



National  
Measurement &  
Regulation Office

3048

III(2)

## Pursuant to section 12 of the Weights and Measures Act 1985

### Certificate No 3048

issued by:

**The National Measurement and Regulation Office**

In accordance with the provisions of section 12 of the Weights and Measures Act 1985, the Secretary of State for Business, Innovation & Skills has issued this UK national type-approval certificate to:

**Smooth Hoperator Ltd**  
**8 Green Street,**  
**London,**  
**W1K 6RF**  
**UK**

and hereby certifies as suitable for use for trade the following pattern of an intoxicating liquor instrument, in respect of a beer measuring system dispensing fixed quantities of either half pint or pint. The necessary data (principal characteristics, alterations, securing, functioning etc) for identification purposes and conditions (when applicable) are set out in the descriptive annex to this certificate.

Note: This certificate relates to the suitability of the equipment for use for trade only in respect of its metrological characteristics. It does not constitute or imply any guarantee as to the safety of the equipment in use for trade or otherwise.

**Issue Date:** 10 March 2016  
**Valid Until:** 09 March 2026  
**Reference No:** TS0502/0010

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*For and on behalf of the Chief Executive*

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## **CERTIFICATION NO 3048**

# **Descriptive Annex**

## **1 INTRODUCTION**

This liquid measuring instrument is for use in dispensing measured nominal quantities of ½ pint and 1 pint of lager, by specifying the required volume on a touch sensitive button Liquid Crystal Display (LCD) panel. Prepayment by card, via a card reader or touch pad, or by phone via the touch pad is required to authorise a dispense. A dispense is initiated by pulling a tap lever forward.

The manufacturer's model designation for this instrument is The Self-Service Beer Device.

Satisfactory dispensing requires that the temperature of the liquid to be within the range of 2 - 5 degrees Celsius.

## **2 CONSTRUCTION**

### **2.1 General**

**2.1.1** A mobile self-pouring dispensing unit, consisting of a display, beer tap, draught beer supply system and control electronics. A python (pipe) of up to 10m may also be integrated.

**2.1.2** The system will be mounted into a flat panel and will have a 'customer facing' side, and a 'sealed' side. The sealed side is not accessible to customers.

**2.1.3** Each dispense tap is supplied by a pipe from the beer supply system.

### **2.2 Mechanical**

**2.2.1** Each beer storage container is connected to a Froth on Beer (FOB) detector, which has a manual float positioning lever. This connects in-line to the flow meter and solenoid valve to the manually operated lever pull taps.

**2.2.2** The beer supply system utilises a gas supply, if the system is powered by kegs this will be from a gas cylinder. If the system is using tanks this will be from a compressor. Both cylinder and compressor will have an adjustable regulator to allow for adjustable beer pressure.

**2.2.3** If the system is utilising kegs then a remote cooler should be used in line with the beer system. If beer tanks are being used then the tanks will be filled with cool beer and an appropriate temperature will be maintained by cooling lines running around

the outside of the tank. These cooling lines have cold water running through them supplied by a remote cooler.

## **2.3 Electrical**

**2.3.1** The dispense unit, is powered by a 230V 50Hz AC supply via a UPS supply

**2.3.2** The chilling of the beer in a keg system utilises a remote cooler powered by 230V 50Hz AC supply.

**2.3.2** The cold water for chilling of the tanks is powered by a 230V 50Hz AC remote cooler.

## **2.4 Electronics**

**2.4.1** The unit is controlled by an Intel NUC micro computer. The flow sensors and valves are interfaced using an ATmega328P microcontroller. The touch screen is a commercially available 1366x768 pixel 10 inch touch screen.

**2.4.2** The “sealed side” houses a commercially available solenoid valve and a commercially available flow meter, Titan model 300-010 Beverage meter.

**2.4.3** The system controls payments using commercially available pin pads, card reader, and contactless card readers. An internet connection is required for these systems to process payments.

## **2.5 Interlocks**

**2.5.1** The following interlocks will prevent the system from initiating a dispense:

- FOB detector activated.
- Inline flow cut off valve.
- No communication to the payment methods.
- “Terminal Closed” being set.

**2.5.2** The following interlocks will prevent further use after a full dispense has been completed.

- Measured flow rate below or above a specified threshold. Flow rate error will be displayed on the touch screen and a manager is called who must re-enable the equipment.
- Insufficient funds on presented debit/credit card.

**2.5.3** The flow rate is monitored by software. The threshold is set in order to allow for a satisfactory and complete delivery of a specified quantity.

## **2.6 Legends**

**2.6.1** The following legends are marked, in the form of a fixed metallic plate or a label, which shall be destroyed/voided if removed.

