

Schneider Series Service Manual

TSXCAY22

1. Description

The Schneider Electric TSXCAY22 is a multifunctional control module designed for a range of servo applications. It facilitates precise motion control and is adaptable to different servo systems with a variety of input compatibility options.

2. Specifications

Specification	Value
Manufacturer	Schneider Electric
Product	Line Modicon
Part	Number TSXCAY22
EAN	3389110123678
Weight	1.00 lbs (0.45 kg)
Power	Dissipation 7.2 to 11.5 W
Servo	Loop Type Proportional with overshoot compensation and gain switching (2 ms)
Speed	Profile Path Trapezoidal or parabolic
Axis	Length 256 to 32,000,000 P
Acquisition	Speed 54,000 to 270,000 points/min
Acceleration	Time 8 ms to 10 seconds
Operating	Modes FOLLOWER, OFF, Direct Drive Mode, Manual, Automatic
Axis	Type Following axis dynamic ratio, Limited axis, Infinite axis
Clock	Frequency 200 kHz (SSI absolute encoder)
Input	Compatibility Incremental encoder 10-30V totem pole, Incremental encoder 5V DC RS422, Absolute encoder SSI output (12-25 bits)
Input	Voltage 24V, 8mA (auxiliary input, servo drive control input)
Number	of Outputs 2 Reflex static outputs, 2 Analog static outputs, 2 Servo drive validation relay outputs
Analog	Output Range ±10 to 24V with 13-bit + sign resolution

3. Product Information

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Technical specifications for TSXCAY22

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EAN 3389110123678

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Input Compatibility Incremental encoder 10-30V totem pole, Incremental encoder 5V DC RS422, Absolute encoder SSI output (12-25 bits)

Input Voltage 24V, 8mA (auxiliary input, servo drive control input)

Number of Outputs 2 Reflex static outputs, 2 Analog static outputs, 2 Servo drive validation relay outputs

Analog Output Range ±10 to 24V with 13-bit + sign resolution

Description

The TSXCAY22 by Schneider Electric is tailored for sophisticated servo control applications. This module is engineered to handle power dissipation ranging from 7.2 to 11.5 watts, providing efficient performance under various operating conditions. The servo loop is designed with proportional control, featuring overshoot compensation and gain switching with a response time of 2 milliseconds.

Users can choose from trapezoidal or parabolic speed profile paths, ensuring versatility in motion control. The module accommodates an axis length that can range from 256 to 32 million pulses, making it suitable for both short and extensive applications. Acquisition speed is robust, allowing for data collection at a rate between 54,000 and 270,000 points per minute. Adjustments in acceleration can be made swiftly within a window of 8 milliseconds to 10 seconds.

Operating modes are diverse, including Follower, Manual, Automatic, and Direct Drive Mode, catering to various system requirements. The axis types offered are Following axis dynamic ratio, Limited axis, and Infinite axis. With a clock frequency of 200 kHz for SSI absolute encoders, the module ensures accurate data representation.

Input compatibility includes various incremental encoders operating at 10-30V and 5V DC RS422, as well as absolute encoders with SSI outputs ranging from 12 to 25 bits, enhancing flexibility. The auxiliary input operates at 24V with an 8mA capacity for servo drive control. The number of outputs consists of 2 Reflex static outputs, 2 Analog static outputs, and 2 validation relay outputs for the servo drive.

The analog output can vary between ±10 to 24 volts, providing a resolution of 13 bits plus sign, which is crucial for fine-tuning operations. Overall, the TSXCAY22 module excels in delivering precise control and is suited for various servo-driven applications.

