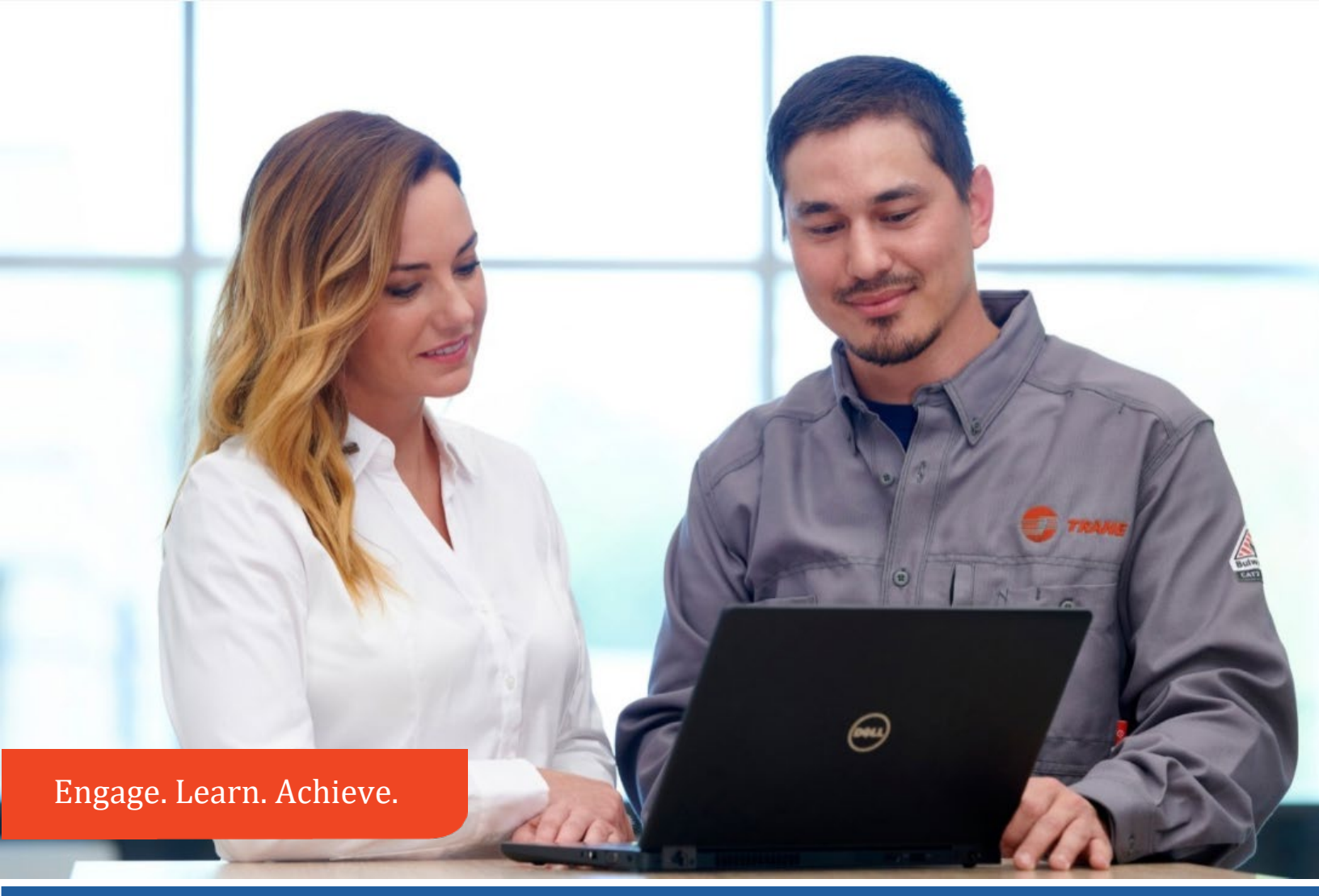


TRANE UNIVERSITY™

CUSTOMER COURSE CATALOG





Engage. Learn. Achieve.

Doing Business with You

Customer satisfaction is a priority at Trane Technologies. We are committed to better understanding customer perspectives and refining our offerings to meet and exceed your expectations for reliability, energy efficiency and sustainability. Contact us; we are here to help you!



WEBSITE

www.trane.com/traneuniversity



BY PHONE

Monday to Friday, 8am to 4:30pm CST
651.407.4022



EMAIL

traneuniversity@trane.com



Welcome to Trane University™

As an industry leader, Trane University™ provides factory and corporate learning solutions. Our industry-leading training empowers customers to develop a high level of proficiency operating and optimizing their equipment, controls and building systems. Trane University integrates innovative teaching technologies using instructor-led and self-paced courses. We use interactive and hands-on experience as well as Trane-developed tools for load, system, energy and economic analysis.

Experienced professional instructors have strong controls and HVAC service backgrounds and are familiar with Trane equipment. They draw on the expertise of Trane applications engineers, product engineers, technical support engineers and product development teams to provide the best training possible.

Trane University offers two professional education tracks

- Building Systems and Controls Training focuses on system design and optimization for facility owners, engineers and management
- Technical Service Training, focuses on operation, maintenance and troubleshooting for HVAC service maintenance technicians, maintenance supervisors and mechanical contractors

Thank you for choosing Trane University

Your success is our priority

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Frequently Asked Questions**

Enrollment

Registration

Browse current course offerings on Trane.com/traneuniversity. To register for training, each learner must create an individual account in [Trane Education Center](#). View our [FAQ](#) section for step-by-step instructions.

Note: Trane reserves the right to reject any training course enrollment.

Payment

Payment options:

- Major credit card (preferred method)
- Purchase order (PO number must be provided when enrolling)

Email Confirmation

Once registered, Trane Education Center generates a confirmation email to the address provided in your online profile. Once the course reaches the minimum enrollment needed to hold the class, you will receive a second email with travel link information once the class has met the minimum. *If you registered for an onsite class do not make travel arrangements until you receive a second confirmation email that includes a travel link (meets minimum enrollment.)*

If you do receive an enrollment confirmation, please check your junk email or add Trane Education Center as a recognized valid sender by your email client. Call us at 855-803-3563 if you have questions.

Course locations

- Building Systems and Controls Courses:
Trane, St. Paul, Minnesota*
- Technical Service Training Courses:
Trane, La Crosse, Wisconsin*
- Regional and Private Classes:
Local Trane Sales Offices

Trane University provides customized regional technical training courses. To discuss your needs and our availability please email TraneUniversity@trane.com.

*Except where noted in course description

Hotel and Food Information

Students are responsible for making their own travel arrangements. Our travel partner, BCD Travel, is a resource for all students to receive discounted rates at our preferred hotels. Please find BCD Travel contact information on the information page for each class.

For La Crosse, WI class locations, the preferred hotels provide transportation to and from class each day.

Trane provides lunch for each full day of class. If you have dietary restrictions, please indicate the restrictions in your Trane Education Center profile.

Federal Government

Training provided by Trane University™ is listed in the GSA Federal Supply Schedule.

International Students

Our technical seminars are fast paced and conducted in English. Therefore, to receive the full benefit from the training, it is essential that the international student speak, read, and understand spoken English competently, including technical terms.

Customers located outside the U.S. must enroll through the local Trane office in their region. We require approval from the local office before registration. Any approved registration requires a credit card payment. International students must complete a Business Visa Form and submit the form to the Trane Global Immigration Services team.

Professional Development Hours (PDH)

Trane University offers PDH for most classes. See individual class in Trane Education Center for specific hours awarded.

Transcripts

Student transcripts are confidential. They are accessible by the student in the Trane Education Center. To access a learning transcript, log into the learner's TEC account, navigate to the Reporting tab and choose Run Transcript Report. If you wish to request release of your training transcript to others, please contact traneuniversity@trane.com to request a Transcript Authorization form.

Discounts

Early Bird Discount*

Receive a 10% discount, automatically applied at checkout, for students registering 60 days prior to course start date.

Multi Student Discount*

(Virtual Classes only)

Receive a 15% discount (automatically applied at checkout,) for each individual student (in the same course/same shopping cart) after first full priced student.

Training Packages*

Up to 35% off tuition with pre-purchased packages. Contact TraneUniversity@trane.com for more information.

GOLD Training Package - Includes 7,800 credits
(Each credit is the equivalent of one dollar)

Cost: \$6,000
20% savings Valid
for one year

GOLD PLUS Training Package - Includes 11,700 credits

Cost: \$9,000
25% savings
Valid for one year

PLATINUM Training Package - Includes 47,500 credits

Cost: \$30,000
35% savings
Valid for two years

Login to the Trane Education Center and search for "Training Package" to purchase a training package. Trane University will contact you within 24 hours (business days) of purchase to provide a Package Code, the credits can be applied immediately. For your convenience, Trane University tracks the credits used and sends periodic updates showing available credit.

* Multiple discounts do not apply

Cancellation Policy

Learners may cancel course registration up to 14 days prior to the start date without penalty. Any cancellation made after that time is subject to full tuition cost (student substitutions are allowed). If a learner does not cancel and/or does not come to class, full tuition is collected (including Trane Employees.)

Trane University reserves the right to cancel any class. We will notify you of class cancellation on or before 14 days prior to the class start date. We are not responsible for any travel costs related to a class cancellation.

Building Security

Our security team issues temporary ID badges to attendants upon arrival. Please wear the badge while on campus.

Tobacco Policy

Our facilities are tobacco-free. Please find designated tobacco areas outside of the building.

Photo Policy

This policy applies to Technical Service Training only. Photography inside the Technology Center requires special authorization. Check photography equipment with our security department when entering the building.

Proper Clothing

Normal work or business casual attire is required. Shorts, sandals and flip-flops are not appropriate. Please wear long pants and long-sleeve shirts of 100 percent cotton when attending Technical Service Training course. These courses involve lab equipment with live electrical circuits. Closed-toe leather shoes and long pants are required for plant tours.



