

Operating Instructions

Liquiline Control CDC90

Data transmission via
analog communication 0/4 to 20 mA







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

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1 About this document



1.1 Warnings

Structure of information	Meaning
 DANGER Causes (/consequences) If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation will result in a fatal or serious injury.
 WARNING Causes (/consequences) If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation can result in a fatal or serious injury.
 CAUTION Causes (/consequences) If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or more serious injuries.
 NOTICE Cause/situation If necessary, Consequences of non-compliance (if applicable) ▶ Action/note	This symbol alerts you to situations which may result in damage to property.

1.2 Symbols

-  Additional information, tips
-  Permitted or recommended
-  Not permitted or not recommended
-  Reference to device documentation
-  Reference to page
-  Reference to graphic
-  Result of a step

1.3 Symbols on the device

-  Reference to device documentation
-  Do not dispose of products bearing this marking as unsorted municipal waste. Instead, return them to the manufacturer for disposal under the applicable conditions.

1.4 Documentation

This supplementary documentation must be used only in conjunction with a Liquiline Control CDC90 with analog communication.

This supplementary documentation is an integral part of the Operating Instructions and provides additional information on the use of the device with analog communication.

More information can be found in the following Operating Instructions:

Operating Instructions CDC90 [BA01707C](#)

It is assumed that the reader has basic knowledge in this area.

This document is aimed at individuals who are incorporating the CDC90 into a control system via analog communication. It is assumed that the reader has basic knowledge of the CM44 transmitter.


1.5 List of abbreviations

n/a	Not applicable
NaN	Not a number (IEEE-754, 7Fh A0h 00h 00h)
ENP	Electronic name plate
I&M	Identification & Maintenance
AI	Analog Input (PA Profile function block)
DI	Discrete Input (PA Profile function block)
AO	Analog Output (PA Profile function block)
DO	Discrete Output (PA Profile function block)
DCS	Distributed control system

2 Basic safety instructions

2.1 Requirements for the personnel

- Installation, commissioning, operation and maintenance of the measuring system may be carried out only by specially trained technical personnel.
- The technical personnel must be authorized by the plant operator to carry out the specified activities.
- The electrical connection may be performed only by an electrical technician.
- The technical personnel must have read and understood these Operating Instructions and must follow the instructions contained therein.
- Faults at the measuring point may only be rectified by authorized and specially trained personnel.

 Repairs not described in the Operating Instructions provided must be carried out only directly at the manufacturer's site or by the service organization.

2.2 Intended use

Liquiline Control CDC90 is a fully automatic measuring, cleaning and calibration system for Memosens sensors. The system is fully equipped with power supply cables and a hose system.

2.2.1 Non-intended use

Use of the device for any purpose other than that described, poses a threat to the safety of people and of the entire measuring system and is therefore not permitted.

The manufacturer is not liable for damage caused by improper or non-designated use.

2.3 Workplace safety

As the user, you are responsible for complying with the following safety conditions:

- Installation guidelines
- Local standards and regulations
- Regulations for explosion protection

Electromagnetic compatibility

- The product has been tested for electromagnetic compatibility in accordance with the applicable international standards for industrial applications.
- The electromagnetic compatibility indicated applies only to a product that has been connected in accordance with these Operating Instructions.

2.4 Operational safety

Before commissioning the entire measuring point:

1. Verify that all connections are correct.
2. Ensure that electrical cables and hose connections are undamaged.
3. Do not operate damaged products, and protect them against unintentional operation.
4. Label damaged products as defective.

During operation:

- ▶ If faults cannot be rectified:
products must be taken out of service and protected against unintentional operation.

⚠ CAUTION**Programs not switched off during maintenance activities.**

Risk of injury due to medium or cleaning agent!

- ▶ Quit any programs that are active.
- ▶ Switch to the Service Mode before you remove sensors from the assembly.
- ▶ If you need to test the cleaning function while cleaning is in progress, wear protective clothing, goggles and gloves or take other suitable measures to protect yourself.

2.5 Product safety

2.5.1 State-of-the-art technology

The product is designed to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate. The relevant regulations and international standards have been observed.

2.6 IT security

We only provide a warranty if the device is installed and used as described in the Operating Instructions. The device is equipped with security mechanisms to protect it against any inadvertent changes to the device settings.

IT security measures in line with operators' security standards and designed to provide additional protection for the device and device data transfer must be implemented by the operators themselves.

