

Operating Instructions

Liquiline Control CDC90

Data transmission via Modbus TCP



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1 About this document

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

1.1 Symbols

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

1.1.1 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.

1.2 Documentation

This supplementary documentation must be used only in conjunction with a Liquiline Control CDC90 with Modbus TCP.

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

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.

Further information on Modbus technology can be found, for example, on the website: www.modbus.org

1.3 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.

2.2.1 Non-designated use

Any use other than that intended puts the safety of people and the measuring system at risk. Therefore, any other use is not permitted.

The manufacturer is not liable for harm caused by improper or unintended use.

2.3 Workplace safety

The operator is responsible for ensuring compliance with the following safety regulations:

- 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.

Procedure for damaged products:

1. Do not operate damaged products, and protect them against unintentional operation.
2. Label damaged products as defective.

During operation:

- ▶ If errors cannot be rectified, take products out of service and protect them 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.
- ▶ If testing 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

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.

4 System integration

4.1 Integrating Modbus TCP communication into the system

4.1.1 Settings

The network settings (IP address, subnet mask and gateway) of the device must first be configured before a connection to the Liquiline Control CDC90 can be established.

The settings depend on the network into which the device is being integrated.

Factory setting

Setting	Factory setting
IP address	192.168.0.1 Valid IPv4 address of CDC90
Netmask	255.255.255.0 Valid subnet mask
TCP port (HTTP)	80
TCP port (Modbus TCP)	502

Setting the static IP address

The screenshot shows the 'Ethernet' configuration page in the device's web interface. At the top, there is a status bar with 'Time: 09:36:13', 'State: Good' (with a green checkmark), and two measuring points: 'Measuring point 1: 7.33 pH' and 'Measuring point 2: 7.04 pH'. Below this is a navigation menu with icons for home, settings, and Ethernet. The 'Ethernet' settings are displayed in a form with the following fields:

- IP address:** 192.168.0.1
- Used address area:** 192.168.0.1 + 6
- Subnetmask:** 255.255.255.0
- Gateway address:** 0.0.0.0

A pink 'Apply' button is located at the bottom right of the settings form.

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1. Apply the values from the graphic in the **System/Connectivity/Ethernet** menu.
2. Change the settings for the IP address and network mask. In addition to this IP address, the CDC90 uses the next six IP addresses for internal components. All seven IP addresses in the network must be free.
3. Save settings by pressing **Accept**.
4. Wait 20 seconds until the measured values are visible again.

4.1.2 Checking the connection



More detailed information on fieldbus communication is provided on the product pages on the Internet:

- Ethernet/IP (adapter) via Modbus TCP - Ethernet/IP gateway: [BA02241C](#)
- Modbus TCP (server): [BA02238C](#)
- PROFIBUS DP (slave) via Modbus TCP - PROFIBUS DP gateway: [BA02239C](#)
- PROFINET (device) via Modbus TCP - PROFINET gateway: [BA02240C](#)

The Liquiline Control CDC90 implements the ICMP protocol. The “ping” command can be used to check whether the Liquiline Control CDC90 can be reached via the network.

```

C:\Windows\system32\cmd.exe
C:\>ping 192.168.0.1

Ping wird ausgeführt für 192.168.0.1 mit 32 Bytes Daten:
Antwort von 192.168.0.1: Bytes=32 Zeit=10ms TTL=128
Antwort von 192.168.0.1: Bytes=32 Zeit=7ms TTL=128
Antwort von 192.168.0.1: Bytes=32 Zeit=2ms TTL=128
Antwort von 192.168.0.1: Bytes=32 Zeit=2ms TTL=128

Ping-Statistik für 192.168.0.1:
    Pakete: Gesendet = 4, Empfangen = 4, Verloren = 0
            (0% Verlust),
    ca. Zeitangaben in Millisek.:
        Minimum = 2ms, Maximum = 10ms, Mittelwert = 5ms

C:\>

```

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4.1.3 Selecting Modbus TCP

Fieldbus communication is always disabled at the factory even if Modbus TCP fieldbus communication has been ordered. To specify which fieldbus communication method is used to send commands, go to:

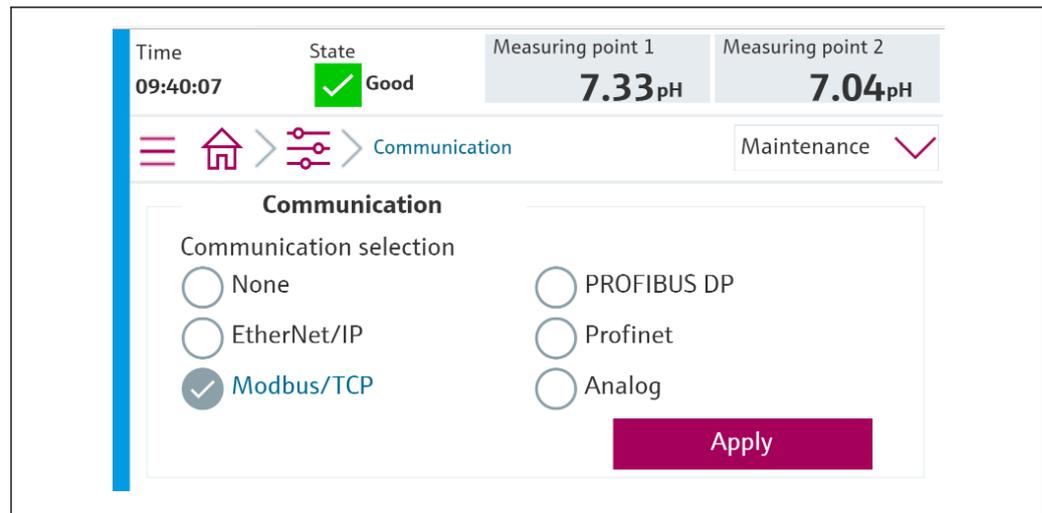
User role: **Maintenance**

Operating mode: **Setup**

1. Go to **Application/Communication** in the menu.
 - ↳ The configured communication protocol is visible under **Selected communication**.
2. Select Modbus TCP as the required communication protocol under **Communication selection**.
3. Press **Accept** to confirm.



The values cannot be read until this setting has been made.



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

Once the protocol has been activated, but the connection to the control station has not been detected or established, a S1003 (out of spec) message appears and the communication between the controller and the process control system (for Modbus TCP) or the gateway (for Profibus, Profinet, EtherNet/IP) is interrupted.

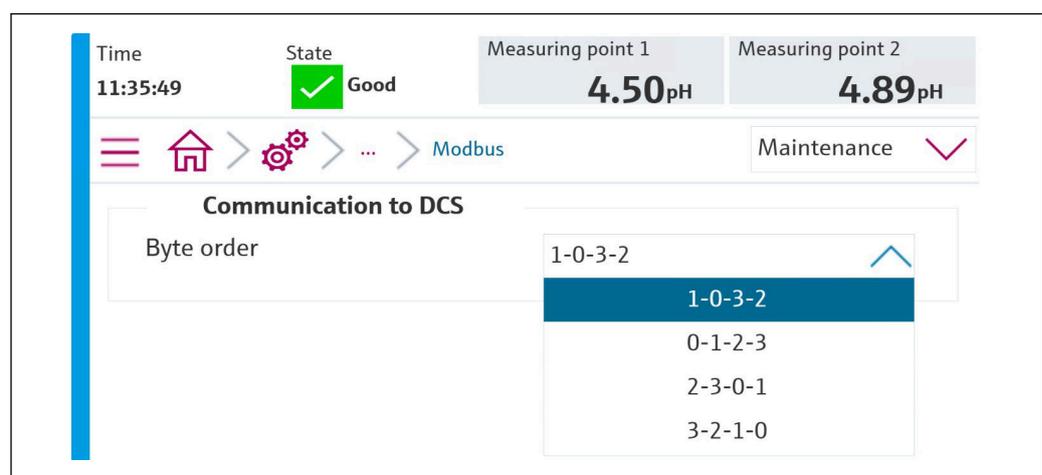
4.1.4 Selecting the byte sequence

Proceed as follows to select the appropriate **Byte order**:

User role: **Maintenance**

Operating mode: **Setup**

1. Go to **System/Connectivity/Ethernet** in the menu.
2. Select the required **Byte order** under **Communication to DCS**.
3. Press **Accept** to confirm.



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4.1.5 Parameter tables

Variables	R/W	Register
System control	w	00 ... 06
System Information	R	00 ... 09
Calibration report	R	10 ... 54
Name of device	R	60 ... 75
Information about measuring point 1	R	100 ... 153
Information about measuring point 2	R	200 ... 253
IO feedbacks	R	900 ... 961
Device information	R	1000 to 1087

Output parameters

The output data modules are used as command parameters to start programs or change the operating mode.

