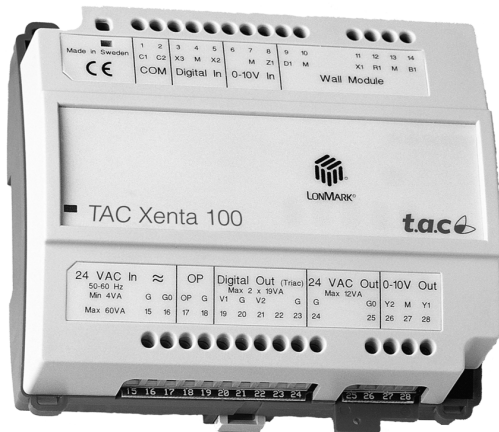# TAC Xenta 110-D

Dual Zone Controller

C-95-40

2001-08-15

The TAC Xenta® 110-D offers flexible solutions with HVAC, light control and more. It is primarily intended for dual zone control.

The controller includes 4 identical lamp actuator objects for turning lamps on/off by using switches and occupancy signals. One constant light controller object is present for adjustable light level control. Two identical Space Comfort Controller objects for basic heating and cooling (on/off) control.

The TAC Xenta 110-D is available in three different models: 24 V AC supply, 115 V and 230 V mains supply.

The controller is a LONMARK® compliant device aimed at communicating on a LONTALK® TP/FT-10 channel with a twisted-pair, unpolarized cable. It is able to operate both as a stand-alone device and as part of a system. All network variables can be monitored and configured with TAC Xenta OP, if the OP version is 3.33 or higher.

TECHNICAL DATA

Supply voltage 110-D/24 . 24 V AC −20% +20%, 50–60 Hz
  110-D/115 .... 115 V AC −10% +10%, 60 Hz
  110-D/230 .... 230 V AC −10% +10%, 50–60 Hz

Power consumption 110-D/24:
  Controller with TAC Xenta OP .... 4 VA
  Digital outputs .... max. 4×19 VA = 76 VA
  Total .... max. 80 VA

Power consumption 110-D/115 or 110-D/230:
  Controller with TAC Xenta OP .... 5 VA
  Digital outputs, individual outputs and total ... max. 12 VA
  Total .... max. 20 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 .... 122×126×50 mm (4.8"x5.0"x2")
  Weight .... 110-D/24 - 0.3 kg (0.66 lb),
  .... 110-D/115 and 110-D/230 - 0.6 kg (1.3 lb)

Inputs X1–X3 and U1 for bypass button, light switch or occupancy sensor:
  Voltage across open contact .... 23 V DC ± 1 V DC
  Current through closed contact .... 4 mA
  Minimum pulse input duration .... 250 ms

Outputs V1–V4 for heating/cooling valve actuators (triac):
  Type of actuator .... thermal actuator NC/NO
  Maximum load .... 110-D/24 - 0,8 A
  .... 110-D/115 and 110-D/230 - 0,5 A

Relay outputs for light control, K1, K2, K3 and KC1/K4 and KC2:
  Maximum voltage .... 250 V AC
  Maximum resistive load .... 3 A
  Maximum lamp load (only HF lamps) .... 250 W

Output for modulating light control, Y1:
  Range .... 1– 10 V DC
  Maximum load .... 2 mA

Inputs for zone temperature sensors, B1–B2:
  Thermistor type .... NTC, 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 R1 and U1, configured for temperature setpoint adjustment:
  Type .... 10 kΩ linear potentiometer
  Adjustment range .... ±4 °C (±7 °F)

Application program:
  Cycle time .... 10 s

Indication LED colours:
  Power .... green
  Service .... red

Interoperability:
  Standard .... TAC Xenta 110-D conforms to
    LONMARK Interoperability Guidelines and
    LONMARK Functional Profiles: 3040, 3050, 8506
  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
  EMC .... EN 61326
  Safety .... EN 61010-1
  ETL listing .... UL 3111-1, first version
  .... CAN/CSA C22.2 1100.1
  Flammability class, materials .... UL 94 V-0

Part number, TAC Xenta 110-D:
  Controller 110-D/24 0-073-0601
  Controller 110-D/115 0-073-0602
  Controller 110-D/230 0-073-0603
  Handbook (EN) 0-004-7799
  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

FUNCTION

The TAC Xenta 110-D offers flexible solutions for climate and light control in one or two zones. An example can be seen in figure 1.

Alternatively, a configuration for controlling both Heating/Cooling, Constant Light, Lamp Actuators and Occupancy for one room can be acheived.

TAC Vista Screen Mate is very suitable in combination with TAC Xenta 110-D for modern room solutions.

