5/6A/211
25 February 2011

Australian Government

National Measurement Institute

Bradfield Road, West Lindfield NSW 2070

Notification of Change
Certificate of Approval No 5/6A/211
Change No 2

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

The following changes are made to the approval documentation for the

Transponder Technologies Model 805-LC-P21-D160S-RR-N-P-M Fuel Dispenser for Motor Vehicles

submitted by Transponder Technologies Pty Ltd
2 Hamra Drive, Export Park
Adelaide Airport SA 5950.

In Certificate of Approval No 5/6A/211 dated 25 September 2009;

1. The Condition of Approval referring to the review of the approval should be amended to read:

   "This approval becomes subject to review on 1 November **2015**, and then every 5 years thereafter."

2. The FILING ADVICE should be amended by adding the following:

   "Notification of Change No 2 dated 25 February 2011

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

Australian Government

National Measurement Institute
Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

No 5/6A/211

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

Transponder Technologies Model 805-LC-P21-D160S-RR-N-P-M Fuel Dispenser for Motor Vehicles

submitted by Transponder Technologies Pty Ltd
2 Hamra Drive, Export Park
Adelaide Airport SA 5950.

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 117-1, Measuring Systems for Liquids Other than Water, July 2004.

CONDITIONS OF APPROVAL

This approval becomes subject to review on 1 November 2009, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked with approval number ‘NMI 5/6A/211’ 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.

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The National Measurement Institute reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.

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

DESCRIPTIVE ADVICE

Pattern: approved 8 October 2004

- A Transponder Technologies model 805-LC-P21-D160S-RR-N-P-M fuel dispenser for motor vehicles.

Variant: approved 8 October 2004

1. Certain other models and configurations of the 805 series.

Technical Schedule No 5/6A/211 describes the pattern and variant 1.

Variant: provisionally approved 9 June 2009
approved 3 August 2009

2. Certain models and configurations of the 801 modular series.

Technical Schedule No 5/6A/211 Variation No 1 describes variant 2.

FILING ADVICE

Certificate of Approval No 5/6A/211 dated 31 January 2005 is superseded by this Certificate, and may be destroyed. The documentation for this approval now comprises:

Certificate of Approval No 5/6A/211 dated 25 September 2009
Technical Schedule No 5/6A/211 dated 31 January 2005 (incl. Test Procedure)
Technical Schedule No 5/6A/211 Variation No 1 dated 25 September 2009
Notification of Change No 1 dated 25 June 2008
Figures 1 to 6 dated 25 September 31 January 2005
Figures 7 to 10 dated 25 September 2009

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

TECHNICAL SCHEDULE No 5/6A/211

Pattern: Transponder Technologies Model 805-LC-P21-D160S-RR-N-P-M Fuel Dispenser for Motor Vehicles

Submittor: Transponder Technologies Pty Ltd
2 Hamra Drive, Export Park
Adelaide Airport SA 5950

1. Description of Pattern

A Transponder Technologies model 805-LC-P21-D160S-RR-N-P-M fuel dispenser for motor vehicles (Figure 1) approved to dispense distillate, in attendant-operated mode. The meter is adjusted to be correct for the liquid for which it is to be verified/certified.

The pattern, model 805-LC-P21-D160S-RR-N-P-M, is an 805 series with a **L**iquid **C**ontrols meter (LC), internal **P**umps and **2** inlets and **1** outlet (P21), dispensing **P**etrol at up to **160** L/min and has a **S**olenoid valve (P160S), has a **R**etail display (price-computing) on both sides of the dispenser (RR), is **N**MI approved (N), has a **P**re-set facility (P), and has a hose **M**ast (M).

1.1 Field of Operation

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

• Minimum measured quantity, V_{min}	20 L	
• Maximum flow rate, Q_{max} (Two pump operation)	160 L/min	
• Minimum flow rate, Q_{min} (Two pump operation)	16 L/min	
• Maximum flow rate, Q_{max} (One pump operation)	80 L/min	
• Minimum flow rate, Q_{min} (One pump operation)	8 L/min	
• Maximum pressure of the liquid, P_{max}	300 kPa	
• Minimum pressure of the liquid, P_{min}	100 kPa	(#1)
• Viscosity range (at 20°C)	0.5 to 20 mPa.s	(#2)
• Nature of liquids to be measured e.g. distillate		
• Maximum temperature of the liquid, T_{max}	50°C	
• Minimum temperature of the liquid, T_{min}	-5°C	
• Ambient temperature range	–10°C to 55°C	

(#1) Required minimum pressure for effective operation of the gas elimination device.

