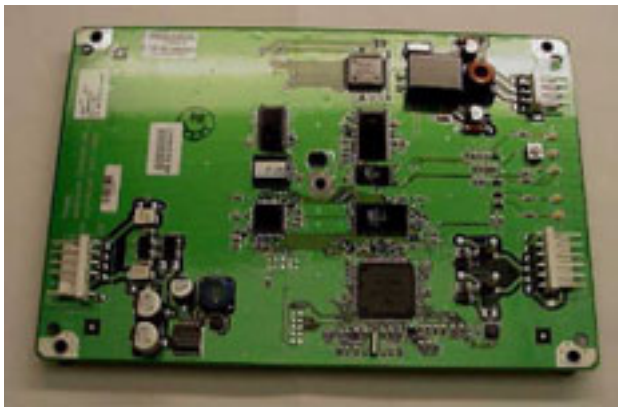
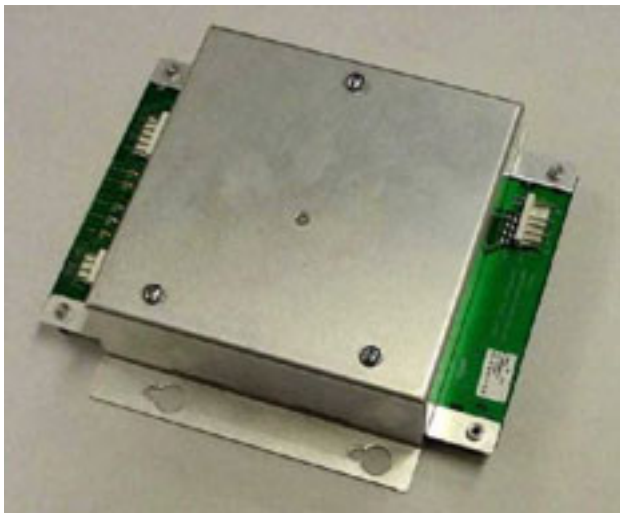
Installation

LonTalk Communications Interface for CGAF, RTAA, RTWA and RTUA Chillers





April 2005

PART-SVN92A-EN

NOTICE: Warnings and Cautions appear at appropriate sections throughout this literature. Read these carefully.

⚠ **WARNING:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

CAUTION: Indicates a situation that may result in equipment or property-damage only accidents.

Product Overview

How this guide can help you

This installation guide takes you through all the steps necessary to install and setup an LCI-C on a CGAF chiller or an RTAA/RTWA/RTUA. It covers both electronic circuit board/hardware installation and appropriate LCI-C software installation and set up.

Tracer Summit building automation systems

If you are connecting the LCI-C to a Tracer Summit™ system, you will not need the network variable information in the Appendixes. Appendix F, however, provides a list of additional resources that you may find useful.

Non-Trane building automation systems

If you are connecting the LCI-C to a non-Trane building automation system using LonTalk,™ Appendixes B through D will provide you with the system integration information you will need regarding network variables.

What does an LCI-C do?

An LCI-C (LonTalk Communications Interface for Chillers) provides a communication interface between a chiller controller and a LonTalk network.

LonMark certification

The LonMark organization promotes LonTalk as an industry standard for control communication.

The LCI-C is certified to the LonMark Chiller Functional Profile 8040 Version 1.0, and follows LonTalk FTT-10A communications system technology. Compliance with this technology means that the LCI-C can provide an interface for non-Trane LonTalk networks.

Network variables

LonTalk uses network variables to communicate points on a communication link. LonMark has defined a list of standard network variables.

Chiller Functional Profile

LonMark calls their standard list of variables for chiller control the Chiller Functional Profile. This profile is meant to allow interoperability between control systems and chillers, regardless of chiller type or manufacturer.

The LCI-C Extension

The LCI-C Extension is a list of additional network variables Trane created that are over and above the ones defined by the Chiller Functional Profile. The LCI-C Extension is considered “open” because the network variables are not proprietary.

LCI-C shipment and inspection

The LCI-C is either factory installed with the chiller controller or shipped as an individual part for field installation. The service part numbers are:

CGAF - KIT12178
RTAA/RTWA/RTUA - KIT12182

Storage

If the LCI-C is stored for a period of time prior to being installed, it must be protected from the elements. The temperature of the storage location should be between -40 °C (-40 °F) and 158 °F (70 °C) and the relative humidity should be 0–95%, non-condensing.

Product Overview

Communications

The Tracer LCI-C controller communicates via Trane's LonTalk protocol. Typically, a communication link is applied between unit controllers and a building automation system. Communication also is possible via Rover service tool. Peer-to-peer communication across controllers is possible even when a building automation system is not present.

