

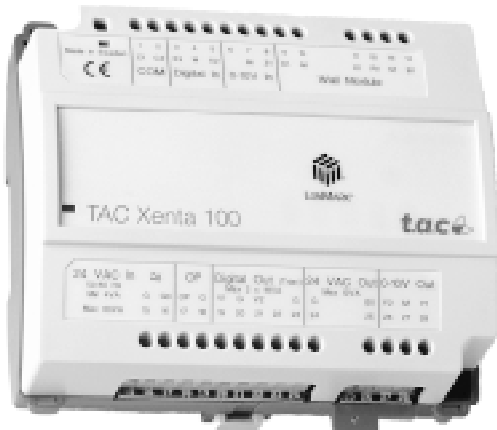


TAC Xenta 102-ES

C-95-16

VAV controller with air flow sensor

1999-05-20



TAC Xenta® 102-ES is a zone controller intended primarily for VAV cooling applications with one or two stages of reheating. The controller keeps a constant temperature in the zone by controlling the air flow and heating stages. By using a carbon dioxide sensor, the air quality can be controlled in the zone.

The controller is a LONMARK® compliant device aimed at communicating 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.

ZS 100 is a range of wall modules intended to be used together with TAC Xenta 102-ES.

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

TECHNICAL DATA

Supply voltage 24 V AC +/-20%, 50–60 Hz
 Power consumption:
 Controller with TAC Xenta OP 4 VA
 Digital outputs max. 6 x 19 = 114 VA
 Total max. 118 VA
 Ambient temperature:
 Operation 0 °C – +50 °C (32 °F – 122 °F)
 Storage -20 °C – +50 °C (-4 °F – 122 °F)
 Humidity max. 90% RH, non-condensing
 Enclosure:
 Material ABS/PC plastic
 Enclosure rating IP 30
 Colour grey/red
 Dimensions 122x126x50 mm (4.8"x4.96"x2")
 Weight 0,4 kg (0,88 lb)
 Input for occupancy sensor, X2:
 Voltage across open contact 23 V DC ± 1 V DC
 Current through closed contact 4 mA
 Minimum pulse input duration 250 ms
 Input for window contact, X3:
 Voltage across open contact 23 V DC ± 1 V DC
 Current through closed contact 4 mA
 Minimum pulse input duration 18 s
 Outputs for damper actuator, V1-V2, reheat actuator, V3-V4, fan, V5, reheat actuator or free network output, V6:
 Minimum output voltage supply voltage – 1,5 V AC
 Maximum load (per output) 0,8 A
 Input for bypass button on wall module, X1:
 Minimum pulse input duration 250 ms
 Maximum current, LED 2 mA, for ZS 100 series
 Inputs for zone and auxiliary temperature sensor, B1-B2:
 Thermistor type 1800 Ω at 25 °C (77 °F)
 Measuring range -10 °C – +50 °C (14 °F – 122 °F)
 Accuracy ±0,2 °C (±0,4 °F)
 Input for carbon dioxide sensor, U1:
 Measuring range 0–10 V DC
 Accuracy ±0,1 V

Input setpoint adjustment on wall module, R1:
 Type 10 kΩ linear potentiometer
 Adjustment range -5 °C – +5 °C (-9 °F – +9 °F)
 Accuracy ±0,1 °C (±0,2 °F)
 Output heating stage 1, Y1:
 Output range 0 – 10 V
 Max current 2 mA
 Accuracy 0,2 V at full load
 Application program:
 Cycle time 18 s
 Indication LED colours:
 Power green
 Service red
 Interoperability:
 Standard conforms to
 LONMARK Interoperability Guidelines and
 LONMARK Functional Profile: VAV Controller
 Communication protocol LONTALK
 Physical channel TP/FT-10, 78 kbps
 Neuron® type 3150®, 10 MHz
 Conformance to standards:
 Emission EN 50081-1
 Immunity EN 50082-1
 Safety EN 61010-1
 ETL listing UL 3111-1, first version
 CAN/CSA C22.2 No. 1010.1-92
 Flammability class, materials UL 94 V-0
 CE marking complies with requirements
 Part number, TAC Xenta 102-VF:
 Controller 0-073-0537
 Manual (GB) 0-004-7663
 Plug-in terminal blocks, TAC Xenta 100 0-073-0914
 Disk with external interface files (XIF) for the
 TAC Xenta 100 series 0-008-5582
 Air flow input: based on TAC GV sensor characteristics at
 duct velocity 1-15 m/s.