(#2) The flowmeter is adjusted for use with one product viscosity.

1.2 Hydraulic System

The Transponder Technologies model 805-LC-P21-D160S-RR-N-P-M fuel dispenser (Figure 1) incorporates the following components:

(i) Two STM model 4-47579 pumping units (Figure 2) each driven by an external motor. Each pumping unit incorporates an integral bypass, strainer and gas elimination device. The outlet pipe from each pumping unit is joined to form a single inlet pipe to the meter.

Any vapour or gas separated by each gas separator is exhausted to the vent tube. A gas detection switch is connected to the vent tube; the switch stops the flow when excessive amount of vapour or gas is entrained in the liquid. To prevent reverse flow, a check valve is fitted upstream of the gas separator.

(ii) A gas/air test valve is provided for checking the operation of the gas elimination device. The device has provision for sealing.

(iii) A Liquid Controls model M-5-1 positive displacement meter (Figure 2).

(iv) A Transponder Technologies model TTMRT86 pulse generator (Figure 3).

(v) A Transponder Technologies model T5b calculator/indicator as described in the documentation of approval NSC S414.

(vi) A rotary switch (Figure 4) for changing from two to one pump operation.

(vii) Asco two-stage solenoid valves for pre-set operations are fitted downstream of the meter.

(viii) A Global 20 G1 31.5 mm R1 20CIT/SN EN853 (6.4 MPa maximum pressure) hose or any other compatible hose that meets the maximum permissible errors for hose dilation.

(ix) An Elaflex 32mm nozzle.

1.3 Measurement transducer

The measurement transducer is a Liquid Controls model M-5-1 positive displacement flowmeter fitted with a Transponder Technologies model TTMRT86 pulse generator. The pulse generator is a dual channel pulse output device, each channel producing 25 for one revolution of the meter/pulse generator shaft.

1.4 Transfer Device

The transfer device is the Elaflex 32mm nozzle or any other approved nozzle that maintains the hose full of liquid at all times and is designed so that the nozzle cannot be placed in a hang up position other than to end the delivery.

1.5 Pre-set Facility

The pre-set keypad facility (Figure 5) allows pre-set values to be entered in '$1' and '$10' dollar increments up to a maximum of $999. The pre-set amount is displayed on the price ($) indicator of the display; the pre-set amount can be viewed before and after the delivery is complete by pressing the 'RCL' button situated in the pre-set pad. To cancel the pre-set amount, or to start again, the 'CLR' button is pressed.

1.6 Totaliser

The instrument has a Jenm Chicago model P2G729A 4.5 V DC electronic totaliser for the volume throughput in one litre graduations up to a maximum of 9 999 999 litres. The totaliser is located above the nozzle.

1.7 Checking Facilities

Removing the nozzle from its normal hang-up position initiates a segment check of the price, volume, and unit price displays.

- 'Error 19' is displayed and the delivery stopped if excessive amounts of air/vapour are detected;
- 'Error 17' is displayed and the delivery stopped when pulse output errors are detected; and
- 'Error 12' when the non-return valve is faulty and the pulser is measuring reverse flow.

1.8 Calculator/indicator

The Transponder Technologies model T5b calculator/indicator as described in the documentation of approval NSC S414 comprises a computing unit and two display units. Separate displays are provided for volume, price and unit price. The indicators display the following maximum values:

Total price:	$9 999.99 in 0.01 cent increments
Volume:	9 9999.9 in 0.1 L increments
Unit price:	999.9 ¢/L in 0.1 cent increments

The software version number for the calculator/indicator is 01291.

1.9 Descriptive Markings

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

Pattern approval sign	NMI 5/6A/211	
Manufacturer's identification mark or trade mark	.....	
Manufacturer's designation (model number)	.....	
Serial number	.....	
Year of manufacture	.....	
Environmental class	class N	(#1)
Maximum flow rate (Q_{max})	..... L/min	(#2)
Minimum flow rate (Q_{min})	..... L/min	(#2)
Maximum operating pressure (P_{max})	..... kPa	
Minimum operating pressure (P_{min})	..... kPa	
Nature of liquids to be measured	.....	(#3)
Maximum temperature of the liquid, T_{max}	40°C	
Minimum temperature of the liquid, T_{min}	5°C	

(#1) See clause **1.1 Field of Operation**.

