Evaluation Certificate

Number **TC7308** revision 1
Project number 3934429

Issued by	NMi Certin B.V.
In accordance with	- WELMEC 8.8, 2017: Guide on the General and Administrative Aspects of the Voluntary System of Modular Evaluation of Measuring instruments - WELMEC 7.2, 2018: Software Guide - OIML R117, 2019: Dynamic measuring systems for liquids other than water - OIML R139, 2018: Compressed gaseous fuel measuring systems for vehicles
Producer	Coptron soc. Coop. Via Industria, 6 23017 Morbegno (So) Italy
Part	An **electronic calculating and indicating device** intended to be used as a part of an interruptible / non- interruptible dynamic measuring systems for liquids other than water.

Producer mark or name	:	Coptron soc. Coop.
Type designation	:	CPTH02
Accuracy class	:	0.5 (OIML R117) 1.5 (OIML R139)

Further properties and test results are described in the annexes:
- Description TC7308 revision 1.
- Documentation folder TC7308-2.

Initially issued	8 April 2008
Remark	This revision replaces the previous version(s), including its documentation folder.

Issuing Authority

NMi Certin B.V.
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1 General information on the electronic calculating and indicating device

All properties of the electronic calculating and indicating device, whether mentioned or not, shall not be in conflict with the legislation.

This Evaluation Certificate is the positive result of the applied voluntary, modular approach, for a component of a measuring instrument, as described in WELMEC 8.8, 2017.

The complete measuring instrument must be covered by relevant metrological certification that is valid in the country where the instrument is put into use.

1.1 Essential parts

The electronic calculating and indicating device can be composed of the following parts:

Description	Documentation	Remarks
CPU boards		
CPTH00106/2	7308/1-03; 7308/1-04	-
CPTH00106/4	7308/1-05; 7308/1-06	Rev 1 board
	7308/1-07; 7308/1-08	Rev 7 board
General electronics		
CPT31106	7308/1-09; 7308/1-10	Multi product interface in case a side has more than 2 nozzles. Maximum is 4 nozzles per side.
CPT25014	7308/1-11; 7308/1-12	Exi barrier for connecting digital in- and outputs.
CPT30803	7308/1-13; 7308/1-14	Motor power board
Indicating devices		
CPT08906	7308/1-15	Contometric display, rev. 0 board
	7308/1-16; 7308/1-17	Contometric display, rev. 1 board
CPT29906	7308/1-18; 7308/1-19	Volumetric display
CPT09024	7308/1-20; 7308/1-21	Exi volumetric display
CPT00525	7308/1-22; 7308/1-23	Exi display
CPT08924	7308/1-24; 7308/1-25	Exi ATEX barrier for connection displays CPT09024 and CPT00525.

Description	Documentation	Remarks
Serial interfaces		
CPT06606	7308/1-26; 7308/1-27	RS485 interface for: - Modbus protocol - Nuovo Pignone protocol - H2P Protocol - DART Protocol
CPT13521	7308/1-28; 7308/1-29	IFSF LON interface
CPT29506	7308/1-30; 7308/1-31	PUMALAN current loop interface
CPT04516	7308/1-32; 7308/1-33	H2P protocol
Impulse encoders		
CPTE06	7308/1-34; 7308/1-35; 7308/1-36	-
Eltomatic, type 01-09	7308/1-37	-
Key pads (for volume or amount pre-set or entering the menu system)		
CPT00606	7308/1-38	12+1 button keypad (optional)
CPT45106	7308/1-39	4+1 button keypad (optional)
Power supply		
CPT29406/230/A	7308/1-40	
CPT08121	7308/1-41	MEAN WELL, RS-75 series, 75W
CPT09913	7308/1-42	Weidmüller, PRO TOP1 1210W 24V 5A EX
CPT16908	7308/1-43	Actronic AR09 mains filter
Battery backup	7308/1-44	Photo's
Battery backup 12V	7308/1-45; 7308/1-46	

1.2 Essential characteristics

1.2.1 Temperature range ambient:
- -25 °C … +55 °C
- Humidity class H3: condensing open location

1.2.2 Environment classes: M1 / E1

1.2.3 Power supply
The electronic calculating and indicating device is powered in the range 100…240 VAC at 50/60 Hz.

1.2.4 Software specification (refer to WELMEC guide 7.2)

- Software type P.
- Risk Class C.
- Extensions T and S, while extensions L and D is not applicable.

