



TAC Xenta® 102-B

VAV Controller

TAC Xenta 102-B is a zone controller VAV cooling applications. It is possible to switch between the heating and cooling via the network.

The controller keeps a constant temperature in the zone by controlling the airflow with the aid of a Belimo® VAV Compact. It is also possible to limit the airflow. By using a carbon dioxide sensor, the air quality can be controlled in the zone.

The controller is a LonMark compliant device that communicates on a LonTalk TP/FT-10 network via a twisted-pair, unpolarized cable. It is able to operate both as a stand-alone unit and as part of a system. All network variables can be monitored and configured via the TAC Xenta OP, if the OP version is 3.11 or higher.

STR 100 is a range of wall modules intended to be used with TAC Xenta 102.

There are plug-in terminal blocks available for the TAC Xenta 100 series that can be attached to the existing terminals.

TECHNICAL DATA

Supply voltage 24 V AC -10% $+20\%$, 50–60 Hz

Power consumption:

Controller with TAC Xenta OP 4 VA
Actuator supply max. 12 VA
Total max. 16 VA

Ambient Temperature

Operation 0 °C to +50 °C (32 °F to 122 °F)
Storage -20 °C to +50 °C (-4 °F to 122 °F)
Humidity max. 90% RH non-condensing

Mechanical

Enclosure ABS/PC
Enclosure rating IP 30
Flammability class, materials UL 94 5VB
Dimensions see Fig. 1
Weight 0.4 kg (0.88 lb.)

Inputs/Outputs

Inputs for occupancy sensor and window contact, X2–X3:

Voltage across open contact 23 V DC ± 1 V DC
Current through closed contact 4 mA
Minimum pulse input duration X2/X3 250 ms / 15 sec.

Input for bypass button on wall module, X1:

Minimum pulse input duration 250 ms
Maximum current, LED 2 mA, for STR 100 series

Input for zone temperature sensor, B1:

Thermistor type NTC, 1800 Ω at 25 °C (77 °F)
Measuring range -10 °C to 50 °C (14 °F to 122 °F)
Accuracy ± 0.2 °C (± 0.36 °F)

Inputs for air flow and carbon dioxide sensor, Z1–Z2:

Measuring range 0–10 V DC
Accuracy ± 0.05 V

Input setpoint adjustment on wall module, R1:

Type 10 k Ω linear potentiometer
Adjustment range ± 5 °C (± 9 °F)
Accuracy ± 0.1 °C (± 0.18 °F)

Output for air flow controller, Y1:

Output range 0–10 V DC
Maximum current 2 mA
Accuracy ± 0.2 V

Application Program

Cycle time 15 sec.

Indication LED Colors

Power On green
Service red

LonMark Standard

. LonMark Interoperability Guidelines
. LonMark Functional Profile: VAV Controller
Communication protocol LonTalk
Physical channel TP/FT-10, 78 kbps
Neuron type 3150, 10 MHz

Agency Compliances

Emission:

CE EN 61000-6-3, C-Tick, FCC Part 15

Immunity:

CE EN 61000-6-1

Safety:

CE EN 61010-1
UL 916, C-UL US, Enclosed Energy Management Equipment

Approved for plenum installations

RoHS directive 2002/95/EG

Part Numbers

Controller 007305310
Manual 0-004-7516
Plug-in Terminal Blocks TAC Xenta 100 007309140

