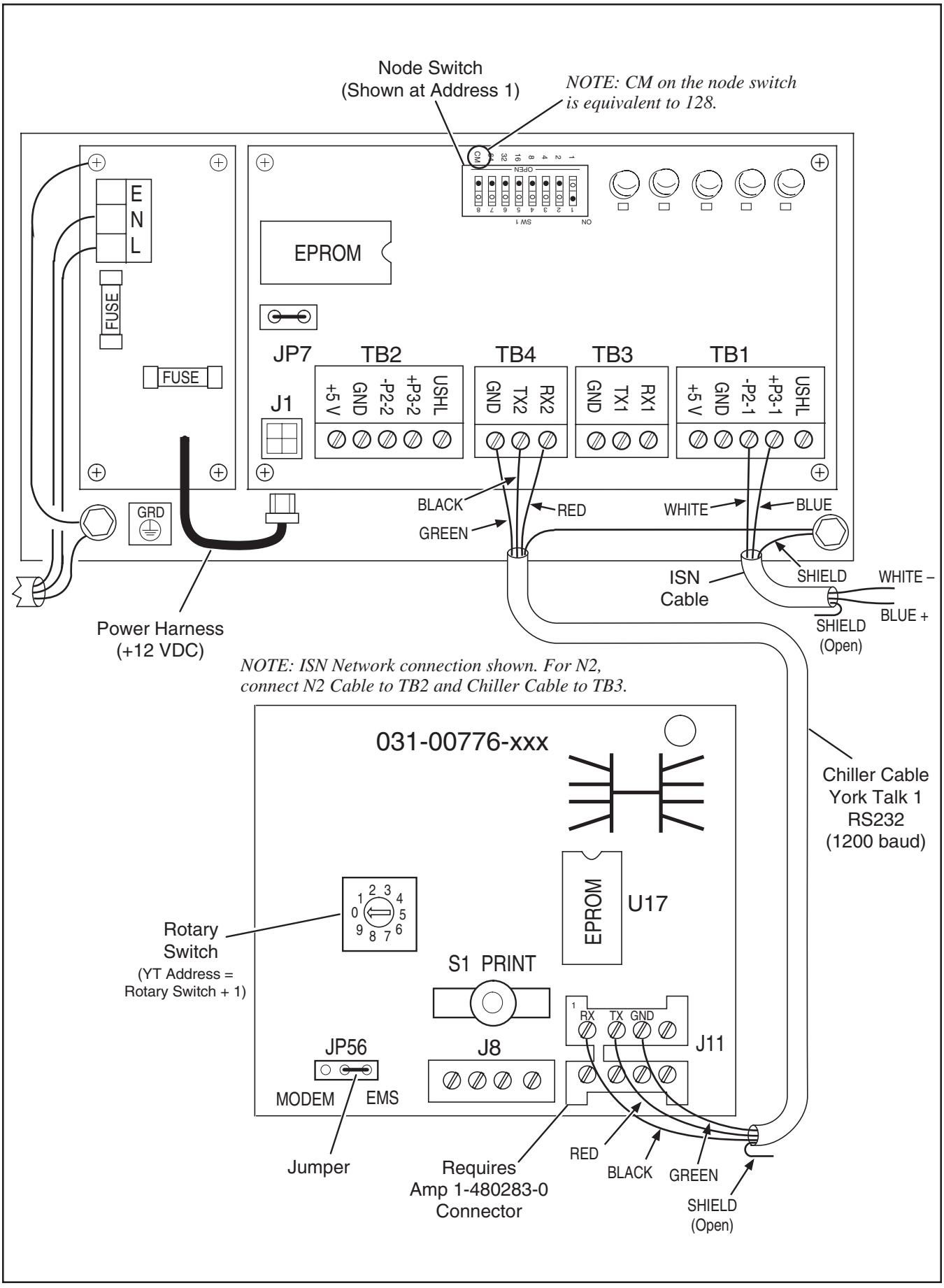


Figure 17 – 776 Board Connections

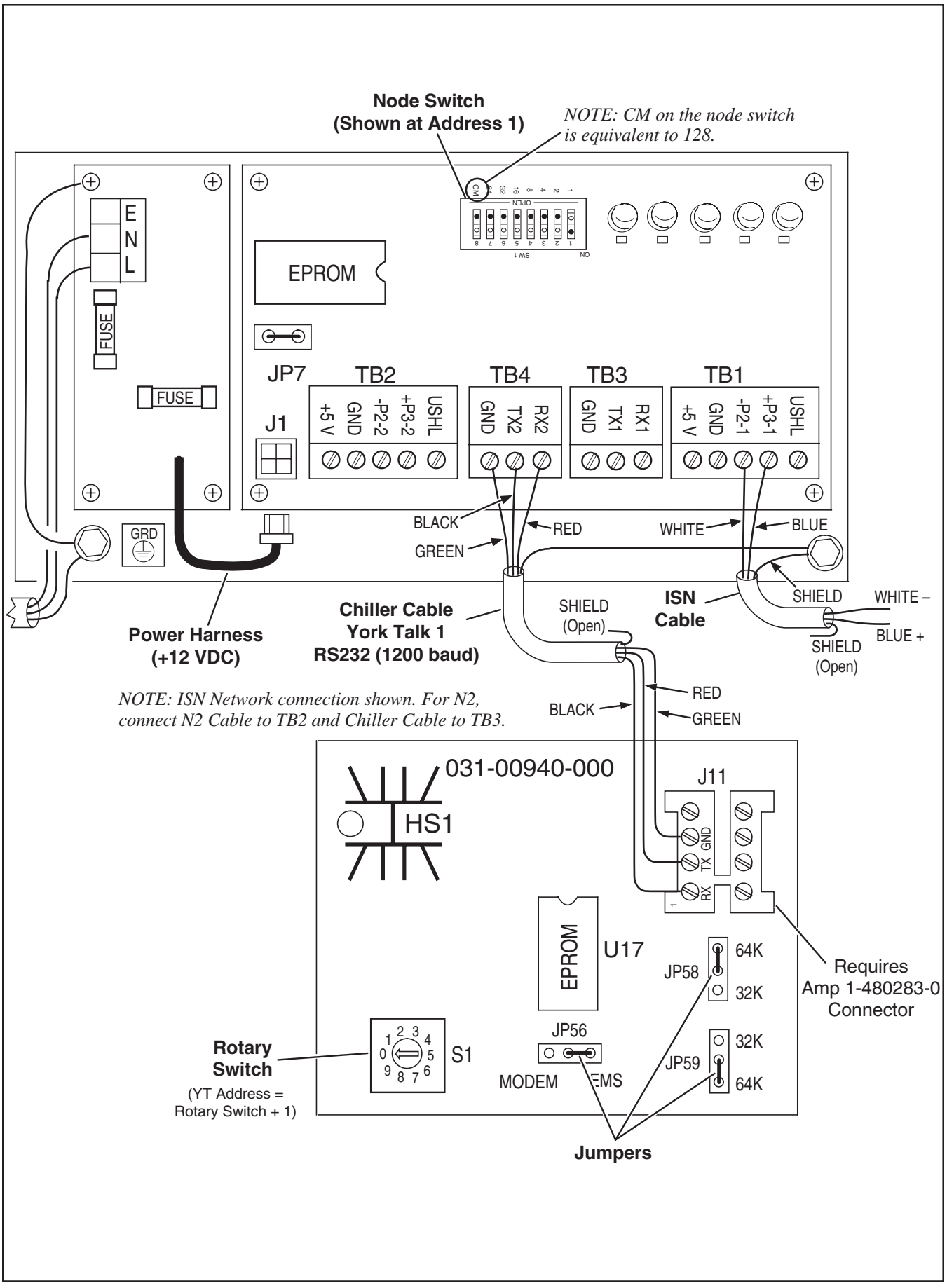


Figure 18 – 940 Board Connections

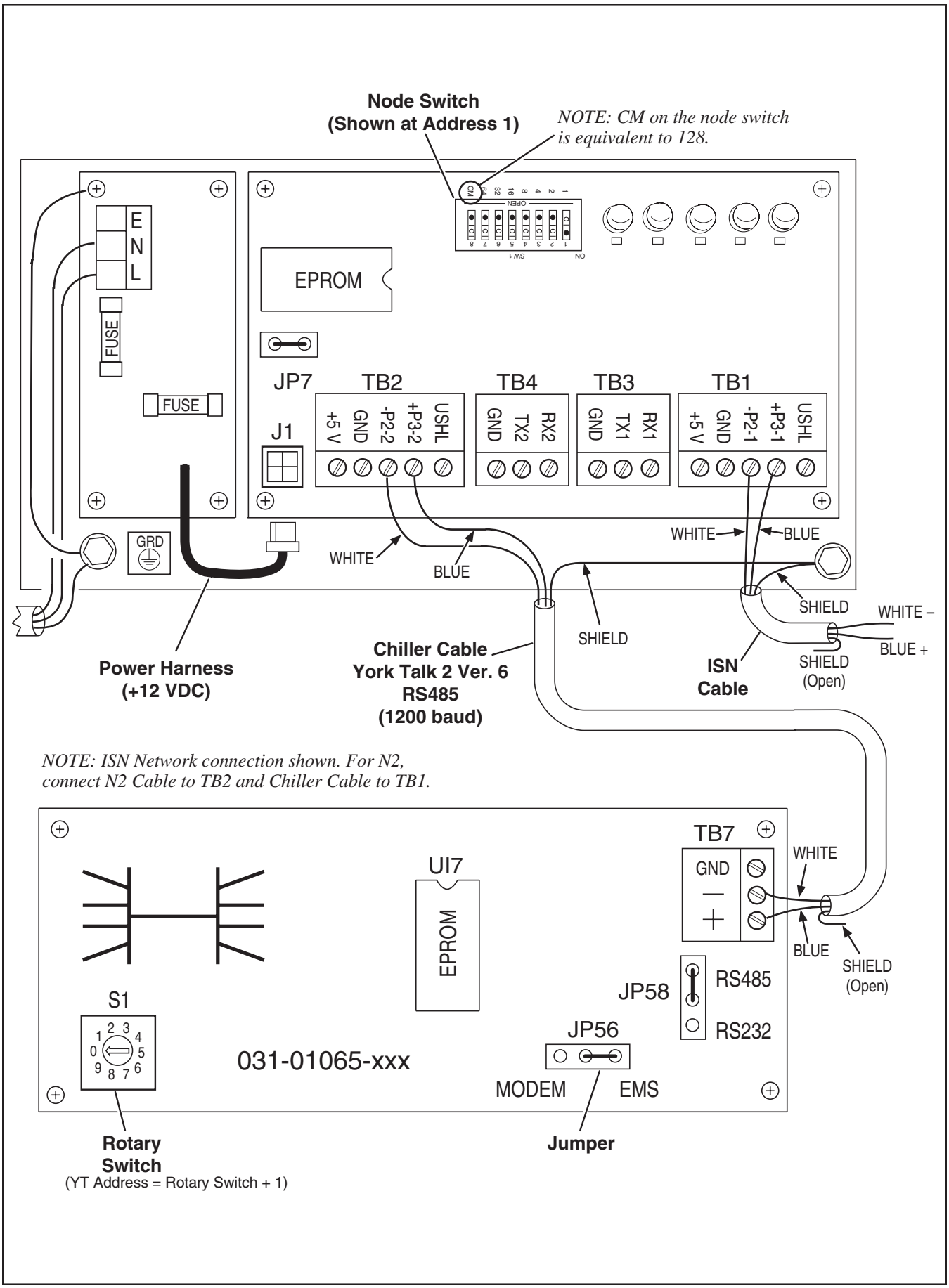
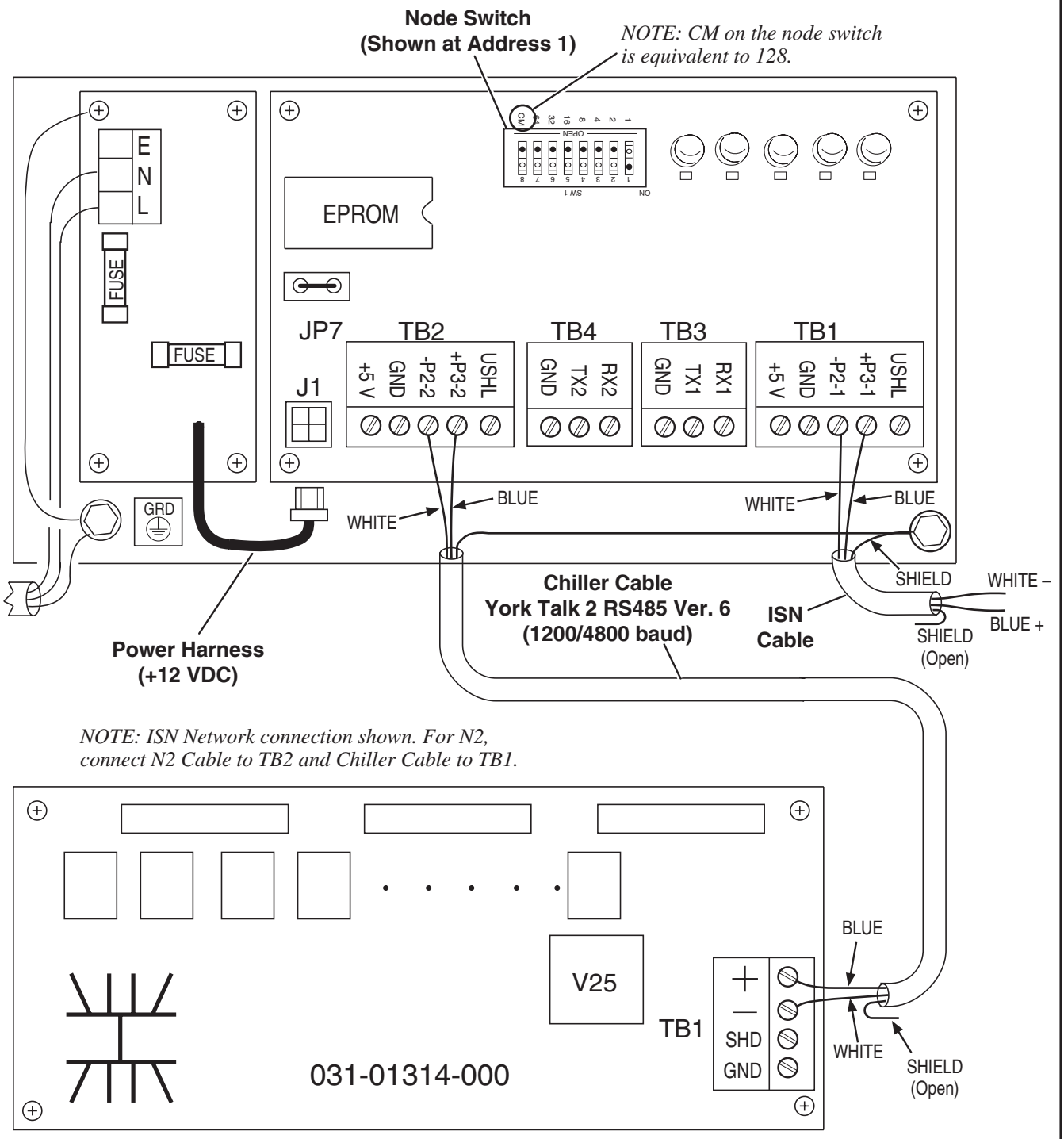
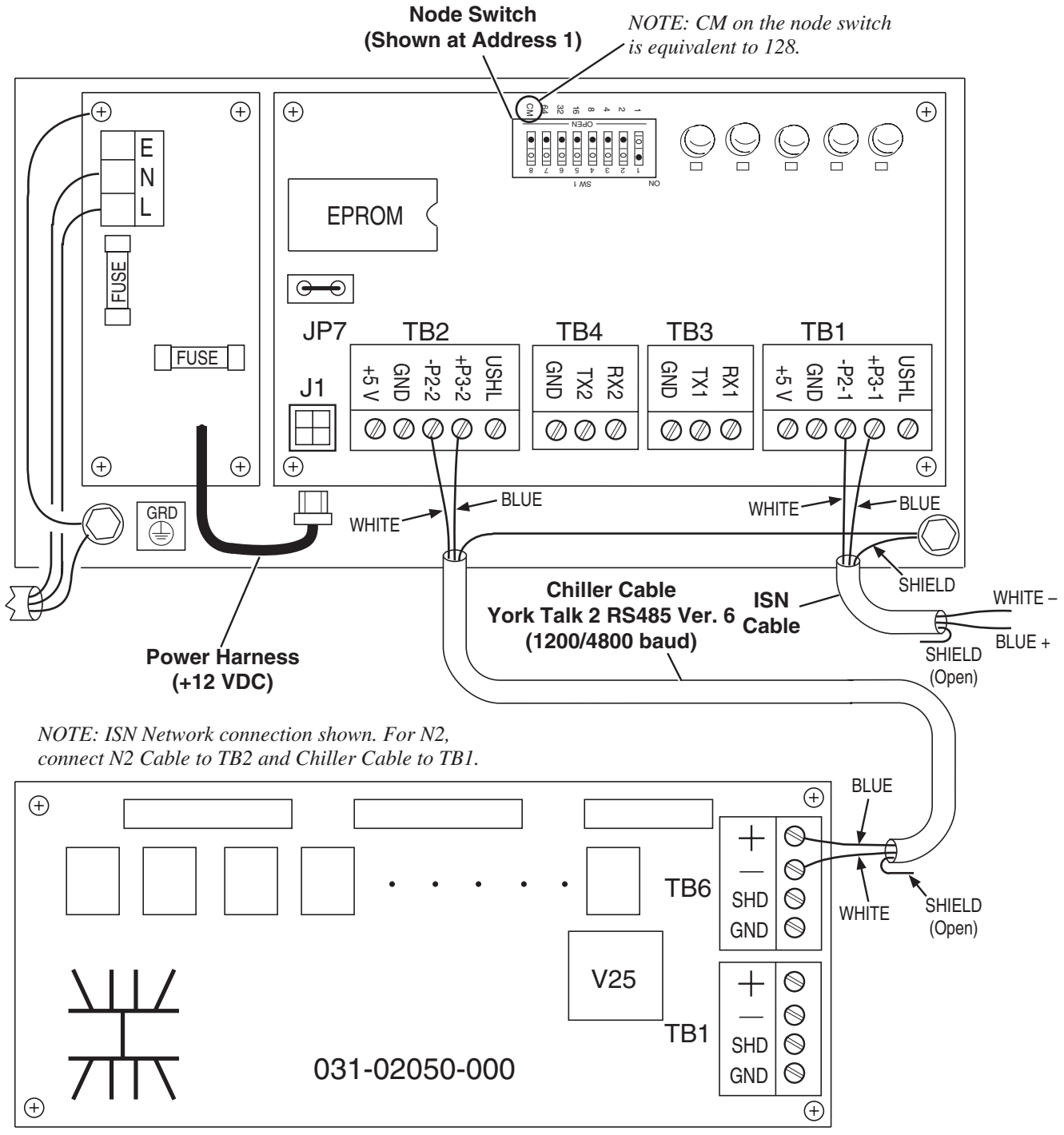


Figure 19 – 1065 Board Connections



NOTE: If the EPROM used in the board is dated prior to 11/2000, the York Talk chiller address is fixed at 0 (network address 1).
If the EPROM used is dated after 11/2000, the chiller address is software selectable through the micro panel keypad.
Refer to the chiller documentation for information regarding the chiller address.

