



Australian Government
**Department of Industry,
Science and Resources**

**National
Measurement
Institute**

36 Bradfield Road, West Lindfield NSW 2070

**Interim
Provisional
Certificate of Approval
NMI P12/2/2**

VALID FOR VERIFICATION PURPOSES UNTIL 1 October 2025

Issued by the Chief Metrologist under Regulation 60
of the
National Measurement Regulations 1999

This is to certify that an approval for use for trade has been granted in respect of the instruments herein described.

AIR LIQUIDE Dual Model H35/H70 Hydrogen Dispenser for Fuel Measuring System

Submitted by Air Liquide Korea Co. LTD
 11F, Teheran-ro 501(Samsung, V-plex)
 Gangnam-Gu
 Seoul, Korea.

NOTE: This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

This approval has been granted with reference to document NMI R 139-1, Compressed Gaseous Fuel Measuring Systems for Vehicles, dated October 2023.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern provisionally approved – interim certificate issued	27/09/24

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI P12/2/2' and only by persons authorised by the submittor.

It is the submittor's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the National Measurement Institute (NMI) and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with document NMI P 106.

Auxiliary devices used with this instrument shall comply with the requirements of General Supplementary Certificate No S1/0B.

Special Conditions of Approval: (Provisional Approval)

This approval is limited to five (5) sites only, the locations of which may be obtained from the National Measurement Institute. The submittor shall advise NMI in writing of the proposed location and serial number of each instrument prior to it being initially verified.

Instruments purporting to comply with this approval shall be marked with approval number 'NMI P12/2/2' and only by persons authorised by the submittor. (Note: The 'P' in the approval number may be a temporary marking.)

The approval will remain provisional pending completion of satisfactory testing and evaluation.

The submittor shall provide NMI with copies of test results from the initial verification and all subsequent tests.

In the event of unsatisfactory performance, the approval may be cancelled (or altered).

The submittor shall implement such modifications as required by NMI. In the event that such modifications (if any are required by NMI) are not made to the satisfaction of NMI, this approval may be withdrawn.

1. Description of Pattern provisionally approved on 27/09/24

Dual model H35/H70 Hydrogen fuel measuring system for refuelling motor vehicles using Hydrogen 350 bar/700 bar fuel. Instruments are approved for attendant-operated mode, or in attended self-service mode when interfaced to a compatible (#) approved fuel dispenser controller.

(#) "Compatible" is defined to mean that no additions/changes to hardware/software are required for satisfactory operation of the complete system including.

1.1 Field of Operation

The field of operation of the measuring system is determined by the following characteristics:

- Minimum measured quantity, M_{\min} 1 kg
- Maximum flow rate, Q_{\max} 3.6 kg/min
- Minimum flow rate, Q_{\min} 0.167 kg/min
- Maximum pressure in the refuelling station gas storage, P_{St} 97 MPa
- Maximum fast fill pressure of the gas, P_v , 45 MPa (H35)
87 MPa (H70)
- Minimum pressure of the gas (if critical) 5 MPa
- Ambient temperature range $-20\text{ }^{\circ}\text{C}$ to $+55\text{ }^{\circ}\text{C}$
- Accuracy Class 2.0
- Nature of fuels to be measured, e.g. Hydrogen

1.2 Components of the Measuring System

The Dual model H70/H35 single mass fuel measuring system includes:

- **Measurement Transducer**

A Coriolis flowmetering system consisting of a RHEONIK model RHM04 sensor (FE450) and RHE28 transmitter (FT450).

(*) Basic model number only – the full model number may have a variety of additional alphanumeric characters, which designate non-metrological features.

- **Adjustment device**

Meters may be provided with an adjustment device which permits modification of the ratio between the indicated mass and the actual mass of gas passing through the meter, by a pressure compensation (PT440).

- **Calculator/Indicator**

A Betacontrol model ADPMPD2/T electronic calculator/indicator compatible to receive electrical signals from a RHEONIK model RHM04 mass flow sensor.

The unit of measurement for measured quantities is kg.

Delivered quantity (kg), Unit Price (\$) and Total Transaction Amount (\$) are displayed on the Human machine Interface (HMI).

Software of a measuring system and/or its constituents shall be clearly identified with the software version or any other token.

- **Outlet Piping**

The pipework from each meter to its hose includes isolating valves.

- **Hose, Nozzle and Transfer Point**

The delivery hose has a nominal bore of approximately 6.35 mm (for H35) / 4.5mm (for H70) and may have a return vent line having a nominal bore of approximately 2 mm (for H35)

The delivery hose and the return vent line are fitted with hose-break couplings.

The transfer point is in the form of model TK16 or TK16-HF (for H35) / TK17(for H70)/ fill coupling, fitted with an integral fill/vent valve which starts and stops the flow

of gas. A bleed valve is also fitted to vent the gas between the hose-break coupling and the transfer point.

2. Sealing

Sealing shall be provided on all parts of the measuring system which cannot be materially protected in any other way against operations liable to affect the measurement accuracy, sealing shall, in all cases, be easily accessible.

Sealing devices shall prohibit the changing of any parameter that participates in the determination of measurement results. Sealing shall at least be applied on the electronics box of the sensor for flow measurements, at the electronics of the transducer and connections of the housing, where all the measuring system is integrated.

3. Markings

Instruments are marked with the following data, together in one location, in the form shown at right:

Pattern approval number	NMI No P12/2/2
Manufacturer's identification mark or trademark
Model number
Serial number
Year of manufacture
Gas Fuel temperature range	-20 °C to +65 °C
Maximum Delivered	999.99 kg
Minimum Measured Quantity	1.0 kg (^)
Accuracy class	class 2.0
Environmental classclass(*)

(*) Determined at verification/certification.

(^) The minimum measured quantity (MMQ) shall be permanently visible on the front of the indicating device.

3. Description of Variants **provisionally approved on 27/09/24**

3.1 Variant 1

Certain other models of the series of mass fuel measuring systems as listed below. All systems use the RHEONIK RHM04 mass flow sensor.

System Model	Hose Length
Mono H35	3 m
Mono H70	3 m

4. Maximum Permissible Errors

For class 2:

±1.5% for the meter,

±2% for the system at verification and

±3% for in-service.

The MPE for the MMQ is 0.03 kg for the meter, 0.04 kg for the system at verification and 0.06 kg for in-service.

Signed by a person authorised by the Chief Metrologist to exercise their powers under Regulation 60 of the *National Measurement Regulations 1999*.



Dr Phillip Mitchell
A/g Manager
Policy and regulatory services

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