(#2) The maximum and minimum flow rates when used with one or two pump operation shall be marked.

(#3) e.g. distillate or D.

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 20 L".

1.10 Sealing Provision

The gas separator test valve and the meter are sealed.

The electronic calibration switch in the model T5b calculator/indicator has provision for sealing as described in the documentation of approval NSC S414.

1.11 Verification/Certification Provision

Provision is made for the application of a verification/certification mark.

2. Description of Variant 1

Certain other models and configurations of the 805 series of fuel dispensers. Model numbers are made up of a series of fields representing the various approved components/ features, as follows:

(For example, the pattern is a model 805-LC-P21-D160S-RR-N-P-M)

- Instrument series field – always:

  805 representing the 805 series.

- Meter field – always:

  LC representing the Liquid Controls meter.

- Hydraulic system field – either:

  P – representing the 'pump' version with internal pump/s; or

  D – representing the'dispenser' version with one or more approved submersible turbine pump (STP) hydraulic systems. These hydraulic systems replace the equivalent components (i.e. motor, pump/strainer/gas separator, and associated pipework) in any fuel dispenser covered by this approval, e.g. refer Figure 6.

- Inlet/outlet field – either **11, 12, 21, 22** or **24**, comprised of:

  1 or **2** as the first digit – representing the number of inlets; and

  1, **2** or **4** as the second digit – representing the number of outlets.

- End configuration field/s, one field for a single dispenser (e.g. the pattern, *-D160*) and two fields for dispensers with 2 or 4 outlets (e.g. *-D160*-D160*-*), refer Figure 6), representing the product/s and maximum flow rate/s.

  Product – either:

  B – representing biodiesel or biodiesel/distillate blends (to Australian government standard);

  D – representing distillate;

  K – representing kerosene; or

  P – representing petrol.

  Note that a gas detection switch is fitted to all units dispensing distillate, kerosene or biodiesel which stops the flow when excessive amount of vapour or gas is entrained in the liquid.

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Maximum flow rate, always:

160 – representing 160 L/min.

- Solenoid field – always:

  S representing that solenoid valves are fitted.

- Display field – comprised of two characters representing the type of display fitted to each side of the dispenser (e.g. *-RR-*), either:

  R representing a retail display (price-computing);

  C representing a commercial display (volume only; or

  B representing no display fitted, to 2nd side only.

- Approval field – always:

  N representing NMI approved.

- Pre-set field – either:

  P – representing that the pre-set facility is fitted; or

  X – representing that no pre-set facility is fitted.

- Hose support field – either:

  H – representing that hose hooks are fitted;

  M – representing that hose masts are fitted; or

  X – representing that no hose supports are fitted.

TEST PROCEDURE

Instruments should be tested in accordance with any relevant tests specified in the Uniform Test Procedures. 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 at Verification/Certification

The maximum permissible errors applied during a verification test of the fuel dispenser using the liquid for which it is to be verified/certified, and from normal flow rate to the minimum flow rate specified in the Certificate of Approval or Technical Schedule are:

±0.3% for the calibration/adjustment of the meter; and

±0.5% for in-service inspection of the complete measuring system.

Note: Adjusting the errors of a meter to values OTHER than as close as practical to zero is forbidden, even when these values are within the maximum permissible errors.

Other applicable maximum permissible errors are:

±0.5% for gas elimination device for liquids having a viscosity not exceeding 1 mPa.s (petrol);

±1.0% for gas elimination device for liquids having a viscosity exceeding 1 mPa.s (e.g. distillate);

±200 mL for deliveries equal to the minimum measured quantity, V_{min}; and

±200 mL due to hose dilation.

Software Version Number

Check the number as described in the documentation of approval NSC S414 for the Transponder Technologies model T5b calculator/indicator, or in the approval documentation for any other calculator/indicator used.

TECHNICAL SCHEDULE No 5/6A/211

VARIATION No 1

Pattern: Transponder Technologies Model 805-LC-P21-D160S-RR-N-P-M Fuel Dispenser for Motor Vehicles

Submittor: Transponder Technologies Pty Ltd
2 Hamra Drive, Export Park
Adelaide Airport SA 5950

1. Description of Variant 2

The Transponder Technologies 801 series of fuel dispensers which are a range of modular instruments in which the hydraulic unit is housed separately to the indicator module(s). Instruments of the 801 series utilise the same components originally approved for the 805 series but in a different physical configuration. Model numbers are comprised of a series of fields representing the various configurations, as follows:

(For example, the model number of a typical 801 series dispenser (Figure 7) is 801-LC-D22-D160S-D160S-N-N-X.)

