

## Infinity

### TCX 870 Terminal Control Unit

The *Infinity* TCX 870 is the perfect choice for stand-alone, programmable, direct digital control of fan coil units, induction units, heat pumps and small AHUs that need both digital and analog outputs. Four universal inputs accompany the three digital and two analog outputs to produce a cost-effective controller for smaller applications. The Inifinet's true peer-to-peer communications protocol provides the *Infinity* TCX 870 with the ability to instantly communicate with an *Infinity* network controller such as the CX 9200, as well as the entire network of Andover Inifinet field controllers. Up to 254 TCX 870s can be networked with the *Infinity* CX family of controllers.

#### COMMUNICATIONS

Communication to the *Infinity* TCX 870 is handled via the Inifinet bus, a twisted pair, half duplex RS-485 interface. Communication is accomplished with a token passing protocol which provides full transparent data transfer between all *Infinity* controllers on the network.

#### INPUTS

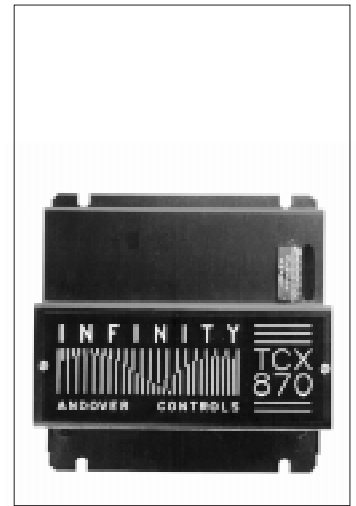
The TCX 870 has four full range universal inputs that accept temperature, voltage, digital (on/off) or counter signals (up to 4Hz). Input voltage range is switch-selectable between 0- 5VDC and 0-10VDC.

#### OUTPUTS

Three Form A relay outputs provide on/off control of lighting, heat, and fan units. Each output has an individual return and is contact rated to switch 240V, 5 amps. Two analog outputs are also included for modulating control, providing 0-20 VDC or 0-20 mA output signals.

#### PROGRAMMING

Every TCX 870 can be configured to meet the exact distributed control requirements of your application using Andover Controls' powerful *Plain English*™ programming language. Programs can be activated within individual TCX 870s or any network controller. Programs are entered into an TCX 870 using an SX 8000 or *Continuum*™ workstation, the LSX 280 Lap-Top Service Tool, or network controller. The program is then stored in, and executed by, the TCX 870. The TCX 870's on-board lithium battery keeps programs and the real-time clock backed up in the event of a power failure.



#### FEATURES

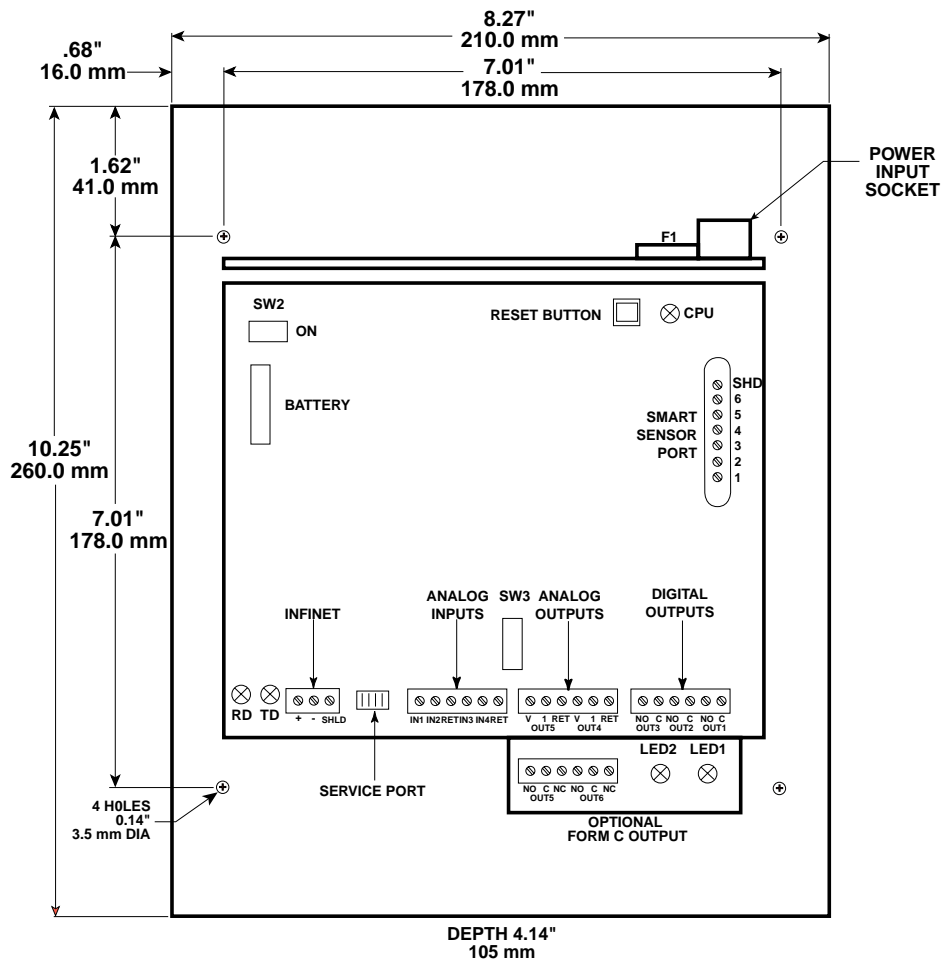
- **Cost-effective Controller for Fan Coils, Small AHUs**
- **Stand Alone DDC for System Reliability**
- **Peer-to-Peer Communications Provide Transparent Data Transfer**
- ***Plain English*™ Language Simplifies Programming**
- **Universal Inputs for Flexible Control Configurations**
- **Relay Outputs Rated At 240V for On/Off Control**
- **Two Built-in Analog Outputs Provide Voltage or Current**
- **Connector Provided for EMX 170 Programmable Interface**