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APPLICATION EXAMPLE

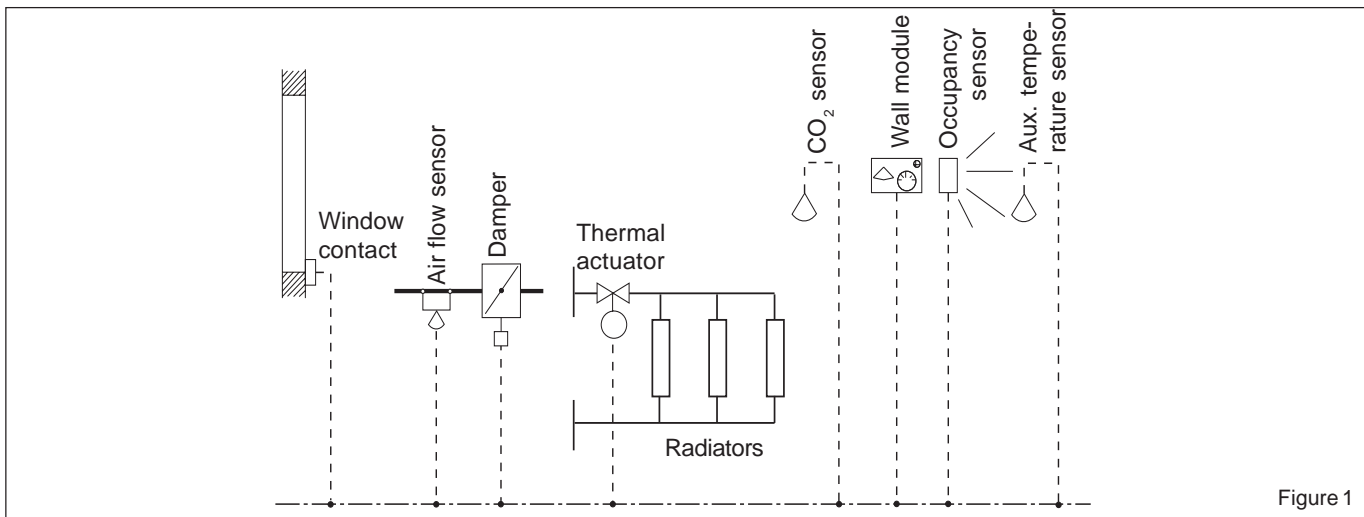


Figure 1

FUNCTIONS

The TAC Xenta 102-ES VAV controller is intended for the following applications:

- Damper control (cooling) and one free network output.
- Damper control with reheat and one free network output.
- Damper control with primary and secondary reheat

Fan control can be enabled/disabled, either in a parallel or serial mode.

The controller has an on-board air velocity sensor and should be connected to an external airflow sensor, e.g. TAC GV.

The controller includes an additional air quality controller, which will modulate the airflow to maintain the carbon dioxide level in the zone between set limits, see figure 3.

The controller also includes an auxiliary temperature sensor input for free network monitoring of any temperature point.

