

Redlined BSC Procedure 601 text for CP1508 'Updating the references to the British and International Standards within the relevant Codes of Practice and Balancing and Settlement Procedure'

This Change Proposal (CP) proposes changes to Sections 3.1, 3.4.2, 3.4.3, 3.4.5, 3.4.8, 3.4.11, 3.4.17.5, 3.4.19, 3.4.27, 3.5.2, 3.5.3.2, 3.5.8, 3.5.12.1 and 3.5.12.2.1. We have redlined these changes against Version 19.0.

There is no impact on any other part of this document for this CP.

Amend Section 3.1.1 as follows:

3.1 Forms

3.1.1 Form F601/01 – Certificate of Compliance

F601/01

Certificate of Compliance

Code of Practice [Five]

CODE OF PRACTICE FOR THE METERING OF ENERGY TRANSFERS [WITH A MAXIMUM DEMAND OF UP TO (AND INCLUDING) 1MW FOR SETTLEMENT PURPOSES]

Application Reference No:

Issued To:

Meter Description: Type: Firmware Version:

Test Reference No. Date of Test: Software Version:

Test Laboratory:

Test Environment:

[ABC Manufacturer's] Metering Equipment has undergone Compliance Testing in accordance with Code of Practice [Five], Issue * (v *.**) dated nth Month Year, and Type Testing Version [5.0] dated nth Month Year (and subsequent revisions) and BS EN/IEC ~~61036~~62053-21.

The Metering Equipment was tested in conjunction with the Manufacturer's "XXXX Software, version V*.*".

Certificate of Compliance:

The review of the Compliance Testing results on nth Month Year confirmed that the Metering Equipment was found to comply with the requirements of Code of Practice [Five] in all respects.

Signed: Date:

On Behalf of the Panel, ELEXON Limited (as the Balancing and Settlement Code Company ('BSCCo'))

The Panel (and its Committees) and ELEXON and its employees, agents and contractors do not and shall not be deemed to make or give any representation, warranty or guarantee, nor shall each or any of them have any liability or responsibility whatsoever or howsoever arising (whether directly or indirectly), in relation to:

- each or any Metering Equipment (including in relation to any safety matters) in respect of any item of Metering Equipment which is not tested whether or not such item is of the same type, model or version as an item which is tested;
- the processing of any application for certification or for Compliance Approval, Protocol Approval or any other approval ("approval") in relation to Metering Equipment;
- the grant, failure or refusal to grant any such certification or approval; and/or
- any testing, method of testing or analysis of the results of testing of Metering Equipment or any act, error, failure or omission in relation to such testing, method of testing or analysis.

All Parties and applicants for certification and approval acknowledge and accept the foregoing and that the processes, requirements and tests relating to Metering Equipment referred to in Code Subsidiary Documents relate to matters concerning settlement and not matters relating to health and safety, which matters are the sole responsibility of the Parties and/or the applicant.

All Parties and applicants for certification and/or approval agree that they accept the foregoing and accept that all applications for certification and/or approval are processed by ELEXON subject to and on the basis of the foregoing.

Amend Section 3.4.2 as follows:

3.4.2 References⁷

The following documents are referenced in this Appendix:

BS 7856	‘Code of Practice for Design of Alternating Current Watt-Hour Meters for Active Energy (Classes 1 and 2)’
BS EN/IEC 62053-22	Electricity metering equipment (a.c.) - Particular requirements – Part 22: Static meters for active energy (classes 0.2S and 0.5S)
BS EN/IEC 62053-11	Electricity metering equipment (a.c.) - Particular requirements – Part 11: Electromechanical meters for active energy (classes 0.5, 1 and 2)
BS EN/IEC 62053-23	Electricity metering equipment (a.c.) - Particular requirements – Part 23: Static meters for reactive energy (classes 2 and 3)
BS EN/IEC 62056-21	Electricity metering – Data exchange for meter reading, tariff and load control – Part 21: Direct local data exchange
BS EN 61107	Data exchange for meter reading, tariff and load control – Direct local data exchange
BS EN/IEC 610366 2053-21	‘Alternating current static watt-hour meters for active energy (classes 1 and 2)’ ²
BS EN 60521	Class 0.5, 1 and 2 alternating current watt-hour meters
BS EN 61268	Alternating current static var hour meters for reactive energy (classes 2 and 3)
BS EN/IEC 61000-4-3	Electromagnetic Compatibility (EMC) – Part 4-3: Testing and Measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test.
BS 5685: Part 4	Electricity meters. Part 4. for Class 3 var-hour meters
Electricity Act 1989	‘Schedule 7, as amended by Schedule 1, to the Competition and Services (Utilities) Act 1992.’
Statutory Instrument 1998 No. 1565	‘The Meters (Approval of Pattern or Construction and Manner of Installation) Regulations 1998.’
Statutory Instrument 1998 No.1566	‘Electricity – The Meters (Certification) Regulations 1998.’

⁷ Metering Equipment should be tested and stamped to the latest iteration of the applicable standard named in this document at the time of initial registration.

Amend Section 3.4.3 as follows:

3.4.3 Test Constraints

3.4.3.1 Applicable Codes of Practice

Subject to 3.4.1 d) above, the following clauses refer to the Test Procedure solely for Compliance Testing to the requirements of a relevant Code of Practice at any one time and not to any other Code of Practice reference in the Code.

3.4.3.2 Timetable

For each Compliance Testing Application the Test Laboratory shall complete all Compliance Testing within 40 business days of receipt of approval from BSCCo.

Where Compliance Testing cannot be completed within the timetable the Test Laboratory shall inform BSCCo prior to the end of the initial 40 business day testing period and obtain agreement to a revised schedule.

3.4.3.3 Test Conditions

To test the metering accuracy requirements in Clause 5.4 below, the test conditions shall be maintained in accordance with BS EN/[IEC 6103662053-21](#), ~~BS EN 60521~~, BS EN/[IEC 62053-11](#) or BS EN/[IEC 62053-22](#) for indoor meters. The appropriate accuracy Class of the Meter Equipment under test will be employed.

For CoP10 Meters, tests for accuracy need not be repeated providing the Meter is approved for use under the Electricity Act 1989.

3.4.3.4 Samples for Testing

The Applicant shall provide a minimum of two samples of the chosen Metering Equipment and any supporting software and hardware necessary to fulfil testing.

Amend Section 3.4.5 as follows:

3.4.5 General Test Conditions

Before testing the metering accuracy requirements in clause 3.4.8 below, the following conditions shall be maintained:

- (a) The Meter shall be tested in its case with the cover in position and all its intended part earthed;
- (b) Seals need not be applied to any sealing point during testing;
- (c) Before any test is conducted , the circuits and instrumentation shall have been energised for sufficient time to reach thermal stability;

- (d) For polyphase Meters, the phase sequence shall be marked on the diagram of connections and voltages and currents shall be substantially balanced (see table 18 of BS EN/~~IEC 610366~~2053-21 for details);
- (e) Reference conditions shall be in accordance with table 19 of BS EN/~~IEC 610366~~2053-21;
- (f) In all cases taking into account the additional percentage error due to change of influence quantities in accordance with table 14 of BS EN/~~IEC 610366~~2053-21; and
- (g) Notwithstanding rack mountable Meters, where a Meter has both Import and Export functionality, then the Active Import Energy flow is deemed to be from the extreme left hand terminal⁸ (Red phase in) to the adjacent load terminal on the same phase (Red phase out).

Amend Section 3.4.8 as follows:

3.4.8 Accuracy Requirements {5.3}

- (a) Active Energy

Meters subject to CoP10 compliance testing shall meet all of the accuracy requirements for Active Energy if the Meter is approved under SI 1998 No 1566 or SI 2006 No ~~1679~~1153.