- Manufacturer's name : **Smooth Hoperator Ltd.**
- The certificate number: **3048**
- Specified quantity legend: **1 pint and ½ Pint**
- Product Serial number :

**The label or plate should have sufficient space for the relevant inspectors stamp or sticker bearing the inspectors "stamp".**

## **2.7 Securing (Sealing)**

**2.7.1** The following items are to be secured or sealed and are described as follows:

- If kegs are in use mixed gas cylinder head pressure - pressure gauge and regulator will be set, locked and sealed within an area inaccessible to customers (within the shipping container).
- The controller box, see Fig.5 - controller box maintenance cover fitted with secure screws and/or "VOID" if removed stickers
- The flow meter should be sealed to the connected tube using a label that would tear if tampered with. The label should be marked accordingly.

A sticker bearing the inspectors "stamp" may be placed across the heads of the secure screws and/or overlapping the tamperproof (VOID) labels/stickers.

**2.7.2** The inside of the container is only accessible to managers trained in the use of this system. The container is secured by padlock with keys, figure 4, only accessible to authorised personnel.

## **3 OPERATION**

### **3.1 System Setup**

**3.1.1** The Beer dispense system is a self contained unit incorporating all the components required for an accurate and satisfactory dispense of the prescribed quantity. The system is designed to remain active for extended periods of time. This is to allow for the chiller to maintain the correct ambient temperature to replicate cellar conditions and product delivery temperature and to avoid trapped air or gas breakout issues which may cause the FOB detector to activate.

**3.1.2** The system will be calibrated prior to use for the product that has been assigned to the tap.

**3.1.3** Accuracy of the dispense is achieved through software that monitors the pulse output from the flowmeter. A small number of flow interruptions can be accounted for by software algorithms to ensure the correct quantity is delivered.

**3.1.4** Any retro-fitted equipment, such as a solenoid valve or additional pipe lengths or different pipe widths will require a dispense check and possible re-calibration.

### **3.2 Software**

**3.2.1** The mobile draught beer system is managed via a Linux based operating system running a local web server. The software name is “drinkdispenser”.

- The current software version is 1.24 (X.yy)

Where **X** represents legally relevant software and **yy** represents changes to the non-legally relevant software.

**3.2.2** The software is displayed by logging into the manager area of the drink dispenser software. The current version will be displayed on the bottom of the screen.

### **3.3 Dispensing**

**3.3.1** When the payment is authorised, options are then made available for selection of a 1 Pint or ½ Pint delivery. The selection is made pressing the relevant touch sensitive button. The solenoid valve will open. The tap lever is pulled forward to commence delivery. The dispense can be interrupted, until the selected quantity has been completed. Once the correct quantity is delivered the solenoid valve will close. The lever pull should be released and will return to the upright position.

**3.3.2** Whilst best practice for a delivery is explained above, the flow meter monitoring software algorithms can compensate for additional lever pull interruptions during a dispense to deliver the correct quantity within the applicable Limit of Error (L.o.E.):

- 1 Pint delivery of lager, up to 4 interruptions
- ½ pint delivery of lager, up to 4 interruptions

## **4 AUTHORIZED ALTERNATIVES**

There are no authorized alternatives at this time.

## **5 RECOMMENDED TESTS**

### **5.1 Accuracy**

**5.1.1** Accuracy tests shall be carried out to verify that the amount dispensed is within the specified L.o.E. As an additional accuracy test, include at least 2 interruptions during either a 1 Pint or ½ Pint delivery.

Note: For verification purposes always use the product intended for use as this will have been calibrated prior to verification. However, it is possible if required, to adjust the volume delivered during verification using the Technician Card level access.

### **5.2 Temperature**

**5.2.1** Verify the temperature of the completed delivery is between 2 and 5 degrees Celsius.

### **5.3 Pressure**

**5.3.1** For the keg system, close the regulator supplying gas to the beer supply system. Verify that when the pressure slows the flow rate below the set threshold the appropriate warning is displayed on the LCD. Verify the delivery prior to the warning message is still within the L.o.E.

**5.3.2** For the tank supply system, the compressor should be switched off, the tank in use should have the pressure bled using the bleed valve and checked that the pressure is reducing. Verify that when the pressure slows the flow rate below the set threshold, the appropriate warning is displayed on the LCD. Verify the delivery prior to the warning message is still within the L.o.E.

### **5.4 Froth on beer (FOB)**

**5.4.1** On the keg system, disconnect the product supply line from the keg. Initiate a dispense (due to the length of internal pipe work through the chiller system, this may take more than a single 1 pint dispense). Verify that the FOB detector operates and that the appropriate warning message appears on the LCD.

