



Australian Government
Department of Industry,
Innovation and Science

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Supplementary Certificate of Approval NMI S774

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.

Emerson model FloBoss S600+ Calculator/Indicator for Liquid-measuring Systems

Submitted by Emerson Process Management Australia Pty Ltd
471 Mountain Highway
Bayswater VIC 3153

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 1/01/24, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern approved – certificate issued	18/12/18

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI S774' and only by persons authorised by the submitter.

Instruments incorporating a component purporting to comply with this approval shall be marked 'NMI S774' in addition to the approval number of the instrument, and only by persons authorised by the submitter.

It is the submitter'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
Manager
Pattern Approval, Policy and
Licensing Section

TECHNICAL SCHEDULE No S774

1. Description of Pattern approved on 18/12/18

The pattern is an Emerson model FloBoss S600+ calculator/indicator (Figure 1) with an NMI-approved measurement transducer generating compatible (#) pulse output proportional to volume throughput, for use in liquid-measuring systems incorporating compatible (#) NMI-approved flowmeters.

Instruments may be fitted with output sockets (output interfacing capability) for the connection of auxiliary and/or peripheral devices.

(#) '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:

- Input pulse rate less than 10 kHz
- Input voltage ranges:
 - for the calculator/indicator 20 V DC to 30 V DC; or
 - for Cabinet 230 V AC
- Environmental temperature range
 - for the calculator/indicator -10°C to 55°C
- Accuracy Class 0.3
- Non-linearity correction facility
- Density range for volume conversion to 15°C:
 - for generalised products 0.653 kg/L to 1.075 kg/L
 - for LPG 0.500 kg/L to 0.600 kg/L

1.2 Indicator

The Emerson model FloBoss S600+ (Figure 1) is approved for use with software versions 06.09k.6.22, 6.26b and above only.

The software version can be visualised by pressing [5. SYSTEM SETTINGS] >> [7. SOFTWARE VERSION], followed by pressing the arrow key down until the screen is reached.

The keyboard has 29 coloured silicon rubber keys.

The indicator includes 8 lines of 20 alphanumeric LCD display with LED backlight, with the following characteristics:

- Up to 999 999.9 L when the resolution is set to 0.1; or
- Up to 999 999 999 L when the resolution is set to 1

1.3 Features

The FloBoss S600+ Flow Computer is a panel-mount fiscal flow computer designed specifically for hydrocarbon liquid and gas measurement where versatility and accuracy are high priorities.

The FloBoss S600+ supports multi-stream (up to ten with optional expansion modules), multi-station (up to two) applications that are configured for simultaneous metering of gas, wet gas, crude oil, refined products, LPG, NGLs, etc. The S600+ can accommodate both a liquid and a gas station simultaneously.

Configuration of the S600+ is done through the same Windows-based intelligent set-up tool as the FloBoss S600+ Config600 Pro. The FloBoss S600+ provides the following functions through the Config600 Pro configuration tool:

The instrument features the following functions: which may be shown by scrolling through the menu options.

- The [TOTAL] option displays the accumulative total of the selected meter [n].
- Pressing the [PROG][BATCH][METER][n][ENTER] option, scrolling to the required batch, scrolling to 'RECALCULATE + PRINT' then pressing the [Y][ENTER] button will print the batch management information. This will reset the 'power interrupts' and delivery number to zero, without resetting the indication to zero.

When interfaced to a flow control valve, the [CONTROL][METER][n] option will begin a delivery or restart a delivery from the point at which it was stopped.

If remote density setting is enabled, selecting the [DENSITY][METER][n] option will display the density which can be changed in program mode by using the numerical keypad and can be saved by pressing the [ENTER] button.

The operator can print a configuration report in any mode.

Note that the displayed density can only be changed when the delivery has been reset to zero.

1.4 Printer (if applicable)

The FloBoss S600+ uses a generic network printing driver which supports a large number of printers by printing files in RAW format on port 9100. This format implies that the file is sent to the printer as the FloBoss S600+ generates it. The printer will be connected to the rear terminals for Reports printing.

1.5 Pulse Generator

The FloBoss S600+ is approved for use with a Veeder-Root Model 767163-305 pulse generator, or any other compatible (#) NMI-approved dual channel measurement transducer. In dual pulse mode, you can enable level A or B pulse checking. Each input has an input range of 1 Hz to 10 kHz. Each channel has live integrity checking. If cabling faults develop or if the pre-amp power fails, the software activates a configurable circuit fail alarm.

1.6 Temperature Probe

For temperature measurement applications, any 4-wire RTD transmitter or any other compatible (#) 4 to 20 mA temperature transmitter may be used to represent the temperature range specified in the field of operation.

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

1.7 Calibration

The Emerson model FloBoss S600+ calculator/indicator is configured either for a single k-factor or up to 12 k-factors to define the relationship between the volume throughput and the pulses generated by the measurement transducer.

To adjust the volume delivered by the measurement transducer, change the current k-factor using the following formula:

$$\text{New k-factor} = (1 + \% \text{ Error} / 100) \times \text{current k-factor}$$

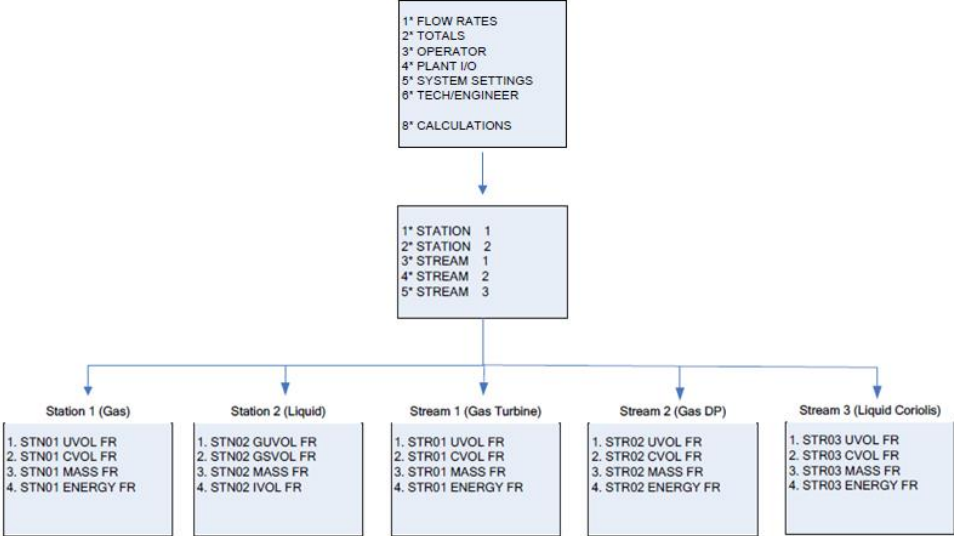
1.8 Checking Facilities

The instrument incorporates the following checking facilities:

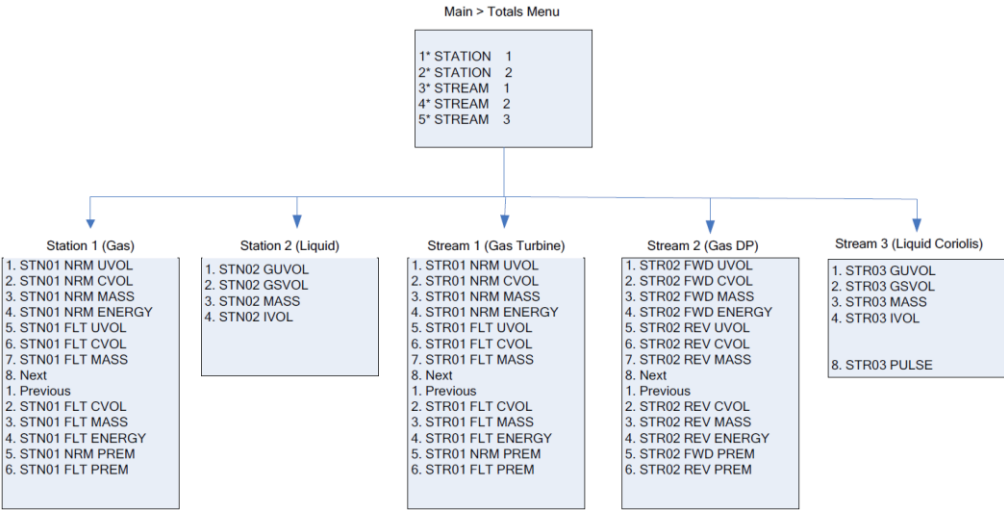
- A check of the presence and of the correct signal output from the measurement transducer.
- Outputs are provided to control the delivery process and if necessary prevent measurements when errors are detected.
- When configured for use with a printer, the Emerson model FloBoss S600+ for DC power supply checks for the presence and correct operation of the printer.

1.9 Volume Conversion for Temperature Facility

An electronic volume conversion for temperature facility is used to convert the measured volume to volume at 15°C. To view Corrected and Uncorrected Volume for Flowrate on the keypad display menu, select the following:



For Corrected and Uncorrected Volume Totalizer, select the following:



The conversion is based on ASTMIP-API Petroleum Measurement Table 54 for LPG, Table 54B for Generalised Petroleum Products.

The density is either fixed via the calibration mode or is available for adjustment using the [PROG][DENSITY][METER][n] option prior to measurements taking place. In such applications, temperature measurement is required which can be displayed by using the [TEMP][METER][n] option.

If the nature of the measured volume is entered into the calculator/indicator at the beginning of the measurement operation, then a printer is mandatory for printing the delivery details and the manually-entered density for which the volume conversion is set.

1.10 Linearity Correction Facility

When the linearity correction facility is enabled, up to 12 k-factors can be entered as a function of frequency (flow rate) in the range 0 to 10 kHz generated by the measurement transducer.

1.11 Flow Control Valve

Any compatible (#) solenoid-operated flow control valve, located downstream of the flowmeter, may be interfaced to the instrument for controlling the delivery process and to stop measurements in the event of errors detected by the checking facility.

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

1.12 Verification Provision

Provision is made for the application of a verification mark.

1.13 Sealing Provision

The FloBoss S600+ can be mounted in a cabinet for sealing purpose. Security to access the system menu is provided by way of user name and password protection with a detailed event log for audit purposes.

1.14 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 number	NMI SXXX
Year of manufacture
Accuracy class	0.3
Environmental class	N
Liquid temperature range°C to°C (*)

(*) Required when the volume conversion for temperature facility is activated.

For applications other than LPG, when the volume conversion facility is activated, the indicator reading face shall be marked 'Litres at 15°C' or 'Volume at 15°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 1000 L'.

TEST PROCEDURE

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 specified in Schedule 1 of the *National Trade Measurement Regulations 2009*.

FIGURE S774 – 1



~ End of Document ~