Building Systems and Controls

Building Systems and Controls Training (system design and optimization) is appropriate for facility owners/management, HVAC technicians and engineers

Class Delivery Method

Instructor Led Course

- On-Site - Training Center St Paul, MN, local sales offices and regionally
- Virtual - Device of your choice

Online Course

- Self-Paced - Device of your choice

Choosing Your Classes

View the class progression which outlines learning components for each Trane system: Tracer® Synchrony™, Tracer® Synchrony™ Advanced, Tracer® Ensemble™, Tracer® Summit™

Trane Education Center

All course enrollments must be completed via the Trane Education Center. To enroll in a course, each individual learner must have a TEC account. See [FAQ](#) to review account creation.

Continuous Product Improvement

We strive to provide current information on our products. With that in mind, Trane may change course design and/or content without notice.

Private Training

Trane University provides private training. Please contact us for more information. Note: Not all classes are available for private training.

COURSE PROGRESSION

Tracer SC+/Synchrony, Tracer Synchrony Advanced,
Tracer Ensemble, Tracer Summit

To register for a specific course, please use the [Register](#) links found on the course page.



Building Systems and Controls Course Progression

Self-Paced

- Tracer® Ensemble™ for Operators
- Tracer® Synchrony™ Daily Operations
- LonTalk® Fundamentals
- Introduction to the Tracer® SC System
- Tracer® Summit™ Operations

Instructor Led

Level 1

- Tracer® Ensemble™ Quick Start
- Tracer® Ensemble™ Operations
- Tracer® Synchrony™ Quick Start
- Tracer® Synchrony™ Operations

Level 2

- Tracer® Synchrony™ Advanced Quick Start

Tracer® Ensemble™ Operation

Course Description

Tracer Ensemble allows building operators and administrators access to Tracer Ensemble from the local network or the internet to monitor and control their building system. Specifically designed for building operators and administrators, Tracer Ensemble Operation attendees work with the Tracer Ensemble software to become more familiar with common tasks and become more efficient with their Tracer Ensemble software (web-enabled service and monitoring tool for multiple building facilities.)

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Create user roles and user profiles
- Navigate Tracer Ensemble Buildings
- Design dashboards
- Use override control to manipulate building systems
- Manage building alarms
- Log data
- Create custom reports
- Set up Tenant Services
- Use Critical Control to limit access in Tracer Ensemble
- Make changes to building schedules

Who Should Attend?

Building operators and owners with Tracer Ensemble should attend this course.

Prerequisites

This is an operations-level class. Students must have an operating-level understanding of personal computers and the Windows operating system. Students must possess knowledge of Tracer® Summit™ or Tracer® SC/Synchrony™ depending upon which system is installed in their facility.

Pre-Work

None

Details

This is a 2.5-day course offered both virtually and onsite

Cost: \$1320

[Register](#)

Tracer® Synchrony™ Operation

Course Description

In the Tracer Synchrony Operation course, students learn to operate and modify an installed Tracer SC+ system using the Synchrony interface. This highly interactive course includes presentations, demonstrations, and hands-on workshops where students practice using the software applications integral to a Tracer SC+ building management system.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Determine the need for and sequence of operation of various types of HVAC equipment.
- Describe the different levels of control in a building automation system and how they relate to equipment.
- Monitor and control building mechanical systems.
- Utilize contract documentation to identify control Components and locations.
- Create new user accounts and control their level of access within Tracer Synchrony.
- Navigate the Tracer Synchrony user interface.
- Create and modify custom time-of-days schedules.
- Apply knowledge of schedules, area, and variable air system applications to control building air systems.
- Respond to hot and cold calls by applying troubleshooting strategies
- Respond to alarm conditions.
- Generate and view data logs and reports.
- Back up your Tracer SC+.

Who Should Attend?

Trane service technicians and Tracer SC/SC+ system owners, building engineers and operators should attend this course.

Prerequisites

Introduction to the Tracer Synchrony Daily Operation self paced module is recommended, but not required.

Pre-Work

None

Details

This is a 2.5-day course offered both virtually and onsite.

[Register](#)

Cost: \$1320



Tracer® Synchrony™ Advanced Operation

Course Description

The Tracer Synchrony Advanced Operation course builds on the knowledge and skills learned in the Tracer SC/Synchrony Operation course. This course will enable learners to expand their skillset to complete a variety of advanced operations, control strategies and energy saving methods to get the most value out of their Tracer SC+ building control system.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Define and apply coordinated control methods using spaces, Area, VAS and schedules.
- Create an area using the area application and understand the different configuration options.
- Create HVAC, analog and binary schedules.
- Set up and modify data logs with advanced configurations.
- Use Tracer TU™ to backup, restore and upgrade firmware for Trane unit controllers.
- Configure alarming for binary and analog points.
- Create custom alarm categories and notification classes.
- Route alarm categories to users.
- Work with Tracer Graphical Editor (TGE) to modify and publish Graphics to the SC+.

Who Should Attend?

Tracer SC/SC+ system owners, operators and building engineers who have previously completed the Tracer SC/Tracer Synchrony Operation course (and want to go deeper) should attend this course.

Prerequisites

- Tracer® Synchrony™ Operation

Tracer Synchrony Advanced Operation is an advanced operations course. Students must also be proficient at using a personal computer and familiar with using a web browser.

Pre-Work

None

Details

This is a 3-day course offered both virtually and onsite.

[Register](#)

Cost: \$1320

Tracer® TU for Customers

Course Description

This course will teach customers who have purchased Tracer TU how to navigate within TU and perform basic functions. **Students must have attended a Tracer Synchrony Operations class first before attending this course.**

Specific Course Objectives

Upon completion of this course, participants should be able to:

- perform firmware upgrades
- perform backup and restore
- discover devices on the link
- understand graphics

Who Should Attend?

Customers who have purchased Tracer TU and have it on their laptops.

Prerequisites

Students must have attended a Tracer Synchrony Operations class first before attending this course. Students must have the current version of Tracer TU installed on their computer. It is helpful for students to already have a Trane Connect account as well.

Pre-Work

None

Details

This is a 4-hour virtual course

[Register](#)

Cost: \$300

Tracer® Ensemble - Quick Start

Course Description

This live introductory course takes a brief look at many of the features of Tracer Ensemble as you walk through various real-life scenarios commonly encountered by a Tracer Ensemble building operator. The instructor will demonstrate tasks and answer questions. If you would like a hands-on course register for Tracer Ensemble Operations.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Set your user preferences.
- Describe user roles and access.
- View status and issue overrides.
- Read and edit schedules.
- Respond to alarms with acknowledgment and comments.
- Generate and read data logs.

- Generate and read reports.
- Create tenants and generate invoices.
- Describe Critical Control and complete an override requiring an electronic signature.

Who Should Attend?

This course is intended for Tracer Ensemble users and operators or those interested in learning more about this product.

Pre-Work

None

Details

This is a 2 day (4 hours each) virtual course

[Register](#)

Cost: \$700

Tracer® Synchrony - Quick Start

Course Description

This live introduction to Tracer Synchrony daily operations takes a brief look at navigation, alarms, reports, data logs, schedules, and overrides. The instructor will demonstrate each of the tasks and will be able to answer questions.

If you want hands-on workshop-based instructor training, please enroll in the Tracer Synchrony Operations course.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Describe what Tracer Synchrony does
- Log on to Tracer Synchrony
- Navigate through basic user interface tasks
- View the status of equipment and spaces
- Override occupancy or set-points
- Manage alarms and events using Tracer Synchrony
- View schedules and exceptions
- Identify the schedule resultant
- View and export reportsView, export, create data logs

Who Should Attend?

This training is intended for those who are new to using Tracer Synchrony, who need to learn how to navigate and complete simple daily tasks.

Prerequisites

Students must have attended a Tracer Synchrony Operations class first before attending this course. Students must have the current version of Tracer TU installed on their computer. It is helpful for students to already have a Trane Connect account as well.

Pre-Work

None

Details

This is a 2 day (4 hours each day) virtual course

[Register](#)

Cost: \$700

Building Systems and Controls

Self-Paced Learning

Trane University™ is pleased to offer self-paced online learning. These courses are created with the same high quality you receive from our on-site offerings.

Convenient: Fit the course into your schedule wherever it works best

Flexible: Understand and apply the material at your own pace

Stress-free: Easy to access from your individual Trane Education Center account

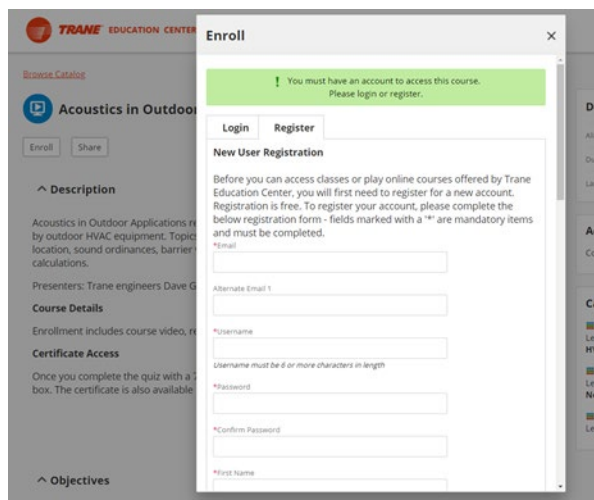
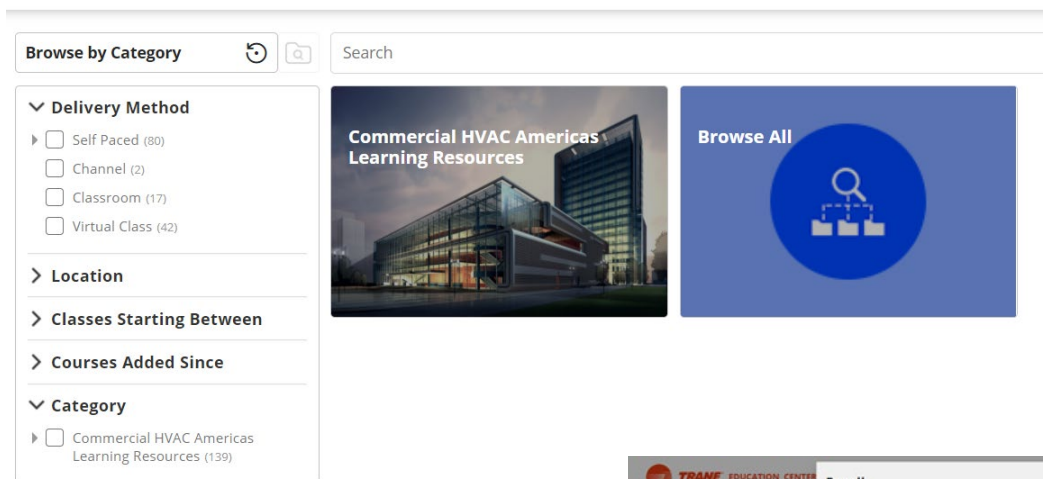
To register for a **specific** course, please use the "**Register**" links found on the course pages.

