



TAC Xenta® 122-FC

Flexible Control for Zone Applications

TAC Xenta 122-FC is an easily programmable controller intended for both 2-pipe and 4-pipe applications, with or without re-heat. It can be configured for use with a multitude of valve actuator types, such as on/off, multistage, increase/decrease, PWM, and so on. The controller has different types of fan control and advanced fan control functions, including on/off delays, boosting, and conditioning.

The sequences for cooling, heating, and fan are completely user-programmable, allowing for numerous applications. For energy savings the controller has built-in economizer functionality. Use TAC Xenta 122-FC with any TAC STR (1.8 kohm) room unit or I/A 10 kohm sensor.

The controller offers a comprehensive and flexible set of I/O-ports, making it ideal for many other applications provided for down-loading.

Set-up is done using the programming tool TAC ZBuilder, which can be run stand-alone or together with either SmartStruxure, TAC Vista® or an LNS-based tool. Using Vista or an LNS-based tool, the configuration settings are downloaded into a TAC Xenta 122, prepared with the necessary basic application software.

The controller is a LonMark® compliant device aimed at communicating on a LonTalk® TP/FT-10 channel. It is able to operate both as a stand-alone device and as part of a system. In- and output network variables can be monitored via the TAC Xenta OP, but programming relies on the use of the TAC ZBuilder.

TECHNICAL DATA

Supply Voltage

FC/24 24 V AC $\pm 20\%$, 50–60 Hz
FC/230 230 V AC $\pm 10\%$, 50–60 Hz

Power Consumption

Controller 3 VA
Xenta OP (light on) 1 VA
FC/24:

Triac Outputs max 4 x 19 VA = 76 VA
FC/230:

Triac Outputs, individually and total max 16 VA
. (at nominal voltage with no OP connected)
Total power FC/24 = 84 VA
. FC/230 = 20 VA

Ambient Temperature

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

Enclosure

Material ABS/PC plastic
Enclosure rating IP 20
Flammability class, materials UL 94 5VB
Color gray/red
Dimensions, mm (in.) 122×126×50 (4.8×5.0×2)
Weight, kg (lb.) FC/24: 0.3 (0.66), FC/230: 0.6 (1.3)

Inputs X1–X3, U1–U4 as digital input

Voltage across open contact 23 V DC ± 1 V DC
Current through closed contact 2.5 - 4 mA
Minimum pulse input duration 250 ms

U1–U4 as temperature inputs

Thermistor types 1.8 k Ω (Xenta)
. 10 k Ω (I/A)
Measuring range –10 °C to +50 °C (14 °F to 122 °F)
Accuracy ± 0.2 °C (± 0.4 °F)

U1–U4 as voltage inputs

Range 0–10V DC
Accuracy 10 mV ± 0.5 % of reading

Input R1

Type 10 k Ω linear potentiometer
Adjustment range software configurable

Triac Outputs V1–V4 for heating/cooling valve actuators, 24 V AC Internally Supplied

Maximum load per output FC/24: 0.8 A, FC/230: 0.7 A
Total output load FC/24: 3.2 A, FC/230: 0.7 A

Relay Outputs K1–K3

Maximum voltage 250 V AC
Maximum resistive load 3 A

Relay Output K4

Maximum voltage FC/24: 24 V AC, FC/230: 250 V AC
Maximum resistive load 12 A

Voltage Output Y1–Y3

Range 0–10 V DC
Accuracy 30 mV ± 0.5 % of set value
Maximum load 2 mA

Indication LED Colors

Power green
Service red

Interoperability

Standard TAC Xenta 122-FC conforms to
LonMARK Interoperability Guidelines 3.4 and
LonMARK Functional Profile: 8501 SCC – Fan Coil
Communication protocol LonTalk
Physical channel TP/FT-10, 78 kbps
Neuron FT-5000