- Instrument series field – always:
  801 – representing the 801 series.
- Meter field – always:
  LC – representing the Liquid Controls model M5 meter.
- Hydraulic system field – either:
  P – representing the 'pump' version with internal pump/s; or
  D – representing the 'dispenser' version with one or more approved submersible turbine pump (STP) hydraulic systems. These hydraulic systems replace the equivalent components (i.e. motor, pump/strainer/gas separator, and associated pipework) in any fuel dispenser covered by this approval (refer Figure 6).
- Inlet/outlet field – either **11**, **12**, or **22**, comprised of:
  1 or **2** as the first digit – representing the number of inlets; and
  1 or **2** as the second digit – representing the number of outlets.
- End configuration field/s, one field for a single dispenser and two fields for dispensers with 2 outlets representing the product/s and maximum flow rate/s.

  Product – either:

  B – representing biodiesel or biodiesel/distillate blends (to Australian government standard); or
  D – representing distillate;
  K – representing kerosene; or
  P – representing petrol.

  Note that a gas detection switch is fitted to all units dispensing distillate, kerosene or biodiesel which stops the flow when excessive amount of vapour or gas is entrained in the liquid.

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Maximum flow rate, Q_{max}, always:

160 – representing 160 L/min.

- Solenoid field – always:
  S representing that solenoid valves are fitted.
- Approval field – always:
  N – representing NMI-approved.
- Forecourt Communications Protocol field – either:
  E – representing that Email FCN protocol is fitted; or
  G – representing that Gilbarco FCN protocol is fitted; or
  N – representing that New Zealand FCN protocol is fitted; or
  X – representing that no FCN protocol is fitted.
- Pre-set field – either:
  P – representing that the pre-set facility is fitted; or
  X – representing that no pre-set facility is fitted.

1.1 Calculator/Indicator

The calculator/indicator used in the 801 series is the Transponder Technologies model T5b calculator/indicator as described in the documentation of approval NMI S414, with the processor and power supply unit housed in the top compartment of the dispenser housing (Figure 8), but with the indicator units housed in a model T5RDM remote display module (Figure 9).

The model numbers of the various indicator units (Figure 10) are as follows:

Indicator Units	**Model Number**
Single Commercial Display	092249
Single Retail Display	092250
Single Commercial Display with CRIP (*)	092251
Single Retail Display with CRIP (*)	092252
Dual Commercial Display	092253
Dual Retail Display	092254

(*) CRIP (‘card reader in pump’) versions must only be used in conjunction with an approved compatible Transponder Technologies control system such as a model TT3000 DCA as described in the documentation of approval NMI S423.

Australian Government
National Measurement Institute

Bradfield Road, West Lindfield NSW 2070

Notification of Change
Certificate of Approval No 5/6A/211
Change No 1

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

The following changes are made to the approval documentation for the

Transponder Technologies Model 805-LC-P21-D160S-RR-N-P-M Fuel Dispenser for Motor Vehicles

submitted by Transponder Technologies Pty Ltd
2 Hamra Drive, Export Park
Adelaide Airport SA 5950.

A. In Certificate of Approval 5/6A/211 dated 31 January 2005, the FILING ADVICE should be amended by adding the following:

"Notification of Change No 1 dated 25 June 2008"

B. In Technical Schedule No 5/6A/211 dated 31 January 2005, clause **1.3 Measurement Transducer** should be amended as follows:

(i) The 1st sentence should be amended to read, in part:

"… model TTMRT86 **or model TTSTM or other compatible (#) approved** pulse generator."

