Australian Government

Department of Industry, Innovation and Science

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Supplementary Certificate of Approval
NMI S691

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.

Gilbarco SIP Model M11128 Pulse Generator for use in Flowmetering Systems

submitted by   Gilbarco Australia Pty Ltd
                      20 Highgate Street
                      AUBURN   NSW   2144

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 1/05/20, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern approved – certificate issued	29/04/15
1	Variant 1 approved – certificate issued	20/08/19
2	Variant 2 approved – certificate issued	03/02/25

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI S691' and only by persons authorised by the submittor.

Instruments incorporating a component purporting to comply with this approval shall be marked 'NMI S691' in addition to the approval number of the instrument, 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.

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 S691

1. Description of Pattern   approved on 29/04/15

A Gilbarco SIP (Secure Intelligent pulser) model M11128 pulse generator for use in compatible NMI-approved flowmetering systems or fuel dispensers (Figure 1).

1.1 Field of Operation

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

Internally:

•	Pulses per shaft revolution	256 pulses/revolution/channel
•	Maximum pulser shaft speed	210 revolutions/minute
•	Output pulses	Positive rectangular waveform
•	Maximum pulse frequency	900 Hz

Connection to calculator: Encrypted serial interface

•	Power supply range	4.7 to 5.0 volts DC
•	Environmental class	–25°C to 55°C
•	Accuracy class	0.5 (or larger)

1.2 Pulse Generator (Encoder)

The Gilbarco SIP model M11128 encoder includes a dual channel (overlapping) pulse generator and is designed to produce pulses proportional to volume throughput when fitted to a compatible NMI-approved flowmeters. An encrypted serial interface is used to interface with a Gilbarco model Sandpiper 2 calculator/ indicator (as described in approval NMI 5/6A/222) or any other compatible (#) NMI-approved calculator/indicator.

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

1.3 Installation

The pulse generator (encoder) is connected to the flowmeter such that the movement of the internal pulse generator is directly proportional to the movement of the metering shaft. When considering the compatibility of the flowmeter and the calculator/indicator for use with the pulse generator, the consideration shall include the field of operation of each device.

1.4 Checking Facilities

Internally the pulse generator is configured for two-channel pulse output operation and with an overlapping pulse output. The overlapping pulse output permits the detection of direction and errors on either channel by the internal encoder electronics.

1.5   Descriptive Markings and Notices

The following is the minimum data required to be marked on the pulse generator:

Pattern approval number   NMI No S691
Manufacturer's identification mark or trade mark   .....
Manufacturer's designation (model number)   .....
Serial number   .....
Year of manufacture   .....
Environmental class   class C

1.6   Verification Provision

Provision is made for the application of a verification mark.

1.7   Sealing Provision

Provision is made for the pulse generator to be sealed (Figure 1b) to prevent access to its electronics.

2.   Description of Variant 1   approved on 20/08/19

The Gilbarco model SIP-II pulse generator (Figure 2) which is similar to the pattern and is designed to produce pulses proportional to volume throughput when fitted to a compatible NMI-approved flowmeters.

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

Internally:

- Pulses per shaft revolution   512 pulses/revolution/channel
- Maximum pulser shaft speed   360 revolutions/minute
- Output   Encrypted data protocol
- Encrypted data polling frequency 50 Hz

Connection to calculator: Encrypted serial interface

- Power supply range   4.5 to 5.5 volts DC
- Environmental class   –40°C to 60°C
- Accuracy class   0.5 (or larger)

3.   Description of Variant 2   approved on 03/02/25

The Gilbarco model SIP-III pulse generator (Figure 3) which is similar to the pattern and is designed to produce pulses proportional to volume throughput when fitted to a compatible NMI-approved flowmeters.

