TCY-FT-U Series PI-Temperature Controller

Features

- PI or on/off temperature control for HVAC systems
- Up to 2 3-point (floating) outputs for 24 V AC actuators
- 1 internal temperature sensor and up to 2 external sensor inputs
- Remote control functions on the external input: heat/cool changeover, economy or off mode, external control sensor
- Password-protected user and control parameters
- Blue backlight



Applications

- Temperature control in heating, ventilation and air conditioning
- Water-only systems: radiators, floor heating or chilled ceilings
- Individual room control in offices, homes, hotel rooms and meeting rooms

General description

The TCY-FT-U is a stand-alone electronic temperature controller with one control loop and up to 2 PI sequences. It has 1 internal NTC temperature sensor, up to 2 external sensor inputs and up to 4 binary outputs for 3-point actuators. The configuration is kept to a minimum for simple, off-the-shelf use; for more advanced functions, the TCI range is recommended. It is configured with the standard operation terminal; no special tools or software are required.

Name

T C Y - F T 2 - (U)

Housing:	U	= Vertical (2x4") housing, Standard is square housing
Function:	2	= 2 = 2-Pipe, 4 = 4-Pipe
Input:	T	= Temperature, H = Humidity
Output:	F	= 3-point, M = Modulating, B = Binary
Series:	**TCY**	

Ordering

Item Name	Item code	Control Type	Key-data
TCY-FT2-U-W01	40-10 0068-1	Cooling only	Compact PI controller with: 2 TI, 1 3-point output
TCY-FT2-U-W02	40-10 0068-2	Heating only	
TCY-FT2-U	40-10 0068	2-Pipe system	
TCY-FT4-U	40-10 0072	4-Pipe system	1 TI, 2 3-point outputs
Accessories			
S-Tn10-2	40-20 0001	Flying lead sensor with 6 ft. cable	
SD-Tn10-12-2	40-20 0002	Flying lead duct sensor 4.7-inch immersion depth, 6 ft. cable	
SD-Tn10-20-2	40-20 0003	Flying lead duct sensor 7.8-inch immersion depth, 6 ft. cable	
SDB-Tn10-12-1	40-20 0124	Duct sensor with housing, 4.7-inch immersion depth	
SDB-Tn10-20-1	40-20 0133	Duct sensor with housing, 7.8-inch immersion depth	
SRA-Tn10	40-20 0005	Room sensor	

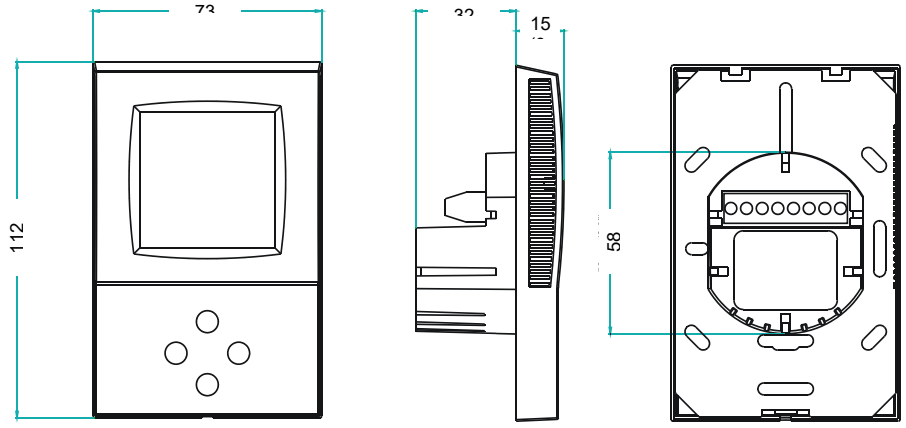
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Technical specifications

Caution! This device is intended to be used for comfort applications. Where a device failure endangers human life and/or property, it is the responsibility of the owner, designer and installer to add additional safety devices to prevent or detect a system failure caused by such a device failure. Vector Controls or its affiliates cannot be held liable for any damage caused by such a failure. Failure to follow specifications and local regulations may endanger life, cause equipment damage and void warranty.