Agency Compliances

Product Standard EN 50491-1
Emission: CE EN 50491-5-2, RCM, FCC 47/15/B/B
Immunity: CE EN 50491-5-3
Safety: CE EN 50491-3, EN 60730-1, EN 60730-2-11
UL 916, C-UL US, Open Energy Management Equipment
(TAC Xenta 122-FC/24): Approved for plenum installations
Energy eu.bac Certified Products 03-00147
RoHS directive 2011/65/EU

Part Numbers

Contr Zone TAC Xenta 122-FC/24 007307110
Contr Zone TAC Xenta 122-FC/230 007307120
Manual 0-004-7692
Plug-in Terminal Blocks TAC Xenta 100 007309140

APPLICATION EXAMPLES

TAC Xenta 122-FC can be programmed to have up to two heating devices and one cooling device. Each of these can be a multistage, pwm, analog, or increase/decrease device.

A Fan Coil unit can have a heating coil and a cooling coil (4-pipe, Fig. 1a).

It can also be a combined cooling and heating coil (2-pipe, Fig. 1b). For the

2-pipe application, a water temperature sensor is required for crossover.

An electrical heater is common as the second device.

The user defines the sequence; there are no restrictions that a specific device be activated first, in parallel, in series, or so on.

Fan control outputs are always either a multistage output (1, 2, or 3 stages) or an analog output.

Economizer control using an outside air damper, as well as CO₂ control and %RH control are available.

When the temperature in the zone increases, the heating valve closes, see Fig. 2. If there is still a cooling demand, the cooling valve opens and the fan speed increases in steps until the highest fan speed is reached.

This sequence is reversed when the temperature drops.

