

Issuing authority NMI Certin B.V.  
Person responsible: M.Ph.D. Schmidt

Applicant and Manufacturer Cetil Dispensing Technology, S.L.  
C/Pelaya 37  
Polígono Industrial Río de Janeiro  
28110 Algete (Madrid)  
Spain

Identification of the certified type **A compressed gas (CG) dispenser** for hydrogen  
Manufacturers mark: Cetil  
Type: E30 H2 A x x\* y y y\*\*

Characteristics See following page(s)  
Remarks \* x x details the dispenser configuration, see characteristics for details  
\*\* y y y details the dispensing mode, see characteristics for details

This OIML Certificate is issued under scheme A.

This Certificate attests the conformity of the above identified type (represented by the sample(s) identified in the OIML Type Evaluation Report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

**R 139: 2018** "Compressed gaseous fuel measuring systems for vehicles"

Accuracy class 2 or 4

This Certificate relates only to the metrological and technical characteristics of the type of measuring instrument covered by the relevant OIML International Recommendation identified above.  
This Certificate does not bestow any form of legal international approval.

This certificate and supporting reports comply with the requirements of OIML-CS-PD-07 clause 6.2.

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Issuing Authority **NMI Certin B.V., OIML Issuing Authority NL1**  
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Certification Board

NMI Certin B.V.  
Thijssseweg 11  
2629 JA Delft  
the Netherlands  
T +31 88 636 2332  
[certin@nmi.nl](mailto:certin@nmi.nl)  
<http://www.nmi.nl/>

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The conformity was established by the results of tests and examinations provided in the associated report(s):

- No. NMI-2546086-01 dated 5 August 2022 that includes 28 pages.

### Characteristics of the measuring instrument

In Table 2 the general characteristics of the measuring instrument are presented.

Each CG dispenser consists at least of one measuring system made up of the following essential parts:

- A flow meter (measurement sensor and transducer); and
- A calculating/indicating device.

In Table 3 the overview of the essential parts of the measuring instrument are presented.

The construction of the measuring instrument is recorded in the Documentation folder no. T9010-1.

The type designation of the dispenser details the actual configuration. E30 H2 A is the "frame model" with the extension "x x" and "y y y y" which details the configuration as per table 1. Each column of the table gives the possible values per item of the type designation.

**Table 1 Configurations**

Dispenser information (x x)			Dispenser Measuring system(s) information (y y y y)		
Frame model	Number of measurement systems	Number of physical inputs <sup>1</sup>	Dispensing mode <sup>4</sup>	Number of physical inputs <sup>1</sup>	Other options <sup>1</sup> (Heat exchanger)
E30 H2 A	1 (Single)	1	Hxx (Single hose, xx0 Bar)	1	X
	2 (Double) <sup>2</sup>	2	HxxHF (Single hose, xx0 Bar, High flow)	2	
		3	HxxYHxx (Dual hose, Hxx & Hxx) <sup>3</sup>	3	
			HxxHFYHxx* (Dual hose, HxxHF & Hxx) <sup>3</sup>	1(E)	
				2(E)	

1) Non-essential indication

2) Double systems have two measurement systems in one dispenser

3) Dual hose systems use one measurement system for two hoses: hoses cannot be used simultaneously

4) xx indicates the operating pressure (i.e. 35 for 350 bar or 70 for 700 bar)

An example of type designation is E30 H2 A 23 H35HF 2X H70YH35 3X, for a dispenser with two measurement systems and three inputs. Where system 1 is a single H35HF with two inputs and system 2 is a H70YH35 with three inputs. Both systems have a heat exchanger.

The CG dispenser automatically depressurizes the entire section from the filling valve up to and including the hose via the purge valve for safety reasons. Delivery is only allowed when the purge valve is fully closed.

The CG dispenser performs a correction to account for the depressurization quantity, for this purpose the temperature, pressure and volume of the depressurization section needs to be known:

- The pressure and temperature are measured in the depressurization section.
- The electronic calculating and indicating device monitors the pressure and temperature measurement for status and deviation from a secondary measurement. In case of abnormalities an alarm is raised, and the refuelling terminated.
- The actual volume of the depressurization section is determined based on the components of the dispenser (Pipework/valves/hoses/etc) and configured in the calculating/indicating device.