You do not need to observe polarity for LonTalk communication links.

The LonTalk communications protocol allows peer to peer communications between controllers, which allows controllers to share information or data. A communicated variable input such as setpoint, space temperature, or outdoor air temperature has priority over a locally wired input to the controller.

Example: if the LCI-C controller has a wired outdoor air temperature sensor and Tracer Summit or another LonTalk controller sends it a communicated outdoor air temperature, the communicated value is used by the LCI-C controller. If a communicated input value is lost, the LCI-C controller reverts to using the locally wired sensor input.

Device Addressing

LonTalk devices are given a unique address by the manufacturer. This address is called a Neuron ID. Each LCI-C controller can be identified by its unique Neuron ID, which is printed on a label on the controller (see figure 1). The Neuron ID is also displayed when communication is established using Tracer Summit or Rover service tool. The Neuron ID format is 00-01-64-1C-2B-00.

LonTalk Communication Link Wiring Requirements

The LonTalk communications link is for connection to a Building LonTalk Network.

The Communications link wiring is dependent on the network architecture. It is recommended that a System Integrator refer to "LonWorks FTT-10A Free Topology Transceiver User's Guide" by the Echelon Corporation for proper wire selection. The physical limits are defined in Chapter 4, Network Cabling and Connection. This User's Guide is available on the Echelon Web page. A typical wire recommendation is Belden 85102, single twisted pair, stranded 19/29, unshielded, 150 C.

For additional wiring information, see the Trane "LonTalk Wiring Installation guide" (BAS-SVN01A-EN.)

Hardware Installation Procedures

CGAF

Backward Compatibility

The LCI-C was designed to be backward compatible with existing Chiller controls on a functional level. All LCI-C features will work on older controller software.

The differences that will be seen on older CGM and HI software are confined to the HI display:

- In places where there are references to the network interface it will show TCI instead of LCI. Such as TCI Module Installed under the Configuration Menu. That will also refer to an LCI.
- In areas were it should refer to a general BAS/NETWORK it will indicate TRACER instead. We changed that with the advent of Lonmark since we may be connected to third party networks.
- Under the Controlling Setpoints Status Menu - Active Capacity Limit Setpoint; It will show 255% when the unit is in Remote network control and will use that value as capacity limit. This is supposed to be recognized as "Invalid", but will not affect unit operation since it will allow 100% of compressors. If the user sets the nviCapacityLim for a proper value from LCI it will use the value transmitted.

The LCI-C will work properly without the anomalies above with the following software versions which were released as part of the CG Enhancements project:

- CGM 4.02
- LHI/RHI 28.03

Refer to CG-SVP01B-EN, System Programming Setup to enable LCI-C control.

Hardware Installation Procedures

Hardware Installation

⚠ WARNING
Hazardous Voltage!

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

1. Disconnect all power from the Unit.
2. Using 3 #8-32 x 1/2 inch mounting screws from the kit, align the mounting holes in the mounting bracket up with the holes in the control panel mounting plate. Refer to Figure 1 and Figure 2 for proper orientation.

