

Change Proposal – BSCP40/02	CP No: 1288 Version No: v1.0 (mandatory by BSCCo)									
Title Revisions to Meter test points within Code of Practice 4										
Description of Problem/Issue Code of Practice 4 (CoP4) deals with the testing commissioning and the calibration of Metering Equipment. It specifically references the tests that are to be conducted on Meters both before they are installed and during their in-service lives. This CP is addressing the tests that are to be conducted by aligning them with British Standards and to remove ambiguity for testing 3 phase Meters. The test points in CoP4 were intended to align with those in BS ¹ EN 62053-22:2003 and BS EN 62053-23:2003. However, CoP4 uses units of power factor (cos φ) for both active and reactive Meters whereas the British Standards use units of power factor for active Meters and units of sin φ for reactive Meters. This is causing some confusion to Meter Operator Agents and Meter manufacturers. The British Standards also allow a greater error when a single phase of a polyphase Meter is being tested.										
Proposed Solution In Appendix B of CoP 4 the headings for the reactive Meters in tables B1, B2, B3, B4, B5 and C3 should be changed to units of sin φ rather than power factor to align with BS EN 62053-23 as shown below.										
<table><tr><td colspan="3">Reactive Meter</td></tr><tr><td colspan="3">Sin φ</td></tr><tr><td>1</td><td>0.5 Inductive</td><td>0.5 Capacitive</td></tr></table>		Reactive Meter			Sin φ			1	0.5 Inductive	0.5 Capacitive
Reactive Meter										
Sin φ										
1	0.5 Inductive	0.5 Capacitive								
A diagram has been inserted into Appendix B (with table B1 – see attachment A) to clarify the test point requirements for Reactive Meters for CoP 1 and 2 applications.										

