TAC Xenta 401:B

Controller, Freely Programmable

TAC Xenta 401:B belongs to a family of freely programmable controllers, with communication features, designed for heating and air handling systems.

A TAC Xenta 401:B holds full HVAC functionality including control loops, curves, time control, alarm handling, etc. The controller does not have any physical inputs or outputs and no TAC Xenta 400 I/O modules can be connected.

This controller may serve as a data manager that can provide time scheduling, data logging, and other logical functions to less capable network nodes.

With the TAC Menta programming tool, a TAC Xenta controller is simple to program and place into operation.

The controller communicates on a LonTalk TP/FT-10 network via a twisted-pair, non-polarized cable. It is able to operate both as a stand-alone unit and as part of a system.

TAC Xenta 401:B can be connected to a modem or the TAC Vista Building Management System.

The controller can be removed/inserted from/to the terminal part without disconnecting the power supply. When adding or replacing a controller it's also possible to pre-configure it in order to achieve Plug and Play functionality without any on-site configurations.

For local use, the TAC Xenta OP (Operator Panel) can be connected. The operator panel has a display and push buttons for navigating and altering settings. The operator panel can be snapped onto the TAC Xenta controller unit, mounted on the front of the cabinet, or used as a portable terminal.

TECHNICAL DATA

Supply voltage . . . . . 24 V AC ±20%, 50/60 Hz or 19–40 V DC
Power consumption . . . . . max. 2 W
Transformer sizing . . . . . 2 VA

Ambient Temperature

Storage . . . . . –20 °C to +50 °C (–4 °F to +122 °F)
Operation . . . . . ±0 °C to +50 °C (+32 °F to +122 °F)
Humidity . . . . . max. 90% RH non-condensing

Mechanical

Enclosure . . . . . ABS/PC
Enclosure rating . . . . . IP 20
Flammability class, materials . . . . . UL 94 5VB
Dimensions . . . . . see Fig. 1
Weight . . . . . 0.5 kg (1.2 lb)

CPU

CPU . . . . 32 bit, 12.28 MHz, 2 MB flash memory, 128 kB SRAM

Real Time Clock

Accuracy at +25 °C (77 °F) . . . . . ±12 minutes per year
Power outage protection . . . . . 72 h

Communication

TAC Menta; modem . . . . . 9600 bps, RS-232, RJ-45
TAC Vista . . . . . TP/FT-10, screw terminal
(also for application program download)
TAC Xenta OP . . . . . TP/FT-10, modular jack

LonMark Standard

Interoperability . . . . . LonMark Interop. Guidelines v 3.0
Application . . . . . LonMark Functional Profile: Plant Controller

Agency Compliances

Emission:
CE . . . . . EN 61000-6-3, C-Tick, FCC Part 15
Immunity:
CE . . . . . EN 61000-6-1
Safety:
CE . . . . . EN 61010-1
UL 916, C-UL US, Enclosed Energy Management Equipment
Approved for plenum installations
RoHS directive 2002/95/EG

Part Numbers

Electronics part TAC Xenta 401:B 007301030
Terminal part TAC Xenta 400 007309020
Operator panel TAC Xenta OP 007309072
TAC Xenta: Programming Serial Kit 007309200

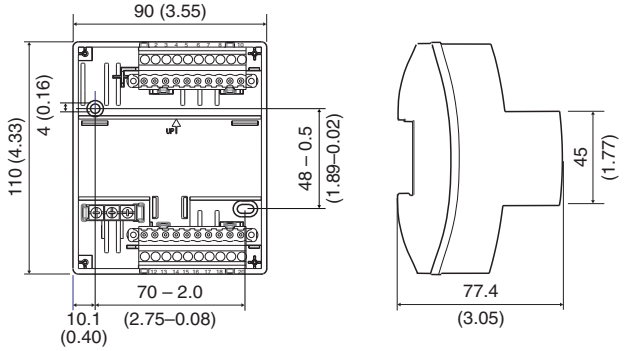

Figure 1

DESIGN

The TAC Xenta 401:B controller has been designed as a general purpose controller. It is normally mounted in a cabinet with several controllers collected per floor or per building.

The large network variable input capacity makes TAC Xenta 401:B well suited for zone system management applications.

TAC Xenta 401:B is microprocessor based. It consists of a terminal and electronics mounted together (Fig. 2).

TAC Xenta 401:B can, via network variables, be interfaced with other LON-based field sensors/transducers and controlled devices.

The 401:B does not, however, support TAC Xenta I/O modules.

Local Operator Panel

The TAC Xenta OP (Operator Panel) is a small operator panel which can be connected to the unit through its enclosure. The operator can read the point status, perform manual override, read measured values, alter set points etc., from the operator panel.

