TAC Xenta® 421A/422A

Universal Input and Digital Output Module   **8 Dec 2004**

TAC Xenta 421A and 422A are Universal Input/Digital Output modules in the TAC Xenta family. They can be used as normal Xenta I/O modules or as certified LONMARK® devices.

Both modules have four universal inputs and five digital outputs. The universal inputs can be used as digital, thermistor, current, or voltage inputs.

In addition, TAC Xenta 422A is equipped with LED status indicators, one for each digital input, and manual override switches for the digital outputs. The LED colors, red or green, can be selected individually by altering the parameter settings in TAC Menta® graphical tool.

The TAC Xenta 421A/422A is linked to a specific controller with the assistance of the TAC Menta.

If several controllers and I/O modules are used in the same network, a special software called the Device Configuration Tool is used during installation.

The input/output status can be checked using the TAC Xenta OP (Operator Panel) when connected to any TAC Xenta controller in the same network. The TAC Xenta OP has a display and a small number of push buttons to facilitate the taking of readings and altering settings.

TECHNICAL DATA

Supply voltage .... 24 V AC ±20%, 50/60 Hz
.... or 21.6–40 V DC
Power consumption .... max. 4 W
Transformer sizing .... 8 VA
Ambient temperature:
  Storage .... –20 to 70 °C (–4 to 158 °F)
  Operation .... 0 to 50 °C (32 to 122 °F)
Humidity .... max. 90% RH non-condensing
Mechanical:
  Enclosure .... ABS/PC
  Enclosure rating .... IP 20
  Flammability class, materials .... UL 94 V-0
  Dimensions .... see diagram
  Weight .... 0.2 kg (0.44 lbs)
Universal Inputs (U1–U4):
  Quantity 4
– as Digital Inputs;
  Voltage across open contact .... 20 V DC
  Current through closed contact .... 3 mA
  Pulse input duration .... min. 20 ms
– as Thermistor Inputs;
  TAC thermistor sensor .... 1800 ohm at 25 °C (77 °F)
  or .. (indiv. selectable) TAC thermistor 10 kohm at 25 °C (77 °F)
  Measuring range .... –50 to 150 °C (–58 to 302 °F)
  Measuring precision .... see table overleaf
– as Current Input;
  Input signal (terminals U–M; over-current protected) .. 0–20 mA
  Input resistance .... 47 ohm
           inaccuracy within ± (0.03 mA + 0.4% of reading)
– as Voltage inputs;
  Input signal .... 0–10 V DC
  Input resistance .... >100 kohm
           inaccuracy ± (7 mV + 0.2% of reading)
Digital outputs (relays; K1–K5):
  Quantity 5
  Control voltage, relay outputs .... max. 2A, 250 V AC
  Control current, to be protected by max. 10 A fuse,
           .... max. 2 A (greater current allowed for short periods)
LED digital input status indicators (TAC Xenta 422A only):
  Quantity 4
  Color .... red or green, selectable in TAC Menta

mm (in.):
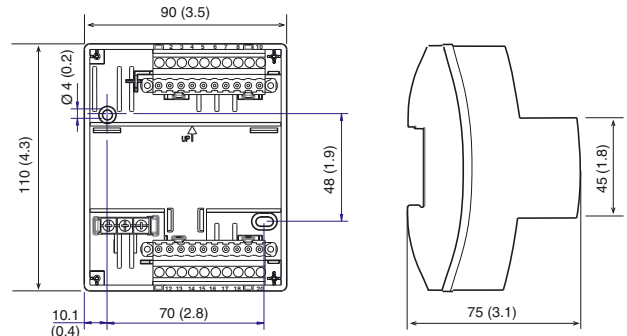
Manual override for digital outputs (TAC Xenta 422A only):
  Quantity 5
  Switch positions .... ON, AUTO, OFF
  Indicators for Auto output status ....green LEDs
Communication, transciever type FTT10A:
  Network ....Echelon LONWORKS® TP/FT-10, 78 kbps
LONMARK® standard
  Interoperability .... *LONMARK Interop. Guidelines v 3.3*
  LONMARK Functional Profiles:
    Analog Input .... #0520
    Digital Output .... #20543
Agency Compliances:
  Emission
     ......C-Tick; EN 61000-6-3; FCC Part 15, Subpart B, Class B
  Immunity .... EN 61000-6-1
  Safety:
    CE ....EN 61010-1
    UL 916 .... C-UL US pending
Part numbers:
  Electronics part TAC Xenta 421A 0-073-0245
  Electronics part TAC Xenta 422A
  (with LED indicators and DO override) 0-073-0246
  Terminal part TAC Xenta 400 0-073-0902
  Operator terminal TAC Xenta OP 0-073-0907