¹ British Standards: <http://www.standardsuk.com/>

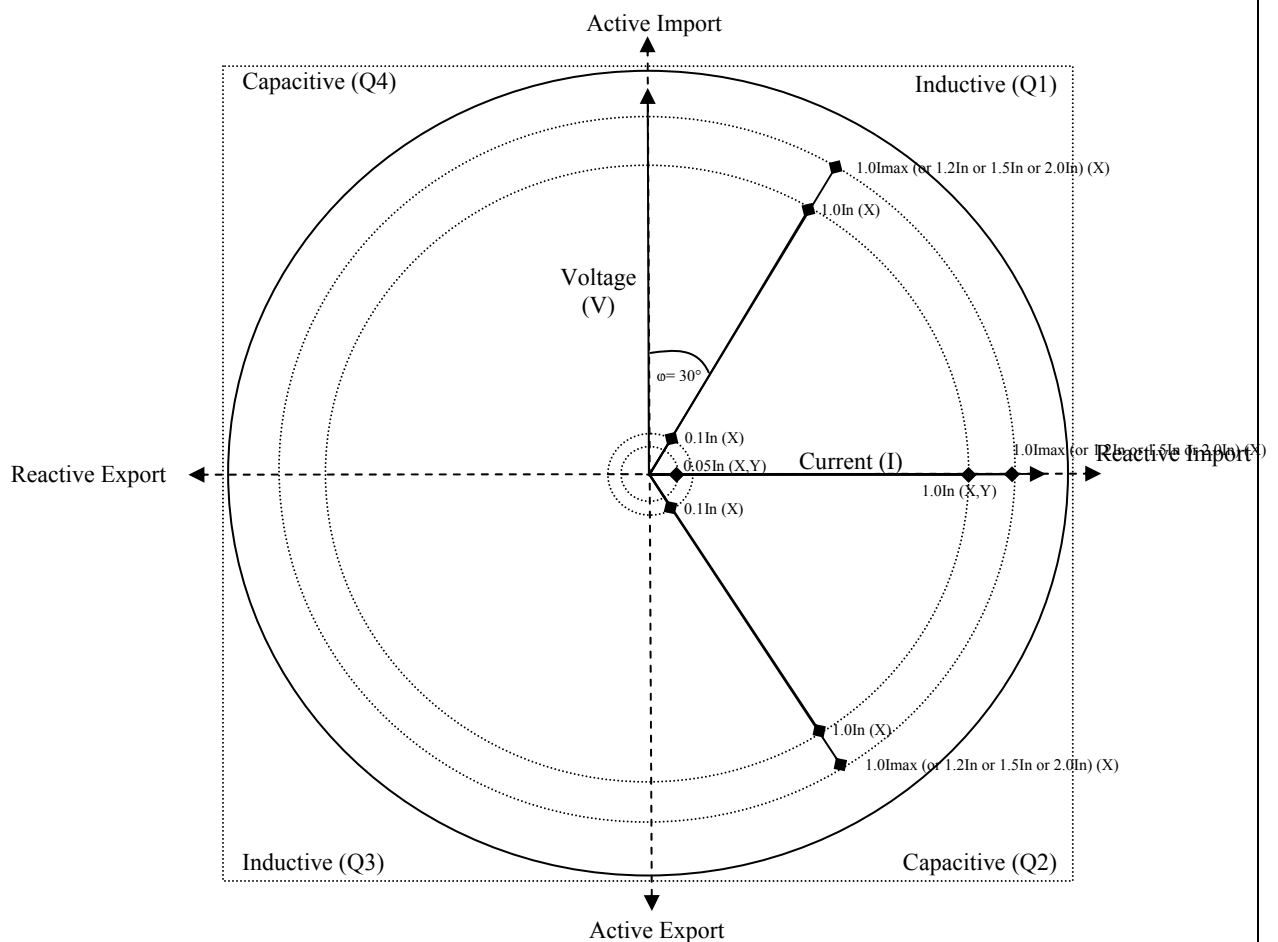


Figure 1: Example showing Type A Calibration Points for a CoP1 and 2 Reactive Energy Meter

Key

X = conduct tests on all elements combined

X,Y = conduct tests on all elements and each element on its own

Appendix C of CoP 4 will include new tables (from BS EN 62053-22 and BS EN 62053-23) stating the percentage error limits for polyphase active and reactive Meters. The standards allow a greater error when a single element of a polyphase Meter is being tested (i.e. carrying a single-phase load but with balanced polyphase voltages applied to the voltage circuits). This is shown below and in the attached (Attachment A) CoP 4 redlining.

Active Meters

Value of current	Power Factor	Percentage error limits for Meters of class	
		0.2s	0.5s
$0.05I_n \leq I \leq I_{max}$	1	± 0.3	± 0.6
$0.1I_n \leq I \leq I_{max}$	0.5 inductive	± 0.4	± 1.0

The difference between the percentage error when the Meter is carrying a single-phase load and a balanced polyphase load at rated current, I_n , and unity power factor shall not exceed 0.4% and 1.0% for Meters of classes 0.2s and 0.5s respectively.

Reactive Meters

Value of current		Sin ϕ (inductive or capacitive)	Percentage error limits for Meters of class 2 and 3
Direct connected Meters	Transformer operated Meters		
$0.1I_n \leq I \leq I_{max}$	$0.05I_n \leq I \leq I_{max}$	1	± 3.0
$0.2I_n \leq I \leq I_{max}$	$0.1I_n \leq I \leq I_{max}$	0.5	± 4.0

The difference between the percentage error when the Meter is carrying a single-phase load and a balanced polyphase load at basic current, I_n , and $\sin \phi = 1$ for direct connected Meters, respectively at rated current, I_n , and $\sin \phi = 1$ for transformer operated Meters, shall not exceed 2.5% and 3.5% for Meters of classes 2 and 3 respectively.

Justification for Change

The inconsistencies between the standards and CoP 4 may cause Meter Operator Agents and Meter manufacturers to inadvertently use incorrect tests points for calibration checks. Not allowing a greater error when a single element of a polyphase Meter is being tested may cause Meters to sent for adjustment or scrapped unnecessarily.

To which section of the Code does the CP relate, and does the CP facilitate the current provisions of the Code?

Yes – This CP will remove inconsistencies between the British Standards and CoP 4 thereby better facilitating the provisions of both, Section L 3.6 Commissioning and Maintenance of Metering Equipment and CoP 4

Estimated Implementation Costs *(mandatory by BSCCo)*

The estimated ELEXON implementation cost is 1.25 man days, which equates to £275.

Configurable Items Affected by Proposed Solution(s) *(mandatory by originator)*

CoP 4 ‘Code of Practice for the Calibration, Testing and Commissioning Requirements of Metering Equipment for Settlement Purposes’

Impact on Core Industry Documents or System Operator-Transmission Owner Code *(mandatory by originator)*

None identified

Related Changes and/or Projects *(mandatory by BSCCo)*

None

Requested Implementation Date Next available release (November 2009)

Reason: This Change Proposal is to correct problems that have been encountered since the latest version of CoP 4 was released.

Version History (*mandatory by BSCCo*)

This is version 1.0 for impact assessment.

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Attachments: Y

Attachment A: CoP 4 redlining v0.2 (8 pages)