TAC Xenta® 451A/452A

Universal Input and Analog Output Module

0FL-4182-000

Configuration Instruction

LONMARK CONFIGURATION AND VARIABLES

Physical Inputs and Outputs

TAC Xenta 451A/452A can be used as a normal Xenta I/O module or as a certified LONMARK® device. It has

- 8 Universal Inputs (UI)
- 2 Analog Outputs (AO)

In addition, TAC Xenta 452A has two manual switches and potentiometers, one pair for each AO, that can be set

- Auto
- Manual with potentiometer value

To configure the inputs and outputs, and to specify the transmission of values, either ordinary TAC Menta®/Xenta configuration or *nci* SNVTs are used. The usage is explained overleaf ("SNVT vs TAC Xenta I/O module Communication".)

The use of SNVTs requires explicit information listed below.

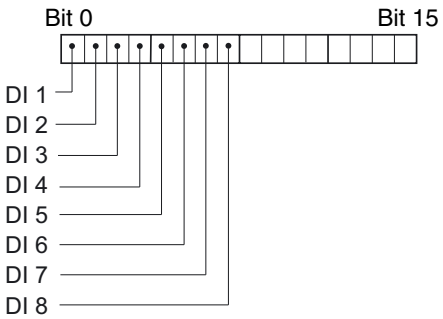
UI Configuration

Each of the four UI:s (1-8) is configured with

nciInput1-8 0 = not connected (default value)
1 = 1.8 kohm thermistor
2 = DI, green indication
3 = 0-10 V
4 = 0-20 mA
5 = 10 kohm thermistor
6 = DI, red indication
7 = DI, green inverted indication
8 = DI, red inverted indication

If configured to be a digital input (DI, any type), its function is further determined by the corresponding bit in

nciDigInNONC:



If bit=0: NO, normally open (default value)

If bit=1: NC, normally closed

Pulse counting is not available for SNVT communication.

UI Values

Depending on the UI configuration, each UI n=1-8 generates a valid value in one of these (the other two are set invalid):

nvoAnalog1-8 (0-10 V or 0-20 mA, converted to 0-100%; invalid=163.835)

nvoDigital1-8 (DI, any type; switch:value=0)
switch:state
state=0: Off (state=255: invalid)
state=1: On

nvoTemp1-8 (thermistor, any type; invalid=327.67)

UI Value Transmission

The UI value will be transmitted

a) when the change in value is large enough (set individually per UI)

b) at a specified time interval (common for all UIs)

a) is determined by

nciSndDelta1-8 (dimensionless; default value=2)
Size of change to cause transmission
Ex.: 1 means
- if configured as analog input: 1%
- if configured as temperature input: 1 °

If the UI is configured as a digital input, a status change will always be transmitted.

b) is determined by

nciSndHrtBt "Heartbeat" interval in seconds (default=60)

A valid and configured UI value will be sent at least once during each interval regardless of change.

The transmissions will be distributed over time to avoid momentary communication overload.

AO Values

The analog output values to the output (AO, n=1-2) are received as:

nviAO1-2 lev_percent: 0-100% corresponding to 0-10 V

For the TAC Xenta 452A, the AO values may be overridden by a manual switch and potentiometer setting. Their status is indicated in

nvoHandBoard1-2 switch:state.
state=1: Manual
state=255 ('invalid'): Auto

(continued ...)

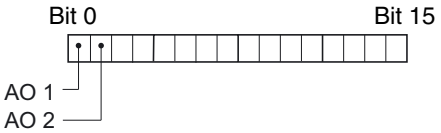
AO Values at Off-line Condition

The AO values are expected to be updated regularly. However, this may be prevented by communication failure or, temporarily, after power-up.

To determine if the *nviAO1-2* are to be considered valid, an interval counter is used:

nciRcvHrtBt No. of seconds until *nviAO1-2* are considered invalid. (0: function is not used; default value.)

