

# Deliver Exceptional Value with Performance Specification Language



Trane® offers consistent, proven, and well-documented solutions for owners and engineers. When flexibility is required for a given project or customer, customization of Trane's products is also an option.

The Trane Controls capabilities outlined in this document result in real benefits for your clients. While others may offer something similar, these capabilities are included as standard – pre-engineered and tested, consistent across all installations. Deliver value and achieve operational excellence with Trane Controls by adopting this performance-based specification language for your next project.

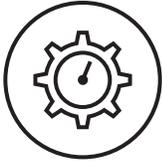
Features	Customer Benefit	Specification Language
<b>Factory Mounted Controls</b> 	Trane delivers factory mounted and tested Trane designed Controls with Trane designed HVAC equipment. In addition to end-device and sensor wiring, Trane Controls includes programming which reflects the collective, embedded knowledge of Trane's system experts. This can lead to faster construction cycles, less risk, and higher quality.	The HVAC equipment controllers shall be installed, wired, and commissioned in the factory.
<b>Standard Applications</b> 	Energy-saving features are provided in a standard, consistent manner across all projects, with published documentation for each optimization feature.	Manufacturer shall provide standard applications to deliver HVAC system control. Standard applications include Time of Day Scheduling with Optimal Start/ Stop, VAV Air Systems Control, Chiller Plant Control and Trim and Respond. Manufacturer shall provide system optimization strategies for functions such as fan pressure optimization and ventilation optimization.
<b>Wireless Topology</b> 	Wireless communication offers tremendous reliability over the life of the system, installation, and reconfiguration flexibility, and economical migration plans. Open, standard communication technology; recognized by ASHRAE®/BACnet.	Each workstation, building controller, and equipment controller communication interface shall utilize the BACnet protocol with an Ethernet (IEEE® 802.3, 802.11), RS485 (EIA-485), or Zigbee® (802.15.4) physical interface and an appropriate data link technology as defined in ANSI®/ASHRAE® Standard 135-2012. (e.g., BACnet IP, BACnet IPv6, BACnet MS/TP, BACnet Zigbee).
<b>Wired Topology</b> 	The selection from multiple wired topologies allows flexibility to help meet customer performance requirements at a low cost. Open, standard communication technology; recognized by ASHRAE®/BACnet.	Each workstation, building controller, and equipment controller communication interface shall utilize the BACnet protocol with an Ethernet (IEEE 802.3, 802.11) or RS485 (EIA-485) physical interface and an appropriate data link technology as defined in ANSI®/ASHRAE® Standard 135-2012. (e.g., BACnet IP, BACnet IPv6, BACnet MS/TP).

**Features**

**Customer Benefit**

**Specification Language**

**After Hours Usage Utility**



A revenue and tenant retention tool for owners that also empowers users to utilize facilities on their schedule which aligns energy costs with space usage.

Provide a Tenant Services™ web interface package with the ability for tenant/occupants to make after hours request and optionally adjust temperature in specific zones. Also, the ability to see all tenants programmed future requests edit, delete, and modify and invoice for all after-hours use.

**Standard Features**



User interface is provided by the manufacturer with time-of-day schedules, data collection, dashboards, reports and building summary, system applications, and self-expiring overrides

Manufacturer shall provide a user interface with time-of-day schedules, data collection, dashboards, reports and building summary, system applications, and self-expiring timed overrides. Manufacturer shall provide published documents that detail operation, configuration, setup and troubleshooting.

**BACnet Protocol**



Allows others to bid, encouraging competitive pricing for the customer's benefit. Also allows the customer to select best-in-class products without feeling locked into a specific vendor.

All system controllers shall be BTL listed as a BACnet Building Controller (B-BC) as defined in ANSI®/ASHRAE® Standard 135-2012.

All equipment and plant controllers shall be BTL listed as a BACnet Application Specific Controller (B-ASC) or a BACnet Advanced Application Controller (B-AAC) as defined in ANSI®/ASHRAE® Standard 135-2012.

**Mobile**



Trane provides multiple applications specifically designed for the user—user-specific apps help the user to be more productive. These mobile applications have all that you need to check your building's HVAC system to see what's happening from anywhere in the building, to respond to hot/cold calls quickly, and get more done in your day.

Controls manufacturer shall provide a phone/tablet interface with the ability to view/override status & setpoints, view/change schedules, view/acknowledge/comment on alarms, and view graphics for all spaces and equipment. This phone/tablet interface shall resize itself appropriately for the size of the interface (i.e., no "pinching & zooming" required).

**Secure Remote Access - to Equipment Controls - and BAS**



Secure remote access offers customers the convenience and safety to access their buildings anytime, from virtually anywhere using compatible PC or mobile devices.

Controls manufacturer shall provide secure remote access to the Building Automation System (BAS). Secure remote access shall not require IP ports to be "exposed" (i.e., port-forwarded, or external public IP addresses) to the Internet. Controls manufacturer shall update secure remote access software as necessary to follow cybersecurity best practices and respond to cybersecurity events

**Data Availability**



Simplify troubleshooting and "look-back" investigation with pre-populated data logs. The HVAC system has a built-in "black box" recorder to readily understand system performance—always.

The system shall harvest trend logs for defined key measurements for each controlled HVAC device and HVAC application. Trend logs shall be captured for a minimum of 5 key operating points for each piece of HVAC equipment and HVAC application and stored for no less than 1 year at 15-minute intervals.

**Features**

**Customer Benefit**

**Specification Language**

**Documentation**



All standard features of the product are documented in published materials for the customer's consumption available online, improving the overall user experience in the most efficient manner.

The manufacturer shall provide a published user and applications guide(s) that detail the system application operation, configuration, setup, and troubleshooting.

**Cloud Hosted Enterprise Management System**



Customer IT staff can focus on their core business systems leaving Trane to manage the BMS software in the cloud including operating system and database maintenance, upgrades, and site backups.

The enterprise building management system shall consist of a cloud-based service that includes server maintenance, site backups, and software upgrades for the term of three years as part of this contract. The service fees shall include licensing fees for operating systems and databases. The system shall have the ability to be transferred to an on-premises solution maintaining all data upon expiration of the contract should the contract not be renewed.

**Customizable Dashboards**



Customizable dashboards offer a customer the flexibility to optimize the representation of key performance indicators for their system, to meet the needs of their daily tasks. Productivity tool for daily operation and troubleshooting.

Controls manufacturer shall provide a user-configurable dashboard of key performance indicators that illustrate HVAC system and BAS status to include selectable dials, gauges, trends, tables, and charts of performance metrics.

**Warranty Support**



HVAC system analytics are used to identify anomalies in system performance to improve comfort, reliability, and energy savings.

The BAS Vendor shall provide data collection, analytics, and professional analysis for the facility HVAC Systems. The analysis shall consist of an evaluation of HVAC Systems including charts and graphs which indicate both current building performance and opportunities for building and HVAC system performance improvement.



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](http://trane.com) or [tranetechnologies.com](http://tranetechnologies.com).

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