



Australian Government
Department of Industry,
Science and Resources

**National
Measurement
Institute**

36 Bradfield Road, West Lindfield NSW 2070

**Supplementary Certificate of Approval
NMI S835**

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.

PEC Model Pinnacle Calculator/Indicator for Fuel Dispensers for Motor Vehicles

submitted by PEC Limited
 2 Station Road
 Marton 4741 New Zealand

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 is subject to review at the decision of the Chief Metrologist in accordance with the conditions specified in the document NMI P 106.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern provisionally approved – interim certificate issued	13/12/22
1	Pattern approved – certificate issued	24/03/23
2	Pattern amended (display sizes) – certificate issued	11/04/23

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number 'NMI S835' and only by persons authorised by the submittor.

Instruments purporting to comply with this approval and currently marked 'NMI PS835' may be re-marked 'NMI S835' but 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*.



Darryl Hines
Manager
Policy and Regulatory Services

TECHNICAL SCHEDULE No S835

1. Description of Pattern **provisionally approved on 13/12/22**
approved on 24/03/23
amended on 11/04/23

A PEC model Pinnacle calculator/indicator (Figure 1) with integrated measurement transducer generating output proportional to volume throughput. The instrument is mounted in a suitable enclosure and fitted to compatible (#) NMI approved fuel dispensers for motor vehicles.

(#) 'Compatible' is defined to mean that no additions/changes to the hardware/software specified in this approval are required for satisfactory operation of the complete system.

1.1 Field of Operation

The field of operation of the pattern is determined by the following characteristics:

- Accuracy class: 0.5
- Environmental temperature range: -25 °C to 55 °C (class C)
- Power supply input: 240 V mains (nominal)
- For use in interruptible metering systems (fuel dispensers)

1.2 Indicator

The indicator comprises an active matrix TFT module that shows the delivery price, delivery volume, any pre-set amount, plus separate displays for grade prices as shown in Figure 1. The display panel is touch sensitive and includes a pre-set keypad and stop button.

Price	up to \$9999.99 in \$0.01 increments
Volume	up to 9999.99 L in 0.01 L increments
Unit price	up to 999.9¢/L in 0.1 ¢ increments
Preset	up to \$9990 in \$1 increments

The software version number is 1.xx.xxx.

There are two display sizes available, a 7 inch (Figure 1a) and a larger 15-inch panel (Figure 1b). The 15-inch panel may be configured in an alternative layout (Figure 1c) which includes facility for media to be displayed. The additional media displayed on a section of the screen shall not cause an incorrect indication of the measured quantity or price.

1.3 Measurement transducer

The Pinnacle measurement transducer provides a total of 512 counts per revolution. Communication with the calculator / indicator is performed using encrypted messages. When the shaft of the pulse generator is rotated once, the indicator displays a volume of 0.5 litres when correctly adjusted.

1.4 Power Supply

The Pinnacle indicator includes a battery backed power supply unit which converts the 240 V AC power supply to the required voltage for the calculator/indicator.

1.5 Checking Facilities

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

Note: The automatic segment test allows visual inspection the display. Due to the resolution of the display, the segment test is not required to include the “eights” test typically required for lower resolution displays.

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 and stops the delivery. Error information is written to an error log stored on an SD card.

In the event of a power failure the displayed value for a delivery is retained.

1.6 Verification Provision

Provision is made for the application of a verification mark.

1.7 Sealing Provision

Provision is made for calibration adjustments to be sealed using wire seal (Figure 2) and a Service mode switch and passcode.

1.8 Descriptive Markings and Notices

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

Manufacturer's mark, or name written in full
Model number
Serial number
Pattern approval mark	NMI S835
Year of manufacture
Accuracy class	0.5
Environmental class	'class C' or '-25 °C to 55 °C'

The minimum measured quantity specified for the fuel dispenser is marked or displayed on the face of the indicator in the form 'Minimum Delivery 2 L'.

TEST PROCEDURE No S835

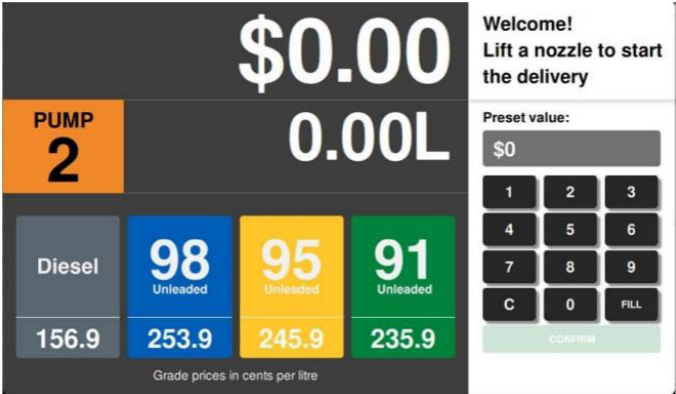
Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures.

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.