<p>Tests shall be carried out at fundamental frequency (50Hz) to verify that the Active Energy measurements are within the limits shown in Table 1 below. The measurement uncertainty at fundamental frequency of the measurement system used shall not be greater than:</p> <p style="margin-left: 40px;"> $\pm 0.01\%$ (CoP1); $\pm 0.05\%$ (CoP2); $\pm 0.1\%$ (CoP3); or $\pm 0.2\%$ (CoP5). </p>	<p>013</p>
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⁸ Viewed from the front of the Meter, as though reading the display.

Table 1 Active Energy

Value of Current (I)		Power factor (Cos φ)	Percentage error limits ⁹ for Meters of Class				
For whole current Meters	For transformer operated Meters ¹⁰		0.2S (CoP1)	0.5S (CoP2)	0.5 (CoP2)	1 (CoP3)	2 (CoP5)
-	$0.01 I_n \leq I < 0.05 I_n$	1	±0.4	±1.0	-	-	-
-	$0.05 I_n \leq I \leq I_{max}$	1	±0.2	±0.5	-	-	-
-	$0.02 I_n \leq I < 0.1 I_n$	0.5 ind 0.8 cap	±0.5 ±0.5	±1.0 ±1.0	-	-	-
-	$0.1 I_n \leq I \leq I_{max}$	0.5 ind 0.8 cap	±0.3 ±0.3	±0.6 ±0.6	-	-	-
$0.05 I_b \leq I < 0.1 I_b$ ¹¹	$0.02 I_n \leq I < 0.05 I_n$	1	-	-	±1.0	±1.5	±2.5
$0.1 I_b \leq I \leq I_{max}$	$0.05 I_n \leq I \leq I_{max}$	1	-	-	±0.5	±1.0	±2.0
$0.1 I_b \leq I < 0.2 I_b$ ¹²	$0.05 I_n \leq I < 0.1 I_n$	0.5 ind 0.8 cap	-	-	±1.3 ±1.3	±1.5 ±1.5	±2.5 -
$0.2 I_b \leq I \leq I_{max}$	$0.1 I_n \leq I \leq I_{max}$	0.5 ind 0.8 cap	-	-	±0.8 ±0.8	±1.0 ±1.0	±2.0 -

Source †: BS EN 62053 - 22 for CoP1 and 2 (Class 0.2S and 0.5S), or BS EN 62053 - 11 for CoP2 (Class 0.5), and ~~BS EN 60521~~ and BS EN/IEC 6403662053-21 for CoP3 and 5 (Class 1 and 2).

(b) Reactive Energy

Tests shall be carried out at fundamental frequency (50Hz) to verify that the Reactive Energy measurements are within the limits show in Table 2 below. The measurement uncertainty at fundamental frequency of the measurement system used shall not be greater than ±0.4%. Not applicable to CoP10	014
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⁹ Single-phase Meters and polyphase Meters with balanced loads.

¹⁰ BS EN/IEC 6052162053-11 specifies values of current as 'basic' (i.e. see figures in whole current Meters column)

¹¹ BS EN/IEC 6052162053-11 specifies one test point (0.05 I_b)

¹² BS EN/IEC 6052162053-11 specifies one test point (0.1 I_b)