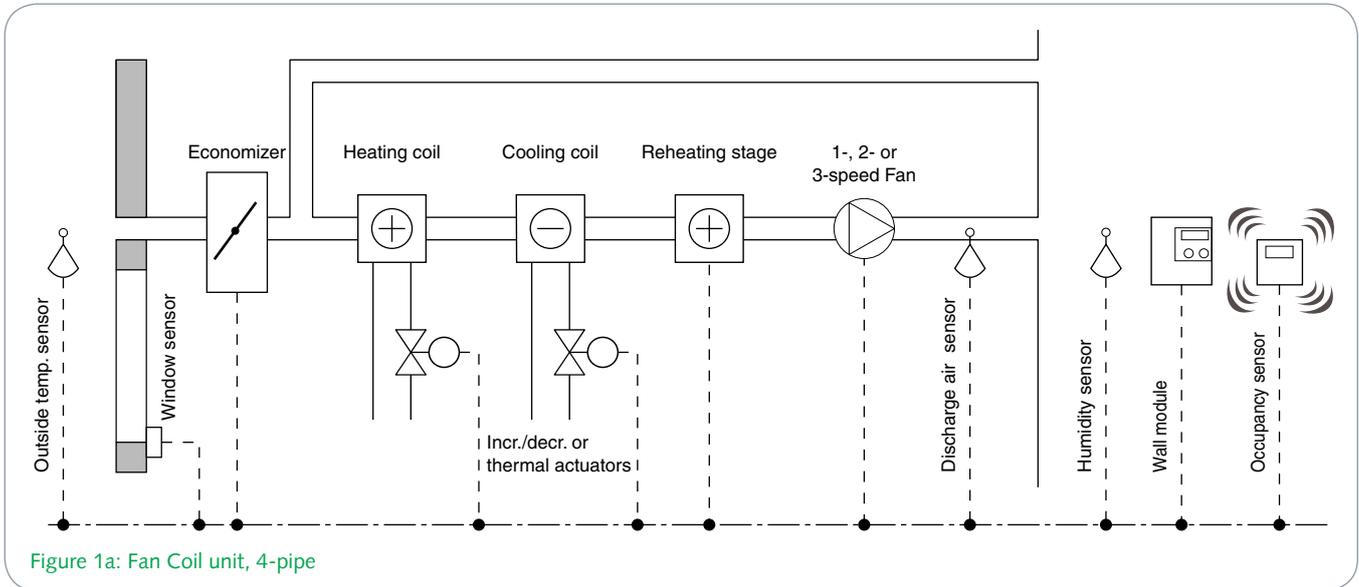


Figure 1a: Fan Coil unit, 4-pipe

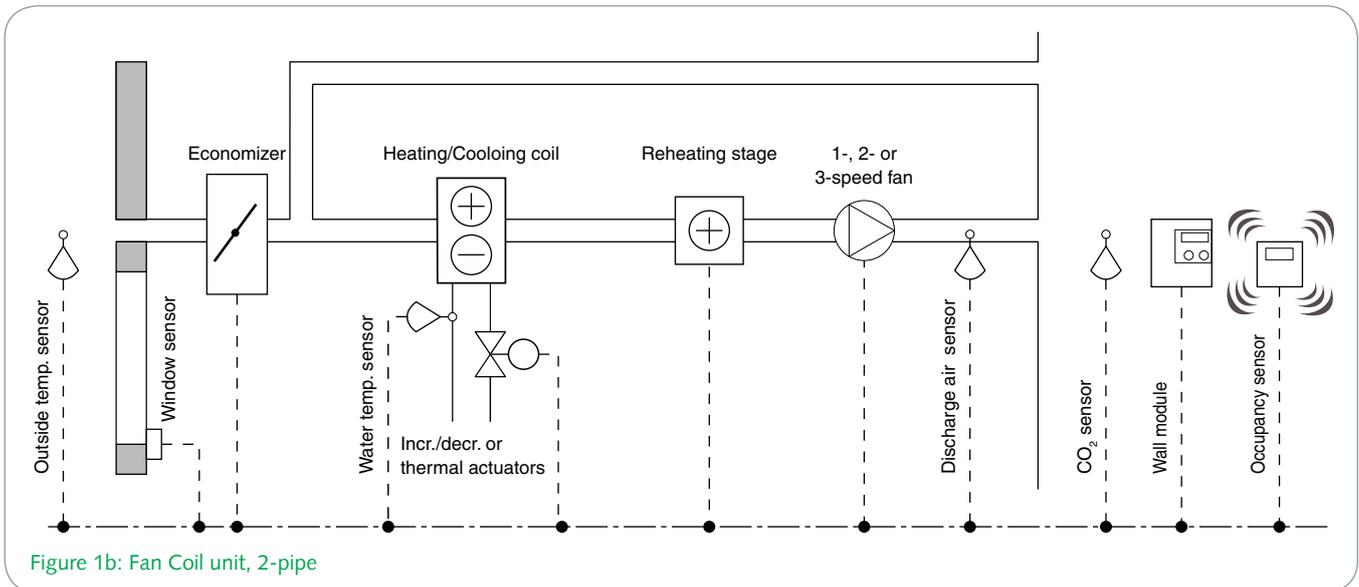


Figure 1b: Fan Coil unit, 2-pipe

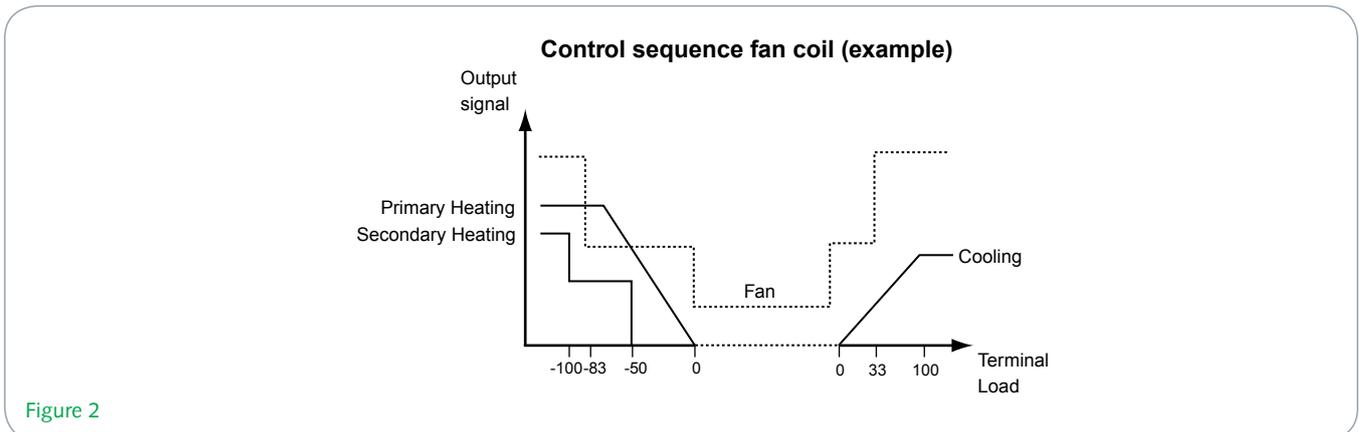


Figure 2

CONTROL OPTIONS

The valve control options are as follows:

Analog, 0–10V

6-Way Control Valve

Control of heating and cooling using one single 0-10V signal. The ranges for cooling and heating are configurable. Alternatively, the change-over can be done by means of a digital output.

Incr/Decr (3-point)

Pulse Width Modulation

One digital signal gives a modulating signal by using a variable duty cycle.

Multistage

1–3 digital outputs are used to give up to three levels of control. A special case of this is one stage, which is just on/off.

General

For the different types of control, different set-ups like scaling or signal limitation values, hysteresis, timing, and so on, can be given.

Any type of control can be used with any equipment, but some types are more suitable than others.

All control can be done either over physical outputs of the controller or on other devices connected to the controller over a LON® network.

Available I/O

3 digital inputs (X)

4 universal input (U): temperature, digital or analog

1 pot.meter input (R): linear 10 kohm

4 Triac outputs (V): valve actuators or other devices

4 relay outputs (K): Fan or other devices

3 analog outputs, 0-10 V (Y): analog or LED

INSTALLATION

To satisfy regulatory safety requirements, the controller must be built-in when line voltage is connected.

It may be mounted on a DIN rail or fastened onto a surface with screws.

There are two sockets provided for that purpose.

Cable lengths

Communication cables: please refer to the TAC Xenta Network Guide, part no. 0-004-7460.

CONFIGURATION OPTIONS

By selecting among the Configuration Modules in the TAC ZBuilder, it is possible to achieve different options in TAC Xenta 122-FC for the following:

Space (Wall module) and outside temperature sensors

