

Infinity

TCX 850, TCX 851, TCX 852, TCX 853, TCX 855 Terminal Control Unit

The *Infinity* TCX 850 family of intelligent, programmable, stand-alone controllers provides cost-effective Direct Digital Control of individual terminal units: VAV boxes, fan powered induction units, unit ventilators, heat pumps, etc. The Infinet's true peer-to-peer communications protocol provides the *Infinity* TCX 850 with the ability to instantly communicate with an *Infinity* network controller such as the CX 9200, as well as the entire network of Andover Infinet field controllers. Up to 254 TCX 850s can be networked with the *Infinity* CX family of controllers.

COMMUNICATIONS

Communication to the *Infinity* TCX 850 is handled via the Infinet 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

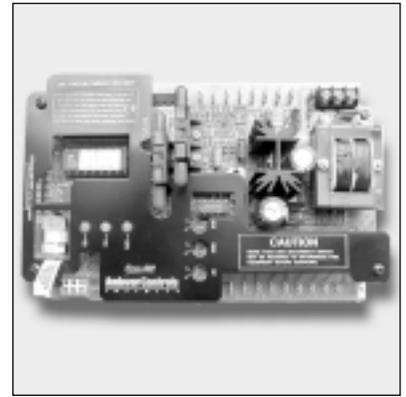
Choose the TCX controller with the input configuration that matches your application. The TCX 850 has four full range Universal inputs that accept voltage (0-5VDC), digital (on/off), counter signals (up to 4 Hz), or temperature signals plus a fifth input which is an on-board air flow sensor. Three field adjustable potentiometers provide min/max and setpoint adjustments.

The TCX 851 comes without the on board airflow sensor for applications not requiring airflow measurement, such as heat pumps and fan coils. It contains four Universal inputs but does not contain the three potentiometers.

The TCX 852 contains two Universal inputs and the on-board airflow sensor for reduced I/O applications. It does not contain the three potentiometers.

The TCX 853 is for dual-duct VAV applications. It contains two on-board airflow sensors and six Universal inputs. It does not contain the three potentiometers.

The TCX 855 is identical to the TCX 850, with the exception that it contains a *lower range* (0-0.2" W.C.) airflow sensor to meet lower air volume applications.



FEATURES

- **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**
- **Form A and Tri-State Outputs for On/Off and Bidirectional Control**
- **On-Board Pressure Transducer for Airflow Measurement**
- **Expandable I/O Meets Additional Point Count Needs**
- **Battery Backup for Ten Years Accumulated Power Failure of RAM Memory**

OUTPUTS

The TCX 850, 851, 853, and 855 contain three Form A relay outputs for on/off or pulsed control of lighting, heat, and fan units. One Tri-State output provides bidirectional control of dampers and valves. Optional analog output, pneumatic output, and high voltage output modules are available.

The TCX 852 contains one Form A output and one Tri-State output for reduced I/O applications.

I/O EXPANSION

The TCX 850, 851, 853, and 855 contain the I/O expansion port for the addition of low-cost I/O modules directly on the bottom of the controller. The family of modules includes the EMX 140 (2 pneumatic outputs), EMX 150 (2 analog outputs), EMX 155 (2 digital outputs), and the EMX 160 (8 digital inputs). The EMX 170 Programmable Interface provides a low-cost, wall-mount user interface and temperature sensor. It contains an 8-character LCD display and six programmable pushbuttons that enable the user to view temperatures, adjust setpoints, and switch to occupied mode.

PROGRAMMING

Every TCX 850 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 850s or any network controller. Programs are entered into a TCX 850 using an SX 8000 workstation, the LSX 280 Lap-Top Service Tool, or network controller. The program is then stored in, and executed by, the TCX 850. The on-board lithium battery keeps programs backed up in the event of a power failure.

Programming multiple TCX 850s is inherently easy with *Plain English*[™]. A complete copy of one TCX 850's programs can be loaded directly into other TCX 850s without changing any point names or programs. The SX 8000 workstation makes this process even easier with its unique drag-and-copy feature.

SOFTWARE CAPABILITIES

The dynamic memory of the TCX 850 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.



SPECIFICATIONS

ELECTRICAL

Power:	24VAC, 50/60 Hz
Power Consumption:	20VA
Overload Protection:	Fused with 2 amp pico fuse. MOV protected.
Software Real-Time Clock:	Synchronized through Infinet by CX or CMX Network Controller.

MECHANICAL

Operating Environment :	32° - 120°F (0°-50°C) 10-95% RH (non-condensing)
Size:	9"H x 5 3/4"W x 2 3/4"D (228H x 146W x 070D)mm
Weight:	3.5lbs (1.6 Kg)
Enclosure Type:	UL open class, IP 10

BATTERY

Battery Backup:	Replaceable non-rechargeable, lithium battery. Provides 10 years typical accumulated power failure backup of RAM memory.
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COMMUNICATIONS

Communications Interface:	Through <i>Infinity</i> CX or CMX Network Controller, or LSX 280 Service Tool.
Communications Speed:	1200 to 19.2k baud
Bus Length:	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.
Bus Media:	Infinet: twisted, shielded pair, approved low capacitance cable
Comm. Error Checking:	International Standard CRC 16

INPUTS/OUTPUTS

Inputs:	
TCX 850	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, 100 ms. minimum pulse width), Voltage (0-5.115 VDC) 1 airflow sensor (0 to 1" W.C.), 3 On-board adjustable potentiometers
TCX 851	4 Universal inputs, no airflow sensor, no potentiometers
TCX 852	2 Universal inputs, 1 airflow sensor, no potentiometers
TCX 853	6 Universal inputs, 2 airflow sensors, no potentiometers
TCX 855	4 Universal inputs, 1 airflow sensor (0 to 0.2" W.C.), 3 On-board adjustable potentiometers

SPECIFICATIONS (Cont'd)

INPUTS/OUTPUTS (Continued)

Input Voltage Range:	0-5.115 Volts DC	
Input Impedance:	10K ohm to 5.120V	
Input Protection:	24VAC or 24 VDC indefinitely on any single channel, ± 1500 volt transients	
Input Resolution:	5.0mV	
Input Accuracy:	± 15 mV, 0-5.115V range	($\pm 1.0^\circ\text{F}$ over range of 0 to 120°F) (55°C over -17.8°C to 48.9°C)

Airflow Input:

TCX 850	Range: 0 to 1 inch W.C. Resolution: 0.005 inch of water @ 23°C Accuracy: $\pm 5\%$ of full scale or ± 0.05 inches water
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TCX 855	Range: 0 to 0.2 inch W.C.
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Outputs:	3 single pole single throw (SPST) Form A relays (TCX 852 has 1 Form A output) 1 Form K Tri-State relay
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Digital Output Rating:	5A, 24VAC, ± 1500 volt transients
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Digital Output Resolution:	0.1 sec. for pulse width modulation
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Expansion Bus:	Interfaces to optional I/O Expansion Modules (TCX 850, 851, 853, 855 only)
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CONNECTIONS

Power:	Three-position barrier strip
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Inputs:	Male Spade (.250)
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Outputs:	Male Spade (.250)
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Infinet Bus:	Three-position, removable terminal strip
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GENERAL

Memory Size:	128K EPROM, 32K RAM, 128 Byte EEPROM
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AGENCY LISTINGS	UL/CUL 916, 1076, 864 UUKL, FCC, CE
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OPTIONS	• UL-864, UUKL Compliance
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Consult *Andover Product Installation
Guides* for exact installation instructions
and specifications.

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