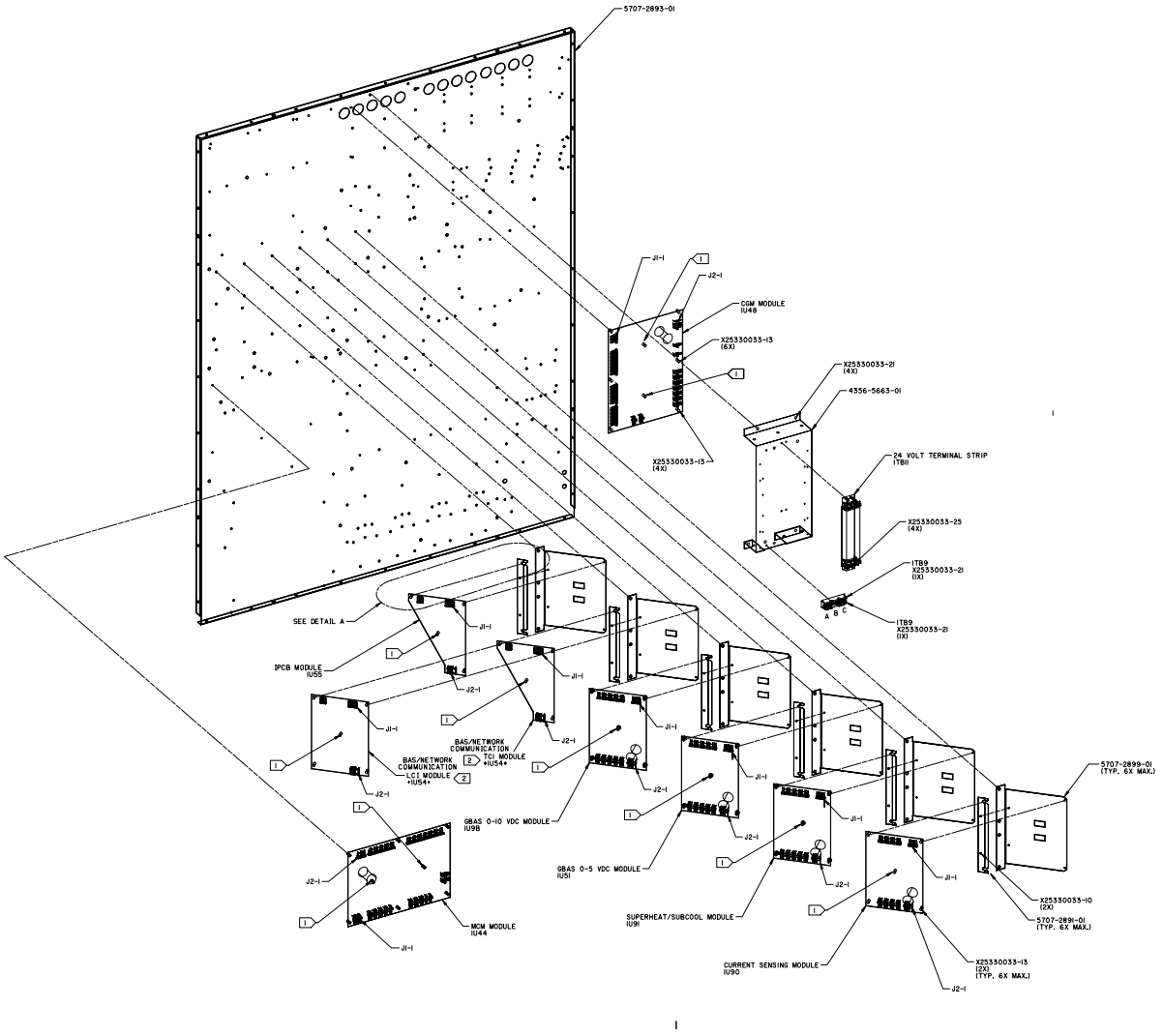


Figure 1 20-30 Ton CGAF Units

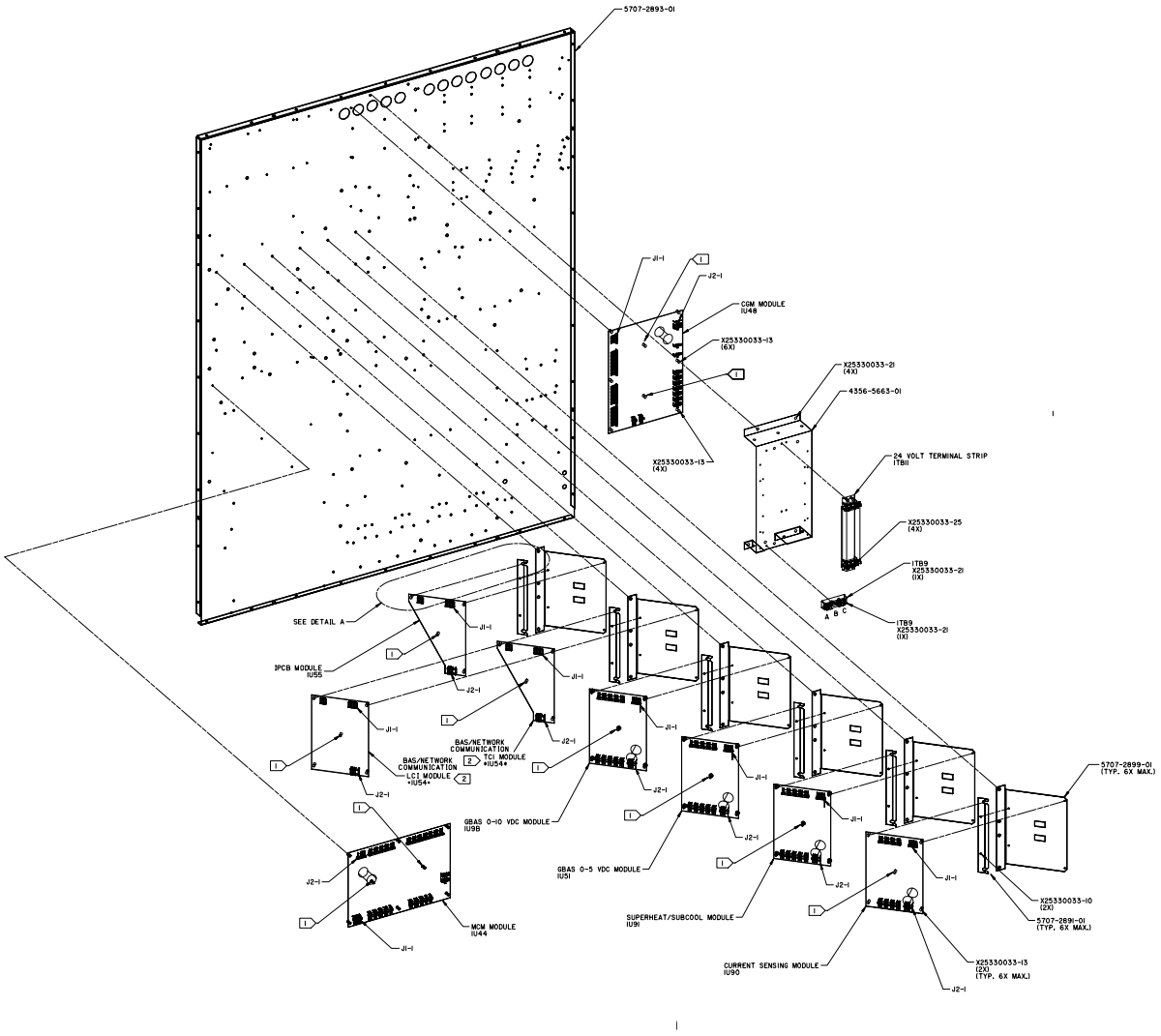


Figure 2 40-60 Ton CGAF Units

3. Using 2 #6-32 x 3/8 inch screws from the kit, install the module mounting clip for the TLCI Module as illustrated in Figure 3.

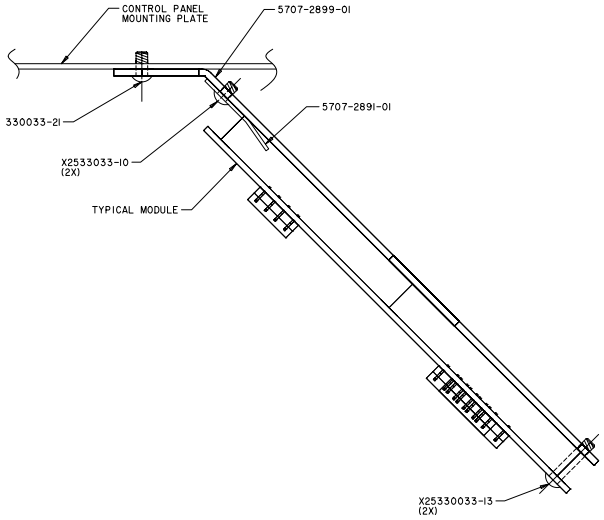


Figure 3 Detail of Module Mounting

4. Slide the left LCI Module mounting foot into the slotted holes on the mounting clip. Using 12 #6-32 x 3/4 inch screw from the kit, secure the module onto the mounting bracket as illustrated in Figure 3.

