DATA SHEET

T 6493 EN

TROVIS 6493 Compact Controller

TROVIS 6400 Automation System

CE

Application

For panel mounting (front frame 48 x 96 mm/1.89 x 3.78 inch)

Digital controller to automate industrial and process plants for general and more complex control tasks. Suitable for control of continuous, on/off or pulsing final control elements (pneumatic actuators with i/p positioners, additional electric actuators, electric heating systems, refrigerating machines etc.)

By setting the functions and parameters, the controller can be adapted to a control task quickly.

The controller settings are saved in a non-volatile memory, even when the power supply fails.

Special features

- Configuration using the controller keys or the TROVIS-VIEW 4 software
- Two analog inputs with filtering, root extraction, function generation and signal monitoring
- One binary input with selectable function
- Two relay outputs for on/off or three-step output or limit alarms
- One transistor output for fault alarms
- Infrared interface for configuration
- Plug-on screw terminals
- Degree of protection (front) IP 65
- Two internal set points and one external set point (fixed set point control and follow-up control)
- Set point ramp and output ramp
- Control signal limitation
- Linking of input variables (addition, subtraction)
- Operation with code number or control key locking by binary input

TROVIS® Electronics from SAMSON

Fig. 1: *TROVIS 6493 Compact Controller*

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Inputs and outputs (Fig. 2)

Two analog inputs

One input is used for the controlled variable. The second input can be used for the external set point, disturbance variable, position feedback of an actuator or as an input for differential control. Both inputs can be configured as:

- 0 to 20 mA, 4 to 20 mA
- 0 to 10 V, 2 to 10 V
- Resistance thermometers Pt 100, Pt 1000, Ni 100, Ni 1000
- Potentiometer 1 kΩ

One binary input

The binary input is activated by a voltage signal (4 to 31 V DC) and can be used as follows:

- Activation of the constant output value (e.g. for enabling control)
- Set point switchover
- Start the set point ramp or output ramp
- Manual/automatic switchover
- Locking the control signal
- Activatation of the relay outputs
- Control key locking

One analog output

The controller output is issued at the analog output by default. Optionally, an input signal (e.g. controlled variable, external set point) or error signal can be issued. The output can be configured as:

- 0 to 20 mA, 4 to 20 mA
- 0 to 10 V, 2 to 10 V

Two relay outputs

The relays are double-throw contacts and can be used either as on/off outputs, three-step outputs or for status and limit alarms.

One transistor output

The isolated transistor output issues the collective fault alarm. If an internal fault exists or the configured signal monitoring of the inputs responds, the externally connected voltage signal (3 to 50 V DC, max. 30 mA) is generated.

One supply output

The supply output can be used to supply a voltage (20 V DC, max. 45 mA) to either a two-wire transmittter or the binary input.