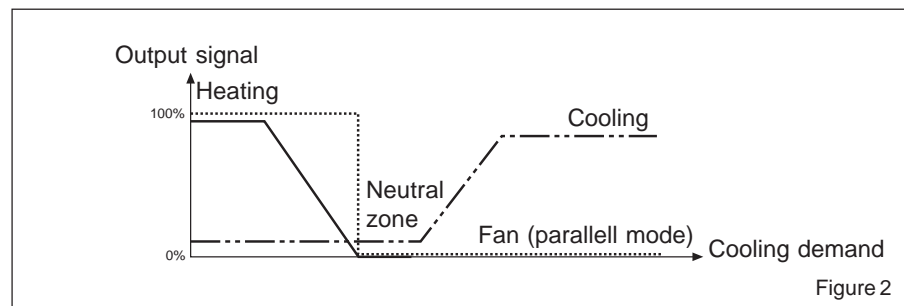


Figure 2

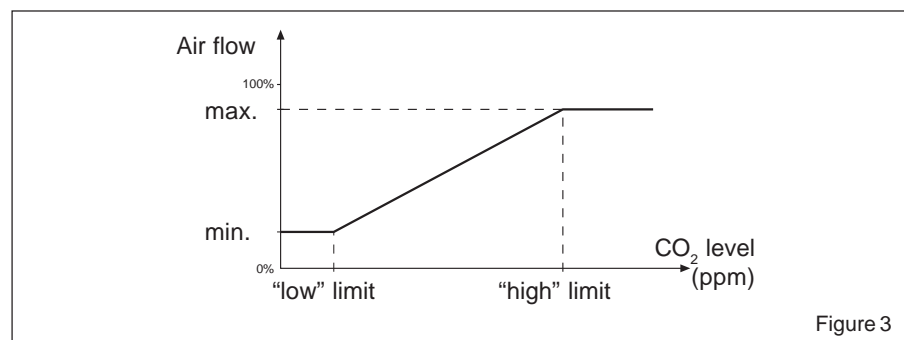


Figure 3

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. The fan is on, if the fan is connected in a serial mode, or if heating is active in the parallel mode.

Standby mode

The controller reduces the energy consumption in the zone when standby mode is enabled. The neutral zone is larger than in occupied mode, and the air flow is diminished from "min. occupied air flow" to "min. standby air flow".

Bypass mode

When someone wants to bypass the centrally set standby mode, bypass mode is activated by pressing the bypass button on the wall module, upon which the controller starts running in occupied mode. When two hours have passed, the controller goes back to standby mode again.

Unoccupied and off modes

The controller stops running when the unoccupied or off mode is centrally ordered or when a window is opened. The damper is fully closed.

Slave mode

When the network variable *nciApp-Options* is set so that slave mode is enabled, the following happens:

The slave controller goes into off mode and controls airflow as set by the master controller.

In slave mode, both the slave and master controllers must be equipped with identical auxiliary units.

Night purge mode

In night purge mode, the the air flow is set to its maximum value in order to cool the zone with the night air. The heating is off.

EMERGENCY MODE

Emergency mode is forced and has two different settings, see below:

Shutdown or depressurize mode

The damper is fully closed.

Purge or pressurize mode

The air flow is set to its nominal value, which equals a fully open damper.

INSTALLATION

The controller may be mounted on a DIN rail or by fastening it onto a ceiling or a wall with screws. There are two sockets provided for that purpose.

Cable lengths

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

Other cables: maximum length 30 m, minimum cross-sectional area of 0,7 mm² (AWG-19) applies to all other cables and all other equipment. The cables are to be twisted, but not shielded.

CONFIGURATION OPTIONS

By changing the network variable *nci-AppOptions*, see figure 4, it is possible to achieve different options with the TAC Xenta 102-ES.

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
- Fan enabled/disabled
- Fan control parallel/serial
- Air quality controller enabled/ disabled
- Thermoactuators NC/NO
- Heating set up options
- Slave mode disabled/enabled
- Occupancy sensor normally open/ normally closed

