

SUPPLEMENT TO CERTIFICATE

Series S032

Certificate No.	Supplement No.
1940	74
2286/58*	75

(*) Refers to the dispenser only, the self service device described in these certificates is not part of this approval.

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In accordance with the provisions of section 12 of the Weights and Measures Act 1985, the Secretary of State for Business, Innovation and Skills hereby certifies as suitable for use for trade a pattern of a liquid flowmeter, as described in the descriptive annex to this Certificate, and having the following characteristics:-

DISPENSER(s): Dispensers described in Certification Nos 1940, 1940/7, 1940/8, 1940/9 & 2286/58.

SELF SERVICE DEVICE: Fuelomat Fuel Management System as described in the descriptive annex.



Signatory: G Stones

for Chief Executive
 National Weights & Measures Laboratory
 (Part of the National Measurement Office)
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Reference No: T1119/0014

Date: 10th March 2011

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Descriptive Annex

1 INTRODUCTION

FUELOMAT is a self-service vehicle fuelling system, for use by registered users only. The system controls and monitors 24 hour fuelling of registered vehicles without attendants and without driver intervention. This system identifies a vehicle by means of sensors; one fitted to the vehicle and one to the dispenser nozzle. Alternatively registered holders of a swipe card or chip key may use the system. Up to 2000 transaction records are stored on the system for invoicing at a later date.

2 CONSTRUCTION

The installation schematic is shown in Figure 1.

2.1 Vehicle equipment

2.1.1 Vehicle identification unit (VIU) or FuelOpas (FPU) (Figure 2)

Either unit type may be installed in a vehicle. These are small vehicle-mounted devices which typically provide information on vehicle identity, corporation identification, fuel type and grade. The information is continuously transmitted by a transceiver device placed around the fuel tank inlet.

NOTE: This is not controlled equipment and is detailed for information only.

2.2 Dispenser equipment

2.2.1 Dispenser interface unit (Figure 5)

The dispenser interface unit provides the interface between the Station Controller and the dispenser(s).

2.2.2 Nozzle antenna (Figure 3)

The nozzle receiver is fastened over the dispensing nozzle and connected via intrinsically-safe (shielded pair) wiring through the Barrier and an explosion-proof junction box to the SCU 2050. The nozzle antenna is mounted on the inlet of the nozzle. The cable from the antenna is fed into the hose and out again at the other end through special fittings. The cable is connected to the vehicle identification transceiver (VIT) via an intrinsically safe Zener barrier (Figure 4) mounted in the dispenser.

2.3 Self service equipment

NOTE: The equipment described in sections 2.3.1 to 2.3.3 is located in a kiosk or secure weatherproof cabinet.

2.3.1 SCU-2050 station controller (Figure 6)

The SCU 2050 serves as the control unit for the station sub-system. It is capable of simultaneously controlling multiple dispensers. It performs vehicle identification and authorization, fuel dispensing, transaction recording and transfer of data to the host computer.

The transaction records include:

- Record serial number
- Date and time of transaction
- Vehicle identification
- Department identification
- Engine-hours and odometer reading
- Fuel volume (with the resolution provided by the fuel dispenser)
- Fuel dispenser number
- Validation information (a record validity flag byte and two checksum bytes).

The SCU 2050 is connected via an RS 232 data link to the host computer, and, when polled, transmits the locally-stored information to the computer for further processing. The SCU 2050 can receive updates regarding the list of authorized vehicles. An audit trail printer automatically prints a record of each transaction. In the event of damage to the SCU 2050 or host computer which results in a loss of data, files can be restored from the printed data.

The memory board of the SCU250 contains the following:

- Main memory
- Backup memory
- Real-time clock
- Backup power supply

Main memory The main memory stores up to 2000 transactions of fuel dispensing transactions. The information to be stored in the memory is transferred by the micro-controller located on the Controller board, via the system bus. Upon request from the system user's host computer, the contents of this memory are sent to the host computer, via the RS-232 communication link. After reading memory data, the host computer commands the SCU-2050 to erase its contents. The condition of the main memory is indicated by means of a MEMORY OK LED located on the Controller board.

Before starting a new refueling, the micro-computer on the Controller board checks the proper operation and the condition of the main memory. If the main memory is full, the micro-computer no longer permits refueling and turns off the MEMORY OK LED. Only after the host computer reads the stored transaction records and commands the ISCU-2050 to erase main memory contents, can refueling be renewed. Refueling is also stopped when the memory malfunctions.

Backup memory. The backup memory stores the most recent 2000 transactions of fuel dispensing transactions. As a new record arrives, the oldest record is overwritten. The information to be stored in the backup memory is transferred by the micro-controller located on the Controller board, via the system bus, in parallel with the information to the main memory. Upon request from the host computer, the contents of this memory can also be sent to the host computer, via the RS-232 communication link. However, the contents of this memory cannot be erased by command from the host computer.