OR

To **browse** for a course, use the Trane Education Center online catalog.

To browse:

- Navigate to [Trane EducationCenter](#) and choose "Access to Catalog"
- Choose a delivery method, category or type a keyword in the Search box
- Once you choose "enroll or add to cart," a prompt appears to log into (or register) your TEC account



LonTalk® Fundamentals

Length: 1 Hour

Cost: Free

[Register](#)

Course Description

This course explains LonTalk and identifies the existing network management. LonTalk fundamentals is a self-paced program with guided readings in the LonTalk literature

Specific Course Objectives

- Identify the number of devices on a link
- Identify the correct Wire type/length
- Distinguish location/necessity of Repeaters
- Identify location and application of end of line terminations each end of the link
- Identify an appropriate LonTalk network architecture daisy chain

- Recognize when to use Rover in Active or Passive mode Operating Modes
- Predict when network management is necessary
- Recognize proper LonTalk addressing including: Domain ID, Subnet ID, and Node ID.
- Identify the SCC and DAC LonTalk pr

Audience

Controls Technicians, Controls Service Technicians, and technical roles working with Trane HVAC system controllers should attend this course.

Note: After completing the reading you must pass a 10-question quiz with a score of 80% or better to complete the program.

Introduction to the Tracer® SC System

Length: 1 Hour

Cost: Free

[Register](#)

Course description

This course introduces the user to the Tracer SC interface and common tasks performed using it.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Understand the Tracer SC/SC+ role in a building automation system.
- Navigate through the user interface.
- View equipment and spaces status and data logs.

- Override occupancy or set-points.
- Determine what set-point will be used by the system.
- Access, view and maintain alarms and events.
- Change a schedule and add an exception.

Audience

Tracer SC/SC+ / Synchrony users and operators should attend this course.

Tracer® Synchrony Daily Operations

Length: 1 Hour

Cost: Free

[Register](#)

Course Description

This video-based introduction to Tracer Synchrony Daily Operations takes a brief look at navigation, alarms, reports, data logs, schedules and overrides.

If you want hands-on workshop-based instructor training, please enroll in the Tracer Synchrony Operations course.

Specific Course Objectives

Upon successful completion of this course the learner will be able to:

- Describe what Tracer Synchrony does
- Log on to Tracer Synchrony

- Navigate through basic user interface tasks
- View the status of equipment and spaces
- Override occupancy or set-points
- Manage alarms and events using Tracer Synchrony
- View schedules and exceptions
- Identify the schedule resultant
- View and export reports
- View, export, and create data logs

Audience

This training is intended for those who are new to using Tracer Synchrony, who need to learn how to navigate and complete simple daily tasks.

Tracer® Synchrony Channel

[Subscribe](#)

Course Description

This channel displays curated content related to Tracer SC+ and Synchrony. Topics range from basic navigation and building summary pages to editing exceptions and understanding the software maintenance plan.

Who Should Subscribe?

Anyone who uses Tracer® Synchrony™

Tracer® Ensemble for Operators

Length: 1 Hour

Cost: Free

[Register](#)

Course Description

This course introduces many of the features of Tracer Ensemble as you walk through various real-life scenarios commonly encountered by a Tracer Ensemble building operator.

Objectives

Upon completion of this course, participants should be able to:

- Set user preferences
- Describe user roles and access
- View status and issue overrides

- Read and edit schedules
- Respond to alarms with acknowledgment and comments
- Generate and read data logs
- Generate and read reports
- Create tenants and generate invoices
- Describe Critical Control and complete an override requiring an electronicsignature

Audience

Tracer Ensemble users and operators or those interested in learning more about this product should attend this course.

Tracer® Ensemble Channel

[Subscribe](#)

Course Description

This channel holds curated content (courses and videos) related to Tracer® Ensemble™. Learn to customize your home page, manage preferences, work with widgets and more

Who Should Subscribe?

Anyone who uses Tracer® Ensemble™

Tracer® Summit System Operation Curriculum

Length: 6 Hours

Cost: Free

[Register](#)

Course Description

From a system architecture overview through user administration, scheduling, area control, alarms and reports this channel has everything needed for daily Tracer Summit operations.

- Analog and Binary Points
- Working with Alarms
- Managing the Event Log
- Using Reports and Trends
- A Graphics overview
- Database Back-up and Re

Specific Course Objectives

Upon successful completion of this course the learner will be able to:

- Architecture and overview of the Tracer Summit system
- Navigation
- User administration
- Scheduling
- Area Control
- Chiller Plant Control

Audience

This training is intended for Anyone who is an operator on a Tracer Summit system.



Technical Service Training

Technical Service Training (operation, maintenance and troubleshooting) is appropriate for HVAC service and maintenance technicians, maintenance supervisors and mechanical contractors

Class Availability

Instructor Led Course

- On-Site - Training Center La Crosse, WI
- Virtual - Device of your choice
- Local Sales Offices and Regional offerings

Online Course

- Self-Paced - via Trane Education Center

Register Online at the Trane Education Center

All course enrollments must be completed online via the [Trane Education Center](#). Each individual learner must have a TEC account to enroll in a course. See FAQ on page 38 to review account creation.

Regional Training

Trane University provides customized regional training. To discuss your needs and our availability, please contact us at traneuniversity@trane.com

Personal Protective Equipment (PPE)

PPE is required (and provided) while performing lab exercises. If you prefer, please bring personal PPE to class (i.e. prescription safety glasses with side shields, steel-toed boots, etc.) If you are attending CenTraVac® Mechanical Overhaul Service or your course includes a plant tour, steel-toed shoe covers are provided, but personal steel-toed boots may be more comfortable.

Photo Policy

Photography, when taking a tour at one of our plants, requires special authorization. Check photography equipment with our security department when entering the building.

Continuous Product Improvement


We strive to provide current information on our products. With that in mind, Trane may change course design and/or content without notice.

Trane University

Technical Service Training Course Offerings

Onsite, Virtual** and Self-Paced*

To register for a specific course, please use the [Register](#) links found on the course page.

 <p>Technical Service Training Course Progression</p> <p>*self-paced ** on-site only</p>	<p>Fundamentals</p> <ul style="list-style-type: none"> • Air Conditioning Service • Airside Systems Service • Chilled Water Service • Commercial Systems Service • HVAC Electrical Troubleshooting
	<p>Unitary</p> <ul style="list-style-type: none"> • Precedent/Voyager • ReliaTel Zone Sensor Testing* • IntelliPak I and II • IntelliPak with Symbio 800 • IntelliPak Human Interface Navigation and Status*
	<p>Scroll</p> <ul style="list-style-type: none"> • CGAM/ACSA Chiller <p>Centrifugal</p> <ul style="list-style-type: none"> • CentraVac System Operation and Maintenance • CentraVac Mechanical Overhaul • CentraVac Electronic Controls <p>Screw</p> <ul style="list-style-type: none"> • RTAA Chiller • RTAC/RTWD Chiller • RTAE/ACRA Chiller • RTAF Chiller • RTHD Chiller

** Trane University’s Technical Service Training offers onsite and virtual training for most courses. Onsite courses are taught over multiple days in La Crosse, WI (unless otherwise noted.) Virtual offerings chunk content into meaningful segments delivered in convenient 3-hour modules. Although our virtual content is not the complete course, careful consideration is placed on providing key points to the learner as well as providing a personalized learning experience. We appreciate feedback and welcome your comments and suggestions.

Air Conditioning Service

Course Description

This is a comprehensive, entry-level air conditioning service course. It concentrates on essential refrigeration knowledge that all HVAC technicians must eventually possess to perform competent HVAC service work. During the course, technicians acquire knowledge in tool usage, basic system theory, metering devices, system problem identification, superheat, sub-cooling, piping, evacuation and recharging techniques.

The onsite course is 45–50 percent lab intensive. Packaged rooftop units, 2 to 5 tons, are used in the lab sessions. A separate course is available to help develop electrical troubleshooting skills.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Draw and explain basic system theory
- Identify the four basic parts of the refrigeration system and how they work
- Use refrigeration instruments
- Perform system logging
- Perform system evacuation and charging
- Diagnose and correct start up and service problems related to refrigeration systems
- Measure and adjust superheat and sub-cooling using classroom methods
- Demonstrate refrigerant recovery procedures

Lab Safety

Instructor provided PPE is required for the hands-on live circuit portion of this course. Please wear long pants and long sleeves of 100% cotton

Who Should Attend

This course is well suited for entry-level air conditioning and/or HVAC maintenance mechanics, service technicians and industrial or facility maintenance technicians. An electrician with new responsibilities in air conditioning maintenance and service will also benefit.

Qualifications

The student should have some basic mechanical and electrical background in addition to an aptitude and interest for work with HVAC equipment.