DESIGN

The TAC Xenta 421A/422A consists of a terminal and a circuit board mounted together (figure 1). All terminations of field wires are made to the terminal. Thus, the electronics may be removed for service without affecting the terminal connections.

Universal Inputs

The Universal Inputs can be individually configured as Analog or Digital Inputs, or as pulse counters. A high and a low limit can be set for each Universal Input. If configured as Digital Inputs, the Universal Inputs may be used for sensing switch positions.

The Universal Input types are selected via the application program.

Digital Outputs

There are five Digital Outputs for the control of equipment such as fans, pumps or similar devices. The output signal can be pulse width modulated and can also be used to control increase/decrease actuators.
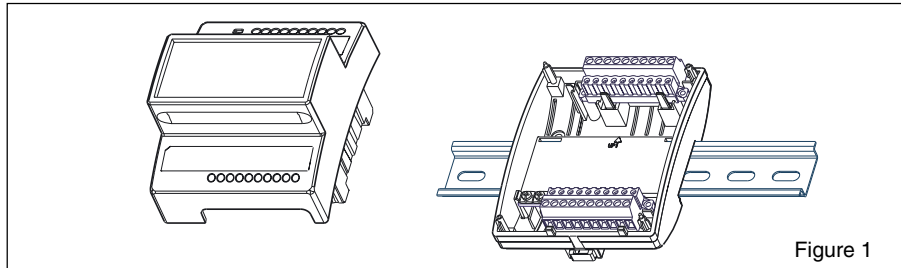
Figure 1

LED Indicators

There are two general LED indicators on the front of the module. One is red and lights up if there is a hardware fault. The other is green and blinks to indicate that the module is online.

The *TAC Xenta 422A* is equipped with four additional status indicators, one for each universal input used as a DI.

The corresponding LED can be configured in TAC Menta to light up either when the input status is ON or when it is OFF.

The 422A status indicator colors, red or green, can be selected individually by altering the settings in TAC Menta.

Pulses are always indicated with green LEDs.

There are an additional five switches that can be used to manually override the digital outputs. These LED indicators are green and are used to show the status of the Auto output signal.

MOUNTING

TAC Xenta 421A/422A is cabinet mounted on a TS 35 mm DIN rail EN 50022. The Input/Output module consists of two parts: a terminal with screw terminals and electronics with circuit board. To simplify installation the terminal can be pre-mounted in the cabinet (see figure 1).

If the module is to be wall mounted, a wide range of standardized boxes are available.

CABLES

G and G0:
Min. wire size of 0.75 mm^2 (18 AWG).

C1 and C2:
The TP/FT-10, 78 kbps system allows the user to wire the control devices with virtually no topology restrictions. The max. wire distance in one segment depends on the type of wire and the topology.

For network segments installed as bus topology, using the Belden 85102 cable, the max. cable length is 2700 m (9000 ft.).

For other applications, please refer to the TAC Xenta Network guide. The wires are polarity insensitive, but must be a twisted-pair.

Terminals U1–U4:
Min. wire size 0.25 to 0.75 mm^2 (18 to 22 AWG).
Max. cable length 20 to 200 m (66 to 660 ft.). (Please refer to the 0-004-7771 TAC Xenta 400 I/O Modules handbook for details).

Terminals K1–K5:
Min wire size of 0.75 to 1.5 mm^2 (18 to 16 AWG). Max. cable length 200 m (660 ft.).