A range of different applications can be made by combining the three different kinds of objects. The inputs and outputs can be configured for different functions for the objects. A description of them follows below.
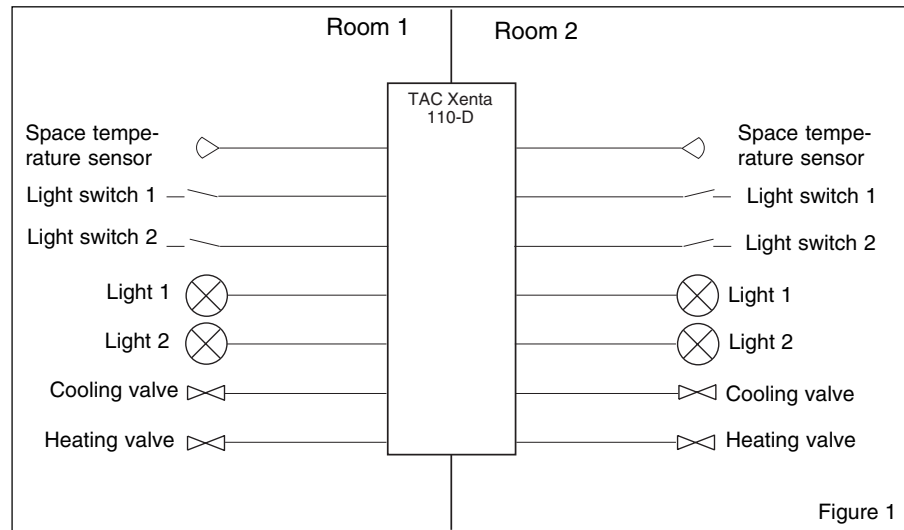
Figure 1

SPACE COMFORT CONTROLLER

There are two Space Comfort Controller objects in each TAC Xenta 110-D.

Climate control

The zone temperature can be measured with a hard-wired temperature sensor (usually in the wall module) or with a LonTalk temperature sensor node.

An occupancy sensor can be connected in each zone and different occupancy modes can be forced via the network.

The control principle is on/off (thermal actuators) with configurable hysteresis and neutral zone (see figure 2).
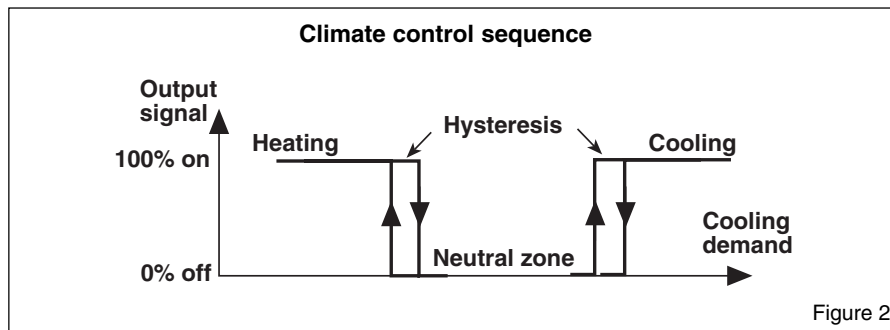

Figure 2

Occupancy 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 controller reduces the energy consumption in the zone when standby mode is enabled. The neutral zone is larger than in occupied mode.

Bypass mode
The controller enters the bypass mode by pressing the bypass button on the wall module or via a network variable, which will set the controller to function as in occupied mode. When the bypass time (configurable) has passed, the controller goes back to previous mode again.

Unoccupied mode
Unoccupied mode is used when the building is unoccupied for a longer period. The neutral zone is even larger than in standby mode.

Slave mode
It is possible to use master/slave configuration for climate control to achieve:

1 Flexible room solutions easy to reconfigure
2 Auxiliary outputs, e g sunblinds
3 Increase actuator output load

When the network variable nciAppOptions is set with slave mode enabled, the slave controller receives copies of output signals from the master controller and acts accordingly.

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

LAMP ACTUATOR

There are four Lamp Actuator objects in each TAC Xenta 110-D. The controller can control up to four lamp relays at the same time.

The hardware inputs can be configured to toggle the lamp status. It is possible to use an on/off switch with only a slight delay (appr. 0.25 s).

If an occupancy sensor is used for the climate control, the effective occupancy mode can be bound to one or more of the lamp actuators. The lamps will then be switched off when the zone is unoccupied. Again occupied the lamps either must be manually switched on, or their previous status can automatically be retained, depending of configuration.

The relay outputs are only intended for modern lamp devices equipped with HF units.

CONSTANT LIGHT CONTROL

There are one Constant Light Control object in each TAC Xenta 110-D.