Onsite Registration Details

[Register](#)

Cost: \$1800 Length: 4.5 day

Virtual Registration Details

Cost: \$300 each Length: 3 Hour
(See page 18 for virtual module explanation)

Basic Refrigeration Virtual Module

[Register](#)

This module will cover the fundamentals of the refrigeration cycle as applied to air conditioning systems. Topics covered include superheat, subcooling, enthalpy, and the fundamentals of heat transfer. The basic refrigeration cycle will be discussing in depth. Basic psychometrics will be introduced.

Refrigeration Components and Troubleshooting Virtual Module

[Register](#)

This module covers the refrigeration system components in depth. Specifically metering devices, compressors and coils will be covered. An introduction to the basic tools required to test and troubleshoot air conditioning equipment will be presented.

Airside System Service

Course Description

This course covers the operation and setup of a commercial VAV system from the standpoint of the service technician. Shutoff VAV, Bypass VAV and Single Zone VAV will be discussed in the class, although Shutoff VAV (traditional VAV) will be the primary focus. The concepts discussed will apply to new system startup as well as existing buildings. The course also discusses the different fan types used in commercial HVAC units.

The lab exercises are designed around several working VAV systems in our La Crosse, Wisconsin, training lab. This includes IntelliPak® Commercial Self-Contained (CSC) and rooftop units (RTU) with various types of VariTrane® VAV boxes. During the lab exercises, students will use the various tools and software needed to setup and commission (or re-commission) a VAV system. Attendees will learn to recognize important parameters within building plans in order to commission the building as the design engineer intended. The plans used will include the equipment schedule, sequence of operation, airflow requirements, and ventilation. The course includes systems used in all geographic regions.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Verify system airflow using multiple methods.
- Interpret fan curve data from the various fan types such as forward curve, airfoil, and direct drive plenum.
- Set up and verify proper system air with the fan types used in our lab
- Describe the capabilities and the limitations of the building control system from a service technician standpoint.

- Using a Rover service tool, analyze air delivery on multiple VAV systems.
- Describe the difference between Single Zone VAV systems and Multiple Zone VAV systems.
- Go through the procedure required to establish the supply pressure setpoint on a VAV system.

Lab Safety

Student participation in any hands-on portion of this course will include ladder safety and use of proper fall protection. Adherence to safety requirements is required.

Who Should Attend

This course is ideal for advanced service, controls, and maintenance technicians, as well as service contractors. Existing Building Systems personnel and others involved with system commissioning or with ensuring that an HVAC system is operating correctly and efficiently would benefit from this course.

Qualifications

Participants attending this course must have strong HVAC skills or an understanding of engineered building systems. They should also understand the importance of compliance with today's energy efficiency requirements.

Onsite Registration Details

This course is offered onsite.

[Register](#)

Cost: \$1800.00

CenTraVac® Electronic Controls

Course Description

This course is intended to update experienced service technicians on Trane CenTraVac chiller control technology. Detailed coverage includes electronic capacity modulation controls found on all Trane centrifugal chillers manufactured between 2001 to present. Earlier-model control systems are not discussed in depth. This course covers Tracer™ CH530 and Tracer AdaptiView™ control system.

This is a controls technology class only. Centrifugal operation and maintenance understanding is necessary for this course.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Operate all the controls covered by this course, including systems interface.
- Describe operating logic for Tracer CH530 and Tracer AdaptiView control platforms.
- Use control information for routine operational troubleshooting.
- Use menu-driven diagnostics.
- Perform trouble analysis on controls and determine necessary field repairs or replacement action.

Lab Safety

Instructor provided PPE is required for the hands-on live circuit portion of this course. Please wear long pants and long sleeves of 100% cotton.

Who Should Attend

This course is for technicians who regularly work with Trane CenTraVac CVHE/F/G/L and duplex chillers.

Qualifications

Technicians must be comfortable with electrical controls, electrical meters such as digital volt-ohmmeters and understand refrigeration and centrifugal chiller control requirements. It is helpful if technicians have experience with other HVAC electronic control systems or have attended Trane University's HVAC Electrical Troubleshooting course. Familiarity with basic computing skills, file management and internet downloading procedures is also desirable.

OnSite Registration Details

[Register](#)

Cost: \$1950 Length: 3.5 days

Virtual Module Registration Details

Cost: \$300 each Length: 3 Hour

(See page 18 for virtual module explanation)

CentraVac Controls Virtual Module

[Register](#)

3 Hours

This module covers the identification of controls hardware and an introduction to the software used to control Trane centrifugal chillers.

CentraVac Human Interface Virtual Module

[Register](#)

3 Hours

This module covers the Navigation of AdaptiView and Dyna view.

CenTraVac® Mechanical Overhaul Service

Course Description

This course will broaden any technician's level of service and overhaul expertise. It will help them gain confidence and experience in repair and major overhaul of water-cooled CenTraVac chillers. The course provides learning situations not otherwise available or that may take months or even years of on-the-job exposure to encounter. This course lays a substantial foundation for the technician's continued professional growth and provides familiarity with other centrifugal chiller products. This is a mechanical service course only. Controls course attendance is required for complete CenTraVac chiller service coverage.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Identify various Trane centrifugal chillers and variations in mechanical components.
- Be familiar with documented factory service information available to support Trane centrifugal chillers.
- Properly repair chillers with varying lubrication and cooling system designs.
- Properly overhaul a CVHE/F/G/L CenTraVac chiller compressor and motor, using factory-recommended procedures.
- Properly inspect compressor and motor components for compliance to factory specifications.

Lab Safety

Students are required to wear steel-tipped footwear, safety glasses and gloves to participate in mechanical lab service procedures. Please wear appropriate work clothes to disassemble a chiller.

Who Should Attend

This course is designed for technicians or mechanics who have experience in HVAC chiller products and perform centrifugal compressor repairs. The class is useful for experienced centrifugal service technicians who have no formal centrifugal overhaul training or experience with Trane CenTraVac chillers.

Qualifications

To attend this course, a student must meet the following qualifications:

- Previous heavy refrigeration service experience
- Experience with shop rigging of components heavier than 150 lbs.

Plant Tour Requirement

Leather shoes which give good protection and long pants are required. Neither sandals nor cloth-top shoes are permitted in manufacturing areas.

Onsite Registration Details

This is a 3.5-day course offered onsite.

[Register](#)

Cost: \$3500



CenTraVac® System Operation and Maintenance

Course Description

This course will familiarize owner maintenance supervisors and technicians with Trane CenTraVac CVHE/F/G/L/S and new CVHM centrifugal chiller operation and maintenance requirements. It will assist them understanding chilled water systems and load-based chiller dynamics. The course will help technicians troubleshoot and will help chiller owners decide if work can be done in-house or not. Technicians can particularly benefit from coverage on diagnosing and maintaining machine design performance and learn what can occur if operating outside of these parameters. We will discuss the addition of the new refrigerant options: R514A and R1233zd, and the changes that were made to the chillers. This course relies primarily on classroom lecture and does not include hands-on maintenance training.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Describe Trane centrifugal chiller operation and chilled water system theory
- Observe chiller construction process
- Use operating logs to recognize normal operation and how abnormal influences affect chiller operation and performance
- Recognize problems that reduce efficiency and damage equipment
- Identify system components and their role in the system
- Identify system differences related to the new refrigerant options
- Understand and perform basic chiller maintenance, such as oil filter replacement, annual purge maintenance
- Understand purge operation

Who Should Attend?

Individuals responsible for the operation and maintenance of chillers (CVHE/F/G/L/S/M). This course will benefit technicians, supervisors or engineers who make planning decisions to support Trane CenTraVac centrifugal chiller preventative maintenance.

Qualifications

Students will benefit from this course in direct relation to their background knowledge of refrigeration, electrical, mechanical, and basic heat transfer systems. This course doesn't require in-depth HVAC knowledge.

Plant Tour Requirement

Students will have the opportunity to observe the manufacturing and the assembly of key components in a factory tour. Leather shoes which give good protection and long pants are required. Neither sandals nor cloth-top shoes are permitted in manufacturing areas.

Onsite Registration Details

[Register](#)

Cost: \$1950 Length: 3.5 days

Virtual Registration Details

Cost: \$300 each Length: 3 Hour

(See page 18 for virtual module explanation)

Capacity Control, Motor Cooling & Oil System Virtual

[Register](#)

This module covers compressor capacity control, motor cooling and oil system

Components and Refrigeration Cycle Virtual Module

[Register](#)

Introduction to chiller components and their role in the low-pressure refrigeration cycle. Chiller performance and what effects it.

Troubleshooting Operation & Maintenance Virtual Module

[Register](#)

This module covers service and maintenance

Purge Virtual Module

[Register](#)

This module covers CenTraVac Purge operation and maintenance

Chilled Water Systems Service

Course Description

This course is intended to provide attendees with a "systems" approach to maintaining and diagnosing problems involving chilled water piping systems from a service perspective. It will show technicians and supervisors how Trane utilizes water flows to obtain efficient chiller operation. The course will also discuss water system conditions that can be detrimental to efficient operation and possibly damaging to system components. Students will take flow measurements in a laboratory setting, using recommended tools and techniques to determine chilled water system performance. Chilled water system types such as decoupled loop, variable- primary flow and others will be discussed.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Demonstrate an understanding of the water principles as applied to a chilled water system.
- Calculate the loop size in a chilled water system to understand and prevent short loop issues.
- Measure and verify water flow on a simple chilled water system using a variable frequency drive.
- Calculate water flow in a system using various methods.
- Given the necessary tools, service literature and personal protective equipment (PPE); properly log multiple chillers in our hands-on lab.
- Using operating pumps, calculate flow and then plot changes of flow using a balancing valve.
- Calculate unit capacity on a chiller by using proper tools and methods.

Lab Safety

Instructor provided PPE is required for the hands- on live circuit portion of this course. The proper clothing should also be worn - long pants and long sleeves of 100% cotton.

Who Should Attend?