Figure 20 – 1314 Board Connections



NOTE: The York Talk chiller address is software-selectable through the micro panel keypad. Set the address to 0 to make the York Talk network address 1. Refer to the chiller documentation for information regarding the chiller ID.

Figure 21 – 2050 Board Connections

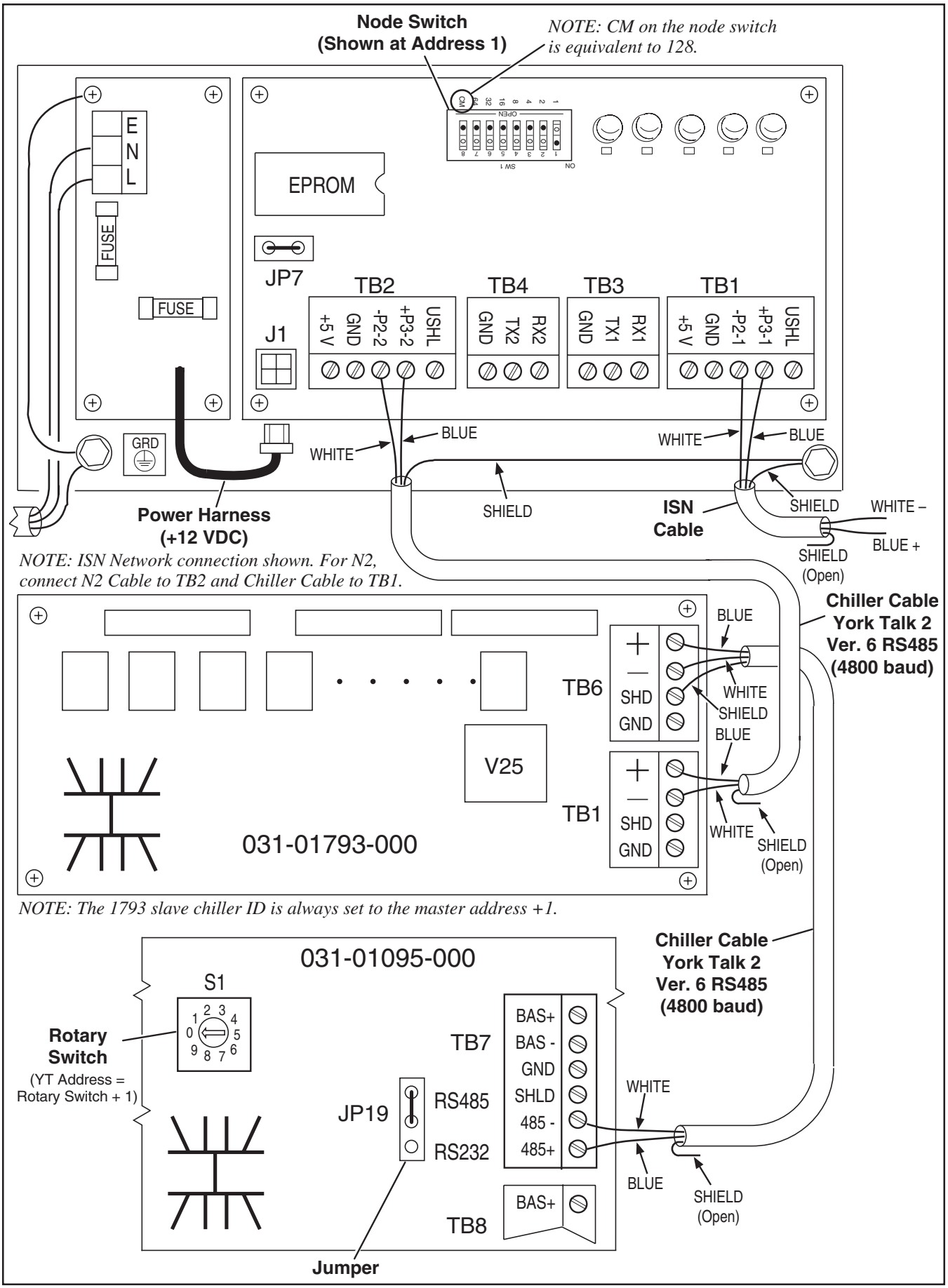


Figure 22 – 1095 to 1793 Board Connections

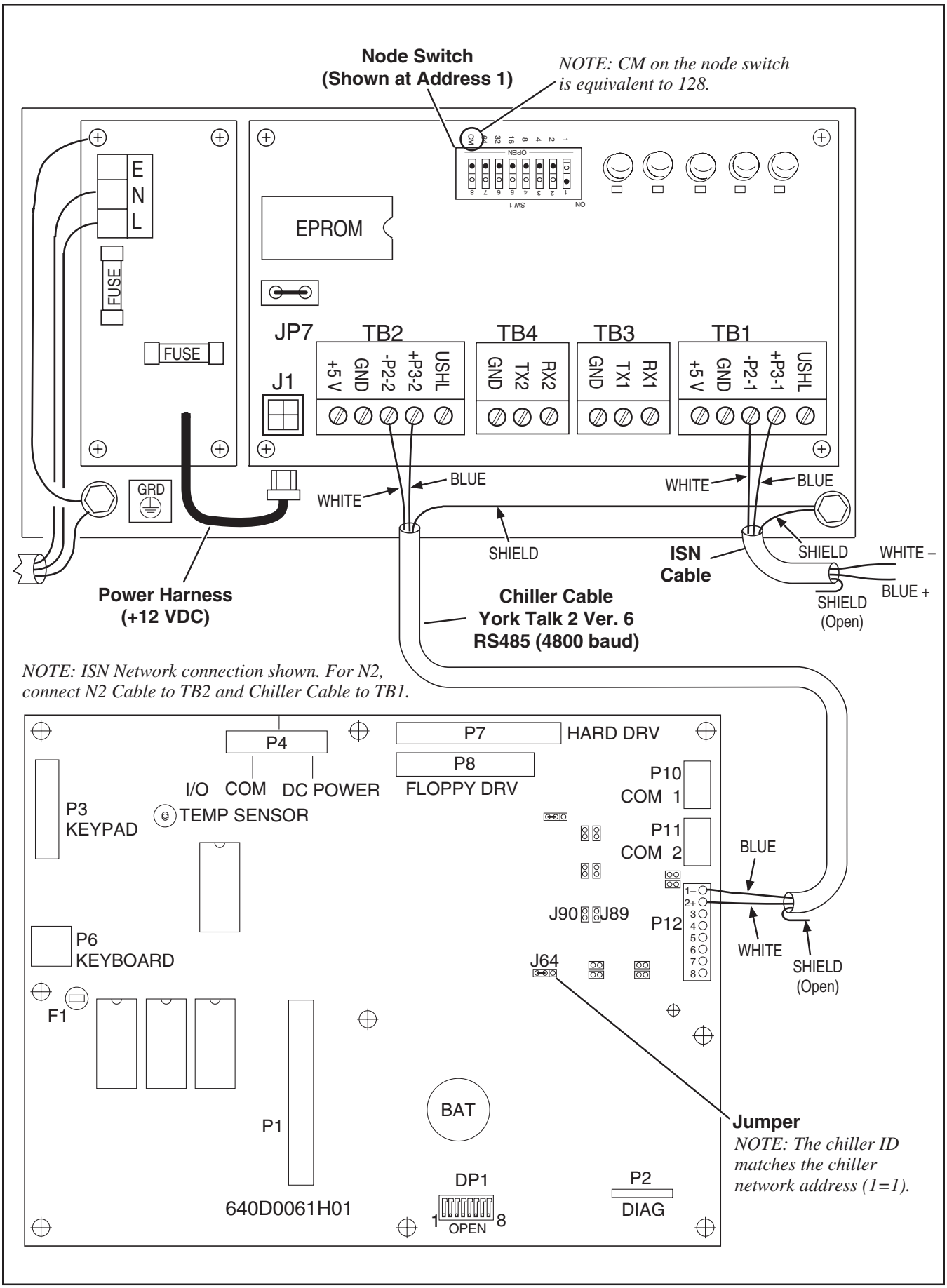


Figure 23 – Frick Quantum 1 and 2 Board Connections

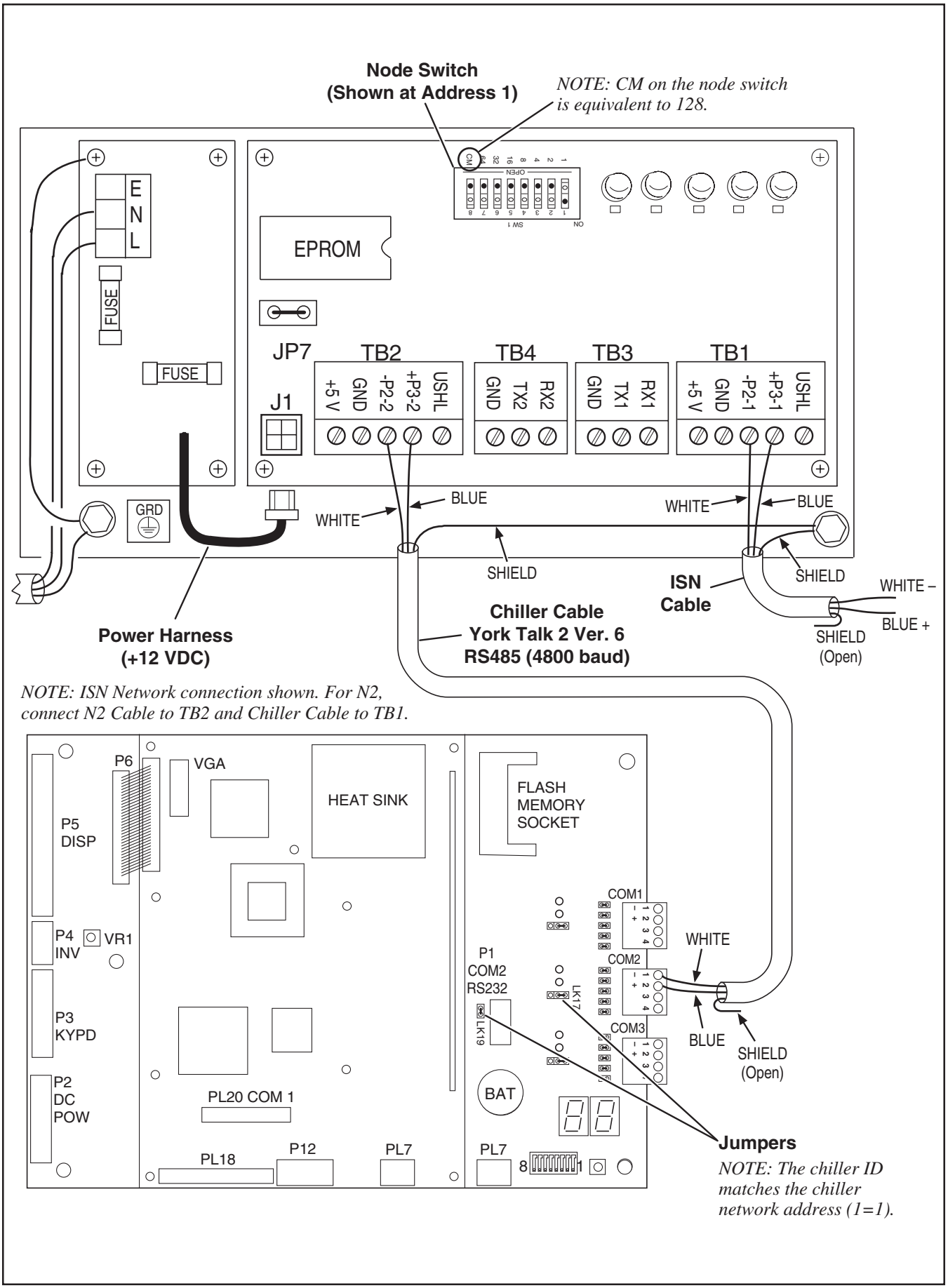


Figure 24 – Frick Quantum 3 Board Connections

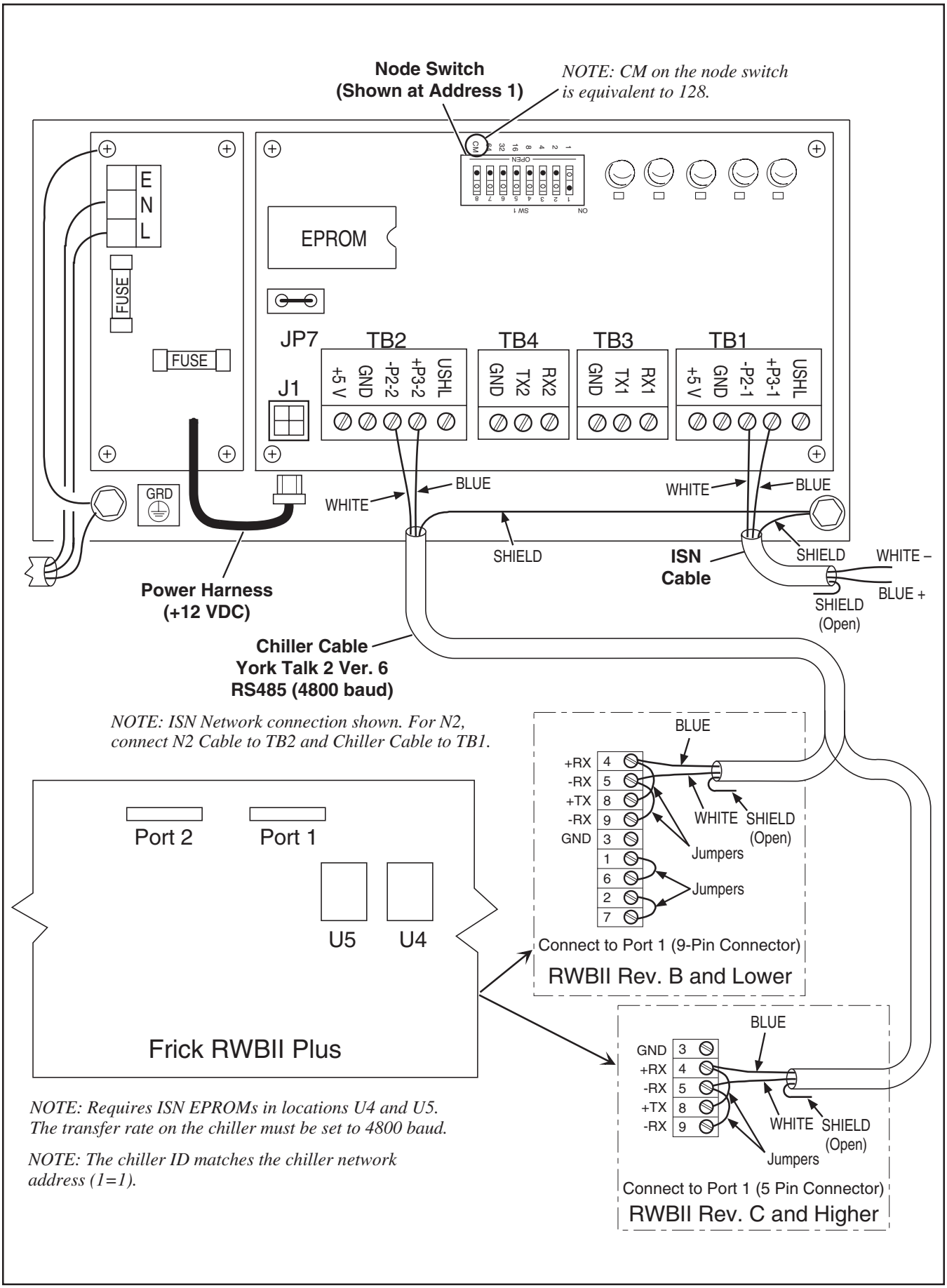


Figure 25 – Frick RWB II Board Connections

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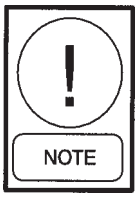
SECTION 4

COMMISSIONING

The MicroGateway Configurator is a windows-based VT100 terminal emulation program developed by York International. This software, formerly known as ISNTools, uses text-based macros to load parameters for each type of chiller micro panel.

The software is available on a CD from YORK BAS. Contact a local York Service/Sales office for further information.



NOTE: Do not apply power to the unit before reading this section.

To commission the MicroGateway, a computer and communications cable are required. The computer operates the software interface (VT 100 emulation) and the cable connects to the MicroGateway. The cable connects to the RS232 port on the computer (DB-9 or DB-25 connector) and to the RS232 port on the MicroGateway (TB4).

To install the software, insert the CD in the CD-ROM drive on the computer. Follow these instructions to install the software.

1. Click the **Start** button located on the left side of the Windows Taskbar and select **Run**.
2. Click the Browse button and locate the CD-ROM drive using the drop-down box (usually D).