**Table 2 General characteristics**

Flow rate	Depending on flow sensor used
Minimum measured quantity	1 kg
Maximum pressure	Depending on flow sensor used
Environmental classes	M1 or M2 (depending on flow sensor used) / E2
Ambient temperature range	-40 to +55 °C; condensing humidity
Product temperature range	Depending on flow sensor used
Intended for the measurement of	Hydrogen (H2)
Power supply voltage	230 AC; 50 Hz

**Table 3 Overview parts of the measuring instrument**

Part	Producer	Type	OIML certificate	OIML Reports	Remarks
Measurement sensor	Emerson Process Management Flow B.V.	HPC015	R139/2018-A-NL1-21.03	-	To be used with Emerson transducer.
Measurement transducer	Emerson Process Management Flow B.V.	700, 800, 820, 1700, 2500, 2700, 3500, 3700 and 5700	-	See Table 4	To be used with Emerson sensor.
Measurement sensor	Rheonik	RHM04 or RHM10	R139-2018-A-NL1-22-01	-	To be used with Rheonik transducer.
Measurement transducer	Rheonik	RHE42 or RHE45	R139-2018-A-NL1-22.04	-	To be used with Rheonik sensor.
Calculating / indicating device	Cetil	EAS2	-	See Table 5	-

**Table 4 General characteristics of the measurement transducer type 700, 800, 820, 1700, 2500, 2700, 3500, 3700 and 5700**

Producer	Emerson Process Management Flow B.V.
Type	700, 800, 820, 1700, 2500, 2700, 3500, 3700 and 5700
Documentation folder	TC8519-4 (5700), TC7057-17 (all other types)
Reports	<p>No. CPC-307228-1 dated 21 February 2005 that include 35 pages;          No. CPC-607580-1 dated 26 April 2007 that include 32 pages;          No. CPC-610406-2 dated 29 January 2008 that include 142 pages;          No. CPC-710466-1 dated 19 November 2008 that include 64 pages;          No. NMI-11200214-01 dated 17 May 2011 that include 13 pages;          No. NMI-11200214-02 dated 17 May 2011 that include 16 pages;          No. NMI-11200345-2 dated 20 October 2011 that include 10 pages;          No. NMI-11200708-2 dated 13 February 2012 that include 15 pages;          No. NMI-SO12200192-1 dated 23 May 2012 that include 15 pages;          No. NMI-SO12200736-1 dated 10 January 2013 that include 16 pages;          No. NMI-SO13200862-1 dated 4 June 2013 that include 15 pages;          No. NMI-SO13203381-01 dated 12 September 2013 that include 15 pages;          No. NMI-SO13204037-01 dated 4 November 2013 that include 16 pages;          No. NMI-SO14200881-01 dated 7 March 2014 that include 15 pages;          No. NMI-1901208-01 dated 5 July 2018 that include 114 pages;          No. NMI-1901208-02 dated 5 July 2018 that include 17 pages;          No. NMI-1902436-01 dated 31 July 2018 that include 27 pages.          No. NMI-1902436-01 dated 31 July 2018 that include 27 pages;          No. NMI-2571596-01 dated 30 September 2021 that include 38 pages;          No. NMI-2571596-01 dated 30 September 2021 that include 32 pages;          No. NMI-14200115-01 dated 4 December 2015 that include 68 pages;          No. NMI-14200115-02 dated 4 December 2015 that include 52 pages;          No. NMI-14200115-03 dated 4 December 2015 that include 10 pages          No. NMI-14200115-04 dated 15 January 2016 that include 15 pages;          No. NMI-14200115-05 dated 15 January 2016 that include 15 pages;          No. NMI-14200115-06 dated 22 April 2016 that include 21 pages;          No. NMI-15200770-01 dated 4 February 2016 that include 9 pages.</p>
Environmental classes	<p>M3 / E3 for 700, 800, 820, 1700, 2700, 3500, 3700, 5700 and dual pulse converter          M2 / E2 for 2500</p>
Ambient temperature range	<p>-40 °C / +55 °C 700, 800, 820, 1700, 2700, 3500, 3700, dual pulse converter          -25 °C / +55 °C for 5700          -40 °C / +55 °C for 5700 in case the measurement results can be read and / or recorded with an approved instrument</p>
Power supply voltage	<p>18-30 VDC for the 820          24 VDC for the 2500          85 ... 265 VAC or 18 ... 100 VDC for the 1700/2700/3500/3700          100 ... 240 VAC or 21 ... 90 VDC for the 5700</p>
Software revision	See details on the following pages