This course is intended for plant engineers, maintenance supervisors, operating engineers, HVAC service technicians, and maintenance technicians who need an improved understanding of chilled water system control and maintenance requirements and techniques.

Qualifications

This course addresses the needs of persons from widely varied backgrounds and does not require in-depth HVAC knowledge. Students should be ready, however, to assimilate HVAC "systems" thinking.

Onsite Registration Details

[Register](#)

Cost: \$1800 Length: 3.5 days

Virtual Registration Details

Cost: \$300 each Length: 3 Hour

(See page 18 for virtual module explanation)

Chilled Water Systems - System Design Types

[Register](#)

This module will describe and identify system design types (variable Primary, decoupled loops, etc.) and discuss the operation and control for various systems. It also includes identify requirements for different system designs (variable flow vs. constant flow.)

Chilled Water Systems - System Operation

[Register](#)

This module includes discussion on the operation of a basic chilled water system; identifies various methods of measuring water flow and describes water flow requirements in the system

Chilled Water Systems - System Principles

[Register](#)

This module discusses the function of a chilled water system and describes and defines chilled water system terminology.

CGAM/ACS Chiller

Course Description

This service level course covers the operation, diagnosis and troubleshooting for the CGAM/ACSA air cooled scroll chiller, with additional detailed coverage of R-410a refrigeration system components, chiller logging and maintenance procedures. Trane scroll CGAM/ACSA Scroll Compressors construction, operation, maintenance requirements and troubleshooting will also be taught. Factory recommended installation, start-up procedures and chiller logging will be discussed in detail.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Describe each chiller's construction and the relationship of components.
- Describe the field charging, handling and troubleshooting of R-410a scroll refrigerant systems.
- Describe the compressor protection processes.
- Use the unit wiring and interconnecting diagrams.
- Describe the control start sequence and operating control logic.
- Properly charge a unit using proper tools and procedures.

Who Should Attend?

This course is intended for contractor and in-plant HVAC service technicians who will work regularly with Trane CGAM and/or CGWF scroll chiller

Qualifications

The student must have solid electrical skills equal to Trane University's HVAC Electrical Troubleshooting course standards. Service experience with other types of liquid chillers and/or Trane's chiller control systems would be helpful but are not required. Familiarity with basic computing skills, file management and internet downloading procedures is also desirable.

Onsite Registration Details

[Register](#)

Cost: \$1950 Length: 3 days

Virtual Registration Details

Cost: \$300 each Length: 3 Hour
(See page 18 for virtual module explanation)

Mechanical Components

[Register](#)

Course module description: this module covers the unit design and the available applications. The module discusses design specs, application selection, and the design operating points for the unit in various applications.

Unit Design and Selection

[Register](#)

This module includes discussion on the operation of a basic chilled water system; identifies various methods of measuring water flow and describes water flow requirements in the system

Unit Operation and Capacity Control

[Register](#)

This module discusses the function of a chilled water system and describes and defines chilled water system terminology.

Commercial Systems Service

Course Description

This course exposes the student to commercial unit and systems operation, set-up, and troubleshooting. This course is delivered through a combination of classroom activities, interactive workshops, and hands on lab exercises using Trane commercial unitary and applied equipment. The course emphasizes a systematic approach to commercial HVAC system service and troubleshooting.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Interpret temperature and pressure readings on an operating refrigeration system
- Troubleshoot common refrigeration system issues
- Measure airflow using appropriate airflow instruments
- Apply airflow fundamentals to unit operation
- Perform combustion analysis and determine combustion efficiency
- Compare air mixtures using the psychrometric chart
- Set up an economizer using appropriate mixed air formulas
- Describe building systems used in commercial HVAC applications

Lab Safety

Instructor provided PPE is required for the hands-on live circuit portion of this course. Please wear long pants and long sleeves of 100% cotton.

Who Should Attend?

This course is ideal for dealer, contractor or owner maintenance technicians progressing from residential to light commercial service who have experience in HVAC.

Prerequisites

We recommend attendees meet one of the following:

- Completion of a technical program in A/C
- At least 1.5 years practical experience
- Completion of either Trane University's Air Conditioning Service or HVAC Electrical Troubleshooting

Qualifications

Students must also have a working knowledge of the basic theory needed to diagnose the refrigeration cycle and an understanding of the following tools and subjects:

- Refrigeration Manifold Gauge Set
- Volt/Ohmmeter
- Electronic Temperature Meter
- Clamp-on ammeter
- Temperature/Pressure Relationships
- Metering Devices
- Basic trade math

Onsite Registration Details

[Register](#)

Cost: \$1800 Length: 4 .5 days

HVAC Electrical Troubleshooting

Course Description

This course is intended to improve a technician's ability and confidence when troubleshooting electrical problems on commercial HVAC equipment. The course will broaden the technician's capabilities to troubleshoot controls and other electrical circuits by teaching an understanding of practical electrical theory as applied to the products and components found in HVAC. The information and skills learned should greatly decrease service diagnosis time and take the guesswork out of isolating problems found in single and three-phase air conditioning and heating products. This course makes extensive use of lab hands-on methods.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Define and use fundamental electrical terms, laws and formulas for understanding what electricity is and what it does.
- Discuss the basics of series, parallel and series-parallel circuits.
- Identify the proper usage of meters required to troubleshoot electricity.
- Increase confidence and ability in reading complex wiring diagrams.
- Discuss the control logic and sequence of unit operation.
- Discuss safeties and component operation in Trane equipment.
- Recognize characteristics of single- and three- phase motors and their associated control components.
- Discuss the principal maintenance requirements for longer operating life of electrical components.
- Practice systematic methods of electrical troubleshooting for all major HVAC products.

Lab Safety

Instructor provided PPE is required for the hands- on live circuit portion of this course. Please wear long pants and long sleeves of 100% cotton.

Who Should Attend

This course is ideal for HVAC installers, maintenance mechanics, industrial electrical technicians and apprentice level service technicians who have HVAC

servicing responsibility and need a thorough understanding of electrical troubleshooting skills.

Qualifications

Students should have some basic mechanical and electrical background in addition to an aptitude and interest for work with HVAC equipment.

Onsite Registration Details

[Register](#)

Cost: \$1800 Length: 4.5 days

Virtual Registration Details

Cost: \$300 each Length: 3 Hour
(See page 18 for virtual module explanation)

Basic Electricity Virtual Module

[Register](#)

This module covers basic electrical concepts for both AC and DC circuits. Ohms, Watts and Kirchhoff's laws and how they apply to series and parallel circuits will be covered in depth. Other topics include use of multimeters, inductance, transformers, relays, and other component typically found in HVAC equipment will be discussed.

Electric Motors Virtual Module

[Register](#)

This module covers the fundamentals of electric motors. Motor construction including stators and rotors for inductive, permanent magnet motors will be discussed. The module will cover both three phase and single phase motors. There will also be discussion of motor starters and the use of capacitors on single phase motors. Motor testing and troubleshooting methods with an approach to predicative maintenance will be introduced.

Schematics and Troubleshooting Virtual Module

[Register](#)

This module will discuss Trane electrical schematics including symbols used, notation and how to navigate the schematic. Basic troubleshooting techniques from the schematic perspective will be presented. The module will also cover using the schematic to help understand the unit's sequence of operations as well as component location.

IntelliPak® I & II Rooftop Units

Course Description

The course focuses on operation, start-up and maintenance of 20 to 130 ton IntelliPak I and 90 to 162 ton IntelliPak II rooftop units. Proper service techniques are discussed and include correct maintenance procedures and intervals. Factory recommended installation and start-up procedures will also be discussed. Students will also learn the service and checkout procedures for the mechanical cooling and heating systems related to Intellipak.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Using IntelliPak terminology, discuss rooftop unit functions.
- Demonstrate circuit board level troubleshooting by using an Intellipak wiring diagram.
- Practice configuration and setup of a unit using an Intellipak Human Interface.
- Demonstrate the proper setup procedure for cooling and heating.
- Discuss and demonstrate pressure transducer troubleshooting.
- Describe the basic IntelliPak sequences of operation.
- Describe scroll compressor construction and operation.
- Diagnose and troubleshoot IntelliPak binary and analog inputs and outputs.
- Test and verify modulating dehumidification.
- Demonstrate an understanding of CV, SZVAV, and VAV air flow properties.

Lab Safety

Instructor provided PPE is required for the hands-on live circuit portion of this course. Please wear long pants and long sleeves of 100% cotton.

Who Should Attend?

This course is intended for rooftop service technicians who have a good understanding of both constant volume and variable air volume rooftop units and systems and need additional knowledge regarding startup and maintenance procedures of Trane IntelliPak rooftop units.

Qualifications

Students must have a good understanding of both the refrigeration and combustion cycles and understand airflow dynamics. Students should also be able to follow electrical ladder diagram logic and be familiar with commercial unitary equipment sequence of operation.

Plant Tour Requirement

Protective leather shoes and long pants are required for plant tours. Sandals and cloth-top shoes are not permitted in manufacturing areas.

Onsite Registration Details

[Register](#)

Cost: \$1950 Length: 4.5 days

Virtual Registration Details

Cost: \$300 each Length: 3 Hour

(See page 18 for virtual module explanation)

Controls/Sequence of Operation 6 hour (2 day)
Virtual Module

[Register](#)

This course does not cover Symbio 800 controls

This module will cover the legacy IntelliPak sequences of operation. This will include a discussion of the various control boards and expected voltage readings. Common sequences of operation based on unit configuration. We will also explore the model number and how that reflects the configuration of the unit and what components to expect

Legacy IntelliPak I & II Heat Virtual Module

[Register](#)

In this module we will discuss the various types of heating that are provided in Intellipak rooftops. We will discuss burner operation and proper setup of the direct fire burners, the modulating burners, hydronic (steam or hot water) and electric heat for Intellipak I and II.