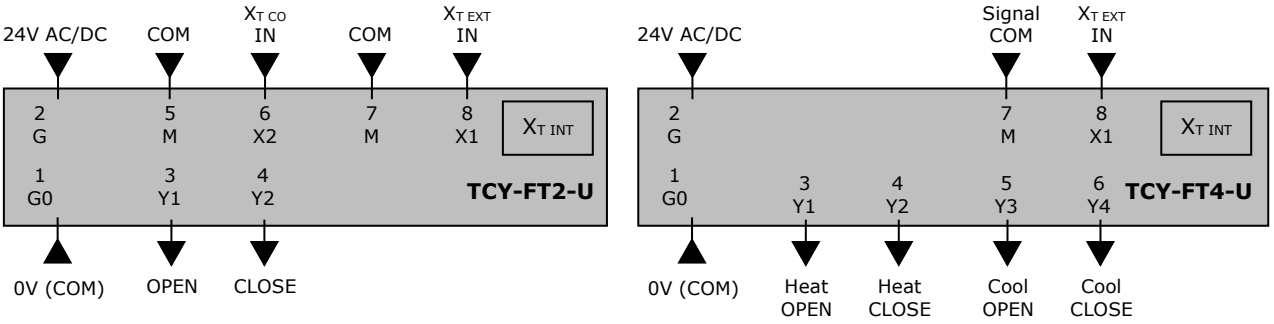
Power Supply	Operating Voltage	24V AC/DC ± 10 %, 50…60 Hz, Class II, 48VA max
	Power Consumption	Max. 1.5 VA
	Electrical Connection	Terminal Connectors, wire 0.34…2.5 mm^2 (AWG 24…12)
Signal inputs	Temperature Input Range Accuracy	 0…50 °C (32…122 °F) 0.5 K
Signal outputs	TRIAC Outputs Switching power	 24 VAC, 250mA max Do not use actuators with power consumption > 6VA
Environment	Operation Climatic Conditions Temperature Humidity	To IEC 721-3-3 class 3 K5 0…50 °C (32…122 °F) <95 % r.H. non-condensing
	Transport & Storage Climatic Conditions Temperature Humidity Mechanical Conditions	To IEC 721-3-2 and IEC 721-3-1 class 3 K3 and class 1 K3 -25…70 °C (-13…158 °F) <95 % r.H. non-condensing class 2MT2
Standards	CE conform according to EMC Directive 2004/108/EU Low Voltage Directive 2006/95/EU	 EN 61 000-6-1/ EN 61 000-6-3
	Product standards Automatic electrical controls for household and similar use Special requirement on temperature dependent controls	 EN 60 730–1 EN 60 730–2–9
	Degree of Protection	IP30 to EN 60529
	Safety Class	III (IEC 60536)
General	Cover, back part Mounting Plate	Fire proof ABS plastic (UL94 class V-0) Galvanized Steel
	Dimensions (H x W x D)	Front part: 112 x 73 x 15 mm (4.4” x 2.9” x 0.6”) Power case: ø 58 x 32 mm (ø 2.3” x 1.3”)
	Weight (including package)	260 g (9.2 oz)

Dimensions [mm] (inch)



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Connection diagram



Description:

G0	0V	Power supply:	0VAC, internally connected to signal common
G	24V	Power supply:	24VAC
M	0V	Signal common:	Common 0 potential for analog inputs and analog outputs.
X1	RT	External temperature input:	NTC 10kΩ @ 25°C (77°F)

TCY-FT2-U:

X2	CO	Change over input:	NTC 10kΩ @ 25°C (77°F)
Y1	DO1	Binary output:	Valve open
Y2	DO2	Binary output:	Valve close

TCY-FT4-U:

Y1	DO1	Binary output:	Heating valve open
Y2	DO2	Binary output:	Heating valve close
Y3	DO3	Binary output:	Cooling valve open
Y4	DO4	Binary output:	Cooling valve close

Selection of actuators and sensors

Temperature sensors:

Use only our approved NTC sensors to achieve maximum accuracy. Recommended is SDB-Tn10-20 as Duct sensor, SRA-Tn10 as Room sensor and SDB-Tn10-20 with AMI-S10 as immersion sensor.

3-point actuators:

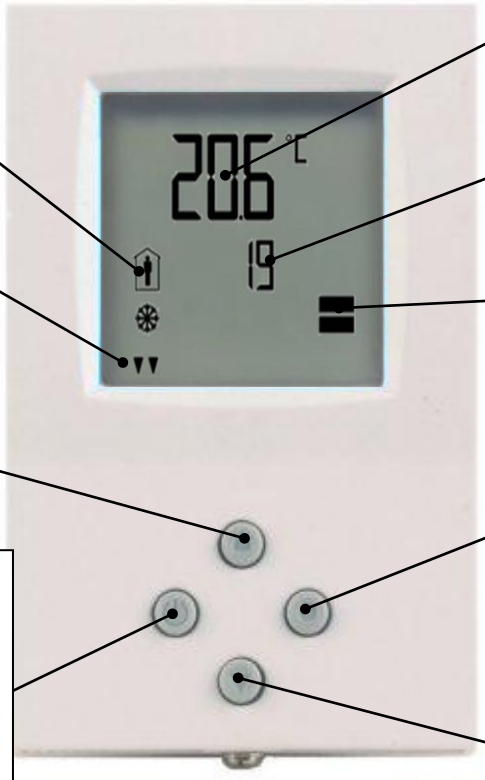
Actuators with constant running time are recommended. Observe power limits. Do not use actuators with power consumption > 6VA. Adjust running time in SW. Default running time is 90s for fully open / close running time.

Mounting and installation

Mount the controller on an interior wall, approx. 1.5 m above the floor, in a place with average room temperature. Avoid direct sunlight, heat sources, doors, outside walls and air outlets. The location is less critical if an external temperature sensor is used.
Mount and connect the controller as shown in the installation sheet supplied with the device, and wire it according to the connection diagram above.

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Display and operation



Mode
Display of operation mode

Indicators
1 Remote temperature sensor
2 Dew point sensor

Up
Increment SET POINT
(Parameter setting: SCROLL menu options and parameters)

Left (POWER)
Press < 2 sec.: Toggle STANDBY-COMFORT mode or switch from OFF to ON
Press > 2 sec.: Turn unit OFF. Text OFF displayed with current time (deluxe) temperature (standard)
(Parameter setting: ENTER to select menu option, accept parameter change)

Large Digits
Display of input or parameter value.

Small Digits
Display of setpoint, clock or parameter number.

Vertical Bar
(scrolls up/down, 10% resolution)

Right (OPTION)
Press < 2 sec.: Select Control Loop
Press > 2 sec.: Manual H/C change
(Parameter setting: ENTER to select menu option, accept parameter change)

Down
Decrement SET POINT
(Parameter setting: SCROLL menu options and parameters)

Operation mode		
	Comfort (occupied)	All control functions operating per set points.
	Economy (unoccupied):	Set points shifted according to *Parameters CP04.* Economy mode and setpoint shift may be disabled with UP07
OFF	Energy Hold Off	Outputs are off, inputs monitored for alarm condition
	Heating	Output activates if temperature lower than setpoint
	Cooling	Output activates if temperature higher than setpoint

Power failure

All the parameters and set points are memorized and do not need to be reentered. Depending on **UP05** the unit will remain switched off, switch on automatically or return to the operation mode it was in before the power failure.
Deluxe version only: Timer operation and daytime setting will be retained for 24h. The controller has to be connected to a power supply for at least 10 hours for the backup function to operate accordingly.

Error messages

The TCY-FT-U may display the following error condition:
Err1: The connection to the temperature sensor may be interrupted or the temperature sensor is damaged. The output is switched off. Verify parameter settings and wiring.

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