Discharge (Supply) Air temperature sensor

Water temperature sensor (2-pipe)

Setpoint adjustment

Outside air damper (Economizer control)

Relative Humidity sensors, space and outside

Reversing valve

CO₂ sensor

Bypass or On/Off button

Room temperature offset scaling

Occupancy sensor

Fan status

Window contact

Freeze protection

Alarm output

Main switch (for example, hotel room key)

TAC Xenta OP can be used to inspect nvi and nvo values. Due to the many configuration possibilities, it cannot be used to configure the controller.

OTHER FUNCTIONS

Exception Modes

Exception Mode is a common name for all kinds of situations where normal control no longer can be used.

Up to eight different exception modes can be configured.

Each mode will have its predefined values on heating devices one and two, cooling device, fan status, speed, and outside air damper. If applicable, it can also be connected to a digital output.

Each of the eight exception modes has its own indicator in nvoSystemStatus.

When the exception mode situation clears, it is possible to configure if it is allowed to go out of the exception mode and, if so, the delay before normal control is resumed.

Examples where exception modes are useful:

Window contact

Main Switch

Smoke input

Freeze protection

Resync

All outputs configured as inc/dec outputs will have a cyclic resync interval of 18 h.

Resync can also be initiated via nviDOResync and is. It is configurable to synchronize toward open or closed position.

Installations Test – Checkout Mode

To facilitate the testing and installation, it is possible to override the physical outputs. By setting a certain status override SNVT, all outputs will be controlled by the user, who can test them freely. No fan interlock or other logical conditions will be activated.

Forcing the Space temp makes it possible to verify the sequence.

Unused Digital Inputs and Outputs

Some digital outputs will have a SNVT input, which allows any other LON device to control these digital outputs.

A condition is that the application is not using the output. Some unused inputs will have the same functionality, using a SNVT output.

Not all digital inputs/outputs can have a mirror SNVT, due to the limitation of the SNVTs. If feasible, the same will be applied for analog in/outputs.

Flexible Combinations

By using TAC ZBuilder stand-alone on a PC, you can easily explore the many features and the great versatility of this product.

Please refer to the TAC ZBuilder data sheet 0-003-3010 for further details about the easy way to program your TAC Xenta 122.

LonMARK OBJECTS AND NETWORK VARIABLES

Additionally, the following objects are used, all with their configuration parameters handled by TAC ZBuilder:

Config. Param.	Description
20023	Application Object
20024	Control Object
20026	Fan Object
20028	I/O Object
20025	Temperature Control Device Object
20027	Exception Mode Object

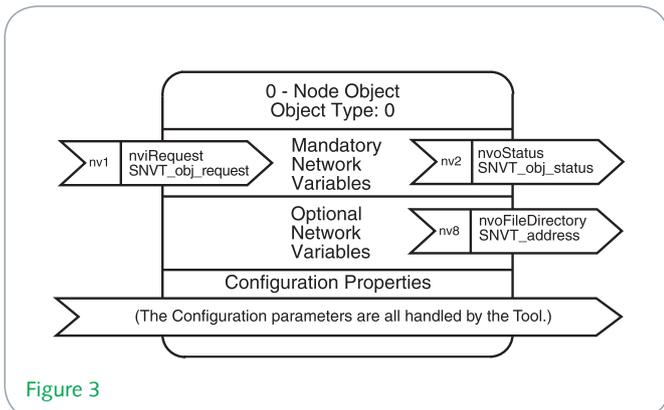


Figure 3

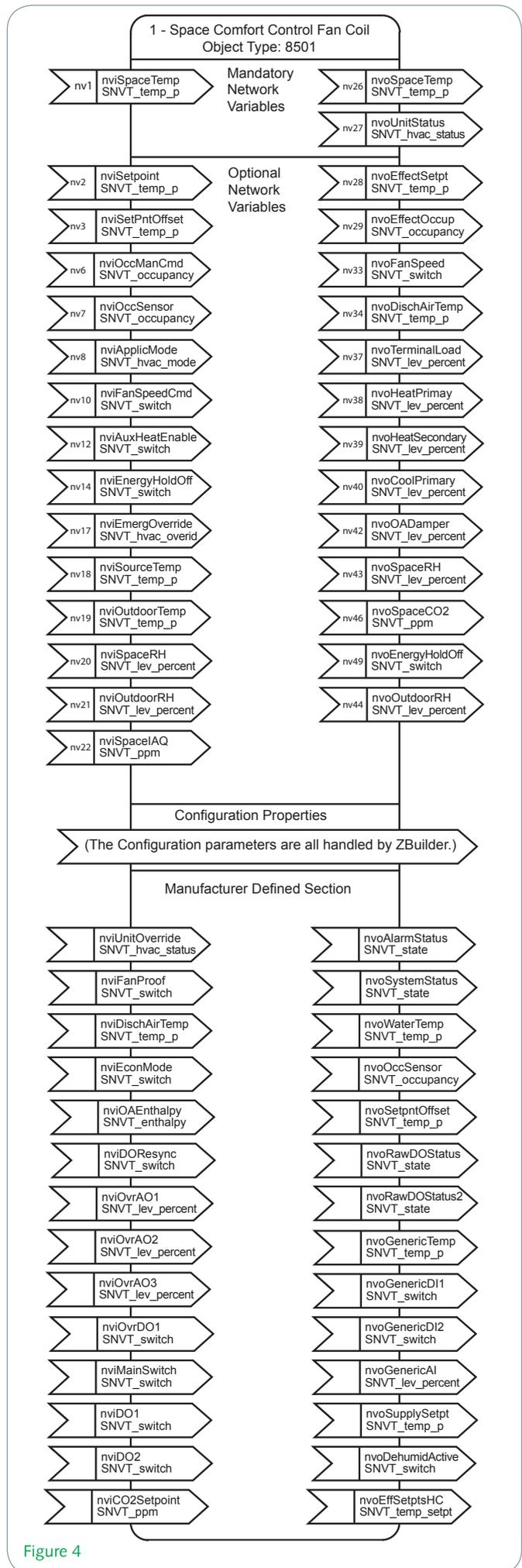


Figure 4

HARDWARE INTERFACE

No.	Designation	Description
1	X2	Input, digital
2	U2	Universal input 2
3	X3	Input, digital
4	U4	Universal input 4
5	Y1	Analog output 1
6	Y2	Analog output 2
7	X1	Input, digital
8	R1	Input, setpoint offset dial on wall module
9	M	Measurement neutral
10	U3	Universal input 3
11	K4	Output, relay 4
12	KC2	Relay 4, common
13	G0 or N	See 14
14	G or L	FC/24: 24V AC Supply FC/230: Mains Supply
	OP	TAC Xenta OP RJ-10 access connector

No.	Designation	Description
15	C1	TP/FT-10 communication channel
16	C2	See above
17	Y3	Analog output 3
18	U1	Universal input 1
19	V1	Output, Triac 24 V AC
20	G	24 V AC (L) output for V1 and V2