The program IDs can be found on the local display in the **User Guidance/Programs** menu.

System control

Register	Parameter	Description	Data type
0	OpMode-Control	2 = OpMode is automatic 3 = OpMode is remote	USINT
3	ProgramSelection	Select the program via the program ID	UINT
4	ProgramControl	0 = No program started 1 = Start selected program 2 = Pause active program (currently not supported) 3 = Quit active program	USINT

ID	Program	Channel
801	Service1	1
802	Measure1	1
803	Service2	2
804	Measure2	2
805	Cleaning1	1

1 Overview of the programs

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Input parameters*System Information*

Register	Parameter	Description	Data type
0	OpMode-State	0 = OpMode is setup 1 = OpMode is manual 2 = OpMode is automatic 3 = OpMode is remote	USINT
1	Alarm-State	0 = CDC90 has no alarm 1 = CDC90 has a maintenance alarm 2 = CDC90 has an out of specification alarm 3 = CDC90 has a function control alarm 4 = CDC90 has an error alarm	USINT
2	Alarm-Number	Number of an alarm	UINT
3	ProgramSelection-State	Reflects the ProgramSelection, if valid.	UINT
4	ProgramControl-State	0 = No program running 1 = Selected program running 2 = Active program paused (currently not supported) 3 = Active program stopped 4 = Selected program canceled 5 = Selected program quit successfully	USINT
5	Current Step	Active program step	UINT
6	Program-Result	0 = No result 1 = Selected program completed successfully 2 = Selected program not completed successfully	USINT

Calibration results

Calibration results for measuring point 1 and for measuring point 2:

Sensor	Calibration result measured value 1	Calibration result measured value 2	Calibration result measured value 3	Calibration result measured value 4	Calibration result measured value 5
pH glass	Current raw value mV	Current measured value pH	Temperature °C	Slope mV/pH	Zero point pH
pH ISFET	Current raw value mV	Current measured value pH	Temperature °C	Slope mV/pH	Zero point pH
ORP	Current raw value mV	Current measured value pH (Raw value+Offset)	Temperature °C	Offset value mV	No data
pH/ORP	pH calibration				
	Current raw value mV	Current measured value pH	Temperature °C	Slope mV/pH	Zero point pH
	ORP calibration				
	Current raw value mV	Current measured value pH (Raw value+Offset)	Temperature °C	Offset value mV	No data

Register	Parameter	Description	Data type
10 - 11	CalibrationResult1-Value		REAL
12	CalibrationResult1-Unit	0 = No unit 7 = % 23 = nA 25 = mA 53 = pH 59 = hPa 65 = kΩ 66 = MΩ 89 = °C 90 = K 110 = mV 114 = mV/pH 127 = °F	USINT
13	CalibrationResult1-Valid	0 = OK 1 = Busy 2 = Local calibration active 3 = Sensor not configured 4 = Sensor not supported 5 = Invalid entry 6 = Calibration error	USINT
14	CalibrationResult1-Type	0 = No calibration type defined 1 = Raw value 2 = Measured value 3 = Temperature 4 = Offset 5 = Medium 1 6 = Measured value 1 7 = Medium 2 8 = Measured value 2 9 = Slope 10 = Zero point 11 = Delta slope 12 = Delta zero point	USINT
20-21	CalibrationResult2-Value		REAL
22	CalibrationResult2-Unit	0 = No unit 7 = % 23 = nA 25 = mA 53 = pH 59 = hPa 65 = kΩ 66 = MΩ 89 = °C 90 = K 110 = mV 114 = mV/pH 127 = °F	USINT
23	CalibrationResult2-Valid	0 = OK 1 = Busy 2 = Local calibration active 3 = Sensor not configured 4 = Sensor not supported 5 = Invalid entry 6 = Calibration error	USINT

Register	Parameter	Description	Data type
24	CalibrationResult2-Type	0 = No calibration type defined 1 = Raw value 2 = Measured value 3 = Temperature 4 = Offset 5 = Medium 1 6 = Measured value 1 7 = Medium 2 8 = Measured value 2 9 = Slope 10 = Zero point 11 = Delta slope 12 = Delta zero point	USINT
30-31	CalibrationResult3-Value		REAL
32	CalibrationResult3-Unit	0 = No unit 7 = % 23 = nA 25 = mA 53 = pH 59 = hPa 65 = kΩ 66 = MΩ 89 = °C 90 = K 110 = mV 114 = mV/pH 127 = °F	USINT
33	CalibrationResult3-Valid	0 = OK 1 = Busy 2 = Local calibration active 3 = Sensor not configured 4 = Sensor not supported 5 = Invalid entry 6 = Calibration error	USINT
34	CalibrationResult3-Type	0 = No calibration type defined 1 = Raw value 2 = Measured value 3 = Temperature 4 = Offset 5 = Medium 1 6 = Measured value 1 7 = Medium 2 8 = Measured value 2 9 = Slope 10 = Zero point 11 = Delta slope 12 = Delta zero point	USINT
40-41	CalibrationResult4-Value		REAL
42	CalibrationResult4-Unit	0 = No unit 7 = % 23 = nA 25 = mA 53 = pH 59 = hPa 65 = kΩ 66 = MΩ 89 = °C 90 = K 110 = mV 114 = mV/pH 127 = °F	USINT

Register	Parameter	Description	Data type
43	CalibrationResult4-Valid	0 = OK 1 = Busy 2 = Local calibration active 3 = Sensor not configured 4 = Sensor not supported 5 = Invalid entry 6 = Calibration error	USINT
44	CalibrationResult4-Type	0 = No calibration type defined 1 = Raw value 2 = Measured value 3 = Temperature 4 = Offset 5 = Medium 1 6 = Measured value 1 7 = Medium 2 8 = Measured value 2 9 = Slope 10 = Zero point 11 = Delta slope 12 = Delta zero point	USINT
50-51	CalibrationResult5-Value		REAL
52	CalibrationResult5-Unit	0 = No unit 7 = % 23 = nA 25 = mA 53 = pH 59 = hPa 65 = kΩ 66 = MΩ 89 = °C 90 = K 110 = mV 114 = mV/pH 127 = °F	USINT
53	CalibrationResult5-Valid	0 = OK 1 = Busy 2 = Local calibration active 3 = Sensor not configured 4 = Sensor not supported 5 = Invalid entry 6 = Calibration error	USINT
54	CalibrationResult5-Type	0 = No calibration type defined 1 = Raw value 2 = Measured value 3 = Temperature 4 = Offset 5 = Medium 1 6 = Measured value 1 7 = Medium 2 8 = Measured value 2 9 = Slope 10 = Zero point 11 = Delta slope 12 = Delta zero point	USINT

Measured value units of the sensors

Information about measuring point 1 and measuring point 2

Sensor	Measured value 1	Measured value 2	Measured value 3	Measured value 4	Measured value 5
pH glass	Current measured value pH	Raw value mV	Glass impedance M Ω	Temperature °C	----
pH ISFET	Current measured value pH	Raw value mV	Leak current nA	Temperature °C	----
ORP	ORP mV	ORP %	----	Temperature °C	----
pH/ORP	Current measured value pH	ORP mV	Raw value mV	Temperature °C	Reference impedance k Ω

Information about measuring point 1

Register	Parameter	Description	Data type
100	Channel1-Activation	0 = Active 1 = Not active (only read in at restart)	UINT
101	Channel1-Position	0 = Assembly in service position 1 = Assembly in measuring position	UINT
102	Channel1-Hold	0 = Not active 1 = Active	UINT
103	Channel1-ConnectedSensorType	0 = None 3 = pH glass 5 = pH ISFET 8 = ORP 18 = pH/ORP	UINT
110 - 111	Channel1-Value1		REAL
112	Channel1-Value1-Unit	0 = No unit 7 = % 23 = nA 25 = mA 53 = pH 59 = hPa 65 = k Ω 66 = M Ω 89 = °C 90 = K 110 = mV 114 = mV/pH 127 = °F	UINT
113	Channel1-Value1-Valid	0 = Good 1 = Uncertain 2 = Bad 3 = Not assigned	UINT
120 - 121	Channel1-Value2		REAL

