



Australian Government  
Department of Industry,  
Innovation and Science

## National Measurement Institute

# Certificate of Approval

## NMI 14/2/80

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.

Satec Model BFM136 Class 1 Electricity Meter

submitted by Satec (Australia) Pty Ltd  
12 Marsh Road  
Silverdale NSW 2752

**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 M 6-1 *Electricity Meters. Part 1: Metrological and Technical Requirements*, July 2012.

This approval becomes subject to review on 1/02/20, and then every 5 years thereafter.

### DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern approved – interim certificate issued	19/01/15
1	Pattern amended (accuracy class) – interim certificate issued	19/06/15
2	Pattern approved – certificate issued	15/10/15
3	Pattern approved – amended Test Procedure reference to MPEs	10/02/17

## CONDITIONS OF APPROVAL

### General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 14/2/80' 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**

TECHNICAL SCHEDULE No 14/2/80

**1. Description of Pattern** **approved on 19/01/15**

A Satec model BFM136 class 1 (#) electronic current transformer (CT) operated static watt hour meter used to measure electrical energy when used with certain Satec HACS/current sensors (current transformers, CTs).

**1.1 Field of Operation**

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

- Number of phases 1 to 36
- Number of wires 1 to 36
- Reference frequency 50 Hz
- Reference ambient temperature ranges:
  - specified range of operation -10 to 60°C
  - limit range of operation -20 to 70°C
- Rated voltage 230 V AC
- Rated currents:
 

Rated current, $I_n$	50 A	(*)
Maximum current, $I_{max}$	100 A	(*)
- Meter constants
  - 5.4 Wh/imp
  - 1000 imp/kWh
- Accuracy class 1 (#)

(\*) These current ratings relate to a particular set of current sensors. Other current sensors with different ratings may also be used.

(#) The model BFM136 meter/HACS (CT) combinations are approved for Accuracy class 1.

**1.2 Features/Functions**

- Electronic (LCD) digital indicator
- Internal crystal clock
- Four quadrant energy metering
- Data logging
- Load profiling
- Event logging
- Time of use (TOU)
- Date/time stamping
- Communications, RS485 & Ethernet TCP/IP
- 36 single phase circuits
- 18 two phase circuits
- 12 three phase circuits
- Combination for up to 36 current inputs, from SATEC HACS/current sensors

**1.3 HACS/Current Sensors** (current transformers, CTs) (Figure 2)

The model BFM136 meter may be used with any of the following models (part numbers) of HACS/current sensors, namely CS1, CS1L, CS1S, CS2S, CS2SL, CS4, CS4S, CS8, CS8S, CS12S, CS20S, CS30S.

The HACS/current sensors may have some or all of the following features:

- HACS/current sensors up to 3000 A
- HACS/current sensors can be mounted up to 200 metres from BFM136
- HACS/current sensors incorporate shorting diodes (CT shorting switches not required)
- HACS/current sensor current ranges can be mixed per sub-meter

#### 1.4 Remote Display (Figure 3)

The model BFM136 meter may be connected to a remote touch screen display (TFT) via serial or Ethernet communications.

#### 1.5 Descriptive Markings

Instruments are marked with the following data, together in one location, in the form shown at right:

Manufacturer's name or mark	...
Model designation	...
Serial number	...
Pattern approval mark	NMI 14/2/80
Number of phases	...
Number of wires	...
Reference frequency	... Hz
Meter constants	...
Rated voltage	... AC
Rated currents:	$I_b$ ... A
	$I_{max}$ ... A
Accuracy index	Class 1

#### 1.6 Verification Provision

Provision is made for the application of a verification mark.

#### 1.7 Sealing Provision

Provision is made for the instrument to be sealed by the application of one or more mechanical seals (Figure 1).

### TEST PROCEDURE

Instruments tested for initial verification shall comply with the certificate of approval and technical schedule, and the maximum permissible errors for verifications at the operating conditions in effect at the time of verification.

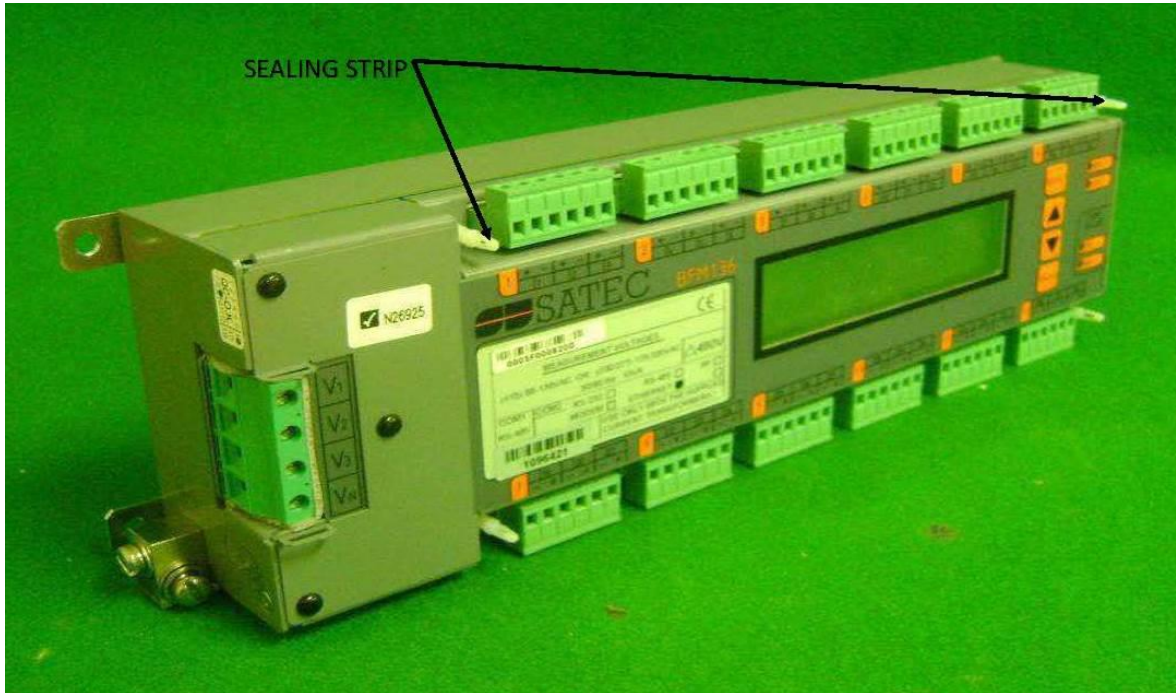
The maximum permissible errors are specified in the *National Trade Measurement Regulations 2009* (Cth).

Meters shall be verified in accordance with NITP 14 *National Instrument Test Procedures for Utility Meters*.

Evidence of verification shall be confirmed via the meter serial number and certificate of verification issued by a utility meter verifier in accordance with NITP 14.

NOTE: NMI reserves the right to vary this procedure. Any such variation shall be notified in writing by NMI.

FIGURE 14/2/80 – 1



Satec Model BFM136 Electricity Meter (Including Typical Mechanical Sealing)

FIGURE 14/2/80 – 2



Typical HACS/Current Sensors (CTs)

FIGURE 14/2/80 – 3



Typical Remote Touch Screen Display

~ End of Document ~