**5.4.2** For the tank system, close the valve before the FOB detector. Initiate a dispense (due to the length of internal pipe work through the chiller system, this may take more than a single 1 pint dispense). Verify that the FOB detector operates and that the appropriate warning message appears on the LCD.

**5.5 Interlocks**

**5.5.1** Verify the operation of the interlocks as described in section 2.5, methods of testing the FOB and Pressure/flow rate detection are described in sections 5.3 and 5.4.

**5.6 Labels and markings**

**5.6.1** Verify that the label bearing the certificate number and the name of the manufacturer described in section 2.6 is present on the instrument. (figure 6).

**5.7 Securing**

**5.7.1** On completion of tests, verify that the following items are secured with secure fixings, key locks or tamper evident seals/labels, as described in section 2.7.1.

- Controller box
- Container lock
- Flow meter

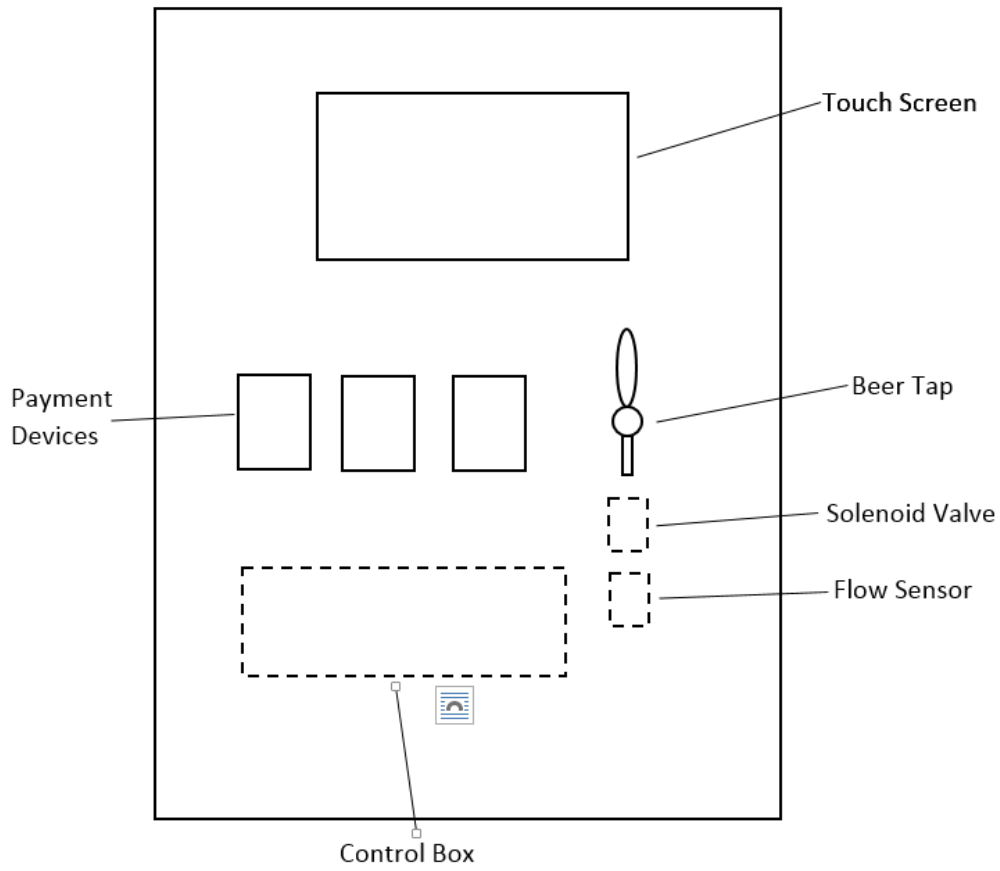
**6 ILLUSTRATIONS**

- Figure 1 - General diagram
- Figure 2 - Flow schematic (keg)
- Figure 3 - Flow schematic (tank)
- Figure 4 - Shipping container lock
- Figure 5 – Controller box seal sticker
- Figure 6 - Data Plate Example
- Figure 7 – Example of Container

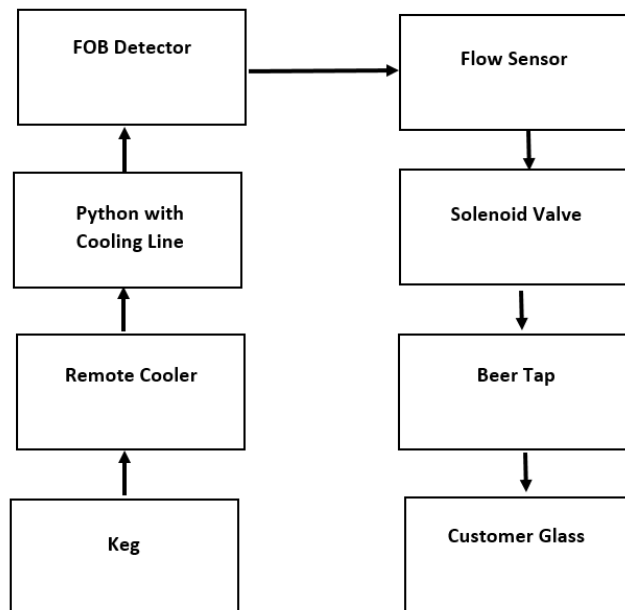
**7 CERTIFICATE HISTORY**

<b>ISSUE No.</b>	<b>DATE</b>	<b>DESCRIPTION</b>
3048	10 March 2016	Certificate first issued.

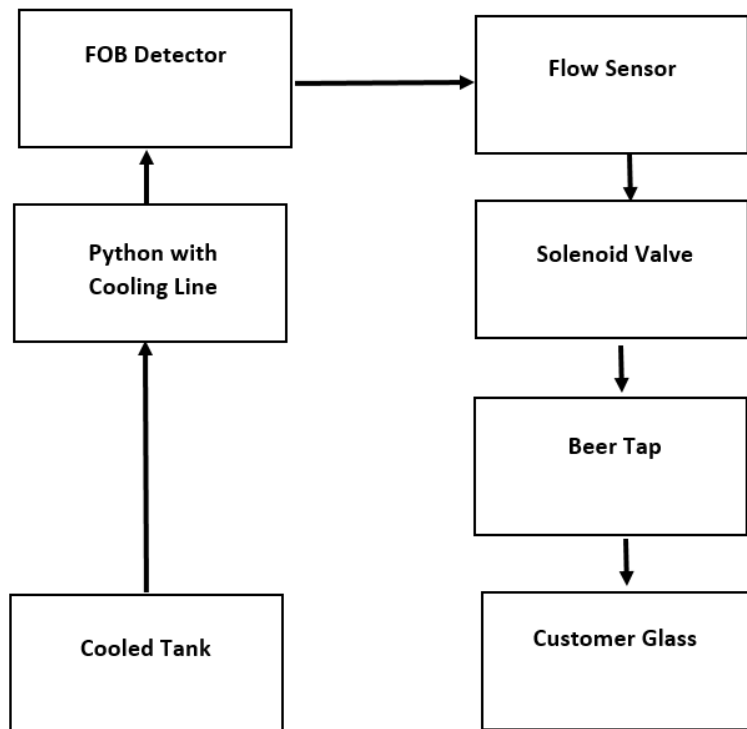




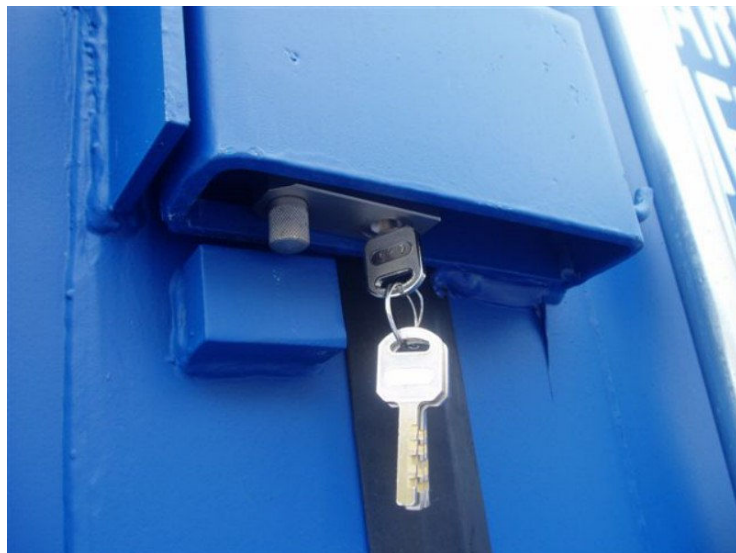
**Figure 1 – General diagram view of system (customer side)**



**Figure 2 – Flow schematic (keg)**



**Figure 3 – Flow schematic (tank)**



**Figure 4 – Shipping container lock**



**Figure 5 – Controller box seal**



**Figure 6 – Data Plate Example**



**Figure 7 Example of Container**