

TYPE APPROVAL CERTIFICATE

Certificate No:
TAA00001ZE
Revision No:
6

This is to certify:

That the Measurement Converter

with type designation(s)

Liquiline CM442 / CM444 / CM448, Liquiline CM442R / CM444R / CM448R

Issued to

Endress+Hauser Conducta GmbH+Co. KG
Gerlingen, Germany

is found to comply with

DNV rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Location classes:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
Liquiline CM442 / CM444 / CM448	B	B	A	A	B
Liquiline CM442R / CM444R / CM448R	B	A	A	A	A

Issued at **Hamburg** on **2023-09-14**

for **DNV**

This Certificate is valid until **2026-10-10**.

DNV local station: **Augsburg**

Approval Engineer: **Holger Jansen**

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Joannis Papanuskas
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

Liquiline CM442, CM444 and CM448:

Multiparameter transmitter with a maximum of 8 measuring channels based on digital Memosens technology.

Liquiline CM442R, CM444R and CM448R:

Cabinet controller with a maximum of 8 measuring channels based on digital Memosens technology.

Supply voltage CM442, CM442R: 100...230V AC (50/60Hz); 24V DC; 24V AC

Supply voltage CM444, CM448: 100...230V AC (50/60Hz)

Supply voltage CM444R, CM448R: 24VDC, external, DIN rail mounting

Communication interface: HART, Profibus DP, Modbus RS485, EtherNet/IP, PROFINET IO

Input/Output: 0/4 ... 20mA, Digital I/O, Relay

All sensors and sensor cables which are listed in TI00444C can be connected to the type approved Transmitter CM442, CM444 and CM448

All sensors and sensor cables which are listed in TI01112C can be connected to the type approved Transmitter CM442R, CM444R and CM448R.

Installation (CM44x): wall mounting

Installation (CM44xR): rail mounting

Degree of protection (CM44x): IP66, IP67

Degree of protection (CM44xR): IP20

Firmware: Release V01.14.xx

Liquiline CM442 – Order codes (issue 10.01.2022)	
Selection code	Description
10 Approval	
AA	Non-hazardous area
BM	ATEX
CA	CSA C/US General Purpose
CD	CSA C/US NI Cl. I, Div. 2, GP ABCD T4A
CL	CSA C/US IS Cl. I, Div. 2, GP ABCD T4A
GR	Non-hazardous area + EAC marking
IE	IECEx
UM	UK EX
20 Sensor input	
M1	1x digital sensor
M2	2x digital sensor
N1	1x digital sensor, M12 plug
N2	2x digital sensor, M12 plug
30 Communication	
A1	2x output 0/4...20mA
A2	2x output 0/4...20mA, HART
A3	4x output 0/4...20mA
A4	4x output 0/4...20mA, HART
B7	M12 female jack, PROFIBUS DP, Webserver (+Ethernet configuration)
B8	Modbus RS485, Webserver
B9	M12 female jack, Modbus RS485, Webserver (+Ethernet configuration)
CA	2x output 0/4...20mA, Webserver
CB	2x output 0/4...20mA, Webserver, M12 female jack
CC	2x output 0/4...20mA, HART, Webserver
CD	2x output 0/4...20mA, HART, Webserver, M12 female jack
CE	Modbus TCP, Webserver, 2x output 0/4...20mA
CF	Modbus TCP, WEB, 2x output 0/4...20mA, M12 female jack, WEB=Webserver
CG	EtherNet/IP, WEB, 2x output 0/4...20mA, WEB=Webserver
CH	EtherNet/IP, WEB, 2x output 0/4...20mA, M12 female jack, WEB=Webserver
CJ	PROFINET; WEB; 2xOutput 0/4; 20mA; WEB= Webserver
CK	PROFINET; WEB; 2xOutput 0/4; 20mA; M12 female jack; WEB= Webserver
40 Additional Function	

Liquiline CM442 – Order codes (issue 10.01.2022)	
Selection code	Description
FA	2x analogue input 0/4...20mA
FD	2x digital input, 2x digital output
F0	W/o
F2	2x relay for cleaning; limit
F4	4x relay for cleaning; limit
50 Power supply	
1	100...230V AC (50/60Hz)
6	24 V DC
7	24 V AC (not extendable to xM444/xM448)
60 Cable Entry Housing	
0	Metric
1	NPT
2	G
70 Cable Entry Set	
A	Enclosed
B	Mounted
610 Accessories	
RS	SD card 1GB

