Product Data Sheet

Air-Fi™ Wireless System

Trane Air-Fi™ wireless systems provides significant advantages to better meet customer by providing a lower initial cost; ease of installation for reduced risk; increased reliability and flexibility for easier problem solving; and fewer maintenance issues for worry-free operation and cost savings over the life of the system. Trane Air-Fi™ wireless systems helps save time and money, with industry-leading technology and performance.

Features and Benefits

Feature		Benefit
Reduced project labor and complexity		Reduces installation time and risks for on-time project completion while increasing return on investment.
Reliable and secure		Based on the IEEE 802.15.4 standard. The Institute of Electrical and Electronics Engineers (IEEE) is an international non-profit, professional organization, in which coexistence is a fundamental requirement and includes methods for network key establishment, network key transport, frame protection, and device management.
Maintenance-free batteries		Batteries will outlast the typical sensor life in typical applications.
Life-cycle savings		By avoiding (re)wiring, savings are incurred both for the initial installation and whenever the spaces are reconfigured or expanded.
Wireless communications interface (WCI)	Factory or field installed	Factory installation, testing, and addressing increases installed quality and further reduces installation labor. Field installation is available when factory installation is not practical, when the Tracer SC is field installed, or when the WCI is installed as a repeater.
	Zigbee® Building Automation certified	Air-Fi™ Wireless runs BACnet® protocol over ZigBee® Building Automation (ZBA) standards. Adding other ZBA-certified devices, down the road, will be easy and affordable.
	Indoor and outdoor mounting	Outdoor mounting is ideal for any outdoor equipment or for network setup above a roof deck. Indoor mounting is suitable for plenum applications.
Wireless communications sensor (WCS)	Digital display (WCS-SD)	Easy-to-use interface for clear and simple monitoring and control. Can be configured for any Trane system or to meet the customer's preference.
	Base model (WCS-SB)	Measures temperature and optional humidity (with WCS-SH) for use in public spaces where no local user interface is preferred.
	2% relative humidity (RH) sensor module (WCS-SH)	The optional RH sensor module plugs in to any WCS model, further simplifying installation by eliminating the needed for additional wiring.

⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

Air-Fi Wireless Device Part Numbers

Air-Fi™ Wireless model			Part number	BAYSENS	Global part
Wireless communications interface (WCI)	Indoor	Field installed or service	X13790901020	BAYWCII002A	MOD02602
	Outdoor		X13790941020	BAYWCII202A	MOD02604
	Indoor—BAA		X13790963010	BAYWCII003A	MOD02608
	Outdoor—BAA		X13790964010	BAYWCII203A	MOD02609
	Indoor flush	Service part only	X13790902020	N/A	MOD02603
	Indoor	Factory only	X13790903020	BAYWCII152A	N/A
	Indoor flush	Factory only	X13790904020	N/A	N/A
Wireless communications sensor—Digital display (WCS-SD)	Universal	Field, factory, or service	X13790955010	N/A	SEN02362
	FC BC UV		X13790955040	N/A	N/A
	RTU WSHP		X13790955050	BAYSENS202A	SEN02263
	Universal—BAA		X13790968010	BAYSENS212A	SEN02265
Wireless communications sensor—Base model (WCS-SB)	Universal		X13790956010	BAYSENS203A	SEN02264
	Universal—BAA		X13790969010	BAYSENS213A	SEN02266
Wireless communications sensor accessory—2% relative humidity (RH) sensor module (WCS-SH)			X13790973010	BAYSENS220A	SENS02347

Specifications

General Specifications	
Operating temperature	32 to 122°F (0 to 50°C)
Storage temperature	-40 to 185°F (-40 to 85°C)
Storage and operating humidity range	5% to 95% relative humidity (RH), non-condensing
Housing material	Polycarbonate/ABS (suitable for plenum mounting), UV protected, UL 94: 5 VA flammability rating
Range[a]	Open range: 2,500 ft (762 m) with packet error rate of 2%. Indoor: Typical range is 200 ft (61 m); actual range is dependent on the environment. See BAS-SVX55* for more detail.
Output power	100 mW
Radio frequency	2.4 GHz (IEEE Std 802.15.4-2003 compliant) (2405–2480 MHz, 5 MHz spacing)
Radio channels	16
Wireless Communications Interface (WCI) Specifications	
Voltage	24 Vac/Vdc nominal ±10%. If using 24 Vdc, polarity must be maintained.
Power consumption	<2.5 VA
Indoor mounting	Fits a standard 2 in. by 4 in. junction box (vertical mount only). Mounting holes are spaced 3.2 in. (83 mm) apart on vertical center line. Includes mounting screws for junction box or wall anchors for sheet-rock walls. Overall dimensions: 2.9 in. (74 mm) by 4.7 in. (119 mm).
Outdoor mounting	Position enclosure in desired flat mounting location and mount using four (4) #8 sheet metal screws with the conduit connection pointing down. If not mounted to the HVAC equipment exterior wall, the conduit connection on the bottom of the enclosure is also available. Please note that the supplied plug must be installed into the unused conduit connection. Overall dimensions: 3.9 in. (98 mm) by 6.4 in. (163 mm) by 1.7 in. (42 mm).
Wireless protocol	ZigBee PRO—ZigBee Building Automation Profile, ANSI/ASHRAE Standard 135-2008 Addendum q (BACnet®/ZigBee®)