21	V2	Output, Triac 24 V AC
22	V3	Output, Triac 24 V AC
23	G	24 V AC (L) output for V3 and V4
24	V4	Output, Triac 24 V AC
25	K3	Output, relay 3
26	K2	Output, relay 2
27	K1	Output, relay 1
28	KC1	Relay 1-3, common

DIMENSIONS

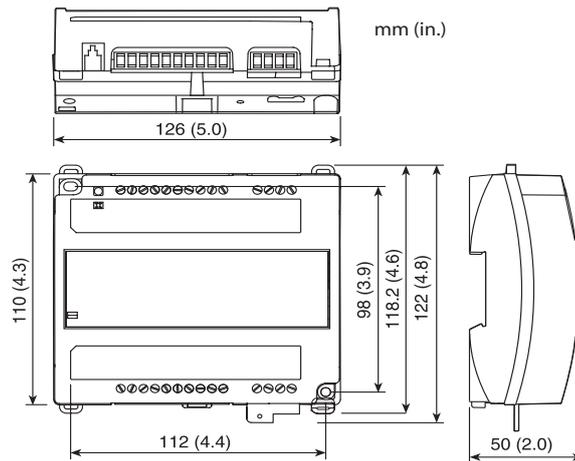


Figure 5

ROOM UNITS

The STR is a series of wall modules optimized for public facilities such as office buildings, hotels, hospitals, schools and shopping malls.

The following room units can be configured with the TAC Xenta 122-FC.

Model	Temp. Sensor	Mode Indicator	Setpoint Offset	Bypass Button	Fan Speed Control	Back Light	SNVT Binding Required
STR100	X						
STR101	X	X					
STR102	X	X	X				
STR103	X	X		X			
STR104	X	X	X	X			
STR106	X	X	X	X	X*		
STR107	X	X	X	X	X**		
STR150	X	X	X	X	X***		
STR350	X	X	X	X	X***		X
STR351	X	X	X	X	X***	X	X

* STR106 Fan speed: Auto-0-I-II-III

** STR107 Fan speed: Auto-Off-On

*** STR150, 350/351 Fan speed: configurable

PART NUMBERS

STR100	.....004600100
STR100-W (White)	.....004600110
STR101	.....004600200
STR102	.....004600300
STR103	.....004600700
STR104	.....004600400
STR106	.....004600500
STR106-B	.....004600800
STR106-3	.....004600900
STR107	.....004600600
STR150	.....004602800

LON Modules

STR350	.....004605000
STR351	.....004605100

ENERGY CERTIFICATION

A TAC Xenta 122-FC/230 controller, connected to various field devices, forms a system which is energy certified according to the eu.bac regulation EN 15500.

All eu.bac certified products and peripheral devices are found on the Eubac website.

For more information,
see www.eubaccert.eu

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