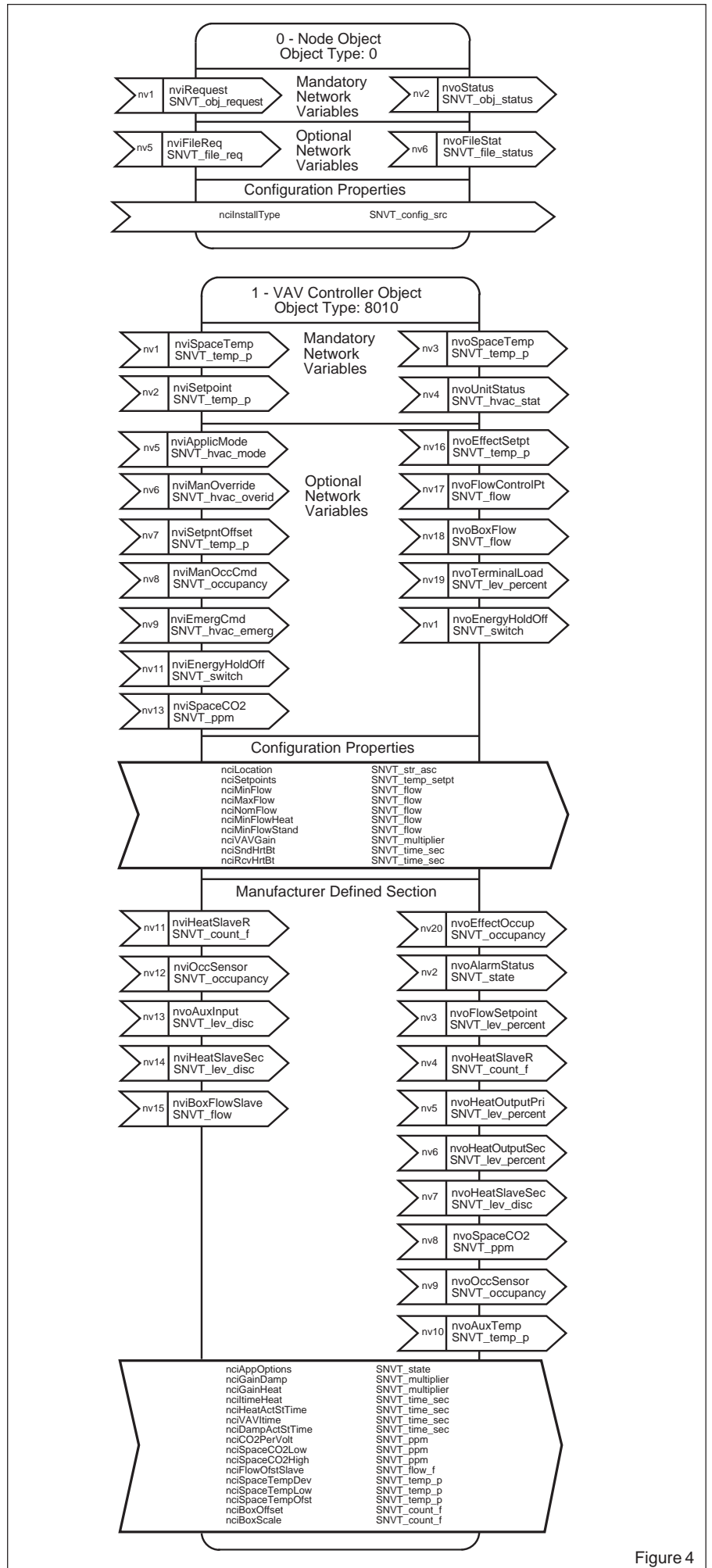


Figure 4

HARDWARE INTERFACE

No.	Designation	Description	No.	Designation	Description
1	C1	TP/FT-10 communication channel	15	G	24 V AC (G) input
2	C2	TP/FT-10 communication channel	16	G0	24 V AC (G0) input
3	X3	Input, window contact	17	OP	24 V AC supply for TAC Xenta OP
4	M	Measurement neutral	18	G	24 V AC supply for TAC Xenta OP
5	X2	Input, occupancy sensor	19	V1	Output, damper increase
6	B2	Optional temperature input	20	G	24 V AC (G) output to V1 and V2
7	M	Measurement neutral	21	V2	Output, damper decrease
8	U1	Input, carbon dioxide sensor	22	V3	Reheat valve actuator, increase or thermal actuator
9	D1	Output, indication on wall module	23	M	Measurement neutral
10	M	Measurement neutral	24	V4	Reheat valve actuator, decrease
11	X1	Input, bypass button on wall module	25	V5	Fan on-off control