### SOFTWARE CAPABILITIES

The dynamic memory of the TCX 870 can be allocated for any combination of *Plain English* control programs, scheduling, alarming, and data logging. Our object-oriented language with intuitive keywords provides easy operation and programming. In addition, *Plain English's* pre-defined and customized functions and powerful math capabilities reduce programming time for repetitive applications.

### PROGRAMMABLE INTERFACE INPUT

The TCX 870 includes an input for the EMX 170 Programmable Interface, a low-cost user interface with an 8-character LCD display and six programmable pushbuttons. An operator can use the EMX 170 for changing setpoints or schedules, viewing point statuses, or overriding normal operation. The EMX 170 also comes in an industrial Nema 4X version suitable for panel mounting.



TCX 870 Dimensional Diagram

## SPECIFICATIONS

### ELECTRICAL

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<b>Power:</b>	24VAC, 50/60 Hz (TCX 870-24) OR 220VAC, 50/60 Hz (TCX 870-220)
<b>Power Consumption:</b>	20VA
<b>Overload Protection:</b>	Fused with 3 amp socketed 3AG fuse. MOV protected.
<b>Real-Time Clock:</b>	Battery-backed clock

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### MECHANICAL

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<b>Operating Environment :</b>	32° - 120°F (0° -50°C) 10-95% RH (non-condensing)
<b>Size:</b>	7.1"H x 6.7"W x 3.1"D (180mmH x 170mmW x 079mmD)
<b>Weight:</b>	3 lbs. (1.4 Kg)
<b>Enclosure Type:</b>	UL open class sheet metal, IP 10

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### BATTERY

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<b>Battery Backup:</b>	Non-rechargeable, lithium battery. Provides 4.7 years typical accumulated power failure backup of RAM memory and real-time clock.
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### COMMUNICATIONS

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<b>Communications Interface:</b>	Through <i>Infinity</i> or <i>Continuum</i> ™ CX or CMX Network Controllers or LSX 280 Lap-Top Service Tool.
<b>Communications Speed:</b>	300 to 19.2k baud
<b>Bus Length:</b>	4,000 ft. (1,220m) standard for Infinet, InfiLink amplification module allows extension to longer distances and is required after every group of 32 units on the network.
<b>Bus Media:</b>	Infinet: twisted, shielded pair, approved, low capacitance cable
<b>Comm. Error Checking:</b>	International Standard CRC 16

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### INPUTS/OUTPUTS

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<b>Inputs:</b>	4 Universal inputs: Temperature -30°F to 230°F (-34°C to 110°C), Digital (on/off), Counter (up to 4Hz at 50% duty cycle), Voltage (0-5.115 VDC or 0-10.130 VDC)
<b>Input Voltage Range:</b>	0-5.115 Volts DC or 0-10.130 VDC, individually dip-switch selectable

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## SPECIFICATIONS (Cont'd)

### INPUTS/OUTPUTS (Continued)

<b>Input Impedance:</b>	5M ohms- 5V range, pull-up disabled 10K ohms-5V range, pull-up enabled 4.4K ohms-10V range, pull-up disabled
<b>Input Protection:</b>	24 VAC or 24 VDC indefinitely on any single channel, ±1500 volt transients
<b>Input Resolution:</b>	5.0 mV, 5V range; 10.0 mV, 10V range
<b>Input Accuracy:</b>	±15 mV, 0-5.115V range (±1°F over range of -10°F to 150°F) (±0.55°C over -23°C to 65°C) ±40 mV, 0-10.130V range
<b>Programmable Interface:</b>	Connector provided for EMX 170 Programmable Interface.
<b>Outputs:</b>	3 single pole single throw (SPST) Form A relays 2 analog outputs, 0 to 20 VDC or 0 to 20 mA
<b>Digital Output Rating:</b>	5A, 250 VAC, ±4000 volt transients
<b>Digital Output Resolution:</b>	0.1 sec. for pulse width modulation
<b>Analog Output Resolution:</b>	0.1 VDC or 0.1 mA
<b>Analog Output Accuracy:</b>	0.2 VDC or 0.2 mA
<b>Analog Output Load:</b>	Voltage: Minimum Load 4K ohms Current: Maximum Load 750 ohms

### CONNECTIONS

<b>Power:</b>	Screw terminal block
<b>Inputs:</b>	Screw terminal block
<b>Outputs:</b>	Screw terminal block
<b>Infinet Bus:</b>	Screw terminal block

### GENERAL

<b>Memory Size:</b>	128K EPROM, 32K RAM, 1K EEPROM
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<b>AGENCY LISTINGS</b>	UL/CUL 916, FCC, CE
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### OPTIONS

- Available with 24 VAC or 220VAC Power

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Consult *Andover Product Installation Guides* for exact installation instructions and specifications.

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