Liquiline CM442R – Order codes (issue 10.01.2022)	
Selection code	Description
10 Approval	
AA	Non-hazardous area
BM	ATEX
CA	CSA C/US General Purpose
CD	CSA C/US NI Cl. I, Div. 2, GP ABCD T4A
CL	CSA C/US IS Cl. I, Div. 2, GP ABCD T4A
GR	Non-hazardous area + EAC marking
IE	IECEX
UM	UK EX
20 Sensor input	
M1	1x digital sensor
M2	2x digital sensor
30 Communication	
A1	2x output 0/4...20mA
A2	2x output 0/4..20mA, HART
A3	4x output 0/4...20mA
A4	4x output 0/4..20mA, HART
B8	Modbus RS485, Webserver
CA	2x output 0/4...20mA, Webserver
CC	2x output 0/4...20mA, HART, Webserver
CE	Modbus TCP, Webserver, 2x output 0/4..20mA
CG	EtherNet/IP, WEB, 2x output 0/4..20mA WEB=Webserver
CJ	PROFINET; WEB; 2xOutput 0/4; 20mA; WEB= Webserver
40 Additional Function	
FA	2x analogue input 0/4...20mA
FD	2x digital input, 2x digital output
F0	W/o
F2	2x relay for cleaning; limit
F4	4x relay for cleaning; limit
50 Power supply	

Liquiline CM442R – Order codes (issue 10.01.2022)	
Selection code	Description
1	100...230V AC (50/60Hz)
6	24 V DC
7	24 V AC (not extendable to xM444/xM448)
610 Accessories	
SS	SD card 1GB
SA	external display for cabinet mounted, Navigator+Softkeys including cable IP66

Liquiline CM444 – Order codes (issue 10.01.2022)	
Selection code	Description
10 Approval	
AA	Non-hazardous area
BM	ATEX
CA	CSA C/US General Purpose
CD	CSA C/US NI Cl. I, Div. 2, GP ABCD T4A
CL	CSA C/US IS Cl. I, Div. 2, GP ABCD T4A
GR	Non-hazardous area + EAC marking
IE	IECEX
UM	UK EX
20 Sensor input	
M2	2x digital sensor
M4	4x digital sensor
N2	2x digital sensor, M12 plug
N4	4x digital sensor, M12 plug
25 Digital communication	
A	Modbus TCP, Webserver + optional Output
B	Webserver + optional Outputs
C	HART, Webserver + optional Outputs
D	Ethernet/IP, Webserver + optional Outputs
J	PROFINET IO, Webserver + optional Outputs
0	Without
1	HART
2	PROFIBUS DP (+Ethernet configuration)
3	Modbus RS485 (+Ethernet configuration)
30 Analogue output	
A0	Without
A1	2x 0/4...20mA
A3	4x 0/4...20mA
A5	6x 0/4...20mA
A7	8x 0/4...20mA
40 Additional Function	
FA	2x 0/4...20mA input
FE	2x relay, 2x 0/4...20mA input
FF	4x relay, 2x 0/4...20mA input
FG	2x digital input, 2x digital output
FH	4x digital input, 4x digital output
FI	2x relay, 2x digital input, 2x digital output
FK	4x relay, 2x digital input, 2x digital output
FM	2x 0/4...20mA input, 2x relay, 2x digital input, 2x digital output
F0	Without
F2	2x relay for cleaning: Limit
F4	4x relay for cleaning: Limit
50 Power supply	
1	100...230V AC (50/60Hz)
60 Cable Entry Housing	

Liquiline CM444 – Order codes (issue 10.01.2022)	
Selection code	Description
0	Metric
1	NPT
2	G
65 Female Jack Fieldbus Communcation	
BA	Without
BB	M12 (Profibus DP, Modbus RTU)
BC	M12 (Ethernet configuration, Modbus TCP)
BD	M12 (Ethernet config., Modbus TCP)
70 Cable Entry Set	
A	Enclosed
B	Mounted
610 Additional	
NC	CDI; female jack external
NS	SD-Card, 1GB, industrial Flush Drive

