



Australian Government  
Department of Industry,  
Innovation and Science

## National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

### Certificate of Approval NMI 5/6A/238

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.

MEPSAN Petrol Cihazlari Sanayi Ticaret A.S Model COSMIC Fuel Dispenser for Motor Vehicles

submitted by Petro Industrial Pty Ltd  
2/106 Potassium Street  
Narangba QLD 4504

**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 117 Measuring Systems for Liquids Other than Water, dated June 2011.

This approval becomes subject to review on 1/10/24, and then every 5 years thereafter.

#### DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variants 1 & 2 approved – certificate issued	24/09/19

## CONDITIONS OF APPROVAL

### General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 5/6A/238' 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.

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



**Mario Zamora**  
A/g Manager  
Policy and Regulatory Services

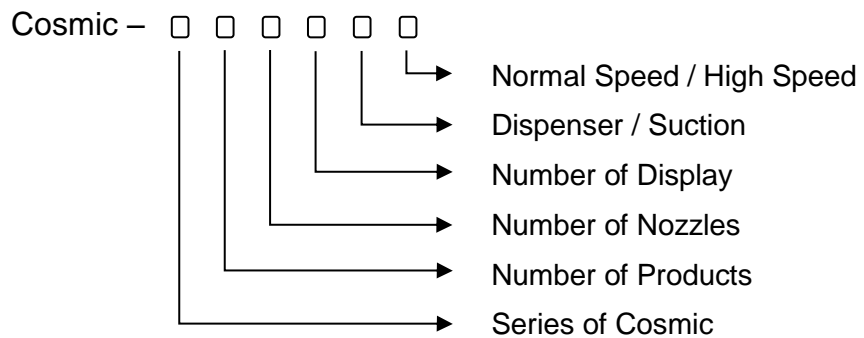
TECHNICAL SCHEDULE No 5/6A/238

**1. Description of Pattern**

**approved on 24/09/19**

A MEPSAN Petrol Cihazlari Sanayi Ticaret A.S Model COSMIC fuel dispenser for motor vehicles is approved to dispense various grades of fuels (\*), in attendant-operated mode, or in self-service mode using any compatible (#) approved control console. The meter is adjusted to be correct for the liquid for which it is to be verified. The dispenser identified as COSMIC has various configurations identified by its designation to the below Table. See Figure 1 for examples of different configurations.

TABLE 1 – Approved model designations



- (\*) including up to 10% ethanol (E10) and various grades of pure biodiesel and biodiesel/distillate blends (to Australian government standard).
- (#) 'Compatible' is defined to mean that no additions/changes to hardware/software are required for satisfactory operation of the complete system.

**1.1 Field of Operation**

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

- Minimum measured quantity,  $V_{min}$  2 L
- Maximum flow rate,  $Q_{max}$  50 L/min
- Minimum flow rate,  $Q_{min}$  5 L/min
- Maximum pressure of the liquid,  $P_{max}$  300 kPa
- Minimum pressure of the liquid,  $P_{min}$  150 kPa (#1)
- Range of liquids viscosity 0.5 to 20 mPa.s (at 20°C) (#2)
- Maximum temperature of the liquid,  $T_{max}$  50°C
- Minimum temperature of the liquid,  $T_{min}$  -10°C
- Ambient temperature range -25 to 55°C
- Accuracy class 0.5

(#1) Minimum pressure required for effective operation of the gas elimination device.

(#2) The flowmeter is adjusted for use with one product viscosity. Fuels include kerosene, distillate and various grades of petrol (which may include up to 10% ethanol). The pattern and variants constructed for use to dispense various grades of pure biodiesel and biodiesel/distillate blends (to Australian government standard).