3. Select the file Config Setup.exe by clicking the Open button.
4. Click the **OK** button once to start the install program. Follow the instructions on the screen.

Additional information is found in the help file located on the CD.

Default Settings

When shipped from the factory, the MicroGateway is set up as shown in Table 4.

Table 5. Default Settings

	PROTOCOL	COMMUNICATION
PORT 1	Rev 77 ISN	50 kbaud and odd parity
PORT 2	Terminal communication	9.6 kbaud and no parity

How to Use the Node Switch

The node switch enables a user to set a unique network address. It consists of eight individual DIP switches that are binary weighted. Summing the value of each of these switches in the ON position forms the decimal value of the node switch. To determine the numeric value assigned to the switch, add the numbers above the corresponding DIP switches which in the ON position. The resulting sum is the number (address) selected.

Setting the Network Address

The network node number should be selected so it is unique on the network. ISN allows network address from 1 to 99. N2 allows addresses from 1 to 255, excluding 128.

Factory Defaults (Address 128)

The node switch has one additional function. When the MicroGateway is powered up and the address set to 128, it reconfigures the software, stored in E^2, to the default settings, stored in the EPROM, (original factory defaults unless a new EPROM was burned). In addition to any port settings which may have been changed, all other software features that have been edited revert to the defaults stored in the EPROM.

CAUTION: It is highly recommended that the reset process be invoked whenever chiller profiles are changed. This clears items not overwritten by activating a macro in the MicroGateway Configurator.

