



**Australian Government**  
**Department of Industry,  
Science and Resources**

**National  
Measurement  
Institute**

36 Bradfield Road, West Lindfield NSW 2070

**Interim  
Provisional  
Certificate of Approval  
NMI P6/14B/33**

**VALID FOR VERIFICATION PURPOSES UNTIL 31 December 2024**

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.

PRECIA MOLEN Model X241-ABS-XL-18 Discontinuous Totalising Automatic Weighing Instrument

submitted by Tports Pty Ltd  
91 King William Street  
Adelaide SA 5000

**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 107, *Discontinuous Totalising Automatic Weighing Instruments (Totalising Hopper Weighers)*, dated July 2004.

This approval is subject to review at the decision of the Chief Metrologist in accordance with the conditions specified in the document NMI P 106.

**DOCUMENT HISTORY**

<b>Rev</b>	<b>Reason/Details</b>	<b>Date</b>
0	Pattern provisionally approved – interim certificate issued	28/11/23
1	Pattern (Validity) – interim certificate issued	22/05/24

## CONDITIONS OF APPROVAL

### General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI P6/14B/33' 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.

The values of the performance criteria (maximum number of scale intervals etc.) applicable to the instrument shall be within the limits specified herein and in any approval documentation for the components where they are approved separately.

This approval shall NOT be used in conjunction with General Certificate No 6B/0

### Special Conditions of Approval: (Provisional Approval)

This approval is limited to 1 (one) instrument only, located at:

T-ports  
Lucky Bay Road  
Cowell SA 5602

Instruments purporting to comply with this approval shall be marked with approval number 'NMI P6/14B/33' and only by persons authorised by the submitter. (Note: The 'P' in the approval number may be a temporary marking.)

The approval will remain provisional pending completion of satisfactory testing and evaluation (results of verification testing shall be copied to the Pattern Approval Section at NMI).

In the event of unsatisfactory performance the approval may be cancelled (or varied).

The submitter shall implement such modifications as required by NMI. In the event that such modifications (if any are required by NMI) are not made to the satisfaction of NMI, this approval may be withdrawn.

### 1. Description of Pattern provisionally approved on 28/11/23

A Precia Molen model X241-ABS-XL-18 Class 0.2 discontinuous totalising automatic weighing instrument (DTAWI) (Figures 1 and 5) having a weigh hopper of 12 000 kg maximum capacity.

The instrument is installed in a permanently fixed location.

Note: This approval has been granted with reference to document NMI R 107, *Discontinuous Totalising Automatic Weighing Instruments (Totalising Hopper Weighers)*, dated July 2004. The following description is intended to introduce terms used in this Certificate and Technical Schedule which may be additional to those in that document but which are consistent with the terminology in the document.

The system aims to provide a *bulk load delivery* using a particular automatic *delivery sequence* (the term 'delivery' may also be taken to refer to 'receipt').

This sequence involves the totalisation of the results of a number of *discrete load deliveries* or *weighing cycles*, each of which involves the division of the bulk product into *discrete loads*, according to a *target discrete load* the mass of which is then determined by weighing to give the *discrete load delivered* following which the product is discharged to the bulk output. Note that the *target discrete load* may be achieved by stopping or slowing the bulk product delivery prior to the *target discrete load* value being reached according to *discrete load target shutoff adjustments* (such as inflight adjustments or slow flow pre-sets).

Each *discrete load delivered* is totalised (at any time this may be termed the *cumulative totalisation*).

The *target discrete load* is generally a pre-selected value that is the same for most of the *discrete load deliveries* (this may be termed the *pre-selected target discrete load*). However for the final one or two deliveries in the *bulk load delivery* the *target discrete load* may differ (for example to avoid excessively large or small *discrete loads*). In addition, arrangements for stopping or slowing the bulk product delivery prior to the *target discrete load* value being reached may vary for the final discrete deliveries in the delivery sequence according to *target totalised load shutoff adjustments* (such as inflight adjustments or slow flow pre-sets).

The *totalised bulk load delivered* may be intended to be close to a requested amount (*target totalised load*) in which case adjustments and pre-sets as described above may be used to achieve this as closely as possible.

Alternatively the *totalised bulk load delivered* may be the quantity measured without a particular target totalised load.