INSTALLATION

There is a label on the front of the controller with both the numbers and the names of the terminals (1 G, 2 G0 and so on). The numbers are also stamped on the plastic of the terminal part.

Service Pin

To simplify network commissioning, there is a service pin on the electronic unit which, when pressed, identifies the unit on the network.

The unique Neuron ID is printed on a label attached to the unit.

Terminal Connections

Term. no.	Term. name	Description
1	G	} 24 V AC/DC
2	G0	
3	C1	} LONWORKS
4	C2	TP/FT-10, 78 kbps
5	U1	Universal input
6	M	Measurem. neutral
7	U2	Universal input
8	U3	Universal input
9	M	Measurem. neutral
10	U4	Universal input

Term. no.	Term. name	Description
11	K1	Relay 1
12	K1C	"
13	K2	Relay 2
14	K2C	"
15	K3	Relay 3
16	K3C	"
17	K4	Relay 4
18	K4C	"
19	K5	Relay 5
20	K5C	"

COMMUNICATION

LONWORKS Connection

TAC Xenta 300/400 controllers and I/O-modules communicate with each other using a common bus, Echelon LONWORKS® TP/FT-10, Free Topology, 78 kbps. A number of controllers can form a network and exchange data.

Additional I/O units can also be connected to the network.

An I/O unit can only be associated with one controller.

The LonTalk® protocol makes it possible to use Network Variables (for example I/O values) defined in third party equipment.
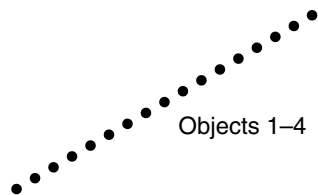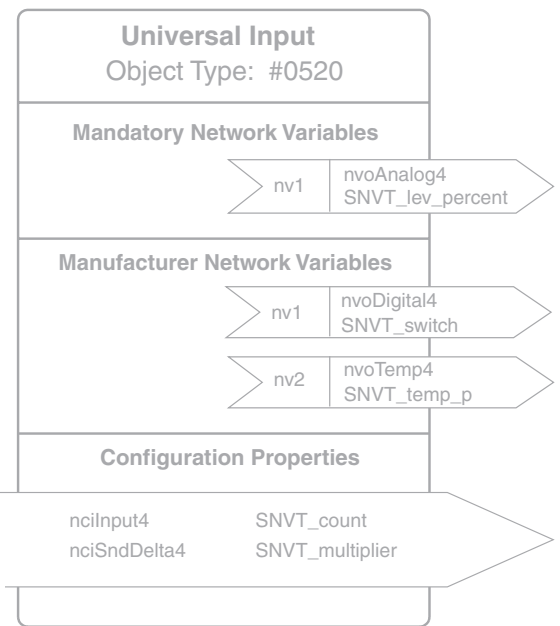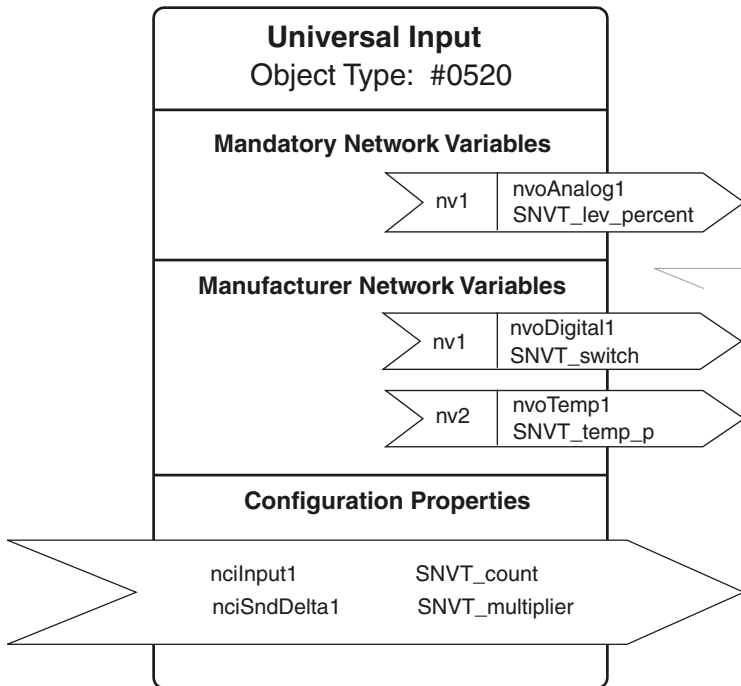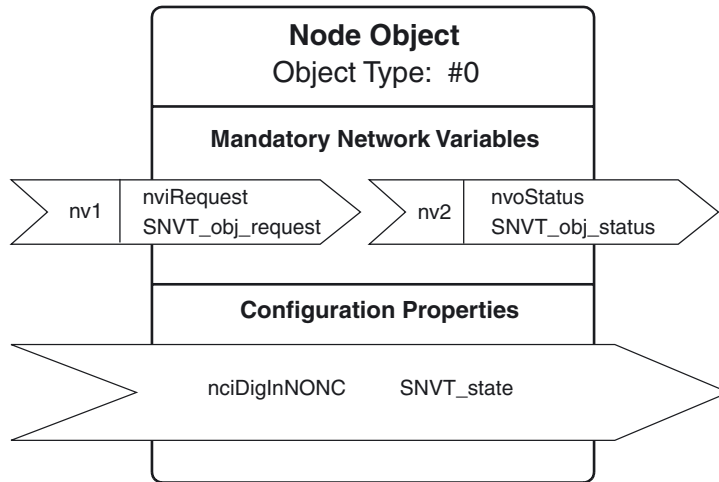
MAINTENANCE