IntelliPak® with Symbio™ 800

Course description

The IntelliPak with Symbio 800 program provides the technical knowledge and skills required to start-up, service and troubleshoot IntelliPak units with Symbio 800 controls. The course is intended to familiarize technicians with the new IntelliPak with Symbio 800 controls rooftop unit. This course will cover new product information with an emphasis on the Symbio 800 control platform.

This course is intended for new IntelliPak units with Symbio 800 controls. This course does not cover legacy IntelliPak topics.

Specific course objectives

Upon completion of this course, participants should be able to:

- Explain sequence of operations for Constant Volume (CV), Single Zone VAV (SZVAV) and Multiple Zone VAV (MZVAV) units.
- Perform LLID binding using Tracer TU and TD7 display.
- Interpret electrical wiring schematics for Symbio 800 controls.
- Verify and adjust units' airflow using product literature.
- Identify system components that make up the Symbio 800 control platform.
- Demonstrate unit configuration using model number, literature and Tracer TU software.
- Describe gas fired burner operation for staged and modulating heat.

Lab safety

Instructor provided PPE is required for the hands-on workshops of this course. Please wear long pants and long sleeves of 100% cotton.

Who should attend?

This course is intended for rooftop service technicians who have a good understanding of both constant volume and variable air volume rooftop units and systems and need additional knowledge regarding startup and maintenance procedures of Trane IntelliPak rooftop units with Symbio 800 controls.

Qualifications

Students must have a good understanding of both the refrigeration and combustion cycles. Students

should be able to follow electrical ladder diagram logic and be familiar with commercial rooftop sequence of operation. Basic PC skills and use of software is a plus but not required.

Onsite Registration Details

[Register](#)

Cost: \$1950

Length: 3.5 days

Virtual Registration Details

Cost: \$300 each Length: 3 Hour

(See page 16 for virtual module explanation)

Symbio 800 Controls 2-day Virtual Module

[Register](#)

This module content covers the IntelliPak with Symbio 800 controls rooftop unit. The content includes an overview of the basic sequence of operation, various control boards and the expected voltage readings. We will also explore the model number and how that reflects the configuration of the unit and what components to expect. Human interface and WebUI navigation will be covered at a high level, including LLID binding from the Human interface.

Airflow, Economizer, Refrigeration and Heat Virtual Module

[Register](#)

This module covers IntelliPak with Symbio 800 airflow and fan operation. Supply fan selection and set-up are covered. Identification of supply fan motor and impeller utilizing the model number description is discussed. Airflow measurement and adjustment using unit fan curves and programming. Location and operation of relief fans including StatiTrac and TRAQ fresh air measurement will also be discussed. Set-up and operation of the economizer including Demand Control Ventilation (DCV) will also be covered. This module will also discuss the sequence of operation and service requirements of the refrigerant circuits and heat options. We will discuss refrigerant logging, pressure curves, compressor operation, compressor safeties and head pressure control including low ambient operation. Dehumidification option using hot gas reheat will be covered. In addition, Gas and electric heat operation and start-up will also be discussed.

Precedent® Voyager™ Rooftops (3–25 Ton Units)

Course Description

This course is designed to provide commercial service technicians in-depth comprehensive coverage of the Trane Precedent and Voyager rooftops with ReliaTel™ controls. Students will be exposed in detail to the mechanical, electrical and control systems of these units and will become knowledgeable in the start-up, maintenance and troubleshooting requirements of these products. This course will also cover updates for each of these units including fans, compressors, and refrigerant.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Explain CV, SZVAV, MZVAV, and eFlex unit operation and proper airflow adjustment.
- Demonstrate the ability to read and follow a ReliaTel® schematic.
- Demonstrate proper gas heating checkout and troubleshooting.
- Demonstrate the ability to test and troubleshoot Zone Sensor modules.
- Apply proper techniques to service, diagnose and troubleshoot Precedent and Voyager rooftops with ReliaTel controls.
- Explain the operation of the ReliaTel economizer with CO2 and DCV control.

Lab Safety

Instructor provided PPE is required for the hands-on live circuit portion of this course. The proper clothing should also be worn: long pants and long sleeves of 100% cotton.

Who Should Attend?

Commercial rooftop service technicians who have a good understanding of both constant volume and variable air volume rooftops and systems and who need extended knowledge of the PRV rooftops.

Qualifications

Students should have a good understanding of both the refrigeration and combustion cycles and understand airflow dynamics. Students should also be able to follow electrical ladder diagram logic and be familiar with commercial unitary equipment sequence of operation.

Plant Tour Requirement

Classes held in Clarksville TN: Protective Leather shoes and long pants are required for plant tours. Sandals and cloth-top shoes are not permitted in manufacturing areas.

Onsite Registration Details

[Register](#)

Cost: \$1950 Length: 3.5 days

Virtual Registration Details

Cost: \$300 each Length: 3 Hour

(See page 18 for virtual module explanation)

Heating Virtual Module

[Register](#)

In this module the various types of heating including gas, electric, heat pump and dual fuel will be covered. Discuss proper set up and operation of the light commercial power burner (negative pressure burner) and Precedent in-shot burner. Modulating heat for Voyager and Precedent units with variable airflow are also covered.

Airflow and Economizer Operation Virtual Module

[Register](#)

This module will cover common airflow applications, including Constant Volume (CV), Single Zone Variable Air Volume (SZVAV) and Multiple Zone Variable Air Volume (MZVAV). Various fan types, their application and how to measure airflow are introduced. Proper set up and operation of the economizer will be discussed. Demand control ventilation (DCV) and ventilation override modes (VOM) are also covered.

ReliaTel Controls Virtual Module

[Register](#)

In this module the ReliaTel controls platform will be covered in depth. ReliaTel controls are used exclusively on Trane Precedent and Voyager RTU's as well as Odyssey split systems. This module will cover circuit boards, sequence of operations, schematics and common applications. This module will help build a foundation for further ReliaTel modules.

ReliaTel Troubleshooting Virtual Module

[Register](#)

This module will cover troubleshooting the ReliaTel control platform. This includes where to take various voltage measurements and how to interpret these readings, using the ReliaTel diagnostic manual. Additional troubleshooting tools will be discussed including Test mode and the TD5 display.

eFlex™ Operation Virtual Module

[Register](#)

This module covers Trane eFlex unit components and sequence of operation.

RTAA Rotary Chillers

Course Description

This course provides training for service and facility maintenance technicians who need an in-depth understanding of the controls, maintenance and troubleshooting of Trane's RTAA and RTWA helical-rotary chillers. The course provides insights into compressor design, unit operation, unit installation, start-up requirements, unit performance and service diagnosis. Specific service steps are covered for refrigerant handling and component service.

This course is primarily classroom oriented.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Describe the theory of helical rotary chiller operation.
- Discuss chiller components and the interrelationships.
- Describe the capabilities of individual chiller designs.
- Read unit wiring and interconnecting diagrams.
- Describe control start sequence and operating logic.
- Discuss system control methods available for building automation.
- Use control information for routine operational troubleshooting.
- Complete routine maintenance requirements for helical-rotary chillers.
- Discuss the limits to field service methods inherent to helical compressor designs.
- Apply proper service techniques with refrigerant handling and component repairs.

Lab Safety

Instructor provided PPE is required for the hands-on live circuit portion of this course. The proper clothing should also be worn: long pants and long sleeves of 100% cotton.

Who Should Attend?

This course is intended for contractors and in-plant HVAC service technicians who will work regularly with Trane RTAA air-cooled and RTWA water-cooled chillers.

Qualifications

Technicians must have solid electrical skills equal to Trane University's HVAC Electrical Troubleshooting course standards. Service experience with other types of liquid chillers and/or Trane's UCP1 and UCP2™ chiller control system are helpful, but not required.

Onsite Registration Details

RTAA

[Register](#)

Cost: \$1950 Length: 3 days

Virtual Registration Details

Cost: \$300 each Length: 3 Hour

(See page 18 for virtual module explanation)

RTAA Controls Overview Virtual Module

[Register](#)

This module provides the controls overview for the RTAA Chiller.

RTAA Operations Virtual Module

[Register](#)

In this module we will provide the RTAA Chiller mechanical overview of the chiller

RTAC Rotary Chillers

Course Description

This course covers operation, diagnostics, and maintenance for Trane's RTAC rotary chillers, the Tracer™ CH530 micro electronic control system and covers refrigeration system components. The operational characteristics of the GP2 compressor, Falling Film evaporator, and E-coil design condenser are given emphasis. Additional coverage provided for chiller operation using ANSI® Trane wiring diagrams with emphasis on understanding the Adaptive control system logic. Tracer CH530 control architecture and components are discussed. This course is primarily classroom oriented.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Discuss the operating characteristics of 140 to 500 ton Trane RTAC rotary chiller machines.
- Identify components and their interrelationship to each other
- Describe GP2 compressor construction, operation and checkout.
- Describe Falling Film evaporator construction and operation.
- Discuss the Tracer CH530 control architecture and operating logic.
- Explain the field maintenance of the Trane RTAC rotary chiller.

Lab Safety

Instructor provided PPE is required for the hands-on live circuit portion of this course. Please wear long pants and long sleeves of 100% cotton.

Who Should Attend?

This course is intended for owners, contractors and in-plant HVAC service technicians who will work regularly with Trane RTAC rotary chillers.

Qualifications

Technicians must have solid electrical skills equal to Trane University's HVAC Electrical Troubleshooting course standards. Service experience with other

types of liquid chillers and/or the Trane UCP1 and UCP2™ chiller control system are helpful, but not required. Familiarity with basic computing skills, file management and internet downloading procedures is also desirable.

Onsite Registration Details

RTAC Onsite

[Register](#)

Cost: \$1950 Length: 3 days

Virtual Registration Details

Cost: \$300 each Length: 3 Hour

(See page 18 for virtual module explanation)

Mechanical Components Virtual Module

[Register](#)

This module covers the mechanical component layout of the chiller and maintenance associated with chiller components as well as their function. As well as refrigeration cycle as it applies to the unit and terminology associated with chiller applications

Operation and Capacity Control Virtual Module

[Register](#)

This module covers the chiller sequence of operation, and capacity controlled. It also discusses items that affect normal operation and capacity control.

