Australian Government
National Measurement Institute
Bradfield Road, West Lindfield NSW 2070

Supplementary Certificate of Approval

NMI S551

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.

Mining Industry Resources Model AdaptFMS MCU-NMI-1.0 Control System for Liquid-measuring Systems

submitted by Mining Industry Resources Pty Ltd
Unit 5/22 Bradmill Avenue
Rutherford NSW 2320

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, dated July 2004.

This approval becomes subject to review on 1/10/16, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern – approved – certificate issued	1/09/11

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with approval number ‘NMI S551’ and only by persons authorised by the submittor.

Instruments incorporating a component purporting to comply with this approval shall be marked ‘NMI S551’ 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.

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

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 S551

1. Description of Pattern approved on 1/09/11

A Mining Industry Resources model AdaptFMS MCU-NMI-1.0 unattended self-service control system for use in compatible (#) NMI-approved liquid-measuring systems.

(#) "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.

1.1 Field of Operation

The field of operation of the pattern is determined by the following characteristics:

• Power supply	Range 204 V to 264 V AC or 12 V to 24 V DC
• Maximum input frequency	500 Hz
• Liquid temperature range	–10ºC to 50ºC
• Environment temperature range	–10ºC to 55ºC (class N)
• Accuracy class	Class 0.5
• For use by registered clients	

1.2 Design/Features

The model AdaptFMS MCU-NMI-1.0 master control unit (MCU) (Figure 1) has features including:

(i) A 2 line liquid-crystal display (LCD) which provides a seven-digit indication of the measured volume of a flowmeter.

(ii) A touch-sensitive keypad.

(iii) A battery back up system.

(iv) An identification tag reader.

The volume displays up to a maximum of 99999.99 L in 0.01 L increments

The MCU operates using software version 1.08NU08. (refer to the Test Procedure for instructions on how to view version number.)

The delivery operation is authorised either automatically from a vehicle identification tag or manual entry from the keypad.

Each MCU provides control and monitoring for up to a maximum of 5 flowmetering systems.

The delivery operation is completed when either the nozzle is returned to its holster, activating a nozzle switch nozzle switch which in turn shuts off the relays which control the pumps/solenoid valves, or when a defined idle timeout period expires while no flow is detected.

1.3 Pulse Generator

The control system is approved for use with a Liquip model ERP100 pulse generator as described in the documentation of approval NMI No S351, or any other compatible NMI-approved measurement transducer.

1.4 Checking Facilities

(i) An automatic segment test for the volume display is performed at the start of each delivery.

(ii) The controller monitors the presence and correct transmission of signal from the measurement transducer and to the volume display. In the event of detecting a fault the instrument has provision for controlling electrically-operated valves to stop the delivery and prevent further deliveries until the fault is corrected.

(iii) When an error occurs with the software or the display has a fault, further deliveries will be prevented from being authorised.

(iv) In the event of a power failure while a delivery is in progress, the delivery will stop and the system will finalise the transaction. Further deliveries cannot be authorised.

1.5 Verification Provision

Provision is made for the application of a verification mark.

1.6 Sealing Provision

Provision is made for the pattern to be sealed via electronic sealing devices. Parameters are accessed via a code and previous interventions are recorded in an audit log.

1.7 Markings and Notices

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

Manufacturer's name or mark	Mining Industry Resources Pty Ltd
Model number	.....
Serial number	.....
Pattern approval mark	NMI No S551
Year of manufacture	.....
Environmental class	N

The minimum measured quantity is marked or displayed on the face of the indicator in the form "Minimum Delivery … L".

TEST PROCEDURE No S551

Instruments shall be tested in conjunction with any tests specified in the approval documentation for the instruments to which the pattern is connected, as appropriate, and in accordance with any relevant tests specified in the national instrument test procedures.

Maximum Permissible Errors

The maximum permissible errors are specified in Schedule 1 of the *National Trade Measurement Regulations 2009*.

The maximum permissible errors applicable are those applicable to the liquid-measuring system to which the instrument approved herein is fitted and as specified in Schedule 1 of the *National Trade Measurement Regulations 2009*.

To view the software version number perform the following procedure:

Reset the instrument by turning off the power to the AdaptFMS MCU-NMI-1.0 master control unit and observe the software version number on the LCD when power is restored.

FIGURE S551 – 1

Mining Industry Resources Model AdaptFMS MCU-NMI-1.0 Master Control Unit

~ End of Document ~