The validated software versions and checksums are:

Software versions	CRC checksum	Remarks
CPTH02 001.10	9A92	Not suitable for CG dispensers.
CPTH02 002.00	07d7	

The validity of the program and the parameters are continuously checked. If these checks fail, an alarm is generated. The metrological software is identified by the software version and/or checksum, in Annex 1 is described how the software version and checksum can be checked.

1.2.5 Legal software functions

The Weights and Measures part of the program that contains the test routines for memory, transmissions and calculation.
Other functions are for optional valve management, monitoring the nozzle-switches, managing and protection of the pump motors, monitoring and protection of the volume / mass impulses / data, registering of volume(s), check on communication between calculator and hydraulic controller, calibration procedure and setting of prices per unit.

1.2.6 Data communication

The electronic calculating and indicating device is capable of indicating several quantities. Use for Weights and Measures related purposes is allowed for the following quantities:

- Mass in case of the measurement of compressed gases (CNG, hydrogen, etc.)
- Volume in case of the measurement of liquid fuels (gasoline, diesel, LPG, etc.)

The following input(s) can be used for legally relevant data:

- Pulse input. Double channel, phase shifted, maximum frequency is 500 Hz.
- RS485 Modbus serial communication with flow meters which support the Modbus protocol.

The following output(s) can be used for legally relevant data:

- LCD/Segment display.
- Serial communication (RS485 or RS232).

The following protocols are available for communication with a self-service device:

- IFSF-LON protocol.
- Dresser Wayne DART protocol.
- Gilbarco / Logitron Pumalan protocol.
- H2P protocol.
- Nuovo Pignone protocol.
- Modbus Protocol

1.3 Essential shapes

1.3.1 Inscriptions
On the electronic calculating and indicating device, clearly visible, at least the following is inscribed:
- Evaluation Certificate number **TC7308**).
- Name or trademark of the producer.
- Type designation.
- Serial number and year of manufacture.

Parts of the inscriptions, except for the Evaluation Certificate number and serial number, may be stated on the nameplate or on a separate Data Sheet belonging to the complete dispenser unit.
See documentation number 7308/1-01 for an example of the markings.

The markings must be clearly visible without removing any covers.

1.3.2 Indication
Indication of volume or mass, price and price per unit.

1.4 Conditional parts

1.4.1 Housing
The housing of the electronic calculating and indicating device is made of steel.

1.4.2 Electro-mechanical totalizer (optional).

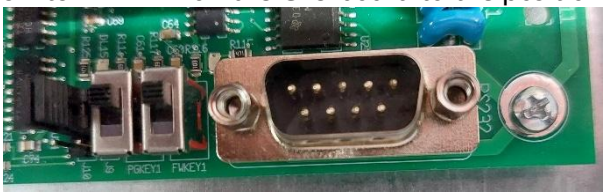
1.4.3 Heater

1.4.4 Connections
- Motor power connection, See documentation number
- Vapour recovery system (optional). See documentation numbers 7308/1-47, 7308/1-48, 7308/1-49 and 7308/1-50.

1.4.5 EMI protection measures
The following measures are taken for EMI protection:
- Main's filter of brand Actronic, series AR09 or similar.
- All used cables are shielded.

1.5 Conditional characteristics

1.5.1 Programming
The legal metrological changes can be done via the menu system of the electronic calculating and indicating device. The setting are protected against changes, by setting switch PFKEY1 on the CPU board to the position as shown in the picture below.



