



**Australian Government**  
**National Measurement**  
**Institute**

Bradfield Road, West Lindfield NSW 2070

**Notification of Change**  
**Supplementary Certificate of Approval No S389**  
**Change No 1**

Issued by the Chief Metrologist under Regulation 60  
of the  
*National Measurement Regulations 1999*

The following changes are made to the approval documentation for the  
Mettler Toledo Model RAAD Analog to Digital Load Cell Conversion Unit

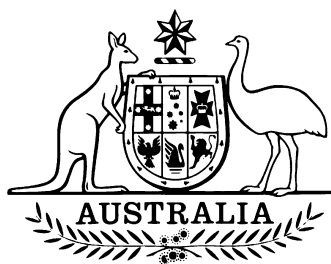
submitted by           Mettler Toledo Ltd  
                                  220 Turner Street  
                                  PORT MELBOURNE    VIC    3207.

In Supplementary Certificate of Approval No S389 dated 16 October 2001;

1.    The Condition of Approval referring to the review of the approval should be amended to read:  
  
      “This approval becomes subject to review on 1 September **2012**, and then every 5 years thereafter.”
2.    The FILING ADVICE should be amended by adding the following:  
  
      “Notification of Change No 1 dated 2 October 2007”

Signed by a person authorised by the Chief Metrologist  
to exercise his powers under Regulation 60 of the  
*National Measurement Regulations 1999*.

A handwritten signature in black ink, appearing to be 'J. H. T.', is located in the bottom right corner of the page.



## National Standards Commission

12 Lyonpark Road, North Ryde NSW

### Supplementary Certificate of Approval

#### No S389

Issued 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

Mettler Toledo Model RAAD Analog to Digital Load Cell Conversion Unit

submitted by Mettler Toledo Ltd  
220 Turner Street  
PORT MELBOURNE VIC 3207.

**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.

### CONDITIONS OF APPROVAL

This approval becomes subject to review on 1 September 2006, and then every 5 years thereafter.

Instruments purporting to comply with this approval shall be marked NSC No S389 and only by persons authorised by the submitter.

Instruments incorporating an analog to digital load cell conversion unit purporting to comply with this approval shall be marked NSC No S389 in addition to the approval number of the instrument.

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 Commission 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 the Commission's Document NSC P 106.

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

The Commission reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.

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

#### **Special:**

This approval shall be used in accordance with General Certificate No 6B/0. See clause 1.6 of Technical Schedule No S389 dated 16 October 2001 for details of special arrangements regarding this.

Conventional (analog) load cells connected to the RAAD unit are effectively equivalent to Mettler Toledo 'MTX' digital load cells and may therefore be used with Commission-approved digital indicators which are limited to use with compatible Commission-approved Mettler Toledo 'DigiTOL', 'DigiTOL POWERCELL', or 'MTX' digital load cells.

### DESCRIPTIVE ADVICE

**Pattern:** approved 29 August 2001

- A Mettler Toledo model RAAD analog to digital load cell conversion unit.

Technical Schedule No S389 describes the pattern.

FILING ADVICE

The documentation for this approval comprises:

Supplementary Certificate of Approval No S389 dated 16 October 2001  
Technical Schedule No S389 dated 16 October 2001 (incl. Test Procedure)  
Figures 1 to 3 dated 16 October 2001

Signed by a person authorised under Regulation 60  
of the National Measurement Regulations 1999 to  
exercise the powers and functions of the  
Commission under this Regulation.

A handwritten signature in black ink, appearing to read "Jim Bennett". The signature is written in a cursive style with a large initial "J" and "B".

TECHNICAL SCHEDULE No S389

**Pattern:** Mettler Toledo Model RAAD Analog to Digital Load Cell Conversion Unit.

**Submittor:** Mettler Toledo Ltd  
220 Turner Street  
PORT MELBOURNE VIC 3207.

**1. Description of Pattern**

A Mettler Toledo model RAAD analog to digital load cell conversion unit (Figure 1) containing circuitry which is intended to allow conventional (analog) load cells to be connected to digital indicators which are normally used with Mettler Toledo 'DigiTOL', 'DigiTOL POWERCELL', or 'MTX' type load cells.

**1.1 Details**

The instrument (RAAD unit or 'RAAD Box') is an enclosure containing a motherboard printed circuit board and up to four analog to digital conversion circuit modules. A single conventional (analog) load cell may be connected to each analog to digital conversion circuit module. The digital outputs of each analog to digital conversion circuit module are networked and provided to the digital indicator to which the unit is connected by a single cable.