3 Electrical connection

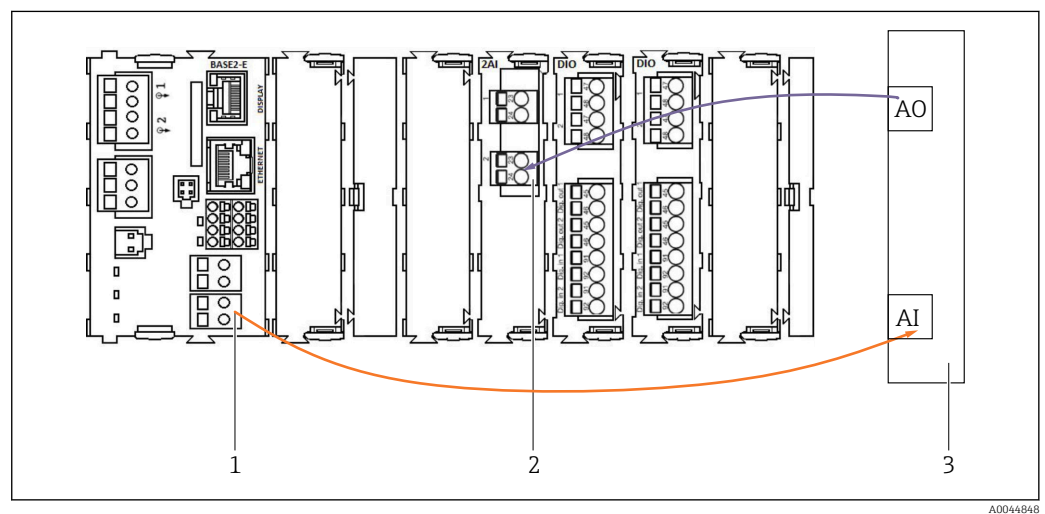
3.1 Connecting the communication interfaces

Installation and wiring is described in the Operating Instructions of Liquiline Control CDC90.

3.1.1 Notes

The device starts when the supply voltage is applied. This process can take up to two minutes, depending on the device configuration. Communication with the device is not possible during the start-up process.

3.1.2 Connection with the CDC90 control unit



- 1 Analog output in BASE2-E
- 2 Analog input 2AI
- 3 Process control system, PCS

1) The second analog output in BASE2-E is used to monitor and receive feedback from the CDC90.

2) The second analog input (2AI module) is used to send specific current values in mA.

Connecting analog communication

1. Unscrew the housing from the CDC90 control unit. See Operating Instructions [BA01707C](#).
2. Connect a 2-wire cable from the analog output AI of the control system (3) to the analog input of the 2AI module (2) in the CDC90 control unit.
3. Connect a 2-wire cable from the analog input AI of the control system (3) to the analog input of the BASE2-E module (1) in the CDC90 control unit.

Current input 4:1 are internal for the soft keys and

Current output 1:1 for the status of the LEDs. These settings must not be changed.

For more details on analog input and output characteristics of the CM44x transmitter, please refer to the Operating Instructions of the CM44x ([BA00451C](#)).

4 System integration

The internal analog input of the CDC90 control unit is used to send commands to the CDC90. Conversely, the analog output of the CDC90 control unit is used to receive analog feedback signals from the CDC90.

4.1 Integrating analog communication into the system

4.1.1 Configuration of the CDC90 control unit

The settings of the CDC90 control unit are preconfigured. So that the configuration can be reviewed and changed, the configuration is described as follows.

1. Adjust the settings via the remote display or web server access.
2. For web server access, enter 192.168.0.4 as the IP address.

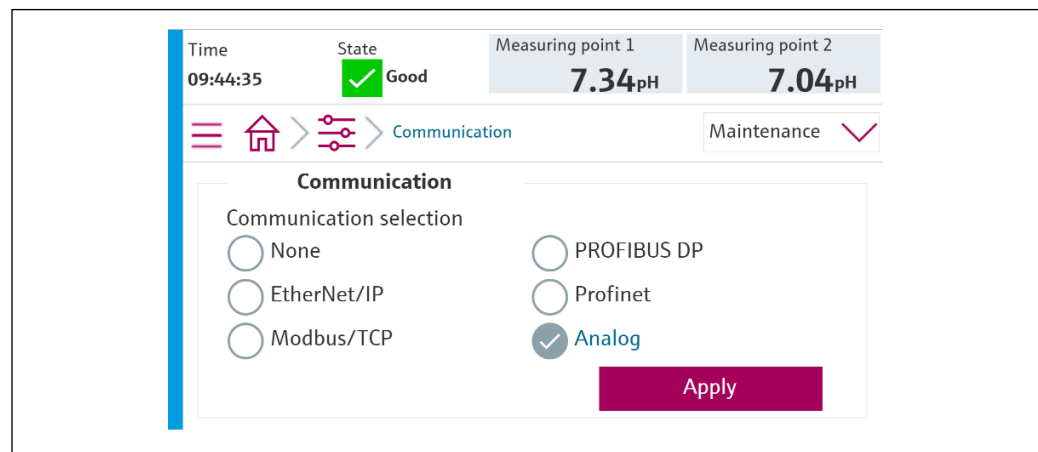
See under **Menu/Setup/Inputs/Current input 4:1**; these values are reserved for the soft keys of the CDC90 control unit and must not be changed.