If set incorrectly:
- A red led illuminates on the CPU board near the switch.
- Error code E108 is shown.
- Deliveries cannot start and ongoing deliveries are terminated.

1.5.2 Parameter settings
The parameters mentioned in Annex 2, shall be set to the belonging values and in the secure mode "read only".

1.5.3 Display test
The display test is used for visual control of the indicating devices. The test cycle is executed when the nozzle is released from the holder and exists of resp. all digits “8”, all digits “blank”, all digits “0”.

1.6 Conditional shapes

1.6.1 Volume / mass / price indication: 6 digits, for example 9999,99.

1.6.2 Unit price: 6 digits, for example 999,999 NCU.

1.6.3 The position of the decimal sign is programmable.

1.7 Non-essential characteristics

- Protected electronic totalisers.
- Electromagnetic totalisers (optional).

2 Seals

The following items are sealed:
- The inscriptions are fixed to the electronic calculating and indicating device and secured against removal by seal or it will be destroyed when removed.
- The cover of the processor is sealed against removal to protect access to the Weights & Measures switch PGKEY1. The Weights & Measures switch is set to the ON position before this seal is applied.
- The impulse encoders against opening and removal

See documentation number 7308/1-02 for an example of the sealing positions.

3 Conditions for conformity assessment

- Other parties may use this Evaluation Certificate only with the written permission of the producer.

4 Reports

An overview of the performed tests is given in Evaluation Report ER7308 revision 1 issued together with this Evaluation Certificate.

Annex 1

Steps required to recall the installed software version and corresponding checksum.

The software version and the checksum can be recalled using the keys which are present on the display module or on the 3x4 Keypad. The keys of the volume display are indicated between round brackets "( )" and the keys of the keypad are indicated between straight brackets "[ ]".
Recalling the software version and checksum, requires opening of the display, for which a physical key is needed, but can be performed without breaking a seal.

The following steps are required:

(1) Press and hold (Key) or [Key switch] which is located at the back of the keypad.
Error code E107 is shown on the unit price display.

(2) While holding (Key) or [Key switch] press (P0) / [1] until PARAM is shown on the price display.

(3) Press 3x (P1) / [4] to scroll down until INFO is shown on the price display.

(4) Press (P3) / [A] to enter the menu item.
1␣␣1 is shown on the unit price display (␣ is indicating a space)

(5) Press 6x (P1) / [4] to scroll down until 1␣␣7 is shown on the unit price display.

(6) Press (P3) / [A] to enter the menu item.
The software version is shown on the quantity display and the checksum is shown on the unit price display. See the example below, which shows software version 2.00 with CRC 07d7.

(7) Press (P3) / [A] to exit the menu item.

(8) Press 2x (P1) / [4] to scroll down until ESC is shown in the unit price display

(9) Press (P3) / [A] to exit the menu item.

(10) Press (P1) / [4] and ESC is shown in the price display

(11) Press (P3) / [A] to exit the menu system.

Annex 2

Mandatory parameter settings

The mandatory parameter settings are given in the overviews below.
In the overview ✸ indicates a parameter value where the actual setting needs to be explained by the manufacturer or the end user during the initial verification.

