TCT-MZ2 Positioner for comfort ventilation

Functions

- Positioner for comfort ventilation with time schedules
- LCD Touchscreen
- Fits into standard mounting frames such as Feller EDIZIOdue®
- Two analog outputs for 0–10VDC with a resolution of 10mV.
- One input for exhaust fan override or presence sensor
- Party mode with automatic setback
- Off mode with selectable ventilation interval and ventilation strength.
- Selectable step or percentage set point resolution
- Password protected controls settings
- Background illumination
- Real-time clock with schedule events

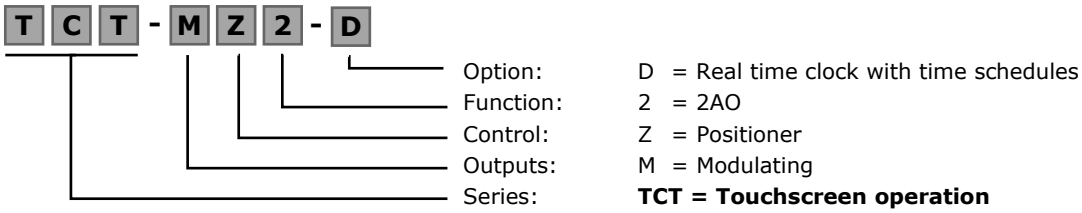
Applications

- Control of ventilation systems for comfort and industrial applications

General description

The TCT-MZ is a microprocessor controlled precision positioner with real time clock and time schedules. Through user and engineering parameters the positioner may be configured to work for most of the standard ventilation applications. The TCT-MZ can be configured using the standard operation terminal. No special tool or software is required.

Name



Ordering

Item Name	Item code	Control Type	Key-data
TCT-MZ2-D	40-10 0212	With clock function	Compact positioner with 2 analog outputs and 1 passive input
AMM-ED-W	40-51 0086	White	Feller EDIZIOdue® Frame and mounting plate

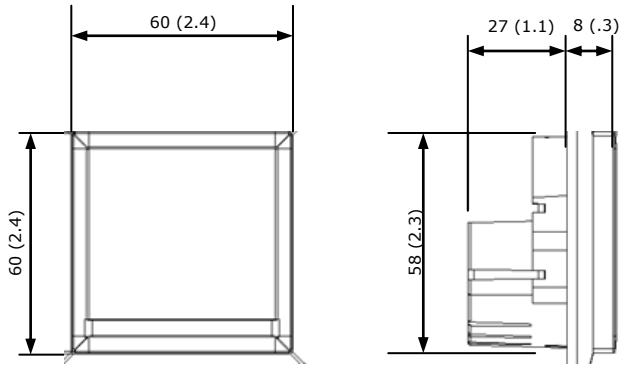
Selection of actuators

Choose actuators with an input signal type of 0–10V DC or 2–10V DC.

Technical specifications

Power Supply	Operating Voltage	24 V AC/DC ± 10 %, 50/60 Hz, Class 2 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	0-50 °C (32-122 °F)
	Accuracy	0.5 K
Signal outputs	Analog Outputs Output Signal Resolution Maximum Load	AO1, AO2 DC 0-10 V 9.76 mV (10 bit) 10 mA
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 Standard 89/336/EEC EMEI Standard 73/23/EEC	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 Safety Class	IP30 to EN 60529 III (IEC 60536)
General	Housing material:	Fire proof ABS plastic (UL94 class V-0)
	Dimensions (H x W x D)	Front part: 60 x 60 x 8 mm (2.4” x 2.4” x 0.3”) Power case: ø 58 x 27 mm (ø 2.3” x 1.1”)
	Weight (including package)	115 g (4.0 oz)

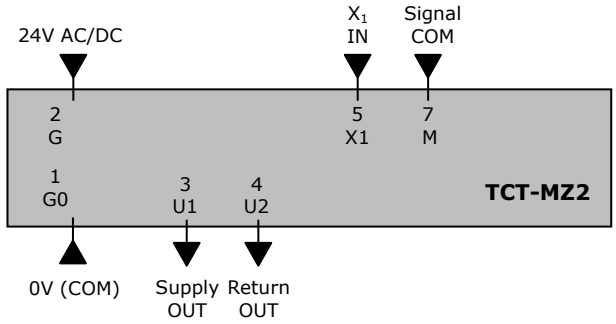
Dimensions [mm] (inch)



Installation and Safety advice

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.

