



# Product Data Sheet

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## Trane Packaged Rooftop Unit With Tracer™ LCI-I

Order No. RT-PRG001-EN

Date: February 2003



### Trane IntelliPak™ Packaged Rooftop Unit Overview

IntelliPak Packaged rooftop units (models S\*HF or S\*HG) are specifically designed for rooftop applications, including large office buildings and commercial/industrial facilities. Each rooftop is equipped with a direct digital unit control module (UCM) as standard. Basic components of the UCM are the rooftop module (RTM), single or multiple compressor module (SCM, MCM) and the human interface (HI). This pre-configured, factory-installed and commissioned unit control module (UCM) is a highly-integrated product that provides accurate and reliable control and equipment protection. Factory commissioning helps ensure the highest level of quality and customer satisfaction.

Other features are:

- Sizes ranging from 20-130 tons, Constant Volume (CV) or Variable Air Volume (VAV)
- Gas, electric, steam or hot water heat options
- Inlet Guide Vanes or Variable Frequency Drives (VFD)
- Air-cooled or evaporative-cooled condensers . . . Plus much more!

Reference Trane catalog, RT-PRC010-EN, for more specific product information.

The unit control package also includes applicable control boards, sensors, transformer, required wiring, and actuators.

### Tracer LCI-I

The optional Tracer LCI-I (LonTalk® Communication Interface for IntelliPak) enables the rooftop unit to communicate over a LonTalk network. Either space comfort controller functional profile (SCC) or discharge air controller profile (DAC) are available. These profiles are communicated via LonTalk FTT 10A free topology communications transceiver.

Note: LonTalk and LonWorks are registered trademarks of Echelon Corporation.



## IntelliPak with Tracer LCI-I Features

- Factory-installed and commissioned controls
- LonMark certification to the LonMark Discharge Air Controller Functional Profile
- LonMark certification to the LonMark Space Comfort Control Functional Profile
- LonTalk FTT-10A free topology communications
- Occupied and unoccupied modes
- Stand-alone operation
- High and low-pressure protection
- Compressor minimum on and off timers
- Discharge air control
- Space sensor with optional override, cancel, and setpoint adjustment
- Multi-stage cooling
- Multi-stage gas, electric, hot water or steam heat
- High-temperature limit input
- UL agency listing

### Interoperability Benefits

In addition to the above features, additional interoperability benefits are available with the LonTalk interface.

LonTalk is an industry standard, open, secure, reliable, network communication protocol for controls, created by Echelon Corporation and adopted by the LonMark Interoperability Association. It has been adopted by several standards, such as: EIA-709.1, the Electronic Industries Alliance (EIA) Control Network Protocol Specification and ANSI/ASHRAE 135, part of the American Society of Heating, Refrigeration, and Air-Conditioning Engineers' BACnet control standard for buildings.

Interoperability allows application or project engineers to specify the best products of a given type rather than one vendor's entire system. It can increase market penetration by reducing the need for closed bids. It can reduce product, training and installation costs by

standardizing communications across products. Interoperable systems allow building managers to monitor and control IntelliPak equipment using standardized tools, such as Tracer or third party building automation systems. It enables integration with many different building controls such as access/intrusion monitoring, lighting, fire and smoke devices, energy management, and a wide variety of sensors (temperature, pressure, light, humidity, occupancy, CO2 and air velocity).

## Feature Descriptions

### Factory Installed and Commissioned Controls

The UCM is factory installed, commissioned, and configured. All units must pass stringent mechanical and electrical performance tests before shipping. This ensures a high quality product.

### LonMark Profile

IntelliPak rooftops with variable air volume (VAV) system control conform to the LonMark Discharge Air Controller functional profile. IntelliPak Rooftops with Constant Volume (CV) system control conform to the LonMark Space Comfort Controller functional profile.

The Tracer LCI-I module provides LonTalk communication via an FTT-10A transceiver.

### Occupancy and Override

The UCM and Tracer LCI-I provide:

- A factory programmed set of occupied and unoccupied **setpoints**. The Tracer LCI-I accepts communicated occupancy inputs that provide application flexibility for localized or system-wide time-of-day scheduling.
- **An occupied bypass function.** This function enables after-hours operation. An On button on the space-temperature sensor overrides the unoccupied mode. A Cancel button returns the controller to its normal mode.

## Equipment Protection

The UCM and Tracer LCI-I provide:

- **Refrigerant high and low-pressure protection and coil frost protection** to prevent the unit from operating in abnormal system conditions
- **Compressor minimum On and Off timers** to extend compressor life by preventing short cycling
- **A discharge air temperature sensor** to help monitor equipment operation and diagnose problems
- **Heat fail detection** for gas heat

## Service Mode and Test Start

The UCM allows the service technician to override normal unit operation at the HI. By manually driving outputs from the UCM to aid in troubleshooting, the service mode and test start allow testing of unit functions without bypassing sensors and safety devices.

## Discharge Air Control (VAV) Space Comfort Control (CV)

IntelliPak rooftops with LCI provides conditioned fresh air to the space based on discharge air temperature (VAV) or space temperature (CV) and controls conditions such as temperature and pressure in the supply air and in the zone.

## Heating Options

Natural gas, electric, hot water or steam.

## Data Lists

- Table 1 provides an input/output listing for the Tracer LCI-I.
- Table 2 provides configuration properties for the interface. The list describes conformance to either the LonMark Discharge Air Controller (86.10) or the LonMark Space Comfort Controller (85.00) functional profile (as applicable to the selected system control) and the LonMark node object.

## Inputs/Outputs

The UCM uses binary and analog inputs and outputs to control the unit.