LCI Wiring Harness Installation

1. Remove all three (3) wire harnesses from the Kit.

J1 - IPC Plug - 406D and 407D
J2 - 24 VAC Plug - 403K and 436K
J3 - Comm Link Plug - 533A and 534A

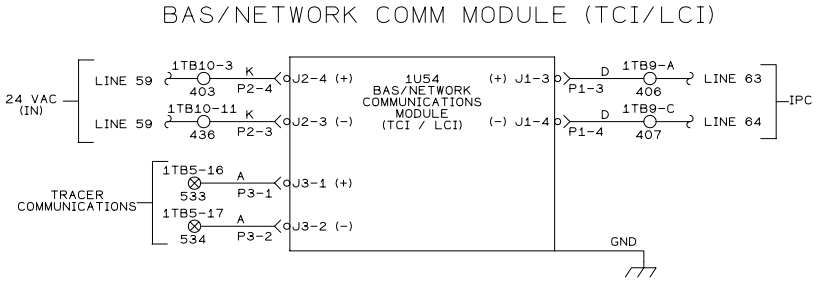


Figure 4 CGAF Wiring

2. Connect each plug to its appropriate receptacle on the LCI Module.
3. IPC Harness - Connect the 1/4" spade connector on wire 406D to 1TB9-A. Connect wire 407D to 1TB9-C.