Connection diagram



Description:

G0	Power supply:	0V, -24VDC, internally connected to signal common
G	Power supply:	24VAC, +24VDC
M	Signal common:	Common 0 potential for analog inputs and analog outputs.
X1	External passive input:	open contact to signal common
U1	Analog output supply air:	0…10 V DC
U2	Analog output return air:	0…10 V DC

Mounting location

- On an easy accessible interior wall, approx. 1.5 m (4.5’) above the floor in an area of average temperature.
- Avoid exposure to direct sunlight

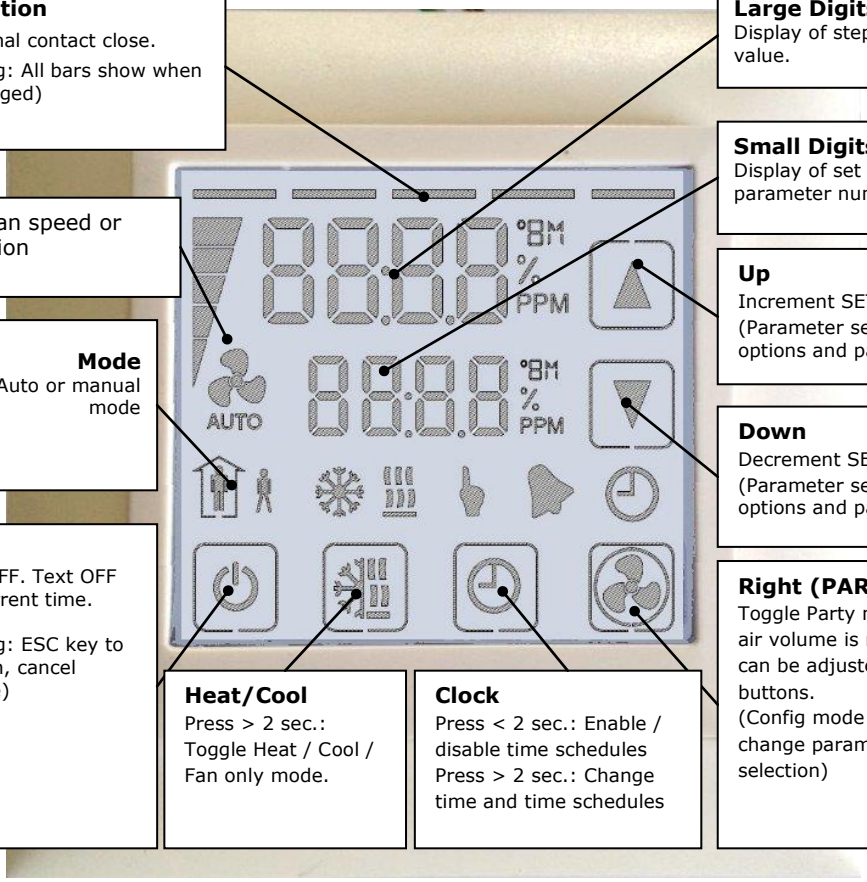
Installation

Install on an easy accessible interior wall, approx. 1.5 m (4.5’) above the floor. Installation only on an on-wall or under-wall box (frame and mounting plate is not included)

Installation:

1. Connect the wires to be connected to the terminals of the power case according to wiring diagram
2. Install the mounting plate to the flush mounting box
3. Screw the power case to the metal plate. Connectors need to point upwards!
4. Place the frame on mounting plate and hold it with one hand
5. Take the display and place it in the middle of the frame, the thick side of the display frame need to point downwards
6. Verify that the 10 pin connector connects correctly
7. Carefully press the display on the power part until the clamps are clicking in (it may be required to move the frame slightly).

Display and operation



Contact indication
Show when external contact close.
(Parameter setting: All bars show when value can be changed)

Vertical Bar: Fan speed or progress indication

Mode
Display of party, Auto or manual mode

Left (POWER)
Turn unit ON or OFF. Text OFF displayed with current time.

(Parameter setting: ESC key to leave menu option, cancel parameter change)

Large Digits
Display of step, clock or parameter value.