12	R1	Input, setpoint offset dial on wall module	26	G	24 V AC (G0) output to V5 and V6
13	M	Measurement neutral	27	V6	Free/network output, reheat thermal actuator stage 2
14	B1	Input, zone temperature sensor	28	Y1	Heating demand stage 1, 0-100%

DIMENSIONS

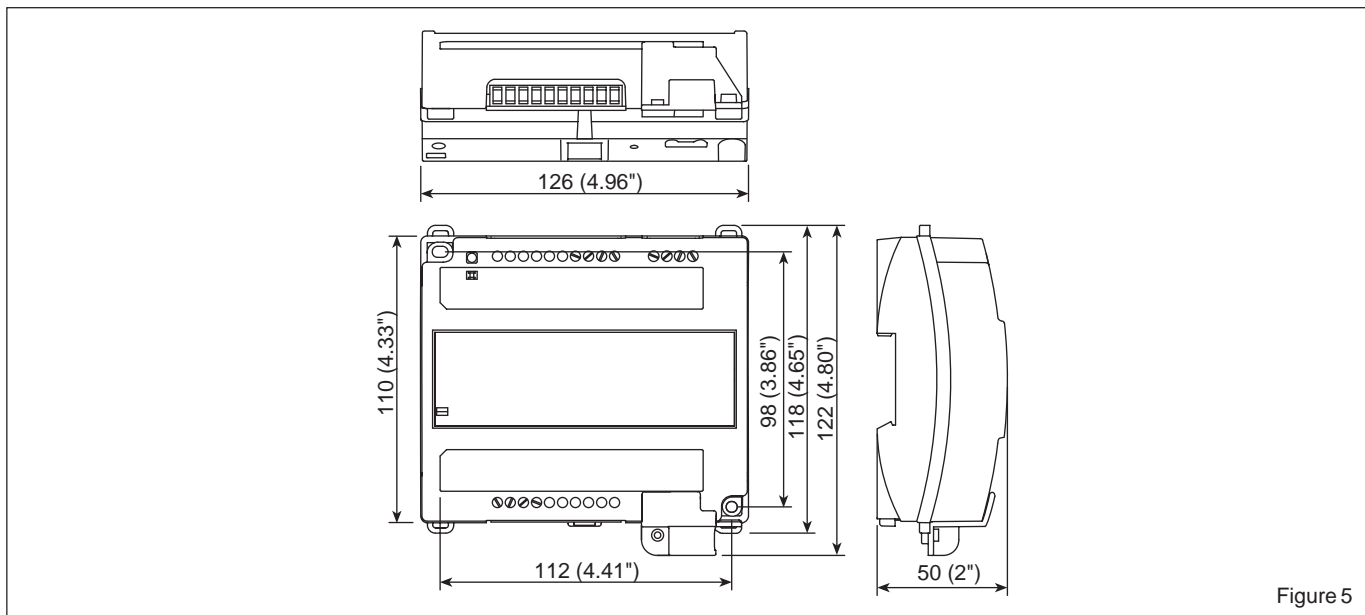


Figure 5

WALL MODULES

Designation	Description	Part number
Sensor Zone ZS 101	Wall module with temperature sensor, mode indication LED and OP connector	0-073-0908
Sensor Zone ZS 102	Wall module with temperature sensor, mode indication LED, setpoint dial and OP connector	0-073-0909
Sensor Zone ZS 103	Wall module with temperature sensor, mode indication LED, bypass button and OP connector	0-073-0910
Sensor Zone ZS 104	Wall module with temperature sensor, mode indication LED, bypass button, setpoint dial and OP connector	0-073-0911