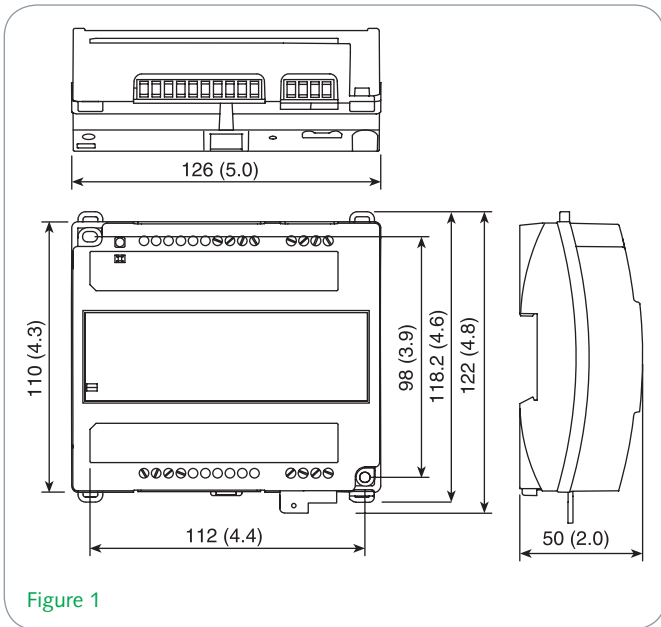


Figure 1

APPLICATION EXAMPLE

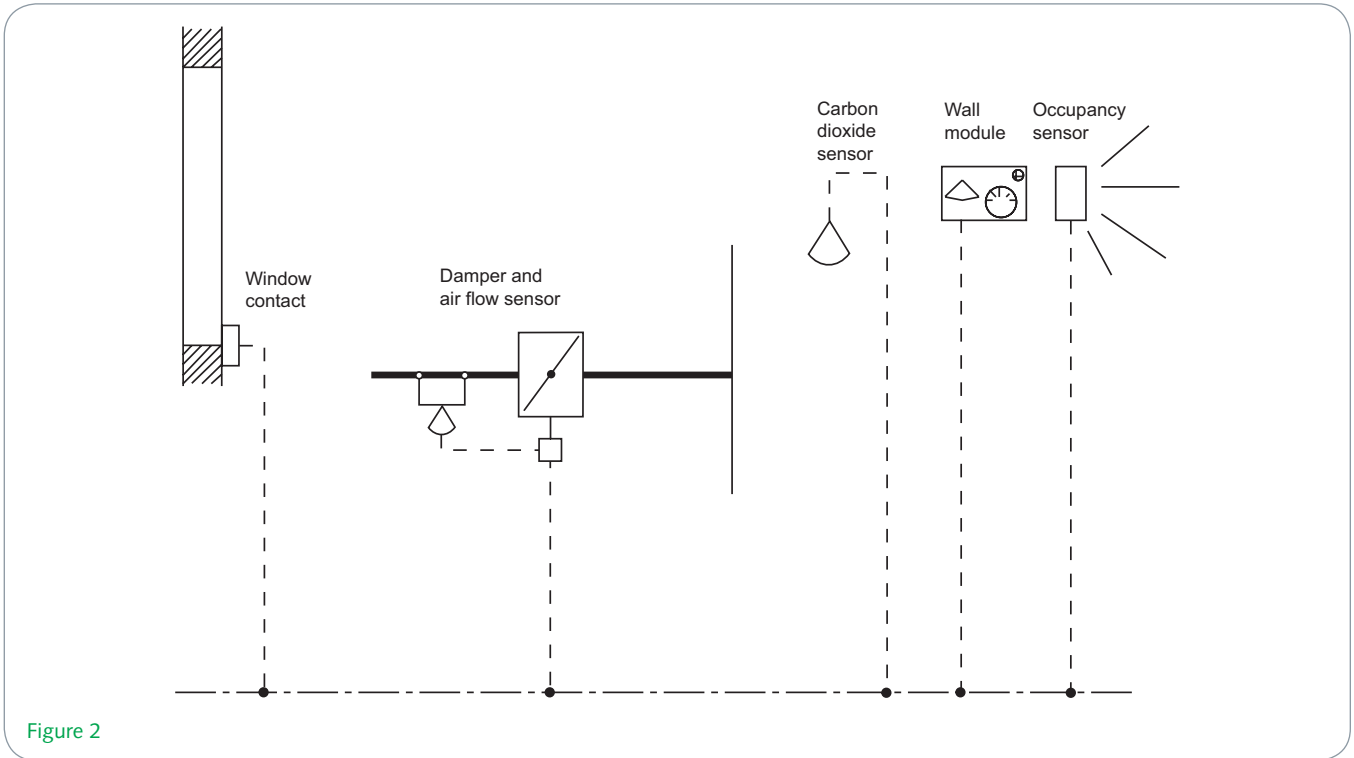


Figure 2

Note: It is not appropriate to mix TAC Xenta 102-B, TAC Xenta 102-EF and TAC Xenta 102-VF in a project when TAC Xenta 102-B is to control a heating application, as TAC Xenta 102-B uses hot air from the central air handling unit in the heating mode.

MAIN FUNCTIONS

The function of TAC Xenta 102-B is determined by the occupancy mode, the application mode, the emergency mode, the manual mode and the node state.

Normally, the controller has cooling control only. The air flow increases when the cooling demand increases (see fig. 2). With a network variable, the control sequence can be changed to heating; in this case, the air flow increases and provides heated supply air.

Air Quality Control

In order to maintain the air quality, the controller selects the highest of three air flow values: the air flow ordered from the cooling sequence, the air quality control or the set minimum position for the damper. At a high carbon dioxide concentration, the air flow is set from the air quality control (see fig. 3); at other times, it is set by the temperature control sequence. The air quality control is enabled in the occupied and bypass modes.

OPERATING MODES

Occupied Mode

Occupied mode is used when the zone is occupied. This mode is also the default mode after a reset or a power up.

Standby Mode

The standby mode reduces energy consumption when enabled. Standby setpoints for heating or cooling are used, and the air flow is diminished from "minimum occupied air flow" to "minimum standby air flow".