Caring for the controller includes keeping it dry and keeping it clean using a dry cloth.

THERMISTOR INPUTS

Precision, measurement input:
-50 to -30 °C (-58 to -22 °F)
.... ±1.5 °C (±2.7 °F)
-30 to ±0 °C (-22 to +32 °F)
.... ±0.5 °C (±0.9 °F)
±0 to +50 °C (32 to 122 °F)
.... ±0.2 °C (±0.4 °F)
50 to 100 °C (122 to 212 °F)
.... ±0.5 °C (±0.9 °F)
100 to 150 °C (212 to 302 °F)
.... ±1.5 °C (±2.7 °F)

0560 4-channel configurable I/O

Node Object
Object Type: #0

Mandatory Network Variables

nv1 | nviRequest
SNVT_obj_request

nv2 | nvoStatus
SNVT_obj_status

Configuration Properties

nciDigInNONC   SNVT_state

Universal Input
Object Type: #0520

Mandatory Network Variables

nv1 | nvoAnalog4
SNVT_lev_percent

Manufacturer Network Variables

nv1 | nvoDigital4
SNVT_switch

nv2 | nvoTemp4
SNVT_temp_p

Configuration Properties

nciInput4   SNVT_count
nciSndDelta4   SNVT_multiplier

Universal Input
Object Type: #0520

Mandatory Network Variables

nv1 | nvoAnalog1
SNVT_lev_percent

Manufacturer Network Variables

nv1 | nvoDigital1
SNVT_switch

nv2 | nvoTemp1
SNVT_temp_p

Configuration Properties

nciInput1   SNVT_count
nciSndDelta1   SNVT_multiplier

Objects 1–4

420 Dig Outs
Object Type: #20543

Mandatory Network Variables

Manufacturer Network Variables

nv1	nviDO1 SNVT_switch	nv6	nvoHandBoard1 SNVT_switch
nv2	nviDO2 SNVT_switch	nv7	nvoHandBoard2 SNVT_switch
nv3	nviDO3 SNVT_switch	nv8	nvoHandBoard3 SNVT_switch
nv4	nviDO4 SNVT_switch	nv9	nvoHandBoard4 SNVT_switch
nv5	nviDO5 SNVT_switch	nv10	nvoHandBoard5 SNVT_switch

Configuration Properties

nciSndHrtBt	SNVT_time_sec
nciRcvHrtBt	SNVT_time_sec
nciOfflineBeh	SNVT_state
nciOfflineVal	SNVT_state