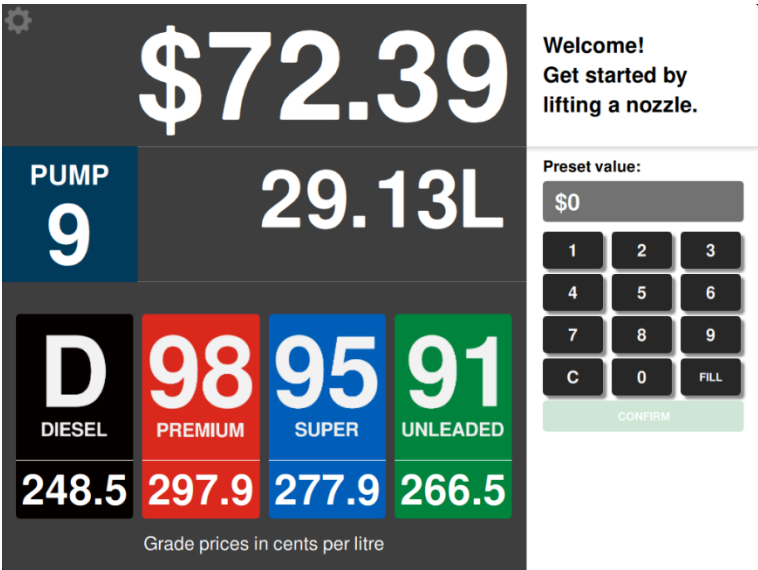
Maximum Permissible Errors

The maximum permissible errors applicable are those applicable to the fuel dispensers to which the instrument approved herein is fitted, as stated in the approval documentation for the fuel dispensers or in Schedule 1 of the *National Trade Measurement Regulations 2009*.

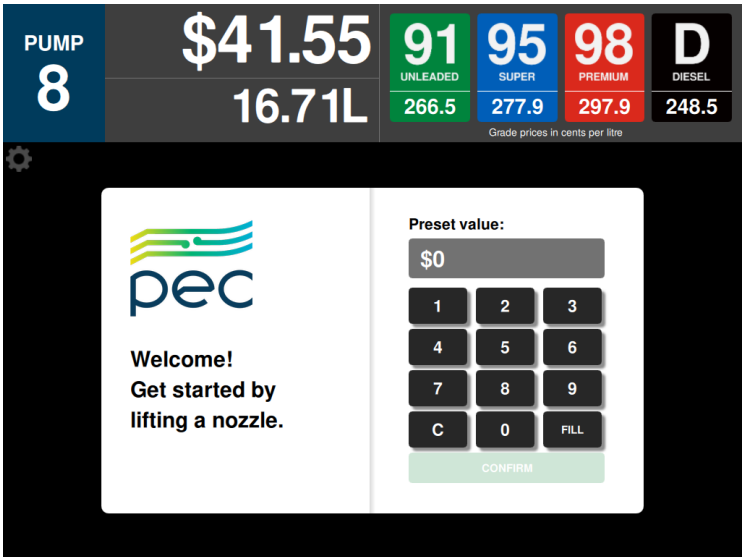
FIGURE S835 – 1



a. PEC Model Pinnacle Calculator/Indicator – 7 inch display

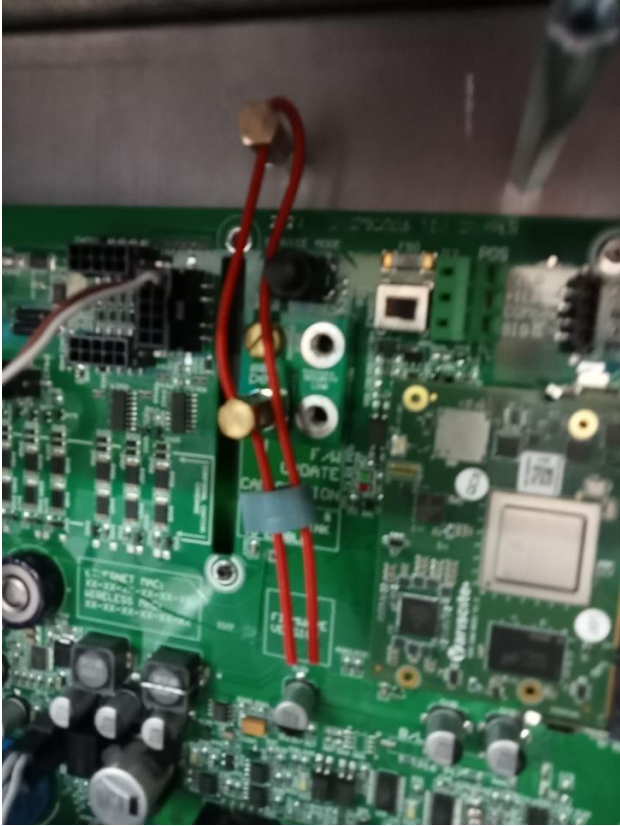


b. PEC Model Pinnacle Calculator/Indicator – 15 inch display



c. PEC Model Pinnacle Calculator/Indicator – 15 inch display with media layout

FIGURE S835 – 2



Calibration mode switch sealing

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