The validated software versions and checksums are:

700 Core Processor					
Version	Checksum	Version	Checksum	Version	Checksum
2.0	51FF	2.7	F666 <sup>*)</sup>	3.2	18D0
2.1	2B3F	2.8	1DEA <sup>*)</sup>	3.3	B0D1
2.2	9005	3.0	D00D <sup>*)</sup>	3.40	73A9
2.3	D75B	3.0-ETO17153	97D6 <sup>*)</sup>	3.42	F00C
2.4	474F	3.11- ETO19413 <sup>**)</sup>	14AD	3.50	11AA
2.5	14AD	3.12	1F1B <sup>*)</sup>	3.52	3C4A
2.6	D732 <sup>*)</sup>	3.13-ETO18951	8BF8 <sup>*)</sup>		

<sup>\*)</sup> Indicated as 14AD, corrected from v3.2

<sup>\*\*)</sup> Linearization feature

800 Enhanced Core Processor					
Version	Checksum	Version	Checksum	Version	Checksum
3.11	891378AB	3.91-ETO21156	65F98DD7	4.60	DDB76E3C
3.21	9893B999	3.94	47EB3E10	4.70	AEB92E3F
3.30	A73D25DA	3.96	756C1BFD	4.80	F1583A44
3.42	7FA82CE8	4.00	C582F843	4.9	6083BF9B
3.50	D9343F05	4.02	8D61C368	5.08	4D368E71
3.52	132CCB63	4.14	40860C63	5.1	82C541D9
3.6	A9CA4E81	4.20	2983A9BE	5.2	BD69FDD6
3.61-ETO17170	9AA358FF	4.21- ETO21931 <sup>*)</sup>	D6349259	5.22	F4A8D922
3.7	BE73CD62	4.40	B280233F	5.23-ETO45214	B1D70450
3.71-ETO18982	580D32B6	4.42	D7BA0841	5.30	65828884
3.8	8CA8E7D1	4.50	6B48C624	5.33	BF3164F6
3.81-ETO20775	7931CE3D	4.51-ETO32353	BC1660E8		
3.9	58CB3E0C	4.51-ETO33244	D7B81135		

Notes:

- For the 800ECP v3.80 or higher: by writing ETO number 13511 in Modbus register 5005, the linearization feature is enabled.
- 800 ECP versions lower than 5.xx are not compatible with hardware version v4 of the Enhanced Core Processor. There are three hardware versions of the 800:
  - 800 v1; identified with part number 20006069.
  - 800 v2; identified with part number 20016889.
 This is the same as the v1 but equipped with RoHS components (Restriction of Hazardous Substances).

- 800 v3; identified with part number MMI-20020807, rev AD.
- 800 v4; identifies with part number MMI-20020807, rev. AE.  
This version uses the SSM2604 CODEC from a different supplier, resulting in:
  - Updated board electronics
  - Updated software version (version 5.00 and higher), which is backwards compatible with the previous hardware versions (v1, v2 and v3).
- 800 v5; identifies with part number MMI-20088230, rev. AA.
  - This version uses the same CODEC as the v4 hardware, but with added compensation circuit and the removal of unused parts of the boards to simplify the lay-out.
- 800 v6; identifies with part number MMI-20093828, rev. AA.
  - This version uses the ADAU1361 CODEC instead of the SSM2604 CODEC. The ADAU1361 is a more modern version with better future availability. This version needs software version 5.00 and higher.