## 1.2 Description of the Metering System

The instrument (Figure 1) incorporates the following components:

- (i) A single phase MEPSAN STP SB2 submersible pump (Figure 2a) or a positive displacement single phase MESPAN S-PUMP (Figure 2b)
- (ii) A measurement transducer comprising a UNIMEP model S-Meter 90 two piston positive displacement flowmeter (Figure 3) fitted with a UNIMEP model Smart Pulser two channel pulse generator (Figure 3b).
- (ii) A hose/nozzle mounted on the side of the dispenser housing. The nozzle used is a 19 mm ZVA/OPW nozzle, or any other compatible nozzle (\*). The hose used is an Elaflex Slimline DN 16, or any other compatible hose (\*).
- (\*) 'Compatible' is defined to mean that no additions/changes to hardware/software are required for satisfactory operation of the complete system. Consultation of the submitter is required for acceptability of alternative nozzles.

## 1.3 Calculator/Indicator

A UNIMEP model CPU calculator/indicator (Figure 5) interfaces to the MEPSAN Smart Pulser; an integrated microcontroller that measures pulses generated by the connected UNIMEP Model S-Meter 90 (Figure 4). An LCD display (Figure 6) is used for indicating dollar, volume and price, and a separate display under the key pad is utilized for the electromechanical totaliser.

The display limits and increments are:

Price (7 digits) up to 99999.00 in 0.01 cents

Volume (6 digits) up to 9999.00 in 0.01 L

Unit price (4 digits) up to 9999 in price/L

Totaliser (7 digits) up to 9 999 999 in 1 L increments

A pre-set facility is fitted to allow pre-set to be selected via keypad, by means of volume (litres) or price (dollars).

The instrument is approved with version 4.4 software, which can be viewed by following the below steps.

1. With the nozzle stowed, press 1 on the keypad
2. Version number will appear on the LCD

Calibration is adjusted via electronic calculation. Access to calibration mode requires a dynamic password. Please refer to submitter for calibration procedure.

## 1.4 Checking Facilities

An automatic segment test is performed at the start of each delivery.

The calculator monitors the presence and correct transmission of signal from the measurement transducer, and in the event of detecting a fault the instrument indicates an error code and has provision for controlling electrically-operated valves to stop the delivery.

Reverse flow is indicated by a code displayed as "E-10 - Pulser Sensor Error".

## 1.5 Descriptive Markings and Notices

Instruments are marked with the following data, together in one location on a data plate:

Pattern approval number	NMI 5/6A/238	
Manufacturer's identification mark or trade mark	.....	
Manufacturer's designation (model number)	.....	
Serial number	.....	
Year of manufacture	.....	
Maximum flow rate ( $Q_{max}$ )	..... L/min	
Minimum flow rate ( $Q_{min}$ )	..... L/min	
Minimum measured quantity ( $V_{min}$ )	..... L	(#1)
Maximum operating pressure ( $P_{max}$ )	..... kPa	
Minimum operating pressure ( $P_{min}$ )	..... kPa	
Nature of liquids to be measured	.....	(#2)
Maximum temperature of the liquid, $T_{max}$	.....	(#3)
Minimum temperature of the liquid, $T_{min}$	.....	(#3)
Environmental class	class C	

(#1) In addition, the minimum measured quantity ( $V_{min}$ ) shall be clearly visible on any indicating device visible to the user during measurement, in the form 'Minimum delivery 2 L' or 'Minimum delivery 2/5 L'.

(#2) e.g. distillate or D, Diesel.

(#3) Required if liquid temperature range differs from -10°C to 50°C.

## 1.6 Sealing Provision

The gas separator test valve has provision for sealing. The meter is sealed as shown in Figure 4b.

## 1.7 Verification Provision

Provision is made for the application of a verification mark.