Register	Parameter	Description	Data type
122	Channel1-Value2-Unit	0 = No unit 7 = % 23 = nA 25 = mA 53 = pH 59 = hPa 65 = kΩ 66 = MΩ 89 = °C 90 = K 110 = mV 114 = mV/pH 127 = °F	UINT
123	Channel1-Value2-Valid	0 = Good 1 = Uncertain 2 = Bad 3 = Not assigned	UINT
130 - 131	Channel1-Value3		REAL
132	Channel1-Value3-Unit	0 = No unit 7 = % 23 = nA 25 = mA 53 = pH 59 = hPa 65 = kΩ 66 = MΩ 89 = °C 90 = K 110 = mV 114 = mV/pH 127 = °F	UINT
133	Channel1-Value3-Valid	0 = Good 1 = Uncertain 2 = Bad 3 = Not assigned	UINT
140 - 141	Channel1-Value4		REAL
142	Channel1-Value4-Unit	0 = No unit 7 = % 23 = nA 25 = mA 53 = pH 59 = hPa 65 = kΩ 66 = MΩ 89 = °C 90 = K 110 = mV 114 = mV/pH 127 = °F	UINT
143	Channel1-Value4-Valid	0 = Good 1 = Uncertain 2 = Bad 3 = Not assigned	UINT
150 - 151	Channel1-Value5		REAL

Register	Parameter	Description	Data type
152	Channel1-Value5-Unit	0 = No unit 7 = % 23 = nA 25 = mA 53 = pH 59 = hPa 65 = kΩ 66 = MΩ 89 = °C 90 = K 110 = mV 114 = mV/pH 127 = °F	UINT
153	Channel1-Value5-Valid	0 = Good 1 = Uncertain 2 = Bad 3 = Not assigned	UINT

Information about measuring point 2

Register	Parameter	Description	Data type
200	Channel2-Activation	0 = Active 1 = Not active (only read in at restart)	UINT
201	Channel2-Position	0 = Assembly in service position 1 = Assembly in measuring position	UINT
202	Channel2-Hold	0 = Not active 1 = Active	UINT
203	Channel2-ConnectedSensorType	0 = None 3 = pH glass 5 = pH ISFET 8 = ORP 18 = pH/ORP	UINT
210 - 211	Channel2-Value1		REAL
212	Channel2-Value1-Unit	0 = No unit 7 = % 23 = nA 25 = mA 53 = pH 59 = hPa 65 = kΩ 66 = MΩ 89 = °C 90 = K 110 = mV 114 = mV/pH 127 = °F	UINT
213	Channel2-Value1-Valid	0 = Good 1 = Uncertain 2 = Bad 3 = Not assigned	UINT
220 - 221	Channel2-Value2		REAL

Register	Parameter	Description	Data type
222	Channel2-Value2-Unit	0 = No unit 7 = % 23 = nA 25 = mA 53 = pH 59 = hPa 65 = kΩ 66 = MΩ 89 = °C 90 = K 110 = mV 114 = mV/pH 127 = °F	UINT
223	Channel2-Value2-Valid	0 = Good 1 = Uncertain 2 = Bad 3 = Not assigned	UINT
230 - 231	Channel2-Value3		REAL
232	Channel2-Value3-Unit	0 = No unit 7 = % 23 = nA 25 = mA 53 = pH 59 = hPa 65 = kΩ 66 = MΩ 89 = °C 90 = K 110 = mV 114 = mV/pH 127 = °F	UINT
233	Channel2-Value3-Valid	0 = Good 1 = Uncertain 2 = Bad 3 = Not assigned	UINT
240 - 241	Channel2-Value4		REAL
242	Channel2-Value4-Unit	0 = No unit 7 = % 23 = nA 25 = mA 53 = pH 59 = hPa 65 = kΩ 66 = MΩ 89 = °C 90 = K 110 = mV 114 = mV/pH 127 = °F	UINT
243	Channel2-Value4-Valid	0 = Good 1 = Uncertain 2 = Bad 3 = Not assigned	UINT
250 - 251	Channel2-Value5		REAL

Register	Parameter	Description	Data type
252	Channel2-Value5-Unit	0 = No unit 7 = % 23 = nA 25 = mA 53 = pH 59 = hPa 65 = kΩ 66 = MΩ 89 = °C 90 = K 110 = mV 114 = mV/pH 127 = °F	UINT
253	Channel2-Value5-Valid	0 = Good 1 = Uncertain 2 = Bad 3 = Not assigned	UINT