The functions are selected from menus. Access to the unit is enabled by using an access code. It is possible to access other TAC Xenta units on the same network.

Power Outage Protection

With non-volatile (flash) memory, the unit will start up with user settings and work normally after a power outage.

Real Time Clock

The real time clock provides data such as year, month, date, day, hour, minute and second. A built-in capacitor maintains operation of the clock for at least 72 hours in the event of a power outage.

Daylight Saving Time:

European, Australian or USA/Canada

Once set, Daylight Saving Time (DST) is fully automatic. The change-over date and the number of hours to change are programmable. This function can also be disabled.

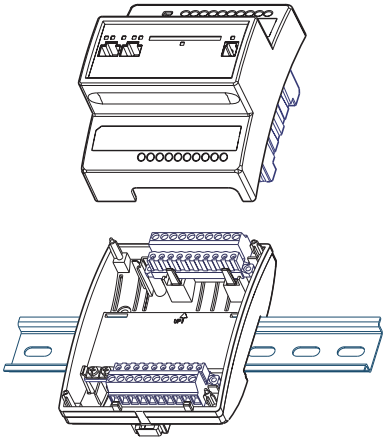

Figure 2

LonWorks SNVT Support

The use of Standard Network Variable Types (SNVT), in accordance with the Echelon specification, makes it possible to communicate with nodes made by other manufacturers.

SOFTWARE FEATURES

With the assistance of TAC Menta, a graphical programming tool using Functional Block Diagrams (FBDs), the TAC Xenta 401:B may be easily adapted to different control and monitoring tasks.

The basic functions available with this controller include:

- alarm handling, alarm conditions may be detected via LonWorks Network variables
- equipment run time totals on selected objects
- programs for optimum start/stop
- control characteristic curves
- PID control loops (loops may be connected in cascade)
- trend logging for up to 50 channels
- local level operator interface via TAC Xenta OP (Operator Panel)
- network communication according to the LonTalk protocol
- communication with the TAC Vista Building Management System via modem

The basic software is adapted to the current application by connecting pre-programmed functional blocks and by adjusting the relevant parameters. These connections and parameters are stored in non-volatile memory.

The parameters may be changed during ongoing operation either from the TAC Vista Building Management System or locally from the TAC Xenta OP (Operator Panel).

COMMUNICATION

LonWorks Connection

TAC Xenta controllers communicate with each other using a common network, LonWorks TP/FT-10.78 kbps.

TAC Vista Building Management System

When connected to a TAC Vista Building Management System, the operating conditions of the fans, pumps, heat exchangers, etc. can be monitored in color graphics or printed reports.

Temperatures and alarms can be read, while setpoints, time settings may be altered as required.

TAC Xenta controllers can be reached from TAC Vista in one of the following ways:

1 Any controller in the network via a PCLTA card or via a TAC Xenta 511 or 911 acting as an LTA.

2 A specific controller via the RS-232 connection. (All versions starting with v 3.x.)

3 Any base unit in the network via TAC Xenta 901 LonTalk adapter (and an optional modem connection), with the additional capability for the base unit to initiate the dial-up.

Application programs generated in TAC Menta may be downloaded from TAC Vista via the network.

TAC Xenta Operator Panel Port

The TAC Xenta OP (Operator Panel) is also connected to the network and can thus act as an operator panel for other units in the network. The connection is made via the modular jack on the front of the controller or directly, using the network cable.

RS-232 Port

The TAC Xenta 401:B controller has an RS-232 port. This port is intended for connection to a PC with the TAC Menta programming tool for loading and commissioning the application programs.

The port can also be used for connection via modem between TAC Vista and specific TAC Xenta 401:B units (see 2 under "TAC Vista Building Management System" above).

SYSTEM CONFIGURATIONS

The TAC Xenta 401:B controller can be used as a zone manager in different configurations;

- as a stand-alone unit (together with suitable LonMark-approved equipment)
- as a controller (with operator panel) in a small network, with extra zone controllers as required
- as a controller (with operator panel) and other equipment in a full network with suitable adapters, possibly connected to a TAC Vista Building Management System

Fig. 3 shows an example of a networked TAC Xenta configuration.

TAC Xenta 401:B does not support any I/O-modules.

It communicates with other units on the network using Network Variables.

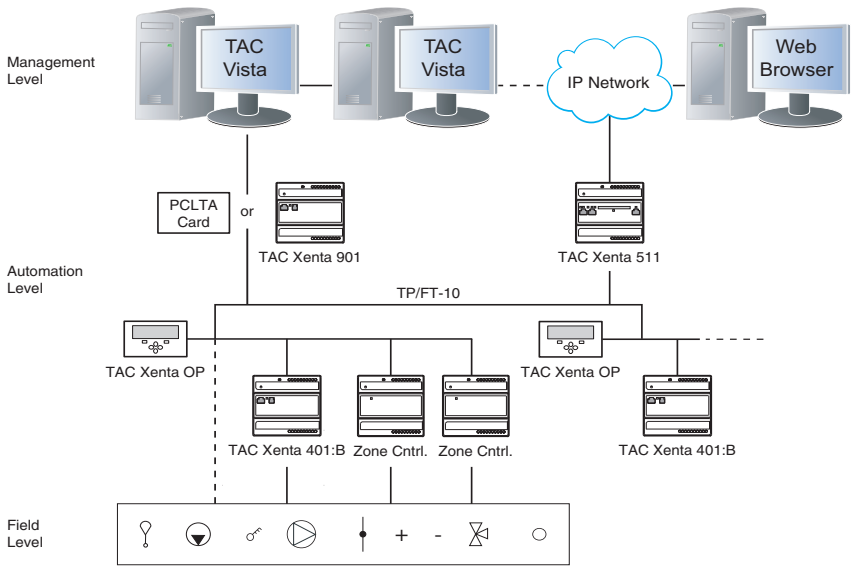

Figure 3

TAC XENTA NETWORK AND UNIT PERFORMANCE

LonWorks

No. of I/O modules 0
No. of STR350/351 (non-SNVT mode) 0
No. of subscriptions*
In . . . . . max. 210
Out . . . . . max. 70
Total** . . . . . max. 250

Trend Logging in TAC Xenta 401:B

Channels 1–50
Interval . . . . . 10 s – 530 weeks
Total logging capacity. . . . approx. 7,000 floating point numbers
. . . . . or approx. 15,000 integers
. . . . . or approx. 110,000 digital values
Optimized storage . . . . . Yes

Application Size

Program and data . . . . . max. approx. 234 kB
Parameters . . . . . max. approx. 234 kB

* Subscriptions can utilize Standard Network Variable Types (SNVTs) or TAC Network Variables (TACNVs). These can be combined if the following restrictions are observed: the sum of the TACNV subscriptions and the number of SNVT members (no. of values in structured SNVTs) does not exceed the stated figures.

** Please note that the total max. is less than the sum of the possible inbound and outbound subscriptions.

MOUNTING

The TAC Xenta 401:B is cabinet mounted on a TS 35 mm Norm rail EN 50 022.

The controller unit consists of two parts; a terminal part with screw terminals, and electronics with the circuit boards.

To simplify installation, the terminal can be pre-mounted in the cabinet (see Fig. 2).

The operator panel is either mounted onto the controller on the snap-in connector, or flush-mounted in the cabinet front. It can also be used as a portable, hand held panel.

If the TAC Xenta 401:B controller is wall mounted, a wide range of standardized boxes are available.

CABLES

G and G0

Min. area 0.75–1.5 mm² (19–16 AWG).

Cable with modular jack for RS-232 serial communication port: Max. 10 m (32 ft).

C1 and C2

TP/FT-10 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, see the table below.

For more details, see the TAC Xenta 280/300/401 Handbook (part no. 0-004-7768).

Cable	Max. bus length, doubly terminated bus topology m (ft)	Max. node-to-node distance, singly terminated free topology m (ft)	Max. length singly terminated free topology m (ft)
Belden 85102, single twisted pair	2,700 (9,000)	500 (1,600)	500 (1,600)
Belden 8471, single twisted pair	2,700 (9,000)	400 (1,300)	500 (1,600)
UL Level IV 22AWG, twisted pair	1,400 (4,600)	400 (1,300)	500 (1,600)
Connect-Air 22AWG, one or two pairs	1,400 (4,600)	400 (1,300)	500 (1,600)
Siemens J-Y(st)Y 2x2x0.8 4-wire helical twist, solid, shielded	900 (3,000)	320 (1,000)	500 (1,600)
TIA568A Cat. 5 24AWG, twisted pair	900 (3,000)	250 (820)	450 (1,500)

INSTALLATION

There is a label on the front of the controller with both the numbers and the names of the terminals (1 C1, 2 C2 and so on). The numbers are also shown in the plastic of the terminal part.

TAX Xenta Operator Panel

The TAC Xenta operator panel can easily be connected to the network by means of the modular socket on the front of the controller.

LED Indicator

An LED indicator on the electronic unit of the TAC Xenta 401:B indicates when the application program is running.

Service Pin

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

Terminal Connections

Term. No.	Term. Name	Description
1	G	24 V AC (or DC+)
2	G0	Ground
3	C1	LonWorks TP/FT-10
4	C2	LonWorks TP/FT-10

MAINTENANCE

The only care needed is to keep the controller dry and to clean it externally with a dry cloth when needed.

03-00010-03-en Jan 2011

Schneider Electric