By using a lux sensor (hardwired or networked), a constant light level can be obtained when controlling a dimmable HF-equipped lamp unit.

By configuration of two inputs, the controller can work with:

- lux input *or* digital input for toggle switch (U1)
- setpoint adjustment *or* light toggle switch (R1)

The configurable setpoint can be temporarily adjusted through the network by a LON device or by a hardwired, single-pole push button on R1.

INSTALLATION

The controller is only intended for built-in installation and may be mounted on a DIN rail or by fastening it onto a surface 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 (98 feet), minimum cross-sectional area of 0,7 mm^2 (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 variables *nciAppOptions* or *nciAppOptions2*, see figure 4, it is possible to achieve different options in TAC Xenta 110-D.

Different options available:

- Occupancy sensor/bypass button

- U1 used as toggle switch, bypass button, occupancy input, lux input or temperature offset input

- R1 used for light setpoint adjustment, light toggle or temperature setpoint offset

- Toggle light switches enabled/disabled.

- Lamp power up status on/off

- Lamp preservation mode

- Slave mode enabled/disabled

- Thermal actuators normally open/normally closed

- Temperature control hysteris 0.2 or 0.8 degrees
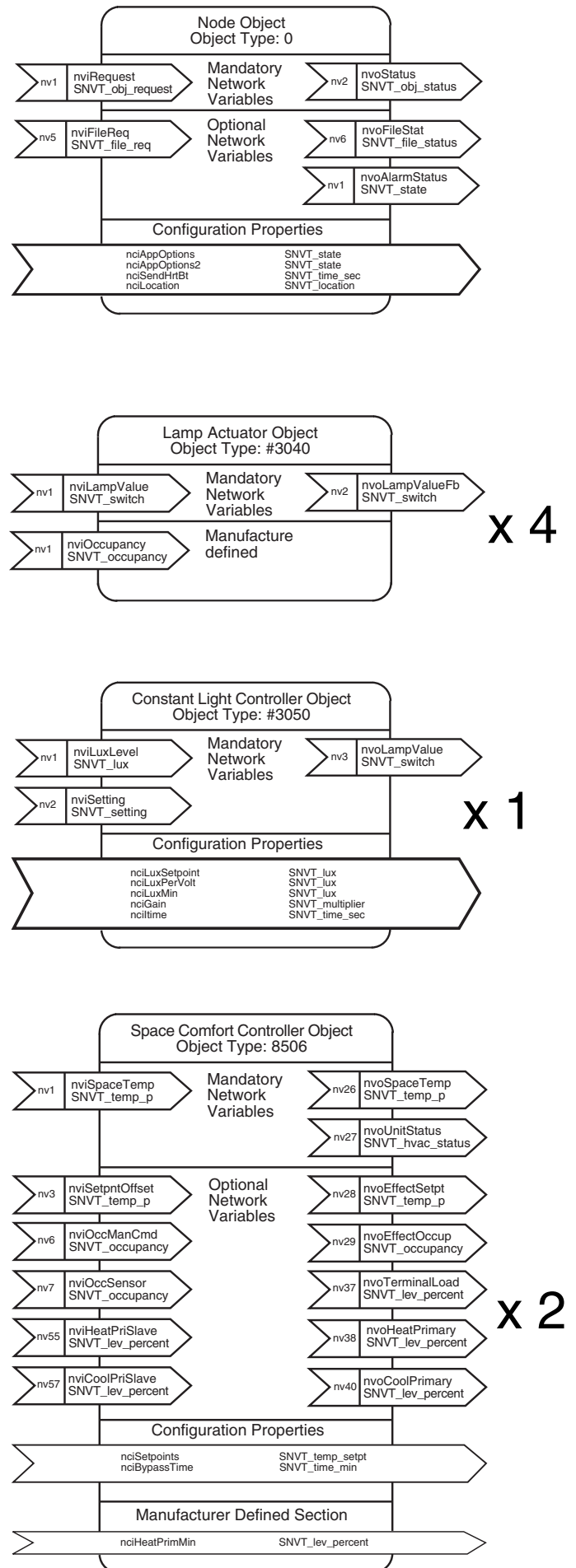
LONMARK OBJECTS AND NETWORK VARIABLES