Table 2 Reactive Energy

Value of Current (I)		Sin φ	Percentage error limits ⁹ for Meters of Class		Applicable BS EN Standard for Test Criteria
For whole current Meters	For transformer operated Meters		2 (CoP1)	3 (CoP2, 3 and 5)	
$0.05 I_b \leq I < 0.1 I_b$	$0.02 I_n \leq I < 0.05 I_n$	1	±2.5	±4.0	BS EN/IEC 62053 - 23 and BS EN 61268
$0.1 I_b \leq I \leq I_{max}$	$0.05 I_n \leq I \leq I_{max}$	1	±2.0	±3.0	
$0.1 I_b \leq I < 0.2 I_b$	$0.05 I_n \leq I < 0.1 I_n$	0.5 ind or cap	±2.5	±4.0	
$0.2 I_b \leq I \leq I_{max}$	$0.1 I_n \leq I \leq I_{max}$	0.5 ind or cap	±2.0	±3.0	
$0.2 I_b \leq I \leq I_{max}$	$0.1 I_n \leq I \leq I_{max}$	0.25 ind or cap	±2.5	±4.0	BS EN/IEC 62053 - 23
$0.2 I_b \leq I \leq I_b$	$0.1 I_n \leq I \leq I_n$	0.25 ind or cap	-	±10.0	BS EN/IEC 61268 62053 - 23
$0.1 I_b \leq I \leq 0.2 I_b$	-	1	-	±4.0	BS 5685 Part 4
$0.2 I_b < I \leq I_{max}$	-	1	-	±3.0	
$0.2 I_b \leq I \leq I_{max}$	-	0.5 ind and 0.8 cap	-	±3.0	

Source †: BS EN 62053 - 23 for CoP1 and 2 (Class 2 and 3), ~~and BS EN 61268 (Class 3)~~ for CoP 3 and 5 or BS 5685: Part 4 (Class 3) for CoP 2, 3 and 5. * for whole current metering percentage relates to I_{max} .

These limits of error for both Active and Reactive Energy shall apply at the reference conditions defined in the appropriate Meter.

† Permission to reproduce extracts from BS EN 62053 – 22, BS EN 62053 – 11, ~~BS EN 60521~~, BS EN/IEC ~~61036~~62053-21, BS EN 62053 – 23, ~~BS EN 61268~~ and BS 5685: Part 4 is granted by BSI. British Standards can be obtained in PDF or hard copy formats from the BSI online shop: www.bsigroup.com/Shop or by contacting BSI Customer Services for hardcopies only: Tel: +44 (0)20 8996 9001, Email: cservices@bsigroup.com.

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Amend Section 3.4.11 as follows:

3.4.11 Meter {5.3}

Establish the following parameters for the Meter under test:

(a)	record whether the Meter is of a Static or induction disc type;	017
(b)	record whether the Meter has an integral Outstation;	018
(c)	<p>establish that the Active Energy Meter meets the requirements of:</p> <ul style="list-style-type: none"> i. CoP1 BS EN/IEC 62053-22 Class 0.2S; ii. CoP2 BS EN/IEC 62053-22 Class 0.5S or BS EN/IEC 62053-11 Class 0.5; iii. CoP3 BS EN/IEC 6103662053-21 Class 1 or BS EN 60521 Class 1; or iv. CoP5 BS EN/IEC 6103662053-21 Class 2 or BS EN 7856 Class 2 v. CoP10 SI 1998 No 1566 or SI 2006 No 16791153 	019
(d)	establish whether the Import Active Energy Meter meets the requirements of Schedule 7 of the Electricity Act 1989;	020
(e)	<p>establish that the Reactive Energy Meter meets the requirements of:</p> <ul style="list-style-type: none"> i. CoP1 BS EN/IEC 62053-23 Class 2.0; ii. CoP2 BS EN/IEC 62053-23 Class 3 or BS 5685 Part 4; iii. CoP3 BS EN 61268 Class 3 or BS 5685 Part 4; or iv. CoP5 BS EN 61268 Class 3 or BS 5685 Part 4. <p>Not applicable to CoP10.</p>	021
(f)	establish whether the number of measuring elements is one less or equal to the number of primary system conductors;	022
(g)	<p>record whether provision has been made for the recording of measurement transformer ratios on the Meter's name plate;</p> <p>Not applicable to CoP10.</p>	023
(h)	if the Meter is a static Meter with combined display and/or Outstation, then confirm that the ratios can be displayed and downloaded during the interrogation process;	024
(i)	<p>Also confirm that any compensation factors that have been applied for measurement transformer errors and/or system losses, and where this is a constant factor applied at security level 3, can be similarly displayed and downloaded;</p> <p>Not applicable to CoP10.</p>	025
(j)	confirm that the Meter includes a non-volatile Meter register of cumulative energy for each Measured Quantity;	026
(k)	<p>confirm that the Meter Register(s) do not roll-over more than once within the normal reading cycle [90 days at full load]; and</p> <p>Not applicable to CoP10.</p>	027