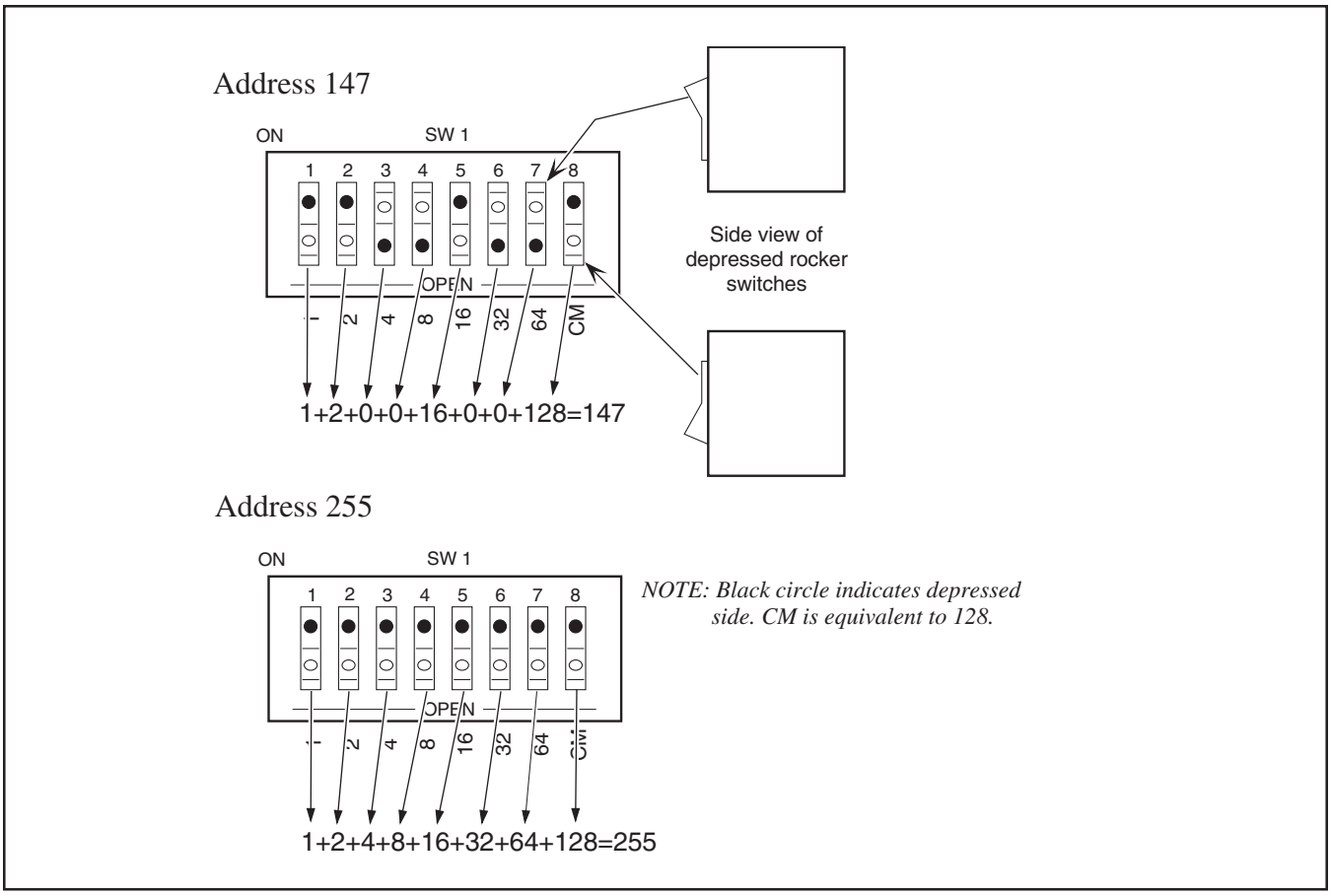


Figure 26 – Setting the Node Switch

NOTE: The 128 reset feature is included in products using software revision level 17g and higher.

To reset the MicroGateway to the defaults:

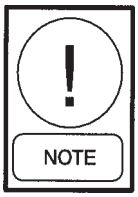
1. Remove the power harness from J1 to disconnect power.
2. Disconnect the communications wiring at Port 1 and Port 2.
3. Corrupt the SRAM by removing the capacitor enable jumper from location JP7 for a minimum of 10 seconds.
4. Install the jumper at JP7.
5. Set the node switch to address 128.
6. Connect the power harness to J1 to reconnect power.
7. Observe the STATUS LED. While data is transferring, the STATUS LED flashes at a rate of 3 times per cycle. When the data transfer is complete, it flashes at a rate of one flash per cycle (a cycle is approximately 1.2 seconds).

NOTE: Only data that has been changed is transferred. If few changes have been made, the transfer rate may take less than a second and the 3 flashes will not be observed.

7. Remove the power harness from J1.
8. Set the node switch to the desired network address.
9. Connect the power harness to J1 to reconnect power.
10. Reconnect the communications wiring at Ports 1 and 2 in the same manner as previously removed in Step 2.

Software Features

The MicroGateway uses the "Feature-Section-Page" layout for programming the software. Many of the commands are the same as the full ISN software feature set. However, the feature list has been customized to suit the specific requirements of the MicroGateway. This software set is referred to as Rev. 8.0. The features and number of sections available in the MicroGateway is summarized in Table 4. For details on each Feature, refer to Software Reference Manual Rev. 8.



NOTE: The Analog Values (F02, F04, F07 and F09) and Digital Status (F01, F05 and F06) provide the same function but are in series to allow sufficient points for communication.

The MicroGateway's software is organized into discreet functional modules called features. Each feature is a self-contained set of routines that are designed to perform a specific task or set of tasks. For example, F53 (York Talk 3) is used to exchange data between the MicroGateway and the OptiView micro panel. F45 (Port Configuration) is used to assign different protocols to the MicroGateway's ports.

Some features are made extensible though the use of sections. Each section is another set of the same functions. For example, F54 (York Talk 2) has two sections. Section 1 is used to connect chillers that only have enough data to populate one section. Section 2 is an identical functional copy of Section 1 used by applications that require greater data capacity.

Every feature is further subdivided into pages. A page represents a finite attribute or set of attributes for a specific aspect of the features function. For example, page 4 of F45 (Port Configuration) displays the type of protocol configured on Port 2.

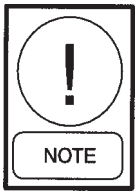
To build a unique application a user edits the required features, sections and pages. The edited features collectively represent the application for a specific need. (This is sometimes referred to as the Application Overlay.)

The language syntax used is expressed as

f*nn* – Represents a feature, such as f45, where *nn* represents a number.

s*nn* – Represents a section, such as s01, where *nn* represents a number.

p*nn* – Represents a page, such as p04, where *nn* represents a number.



NOTE: Always use lower case when typing commands into the MicroGateway Configurator (ISNtools). Use upper case when typing labels into text fields.

Table 6. Feature List

Feature Number	Description	Number of Sections
01	Digital Status	99
02	Analog Value	99
03	System Variable	99
04	Analog Value	99
05	Digital Status	99
06	Digital Status	99
07	Analog Value	99
08	Conditional Logic	99
09	Analog Values	99
10	System Calendar	01
13	Look-up Table	08
20	Status LED	01
28	Analog Transfer	84
29	Digital Transfer	84
31	Time Program	08
33	Time Schedule	04
39	Analog Interlock	99
40	Digital Interlock	99
45	Port Configuration	01
46	Network Status	01
48	Report Configuration	10/30
49	User Type	12
50	System Diagnostics	01
52	York Talk 1	01
53	York Talk 3	04
54	York Talk 2	02
55	Multiplexing	08
56	De-Multiplexing	04
57	Network Group	10
58	E^2 Setup	20
59	E^2 Data	20
60	System Structure	01
61	N2 Analog Map	01
62	N2 Digital Map	01

To edit a field within a page, "open" the page for editing by typing

e <Return>

To proceed to each subsequent field type

e <Return>

If a field requires a number variable to be entered, it is indicated by *vvv*. A text field is indicated by *tt...t* and a menu selections is indicated by *mm...m.*

To toggle through the menu items type

m <Return>

Once the desired item is shown on the screen, confirm the choice by typing

e <Return>

to select it.

A help screen can be accessed by typing **help** <Return> at the prompt after logging on to the MicroGateway.

Example

The following example shows how to view and edit the communications settings on Port 1.

1. Connect to the MicroGateway and logon. Refer to the instructions in Section 2 for details.

2. Type

   f45p03 <Return>

   Screen response
   P03 PORT 1 PROTOCOL: YORK TALK 3

   The unit enters Feature 45, Page 3 and responds with the current setting.

3. To change the setting, type

   e <Return>

   Screen response
   mmmmmmmm

   The field is "opened" for editing. When *mm...m* is displayed it indicates the field has a menu list of choices.

   For other fields *vv...v* may be displayed, which indicate a value must be entered. When *tt...t* is displayed, text may be typed into the field.

4. To cycle through the menu type

   m <Return>

   Screen response:
   P03 PORT 1 PROTOCOL: YORK TALK 2 V4 1200

   which is the next choice on the menu. Continue cycling through the list until the desired choice appears on the screen. When the desired choice appears close the edit by typing

   e <Return>

   Screen response:
   P03 PORT 1 PROTOCOL: YORK TALK 2 V4 4800

For pages with multiple fields, each subsequent *e* <Return> selects the next field.