Liquiline CM444R – Order codes (issue 10.01.2022)	
Selection code	Description
10 Approval	
AA	Non-hazardous area
BM	ATEX
CA	CSA C/US General Purpose
CD	CSA C/US NI Cl. I, Div. 2, GP ABCD T4A
CL	CSA C/US I Cl. I, Div. 2, GP ABCD T4A
GR	Non-hazardous area + EAC marking
IE	IECEX
UM	UK EX
20 Sensor input	
M2	2x digital sensor
M4	4x digital sensor
25 Digital communication	
A	Modbus TCP, Webserver + optional Output
B	Webserver + optional Outputs
C	HART, Webserver + optional Outputs
D	Ethernet/IP, Webserver + optional Outputs
J	PROFINET IO, Webserver + optional Outputs
0	Without
1	HART
2	PROFIBUS DP (+Ethernet configuration)
3	Modbus RS485 (+Ethernet configuration)
30 Analogue output	
A0	Without
A1	2x 0/4...20mA
A3	4x 0/4...20mA
A5	6x 0/4...20mA
A7	8x 0/4...20mA
40 Additional Function	
FA	2x 0/4...20mA input
FE	2x relay, 2x 0/4...20mA input
FF	4x relay, 2x 0/4...20mA input
FG	2x digital input, 2x digital output
FH	4x digital input, 4x digital output
FI	2x relay, 2x digital input, 2x digital output
FK	4x relay, 2x digital input, 2x digital output
FM	2x 0/4...20mA input, 2x relay, 2x digital input, 2x digital output
F0	Without
F2	2x relay for cleaning; limit

Liquiline CM444R – Order codes (issue 10.01.2022)	
Selection code	Description
F4	4x relay for cleaning; limit
50 Power supply	
6	24VDC with the external DC/DC Converter PULS CD5.241 (Railmount)
620 Additional	
PK	External display for cabinet mounted, Navigator+Softkeys including cable IP66
PP	SD card 1 GB

Liquiline CM448 – Order codes (issue 10.01.2022)	
Selection code	Description
10 Approval	
AA	Non-hazardous area
BM	ATEX
CA	CSA C/US General Purpose
CD	CSA C/US NI Cl. I, Div. 2, GP ABCD T4A
CL	CSA C/US NI Cl. I, Div. 2, GP ABCD T4A
GR	Non-hazardous area + EAC designation
IE	IECEX
UM	UK EX
20 Digital communication	
A	Modbus TCP, Webserver + optional Output
B	Webserver + optional Outputs
C	HART, Webserver + optional Outputs
D	Ethernet/IP, Webserver + optional Outputs
J	PROFINET IO, Webserver + optional Outputs
0	Without
1	HART
2	PROFIBUS DP (+Ethernet configuration)
3	Modbus RS485 (+Ethernet configuration)
25 Digital sensor; Output; Input	
2A6	2x; 2x 0/4...20mA, 4x relay, 4x digital; 4x digital
2A7	2x; 2x 0/4...20mA, 8x relay, 4x digital; 4x digital
6AA	6x; 8x 0/4...20mA, 4x relay; none
6A1	6x; none; none
6A3	6x; 4x relay; none
6A5	6x; 2x 0/4...20mA, 4x relay, 2x digital; 2x digital, 2x 0/4...20mA
6A6	6x; 6x 0/4...20mA; none
6A7	6x; 6x 0/4...20mA, 2x digital; 2x digital
6A8	8x; 6x 0/4...20mA; none
8A2	8x; none; none
8A3	8x; 2x 0/4...20mA; none
8A4	8x; 8x 0/4...20mA; none
8A5	8x; 8x 0/4...20mA, 4x relay; none
50 Power supply	
1	100...230V AC (50/60Hz)
60 Cable Entry Housing; Sensors	
AA	Metric; Metric
AB	NPT; NPT
AC	G; G
AD	Metric; M12
AE	NPT, M12
AF	G; M12
65 Female Jack Fieldbus Communication	

Liquiline CM448 – Order codes (issue 10.01.2022)	
Selection code	Description
BA	Without
BB	M12 (Profibus DP, Modbus RTU)
BC	M12 (Ethernet configuration, Modbus TCP)
BD	M12 (Ethernet config., Modbus TCP)
70 Cable Entry Set	
A	Enclosed
B	Mounted
610 Additional	
NS	SD-Card, 1 GB, Industrial Flash Drive