See under **Menu/Setup/Inputs/Current input 4:2**; this current input is linked internally to the Liquiline Control CDC90 via Modbus TCP. The configuration of the Modbus AI must not be changed.

See under **Menu/Setup/Outputs/Current output 1:1** ; these values are reserved for the LED display of the CDC90 control unit and must not be changed.

The configuration of the Modbus AO must not be changed under **Menu/Setup/Outputs/Current output 1:2**. The **Current output 1:2** is linked internally to the Liquiline Control CDC90 via Modbus TCP.

4.1.2 Configuration in Liquiline Control CDC90



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To start remote control of the CDC90, the CDC90 must be set to the **Remote access** mode. It is possible to read the CDC90 parameters in any mode.

1. In the CDC90, go to **Application/Communication**.
2. Select **Analog**.
3. Press **Accept** to confirm.

 Only fieldbus communication or analog communication is used to send commands to the Liquiline Control CDC90 or to read the values.

4.1.3 Parameter tables

Input and output parameters

The following table provides an overview of the possible commands that CDC90 can receive via the analog input. Once a corresponding current signal has been sent and accepted, the CDC90 responds with the corresponding current level.

Commands [mA]	Description	Response from CDC90 [mA]	
4	No command active Do not select a program	4	No program is active No program is selected
5	Start program	5	Program is started
6	Pause program (currently not supported)	6	Program is paused (currently not supported)
7	Stop program	7	Program is stopped
8	Not defined	8	Program is canceled
9	Not defined	9	Program is quit successfully
10	Not defined	10	CDC90 has a failure alarm
11	Select program 801	11	Program 801 is selected
12	Select program 802	12	Program 802 is selected
13	Select program 803	13	Program 803 is selected
14	Select program 804	14	Program 804 is selected
15	Select program 805	15	Program 805 is selected
16	Select program 806	16	Program 806 is selected
17	Select program 807	17	Program 807 is selected
18	Select program 808	18	Program 808 is selected
19	Select program 809	19	Program 809 is selected
20	Select program 810	20	Program 810 is selected

Program control

1 Overview of programs (20 programs are shown)

The program IDs are in the "CDC90 program configuration tool" or can be found on the local display in the **User Guidance/Programs** menu.

Programs			
ID	Name	Sequence	Channel
801	Prg1	Service	1
802	Prg2	Measure	1
803	Prg3	Service	2
804	Prg4	Measure	2
805			
806			
807			
808			
809			
810			

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2 Programs

Each program must be selected before starting. An example of controlling program 801:

1. Set AI to 4 mA.
 - ↳ Initialization in progress.
2. Wait for confirmation AO equal to 4 mA.
3. Set AI to 11 mA.
 - ↳ Program selection in progress.
4. Wait for confirmation AO equal to 11 mA.
5. Set AI to 5 mA.
 - ↳ Program starts.


After the program starts, the analog output outputs 5 mA as long as the program is running. When the program is finished, the analog output outputs 9 mA.

With short programs (e.g. valve travel), the AO may output 9mA.

After quitting a program successfully, a new program can be selected and started immediately.

If the program is stopped or is aborted due to an error:

1. First initialize the system by sending 4 mA.
2. Select and start a new program.

 With analog communication, only the first 10 programs are controlled.

Diagnostics

Diagnosis via digital inputs 11-16:

DO	Description	Assignment
11	Operating mode	Setting, if DO11 = 0 and DO12 = 0 Manual, if DO11 = 0 and DO12 = 1 Automatic, DO11 = 1 and DO12 = 0 Remote access, DO11 = 1 and DO12 = 1
12		
13	Assembly 1	0 = service, 1 = measure
14	Assembly 2	0 = service, 1 = measure
15	Program	0 = no program, 1 = program active
16	Alarm	0 = alarm, 1 = no alarm



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