## 2. Description of Variant 1 approved on 24/09/19

With the COSMIC fuel dispenser having the model designation of Dispenser (i.e. Cosmic - xxxx**D**x) as indicated by Table 1. This variant utilizes a MEPSAN STP SB2 or any compatible submersible pump (Figure 3a) (\*)

High speed configurations are fitted with two UNIMEP S-Meter 90 flowmeters in parallel, ELAFLEX Slimline DN21 hoses, ZVA 25 mm nozzles, and three phase MEPSAN STP SB2, in which case the fuel dispenser has the following field of operation:

- Minimum measured quantity,  $V_{min}$  2 L
- Maximum flow rate,  $Q_{max}$  80 L/min
- Minimum flow rate,  $Q_{min}$  10 L/min

Ultra-high-speed configurations are fitted with two UNIMEP S-Meter 90 flowmeters in parallel, ELAFLEX Slimline DN25 hoses, ZVA 25mm nozzles and a 400V MEPSAN STP SB2, in which case the fuel dispenser has the following field of operation

- Minimum measured quantity,  $V_{min}$  5 L
- Maximum flow rate,  $Q_{max}$  130 L/min
- Minimum flow rate,  $Q_{min}$  10 L/min

(\*) 'Compatible' is defined to mean that no additions/changes to hardware/software are required for satisfactory operation of the complete system. Consultation of the submitter is required for acceptability of alternative submersible turbines/pumps.

## 3. Description of Variant 2 approved on 24/09/19

With the COSMIC fuel dispenser having the model designation of Suction (i.e. Cosmic - xxxx**S**x) as indicated by Table 1. This variant utilizes a positive displacement pump inside the assembly of the instrument. The pump unit is a MEPSAN S-PUMP (Figure 3b), driven by an external electric RAEL motor via a belt. Pump assembly includes integral bypass, strainer and a gas elimination device. Vapour and gas are expelled to a vent tube.

Maximum and minimum flow rates follow the specifications of Variant 1, with a single phase MEPSAN S-PUMP used in high speed configuration and three phase MEPSAN S-PUMP used in Ultra-high-speed configuration.

## TEST PROCEDURE No 5/6A/238

Instruments shall be tested in accordance with any relevant tests specified in the national instrument test procedures.

The instrument shall not be adjusted to anything other than as close as practical to zero error, even when these values are within the maximum permissible errors.

Tests should be conducted in conjunction with any tests specified in the approval documentation for any components used, including indicator/controller and submersible turbine pump (STP) hydraulic systems.

### **Maximum Permissible Errors**

The maximum permissible errors are specified in Schedule 1 of the *National Trade Measurement Regulations 2009*.