(l)	where the Meter is to be used with an external Outstation, confirm that the Meter is fitted with at least one output pulse facility for each Measured Quantity (two output pulse facilities are required in the case of CoP1). Not applicable to CoP10.	028
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Amend Section 3.4.17.5 as follows:

3.4.17.5 Reverse Running

	Where an Active Energy reverse running display is provided, determine that the requirements of BS EN/ IEC 61036 62053-21 or BS EN/ IEC 62053-22 as appropriate are met. Establish under what conditions the reverse running flag is activated and record those conditions. Tests should include single and polyphase power reversals and set the appropriate flag for the Demand Period affected (<i>CoP3 and 5 only, and if fitted</i>).	085
	Test that upon return to normal power flow, the reverse running flag is no longer present in the unaffected Demand Period (<i>CoP3 and 5 only, and if fitted</i>).	086

Amend Section 3.4.19 as follows:

3.4.19 Local Port

Using the Local Interrogation Unit provided by the Applicant, confirm that:

(a)	The local port provides data to a Local Interrogation Unit via an opto port to BS EN 61107 (<i>CoP3 and 5</i>) or BS EN/ IEC 62056-21 (<i>CoP 1, 2 and 10</i>); or	088
(b)	The local port provides data to a Local Interrogation Unit via another type of port; and	089
(c)	Repeat collections of stored data are available throughout the storage period and verify that and “read” operation does not delete or modify any stored metering data.	090

Amend Section 3.4.27 as follows:

3.4.27 Additional Tests

3.4.27.1 Electromagnetic Compatibility Tests

Not applicable to CoP10

In addition to the EMC tests carried out by the Electricity Meter Examination Service of the Director of Electricity Supply as part of the process of Type Approval for the Meter in accordance with BS EN/~~IEC 61036~~62053-21, verify, by testing under all the conditions detailed in BS EN/~~IEC 61036~~62053-21, that:

(a)	any stored data and time/date is not corrupted or has been destroyed; and	128
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(b)	the metering accuracy remains within the requirements of Clause 5.4 of this Compliance Testing.	129
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3.4.27.2 Immunity to Electromagnetic HF Fields

Not applicable to CoP10

Verify, by testing in accordance with [BS EN/IEC 61000-4-3](#), and under the following conditions:

- the voltage and auxiliary circuits energised with reference voltage;
- a frequency band of 26MHz to 1GHz;
- a test field strength of 12.5V/m; and
- a carrier of 80% amplitude modulated with a 1kHz sine wave.

(a)	that without any current in the current circuits and the current terminals open circuit the application of the HF fields shall not produce a change in the Meter Register reading of more than 0.01kWh and the test output shall not produce a signal equivalent to more than 0.01kWh. (Where VT and CT connected Meter(s) is under test, equivalent scaled values should be used taking into account the transformer ratios); and	130
(b)	that with basic current I_b , and power factor equal to 1.0, at sensitive frequencies or frequencies of dominant interest, the variation of error does not exceed 3%.	131

On completion of each EMC test verify that:

(a)	any stored data is not corrupted or has been destroyed; and	132
(b)	the metering accuracy remains within the requirements of Clause 5.4 of this .	133

NOTE: Where VT and CT connected Meter(s) are under test the equivalent scaled values, taking into account the transformer ratios, should be used when considering any differences in Meter Register reading and output signals.

