

# Siclock TC 400

Modern automation systems comprise of a multitude of computers, controls and systems. This applies in particular when incidence notifications are supplied with time stamps and cause and action have to be identified by a reliable sequence based on time.

As a central plant clock the Siclock TC 400 reliably provides the different plant components with the accurate and secure time.

The Siclock system is a modular system that can be parameterised. The multiple possibilities of parameterisation of Siclock components guarantees:

- Shortened project planning stages by e.g.:
  - comfortable parameterisation tools via Internet
- Low cost of putting into operation
- Maximum performance by e.g.:
  - highly flexible hard and software design
- Support of all current international standards such as GPS, DCF77, Ethernet, (S)NTP, IRIG, Windows operating systems and many more

## Innovations Siclock TC 400:

- Support of several Ethernets; 4 independent Ethernet interfaces
- Clear expanded redundancy possibilities
- Designed for Profinet
- A very compact design (~80% smaller than the previous model)
- Integrated web server for comfortable parameterisation of devices
- Newly configured face with the optimised display offers clear information on time and device statuses
- Multiple electronic update possibilities – future-oriented for new features
- Increased precision by ideal hard and software support
- Compatible: SIMATIC NET, PCS7, WinCC, TELEPERM, SIPROTEC



## Siclock TC 400

Electronic Design and Manufacturing Services

**SIEMENS**

# Technical Data

## Siclock TC 400

Measurements	180,0 x 88,9 x 47,0 (wxhxd in mm)
Weight	approx. 750 g
Voltage	DC 24 V (-15% to +20%) to X1
Power Supply	continuous current max. 0,7 A
Temporary Power Cut	max. 3 ms (at 20,4 V to 28,8 V)
Power Consumption	max. 15 W
Power Loss Fuse	type 7,5 W
Protection (external)	1 A delay
Protection Category	IP 20
Installation Method	DIN rail EN 50022-35 (15 mm high)

### Safety

Product standard	EN 61131-2 (Environment)
Test voltage	Electric circuits with nominal voltage U <sub>e</sub> < 50 V against others Electric circuits or earth against Test voltage DC 500 V
Protection category	Protection category III according to EN 60536
Electrical safety	EN 60950-1

### Clocktime Features

Precision with regard to GPS signal	< 50 µs
Precision with regard to DCF77 signal	< 1000 µs
Precision in case of loss of GPS signal	< 50 x 10 <sup>-9</sup>
Precision in case of loss of DCF77 signal	< 1 x 10 <sup>-6</sup>
Precision in case of loss of the supply voltage	< 4 x 10 <sup>-6</sup>
Clocktime correction by micro steps	< 50 µs/s
Jitter in the GPS operation	< 200 ns/s
Power reserve	See battery



### Battery

Operational lifecycle	> 12 years
Storage lifecycle disconnected	> 12 years
Storage lifecycle connected	< 6 years

### Electromagnetic Compatibility (EMC)

Interference emission	EN 55022 Category A, FCC Category
Stability/fault-free operation	EN 55024

### Environmental Features

during operation	EN 60721 -3-3 (stationary use weather protected) category 3KS
During storage/transport	EN 60721 -3-2 category 2K4

### Climatic Conditions

Operational temperature	0 °C to 65 °C
Temperature during storage/transport	40 °C to 70 °C
Temperature lapse rate	max. 10 °C/h during operation, 20 °C/h in storage, no condensation
relative humidity	tested according to IEC 60068-2-78, IEC 60068-2-30
- during operation	10% to 95% at 25 °C (no condensation)
- storage/transport	10% to 95% at 25 °C (no condensation)
Air pressure	1080 to 795 hPa (represents a height of -1000 to 2000 m)



## Mechanical Ambient Conditions

during operation	EN 60721 -3-3 category 3M3
During storage/transport	EN 60721 -3-2 category 2M2

## Interfaces

Ethernet connection	4 separated Ethernet ports 10/100 MBit/s auto negotiation
2 x radio-controlled clock inputs (short-circuit-proof)	Nominal current 20 mA to 40 mA, Input terminal voltage 48 V for connection of Siclock GPS 1000, Siclock GPSDEC or Siclock DCFRS Radio-controlled interfaces are separated according to capability compared to the rest of the electronics
2 x outputs Power interface 24 V / Current interface 20 mA (short-circuit-proof)	20 mA/24 V for DCF77, impulse, beats, telegrams The outputs are separated according to capability from the rest of the electronics
1 x output RG422/5V	for DCF77, impulse, beats, telegrams
1 x relay output NC (normally closed contact) for signal WARNING	max. 0.06 A, 48 V DC
1 x relay output NC (normally closed contact)	max. 0.06 A, 48 V DC