Mandatory parameter settings for software version CPTH02 001.10

Parameter number	Setting	Description / Remarks
P002✸	correct address	Address in the station network (not applicable to stand alone mode).
P003✸	correct protocol	Communication protocol
P006✸	correct combination	Combining nozzle with product
P008	0 (zero seconds)	Time in seconds for replacing nozzle
P031	MMQ 2 L: 0 … 4. MMQ 5 L: 0 … 10.	Hidden centilitres
P034	MMQ 2 L: 2. MMQ 5 L: 5.	Number of incongruent impulses before the delivery is blocked.
P036✸	Correct setting	Number of pulses per litre
P038	7	Pulse counting time after ending the delivery
P047✸	Correct setting	Prescaler pulser
P055	0 (not used)	Temperature sensor used
P059✸	Correct setting	Impulse encoder type
P071✸	Correct setting	Display operation
P072✸	Correct setting	Display presence check
P073	0 (absent) or 1 (present)	Electro mechanical totalizer presence
P075	0 (unit price)	Visualization on unit price display
P076	0 (litres)	Metering units
P077	2	Number of digital digits on amount display
P078	2	Number of digital digits on volume display
P079	3	Number of digital digits on unit price display
P080	1	Ratio between price multiplied by volume, and amount
P081	3 (no rounding)	Amount rounding off
P103	107 (W&M switch)	Programming key function. W&M parameters can be viewed, but not altered.
C001	Not used when in normal operation mode.	Meter calibration procedure

Mandatory parameter settings for software version CPTH02 002.00

In the overview below:
F indicates parameter which are only applicable to fuel dispensers and
C indicates parameters which are only applicable to compressed gas dispensers.

Parameter number	Setting	Description / Remarks
2*	correct address	Address in the station network (not applicable to stand alone mode).
3*	correct protocol	Communication protocol
6*	correct combination	Combining nozzle with product
8	0 (zero seconds)	Time in seconds for replacing nozzle
30*	Correct setting	Dispenser configuration
31	MMQ 2 L: 0 … 4. MMQ 5 L: 0 … 10.	Hidden centilitres
34	MMQ 2 L: 2. MMQ 5 L: 5.	Number of incongruent impulses before the delivery is blocked.
36*	Correct setting	Number of pulses per litre
37*	Less than or equal to 120.	Maximum time without delivery pulses in seconds
38	7 (= 4 seconds)	Pulse counting time after ending the delivery
48*	Correct setting	Prescaler pulser
49*	Correct setting	Pulse output divider
50*	Correct setting	Minimum pulse period
55	0 (not used)	Temperature sensor used
57	0 (not used)	Pressure transmitter
59*	Correct setting	Impulse encoder type
70*	Correct setting	Contrometric display type
71*	Correct setting	Display visualisation
72*	Correct setting	Display presence control
73	0 (absent) or 1 (present)	Electro mechanical totalizer presence
75	0 (unit price)	Visualization on unit price display
76	0 (litres) or 3 (kilogram)	Metering units
77	2	Number digital digits amount display
78	2	Number digital digits volume display
79	3	Number digital digits unit price display

Parameter number	Setting	Description / Remarks
80	1	Ratio between price multiplied by volume, and amount
81	3 (no rounding)	Amount rounding off
85*	Correct setting	GPL type
86*	Correct setting	Cubic meters conversion coefficient
95*	Correct setting	Preset duration (in seconds)
96*	Correct setting	Amount preset multiplier (12 keys)
97*	Correct setting	Volume preset multiplier (12 keys)
98*	Correct setting	Setting up digit for automatic balance
99*	0 (disabled) or 1 (enabled)	Fixed preset
100*	0 (disabled) or 1 (amount) or 2 (volume)	Preset buttons type (4 keys)
101*	Correct setting	Preset buttons value
103	107 (W&M switch) Weights and Measures parameters can be viewed, but not altered.	Programming key function
115*	0 (standard) or 1 (Promass 84)	Endress+Hauser meter type
168*	0 (4 digits) or 1 (6 digits)	Price type
177*	0 (enabled) or 1 (disabled)	Mass flow meter totalizers start (Mico Motion only)
178*	0 (standard) or 1 (advanced density and totalizer 2)	Mass meter data reading. Option 1 is for Micro Motion only.
190*	Correct setting	Cut off mass flow meter (percents of measuring unit)
198*	Correct setting	Hose mass compensation h2 (grams)
199*	Correct setting	Hose volume compensation h2 (cm^3)
C001	Not used when in normal operation mode.	Meter calibration procedure