



TAC Xenta® 103-A is a zone controller intended primarily for chilled ceiling applications. The controller keeps a constant temperature by means of modulation of the chilled water flow to ceiling elements, the hot water flow to radia-

tors and the air flow through dampers. By using a carbon dioxide sensor and an air flow damper, the air quality in the zone can be controlled.

The controller can handle the following applications:

- Heating and cooling
- Heating only
- Cooling only, air and/or water

The controller communicates on a LON^{TALK}® 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 by using the TAC Xenta OP, if the OP version is 3.1 or higher.

ZS 100 is a range of wall modules intended to be used together with TAC Xenta 103.

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 -10% +20%, 50-60 Hz
 Power consumption:
 Controller with TAC Xenta OP 4 VA
 Actuator supply max. 12 VA
 Digital outputs max. 2x19 VA = 38 VA
 Total max 54 VA
 Ambient temperature:
 Operation 0 °C - +50 °C
 Storage -20 °C - +50 °C
 Humidity max. 90% RH, non-condensing
 Enclosure:
 Material ABS/PC plastic
 Enclosure rating IP 30
 Colour grey/red
 Dimensions 122x126x50 mm
 Weight 0,4 kg
 Inputs X2-X3 for occupancy sensor and window contact:
 Voltage across open contact 23 V DC ± 1 V DC
 Current through closed contact 4 mA
 Minimum pulse input duration, inp. X2/X3 .. 250 ms / 15 s
 Outputs V1-V2 for heating valve actuators (triac):
 Type of actuator incr./decr. or thermal actuator NC/NO
 Minimum output voltage supply voltage - 1,5 V
 Maximum load 0,8 A
 Input X1 for bypass button on wall module:
 Minimum pulse input duration 250 ms
 Maximum current, LED 2 mA, for ZS 100 series
 Temperature sensor input B1:
 Thermistor type NTC, 1800 Ω at 25 °C
 Measuring range -10 °C - +50 °C
 Accuracy ±0,2 °C
 Input R1, setpoint adjustment on wall module:
 Type 10 kΩ linear potentiometer
 Adjustment range -5 °C - +5 °C
 Accuracy ±0,1 °C

Input Z1, carbon dioxide sensor:
 Measuring range 0-10 V DC
 Accuracy ±0,05 V
 Outputs Y1-Y2, cooling valve and cooling damper:
 Output range 0-10 V DC
 Maximum current 2 mA
 Accuracy ±0,2 V
 Application program:
 Cycle time 15 s
 Indication LED colours:
 Power green
 Service red
 Interoperability:
 Standard conforms to LON^{MARK}®
 Interoperability Guidelines and LON^{MARK}
 Functional Profile: Chilled Ceiling Controller
 Communication protocol LON^{TALK}
 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 103-A:
 Controller 0-073-0561
 Handbook (GB) 0-004-7526
 Plug-in terminals, TAC Xenta 100 0-073-0914
 Disk with external interface files (XIF) for the
 TAC Xenta 100 series 0-008-5582
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APPLICATION EXAMPLE

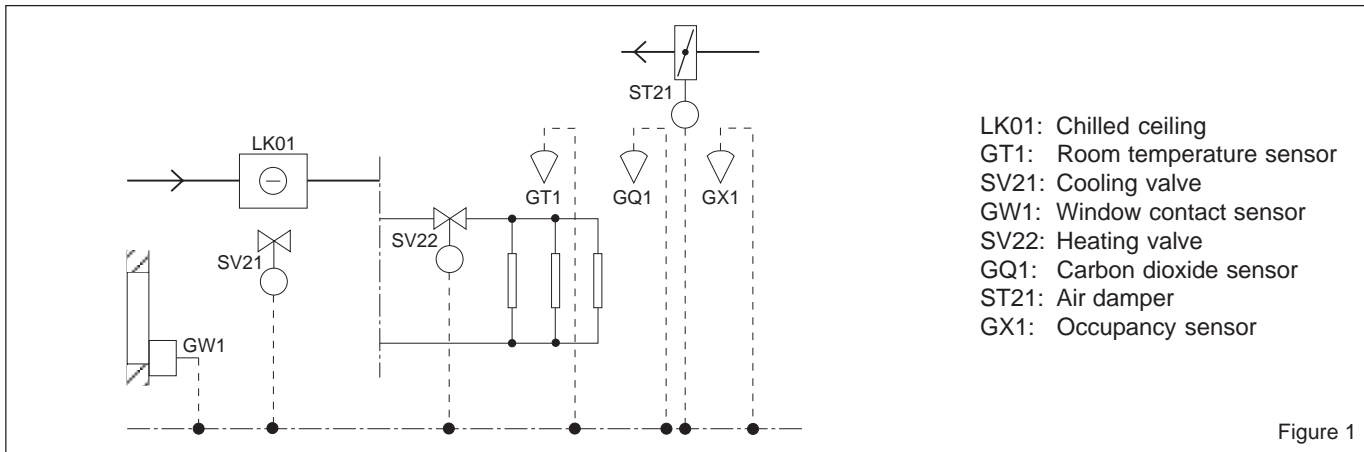


Figure 1

FUNCTIONS

The function of TAC Xenta 103-A is determined by the occupancy mode, the application mode and the node state.

When the temperature in the zone increases, the heating valve closes, see figure 2. The air damper is opened, and finally, the cooling valve is opened. This sequence is reversed when the temperature drops.

Low temperature protection

When the zone temperature drops below 10 °C, the controller goes into heating mode in order to ensure low temperature protection in the off and "fan only" modes, see below.

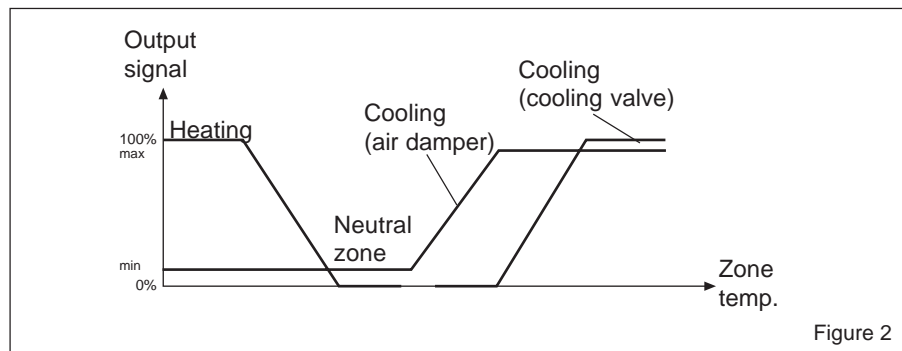


Figure 2

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.

In order to maintain the air quality, the controller selects the highest of three positions for the damper: the position ordered from the cooling sequence or the air quality control or the set minimum position for the damper. At a high carbon dioxide concentration, the position of the damper is set from the air quality control, see figure 3; at other times, it is set by the temperature control sequence.

Standby mode

The controller reduces the energy consumption in the zone when standby mode is enabled. The neutral zone is larger and the air quality control is disabled in this mode.

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

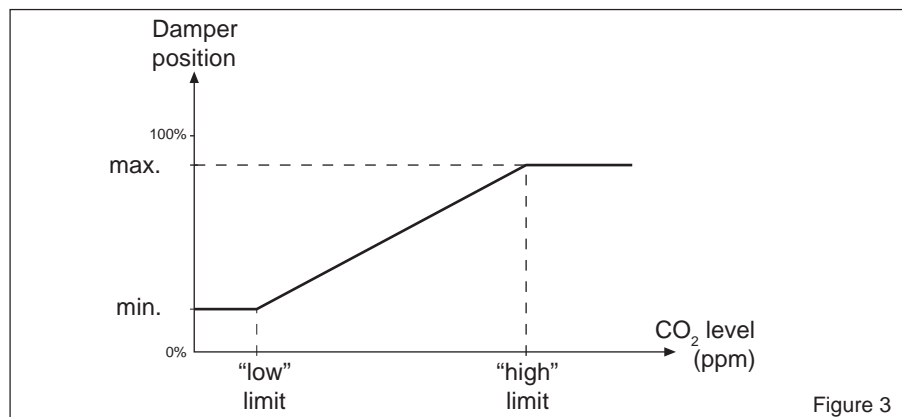


Figure 3

passed, the controller goes back to standby mode again.

Unoccupied mode

Unoccupied mode is used when the building is unoccupied for a longer period of time. Here, the neutral zone is at its largest. The air quality control is disabled in this 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. In this mode, frost protection only is active.