Figure 3

HARDWARE INTERFACE

No.	Designation	Description	No.	Designation	Description
1	X2	Input, light switch/occupancy sensor	15	C1	TP/FT-10 communication channel
2	M	Measurement neutral	16	C2	see above
3	X3	Input, light switch/occupancy sensor	17	M	Measurement neutral
4	B2	Input, zone temperature sensor 2	18	U1	Input, light switch/occupancy sensor/ lux sensor/setpoint offset dial
5	Y1	Output, modulation light control	19	V1	Output, heating valve 1, on-off
6	M	Measurement neutral	20	G	24 V AC (L) output for V1 and V2
7	X1	Input, light switch/occupancy sensor	21	V2	Output, cooling valve 1, on-off
8	R1	Input, setpoint offset dial on wall module/light setpoint adjustment	22	V3	Output, heating valve 2, on-off
9	M	Measurement neutral	23	G	24 V AC (L) output for V3 and V4
10	B1	Input, zone temperature sensor 1	24	V4	Output, cooling valve 2, on-off
11	K4	Light control relay 4 output	25	K3	Light control relay 3 output
12	KC2	Light control relay 4 common	26	K2	Light control relay 2 output
13	G0	VF/24: 24V AC Supply	27	K1	Light control relay 1 output
	or 115V	VF/115: Mains Supply	28	KC1	Light control relay 1-3 common
	or 230V	VF/230: Mains Supply			
14	G/115V/230V	See 13		RJ-10	TAC Xenta OP access connector

DIMENSIONS
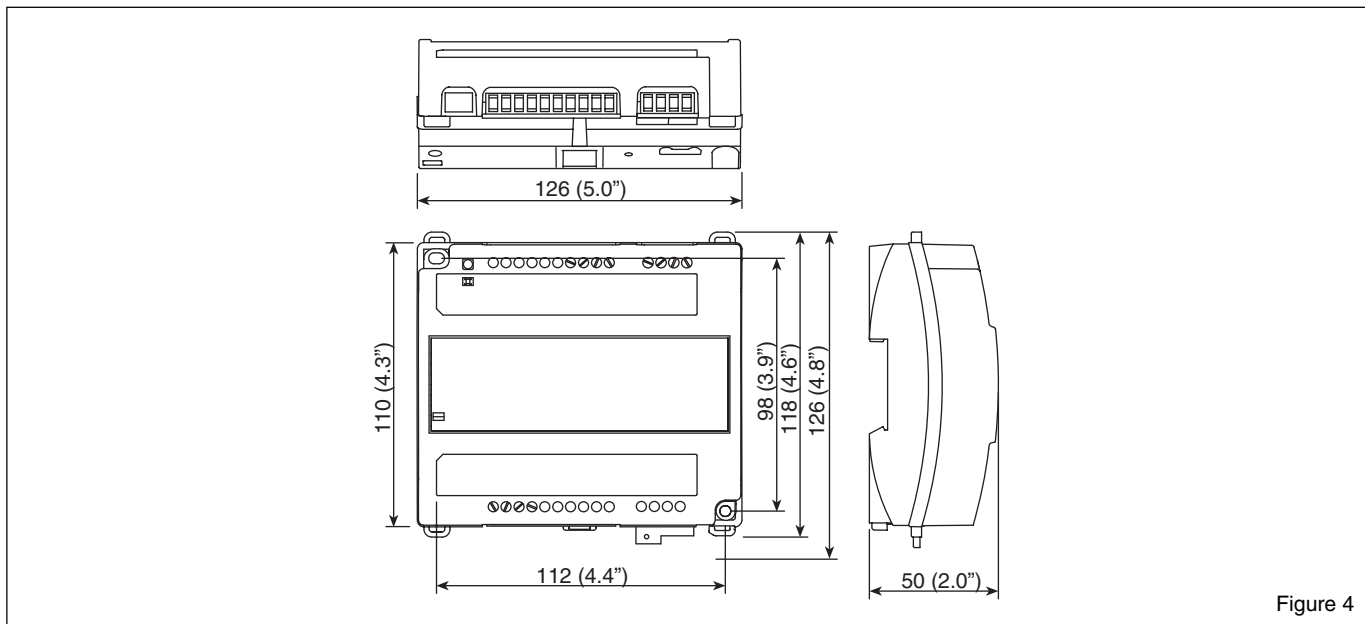
Figure 4

WALL MODULES

Designation	Description	Part number
Zone Sensor ZS 101	Wall module with temperature sensor, mode indication LED and OP connector	0-073-0908
Zone Sensor ZS 102	Wall module with temperature sensor, mode indication LED, setpoint dial and OP connector	0-073-0909
Zone Sensor ZS 103	Wall module with temperature sensor, mode indication LED, bypass button and OP connector	0-073-0910
Zone Sensor ZS 104	Wall module with temperature sensor, mode indication LED, bypass button, setpoint dial and OP connector	0-073-0911
Zone Sensor ZS 105	Wall module with temperature sensor, mode indication LED, bypass button, setpoint dial, fan speed switch and OP connector	0-073-0912

To find your local sales office for TAC products, please see www.tac-gobal.com
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