Unit Design and Selection Virtual Module

[Register](#)

This module covers the unit design and the available applications. The module discusses design specs, application selection, and the design operating points for the unit in various applications



RTAE/ACRA Rotary Chillers

Course Description

This course covers the operation of Trane RTAE/ACRA rotary chillers. Coverage includes chiller refrigeration system components, construction and operation. Emphasis will be placed on the operational characteristics of the GP4 and GP4 with VVI compressor, CHIL evaporator, transverse condenser, and the AFD3 and PowerFlex 755 cooling circuits. Additional coverage will be provided on the RTAE/ACRA UC800 control platform with TD7 AdaptiView™ display, chiller logging and maintenance requirements. This course is primarily classroom oriented.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Describe the operating characteristics of a RTAE/ACRA rotary chiller.
- Identify RTAE/ACRA rotary chiller construction and the physical relationship of components.
- Describe GP4 and GP4 with VVI compressor operation.
- Describe the CHIL evaporator construction and operation.
- Discuss the Trane UC800 control platform and operating logic.
- Perform the field service, maintenance of RTAE/ACRA rotary chillers.
- Identify how the AFD3 and PF755 Drive works as it relates to RTAE/ACRA rotary chillers.

Lab Safety

Instructor provided PPE is required for the hands-on live circuit portion of this course. Please wear long pants and long sleeves of 100% cotton.

Who Should Attend?

This course is intended for owners, contractors and in-plant HVAC service technicians who will work regularly with Trane's RTAE/ACRA rotary chillers.

Qualifications

The student must have solid electrical skills equal to Trane University's HVAC Electrical Troubleshooting course standards. Service experience with other types of liquid chillers and/or the Tracer™ CH530 chiller control system would be helpful but are not required.

Onsite Registration Details

RTAE Onsite

[Register](#)

Cost: \$1950 Length: 3 days

Virtual Registration Details

Cost: \$300 each Length: 3 Hour

(See page 18 for virtual module explanation)

User Interface, Controls Hardware Virtual Module

[Register](#)

ACRA/RTAE user interface, controls hardware and sequence of operation

Power Options and Compressor Virtual Module

[Register](#)

Introduction of the ACRA/RTAE chiller, power options and compressor overview

Condenser Evaporator Construction Operation

Virtual Module

[Register](#)

ACRA/RTAE Condenser/ evaporator construction operation & maintenance



RTAF Rotary Chillers

Course Description

This course is designed to teach service technicians the components of Trane’s RTAF Sintesis unit and how to maintain it. Identification and troubleshooting using diagnostics is emphasized. Compressor and unit control operation are also covered. After completion, the technician should be able to verify proper unit operation and performance. This course is primarily classroom oriented.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Identify the tonnages, components and physical differences of the compressors in a RTAF Sintesis chiller.
- Explain the operation of the capacity control of the Helical Rotary compressor.
- Explain the diagnostic, troubleshooting and repair procedures on the capacity control for the Helical Rotary compressor.
- Identify the components, oil management process and maintenance of a RTAF Sintesis chiller.
- Explain the unit control operation of the RTAF Sintesis chiller.
- Explain the components, operation and troubleshooting of a RTAF Sintesis chiller Microchannel condenser.
- Identify the EEV and evaporator components in a RTAF Sintesis chiller.

Lab Safety

Instructor provided PPE is required for the hands-on live circuit portion of this course. Please wear long pants and long sleeves of 100% cotton.

Who Should Attend?

Owners, contractors and in-plant HVAC service technicians who work regularly with Trane RTAF rotary chillers should attend.

Qualifications

The student must have solid electrical skills equal to Trane University's HVAC Electrical Troubleshooting course standards. Service experience with other types of liquid chillers and/or the Tracer™ CH530 chiller control system would be helpful but are not required.

Plant Tour Requirement

Classes held in Pueblo, CO include a plant tour. Please wear protective leather shoes and long pants during plant tours. Sandals and cloth-top shoes are not permitted in manufacturing areas.

Onsite Registration Details

RTAF Onsite

[Register](#)

Cost: \$1950 Length: 3 days

Virtual Registration Details

Cost: \$300 each Length: 3 Hour
(See page 18 for virtual module explanation)

Evaporator Virtual Module

[Register](#)

This module covers the Evaporator as it applies to the various screw chiller products: RTAF, ACRA, & RTAE. It also covers the construction, operation, and service of the Evaporator. Attendees for this module should be familiar with basic chiller operation and refrigeration cycle.

Oil System Virtual Module

[Register](#)

This module describes the oil system as it applies to the RTAF screw chillers: It also covers the operation and servicing of the oil system

Operation & Maintenance Virtual Module

[Register](#)

This module covers the chiller operation and maintenance associated with chiller components. It also covers the refrigeration cycle as it applies to the unit and terminology associated with chiller applications.

RTHD Rotary Chillers

Course Description

This course covers the operation and maintenance of Trane's RTHD helical rotary chiller with Tracer™ CH530 and UC800 control platforms. Coverage includes discussion on the CH530 and UC800 micro electronic controls in addition to refrigeration system components and operational logging.

Emphasis will be placed on chiller sequence of operation, construction of refrigeration system components and the chiller's Adaptive Control™ system logic. This course is primarily classroom oriented.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Describe the operating characteristics of Trane RTHD helical rotary chillers.
- Explain the differences between Tracer CH530 and UC800 control platforms.
- Discuss the service and maintenance of Trane's RTHD rotary chillers.
- Describe Trane's RTHD rotary chiller compressor operation with and without TR200™ VFD.

Who Should Attend?

Contractor and in-plant HVAC service technicians who work regularly with Trane Series R chillers should attend.

Qualifications

The technician must have solid electrical skills equal to Trane University's HVAC Electrical Troubleshooting course standards. Service experience with other types of liquid chillers and/or Trane's UCP1 and UCP2™ is helpful but not required. Familiarity with basic computing skills, file management and internet downloading procedures is also desirable.

Onsite Registration Details

RTHD Onsite

[Register](#)

Cost: \$1950 Length: 3 days

Virtual Registration Details

Cost: \$300 each Length: 3 Hour

(See page 18 for virtual module explanation)

Evaporator Virtual Module

[Register](#)

This module covers the falling film style Evaporator as it applies to the various screw chiller products: RTHD. It also covers the construction, operation, and service of the falling film style Evaporator. Attendees for this module should be familiar with basic chiller operation and refrigeration cycle.

Oil System Virtual Module

[Register](#)

This module describes the oil system as it applies to the RTHD screw chillers. It also covers the operation and servicing of the oil system.

Operation & Maintenance Virtual Module

[Register](#)

This module covers the chiller operation and maintenance associated with chiller components. It also covers the refrigeration cycle as it applies to the unit and terminology associated with chiller applications.



RTWD Rotary Chillers

Course Description

This course provides an in-depth understanding of the controls, maintenance and troubleshooting of Trane's RTWD helical rotary chiller with Tracer™ CH530. The course also provides insight into compressor design, unit operation, unit performance and service diagnosis. This course is primarily classroom oriented.

Specific Course Objectives

Upon completion of this course, participants should be able to:

- Describe the theory of operation of Trane's RTWD.
- Discuss the RTWD platform service procedures, maintenance and troubleshooting
- Describe oil return.
- Explain how the GP2 compressor operates
- Describe gas pump operation.
- Discuss the CH530 control system.
- Discuss the problems associated with oil

Who Should Attend?

Contractor and in-plant HVAC service technicians who work regularly with Trane Series R chillers should attend

Qualifications

The student must have solid electrical skills equal to Trane University's HVAC Electrical Troubleshooting course standards. Service experience with other types of liquid chillers and/or Trane's UCP1™ and UCP2™ is helpful but not required. Familiarity with basic computing skills, file management and internet downloading procedures is also desirable

Lab Safety

Instructor provided PPE is required for the hands- on live circuit portion of this course. Please wear long pants and long sleeves of 100% cotton.

Onsite Registration Details

[Register](#)

Cost: \$1950 Length: 3 days

Virtual Registration Details

Cost: \$300 each Length: 3 Hour
(See page 18 for virtual module explanation)

Evaporator Virtual Module

[Register](#)

This module covers the Evaporator & Condenser as it applies to the RTWD screw chiller product. It also covers the construction, operation, and service of the Evaporator & Condenser. Attendees for this module should be familiar with basic chiller operation and refrigeration cycle.

Oil System Virtual Module

[Register](#)

This module describes the oil system as it applies to the RTWD screw chiller: It also covers the operation and servicing of the oil system.

Operation & Maintenance Virtual Module

[Register](#)

This module covers the chiller operation and maintenance associated with chiller components. It also covers the refrigeration cycle as it applies to the unit and terminology associated with chiller applications

Technical Service Training

Self-Paced Learning

Trane University™ is pleased to offer on demand learning. These courses are created with the same high quality you receive from our on-site offerings.