(ii) Add the following footnote:

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

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

FIGURE 5/6A/211 – 1

Transponder Technologies Model 805-LC-P21-D160S-RR-N-P-M Fuel Dispenser

FIGURE 5/6A/211 – 2

Model 805-LC-P21-D160S-RR-N-P-M – Hydraulics

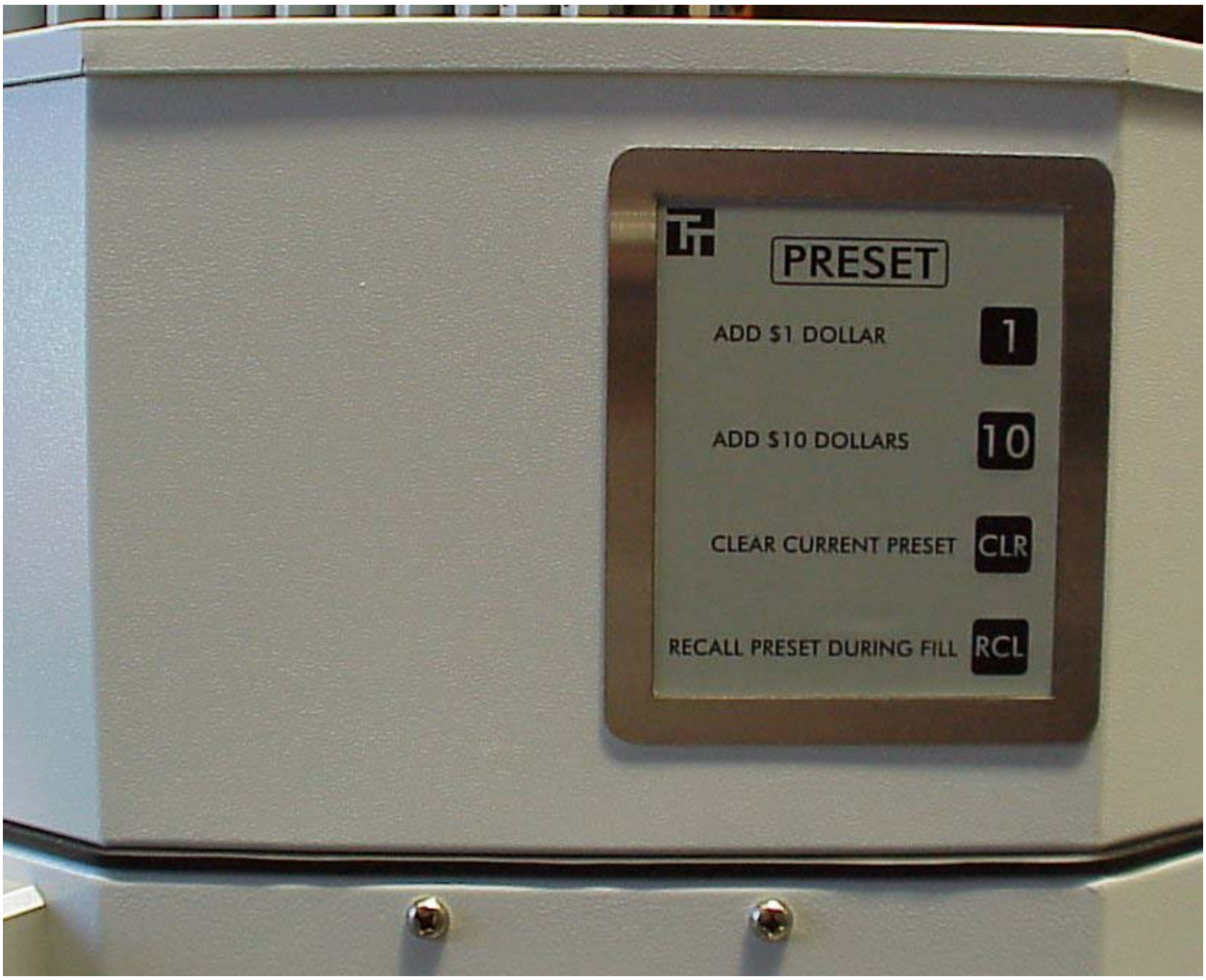
FIGURE 5/6A/211 – 3

Transponder Technologies Model TTMRT86 Pulse Generator

FIGURE 5/6A/211 – 4

Typical Pump Operation Rotary Switch

FIGURE 5/6A/211 – 5



Typical Pre-set Keypad

FIGURE 5/6A/211 – 6

Typical Two Inlet/Two Outlet Fuel Dispenser and
With Fuel Supplied From STP Hydraulic System