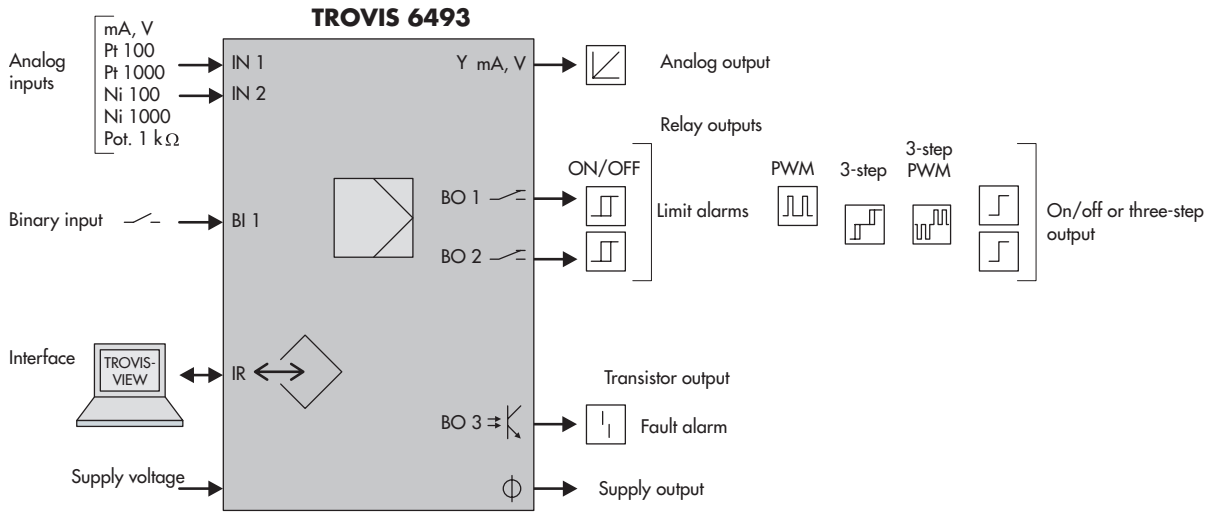


Fig. 2: *Wiring diagram (inputs and outputs)*

Operation (Fig. 3)

The controller is operated using six keys whose functions depend on the selected level.

Operating level

After the compact controller is switched on, it runs in automatic mode. The display shows the operating level with the controlled variable and set point readings. The selector key (8) can be used to switch the reading on the bottom row of the display (2): internal set point W or W2, external set point WE, manipulated variable Y or error signal Xd%. The internal set points W and W2 can be changed by pressing the cursor keys (4 and 5).

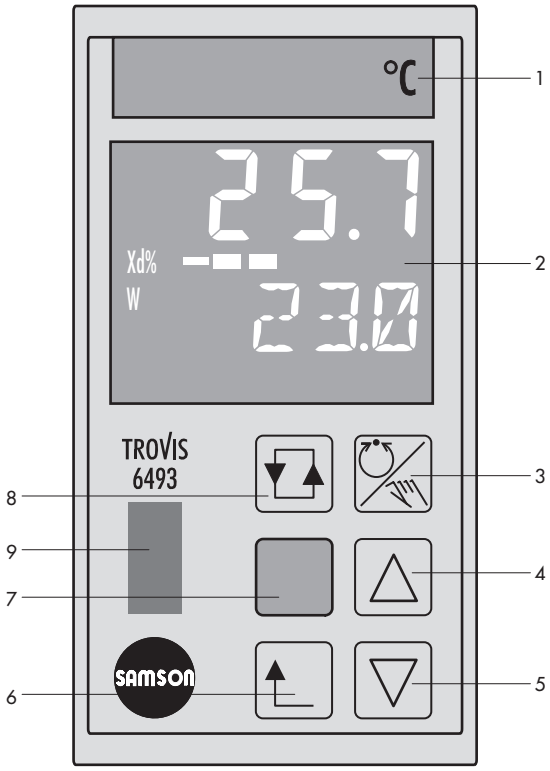
Setup and parameter levels

Press the enter key (7) to access the setup and parameter levels. In these levels, the compact controller is adapted to its control task by configuring the functions and setting the parameters. The functions are arranged in hierarchical levels. The cursor keys (4 and 5) are used to navigate to levels, sublevels, functions and parameters and the enter key (7) to open them. Changes to settings are confirmed by pressing the enter key (7). The user can return at any time to the next level by pressing the escape key (6). The functions blocks, parameters and calibration values can be protected by a key code against unauthorized access.

TROVIS-VIEW 4 Software

The infrared interface (Fig. 4) at the front allows the compact controller to be configured and operated using SAMSON's TROVIS-VIEW 4 software installed on a computer.
The TROVIS-VIEW software can be downloaded free of charge from our website (▶ www.samson.de > Services > Software > TROVIS-VIEW). The software can also be supplied on a CD-ROM on request (order no. 6661, configuration ID 2938759). Refer to the Data Sheet ▶ T 6661 for details on the system requirements.

The compact controller can communicate with a PC over its infrared interface on the front of the controller next to the yellow enter key. An infrared adapter (order no. 8864-0900) is required for data transmission between the serial RS-232 interface on the PC and infrared interface on the controller. A bracket (order no. 1400-9769) ensures that the adapter is properly aligned in front of the controller. The infrared adapter can be connected to the USB port of the computer using the USB/RS-232 adapter (order no. 8812-2001).