Wireless Communications Sensor (WCS) Specifications	
Accuracy	0.5°F for a range of 55 to 85°F (12.8 to 29.4°C)
Resolution	+0.125°F over a range of 60°F to 80°F (15.56°C to 26.67°C)/±0.25°F outside this range
Setpoint functional range	45°F to 95°F (7.22°C to 35°C)
Sensor battery	Two (2) AA lithium 1.5 V batteries, 2800 mA with an expected life of 15 years under typical operating conditions
Address range	000 to 999
Maximum time between transmissions	15 minutes
Minimum time between transmissions	10 seconds. Time between transmissions can be shorter during user interaction.
Mounting	Fits a standard 2 in. by 4 in. junction box (vertical mount only). Mounting holes are spaced 3.2 in. (83 mm) apart on vertical center line. Includes mounting screws for junction box and wall anchors for sheet-rock walls. Overall dimensions: 2.9 in (74 mm) by 4.7 in. (119 mm)
2% Relative Humidity (RH) Sensor Module	
Accuracy	±1.8% (typical)
Hysteresis	±1% (typical)
Response time	8 seconds
Long-term drift	<0.5%RH/year

(a) Range values are estimated transmission distances for satisfactory operation. Actual distance is job specific and must be determined during site evaluation. Placement of the WCI is critical to proper system operation. In most general office space installations, distance is not the limiting factor for proper signal quality. Signal quality is more greatly affected by walls, barriers, and general clutter. Note that sheetrock walls and ceiling tiles offer little restriction to the propagation of the radio signal throughout the building as opposed to concrete or metal barriers. More details information, including wiring schematics, are available at http://www.trane.com.

Agency Compliance

United States	UL listed: UL 94, 5 VA flammability rating and UL916. Energy Management Equipment FCC CFR47, Sec. 15.247 & subpart E, Digital Modulation Transmission with no SAR (FCC ID: TPF-251701). This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the manufacturer for compliance could void the user's authority to operate the equipment. **Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: • Reorient or relocate the receiving antenna. • Increase the separation between the equipment and receiver. • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. • Consult the dealer or an experienced radio/TV technician for help.
Canada	CSA-C22.2 No. 205-M1983 Signal Equipment Industry Canada (IC: 6178A-251701) Cet appareil est conforme à la partie 15 du règlement du FCC. Son fonctionnement fait l'objet des deux conditions suivantes : (1) Cet appareil ne produit pas de brouillages nuisibles, et (2) cet appareil doit pouvoir recevoir n'importe quel type d'interférence, y compris les brouillages pouvant occasionner un fonctionnement non désiré. Les changements et les modifications n'ayant pas été approuvés expressément par le fabricant comme étant conformes, pourraient rendre nulle le droit de l'utilisateur à faire fonctionner cet équipement. **Remarque:** Cet équipement a été testé et reconnu comme étant conforme aux limites des appareils numériques de classe B, tel qu'indiqué dans la partie 15 du règlement du FCC. Ces limites ont été établies afin de fournir un niveau de protection raisonnable contre le brouillage nuisible dans les installations résidentielles. Cet appareil produit, utilise, et peut aussi émettre des fréquences radioélectriques. Si celui-ci n'est pas installé et utilisé conformément aux instructions, il peut provoquer des brouillages nuisibles dans les communications radioélectriques. L'absence d'interférence n'est cependant pas garantie dans toutes les installations. Si cet équipement provoque des brouillages nuisibles dans la réception des communications radioélectriques ou de télévision (ceci pouvant être déterminé en allumant et en éteignant l'équipement), l'utilisateur est encouragé à essayer de corriger l'interférence en utilisant un ou plusieurs des moyens suivants : • Réorienter ou changer l'emplacement de l'antenne réceptrice. • Éloigner l'équipement et le récepteur l'un de l'autre. • Brancher l'équipement à une prise de courant se trouvant sur un circuit différent de celui sur lequel le récepteur est branché. • Faire appel aux services du fournisseur ou d'un technicien radio/TV qualifié.
IEEE/radio frequency range	IEEE 802.15.4-2003, IEEE Standard for Information Technology—Telecommunications and information exchange between systems—Local and metropolitan area networks—Specific requirements, Part 15.4: Wireless Medium Access Control (MAC) and Physical Layer (PHY) Specifications for Low Rate Wireless Personal Area Networks (LR-WPANs)

Trane optimizes the performance of homes and buildings around the world. A business of Ingersoll Rand, the leader in creating and sustaining safe, comfortable and energy efficient environments, Trane offers a broad portfolio of advanced controls and HVAC systems, comprehensive building services, and parts. For more information, visit www.Trane.com.

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

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