2.3.1.1 Software

The software version is displayed and printed after pressing the reset button in the station controller. The software version number is MIXSL 1.17E.

2.3.1.2 Host computer

The host computer serves as a master, which initiates communication sessions with the SCU-2050, receives information from the SCU-2050, and transmits various commands and information.

2.3.2 Vehicle identification transceiver (VIT)

The VIT (Figure 7) communicates with the VIU via the antenna on the dispenser nozzle and the antenna on the fuel tank inlet, and only passes vehicle information stored on the VIU to the VIT.

2.3.3 Audit trail printer

This may be any CE marked simple recipient printer which may be used providing it is not capable of transmitting any data or instructions into the system other than for checking for correct data transmission. The printer is used for recording transactions and typically prints the following fields:

1. Time (24-hour military time)
2. Date (day/month/year)
3. Vehicle identification
4. System user identification
5. Dispensed fuel volume (litres)
6. Dispenser number
7. Odometer reading
8. Transaction number
9. Time reading
10. Fuel type
11. Odometer code (see VIU-3 manual) (optional)

2.3.4 Isle control unit (ICU) (Figure 8)

The ICU is connected to the SCU 2050 via the RS 485 bus. The ICU adds user interface functions to the system such as magnetic card reader, electronic key and keyboard entry. The ICU holds specific messages to be displayed by the LCD display panel, and printed on the printer. The system operating keyboard allows entry of alphanumeric data into the system.

The display contains a 2 x 16 character backlit LCD and is located at the upper section of the ICU above the keyboard as shown in Figure 9.

The ICU print control board and the printer assembly is shown in figures 10 and 11 respectively.

2.3.4.1 Software

The software version can be checked by un-powering and powering the isle controller. The software version is displayed on the display. The current software version number is CF 03-AXM.

3 OPERATION

The system can only be used by vehicles with a VIU, FuelOpass or a person using a swipe card or chip key. If it is a monitored transaction the vehicle information together with the fuelling operation will be logged by the VIC and converted into a transaction report ready for daily polling.

3.1 Swipe card or chip key (vehicles not fitted with a VIU)

For vehicles not fitted with a VIU authorised persons may dispense fuel by using a swipe card or chip key at the ICU.

The ICU displays the following information:

- (1) Initial screen. Prior to refueling, the screen displays a message such as “SWEEP CARD” or “INSERT KEY”.
- (2) During refueling, two screens are encountered:
 - Data entry screen
 - Information screen - a temporary screen, which is cleared after several seconds. The display then reverts to the data entry screen.

The following procedure is used to fuel a vehicle:

- Sweep card or insert key
- Enter pump no.
- Lift nozzle and dispense fuel.
- Upon completion of refuelling the nozzle is replaced in the dispenser. To obtain a receipt the PRINT key should be pressed followed by the pump number.

The receipt shall bear at least the following information:

- The number of the dispenser
- The volume (litres)
- Information to identify the transaction (e.g. receipt number, date, time)
- Information to identify the customer (e.g. customer name, ID number).

3.2 Monitored (vehicles fitted with a VIU& FPU (Fuelopass))

For vehicles vehicle fitted with a VIU the following fuelling procedure is used:

- Remove the nozzle from the dispenser holster.
- Insert the nozzle into to the vehicle fuel inlet. When the VIU is detected, after approximately 7 seconds the pump will reset
- Dispense fuel
- Upon completion of refueling the nozzle is replaced in the dispenser.

4 RECOMMENDED TESTS

The following tests may be carried out in addition to those specified in the Regulations to determine conformity to the approved pattern.

- 4.1 Check the software version numbers for the Station controller and the ICU.
- 4.2 Verify that for each transaction, there is no discrepancy between the pump indication and the printed receipt values.

5 CERTIFICATE HISTORY

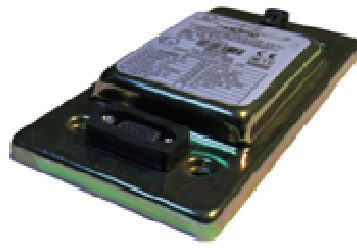
ISSUE NO.	DATE	DESCRIPTION
Certification No 1940 Supplement No 74	17 th April 2001	Type examination certificate first issued.
Series S032	10 th March 2011	Series S032 first issued Application by: Energy Level Systems Unit K2, Welland Business Park, Valley Way Market Harborough, Leicestershire, LE16 7PS Addition of fuel dispenser Certificate 2286/58 Supplement 75 Certificate History added

(1940, 2286)

III(5)a



Fuelopass



VIU



Transceive coil

Figure 2 Vehicle equipment



Figure 3 Nozzle antenna



Figure 4 Zener barrier

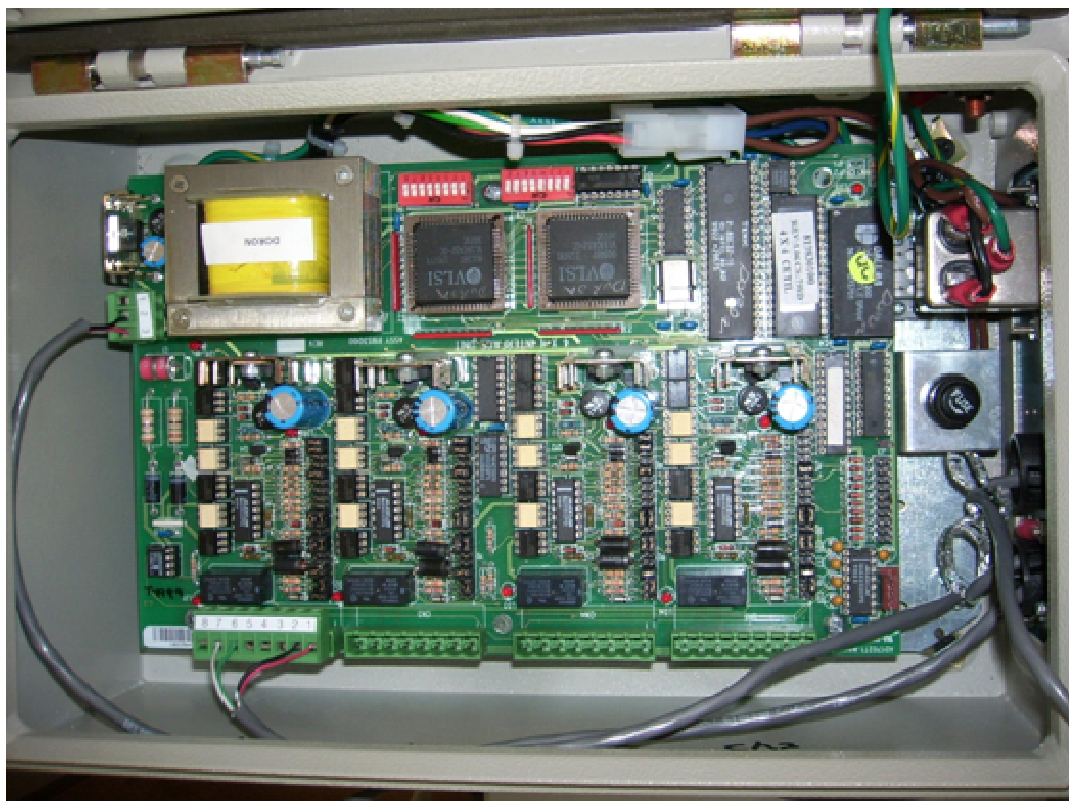


Figure 5 Dispenser interface unit



Figure 6 SCU-2050 station controller (incorporating display)



Figure 7 Vehicle information transceiver (VIT)