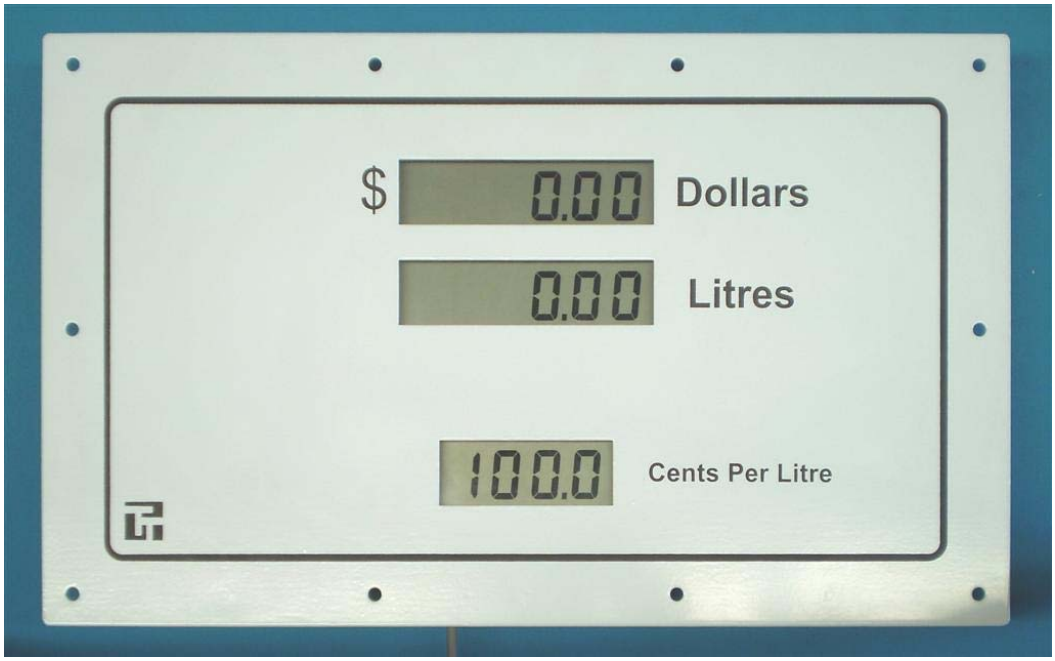
FIGURE 5/6A/211 – 7

Typical 801 Series Fuel Dispenser (2 inlet/2 outlet, with and without covers)

FIGURE 5/6A/211 – 8

Dispenser Viewed From Above Showing Processor and Power Supply Unit
Housed in The Top Compartment of The Dispenser Housing

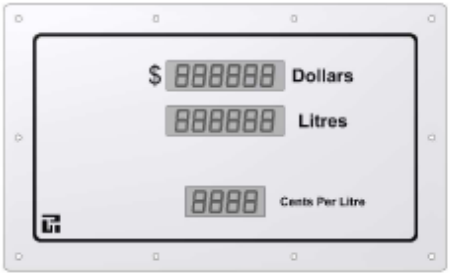
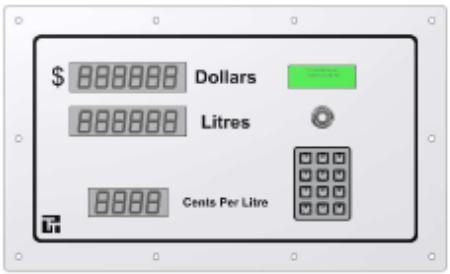
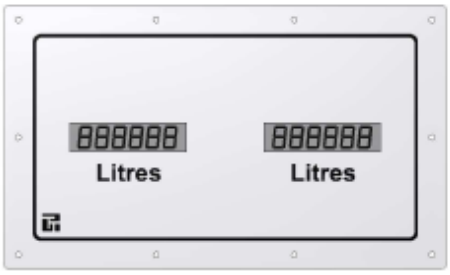
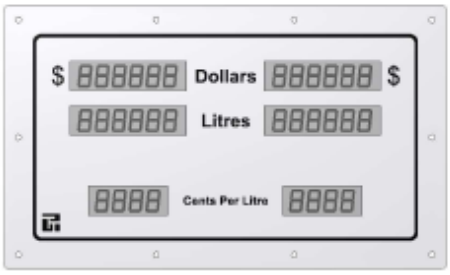
FIGURE 5/6A/211 – 9



(a) Model 092250 Single Retail Display Unit

(b) Model T5RDM Remote Display Module (rear view)

FIGURE 5/6A/211 – 10

Single Commercial	Single Commercial with CRIP
	
Single Retail	**Single Retail with CRIP**
	
Dual Commercial	**Dual Retail**
	

Component Orientation of Various Display Units