Small Digits
Display of set point, clock or parameter number.

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

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

Right (PARTY)
Toggle Party mode. In Party mode air volume is maximum. Reset time can be adjusted with up/down buttons.
(Config mode: ENTER key to change parameter and confirm selection)

Heat/Cool
Press > 2 sec.:
Toggle Heat / Cool / Fan only mode.

Clock
Press < 2 sec.: Enable / disable time schedules
Press > 2 sec.: Change time and time schedules

Operation Modes

STEP	Normal mode	The ventilation is operating based on selected values
OFF	Absence mode	Ventilation is operated with on and off intervals. The intensity and duration of both on and off intervals may be defined with parameters. The default is 5.5 hours in off mode and 0.5 hours with minimum airflow.
	Party mode (FULL)	Ventilation is fully activated. The reset time is shown on the display. It may be set.
HIGH	Full supply mode	This mode is activated by an external input for example a switch on the kitchen or bathroom exhaust fan. The Supply air opens full and the return air is switched off. The values of full supply mode for both supply and return air are selectable through parameters.
	Time schedule mode	Airflow is defined by time schedules
	Manual override	Short term manual override of the time schedule value. After a fixed reset time of 60 min the positioner will revert to the scheduled value.

Power Failure

All the parameters and set points are memorized and do not need to be reentered. Depending on **UP03** 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.

Clock operation

The TCT-MZ2-D contains a quartz clock with battery back-up (not available in TCT-MZ2). Up to 8 switching events based on time and day of the week may be programmed. A switching event is defined by the time, day of the week and ventilation setpoint.
A blinking clock indicates that the time has not been set or that the unit has been without power for longer than 48 hours. The time needs to be set to allow time schedules to operate.

Clock setup

Press CLOCK Key > 2 sec. SEL and current time displayed Press RIGHT < 2 sec. to change time, Minutes blink: UP/DOWN to change, OPTION to save minutes, Hours blink: UP/DOWN to change, OPTION to save hour, Press RIGHT to save time, DAY1 blinks: UP/DOWN to change, OPTION to save day	SEL 00:00 DAY1 (Mon)

Enable/disable time schedules

Press CLOCK key < 2 sec. Time schedule operation is enabled or disabled alternately		

Creating time schedules

Step 1: Select a switching time (Up to 8, Pr01–Pr08)

Press CLOCK Key > 2 sec. SEL and current time displayed Press UP key, Press RIGHT key to select PRO. Press UP while PRO-ON displayed: Large digits display Pr01, small digits display 00:00 Press RIGHT: 00:00 blinks Press UP/DOWN to select switching time from 00:00–23:45 Press RIGHT to save switching time	Pr01 08:00

Step 2: Select day(s) of week during which the switching event shall be executed

While Pr01 is displayed and DAY1 is blinking: Press UP: Activate switching event for DAY1 (triangle appears on 1), Press DOWN: Deactivate switching event for DAY1 (triangle disappears) Press RIGHT to step to next day: Repeat for DAY2 – DAY7	Pr01 DAY1 ▼ 1 2 3 4 5 6 7

Step 3: Define setpoint

Press UP/DOWN to adjust the setpoint to the desired level Press RIGHT button to complete. The switching event is now defined.	Pr01 08:00

Default switching times

These switching times are preprogrammed:
Monday to Sunday (Day1 to Day7:
PR01: 07:00 50%
PR02: 17:00 100%
PR03: 22:00 25%

Configuration

The TCT-MZ is preset to work for most applications. However, it can be fine-tuned for special requirements through a simple parameter setup routine. The parameters can be changed on the unit without the need of additional equipment.

Identifying the firmware version

The parameters and functionality of controller depend on its firmware version and revision. It is therefore important to use a matching product version and parameter set. The Firmware version and revision version can be found when pressing simultaneously the ▲ and ▼ keys during several seconds. On the upper 7 segment display, the firmware version can be found, on the lower 7 segment display the current revision index (or "sub-version").