The *totalised bulk load delivered* is the cumulative totalisation (sum of all discrete loads delivered), in the complete *bulk load delivery*. The transaction is based on the *totalised bulk load delivered* (not the *target totalised load*).

## 1.1 Details

The X241-ABS-XL-18 instrument is a Class 0.2 discontinuous totalising automatic weighing instrument having a weigh hopper with a maximum capacity of 12 000 kg.

The instrument is approved for use with a minimum totalised load ( $\Sigma_{\min}$ ) of not less than 10 000 kg and a totalisation scale interval of 10 kg. The instrument has a minimum capacity of 2 400 kg, and is set to have a *target discrete load* from 2 400 kg to 10 000 kg.

The X241-ABS-XL-18 instrument permanently records the *totalised bulk load delivered* and the net value of each discrete load delivered. This information can be sent to a printer if required.

Note: The discrete load values are NOT approved for trade use. The totalised bulk load delivered (a total of the discrete load delivered values) is the value approved for trade use.

## 1.2 Weighing System

The pattern comprises components as described below.

- (a) A weigh hopper with out-feed gate, using four (4) HBM model RTN load cells of 10 000 kg maximum capacity. The load cells are also described in the documentation of approval NMI S499. The load cells are located symmetrically around the weigh hopper.
- (b) A Mettler Toledo model IND780 digital indicator for the weighing system (the indicator is also described in the documentation of approval NMI S502).
- (c) The An Allen Bradley model 1756-L82E (\*) programmable logic controller PLC, with associated networking and input/output modules.
- (d) Matrixgroup Bulk Weigher Control System which runs on the programmable logic controller mentioned in (c) above, and utilises the weight readings from the digital indicator to determine the discrete load values and totalises them to determine the *totalised bulk load delivered*, and stores the weighing data.
- (e) An operator interface computer by which the operator can control the system, and access the weighing data. (\*)

Note: The system may also be controlled and weighing data accessed by other (networked) computers.

- (f) A printer (to print transaction data), or equivalent record in electronic form.
- (g) Actuators and associated position sensors to control the product in-feed and the out-feed gates for the weigh bin. (\*)
- (\*) For items marked (\*) above, 'Compatible and Equivalent' equipment may be used. 'Compatible and Equivalent' refers to equipment of the same or better specifications, requiring no changes to software for satisfactory operation of the complete system.

## 1.3 Indicator and Weighing Control Arrangements

The Bulk weigher control software running on the PLC, along with weight data from the digital indicator, controls the weighing sequence, including checking of various aspects of the system operation (level sensors, blocked chutes and gates open or closed as appropriate) and filling of the weigh-bin by starting and stopping of product flow (opening and closing of in-feed and out-feed gates) according to messages from the plant operator's control system.

The control software running on the PLC uses inputs from the system to determine when no further product delivery is required (e.g. when the in-feed bin is empty, the out-feed bin is full, or sufficient product has been supplied). In some cases these inputs may be provided by the plant operator's control system (e.g. to indicate that sufficient product has been supplied).

Weight data from the digital indicator is continually provided to the control software which uses this information to determine the discrete load values, totalise them to determine the *totalised bulk load delivered*, and store this weight data.

Where sufficient product has been supplied, the control software finalises the delivery and totalises the discrete load deliveries to form the *total bulk load delivered* value.

The weight data, together with information regarding the weighing sequence status, is also provided continually to Supervisory Control and Data Acquisition (SCADA)

software and the operator interface computer(s). The SCADA software runs on the Server and interfaces with the software running of the PLC. The operator interface computer(s) can retrieve weight data for printing if required.

The system has provision for a number of additional modes:

**Feed through mode**

In which the system simply feeds product, the product delivery is not totalised. This mode is not for trade use (no transaction record is generated).

**Manual operation**

In which the gates of the system may be manually operated, outside the normal operation sequence, the product delivery is not totalised.

**Simple weighing mode**

In which the weigh hopper operates as a simple (non-automatic) weighing instrument, without any data entry or additional functions (automatic and manual tare facilities, as well as zero setting are available, together with a capability to display the net weight value with expanded resolution. The product delivery is not totalised.

These modes are not approved for trade use.

**1.4 Operation**

The system is considered to be a discontinuous totalising automatic weighing instrument as it follows a predetermined program of automatic processes characteristic of the instrument. The product is weighed by individual discrete loads, which are totalised to determine the bulk product weighed.