Configuring to a Micro Panel

After the MicroGateway Configurator is installed and a computer is connected to the MicroGateway, it can be configured using MicroGateway Configurator. To start the MicroGateway Configurator follow the instructions on the CD.

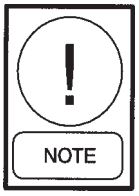
The MicroGateway Configurator allows the user to choose from a selection of macros specific to the various chiller micro panels available from YORK. As each chiller profile is selected, the proper communication parameters are loaded in the MicroGateway.

There are three drop-down boxes which list the micro panel choices.

Type Macro

The Type macro selects the type of protocol to be used and the number of sections within the software (Feature 45). The number of sections selected matches the protocol with York Talk 1 using a single section, York Talk 2 using two sections and York Talk 3 using 4 sections.

The Type macro also loads the points for the specific micro panel chosen (Feature 52, 53 or 54). These points are stored in the EPROM according to the standard points list.



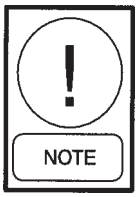
NOTE: For OptiView micro panels, the macro first loads all the OptiView points. A second macro then adjusts the points list to fit the specific model of OptiView (YK, YS, YT).

Port 1 Macro

The Port 1 macro sets the specific communication protocol for Port 1 according to the chosen micro panel (Feature 45 Page 03).

Port 2 Macro

The Port 2 macro sets the specific communication protocol for Port 2 according to the chosen micro panel (Feature 45 Page 04).



NOTE: The Help document on the CD lists the commands performed (Feature-Section-Page) for each macro. If desired, the settings may be performed manually using any VT100 terminal emulation program, such as ProComm® from Symantic® or HyperTerminal.

Configuring as a Point-of-Connection

When the MicroGateway is used as a point-of-connection device, it must be configured to allow a given amount of access by the third-party ASCII device. The ASCII devices typically use a password of 1 to access data. With this user-level password, the number of Features available to the ASCII device are limited to the five which contain relevant data.

To setup this user-level password log on to the MicroGateway using the MicroGateway Configurator. In Feature 60, Section 1, Page 06, change the password to 1 and the Feature Extent to 5.

1. Connect to the MicroGateway and logon. Refer to the instructions in Section 2 for details.
2. Type

   f60s01p06 <Return>

   Screen response

   P06 PASSWORD1 1 FEATURE EXTENT 5

The MicroGateway will now respond when the ASCII device communicates to it, allowing access to Features 1 through 5 only, which is where the required data resides.

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SECTION 5

HARDWARE

GENERAL

The MicroGateway has five LEDs that are used as indicators of communication and operating status. Two LEDs are associated with each communication port and indicate when the MicroGateway is receiving or transmitting information. The STATUS LED indicates proper operation of the MicroGateway.

STATUS LED

Normal Operation

When the ISN MicroGateway is working properly, the STATUS LED flashes continuously approximately once per second. The transmit and receive LEDs flash when information is transferred to or from each port.

Error Conditions

If the STATUS LED flashes several times within a cycle (a cycle is a number of flashes and a 3 second off time), an error condition is present. This cycle will continue to indicate the error condition until the cause of the condition is removed.

The STATUS LED has nine flash rates to indicate error conditions.

Table 7 – STATUS LED Flash Rates

FLASHES	INDICATES
Steady OFF or ON	Hardware Errors, EPROM Failure or E^2 Failure*
1	System Error
2	System Unconfigured
3	System in Halt or Monitor Mode
4	York Talk Communication Failure
5	Node Switch 255 Selected
6 through 9	Reserved

** Indicates a Fatal Hardware error which requires the hardware to be replaced.*

Flash rates from 10 to 99 may be configured by the user to indicate specific error conditions. Refer to the Software Reference Manual for additional information on configuration of Feature 20 – STATUS LED.

NOTE: System flash rates (1 through 9) always takes precedence over user-configured flash rates.

Advisory Conditions

Several of the flash codes can be considered advisory. They provide an indication that the MicroGateway is not functioning due to its operational state or a network communications failure rather than a MicroGateway error.

Two (2) flashes per cycle indicate the MicroGateway is unconfigured. No applications are installed or programming is not implemented.

Three (3) flashes per cycle indicate the system is halt or in monitor mode (Feature 60) and applications are not being processed.

Four (4) flashes of the STATUS LED indicate a York Talk communication failure between the chiller micro panel and the MicroGateway. The condition could be due to faulty wiring, incorrect setup of the chiller or simply an unplugged network cable. For any York Talk features enabled in Feature 45 but not operational, i.e. sending and receiving messages correctly, the STATUS LED flashes 4 times per cycle.

Five (5) flashes per cycle indicate the MicroGateway node switch is set to 255 for terminal communications.

System Errors

A system error is an error that will not allow the MicroGateway to operate correctly. This is indicated by a single flash per cycle.

If the MicroGateway's hardware seriously malfunctions, the watchdog circuit will not be updated and the STATUS LED flashes in unison with the processor reset signal. This is typically once every 1.5

seconds. The STATUS LED continues to flash until the watchdog circuit once again starts to be updated by the system.

A serious hardware malfunction would be characterized by the failure of the processor, SRAM, E² or EPROM (or the removal of the EPROM).

A catastrophic hardware failure may leave the STATUS LED either in the ON or OFF state. This situation could be caused by the above mentioned hardware malfunctions, a malfunctioning power supply, system error condition or communications test failure. System errors can result from an intermittent hardware failure (the result of electrical noise) which can corrupt the system's memory, resulting in unpredictable behavior.

A user usually cannot determine the difference between a system error and a catastrophic failure. If the STATUS LED is observed to be either permanently ON or OFF, the user should de-configure the MicroGateway by disabling the capacitor to clear out the contents of the SRAM and performing the Power Down/Power Up. This may cure the problem if it was due to a hardware glitch. Otherwise, the MicroGateway may need to be replaced.

Port LEDs

Each communication port is supported with two diagnostic LEDs. The red LEDs show transmissions while the green LEDs show data reception.

York Talk Communications

When communicating to a device using a York Talk protocol, the port begins transmitting requests to the micro panel. Even if there is no micro panel actually connected to the MicroGateway, the MicroGateway attempts to communicate. The types of exchanges are listed below:

York Talk 1 Connection (RS232) – The red TX LED flashes for a couple of seconds and then the whole process will be repeated every Poll Time, (currently this defaults to 30 seconds). If a micro panel is connected to the MicroGateway it responds with a reply message causing the green RX LED to flash for about 10 seconds, although this depends upon the type of chiller.

York Talk 2 Connection (RS485) – The red TX LED and the green RX LED flashes together for a couple of seconds and then the whole process is repeated every Poll Time, (the Poll Time default is 30 seconds). If a micro panel is connected to the MicroGateway it responds with a reply causing the green RX LED to flash for about 20 seconds, although this depends upon the type of chiller.

The TX and RX LEDs flash together because TX and RX lines are connected through the RS485 transceiver. When the MicroGateway transmits a message it also receives it.

York Talk 3 Connection (RS232) – The LED pattern is very much dependent if an OptiView micro panel is connected or not.

a. On power up the MicroGateway requests the time from the OptiView micro panel. The user can observe the red TX LED flashing during this process. If the micro panel responds with the time, indicated by green LED flashes, the MicroGateway assumes the communication link is established. The MicroGateway then proceeds to send the engineering units to the micro panel and wait for a positive acknowledgement. Once this is received the MicroGateway proceeds with normal operation.

b. If no acknowledgement is received after three attempts, the MicroGateway assumes the communication link is bad and starts requesting the time from the micro panel. Simultaneous red and green LED flashes characterize normal communications.

Dimly Lit LEDs

Sometimes the green RX LED on the MicroGateway monitoring an RS485 transceiver may appear to be dimly illuminated, even if there is no activity on the network. This is an indication that the bias of the transceiver is being affected. There are usually two reasons for this type of problem; a constant electrical coupling onto the network wires or a defective RS485 transceiver.

To ensure that the problem is not related to an installation problem:

- Ensure that no high voltage electrical signals are in close proximity to the MicroGateway.

- Provide a good ground connection for the MicroGateway.

If a defective transceiver requires replacement refer to the procedure shown later in this section.

Updating Firmware

Occasionally, it may be necessary to upgrade the firmware in the MicroGateway or reset the configuration to the default, factory setting. A routine can be selected by setting the node switch to 128 which forces the MicroGateway to use the default configuration stored in EPROM.

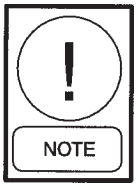
Normally the current settings are retrieved from E^2 each time the MicroGateway is started. When node address 128 is selected the priority of the information which is loaded in SRAM is changed. Information is retrieved from the EPROM first and then the information stored in E^2 is overwritten by the EPROM defaults.

A STATUS LED flash rate of 3 flashes per cycle indicates the MicroGateway is transferring data from the EPROM. When complete, the STATUS LED flashes at a once per cycle rate.

WARNING: Personnel should always be grounded before touching the MicroGateway. An Anti-Static Ground Strap is recommended. As a minimum, firmly grasp grounded metal before working on the unit.

To update the firmware:

1. Remove the power to the MicroGateway by pulling the power harness from **J1**.
2. Remove the Capacitor Enable jumper at **JP7** for a minimum of 10 seconds. This corrupts the SRAM memory.
3. Install the Capacitor Enable jumper at **JP7**.
4. If necessary, remove the EPROM using a removal tool. Carefully install the new EPROM, making sure pin 1 is located properly.
5. Set the node switch to **128**.
6. Insert the power harness into connector **J1**. The STATUS LED should flash **3** times per cycle.