Hardware Installation Procedures

4. 24 VAC Harness - Connect the 1/4" spade connector on wire 403K to 1TB10-3. Connect wire 436K to 1TB10-11.
5. Comm Link Harness - Connect the 1/4" spade connector on wire 533A to 1TB5-16. Connect wire 534A to 1TB5-17.
6. Secure the harness wires within the control panel to the existing wire bundles. Coil any excess wire and secure as well.
7. For the LCI external wiring connections, refer to the Field Connection Wiring Diagram inside the unit control panel.
8. This completes the LCI Module installation and wiring. Restore power to the unit.
9. Before operating the unit, the operating parameters must be re-programmed to include the LCI Module. Refer to the latest edition of the Trouble Shooting Guide for unit configuration and programming instructions.

RTAA/RTWA/RTUA

Backward Compatibility

The LCI-C was designed to be backward compatible with existing Chiller controls on a functional level. All LCI-C features will work on older controller software.

Hardware Installation

⚠ WARNING
Hazardous Voltage w/Capacitors!

Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. For variable frequency drives or other energy storing components provided by Trane or others, refer to the appropriate manufacturer's literature for allowable waiting periods for discharge of capacitors. Verify with an appropriate voltmeter that all capacitors have discharged. Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.

1. Install LCI-C bracket using the supplied screws either on top of the 1U2 module, if installed or on the back panel where the 1U2 would be located.

2. Install LCI-C module on the bracket.

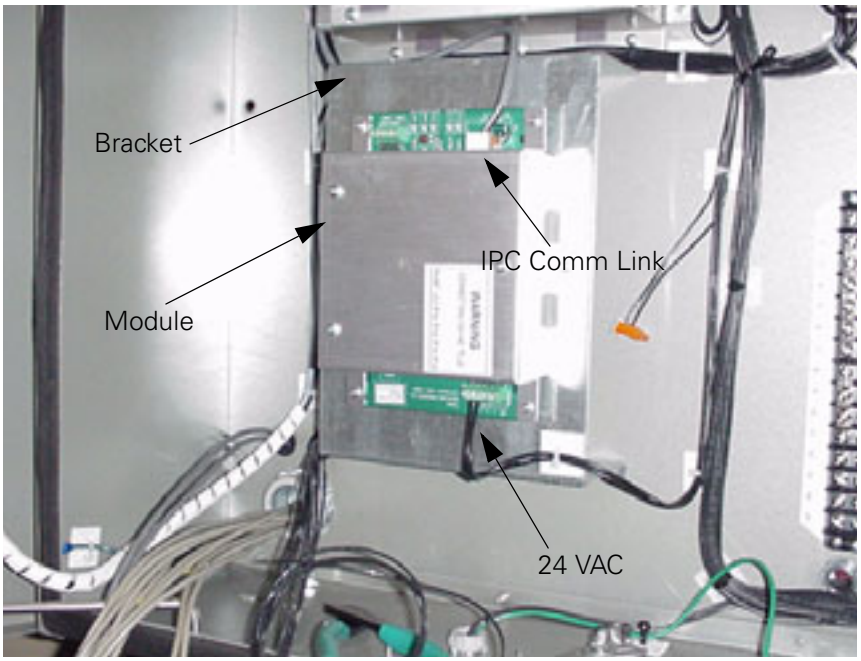


Figure 5 Module Installation

3. Connect 24VAC (wires 69B, 70B) from the 1T9 Transformer to the module power connection at J2-4(+) and J2-3(-) using the existing screw terminal.

   Do not connect 115V to this module. This will damage the module.

   Note: 18 awg wire and two spade connectors are field supplied.

4. Connect the IPC comm link to J1-3 and J1-4 using the existing MTA connector and wiring.

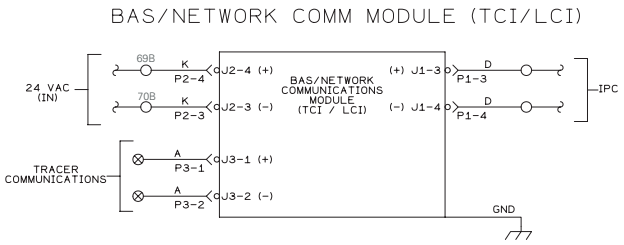


Figure 6 RTAA/RTWA/RTUA Wiring

5. Refer to the field wiring diagram for external wiring connections.

Trane
A business of American Standard Companies
www.trane.com

For more information contact your local district office or e-mail us at comfort@trane.com

Literature Order Number	PART-SVN92A-EN
File Number	SV-RF-PART-SVN92A-EN-0405
Supersedes	New
Stocking Location	Inland