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

Internally:

•	Pulses per shaft revolution	512 pulses/revolution/channel
•	Maximum pulser shaft speed	360 revolutions/minute
•	Output	Encrypted data protocol
•	Encrypted data polling frequency	50 Hz

Connection to calculator: Encrypted serial interface

•	Power supply range	4.5 to 5.5 volts DC
•	Environmental class	–40°C to 60°C
•	Accuracy class	0.5 (or larger)

TEST PROCEDURE

Instruments should be tested in accordance with any tests included in the approval documentation for the flowmetering system/s in which the pattern is included, as appropriate, and in accordance with any relevant tests, and 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 specified for flowmetering system in which the pattern is included, as stated in the approval documentation for the system or as specified in Schedule 1 of the *National Trade Measurement Regulations 2009.*
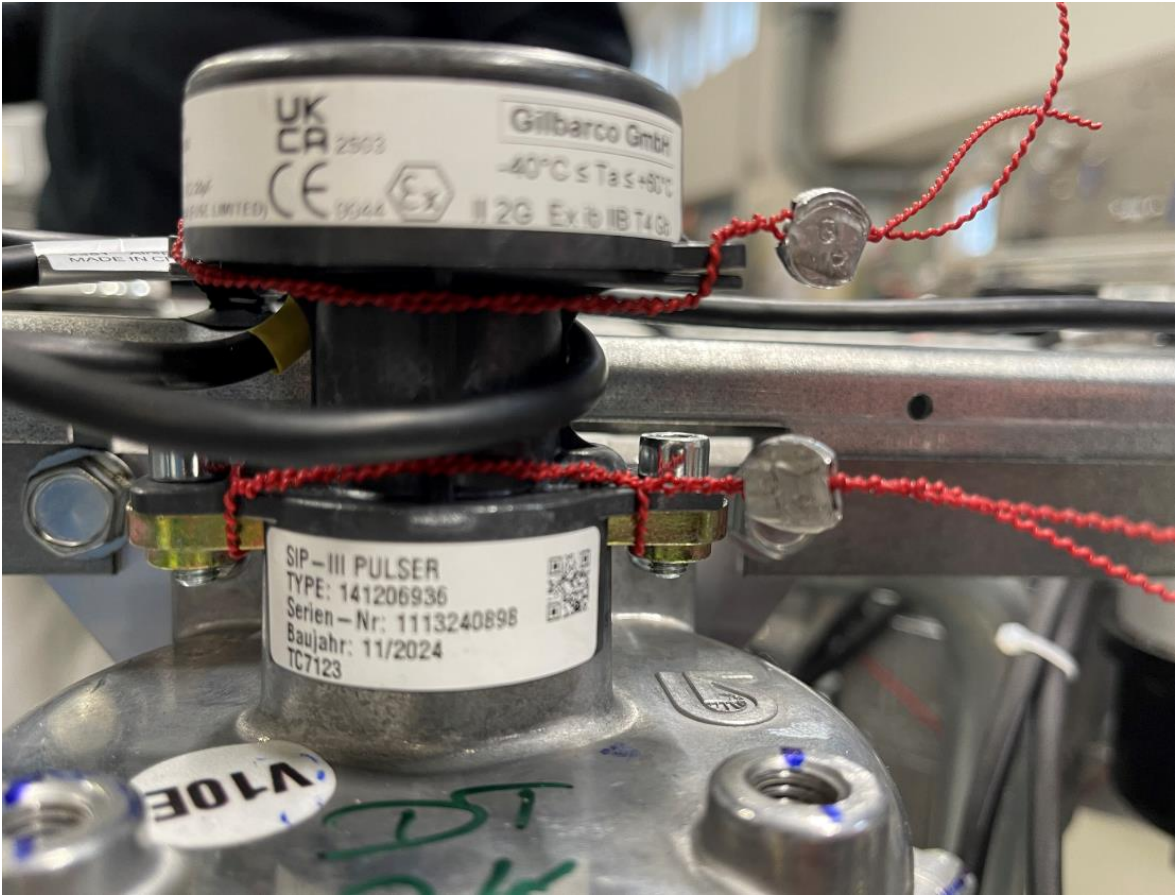
FIGURE S691 – 1

Gilbarco SIP Model M11128 Pulse Generator (incl. typical sealing method)

FIGURE S691 – 2

Gilbarco Model SIP-II Pulse Generator (incl. typical sealing method) – Variant 1

FIGURE S691 – 3

Gilbarco Model SIP-III Pulse Generator (incl. typical sealing method) – Variant 2

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