## Operating Mode Displays on Device

Display	Double-spaced, alphanumerical LCD display with background lighting and temperature-compensated contrast placement
LED	4 x orange LED for Ethernet Port Linkup 4 x green LED for Ethernet port Activity 2 x green LED for Status radio-controlled clock 3 x green LED for output 1 x green LED for POWER 1 x green LED for SYNC Status 1 x red LED for FAULT status

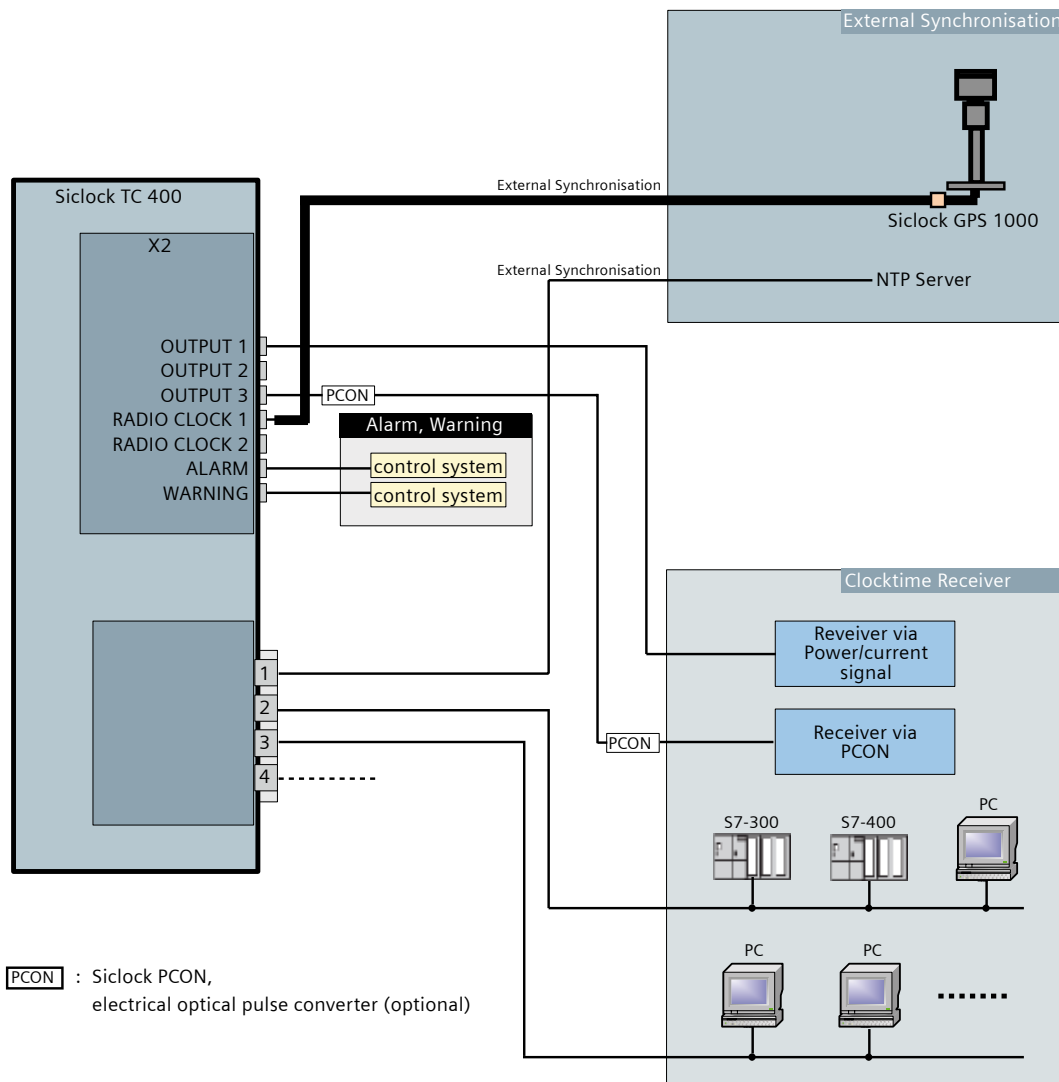
## Operating Controls on the Device

Keys	1 x SETUP key 4 x CURSOR key 1 x ESC key 1 x OK key
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# Application Example

## TC 400 Hardware

The following illustration shows an example of a connection of Siclock TC 400 with Siclock GPS 1000 as a radio-controlled clock and an NTP server for further external synchronisation.



order number	specification
2XV9450-2AR01	SICLOCK TC 400 24V
2XV9450-2AR10	SICLOCK TC 400 24V GPS1000 + lightning arrestor
2XV9450-2AR20	SICLOCK TC 400 24V DCF77 without lightning arrestor