



Federspiel Controls FACS™ wireless modules Models WCM and WSM-E

Product Description

The Federspiel Advanced Control System (**FACS™**) **Model WCM** wireless control module senses two separate analog inputs (AIs) and produces three 0-10 VDC analog outputs (AOs). One of the analog inputs is software selectable between an external input and an onboard temperature sensor. The WCM operates on 24 VAC/VDC. A pair of internal AA batteries provides backup power for the radio and co-processor. The WCM comes with SafetyNet™, which is a firmware feature that allows it to revert to one of two software-selectable fail-safe modes of operation in the unlikely event that the module loses contact with its wireless network.

The **FACS™ Model WSM-E** wireless sensor module with external inputs senses two separate analog inputs and can operate on a pair of AA lithium batteries for up to eight years. Like the WCM, one of the analog inputs is software selectable between an external input and an onboard temperature sensor. The WSM-E can operate on 24 VAC/VDC line power. The WSM-E accepts either thermistor inputs or voltage inputs.

The transceivers in the WCM and WSM-E use Time Synchronized Mesh Protocol (TSMP™) technology from Dust Networks™. TSMP™ enables highly reliable, self-configuring, self-healing mesh networks combined with exceptional battery life. The WCM and WSM-E operate in the 902-928 Industrial, Scientific, and Medical (ISM) band at 2.5 mW (+4 dbm). They use frequency hopping spread spectrum (FHSS) for interference-free operation and security. Additional security protection is provided by 128-bit encryption. The WCM and WSM-E have internal antennas for rugged, tamper-proof installations.



Features

- **mesh networking**
- **battery-powered or line-powered**
- **years of battery life**
- **self-configuring**
- **self-healing**
- **highly reliable**
- **non-intrusive installation**
- **secure communications**
- **thermistor or voltage inputs**

Applications

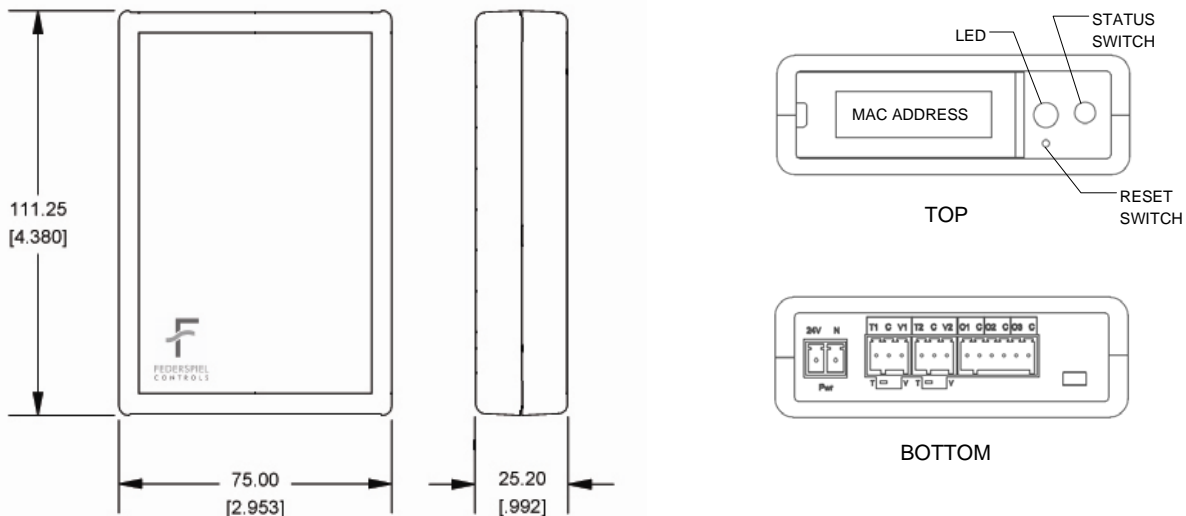
The WCM and WSM-E are components of the FACS™ wireless control system, which performs supervisory control of HVAC systems. The FACS™ wireless control system includes a suite of control applications for doing the following:

- converting constant-volume HVAC systems to VAV operation (DART™)
- resetting static pressure in existing VAV systems (SAV with InCITe™)
- data center cooling control
- chiller plant optimization
- demand response



WCM/WSM-E Specifications

PARAMETER	MIN	TYP	MAX	UNITS	COMMENTS
RADIO					
Operating frequency	902		928	MHz	Frequency hopping in this band
Number of channels		50			
Encryption		128		bits	
Raw data rate		76.8		kbps	
Receiver sensitivity		-88		dBm	At 25 degC
Output power		+4		dBm	Conducted, at 25 degC
Antenna gain		+2		dBi	
Antenna radiation pattern					Omni-directional with vertical polarization
I/O					
A/D resolution		12		bits	
D/A resolution		8		Bits	PWM with low-pass filter
Input voltage	0		10	volts DC	
Output voltage	0		10	volts DC	
Internal vs external					Software selectable on channel 1
Voltage vs thermistor					Selector switch for each channel
ELECTRICAL					
Battery power	2.7		3.6	volts	
Line power (DC)	15		30	volts	
Line power (AC)	17		28	volts	RMS
Average current		40 uA			40-byte packets every 60 seconds
MECHANICAL					
Enclosure material					Flame-retardant ABS
Dimensions					4.38"H x 2.953"W x 0.992"D
Weight		0.14		kg	With batteries
Operating temperature	0		50	Celsius	Measurement range exceeds this range
Operating humidity	5		95	%	Non-condensing



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