NOTE: If the update process is short (not much data to transfer) the 3 flashes may not be visible.

7. When the STATUS LED begins to flash once per cycle, the MicroGateway can be configured using either a Quick Start address or connecting a computer terminal.

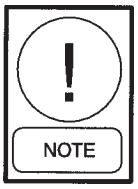
Part Replacement

Certain items can be replaced if found to be malfunctioning. Typical items are the RS485 drivers (transceivers), EPROM Circuit Board or Power Board.

Chip Replacement

DANGER: Always disconnect the line voltage to the MicroGateway before removing any components.

WARNING: Personnel should always be grounded before touching the MicroGateway. An Anti-Static Ground Strap is recommended. As a minimum, firmly grasp grounded metal before working on the unit.



NOTE: If upgrading the software to a new version, refer to the section on UPDATING FIRMWARE.

To replace either the EPROM or the RS485 drivers (transceivers):

1. Disconnect the line voltage power supply to the MicroGateway.
2. Note the position of the notch in the chip. Using a chip removal tool, remove the chip from the MicroGateway card.

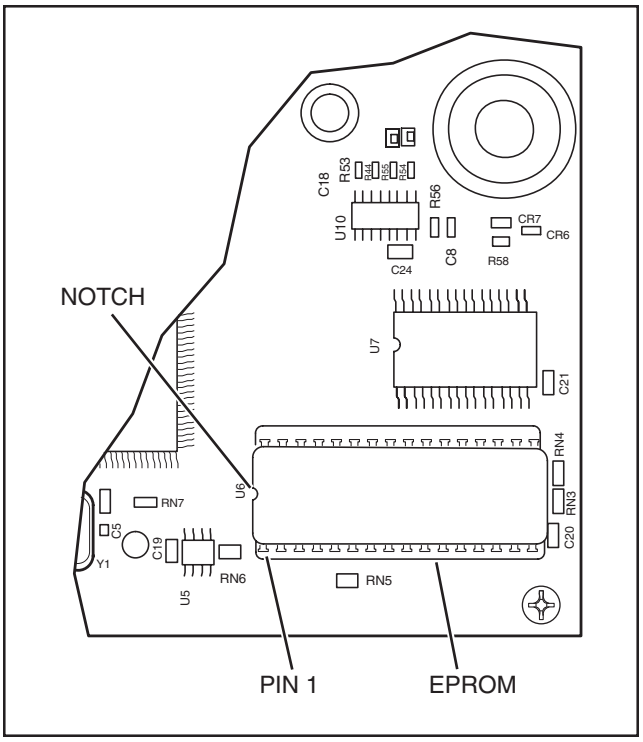


Figure 27 – EPROM Orientation

3. On the replacement chip, locate the notch. Carefully install the replacement chip in the socket with the notch in the same location as noted during removal.

NOTE

NOTE: The notch indicates the location of pin 1 on the chip.

4. Reconnect the line voltage power supply. If necessary, reconfigure the MicroGateway using the MicroGateway Configurator.

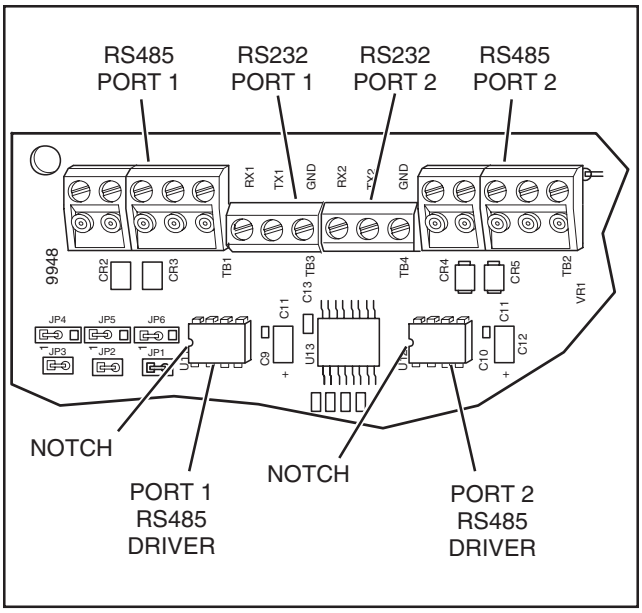


Figure 28 – RS485 Drivers

Fuse Replacement

For MicroGateways within their own enclosure (non-OptiView units) the Power Board is protected by two fuses. The fuse in location FU1 is a 5 x 20 Fast-Blow, 1.25 A, 250 volt fuse. It protects the board against circuit overload on the low voltage side of the Power Board. The fuse in location FU2 is a 5 x 20 Fast-Blow, 150 mA, 250 volt fuse. It protects the Micro-Gateway transformer from overload.

DANGER

DANGER: Always disconnect the line voltage to the MicroGateway before removing any components.

WARNING

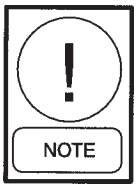
WARNING: Personnel should always be grounded before touching the MicroGateway. An Anti-Static Ground Strap is recommended. As a minimum, firmly grasp grounded metal before working on the unit.

NOTE

NOTE: Inserting a replacement fuse with no power connected may cause the LED to illuminate momentarily due to the energy stored by capacitor on the Power Board.

If the Power Board is suspected of malfunctioning:

1. Disconnect the line voltage power supply to the MicroGateway.
2. Remove the power harness from **J1** to disconnect power.
3. Place probes from a voltmeter into the power harness plug.
4. Reconnect the line voltage power supply to the MicroGateway. Note the voltage at the power harness connector. Voltage should be in the range of 12 to 30 volts DC.
   a. If the voltage measures within this range, the Power Board is functioning properly.
   b. If not proceed to step 5.
5. Disconnect the line voltage power supply to the MicroGateway.
6. Reconnect the power harness to connector J1. This will discharge any stray voltage remaining on the Power Board capacitor.
7. Remove the fuse covers and fuses on the Power Board. Install new fuses of the appropriate size.



NOTE: It is recommended that both fuses be replaced if either is questionable.

8. Reconnect the line voltage power supply to the MicroGateway.

If the MicroGateway fails to work, proceed to the Power Board Replacement procedure.

Power Board Replacement

DANGER: Always disconnect the line voltage to the MicroGateway before removing any components.

WARNING: Personnel should always be grounded before touching the MicroGateway. An Anti-Static Ground Strap is recommended. As a minimum, firmly grasp grounded metal before working on the unit.

For MicroGateways with their own enclosure (non-OptiView units) the Power Board can be replaced if it is determined to be faulty. Before replacing the board, check the two fuses located on the board.

To replace the board:

1. Disconnect the line voltage power supply to the MicroGateway.
2. Remove connector **TB1** (line voltage supply) from the Power Board.
3. Remove the power harness from **J1** on the circuit board to disconnect power.
4. Remove the four screws and washers securing the Power Board to the enclosure. Note that two of the screws also secure ground wires to the board. Remove the board.
5. Position the replacement board in the enclosure and secure with the two screws and washers which did not also secure ground wires.
6. Insert and tighten the screws and washers which secured the ground wires to the enclosure and enclosure cover.

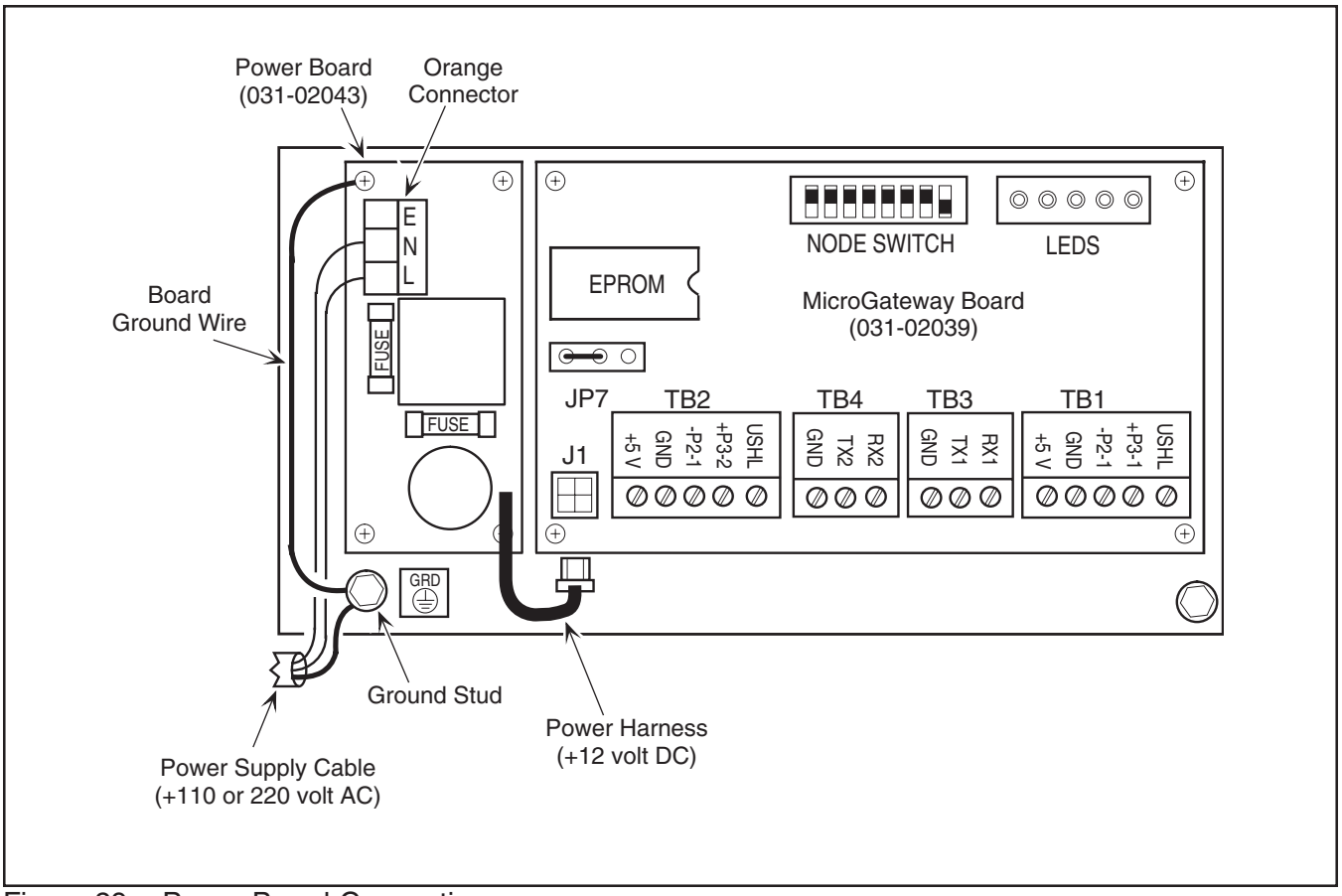
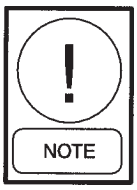