Liquiline CM448R – Order codes (issue 10.01.2022)	
Selection code	Description
10 Approval	
AA	Non-hazardous area
BM	ATEX
CA	CSA C/US General Purpose
CD	CSA C/US NI Cl. I, Div. 2, GP ABCD T4A
CL	CSA C/US NI Cl. I, Div. 2, GP ABCD T4A
GR	Non-hazardous area + EAC marking
IE	IECEX
UM	UK EX
20 Digital communication	
A	Modbus TCP, Webserver + optional Output
B	Webserver + optional Outputs
C	HART, Webserver + optional Outputs
D	Ethernet/IP, Webserver + optional Outputs
J	PROFINET IO, Webserver + optional Outputs
0	Without
1	HART
2	PROFIBUS DP (+Ethernet configuration)
3	Modbus RS485 (+Ethernet configuration)
25 Digital sensor; Output; Input	
2A6	2x; 2x 0/4...20mA, 4x relay, 4x digital; 4x digital
2A7	2x; 2x 0/4...20mA, 8x relay, 4x digital; 4x digital
6AA	6x; 8x 0/4...20mA, 4x relay; none
6A1	6x; none; none
6A3	6x; 4x relay; none
6A5	6x; 2x 0/4...20mA, 4x relay, 2x digital; 2x digital, 2x 0/4...20mA
6A6	6x; 6x 0/4...20mA; none
6A7	6x; 6x 0/4...20mA, 2x digital; 2x digital
6A8	8x; 6x 0/4...20mA; none
8A2	8x; none; none
8A3	8x; 2x 0/4...20mA; none
8A4	8x; 8x 0/4...20mA; none
8A5	8x; 8x 0/4...20mA, 4x relay; none
50 Power supply	
6	24VDC with the external DC/DC Converter PULS CD5.241 (Railmount)
620 Additional	
PK	External display for cabinet mounted, Navigator+Softkeys including cable IP66
PP	SD card 1 GB

Application/Limitation

This type approval certificate refers to the transmitter CM442/CM444/CM444R and CM442R/ CM448/CM448R but not to the connectable sensors.

All sensors and sensor cables which are listed in TI00444C/TI01112C can be connected to the transmitter CM442/CM444/CM444R and CM442R/CM448/CM448R.

Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to the Rules and Ex-Certification/ Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

Type Approval documentation

Test report: paconsult no. 12-4253 (14.11.2012)
Test report: paconsult no. 14-5856 (04.11.2014)
Test report: paconsult no. 17-9052B (28.06.2017)
Test report: paconsult no. 19-11390 (07.03.2019)
Test report: hansecontrolcert Hermes no. 13-L-00387-01 (15.08.2013)
Test report: E+H no. 970003308 (17.05.2012)
Test report: E+H no. 970003309 (21.05.2012)
Test report: E+H no. 970003310 (22.05.2012)
Test report: TREO No. 001-18 (15.03.2018)
Test report: TREO No. 0081-19 (22.03.2019)
Test report: Phoenix TestLab No. U190664E1 (12.07.2019)
Test report: Phoenix TestLab No. U190664E2 (12.07.2019)
Test report: Phoenix TestLab No. E190664E1 (05.11.2019)
Test report: Phoenix TestLab No. E190664E2 (02.09.2019)
Test report: Phoenix TestLab No. U212423E1 (18.01.2022)
Test report: Phoenix TestLab No. U210641E1 2nd version (26.01.2022)
Test report: Phoenix TestLab No. E210641E1 (28.06.2021)
Documents for Type Approval according to "Table of Content of submitted documents"
(Revision 1.0 / 03.02.2014)
Documents for Type Approval according to "Table of Content of submitted documents"
(Revision 1.0 / 24.04.2018)
Documents for Type Approval according to "CM44 Marine S3 – Product documentation v0.2.xls"
Technical information TI00444C/07/EN/26.22-00 Liquiline CM442/CM444/CM448
Technical information TI01112C/07/EN/11.22-00 Liquiline CM442R/CM444R/CM448R
Operating Instructions BA00444C/07/EN/30.22-00 Liquiline CM442/CM444/CM448
Operating Instructions BA01225C/07/EN/16.22-00 Liquiline CM442R/CM444R/CM448R
Technical description V1.0
Order codes for CM44x/CM44xR, issue 10.01.2022
Type approval assessment report issued at Augsburg on 2020-07-01

Tests carried out

Applicable tests according to class guideline DNV-CG-0339, August 2021.

Marking of product

The products to be marked with:

- manufacturer name
- model name
- serial number
- power supply ratings

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE