# -PREVIOUS-
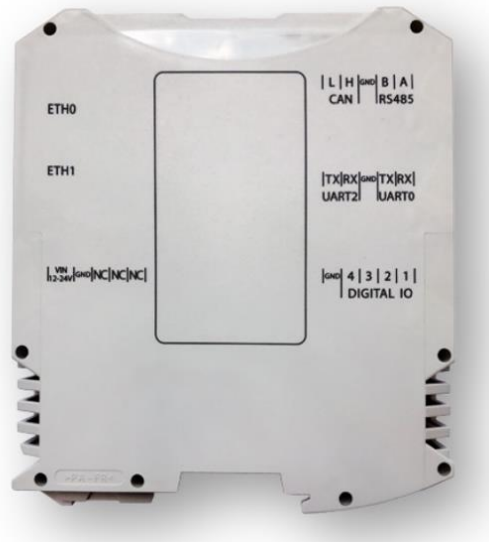# Mounting instruction

Control PLC DT3xx

4WEB-Automation GmbH

# Mounting instruction



**Control PLC DT300**
**Control PLC DT300E**
**Control PLC DT304**
**Control PLC DT307**

CODESYS PLC in standard DIN rail housing

## Contents

## About this document

**This instruction applies to the Control PLC DT3xx.**

Read this documentation carefully before starting any work.
Please observe the safety instructions!
Please note: Technical changes reserved!

## Safety instructions

Pay no attention to the following basic safety measures and safety information may lead to harsh personal injury and damage to property!

Observe all specifications of this documentation. This is the precondition for safe and trouble-free operation and for obtaining the product features specified.

**Safety instructions**
**Personnel**

The product has to be used by qualified personnel:

- They are familiar with installing, mounting, commissioning, and operating the product.
- They have the corresponding qualifications for their work.
- They know and can apply all regulations for the prevention of accidents, directives, and laws applicable at the place of use.

**Product**

Modification of the product is strictly forbidden.

All your warranty claims will be voided, if you carry out any technical modifications or alterations that are impermissible. The product liability will be excluded.

**Application as directed**

The product is electrical equipment. The product is exclusively suitable to be installed in control cabinets or similar closed electrical operating areas and to realize control concepts, operating concepts, or information in usual industrial and commercial areas. To avoid personal injury and property damage, higher-level safety systems must be used!

**Handling**

- Never commission the product in the event of visible damage.
- The product must never be technically modified.
- Never commission the product before assembly has been completed.
- The product must never be operated without required covers.
- Establish, separate and change all electrical connections only in deenergised state!

**Residual hazards**

Observe the warning labels on the product!

| | |
|---|---|
|  | **Electrostatic sensitive devices:** Before working on the product, the staff must ensure to be free of electrostatic charge! |
|  | **High leakage current:** Carry out fixed installation and PE connection in compliance with: EN 61800−5−1 / EN 60204−1. |

**Notice!**

| | | |
|---|---|---|
| Unstable LAN connection due to the use of incorrect cable types | The LAN connection may be interrupted | Exclusively use cables of the CAT5-S/FTP type or better. The unit is to be connected only to internal Ethernet networks without exiting a facility and being subjected to TNVs. |
| High input voltage at the device | Destruction of the device | Observe maximum permissible input voltage. Fuse device at the input against too high input voltage. |
| Short circuit at the device due to electrostatic discharge | Destruction of the device | The personnel must be free of electrostatic charge prior to working on the device. |
| Short circuit in the device due to incorrect handling | Destruction of the device | Only plug in and remove the controller when the supply voltage is switched off. |

## Main Features DT300

- Very compact control unit with CODESYS Runtime
- Commissioning without an IP address
- Short boot time
- User-friendly: Simple DIN rail mounting
- Powerful: ARM® Cortex A8 @ 1GHz
- Memory: RAM 512 MB
- Added value: A large number of Industrial Ethernet variants can be used
- CODESYS: Can be used in conjunction with CODESYS CANopen Master, and much more.

## Extended Features DT300E

- Additional CAN Fieldbus
- Retain data 512 Kbyte
- Extended I/Os
        - 12 x Digital IN
        - 10 x Digital IN / OUT
        - 2 x 12 Bit Analog IN
        - 1 x 12 Bit Analog OUT