Figure 29 – Power Board Connections

7. Connect the line voltage supply cable to **TB1** on the Power Board.
8. Apply the normal line voltage supply to the Power Board. Check to make sure operation seems normal.
9. Place the power connector into J1 on the circuit board. Check to make sure operation seems normal.

Circuit Board Replacement

If the circuit board is found to be faulty, it can be replaced. It is recommended that the EPROM be removed from the faulty board and reinstalled into the new, replacement board.



NOTE: If the circuit board is faulty, the EPROM may still function properly. By removing the EPROM, the original version of the software can be retained.

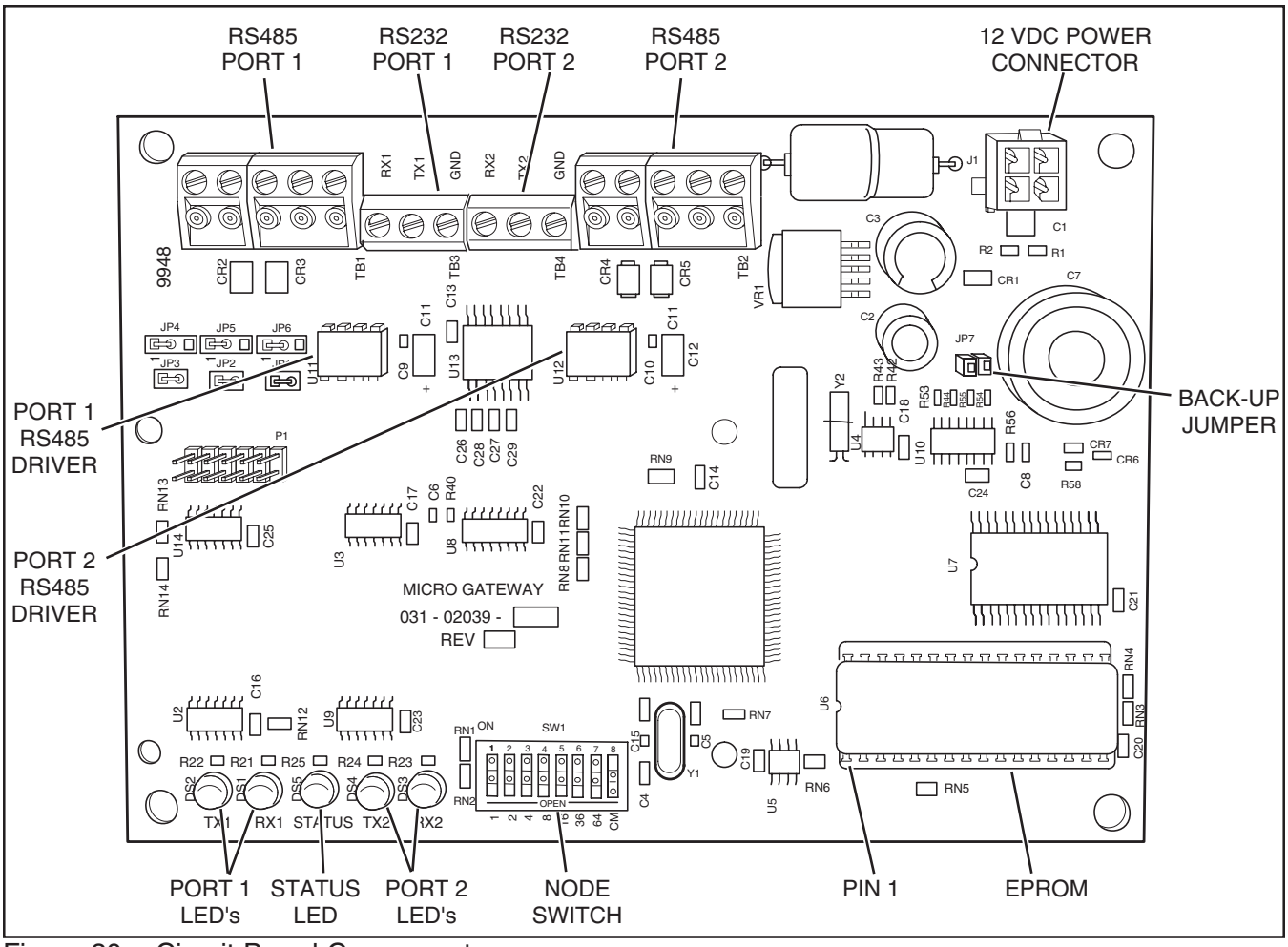
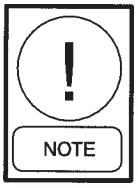


Figure 30 – Circuit Board Components

If the EPROM is found to be faulty, refer to the section on upgrading firmware.

To replace the circuit board:

1. Disconnect the line voltage power supply and network cables to the MicroGateway.
2. Remove the connector **J1** from the circuit board or from the OptiView micro panel power source.
3. Using a chip removal tool, remove the EPROM from socket **U6**.
4. Remove the four screws securing the board to the enclosure or OptiView micro panel.
5. Position the replacement circuit board in the enclosure or OptiView micro panel. Secure with four washers and screws.
6. Install the EPROM previously removed.



NOTE: If a new EPROM is to be installed, refer to Upgrading the Firmware.

7. Connect the power to connector **J1**.
8. Turn on the line voltage supply and check for proper operation.
9. Reinstall any covers removed to gain access to the circuit board.

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SECTION 6

TROUBLESHOOTING

This section provides a guide for troubleshooting should a problem develop. A chart has been created to help in diagnosis of faults. To use the chart, locate the appropriate symptom and review the possible causes for that symptom. After the most likely cause is determined, follow the suggestions listed in the solutions column.

While this Troubleshooting Guide does not claim to include all possible symptoms or solutions, it can simplify troubleshooting and assist in determining the causes of a malfunctioning device.

SYMPTOM	PROBABLE CAUSE	SOLUTION
STATUS LED does not light.	No power to the unit.	Check power supply for correct voltage (110 or 220 v AC).
		Ensure line voltage power supply is turned “on.”
	Blown fuse.	Replace both fuses.
	Malfunctioning Power Board.	Check for 12 volts DC at J1. Replace defective components.
	EPROM removed from board	Install EPROM.
Chiller TX1/RX1 LEDs do not flash (observe for a minimum of 30 seconds).	Port not setup correctly.	Ensure that port settings are correct.
	Chiller micro panel not communicating.	Ensure chiller is configured correctly. Refer to chiller documentation.
	Malfunctioning RS485 driver (applies to RS485 communications only).	Replace RS485 driver.
	Incorrect wiring at connector.	Ensure wires are installed properly.
	RX and TX swapped.	Ensure wires are installed properly.
Third party TX2/RX2 LEDs do not flash.	Port not set correctly.	Ensure that port settings are correct.
	Third-party device not communicating.	Ensure third party device is configured correctly. Refer to the third-party documentation.
	Malfunctioning RS485 driver (applies to RS485 communications only).	Replace RS485 driver.
	Incorrect wiring at connector.	Ensure wires are installed properly.
	RX and TX swapped.	Ensure wires are installed properly.
Third party is communicating but some values are suspected to be incorrect.	Third party attributes not set correctly.	Third party address and object attributes are not set correctly. Refer to third party documentation.
		Check scale and range calculations.
Exception status returned.	Query request out of range.	Check query for number of points requested.

SYMPTOM	PROBABLE CAUSE	SOLUTION
York Talk 3 TX (red) LED blinks continuously.	Incorrect wiring to OptiView micro panel.	Correct the wiring.
	Jumper not installed in JP27 on micro panel.	Install jumper. Refer to Installation Manual.
	OptiView micro panel is not configured for ISN communications.	Configure micro panel to use ISN as the source.
	Faulty OptiView micro panel.	Replace micro panel.
	Faulty MicroGateway.	Replace MicroGateway.
STATUS LED flashes once every 2 seconds.	Low input supply voltage.	Measure voltage at J1 to ensure it is greater than 12 volt DC. If not, replace Power Board or power source at micro panel.
	No EPROM.	Replace or install EPROM.
	Faulty MicroGateway.	Replace MicroGateway.

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