Figure 8 Isle control unit



Figure 9 Isle control unit display

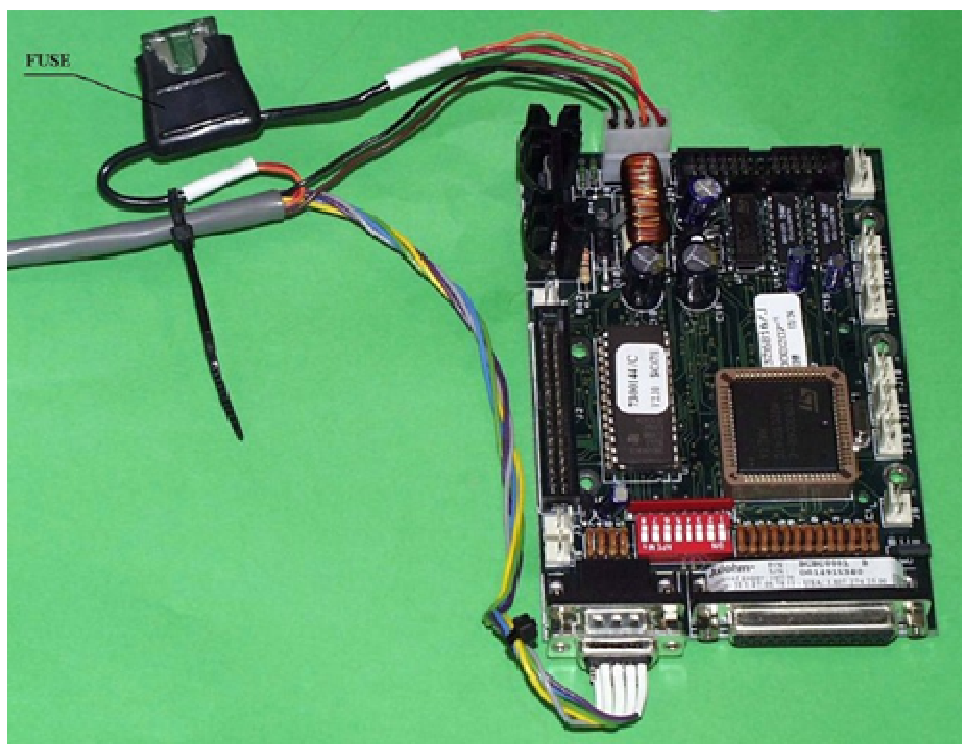


Figure 10 Isle control unit print controller board

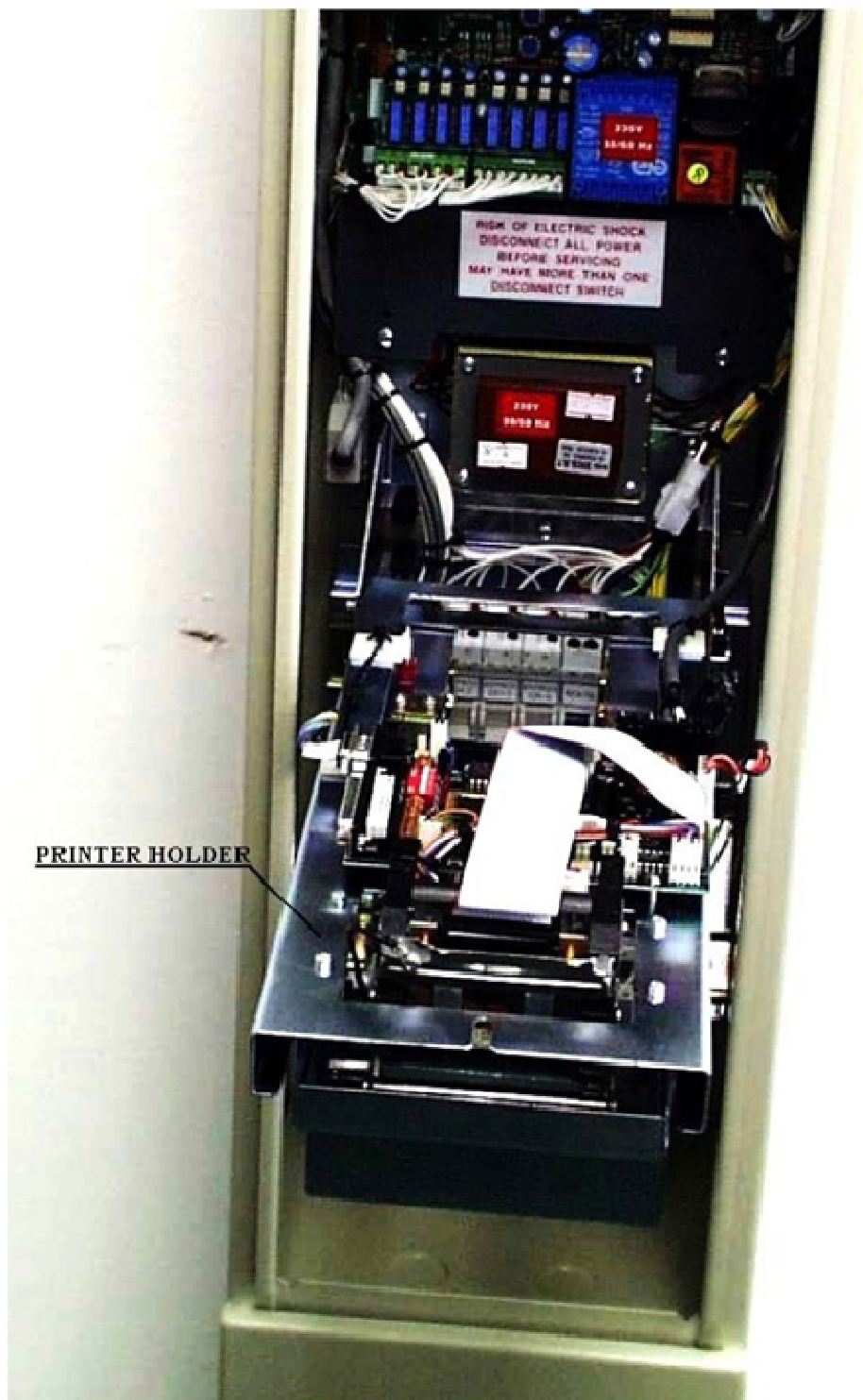


Figure 11 Isle control unit printer assembly