**Table 1. Tracer LCH Input/Output Listing**

<b>Input</b>	<b>Profile</b>	<b>SNVT_Type</b>	<b>Output</b>	<b>Profile</b>	<b>SNVT_Type</b>
nviApplicMode	DAC/SCC	SNVT_hvac_mode	nvoAlarmMessage	Node Ext <sup>1</sup>	SNVT_str_asc
nviAuxHeatEnable	SCC	SNVT_switch	nvoApplicMode	DAC	SNVT_hvac_mode
nviBldgStaticSP	DAC	SNVT_press_p	nvoBldgStatPress	DAC	SNVT_press_p
nviBldgStatPress	DAC	SNVT_press_p	nvoDischAirTemp	DAC/SCC	SNVT_temp_p
nviComprEnable	SCC	SNVT_switch	nvoDuctStatPress	DAC	SNVT_press_p
nviDACISP	DAC	SNVT_temp_p	nvoEconEnabled	DAC	SNVT_switch
nviDAHTSP	DAC	SNVT_temp_p	nvoEffDATempSP	DAC	SNVT_temp_p
nviDuctStaticSP	DAC	SNVT_press_p	nvoEffDuctStatSP	DAC	SNVT_press_p
nviEconEnable	DAC/SCC	SNVT_switch	nvoEffectOccup	DAC/SCC	SNVT_occupancy
nviEmergOverride	DAC/SCC	SNVT_hvac_emerg	nvoEffectSetpt	SCC	SNVT_temp_p
nviHeatCool	SCC	SNVT_hvac_mode	nvoExhFanStatus	DAC	SNVT_switch
nviMinOAFlowSP	DAC	SNVT_flow	nvoHeatCool	DAC/SCC	SNVT_hvac_mode
nviOAMinPos	DAC/SCC <sup>2</sup>	SNVT_lev_percent	nvoLocalOARH	DAC	SNVT_lev_percent
nviOccManCmd	DAC/SCC	SNVT_occupancy	nvoLocalOATemp	DAC	SNVT_temp_p
nviOccSchedule	DAC/SCC	SNVT_tod_event	nvoLocalSpaceTmp	SCC <sup>2</sup>	SNVT_temp_p
nviOccSensor	SCC	SNVT_occupancy	nvoOADamper	DAC/SCC	SNVT_lev_percent
nviOutdoorRH	DAC/SCC	SNVT_lev_percent	nvoOAEenthalpy	DAC	SNVT_enthalpy
nviOutdoorTemp	DAC/SCC	SNVT_temp_p	nvoOAFlow	DAC	SNVT_flow
nviPriCoolEnable	DAC	SNVT_switch	nvoOutdoorRH	DAC/SCC	SNVT_lev_percent
nviPriHeatEnable	DAC	SNVT_switch	nvoOutdoorTemp	DAC/SCC	SNVT_temp_p
nviRequest	Node	SNVT_obj_request	nvoRATemp	DAC	SNVT_temp_p
nviSetpoint	SCC	SNVT_temp_p	nvoSetpoint	SCC	SNVT_temp_p
nviSetptOffset	SCC	SNVT_temp_p	nvoSpaceCO2	SCC	SNVT_ppm
nviSetptShift	SCC	SNVT_temp_setpt	nvoSpaceRH	DAC/SCC	SNVT_lev_percent
nviSpaceTemp	DAC/SCC	SNVT_temp_p	nvoSpaceTemp	DAC/SCC	SNVT_temp_p
			nvoStatus	Node	SNVT_obj_status
			nvoUnitStatus	DAC/SCC	SNVT hvac_status

<b>Configuration Property</b>	<b>Profile</b>	<b>SNVT_Type</b>	<b>SCPT Reference</b>	<b>Description</b>
nciBypassTime	DAC/SCC	SNVT_time_min	SCPTbypassTime (34)	Local Bypass Time
nciDACISP	DAC	SNVT_temp_p	SCPTdischargeAirCoolingSetpoint (183)	Discharge Air Cooling Setpoint
nciDAHTSP	DAC	SNVT_temp_p	SCPTdischargeAirHeatingSetpoint (184)	Discharge Air Heating Setpoint
nciDevMajVer	Node		SCPTdevMajVer (165)	Device Major Version Number
nciDevMinVer	Node		SCPTdevMinVer (166)	Device Minor Version Number
nciDuctStatSP	DAC	SNVT_press_p	SCPTductStaticPressureSetpoint (189)	Duct Static Pressure Setpoint
nciHvacType	SCC	SNVT_hvac_type	SCPTHvacType (169)	HVAC Unit Type Identifier
nciLocation	DAC/SCC	SNVT_str_asc	SCPTlocation (17)	Location Label
nciMinOutTm	DAC/SCC	SNVT_time_sec	SCPTminSendTime (52)	Minimum Send Time
nciOAMinPos	DAC/SCC	SNVT_lev_percent	SCPTminRnge (23)	Outdoor Air Damper Minimum Position
nciOATSP	DAC	SNVT_temp_p	SCPToutdoorAirTempSetpoint (199)	Outdoor Air Temperature Setpoint
nciRcvHrtBt	DAC/SCC	SNVT_time_sec	SCPTmaxRcvTime (48)	Receive Heartbeat
nciSetpoints	DAC/SCC	SNVT_temp_setpt	SCPTsetPnts (60)	Occupancy Temperature Setpoints
nciSndHrtBt	DAC/SCC	SNVTtime_sec	SCPTmaxSendTime (49)	Send Heartbeat

**Notes:**

1. nvoAlarmMessage is implemented as a Trane extension to the node object, using a standard SNVT type. See product XIF for details.
2. These variables were recently added to the SCC profile, but are currently defined as product extension variables in the XIF.
3. These input/output variables and configuration properties are accessible through third party, compatible building automation controls as well as Tracer Summit which provides additional manufacturer defined input/output variables and configuration properties.



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Trane has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice.