TCI-W-U Universal Controller



Features

- Universal PID and/or binary control for any analog input/output signal and range
- Multiple auxiliary functions: heat-cool auto changeover, automatic enable, setpoint compensation
- Averaging, min. and max. functions
- Cascading of control loops (-W22 type)
- Alarm monitoring of low and high limits on all inputs
- Programmable reaction in case of alarm
- Feedback function for inputs and set points
- Functions for dehumidifying, set point shift, cascade control
- Password protected programmable user and control parameters

TCI-W22-U also includes

- Power Cap protected real-time clock with 48hr power backup
- 7-day programmable schedules, with options including change of setpoints and direct position of manual outputs
- Blue backlight

Applications

- Fan coil units
- Heat exchangers
- Zoning
- VAV
- Air handlers
- Fan, Pump control
- Humidifiers
- Dehumidifiers
- Ventilation
- Radiant heating
- Radiant cooling
- Pressurization

General

- TCI-W11-U: 1 independent control loop, 1 internal temperature sensor, 1 universal input (analog/binary/temp), 2 binary outputs, 1 analog output
- TCI-W22-U: 2 independent control loops, 1 internal temperature sensor, 2 universal inputs, 2 binary outputs, 1 analog output.
- Internal temperature sensor standard. Add replaceable humidity element as required: AES3-HT-A2 (2%), AES3-HT-A3 (3%), or AES3-HT-A5 (5%)
- Flexible application configuration is made with a parameter-setting routine using the standard operation terminal.

Name

T C I - W 2 2 - U

Housing	Blank = square housing
In/Outputs:	See table below
Control loops:	1 = 1 control loop, 2 = 2 control loops
Mounting:	W = Wall mounted
Series:	**TCI**

Ordering

Model	Stock code	Loop	Temperature Input	Humidity Input	Universal Input	Binary Output	Analog Output	Option
TCI-W11-U	40-10 0074	1	1	0	1	2	1	Standard
TCI-W11-U-H	40-10 0163	1	1	1	1	2	1	RH Sensor 3% acc.
TCI-W22-U	40-10 0076	2	1	0	2	2	1	Clock schedules
TCI-W22-U-H	40-10 0078	2	1	1	2	2	1	RH Sensor 3% acc.
AES3-HT-A2	40-50 0102			1				RH Sensor 2% acc.
AES3-HT-A3	40-50 0103			1				RH Sensor 3% acc.
AES3-HT-A5	40-50 0104			1				RH Sensor 5% acc.

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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	Power Requirements	24V AC/DC ± 10%, 50/60 Hz, Class II, 48 VA max
	Power Consumption	Max. 3 VA
	Electrical Connection	Terminal Connectors 0.34…2.5 mm² wire (AWG 24…12)
	Clock backup	Min. 48 hours
Signal inputs	Universal Input Input Signal Resolution Impedance	Setting for Voltage or Current 0–10 V or 0–20 mA 9.76 mV or 0.019 mA (10 bit) Voltage: 98kΩ Current: 240Ω
	Universal Input Range Accuracy	Input configured to remote temperature (RT) or digital input (DI) NTC (Sxx-Tn10) 10kΩ, Type 2: -40…100 °C (-0…212 °F) -40…0 °C (-40…32 °F): 0.5 K 0…50 °C (32…122 °F): 0.2 K 50…100 °C (122…212 °F): 0.5 K > 100 °C (> 212 °F): 1 K
	Humidity Sensor AES3-HT-Ax: Range Measuring Accuracy Hysteresis Repeatability Stability	Capacity sensor 0…100 % RH See Figure to the right ± 1% ± 0.1% < 0.5% / year
Signal outputs	Analog Output Output Signal Resolution Output Load	 DC 0–10 V / 0–20 mA 9.76 mV / 0.019 mA Voltage: ≥1kΩ Current: ≤250Ω
	Relays Outputs Type of disconnection AC Voltage DC Voltage	 Micro-interruption 0…48 VAC, 2(1.2) A max. (Observe local regulation) 0…30 VDC, 2A max.
	Insulation strength between relays contacts and system electronics: between neighboring contacts:	2000V AC to EN 60 730-1 1250V AC to EN 60 730-1
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 2M2
Standards	Degree of Protection	IP30 to EN 60 529
	Pollution Class	II (EN 60 730-1)
	Safety Class	III (IEC 60536)
	Overvoltage Category	I (EN 60 730-1)
General	Material: Cover, back part Mounting Plate	Fire proof ABS plastic (UL94 class V-0) Aluminium
	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)	TCI-W11-U = 205g (7.2 oz.), TCI-W22-U = 220g (7.8 oz)

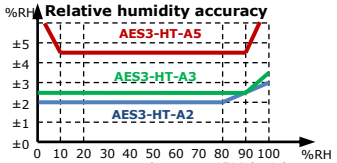


Figure 1: Max RH-tolerance at 25°C (77°F) per sensor type

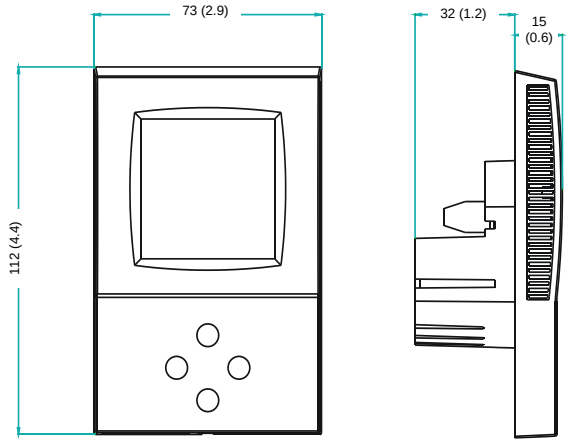
Product testing and certification

CE Declaration of conformity

Information about the conformity of our products can be found on our website www.vectorcontrols.com on the corresponding product page under "Downloads".

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Dimensions, mm (inch)



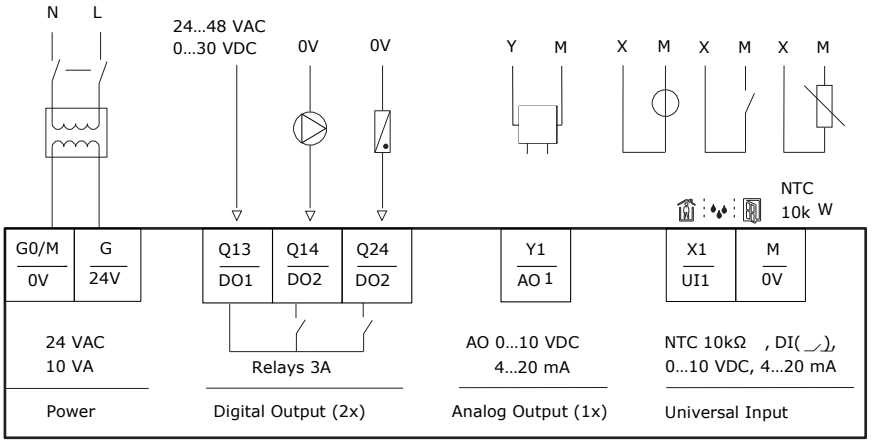
Installation

- Install the controller on an easy accessible interior wall, approx. 1.5 m above the floor in an area of average temperature.
- Avoid direct sunlight or other heat sources, e.g. the area above radiators and heat emitting equipment.
- Avoid locations behind doors, outside walls and below or above air discharge grills and diffusers.
- Location of mounting is less critical if external temperature sensors are used.
- Ensure adequate air circulation to dissipate heat generated during operation.
- Observe local regulations.

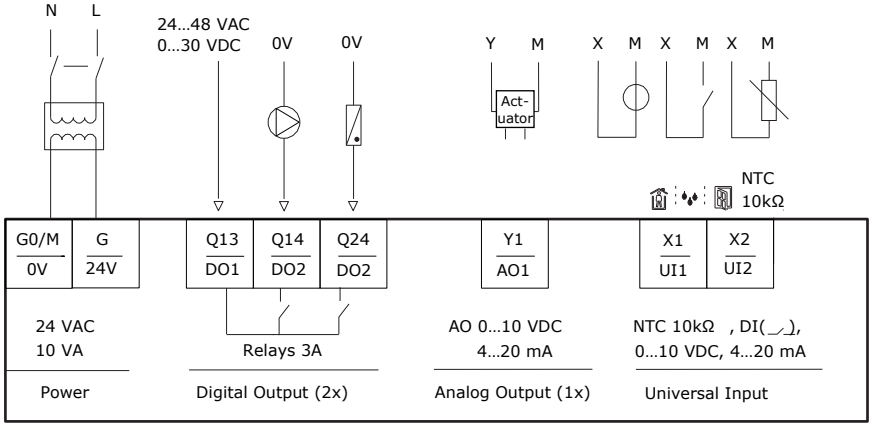
  Do not mount in a wet or condensation prone environments.

Connection

TCI-W11-U



TCI-W22-U



Warning:
Live Electrical Components!
During installation, testing, servicing and troubleshooting of Vector Controls products, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

Terminal Description

G0	Power supply:	0V, -24VDC; common for power supply, analog in- and outputs
G	Power supply:	24VAC, +24VDC
Q	Binary outputs:	Potential free relays contacts (see technical specification)
		Yb1, b2 Binary output common
$X_{U1, u2}$	Universal input:	NTC 10kΩ @ 25°C (77°F), 0…10 V or 0…20 mA (selectable by jumper)
Y1	Analog output:	0…10 V or 0…20 mA*

Use copper, twisted pair, conductors only. The operating voltage must comply with the requirements for safety extra-low voltage (SELV) as per EN 60 730. Use safety insulating transformers class II with double insulation as per EN 60 742; they must be designed for 100% ON-time. When using several transformers in one system, the connection terminal 1 must be galvanic connected. TCI is designed for operation of AC 24 V safety extra-low voltage and is short-circuit-proof. Supplying

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voltages above AC 24 V to low voltage connections may damage the controller or other devices. Connection to voltages exceeding 42 V endangers personnel safety.

Selection of actuators and sensors

Temperature sensors: Use Vector Controls NTC sensors to achieve maximum accuracy:SDB-Tn10-20 (duct), SRA-Tn10 (room), SDB-Tn10-20 + AMI-S10 as immersion sensor.

Actuators: Choose modulating actuators with an input signal type of 0-10 V DC or 4-20 mA (Min. and max. signal limitations may be set with parameters.3-pointactuators with constant running time are recommended.

Binary auxiliary devices (e.g. pumps, fans, on/off valves, humidifiers, etc.): Do not directly connect devices that exceed specified limits in technical specifications – observe startup current on inductive loads.

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