3.4.27.3 Sealing {5.7}

Ensure that adequate sealing facilities are provided for Settlement requirements.	134
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Amend Section 3.5.2 as follows:

3.5.2 References

The following documents are referred to in the text:-

IEC 1334-4-41	Application Protocols: Distribution Line Message.
BS EN/IEC 6103662053-21	AC Static Watthour Meters for Active Energy (Class 1 and 2)

BS EN 60521	of Class 0.5, 1 and 2 Single Phase and Polyphase Single Rate and Multi Rate Watt hour meters.
BS EN/ IEC 61407 <u>62056-21</u>	Data Exchange for Meter Reading, Tariff and Load Control. Direct Local Exchange.
Code of Practice for Electricity Meter Operators	Sealing Requirements.

Amend Section 3.5.3.2 as follows:

3.5.3.2 Test Conditions

To test the metering accuracy requirements in Clause 3.5.4 below the test conditions shall be maintained in accordance with BS EN/~~IEC 61036~~62053-21 Class 2 ~~or BS EN 60521 Class 2~~ for indoor meters as appropriate.

Amend Section 3.5.8 as follows:

3.5.8 Local Interrogation

Ensure that a local interrogation facility is provided which is an optical port conforming to BS EN/~~IEC 61407~~62056-21 and with a Data Protocol as defined in the Appendices of Code of Practice Six, and verify that data can be read using an Interrogation Unit.

Ensure that repeat collections of stored data are possible throughout the storage period and verify that any "read" operation shall not delete or modify any stored metering data.

Verify that the data transfer rate from the Outstation to the Interrogation Unit or PC achieves no less than 100 days worth of data in 90 seconds, using the Protocol Tester. (Note: ensure that the Protocol Tester is not the limiting factor).

Determine if the Metering Equipment will

- a) provide any portion of data stored in complete days, i.e. all metering data between any specified date and the current date; or
- b) provide metering data from the start of a daily block, for any date or day number, up to, and including, the Demand Period preceding the time of interrogation; or
- c) provide metering data only in daily blocks of 48 Demand Periods from any date(s) or day number(s),

upon request from an Interrogation Unit or PC.

Ensure that the data format and protocol submitted by the Applicant conforms to the requirements of Code of Practice Six, Section 6.4.1 and Appendices.

Ensure that for the purposes of transferring data to the relevant Instation a unique Outstation identification code is required.

Amend Section 3.5.12.1 as follows:

3.5.12.1 EMC Tests for Data Integrity

In addition to the EMC tests carried out by the Electricity Meter Examination Service of the Director of Electricity Supply as part of the process of Type Approval for the Meter in accordance with BS EN/IEC ~~6103662053-21~~, verify, by testing under all the conditions detailed in BS EN/IEC ~~6103662053-21~~, that:-

- (i) any stored data and time/date is not corrupted or has been destroyed; and
- (ii) the metering accuracy remains within the requirements of this specification 3.5.

Amend Section 3.5.12.2.1 as follows:

3.5.12.2.1 Verify, by testing in accordance with BS EN/IEC 61000-4-3, and under the following conditions:-

- voltage and auxiliary circuits energised with
 - reference voltage;
 - frequency band: 26MHz to 1GHz;
 - test field strength: 12.5V/m;
 - carrier 80% amplitude modulated with a 1KHz sinewave,
- (i) that without any current in the current circuits and the current terminals open circuit the application of the HF fields shall not produce a change in the Meter Register reading of more than 0.01kWh and the test output shall not produce a signal equivalent to more than 0.01kWh.; and
 - (ii) that with basic current I_b , and power factor equal to 1.0, at sensitive frequencies or frequencies of dominant interest, the variation of error does not exceed 3%,

and on completion of each EMC test verify that:-

- (i) any stored data is not corrupted or has been destroyed;
and
- (ii) the metering accuracy remains within the requirements
of this specification 3.5.