Convenient: On-demand 24/7 access

Flexible: Understand and apply the material at your own pace

Stress-free: Easy to access from your individual Trane Education Center account

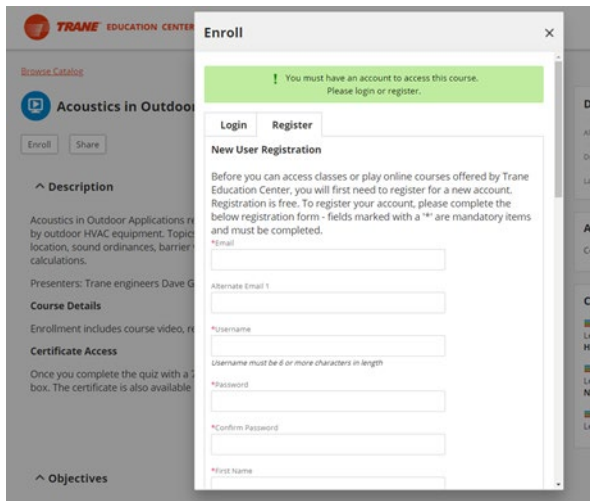
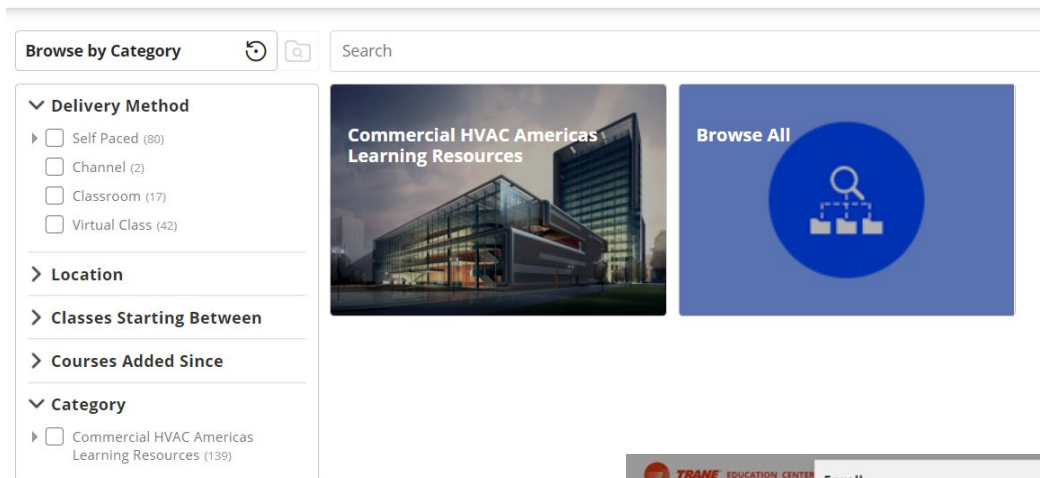
To register for a **specific** course, please use the "**Register**" links found on the course page.

OR

To **browse** for a course, use the Trane Education Center online catalog.

To browse:

- Navigate to [Trane Education Center](#) and choose "Access to Catalog"
- Choose a delivery method, category or type a keyword in the Search box
- Once you choose "enroll or add to cart," a prompt appears to log into (or register) your TEC account



Intellipak Human Interface Navigation and Status Menu

Length: 1 hour

Cost: 75.00

[Register](#)

Course Description

The IntelliPak Human Interface Navigation and Status Menu program walks a service technician through basic navigation and status screens for IntelliPak Rooftop Units 20 to 162 tons.

Specific Course Objectives

Upon completion of this course, participants should be able to effectively navigate the IntelliPak Human Interface

Reliatel Zone Sensor Testing

Length: 1 hour

Cost: 75.00

[Register](#)

Course Description

This course is designed to provide Trane service technicians with in-depth information on ReliaTel Zone Sensor Module testing and troubleshooting.

Specific Course Objectives

- Upon completion of this course, participants should be able to:
- Discuss the basic operation of a Zone sensor.
 - Demonstrate how to properly test the Zone Sensor Module.
 - Troubleshoot the Zone Sensor Module

Trane Education Center

Frequently Asked Questions

Where can I view a schedule of upcoming classes?

Browse all available classes on [Trane.com Education Page](#). The Trane Education Center (TEC) holds current training, training history and personal information. Please follow directions below to create a TEC account.

I want to register myself for a course; where do I begin?

Log into your [Trane Education Center](#) account (or if needed, create an account in [TEC](#)) and search by course name or use search filters.

What should I do if I forgot my username or password?

If you need a password reset, click "Forgotten Password?" on the TEC login page. If you need username or additional password assistance, email traneeducationcenter@tranetechnologies.com

I want to register ONE learner for a course; where do I begin?

Do they have an account in Trane Education Center?

If YES...

Login to their account, search for the course, add to cart and proceed to payment. If you do not know their login information email traneeducationcenter@tranetechnologies.com

If NO...

Create an account for the learner (or have them create an account) in [Trane Education Center](#). Click on "New Customer? Register Here" and follow the prompts.

I want to register MULTIPLE learners for a course; where do I begin?

Do they have an account in [Trane Education Center](#)?

If YES...

Login to YOUR account, search for the course(s), and add them to the shopping cart. On the first checkout screen, uncheck "Enroll Yourself" and proceed to payment. Once you have completed payment you will be directed to go to the "My Orders" page. Select the "Actions" drop down and click "Use Key". You will be asked to confirm the course and select whether you are enrolling yourself or others. Then you can apply the keys to the appropriate technicians; to enroll the specific learners, search by TEC account username or last name and select the individual to enroll in the course.

If NO...

Create an account for the learner (or have them create an account) in TEC. Click "New Customer? Register Here" and follow the prompts. When creating multiple accounts, you have the option to click "Submit and Create Another" to save the information from the current entry to the next entry.

What types of payment do you accept?

We accept Credit Card (Visa, MC, Amex) and Purchase Order (must enter a PO #.)

How do I pay for a course?

If a course has a cost associated with it, you will see an Add to Cart button; click this button to add the course to your shopping cart then proceed to checkout. NOTE: Government Employees follow this procedure as well.

Where can I find a copy of my receipt or proof of transaction?

If you purchased a training class in your account, log into your account and go to the e-Commerce drop down, select My Orders and click on the Order Number, right click to print the details. If you purchased a training class in someone else's account, log into their account > e- Commerce > My Orders> Click on the Order Number, right click to print the details

I am not attending the course but I am paying for this course and/or making the learner's travel arrangements; can I also receive course information?

Yes, add your email to the alternative email field in the learner's profile. You will receive the confirmation email with our travel recommendations information as well.

Do you have hotel and travel recommendations?

Yes, once the course reaches the minimum number of students, the learner and anyone's email listed as an alternative contact on their profile, receives a confirmation email that includes a link to a website with BCD Travel's contact information, and our hotel recommendations. Please contact BCD Travel directly (1.866.598.3938) with all questions regarding hotel and travel reservations.

Note: We strongly recommend that you do not make travel arrangements until you receive a confirmation email that includes travel information. Note: La Crosse, WI training ONLY - If you book reservations at our preferred hotel, transportation (to and from class, evenings out and back to the airport) is provided.

Can I switch learners once I register for a course?

Yes, please email traneeducationcenter@tranetechnologies.com Note: If there is a wait list for the course and you attempt to switch learners, the place may be lost.

How do I know if I completed a course and/or print a certificate?

From your TEC home page, select the My Learning drop down and click on My Learning History. Locate the course and check for a "Completed" status or a Certificate button

Where can I find pre-requisites or pre-work information for a course?

From your TEC home page, click on the Course Name. Prerequisites are found on the right side of the course enrollment page. If the list contains eLearning modules, go back to your TEC home page and type the module course name key words into the search field and click Search, then Enroll.

How do I un-enroll from a course?

From the list of current learning on your TEC home page, click on the course name. From the action section, click Un-enroll. Note: If the un-enroll button is grayed out, email traneeducationcenter@tranetechnologies.com

How do I view my current course enrollments?

Your TEC home page will show all course registrations under the My Self-Paced Learning and My Scheduled (classroom) Learning sections.

Do you offer any discounts or promotions?

Early Bird Discount*

Receive a 10% discount, automatically applied at checkout, for students registering 60 days prior to course start date.

Multi Student Discount*

(Three Hour Virtual Classes only)

Receive a 15% discount (automatically applied at checkout,) for each individual student (in the same course/ same shopping cart order) after first full priced student.

Training Packages*

Up to 35% off tuition with pre-purchased packages. Contact Trane University for more information.

GOLD Training Package - Includes 7,800 credits

Cost: \$6,000 (\$7,800 in training value)

20% savings

Valid for one year

GOLD PLUS Training Package - Includes 11,700 credits

Cost: \$9,000 (\$11,700 in training value)

25% savings

Valid for one year

PLATINUM Training Package - Includes 47,500 credits

Cost: \$30,000

35% savings

Valid for two years

To purchase a training package login to the [Trane Education Center](#) and search for "training package" and choose from the above options. Once purchased, Trane University will contact you within 24 hours to provide a Package Code, the credits can be applied immediately. For your convenience, Trane University tracks the credits used and sends periodic updates showing available credit.

* Multiple discounts do not apply

I want to attend a course and I am an international student; how do I enroll?

The technical seminars offered by Trane University are fast paced and conducted in English. Therefore, to receive the full benefit from the training, it is essential that the student speak, read, and understand spoken English competently, including technical terms.

Customers located outside the U.S. must enroll through the Trane office in their region. Approval is required by the local Trane Office in writing before registration can be completed. Any registration that has been approved must be completed with a credit card payment only. Trane also requires all international students to complete a Business Visa Form, to be submitted to the Trane Global Immigration Services team.

What is a Learning Path?

A list of courses, learning objects or events that need to be completed within a specific time frame, (for example: a target completion date is created). You can create one (1) personal development Learning Path each year. You may also be enrolled in Learning Paths based on career, function or role requirements (created by TEC Administrator.)

What is your Cancellation Policy?

You may cancel a registration up to 14 days before the course start date without penalty. Any cancellation made after that is subject to full tuition cost (student substitutions are allowed). If you do not cancel and do not come to class, you are considered a no-show. All no-show participants will be charged full tuition (including Trane employees.) Trane University reserves the right to cancel any class. We will notify you of class cancellation on or before 14 days prior to the class start date. We are not responsible for any travel costs related to a class cancellation.



Trane – by Trane Technologies (NYSE: TT), a global climate innovator – creates comfortable, energy efficient indoor environments through a broad portfolio of heating, ventilating and air conditioning systems and controls, services, parts and supply. For more information, please visit trane.com or tranetechnologies.com.

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