IO feedbacks

Register	Parameter	Description	Data type
900	LED	0 = Off 8 = Green 18 = Red	USINT
901	Current Response	(currently not supported)	USINT
902	Local Softkey	0 = No softkey is pressed 6 = Soft key 1 is pressed 10 = Soft key 2 is pressed 14 = Soft key 3 is pressed 18 = Soft key 4 is pressed	USINT
903	Current Command	(currently not supported)	USINT
904	Canister1	0 = Empty 1 = Full, not empty	BYTE
905	PressureSwitch	0 = Not active 1 = Active	BYTE
906	Canister3	0 = Empty 1 = Full, not empty	BYTE
907	Canister2	0 = Empty 1 = Full, not empty	BYTE
910	Assembly1 Measure	0 = Off 1 = On	BYTE
911	Assembly1 Service	0 = Off 1 = On	BYTE
912	WaterValve1	0 = Off 1 = On	BYTE
913	AirValve1	0 = Off 1 = On	BYTE
914	PumpA	0 = Off 1 = On	BYTE
915	PumpB		
916	PumpC		
917	ValvesChannel1	0 = Off 1 = On	BYTE
918	ValvesChannel2	0 = Off 1 = On	BYTE
919	SelectableValve1		

Register	Parameter	Description	Data type
920	Assembly2 Measure	0 = Off 1 = On	BYTE
921	Assembly2 Service	0 = Off 1 = On	
922	WaterValve2	0 = Off 1 = On	BYTE
923	AirValve2		
924	SelectableValve2		
925	SelectableValve3		
930	SelectableDO1	0 = Off 1 = On	BYTE
931	SelectableDO2		
932	SelectableDO3		
933	SelectableDO4		
934	SelectableDO5		
935	SelectableDO6		
936	SelectableDO7		
937	SelectableDO8		
938	SelectableDO9		
939	SelectableDO10		
940	OpMode	Operating mode: Setting, if DO11 = 0 and DO12 = 0 Manual, if DO11 = 1 and DO12 = 0 Automatic, if DO11 = 0 and DO12 = 1 Remote access, if DO11 = 1 and DO12 = 1	
941	OpMode		
942	Assembly1 Position	0 = Service 1 = Measure	BYTE
943	Assembly2 Position		
944	Program active	0 = Program active 1 = No program	BYTE
945	Alarm active	0 = alarm 1 = no alarm	BYTE
946 169	Assembly1 Position switch 1 (DI1)	0 = Off 1 = On	BYTE
947	Assembly1 Position switch 2 (DI2)	0 = Off 1 = On	BYTE
948	Assembly2 Position switch 1 (DI3)	0 = Off 1 = On	BYTE
949	Assembly2 Position switch 2 (DI4)	0 = Off 1 = On	BYTE
950	SelectableDI5	0 = Off 1 = On	BYTE
951	SelectableDI6		
952	SelectableDI7		
953	SelectableDI8		
954	SelectableDI9		
955	SelectableDI10		
956	SelectableDI11		
957	SelectableDI12		
958	Softkey1 (DI13)	0 = Off 1 = On	BYTE
959	Softkey2 (DI14)		

Register	Parameter	Description	Data type
960	Softkey3 (DI15)		
961	Softkey4 (DI16)		

Name of the device

Parameter	Description	Data type	Register
Device-Tag	Device description/TAG	STRING(32)	60-75

Device information

Parameter	Description	Data type	Register
Firmware	Firmware version	STRING(8)	1000 - 1003
ShortOrdercode	Short order code	STRING(16)	1004 - 1011
SerialNumber	Serial number	STRING(16)	1012 - 1019
ManufacturingDate	Date of manufacture	DATETIME	1020 - 1023
OriginalOrdercodeExt	Extended (original) manufacturing order code	STRING(64)	1024 - 1055
CurrentOrdercodeExt	Extended order code from last upgrade	STRING(64)	1056 - 1087