Bypass Mode

To bypass the centrally set standby mode, press the bypass button on the wall module, upon which the controller switches to occupied mode.

When two hours have passed, the controller reverts to standby mode. The fan is controlled in occupied mode while the bypass mode is active.

Unoccupied Mode

This mode is used when the building is unoccupied for a longer period. In this mode, the neutral zone is even larger than that of the standby mode. The fan is controlled in standby mode.

Off Mode

The controller stops running when off mode is centrally ordered, when a window is opened or slave mode is enabled in the controller.

Slave Mode

When the network variable nciAppOptions is set so that slave mode is enabled, the following happens:

The slave controller goes into off mode and receives copies of output signals from the master controller.

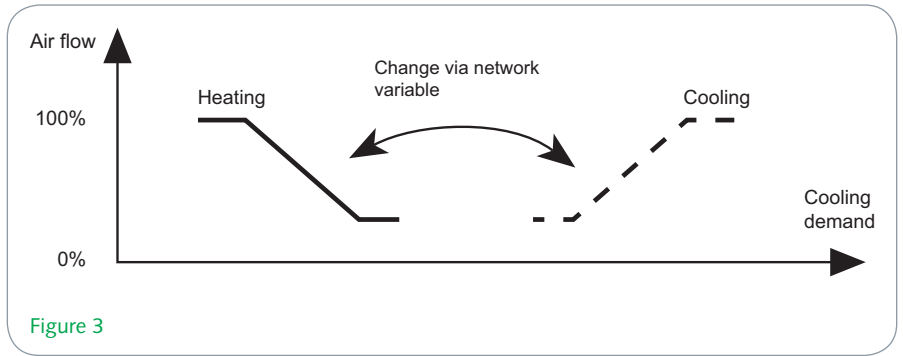


Figure 3

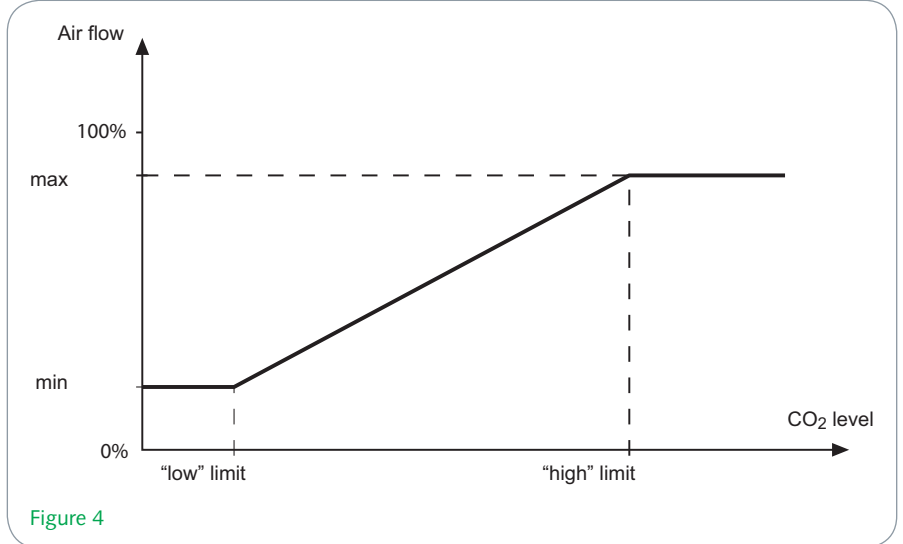


Figure 4

In slave mode, both the slave and master controllers must be equipped with identical actuators and valves.

Night Purge Mode

In night purge mode, the air flow is set to its maximum value in order to cool the zone with outdoor air. If the controller is used in a heating application, the heating is off.

EMERGENCY MODE

Emergency mode is forced and has two different settings:

- Shutdown mode – The damper is fully closed.
- Purge mode – The air flow is set to its nominal value, which equals a fully open damper.

When emergency mode is not needed, the network variable is set to normal control.

INSTALLATION

The controller may be mounted on a DIN rail or fastened onto a ceiling or a wall. Two sockets are included to allow for this type of installation.

CABLES

Communication cables: refer to the TAC Xenta Network Guide, part number 0-004-7460.

Other cables: maximum length 30 m (100 ft.), minimum wire size of 0.7 mm²

(18 AWG) applies to all other cables and all other equipment. The cables are to be twisted, but not shielded.

CONFIGURATIONS OPTIONS

By changing the network variable nciAppOptions (see fig. 6), it is possible to achieve different options in TAC Xenta 102-B.