1 Label (exchangeable)
2 Display
3 Manual/automatic key
4 Cursor key (increase, scroll forwards)
5 Cursor key (decrease, scroll backwards)
6 Escape key
7 Enter key
8 Selector key
9 Infrared interface

Fig. 3: *Operation*

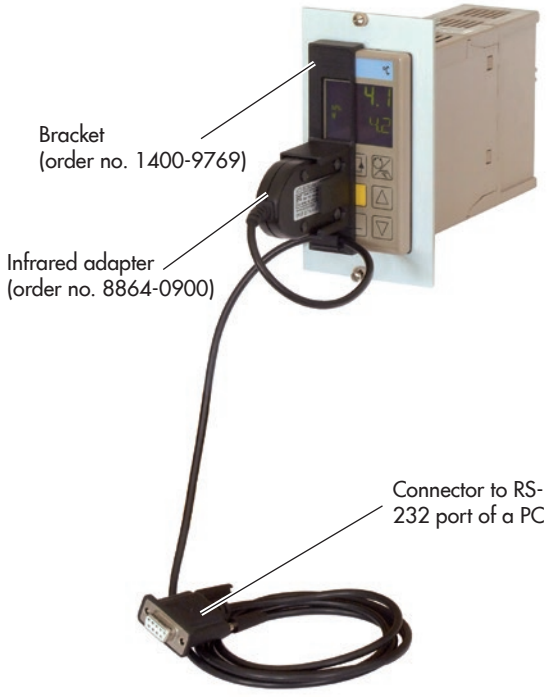


Fig. 4: *Connecting an infrared adapter*

Technical data

Inputs		
Analog input IN1 Analog input IN2		Two analog inputs, optionally for controlled variable X or external set point WE 0/4 to 20 mA or 0/2 to 10 V, resistance thermometer Pt 100, Pt 1000, Ni 100, Ni 1000 or potentiometer 1 kΩ
Input for current and voltage	Signal range	0/4 to 20 mA or 0/2 to 10 V
	Maximum permissible values	Current ±50 mA, voltage ±25 V
	Internal resistance	Current R_i = 50 Ω, voltage R_i = 20 kΩ
	Permissible common mode voltage	0 to 5 V
	Error	Zero < 0.2 %, span < 0.2 %, linearity < 0.2 %
	Temperature influence	< 0.1 %/10 K for zero and span (based on 20 °C)
	Resolution	< 0.0024 mA (< 0.012 % with 0 to 20 mA) (< 0.015 % with 4 to 20 mA) < 1.2 mV (< 0.012 % with 0 to 10 V)
Transmitter supply		Acc. to DIN IEC 381 (NAMUR NE 06) 20 V DC, max. 45 mA, resistant to short circuiting
Resistance thermometer	For sensor	Pt 100, Pt 1000 acc. to DIN EN 60751 Ni 100, Ni 1000 acc. to DIN 43760
	Nominal measuring range	Pt 100, Pt 1000: −100 to 500 °C Ni 100, Ni 1000: −60 to 250 °C
	Wire resistance	Three-wire $R_{L1} = R_{L2} = R_{L3}$ < 15 Ω
	Error Pt 100, Pt 1000 (in the range between −40 and 150 °C)	Zero < 0.2 %, span < 0.2 %, linearity < 0.2 % Zero < 0.1 %, span < 0.1 %, linearity < 0.1 %
	Temperature influence	< 0.2 %/10 K for zero and span (based on 20 °C)
	Resolution	< 0.04 °C (< 0.007 % at −100 to 500 °C)
Potentiometer	Nominal value	1 kΩ, three-wire
	Wire resistance	R_L < 15 Ω per wire
	Error	Zero < 0.2 %, span < 0.2 %
	Temperature influence	Zero < 0.1%/10 K, span < 0.2 %/10 K (based on 20 °C)
	Resolution	< 0.07 (< 0.007 %)
Binary input		Switching contact – with external supply 24 V DC (4 to 31 V DC) or – powered by the controller over terminals 14, 15 (20 V DC) Signal state OFF with 0 to 2 V Signal state ON with 4 to 31 V Current consumption < 6.0 mA with 24 V DC < 5.5 mA with 20 V DC
Outputs		Continuous-action, on/off or three-step output
Analog output	Signal range	0(4) to 20 mA; load < 740 Ω 0(2) to 10 V; load > 3 kΩ
	Maximum modulation range	0 to 22 mA, 0 to 11 V
	Error	< 0.2 %
	Temperature influence	Zero < 0.1%/10 K, span < 0.1 %/10 K
	Resolution	< 0.0015 mA (< 0.0075 % with 0 to 20 mA) (< 0.0094 % with 4 to 20 mA) < 0.75 mV (< 0.0075 % with 0 to 10 V)
Binary output BO1 Binary output BO2		Two relays with floating switching contact, max. 250 V AC, max. 250 V DC, max. 1 A AC, max. 0.1 A DC, cos Θ = 1
	Spark suppression	Connected in series C = 2.2 nF and varistor 300 V AC, in parallel to each relay contact
Binary output BO3 for fault alarms		Isolated transistor output, external supply 3 to 50 V DC, max. 30 mA