The power supply for the 'RAAD Box' is provided by the digital indicator to which it is connected.

Where more than four analog load cells are required, a number (up to 6) of the 'RAAD Box' units may be connected together (Figure 2).

**1.2 Sealing Provision**

Provision is made for the sealing of the 'RAAD Box' enclosure by use of destructible adhesive labels or a lead and wire seal (Figure 3).

**1.3 Verification/Certification Provision**

Provision is made for the application of a verification/certification mark.

**1.4 Markings**

Instruments carry the following markings:

Manufacturer's mark, or name written in full	Mettler Toledo Inc., USA
Name or mark of manufacturer's agent	Mettler Toledo Ltd
Indication of accuracy class	Ⓜ
Serial number of the instrument	.....
Pattern approval mark for the RAAD unit	NSC No S389

## 1.5 Specifications

Maximum number of verification scale intervals	6000
Minimum sensitivity	0.9 $\mu\text{V}/\text{e}$
Excitation voltage (to load cell)	5 V DC
Minimum load cell impedance	350 $\Omega$
Maximum load cell impedance	2000 $\Omega$
Temperature range	-10°C / 40°C
Power voltage to unit	7.5 to 30 V DC (supplied by the indicator)

## 1.6 Arrangements in regard to NSC General Certificate 6B/0

The application of the RAAD unit shall be carried out in accordance with NSC General Certificate No 6B/0, with the following exemptions/observations:

(i) NSC 6B/0 clause **6.5 Minimum Sensitivity of the Digital Indicator.**

The calculation shall be performed as shown in NSC 6B/0 clause 6.5 except that the approved minimum sensitivity for the RAAD unit (0.9  $\mu\text{V}/\text{e}$ ) shall be used instead of the approved minimum sensitivity of the digital indicator.

(ii) NSC 6B/0 clause **6.6 Load Cell Impedance.**

The following calculation shall be used instead of that given in NSC 6B/0 clause 6.6:

- (a) Load cell impedance  $\geq$  minimum load cell impedance for the RAAD unit (350  $\Omega$ ); and
- (b) Load cell impedance  $\leq$  maximum load cell impedance for the RAAD unit (2000  $\Omega$ ).

## TEST PROCEDURE

Instruments should be tested in conjunction with any tests specified in the approval documentation for the instrument to which the pattern is connected, as appropriate, and in accordance with any relevant tests specified in the Uniform Test Procedures.

### Maximum Permissible Errors at Verification/Certification

For single range and multi-interval instruments, the maximum permissible errors for increasing and decreasing loads on initial verification/certification for loads,  $m$ , expressed in verification scale intervals,  $e$ , are:

- $\pm 0.5e$  for loads  $0 \leq m \leq 500$ ;
- $\pm 1.0e$  for loads  $500 < m \leq 2\,000$ ; and
- $\pm 1.5e$  for loads  $2\,000 < m \leq 10\,000$ .

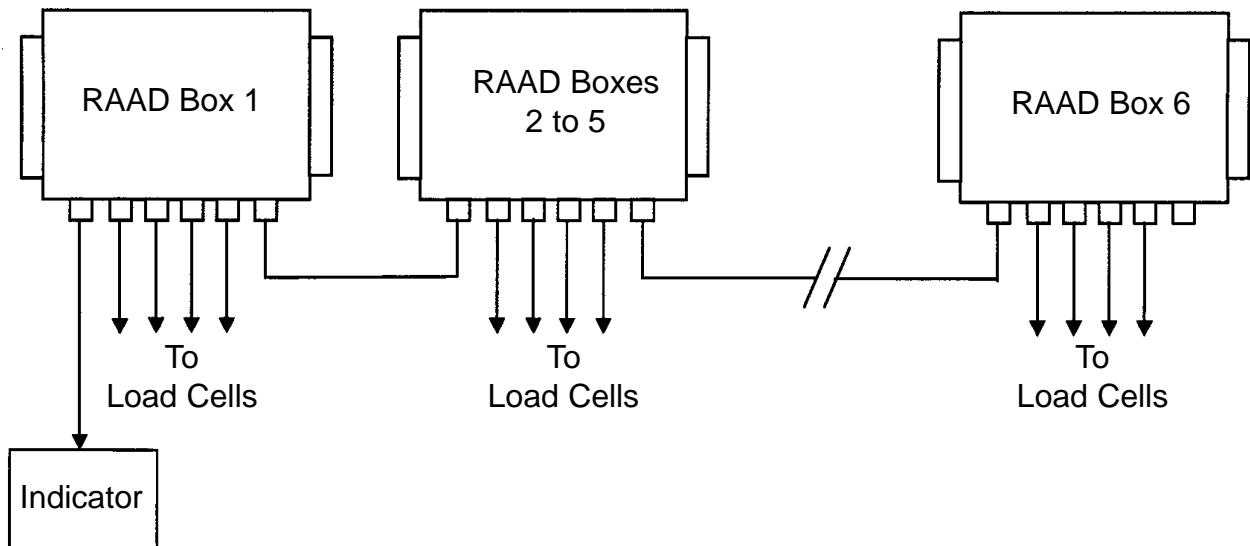
For multi-interval and multiple range instruments with verification scale intervals  $e_1, e_2, \dots$ , apply  $e_1$ , for zero adjustment, and for maximum permissible errors apply  $e_1, e_2, \dots$ , as applicable for the load.