The factory setting of the controller is that all auxiliary units are disabled. Below is a list of the different options:

- Occupancy sensor enabled/disabled
- Window contact enabled/disabled
- Cooling only enabled/disabled
- Air quality controller enabled/disabled
- Slave mode disabled/enabled
- Occupancy sensor normally open/normally closed

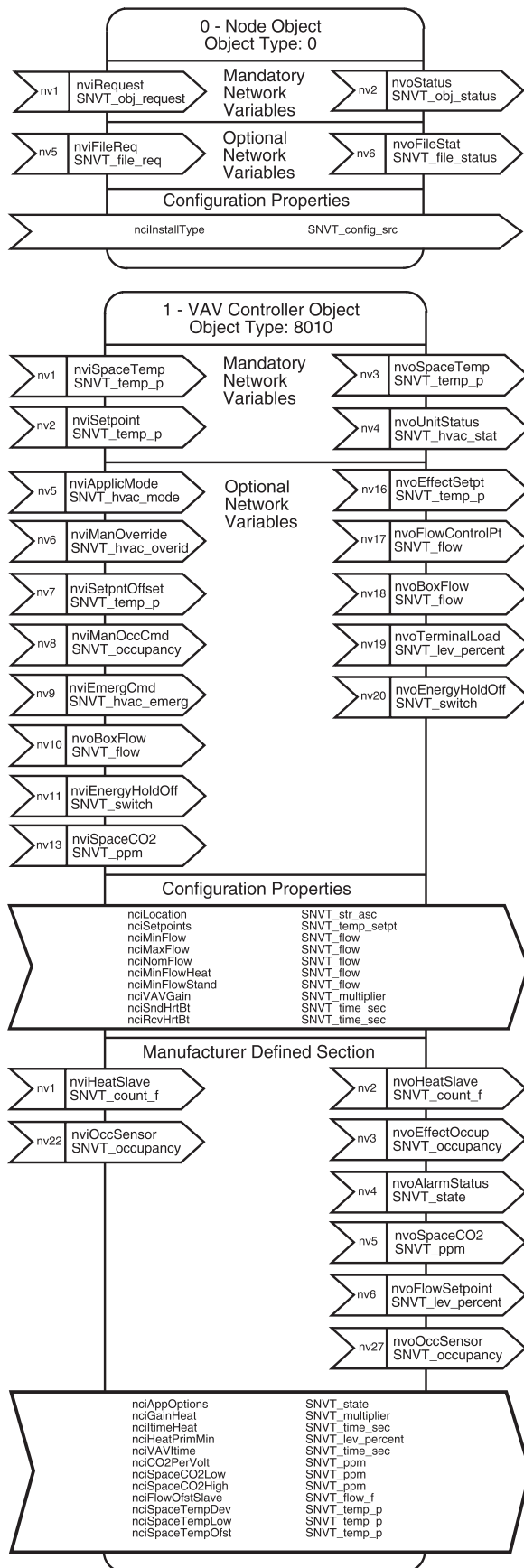


Figure 5: LonMark Objects and Network Variables

HARDWARE INTERFACE

Term. No.	Term. Name	Description
1	C1	TP/FT-10 communication channel
2	C2	TP/FT-10 communication channel
3	X3	Input, window contact
4	M	Measurement neutral
5	X2	Input, occupancy sensor
6	Z2	Input, carbon dioxide sensor
7	M	Measurement neutral
8	Z1	Input, air flow
9	D1	Output, indication on wall module
10	M	Measurement neutral
11	X1	Input, bypass button on wall module
12	R1	Input, setpoint offset dial on wall module
13	M	Measurement neutral
14	B1	Input, temperature sensor
15	G	24 V AC (G) input
16	G0	24 V AC (G0) input
17	OP	24 V AC supply for TAC Xenta OP
18	G	24 V AC supply for TAC Xenta OP
19	–	Not used
20	G	24 V AC (G) output
21	G0	24 V AC (G0) output
22	–	Not used
23	M	Measurement neutral
24	Y1	Air flow controller setpoint
25	–	Not used
26	–	Not used
27	–	Not used
28	–	Not used

ROOM UNITS

The STR is a series of wall modules optimized for public facilities such as office buildings, hotels, hospitals, schools, and shopping malls.

The following room units can be configured with the TAC Xenta 102-B.

Model	Temp. Sensor	Mode Indicator	Setpoint Offset	Bypass Button	Back Light	SNVT Binding Required
STR100	X					
STR101	X	X				
STR102	X	X	X			
STR103	X	X		X		
STR104	X	X	X	X		
STR350	X	X	X	X		X
STR351	X	X	X	X	X	X

PART NUMBERS

STR100004600100
 STR100-W (White)004600110
 STR101004600200
 STR102004600300
 STR103004600700
 STR104004600400

LON Modules

STR350004605000
 STR351004605100

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