Infrared interface		
Transmission protocol		SAMSON-specific protocol (SSP)
Transmission rate		9600 bit/s
Angle of reflected beam		50°
Distance IR adapter – controller		Max. 0.7 m
General specifications		
Display		Backlit LCD
Reading range		–999 to 9999; start value, end value and decimal separator can be adjusted
Configuration		Functions saved in read-only memory for fixed set point and follow-up control, one control circuit
Supply voltage		90 to 250 V AC; 47 to 63 Hz 24 V AC/DC (20 to 30 V AC/DC), 47 to 63 Hz
Power consumption		13 VA (90 to 250 V AC), external fuse > 630 mA (slow) 7 VA (24 V AC/DC), external fuse > 1.25 A (slow)
Temperature		0 to 50 °C (ambient) –20 °C to 70 °C (storage and transport)
Mechanical environmental testing for storage, transportation and operation	Sinusoidal vibrations acc. to IEC 60068-2-6	2 to 9 Hz; amplitude 3.5 mm 9 to 200 Hz; acceleration 10 m/s² 200 to 500 Hz; acceleration 15 m/s²
	Random vibrations acc. to IEC 60068-2-64	1.0 m²/s³; 10 to 200 Hz 0.3 m²/s³; 200 to 2000 Hz
	Shocks acc. to IEC 60068-2-27	Acceleration 100 m/s²; duration 11 ms
Degree of protection		IP 65 (front), IP 30 (housing), IP 00 (terminals) according to EN 60529
Device safety		Acc. to EN 61010-1: Protection class II Overvoltage category II Degree of contamination 2 Design and testing according to EN 61010
Electromagnetic compatibility		Requirements according to EN 61000-6-2, EN 61000-6-3 and EN 61326-1
Electrical connection		1.5 mm² screw terminals
Scanning time		≤ 80 ms
Weight		Approx. 0.5 kg
Compliance		CE · EAC

Dimensions in mm (inch)

Panel cut-out $45^{+0.6}$ x $92^{+0.8}$ ($1.77^{+0.023}$ x $3.622^{+0.0315}$)