Range of Product

Modicon Premium Automation platform

Product or Component Type

Motion control modules

Product Specific Application

For servo motors

Servo loop type

Proportional to overshoot compensation and gain switching 2 ms

Checks

Presence of voltage/sensor feedback counter input

Consistency of commands

Encoder coupling, servo drive present, emergency stop

Proper execution of movement

Sensor power supply

Validity of parameters

Complementary

Speed profile path

Trapezoidal or parabolic

Resolution

>= 0.5 position units per point

<= 1000 position units per point

Length of axis

256...32000000 P

Acquisition speed

<= 270000 points/mn
>= 54000 points/mn
Acceleration time
8 ms...10 s
Operating Mode
FOLLOWER
OFF
Direct drive mode
Manual
Automatic
Type of axis
Following axis dynamic ratio
Limited axis
Infinite axis
Function of module
Cut on the fly
Servo drive offset correction
I/O modularity
2 axes
Input compatibility
Incremental encoder 10...30 V totem pole
Incremental encoder 5 V DC RS422
With 2-wire/3-wire sensor (24 DC) auxiliary input
Absolute encoder parallel output ABE7CPA11
Absolute encoder SSI output 12...25 bits
Clock frequency
200 kHz SSI absolute encoder
Incremental encoder frequency x1
500 kHz
Incremental encoder frequency x 4
1000 kHz in counting
250 kHz in input
Power dissipation in W
7.2...11.5 W
Input type
Current sink auxiliary input EN/IEC 1131 Type 2
Resistive servo drive control input EN/IEC 1131 Type 1
Resistive counter input
Input logic
Positive
Input voltage
24 V 8 mA auxiliary input
24 V 8 mA servo drive control input
5 V 18 mA counter input
Input voltage limits
<= 5.5 V counter input
19...30 V auxiliary input
19...30 V servo drive control input
Voltage state 1 guaranteed
>= 11 V auxiliary input
>= 11 V servo drive control input
>= 2.4 V counter input
Current state 1 guaranteed
>= 3.5 mA servo drive control input)
>= 3.7 mA counter input)
>= 6 mA auxiliary input)
Voltage state 0 guaranteed
<= 1.2 V counter input
<= 5 V auxiliary input

<= 5 V servo drive control input
 Current state 0 guaranteed
 <= 1 mA counter input)
 <= 1.5 mA servo drive control input)
 <= 2 mA auxiliary input)
 Input impedance
 270 Ohm counter input
 3000 Ohm auxiliary input
 3000 Ohm servo drive control input
 Number of outputs
 2 reflex output static EN/IEC 61131
 2 analogue output static
 2 servo drive validation output relay
 Analogue output range
 +/- 10...24 V
 Analogue output resolution
 13 bits + sign
 LSB value
 1.25 mV analogue output
 Output voltage
 24 V DC reflex output:
 24 V DC servo drive validation output:
 Output voltage limits
 Reflex output 19...30 V
 Servo drive validation output 5...30 V
 Nominal output current
 0.5 A reflex output
 Maximum output current
 1.5 mA analogue output
 200 mA servo drive validation output
 625 mA reflex output
 Minimum load
 1 mA 1 V
 Maximum voltage drop
 <1 V at state on reflex output
 Maximum leakage current
 0.3 mA reflex output
 Switching time
 < 5 ms for servo drive validation
 < 500 µs for reflex output
 Output compatibility
 Positive logic DC inputs (resistance <= 15 kOhm) reflex
 Short-circuit protection
 Current limiter reflex output
 Thermal tripping reflex output
 Output overload protection
 Current limiter reflex output
 Thermal tripping reflex output
 Output overvoltage protection
 Zener diode between outputs and 24 DC reflex output
 Reverse polarity protection
 Reflex output reverse diode on supply
 Local signalling
 1 LED (green) for module operating (RUN)
 1 LED (red) for external fault (I/O)
 1 LED (red) for internal fault, module failure (ERR)
 2 LEDs (green) for axis diagnostics available
 Electrical connection
 1 connector HE-10 20 pins for aux inputs, reflex output, for external sensor and preactuator power supply

1 connector HE-10 20 pins for servo drive ctrl inputs + for ext power supply of servo drive inputs/outputs

1 connector SUB-D 9 for an analogue output (speed reference)

2 connectors SUB-D 15 for an incremental or absolute encoder

Current consumption

11...20 mA 24 V DC on 10/30 V absolute encoder module

1100 mA 5 V DC

15 mA 24 V DC

Module format

Standard

Net Weight

1.06 lb(US) (0.48 kg)

Environment

Protective treatment

TC

Ambient Air Temperature for Operation

32...140 °F (0...60 °C)

Ambient Air Temperature for Storage

-13...158 °F (-25...70 °C)

Relative Humidity

5...95 % without condensation

Operating altitude

<= 6561.68 ft (2000 m)