FIGURE S389 - 1



Mettler Toledo Model RAAD Conversion Unit

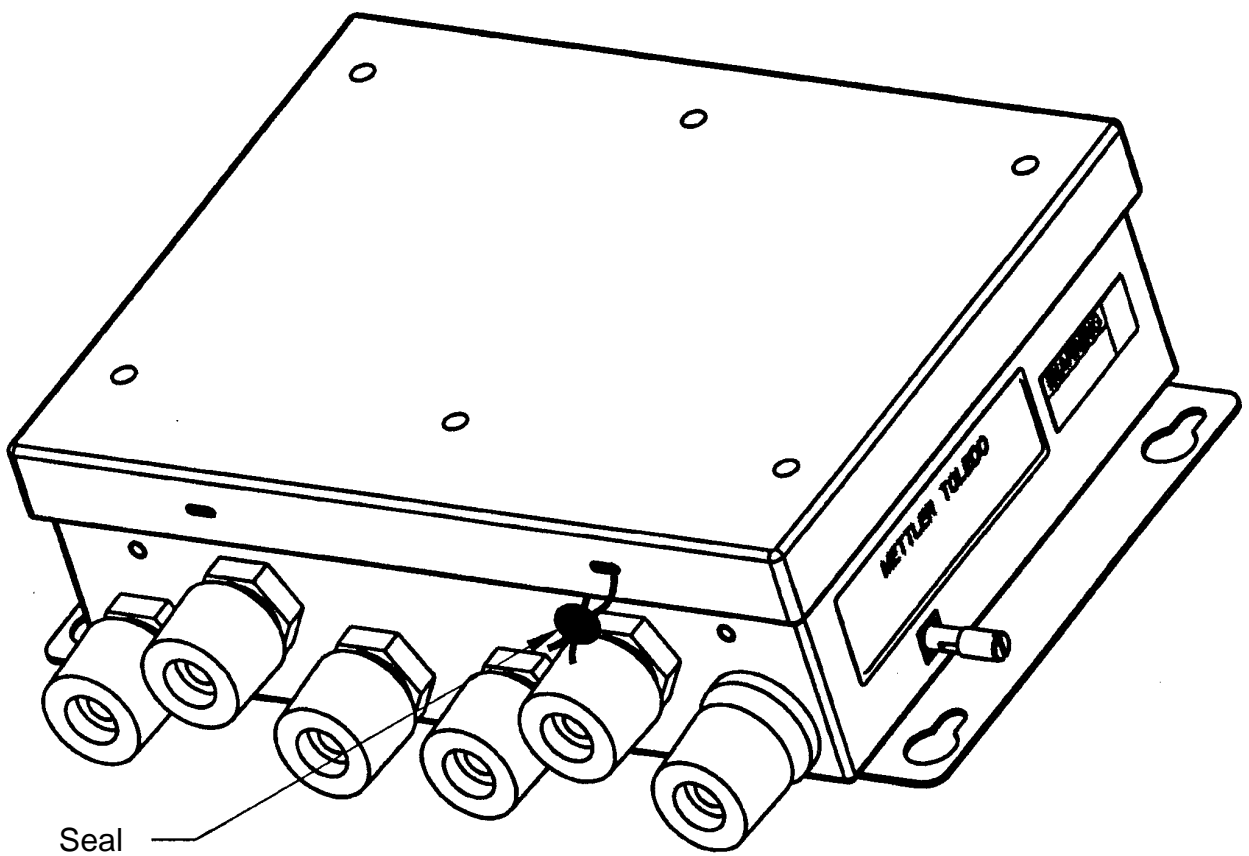
FIGURE S389 - 2



Interconnection of Multiple RAAD Conversion Units



FIGURE S389 - 3



Showing Sealing