## Getting Started
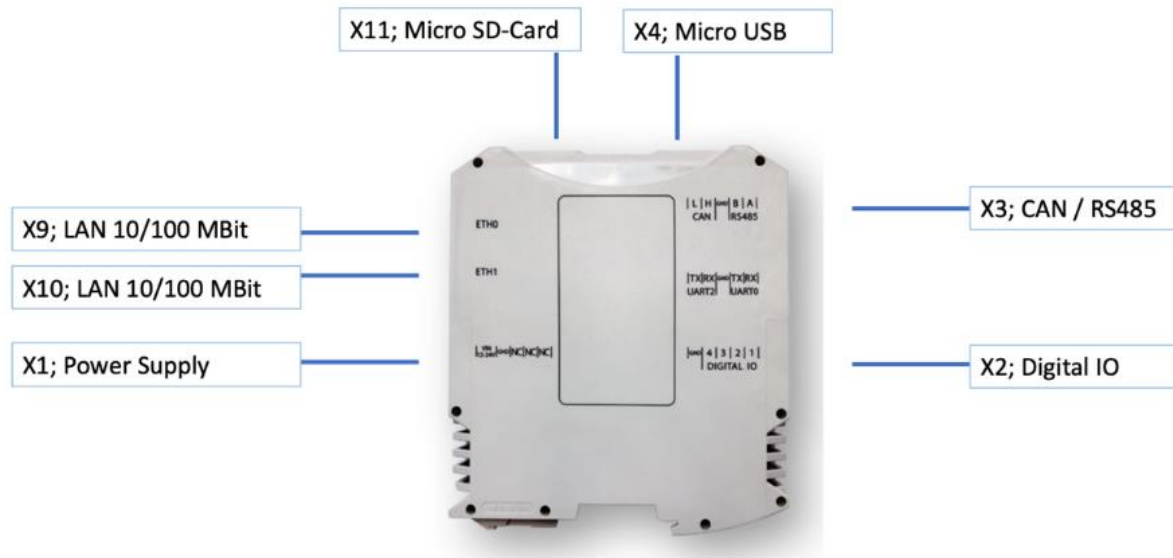


*Image 1: Interface description*

- In order to make the device ready for operation, a supply voltage of 24V DC is required first.
- Use X1 for this purpose. During booting, the device signals with the Run/Stop LED that it is booting by flashing.
- If the LED lights up continuously, the operating system and the CODESYS runtime have been started.
- You can now connect to the device in three ways.
    o X9, ETH0, Default IP: DHCP
    o X10, ETH1, Default IP: 192.168.2.2, Default Subnet: 255.255.255.0
    o X4, USB: no IP needed
- Alternatively, the startup configuration can be adjusted via a file on SD card. See the configuration file for this.

## Interfaces and pin assignment

### X1 Power Supply

| PIN | Signal | Description |
| --- | --- | --- |
| 1 | X_VIN | +24V DC +/- 10% power supply |
| 2 | GND | Ground |
| 3 | - | NC |
| 4 | - | NC |
| 5 | - | NC |

### X2 Digital IO

| PIN | Signal | Description |
| --- | --- | --- |
| 1 | GND | Ground |
| 2 | DIGI04 | Digital Input /Output NPN |
| 3 | DIGI03 | Digital Input/Output NPN |
| 4 | DIGI02 | Digital Input/Output NPN |
| 5 | DIGI01 | Digital Input/Output NPN |

**Notice:**

Digital inputs configured as sourcing input and digital output as sinking output (NPN)

### X3 Can / RS 485

| PIN | Signal | Description |
| --- | --- | --- |
| 1 | X_CANL | CAN Low signal line |
| 2 | X_CANH | CAN High signal line |
| 3 | GND | Ground |
| 4 | RS485_B | RS-485 level |
| 5 | RS485_A | RS-485 level |

**Notice:**

CAN bus is always provided with **120 Ohm** internal resistor. Optionally this can be ordered without.

### X9 / X10 | Ethernet 10/100 MBit

In a computer network such as a local area network (LAN), the MAC (Media access Control) address is a unique computer hardware number. For a connection to the Internet, a table is used to convert the assigned IP number to the hardware's MAC address.
In order to guarantee that the Mac address is unique, all addresses are managed in a central location. The MAC address of this device is saved on the CPU.

### X11 micro SD-Card

Use microSD-cards in maximum to 32Gbyte. High Capacity (SDHC) cards are supported. To extend the life of the memory, make sure that the SD card is not written to cyclically.

### X4 micro USB

The micro USB fulfills two functions
-   Engineering without IP address. An RNDIS driver from 4WEB-Automation is required for this.
-   Connecting USB storage. These must not exceed a maximum current consumption of 500 mA. Typically, an adapter is required from micro USB to USB Type A format.

