

Metering Code

By:

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The Malaysian Grid Code Awareness Programme Funded by Akaun Amanah Industri Bekalan Elektrik (AAIBE)

Agenda



Overview of Metering Codes

Discussion on selective clauses

Closing

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Overview of Metering Codes (MC)

✓ 13 main sections

- •MC 1: Introduction
- MC 2: Objectives
- MC 3: Scopes
- MC 4: Requirements
- MC 5: Ownership
- •MC 6: Metering Accuracy and Data Exchange
- •MC 7: Commissioning, Inspection, Calibration and Testing
- •MC 8: Security of Metering Installation and Data
- •MC 9: Processing of Metering Data for Billing Purposes
- MC 10: Confidentiality
- •MC 11: Metering Installation Performance
- •MC 12: Operational Metering
- •MC 13: Disputes





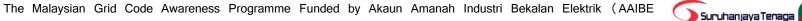
Objectives of MC

✓ Sets out metering requirements for all grid connected Users relating to

- Active Power (P)
- Reactive Power (Q)
- Active Energy (kWh)
- Reactive Energy (kVarh)
- ✓ To facilitate the Single Buyer in respect of revenue metering

✓ To facilitate the GSO in respect of operational metering (MC12)

✓ To ensure Users are in compliance with statutory & License obligations





Scope (MC3)

✓ MC applies to the GSO, Single Buyer and Users

- •Generators,
- Distributors,
- Network Operators, Directly Connected Customers,
- Users seeking connection to Transmission System or to
- a User system,
- Externally Interconnected Parties and
- TNB Transmission



Requirements (MC4) (1/2)

✓ SB is the responsible party for the Metering Installation

✓ Revenue meter

- To be installed at Connection Points and the nett output of each Generating Unit on the Transmission System
- Shall be located as close as possible to the Connection Point
- Data shall be recorded every 30 minutes interval and automatically collected once a day by the Data Collection System
- Shall have adequate capacity to store data at least 45 days of onsite data to provide back-up

Shall be the primary source of data for billing purposes.

✓ Revenue meter shall have Main Meter to measure and record the required data and Check Meter as back-up to validate the readings



Requirements (MC4) (2/2)

✓ Operational meter

•To be installed to measure voltage, current, frequency, P & Q, and signals (status and alarms) for monitoring the circuits connecting the Generating Unit to the Transmission System.

•In addition, to include all the plant signals, indications, parameters and quantities that will enable the GSO to monitor the dynamic behaviour of the Generating Plant and spinning reserve.

•Data shall be collected by the Remote Terminal Units (RTUs) which are part of the GSO's SCADA system

Installation and maintenance undertaken by the User

✓ Historical data shall be maintained in the metering Database

•Six (6) months on-line;

Thirteen (13) months in accessible format; and

•Seven (7) years in archive



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✓ SB shall own the Revenue Metering installation

✓ If the SB does not own the premises where the Metering Installation is located, then the owner of that premises will provide:

•24-hour access and adequate space for the Metering and associated communications equipment;

- Reliable auxiliary power supplies; and
- •Current transformers (CT) and voltage transformers (VT) compliant with this Metering Code and as agreed by the Single Buyer



Metering Accuracy and Data Exchange (MC6)

 Target availability of measurement & metering installation
99% per annum connecting the Generating Unit to the Transmission System

•95% per annum (communication link), unless otherwise agreed

between the SB and the User

Accuracy requirements :

Type	Maximum Demand or Energy (GWh pa) per Metering Point	Maximum Allowable Overall Error (±%) (Refer to Tables 2&3) at Full Load		Minimum Acceptable Class of <mark>Components</mark>		
		Active	Reactive			
1	More than 7.5MW			0.2 CT		
	or			Burden 30VA		
	60GWh per annum			if/1A, 15 VA		
	-			if/5A, 0.2		
		0.6	1.0	VT		
				Min Burden		
				100 VA		
				0.2 Wh Meter		
				0.5 VARh meter		
2	Less than 7.5MW			0.2 CT Burden		
	or			15VA		
	60GWh per annum			0.5 VT		
	r	1.0	2.0	Min Burden		
				75 VA		
				0.5 Wh Meter		
				1.0 VARh meter		
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Commissioning, Inspection, Calibration and Testing

✓ User to ensure that the Metering equipment has been type tested to the standards – to furnish type test certificates to the SB

Test & inspection interval : Maximum allowable period between tests

Metering Installation	Metering Installation Type		
Equipment	Type 1	Type 2	
CT	10 years	10 years	
VT	10 years	10 years	
Burden Tests	Whenever Meters are tested or when Modifications are made		
CT Connected Meter (Electronic Type)	5 years	5 years	

Maximum allowable period between inspections

Inspection of	Metering Installation Type		
Metering Installation Equipment	Type 1	Type 2	
Maximum allowable period between inspections	2.5 years	2.5 years	



✓ Commissioning

•User shall notify the Single Buyer the details of the new Metering Installation at least one (1) calendar month prior to the commissioning date

✓ **Procedures in the event of non-compliance:**

•In the event of non-compliance in respect of accuracy of Metering Installation with requirements of MC, User to notify Single Buyer within 1 Business Day of the detection of discrepancy

✓ Audit of Metering Data:

•Single Buyer may carry out periodic, random or unannounced audits of Metering Installations to confirm compliance



Metering Register

✓ Forms part of Metering Database that holds static Metering information not subject to frequent change, that determine the validity and accuracy of Metering Data

✓ Information includes:

- Connection and metering points
- Characteristic details (name, serial numbers, test certificates etc)
- Data validation processes (algorithm, check meter, alternate data source)

Data communication and local and remote access details

✓ SB is to prepare appropriate formats for collection of data for the Metering Register



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✓ APPENDIX 1 – Type & Accuracy of Revenue Metering Installations

✓ APPENDIX 2 – Commissioning, Inspection, Calibration & testing Requirements

✓ APPENDIX 3 – Metering Register

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✓ Metering Codes

 Sets out metering requirements for all grid connected Users relating to P, Q, kWh, kVarh

•Facilitate the Single Buyer and GSO in respect of revenue metering and operational metering respectively

Ensure Users to be in compliance with statutory & License obligations

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THANK YOU





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