Access to parameters

The parameters can be changed as follows:

1. Press UP and DOWN button simultaneously for three seconds. The display will indicate the firmware version in the upper large digits and the revision in the lower small digits. Pressing any key will show: CODE.
2. Select a password using UP or DOWN buttons. Select 009 in order to get access to the user parameters Press OPTION after selecting the correct password.
3. Once logged in, the parameter is displayed immediately
4. Select the parameters with the UP/DOWN keys. Change a parameter by pressing the OPTION key. The MIN and MAX symbols show up and indicate that the parameter may be modified now. Use UP and DOWN key to adjust the value.
5. After you are done, press OPTION or POWER in order to return to the parameter selection level.
6. Press the POWER key again so as to leave the menu. The unit will return to normal operation if no key is pressed for more than 5 minutes.

User Parameters (Password 009)

Parameter	Description	Range	Default
UP 00	Enable access to operation modes	ON, OFF	ON
UP 01	Enable access to set points	ON, OFF	ON
UP 02	Enable access to clock settings and time schedules	ON, OFF	ON
UP 03	State after power failure: 0 = off, 1 = on, 2 = state before power failure	0, 1, 2	2
UP 04	Reset time for party mode	0…255 min	10 min
UP 05	Reset time for manual override mode during time schedules	0…255 min	60 min
UP 06	Step or percentage control for ventilation setpoint: OFF: Step control (# Steps defined in UP07) ON: Percent (0…100% in 0.5% steps)	ON, OFF	OFF
UP 07	Number of steps if UP06 = OFF	0…10	5
UP 08	Time format: OFF 24H, ON 12H (AM/PM)	ON, OFF	OFF

Control Functions (Password 241)

Warning! Only experts should change these settings! See user parameters for login procedure

Parameter	Description	Range	Default
CP 00	Signal type: OFF = 0…10V, ON = 2-10V	OFF, ON	ON (2-10V)
CP 01	Min output for AO1 (TCT-MZ2 = Supply air)	0 – 100 %	0%
CP 02	Max output for AO1 (TCT-MZ2 = Supply air)	0 – 100 %	100%
CP 03	Min output for AO2 (TCT-MZ2 = Return air)	0 – 100 %	0%
CP 04	Max output for AO2 (TCT-MZ2 = Return air)	0 – 100 %	100%
CP 05	Absence mode: High time	0…25.5h	0.5h
CP 06	Absence mode: Low time	0…25.5h	5.5h
CP 07	Absence mode: Output during high time. OFF = 0V(energy hold off) , 0…100% 0-10V or 2-10V	OFF, 0 – 100 %	0%
CP 08	Absence mode: Output during low time. OFF = 0V(energy hold off) , 0…100% 0-10V or 2-10V	OFF, 0 – 100 %	OFF
CP 09	Configuration of external input (X1) 0 = Disabled 1 = Normal Absence mode changeover 2 = Full supply mode control	0…2	2
CP 10	Activation delay (seconds): If CP 09 = 1: The time the binary input needs to be open before absence mode is activated. If CP 09 = 2: The time the binary input needs to be connected to signal ground before full supply mode is activated.	0…1275s	60s
CP 11	Full supply mode: Volume for supply air OFF = 0V (energy hold off), 0…100% 0-10V or 2-10V	OFF, 0…100%	100%
CP 12	Full supply mode: Volume for return air OFF = 0V (energy hold off), 0…100% 0-10V or 2-10V	OFF; 0…100%	OFF

➔ Signal limitation for VAV systems
The minimum and maximum airflow limits may be adjusted directly on the controller. A setup on the VAV actuator is thus not required.

➔ Absence mode
The ventilation is activated during absence mode in selectable intervals. High and Low time as well as high and low levels of the absence mode may be defined. Per default a low time of 5.5 hours with energy hold off level is followed by a high time of 0.5hours with minimum air flow. During energy hold off level, the ventilation is off.

Configuring the function of the external input X1

➔ Normal – Absence mode changeover
The operation mode can be controlled through an external contact. If the contact is closed (input connected to signal ground), normal mode is activated. If the contact is open for a time defined in CP10, absence mode is activated. Pressing the LEFT button reactivates normal mode and resets the countdown timer defined with CP10. A possible application is a motion detector for an office or meeting room in series with a window contact.

➔ Full supply mode
If the contact closes, the supply air will be set to maximum (defined in CP11) and the return air set to OFF (CP12). This function is used for kitchen exhaust or bathroom exhaust fans to prevent negative indoor pressure. A delay may be defined with CP10.