5 Commissioning

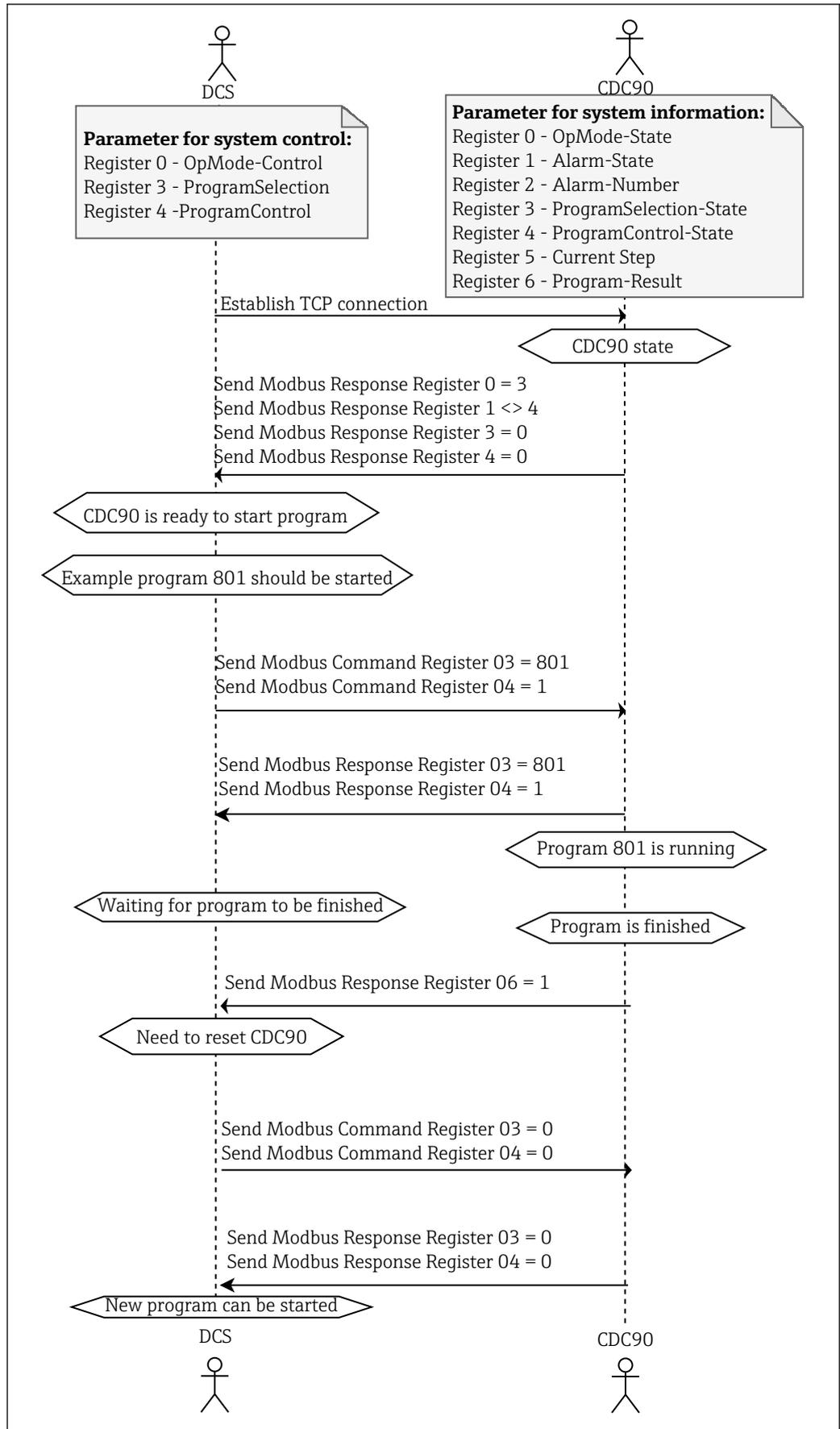
The following flowchart shows an example of how a system program is started by a process control system using Modbus TCP.

System control

Parameter	Description
OpMode-Control	2 = OpMode is automatic 3 = OpMode is remote
ProgramSelection	Select the program via the program ID
ProgramControl	0 = No program started 1 = Start selected program 2 = Pause active program (currently not supported) 3 = Quit active program

System Information

Parameter	Description
OpMode-State	0 = OpMode is setup 1 = OpMode is manual 2 = OpMode is automatic 3 = OpMode is remote
Alarm-State	0 = CDC90 has no alarm 1 = CDC90 has a maintenance alarm 2 = CDC90 has an out of specification alarm 3 = CDC90 has a function control alarm 4 = CDC90 has an error alarm
Alarm-Number	Number of last diagnostic message to appear
ProgramSelection-State	Reflects the ProgramSelection, if valid.
ProgramControl-State	0 = No program running 1 = Selected program running 2 = Active program paused (currently not supported) 3 = Active program stopped 4 = Selected program canceled 5 = Selected program quit
Current Step	Active program step
Program-Result	0 = No result 1 = Selected program completed successfully 2 = Selected program not completed successfully



2 Modbus TCP flowchart

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www.addresses.endress.com