If this happens, due to communication failure, the behavior is determined by *nciOfflineBeh*, using the following bits:

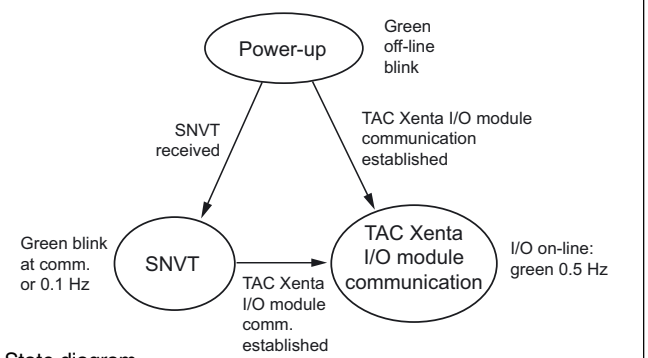


If bit=0: Keep latest value (default).

If bit=1: Use default value as specified by *nciOfflineVal1-2* lev_percent: 0-100% corresponding to 0-10 V. (Default value=0.)

SNVT vs TAC XENTA I/O MODULE COMMUNICATION

The TAC Xenta 451A/452A can be used in networks with either LONMARK communication or TAC Xenta I/O module communication. The device automatically determines which type of communication to use.



State diagram

In the Power-up state, the green LED blinks "Off-line". The device is open for *both* SNVT and TAC Xenta I/O module communication.

Previous configuration, if defined, will apply until a change is initiated.

SNVT received

The device enters the SNVT state. The device is configured when the *nci*:s are updated. The green LED will light up when there is communication or approximately every 10 seconds.

SNVT transmission is determined by the *nciSndDelta1-4* or the *nciSndHrtBt* values.

The device remains in the SNVT state until a TAC Xenta I/O module communication state is established, or until the next power-up. In the SNVT state it is possible to change the configuration by updating the network configuration inputs *nci*:s.

TAC Xenta I/O module Communication

The TAC Xenta I/O module communication state is accepted only after a thorough protocol initiation. This may be initiated at any time.

In the TAC Xenta I/O module communication state, no *nvi*:s or *nci*:s can be used. The green LED blinks on-line at about 0.5 Hz.

Input SNVTs are ignored, also when the device is off-line from the controller.

However, output SNVT transmission is still performed using a hard-coded interval of about 10 seconds.

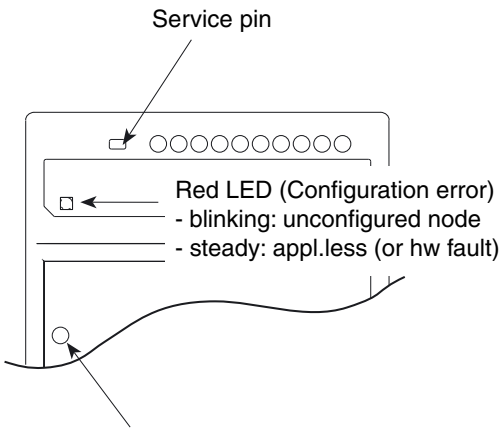
Once in the TAC Xenta I/O module communication state, the device can only enter the SNVT state after a new Power-up. At this stage all *nci*:s must be updated, since the same memory area is used by both the SNVT and TAC Xenta I/O module communication configuration parameters.

Note! As the TAC Xenta I/O module communication state is a 'dead-end' (until power-up), any mis-addressed communication may cause the I/O module to loose its SNVT communication state.

TAC Xenta I/O module communication is inititiated by the controller at events specified below. If an I/O module intended for SNVT communication has been used in another configuration and happens to have an address that is used by the I/O module communication, the I/O module will be 'lost' in this state.

TAC Xenta I/O module communications will be initiated by the following events:

- Controller power-up
- I/O module power-up
- Controller application download
- Recovery after communication failure



LED indicators on front panel

0510 8-channel configurable I/O