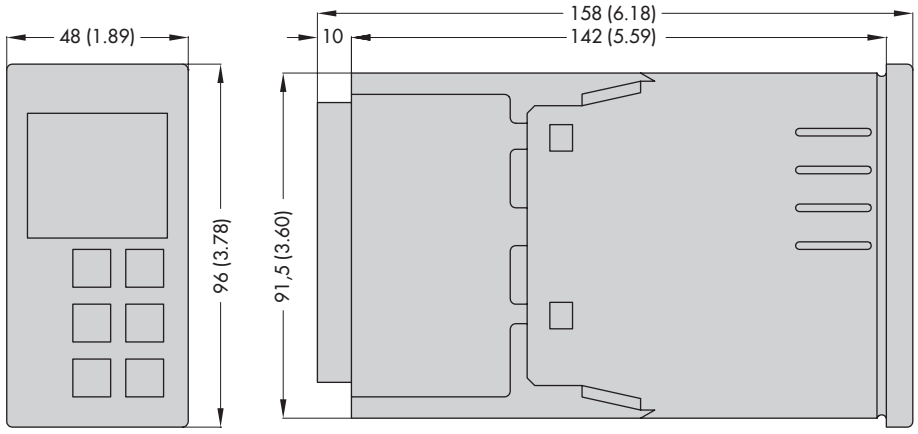


Fig. 5: *Dimensions in mm (inch)*

Electrical connection

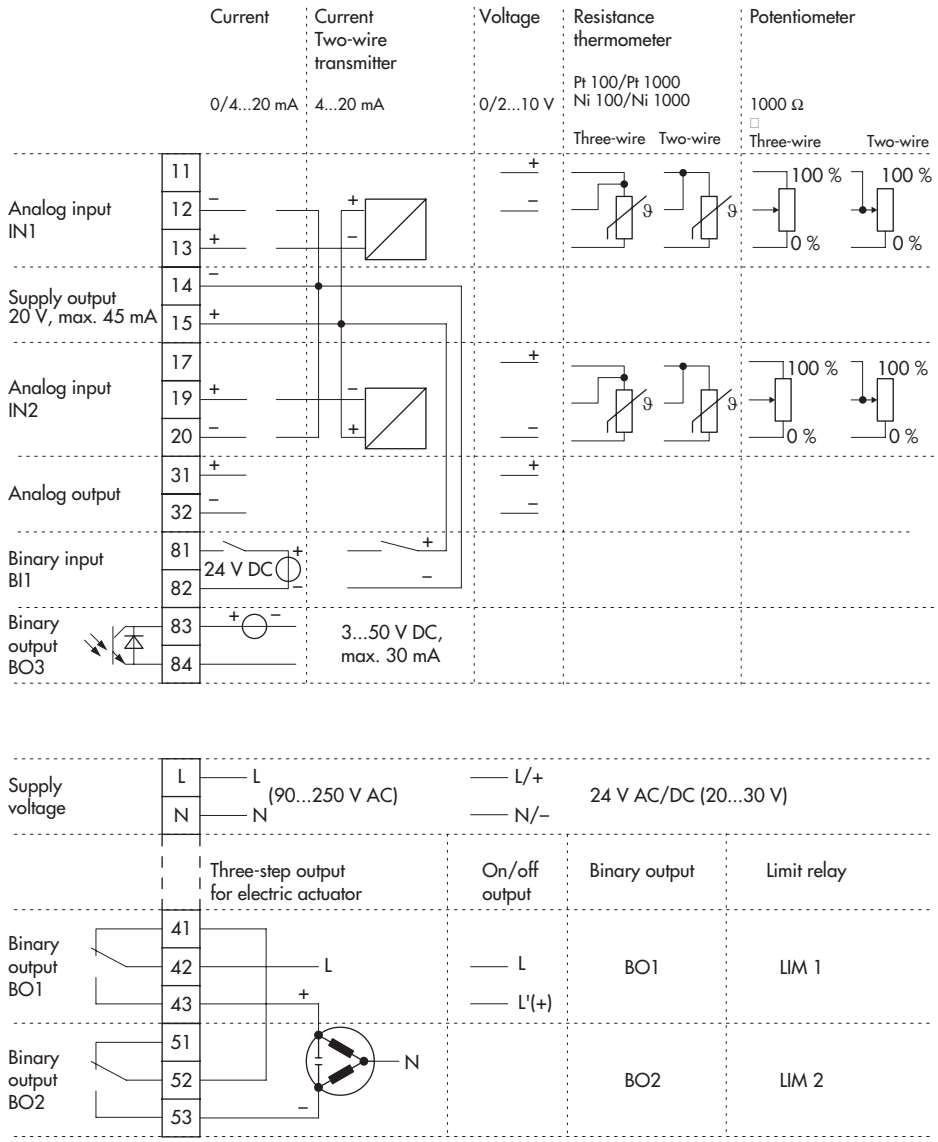


Fig. 6: *Electrical connection*

Article code

Compact controller	TROVIS 6493-032	x
Supply voltage	90 to 250 V AC	4
	24 V AC/DC	5

Accessories

Accessories	Order no.
CD-ROM with TROVIS-VIEW 4 software	6661, Var.-ID 2938759
Infrared adapter (RS-232)	8864-0900
Bracket for infrared adapter	1400-9769
USB/RS-232 adapter	8812-2001