See the documentation folder TC7057-17, section 800 Core Processor

- <sup>\*)</sup> Density Based Correction coefficients removed. To be used in gas application measuring Hydrogen or Helium.

820 Remote Dual Core Processor					
Version	Checksum	Version	Checksum	Version	Checksum
1.00	52FB 1CF0	1.30	AC56C460	1.50	F42A4B2C
1.10	787951AA	1.40	8B64EF94		
1.20	3B7249F6	1.41	073C45F2		

Notes:

- Fuel Consumption feature from v1.10 onwards is not approved.
- 820 versions lower than 1.50 are not compatible with hardware version v2 of the Remote Dual Core Processor. There are two hardware versions of the 820:
  - 820 v1; identified with part number MMI-200229698 Rev. AB
  - 820 v2; identified with part number MMI-20029698 Rev. AC.  
This version uses the SSM2604 CODEC from a different supplier, resulting in:
    - Updated board electronics
    - Updated software version (version 1.50 and higher), which is backwards compatible with the previous hardware version (v1).

See the documentation folder, section 820 Dual Core-Processor

1700 / 2700 / 2500		
Software versions with no checksum		
Part	Version	Remark
1700	3.2, 3.3, 3.4, 3.4.1, 3.5.3, 3.6,	
2700	3.7, 4.1, 4.2	
2500	4.0, 4.1, 4.2	

1700 / 2700 / 2500					
Version	Checksum	Version	Checksum	Version	Checksum
5.0/1.0	7A7F0B39	6.4/1.3	B77B25C9	7.1/1.3	88FB1B5C
5.1/1.0	95F0BC47	6.5/1.3	88FB1B5C	7.2/1.3	9ECE81F1
5.12/1.0	A14FBFB9	6.6/1.3	9ECE81F1	7.3/1.3	4A5365D4
5.2/1.0	746CBE79	6.7/1.3	4A5365D4	8.0/1.3	1E1467F9
6.0/1.1	BB615B55	6.8/1.3	1E1467F9	8.02/1.3	201465F9
6.1/1.2	13176BE6	6.82/1.3	201465F9		
6.11-ETO19266	9B13F21A	7.0/1.3	B77B25C9		

3500 / 3700					
Version	Checksum	Version	Checksum	Version	Checksum
7.0/1.1	A1C34F1C	8.1/1.3	4279A001	8.41-ETO26097	31D36D05
7.1/1.1	D5783FCF	8.14/1.3	62F125F2	8.43-ETO31478	E35DF3C0
7.2/1.1	20609FD3	8.2/1.4	368139C5	8.50/1.5	1C146AF7
8.0/1.2	158A12BD	8.21-ETO23686	D507F464	8.51-ETO22243	B18A0CB3
8.02-ETO18947	1CC007C4	8.3/1.4	8F65A9E9		
8.03-ETO19299	2D6104C2	8.4/1.4	227B10D2		

See documentation folder page 7057/35-01 with an overview of the ETO Software for the different transmitters.



5700					
Version	Checksum	Version	Checksum	Version	Checksum
Transmitter Software (Weights & Measures) <sup>[1]</sup>					
1.20 (1.0)	2DF0D8E9	2.10 (2.0)	23DD3385	4.0 (3.0)	0E4997D5
1.30 (1.1)	ADE631BB	3.0 (3.0)	06108400	4.07 (4.0)	44477758
1.85 (2.0) ETO28130	0EA71B41	3.1 (3.0)	2DE64BB2	4.1 (4.0)	AFE0673B
2.00 (2.0)	2F52132D	3.2 (3.0)	8CB1FE4B	4.2 (4.0)	627B3E99
Internal Core Software					
4.02	8D61C368	4.60	DDB76E3C	5.20	BD69FDD6
4.14	40860C63	4.70	AEB92E3F	5.22	F4A8D922
4.20	2983A9BE	4.80	F1583A44	5.30	65828884
4.40	B280233F	4.90	6083BF9B	5.33	BF3164F6
4.42	D7BA0841	5.08	4D368E71		
4.50	6B48C624	5.10	82C541D9		
PIC Firmware					
8.0	0000DE9C				
LCD PIC Firmware *)					
3.0	000081D5 (1.20)	3.0	00007442 (1.30 and later)		