Slave mode

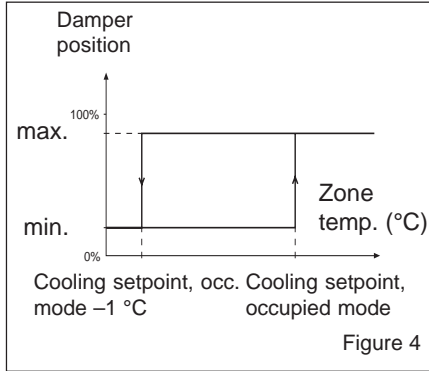
When the network variable *nciAppOptions* is set so that slave mode is enabled, the following happens:

The slave controller goes into off mode and executes copies of output signals from the master controller. Therefore, both the slave and master controllers must control actuators and valves of the same type and size.

The frost protection is off in the slave controller, but it is on in the master controller.

Night purge mode

In night purge mode, the setpoint for cooling in occupied mode $-1\text{ }^{\circ}\text{C}$ is used, see figure 4. The heating and cooling valves are closed, but the frost protection is on. When the room temperature falls below the setpoint, the damper adopts its minimum position. It is reopened with a fixed hysteresis of $1\text{ }^{\circ}\text{C}$.



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 $0,7\text{ mm}^2$ 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 5, it is possible to achieve different options in TAC Xenta 103-A.

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
- Occupancy sensor normally open/ normally closed
- Window contact enabled/disabled
- Heating valve enabled/disabled
- Cooling valve enabled/disabled
- Cooling damper enabled/disabled
- Carbon dioxide sensor and air quality controller enabled/disabled
- Heating valve actuator is of ON/OFF type/three-point increase/decrease
- Slave mode disabled/enabled
- Thermal actuator NC/NO

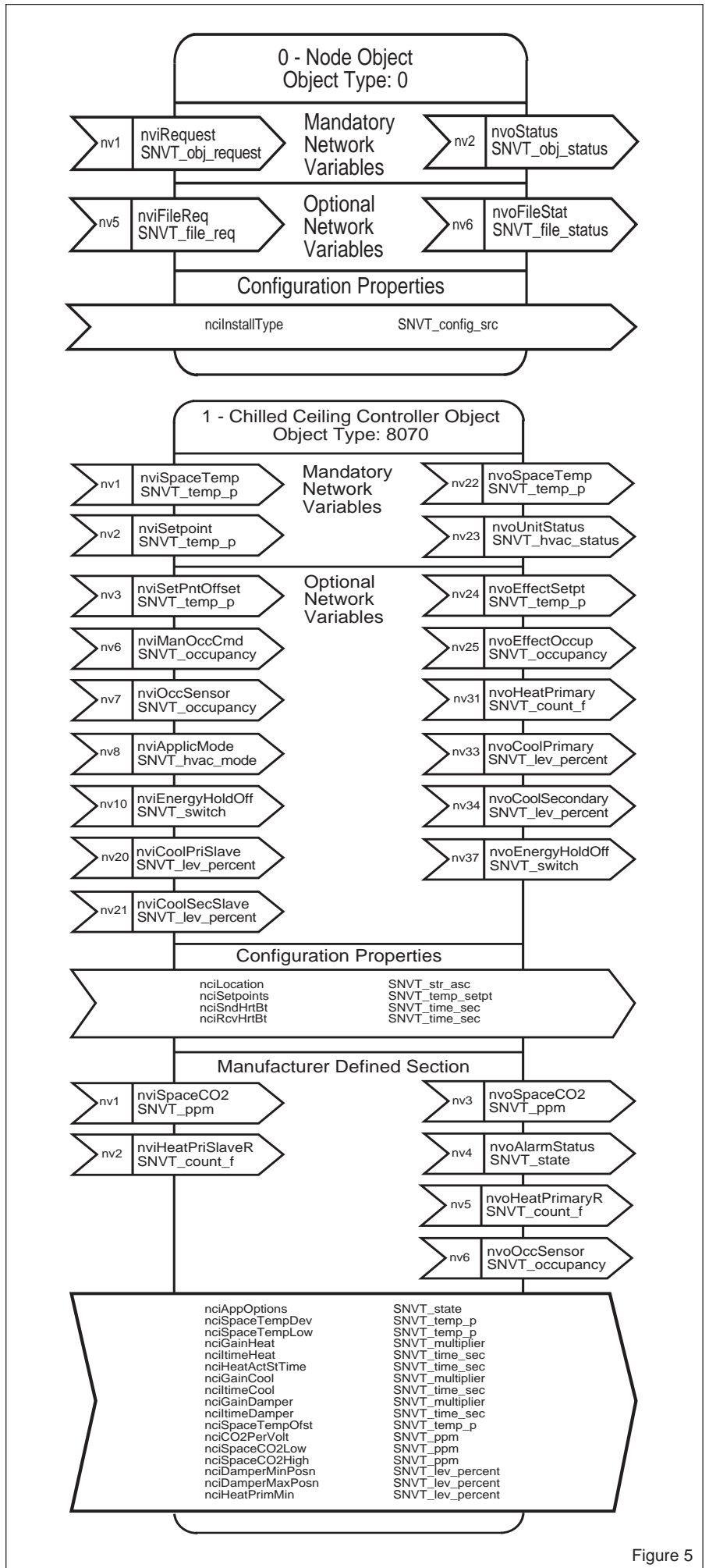


Figure 5

HARDWARE INTERFACE

No.	Designation	Description	No.	Designation	Description
1	C1	TP/FT-10 communication channel	15	G	24 V AC (G) input
2	C2	see above	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, heating valve, increase or on/off
6	—	Not used	20	G	24 V AC (G) output for V1 and V2
7	M	Measurement neutral	21	V2	Output, heating valve, decrease or on/off
8	Z1	Input, carbon dioxide sensor	22	—	Not used
9	D1	Output, indication on wall module	23	G	24 V AC (G) output for actuators
10	M	Measurement neutral	24	G	24 V AC (G) output for actuators
11	X1	Input, bypass button on wall module	25	G0	24 V AC (G0) output for actuators
12	R1	Input, setpoint offset dial on wall module	26	Y2	Output, cooling valve act., 0 (2)–10 V*
13	M	Measurement neutral	27	M	Measurement neutral
14	B1	Input, temperature sensor	28	Y1	Output, cooling damper actuator

*0 or 2 V equals a closed cooling valve, 10 V equals an open cooling valve. The actuator should be able to switch running directions.

DIMENSIONS

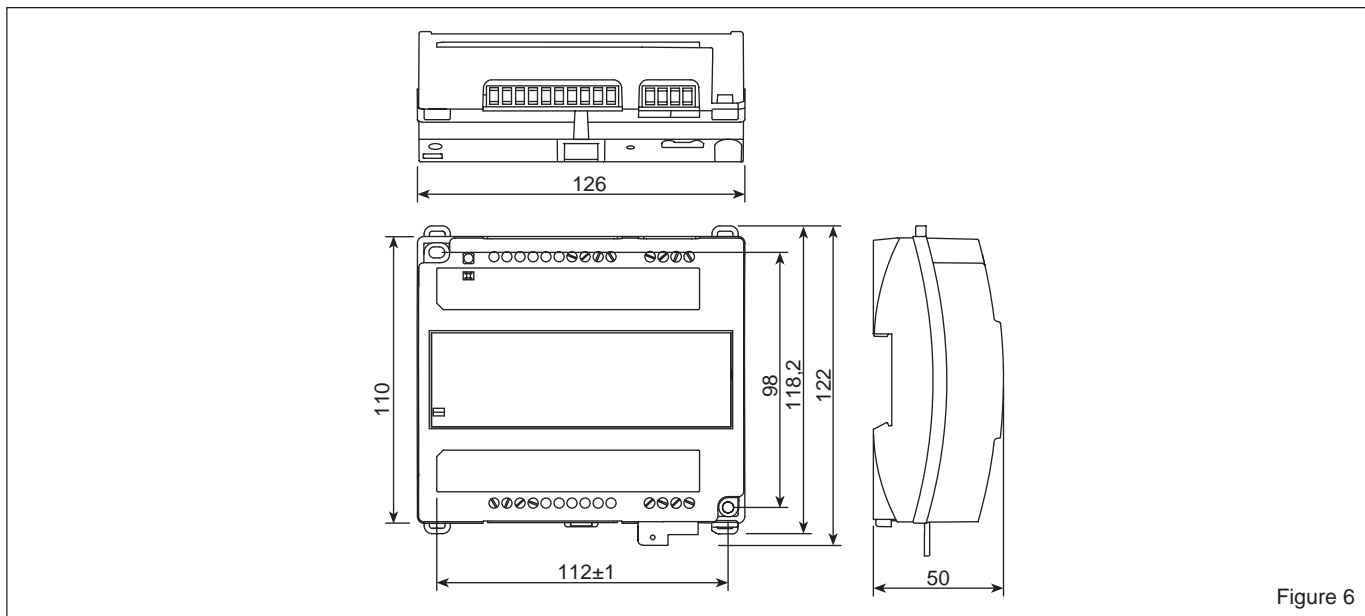


Figure 6

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, setpoint dial, mode indication LED 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