FIGURE 5/6A/238 – 1



(a) MEPSAN Model COSMIC 1122D Fuel Dispenser for Motor Vehicles



(b) MEPSAN Model COSMIC 1111D Fuel Dispenser for Motor Vehicles



FIGURE 5/6A/238 – 2



(a)  
MEPSAN Model COSMIC 1122D Fuel  
Dispenser Hydraulics

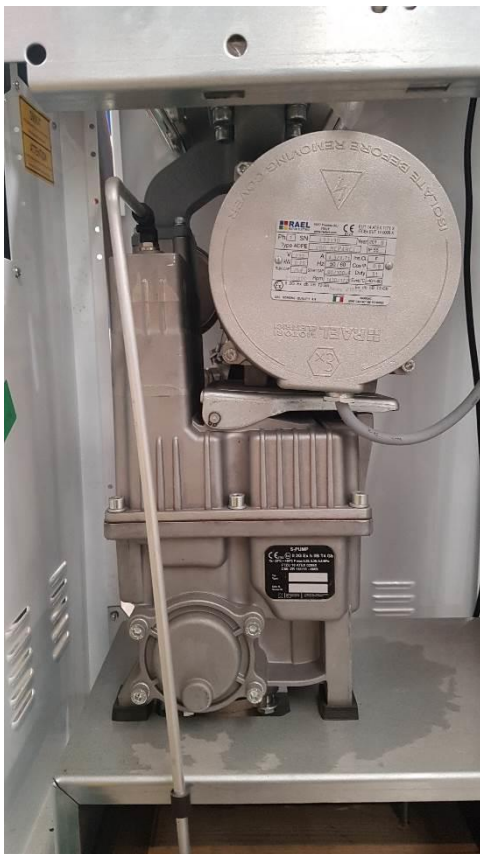


(b)  
MEPSAN Model COSMIC 1122S Fuel  
Dispenser Hydraulics

FIGURE 5/6A/238 – 3

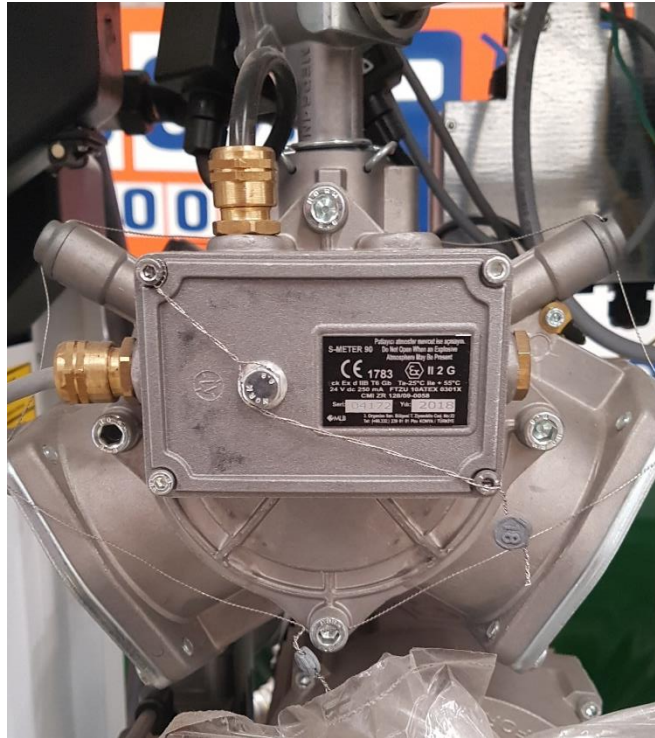


(a)  
MEPSAN STP SB2 Pumping Unit

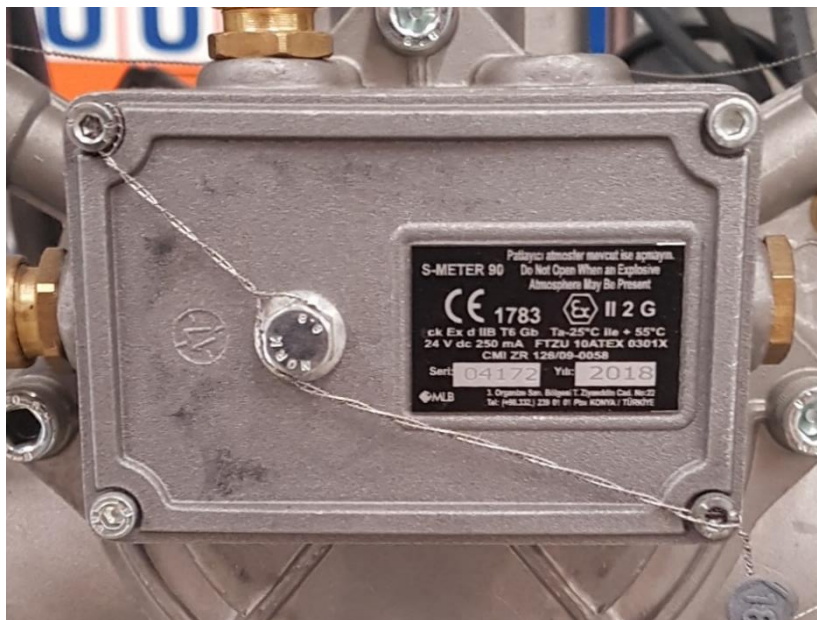


(b)  
MEPSAN S-PUMP Positive Displacement  
Pumping Unit

FIGURE 5/6A/238 – 4



(a) UNIMEP model S-Meter 90 Flowmeter



(b) Typical Sealing of Flowmeter

FIGURE 5/6A/238 – 5



UNIMEP CPU Unit

FIGURE 5/6A/238 – 6



UPCS LCD Module

~ End of Document ~