**1.5 Verification Provision**

Provision is made for the application of a verification mark.

**1.6 Sealing Provision**

The digital indicator shall be sealed as described in the documentation of its approval (see 1.2 (b) above).

**1.7 Descriptive Markings and Notices**

- (a) Instruments carry the following markings, grouped together in a clearly visible place on the instrument, either on a descriptive plate fixed near the indicating device or on the indicating device itself:

Manufacturer's mark or name written in full	PRECIA SA
Indication of accuracy class	0.2
Pattern approval mark for the instrument	NMI P6/14B/33
Model number	X241-ABS-XL-18
Serial number of the instrument	.....
Maximum capacity	<i>Max</i> = 12 000 kg (#)
Minimum capacity	<i>Min</i> = 2 400 kg (#)
Minimum totalised load (not less than)	$\Sigma_{min}$ = 10 000 kg (#)
Totalisation scale interval	$d_t$ = 10 kg

Material to be measured .....

- (#) These markings shall also be shown near the display of the result if they are not already located there.
- (b) Instruments carry a notice visible to the operator stating TARGET DISCRETE LOAD SHALL BE xxxx kg to yyyy kg ONLY, or similar wording (where xxxx and yyyy are in the range of 2 400 kg to 10 000 kg).

Note: Markings for variants vary according to particular characteristics.

### TEST PROCEDURE No P6/14B/33

Instruments shall be tested in accordance with any relevant tests specified in the National Instrument Test Procedures.

Where a specific National Instrument Test Procedure for DTAWI does not exist, an appropriate test procedure (e.g., Inspectors Handbook Test Procedure No 22) shall be used and a copy of Test Procedure No 22 should be requested from NMI.

#### Maximum Permissible Errors

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

#### Application of Inspectors Handbook Test Procedure No 22 Clause 5.2

#### Weighing Performance Tests

The following test procedure assesses the weighing performance of the DTAWI with the type of material that it is intended to weigh. The performance tests shall be carried out in accordance with *separate verification method* only.

A minimum of 3 material weighing tests is required as specified below.

#### Maximum Target Discrete Load

This test procedure assesses the weighing performance operating with maximum target discrete loads.

1. Determine the number of weighing cycles required to deliver the minimum totalised load ( $\Sigma_{min}$ ) when operating with maximum target discrete loads ( $Max_T$ ) as follows:

$$N_{Max} = \frac{\Sigma_{min}}{Max_T}$$

where  $N_{Max}$  is rounded up to the next integer.

2. Perform a weighing test with a target discrete load of  $Max_T$  and a target totalised load of  $\Sigma_{min}$ .
3. If  $N_{Max}$  is less than 5, perform an additional material weighing test with a target discrete load of  $Max_T$  and a target totalised load of  $5 \times Max_T$ .

#### Minimum Target Discrete Load

This test procedure assesses the weighing performance operating with minimum target discrete loads.

1. Determine the number of weighing cycles required to deliver the minimum totalised load when operating with minimum target discrete loads ( $Min_T$ ) as follows:

$$N_{Min} = \frac{\Sigma_{min}}{Min_T}$$

where  $N_{Min}$  is rounded up to the next integer.

2. Perform a weighing test with a target discrete load of  $Min_T$  and a target totalised load of  $\Sigma_{min}$ .
3. If  $N_{Min}$  is less than 5, perform an additional weighing test with a target discrete load of  $Min_T$  and a target totalised load of  $5 \times Min_T$ .

### **Additional Test**

In some cases the above procedure may indicate only two tests to be performed. To achieve three material tests in total, perform an additional weighing test with target totalised load of  $\Sigma_{min}$  and a target discrete load value which is standard or typical for the installation. If it is difficult to arrive at a standard value then use  $Min_T$ .

Note: For some types of instruments the quantity delivered (target totalised load) must be an integer multiple of the discrete load. In this case unless the minimum totalised load is an integer multiple of the discrete load, it may be necessary to use the next larger possible test load (which is an integer multiple of the discrete load).

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

FIGURE P6/14B/33 – 1



Typical Integration Installation

FIGURE P6/14B/33 – 2



HBM Model RTN Load Cell



FIGURE P6/14B/33 – 3



Mettler Toledo Model IND780 Indicator

~ End of Document ~