### X5 Power supply on DT300E with electrical isolation and CAN
This provides electrical isolation to additional IOs and CAN fieldbus

| PIN | Signal | Description |
|-----|--------|-------------|
| 1 | X_VIN | +24V DC +/- 10% power supply |
| 2 | GND | Ground |
| 3 | X_CANH | CAN High signal line |
| 4 | GND | Ground |
| 5 | X_CANL | CAN Low signal line |

## Connector description
All pluggable connectors are featuring the same.

| Description | | Power supply and control inputs X1 |
|-------------|------|-------------------------------------|
| max conductor diameter | mm² | 1.5 |
| max conductor diameter | AWG | 16 |
| min conductor diameter | mm² | 0.14 |
| min conductor diameter | AWG | 24 |
| stripping length | mm | 7 |
| stripping length | inch | 0.28 |
| tightening torque | Nm | 0,22 Nm ... 0,25 Nm |

## Commissioning configuration

The device can be configured through different methods:
- Linux shell commands
- Configuration file
- CODESYS

## Linux shell commands

### Network_control

The Ethernet interfaces of the device can be configured with this command.

### Syntax

```
network_control <interface> <dhcp|static> [ip] [mask] [gateway]
```

Gateway is optional

### Example static IP

```
network_control eth1 static 192.168.2.3 255.255.255.0 192.168.2.1
```

### Example DHCP

```
network_control eth1 dhcp
```

If you switch between static and DHCP, the device must be restarted.

### Syntax

```
reboot
```

## Date_control

This command sets the date.

**Syntax**

```
date_control <ntp|manual> "[date]" [tz]
```

Timezone is optional. Please write timezone in uppercase.

**Example NTP**

```
date_control ntp CET
```

**Example manual**

```
date_control manual "2022-01-24 15:22:57" CET
```

## Configuration file

Create a file called **config.ini** and place it on a SD card. As soon as the device starts, this file is applied. Please wait before the connection is established, the device will automatically restart. The file on SD-card is renamed after reboot to: **config.ini.applied**

**Example config.ini**

```
[system]
hostname=DT300

[services]
ftp_enable=true

[network]
eth0=dhcp
eth1=static:192.168.2.2:255.255.255.0:192.168.2.1
```

## Execute through CODESYS

You need *SysProcess* and *SysTypes2 Interfaces* libraries in your project.

**Example**

```
VAR
     xDo: BOOL;
     _RetVal: DINT;
     _pResult: SysTypes.RTS_IEC_Result;
     _sCommand: STRING;
     rts: POINTER TO SysProcess_Implementation.RTS_IEC_RESULT;

END_VAR

IF xDo THEN
xDo := FALSE;

_sCommand := 'network_control eth1 static 192.168.10.11
255.255.255.0';

_RetVal := SysProcessExecuteCommand(pszComand:=_sCommand ,
pResult:=ADR(_pResult) );

END_IF
```

**Notice:**

Please create for system commands a freewheeling task!

**Notice:**

Run "reboot" command after changing through DHCP and static ip address assignment.

You can run the following commands through Codesys
- shutdown
- reboot
- network_control
- date_control
- save_log

## Diagnostic webserver

There is a simple configuration page available via web browser. You can connect via IP address or via http://[hostname].local

**Example**

```
http://dt300.local

or

http://192.168.2.2
```

## Mechanical installation

| Device | Hight | Width | Depth | Weight |
|--------|-------|-------|-------|--------|
|        | mm    | mm    | mm    | kg     |
| DT300  | 103   | 25    | 114   | 0.15   |
| DT300E | 103   | 45    | 114   | 0.2    |

**Mounting the device / Mounting conditions**
- Mounting place: in the control cabinet (indoor use)
- Mounting position: Vertical
- Mounting type: DIN rail mounting

## Electric ratings

| Device | Nominal voltage | Current | Power |
|--------|-----------------|---------|-------|
| DT300 + DT300E | 24VDC +-20% | 190 mA | 4,5W |

## Technical data

| Conformity and approval | | |
|---|---|---|
| CE | 2014/30/EU | EMC Directive<br>Applied harmonized standards:<br>EN 55032: 2015/AC:2015, Class B<br>EN 55011: 2011-12, Class B<br>EN 61000-4-2, Class A<br>EN 61000-4-3, Class A<br>EN 61000-4-4, Class A (except DC supply)<br>EN 61000-4-5, Class A (except DC supply)<br>EN 61000-4-6, Class A (except DC supply) |
| RoHS | 2011/65/EU | RoHS Directive |

## Modification history

| Version | Release date | Changes |
|---|---|---|
| 1.0 | 08.2021 | Initial version |
| 1.01 | 12.2021 | Added configuration chapter, minor improvements, corrections |
| 1.02 | 11.2022 | Added FTP chapter |
| 1.03 | 08.2023 | Added DT300E |
| | | |
| | | |
| | | |
| | | |
| | | |

## Contact

4WEB-Automation GmbH
Heisinger Straße 12
87437 Kempten
Germany

Phone:        +49 (0) 83152622 366
E-Mail:        info@4web-automation.de
Web:          www.4web-automation.de


https://www.linkedin.com/company/4web-automation-gmbh/
https://www.xing.com/pages/4web-automationgmbh