Notes:

- Internal core software versions lower than 5.xx are not compatible with the new Core Processor Board, reference EB-20084741, documentation numbers 8515/14-01 and 8519/14-02.
- Internal core software versions higher than 5.xx are backwards compatible with the old Core Processor Board, reference EB-20025291, documentation numbers 8515/0-01 and 8519/0-02.

\*) Between brackets the transmitter software is mentioned which belongs to the stated checksum.

<sup>[1]</sup> The transmitter software and the Weights & Measures (W&M) software form a matched set. Please note that the W&M software does not have a checksum and means W&M is licensed.

**Table 5 General characteristics of the calculating/indicating device type EAS2**

Producer	Cetil
Type	EAS2
Documentation folder	TC8491-3
Reports	- No. NMI-15200617-01 dated 14 April 2016 that includes 85 pages. - No. NMI-15200617-02 dated 14 April 2016 that includes 20 pages. - No. NMI-15200617-04 dated 14 April 2016 that includes 34 pages.
Maximum volume indication	8 positions 99999999
Maximum unit price	8 positions 99999999
Maximum price to pay	8 positions 99999999
Environmental classes	M3 / E2 / H3
Ambient temperature range	-40 °C / +55 °C
Software identification	See below table
Power supply voltage	230 AC; 50 Hz

The validated software versions and checksums are:

Module	Software version	Date	Checksum
MCON	02-00	30-06-22	64465ED1
MVIS			9119A678
MEES			458C8115
M420			7305BF75

The legally relevant parameters are:

Parameter number	Parameter description	Setting	Remark
00.h.--	<b>Hoses Configuration Parameters</b> (In the following parameters h refers to the number of hose and its value can be either 01 or 06)		
00.h.07	Hose number h hidden quantity.	0-9999 kg*10 <sup>-2</sup>	Must be set below 0,04 kg (Emin)
00.01.08	Fueling point 1 hose piping volume (Depressurization section)	0-9999 cm <sup>3</sup>	Must be set according to actual dispenser depressurization volume
00.06.08	Fueling point 2 hose piping volume (Depressurization section)	0-9999 cm <sup>3</sup>	
00.20.09	Fueling point 1 satellite hose piping volume (Depressurization section)	0-9999 cm <sup>3</sup>	
00.20.10	Fueling point 2 satellite hose piping volume (Depressurization section)	0-9999 cm <sup>3</sup>	

Parameter number	Parameter description	Setting	Remark
11.00.--	<b>Display Parameters</b>		
11.00.06	Display mass configuration	10-87	Left number represent the number of digits. The right number represents the number of decimals which must be set to 2 or higher, avoiding non-significant indications.
20.m.--	<b>Meter Configuration Parameters</b> (In the following parameters m refers to the number of meter and its value can be either 01 or 02)		
20.m.01	Meter m type	1 = HPC015 2 = HPC020 3 = RHM04 4 = RHM10	Must be set according to the meter model used.
20.m.06	Meter m systematic error Systematic measurement error in 1 kg * 10000 kg.	-999/+999	Set during initial verification based if required based on performance testing
40.--.--	<b>Other General Parameters</b>		
40.00.05	Unit price multiplication factor for amount calculation:	0- x1. 1- x10. 2- x100. 3- x1000. 4- /10. 5- /100. 6- /1000.	Must be set to 0 for EURO with three decimals
40.00.06	Amount rounding type The amount is rounded to multiples of the value introduced.	1-9999	Must be set to 1 For EURO
40.01.03	Timeout maximum time without pulses	0-255 10*s	Must be set to 12 or less (less than 120 Seconds)
40.10.06	Access code to calibration level setup menu.	0-999999	To be set during initial verification

**Certificate history:**

Revision	Date	Description of the modification
0	10 October 2022	Initial revision