Conforming Meter List Application

Mail the completed form including all supporting documents and materials to:

Independent Electricity Market Operator
Station A, Box 4474
Toronto, ON M5W 4E5
Attn: Metering Technical Group

Courier the completed form including all supporting documents and materials to:

Independent Electricity Market Operator
655 Bay Street, Suite 410
Toronto, ON M5G 2K4
Attn: Metering Technical Group

All information submitted in this process will be used by the *IMO* solely in support of its obligations under the "Electricity Act, 1998", the "Ontario Energy Board Act, 1998", the "Market Rules" and associated policies, standards and procedures and its licence. All submitted information will be assigned the appropriate confidentiality level upon receipt.

Terms and acronyms used in this Form that are italicized have the meanings ascribed thereto in Chapter 11 of the "Market Rules".

If mailing your package, please allow 5 business days for delivery to the *IMO*. Questions regarding the application form should be directed at email: meter.group@theIMO.com or the *IMO* Help Centre number (905) 403-6900 (1-888-448-7777).

The Independent Electricity Market Operator (*IMO*) requires all *revenue meters* to conform to the standards in the "Wholesale Revenue Metering Standard – Hardware". The *IMO* publishes a list of conforming *meters* on its web site (www.theIMO.com) called the "Conforming Meter List". This list is accessible to all participants in the marketplace.

Applicants should review the *IMO* procedure "Conformance Monitoring - Conforming Meter List" before completing this application form. This procedure can be downloaded from the *IMO* web site.

Applicants are required to complete Parts A, B, C and F of this form.

Use Part A to complete general information about your organization and the *meter* being submitted for conformance acceptance.

Use Part B to identify if specific features of the *meter* meet *IMO* standards.

Use Part C to provide information required by the *IMO* to communicate with the *meter* and to provide information about dial-up and power source configurations. Part C also contains channel assignment guidelines for the *meter*, which the Applicant is required to follow.

Part D is for reference only and describes the format of the Dynamic Bench Test. This test is conducted after this application and all supporting documents have been reviewed and accepted by the *IMO*, at a test site chosen by the applicant.

Applicants are required to submit one form per manufacturer *meter* and model. Please include with the application any user guides or technical specification documents available for the *meter*.

PART A – APPLICANT INFORMATION

Organization Name:

Primary Contact

Name: _____ Position: _____

Telephone No.: _____ Fax No.: _____

Mailing Address: _____

E-mail Address: _____ URL: _____

Secondary Contact

Name: _____ Position: _____

Telephone No.: _____ Fax No.: _____

E-mail Address: _____

Meter

Manufacturer: _____

Model: _____ Serial Number of Meter: _____

Requesting Main Meter Conformance: ☐ Requesting Alternate Meter Conformance: ☐

(Please note that a main meter automatically qualifies as an alternate meter.)

Suitable for Generator Loads: ☐ Suitable for Pure Consumption Loads: ☐

(Please note that a generator load meter automatically qualifies as a pure consumption load meter.)

Dynamic Bench Test Procedure

Please provide the preferred week to perform the Dynamic Bench test. Allow at least two weeks to process this request.

~~3.~~I request the week of _____

PART B – MAIN AND ALTERNATE METER REQUIREMENTS

Use Part B of the application to verify that the *meter* meets each *IMO* requirement listed for main or alternate *meters*. Check "Yes" if the *meter* does meet the requirement, or "No" if the *meter* does not meet the requirement. If "No" is selected, explain why in the Comments column.

Applicants should review both checklists to confirm that the appropriate *meter* category ("Main" or "Alternate") has been selected for this application.

PART B – MAIN AND ALTERNATE METER REQUIREMENTS (CONTINUED)

Main Meter		Yes	No	Comments
1	Measurement Canada Approval Number (provide number)	☐	☐	
2	Firmware Version Number (provide number)	☐	☐	
3	ANSI C12.20, 0.2% Specification (submit test results)[1]	☐	☐	
~~4~~	~~3 Channel Wh DEL and VARh DEL & REC Interval Data (Pure Load)~~	☐	☐	
4~~5~~	4 Channel Wh DEL & REC and VARh DEL & REC Interval Data[2]	☐	☐	
5~~6~~	Encoded Cumulative Registers (all Watts & VARS)	☐	☐	
6~~7~~	I^2h per Phase/Channel	☐	☐	
7~~8~~	V^2h per Phase/Channel	☐		
8~~9~~	5 Minute Interval Channels	☐	☐	
9~~10~~	35 Days of Data Storage	☐	☐	
10~~1~~	35 Days of Battery Back-up	☐	☐	
11~~2~~	100 Event Log	☐	☐	
12~~3~~	Two Passwords minimum	☐	☐	
13~~4~~	Minimum 7 Alphanumeric Char. for Device ID	☐	☐	
14~~5~~	Time Clock Resettable by MV-90	☐	☐	
15~~6~~	Compatible with UTS MV-90 Software	☐	☐	
16~~7~~	Maintain Eastern Standard Time	☐	☐	
17~~8~~	Modem–9600 BAUD (external modem acceptable)	☐	☐	
18~~9~~	ANSI Optical Port	☐	☐	
A.	Optional Distributed Network Protocol (DNP 3.0) compatibility[3]	☐	☐	
B.	Does the Meter support Multi-drop or Master/Slave configuration? If Yes, complete Part C.3	☐	☐	

~~[2] DELivered and RECeived from the *IMO controlled grid* in the case of pure loads.~~

[1] Test results require a signature of a professional engineer. An in-house engineer is acceptable.

[2] DELivered and RECeived from the *IMO-controlled grid* in the case of *generators* or parallel transformers.

[3] DNP compatibility is not an *IMO* requirement for *revenue metering*, but an optional feature. If the *meter* does have DNP compatibility, the *IMO* will request a sample *meter* for SCADA testing at a later date.

PART B – MAIN AND ALTERNATE METER REQUIREMENTS (CONTINUED)

Alternate Meter		Yes	No	Comments
Bolded words indicate that requirement differs from main meter requirement. Do not complete this page if Main Meter checklist (opposite) has been used.				
1	Measurement Canada Approval Number (provide number)	☐	☐	
2	Firmware Version Number (provide number)	☐	☐	
3	ANSI C12.20, **0.5%** Specification (submit test results)[4]	☐	☐	
~~**4**~~	~~3 Channel Wh DEL and VARh DEL & REC Interval Data (Pure Load)~~	☐	☐	
5~~**4**~~	4 Channel Wh DEL & REC and VARh DEL & REC Interval Data[5]	☐	☐	
5~~**6**~~	Encoded Cumulative Registers (all Watts & VARS)	☐	☐	
~~**7**~~	~~**Optional I^2h per Phase/Channel**~~	☐	☐	
~~**8**~~	~~**Optional V^2h per Phase/Channel**~~	☐	☐	
6~~**9**~~	5 Minute Interval Channels	☐	☐	
7~~**10**~~	**10 Days** of Data Storage	☐	☐	
8~~**11**~~	**10 Days** of Battery Back-up	☐	☐	
9~~**12**~~	**Alarm Flags**	☐	☐	
10~~**3**~~	Two Passwords minimum	☐	☐	
11~~**4**~~	Minimum. 7 Alphanumeric Char. for Device ID	☐	☐	
12~~**5**~~	Time Clock Resettable by MV-90	☐	☐	
13~~**6**~~	Compatible with UTS MV-90 Software	☐	☐	
14~~**7**~~	Maintain Eastern Standard Time	☐	☐	
15~~**8**~~	Modem–**2400 BAUD** (external modem acceptable)	☐	☐	
16~~**9**~~	ANSI Optical Port	☐	☐	
A	Optional Distributed Network Protocol (DNP 3.0) compatibility[6]	☐	☐	
B	Does the Meter support Multi-drop or Master/Slave configuration? If Yes, complete Part C.3.	☐	☐	

[4] Test results require a signature of a professional engineer. An in-house engineer is acceptable.

[5] DELivered and RECeived from the *IMO-controlled grid* in the case of *generators* or parallel transformers.

[6] DNP compatibility is not an *IMO* requirement for *revenue metering*, but an optional feature. If the *meter* does have DNP compatibility, the *IMO* will request a sample *meter* for SCADA testing at a later date.

PART C

Part C.1, Channel Assignment, describes the *IMO meter* channel assignments. All *revenue meters* operating in the *IMO-administered markets* are recommended to adhere to these channel guidelines.

Applicants must complete Part C.2, MV-90 Parameters, to allow the *IMO* to communicate with the *meter* during the Dynamic Bench Test with the MV-90 application. Complete parts C.3 and C.4, if applicable.

~~[5] DELivered and RECeived from the *IMO controlled grid* in the case of pure loads.~~

C.1 – CHANNEL ASSIGNMENT GUIDELINES

	Interval Data	Normal Channel
1.	Watts delivered by the IMO grid	1
2.	VARs delivered by the IMO grid	2
3.	Watts received by the IMO grid ~~if applicable, ie., for 4 channels~~	3
4.	VARs received by the IMO grid	4
5.	V^2 per phase ~~if applicable; optional for alternate but required for main~~(main meter)	5, 6, 7
6.	I^2 per phase (~~if applicable; optional for alternate but required for~~ main meter)	8, 9, 10

C.2 – MV-90 PARAMETERS

1. Indicate the value or setting for each of the MV-90 parameters below.
2. Provide export MV-90 Master File on disk with this application form.

1.	Intervals/hour	
2.	Device ID	
3.	TIM Name and Number	
4.	Telephone number	
5.	Baud rate	
6.	Password to read	
7.	Password to synchronize time	
8.	Password to read/write	

	Channels									
	1	2	3	4	5	6	7	8	9	10
9. Unit of measure for each channel										
10. Meter Multiplier for each channel										
11. Pulse Multiplier for each channel										
12. Number of Dials for each channel										
13. Start Meter Reading for each channel										
14. Encoder Type for each channel										

C.3 – DIAL-UP CONFIGURATIONS

Provide a description, with diagrams (attach additional pages, if necessary), of dial-up configurations supported for multiple-*meter* connections (i.e., master/slave, multi-drop, line router). If these descriptions and diagrams are already available in the *meter's* technical or user manual, provide page references below.

	Description	**Reference (Manual/pg. no.)**
1.		
2.		
3.		

C.4 – POWER SOURCE CONFIGURATIONS

If submitting an alternate *meter* in this application, or a main *meter* which can be installed as an alternate, describe how the *meter* meets the “Self Power” requirement specified in Section 5.4 of the "Wholesale Revenue Metering Standard - Hardware". If these descriptions and diagrams are already available in the *meter’s* technical or user manual, provide page references below.

	Reference (Manual/pg. no.)
1.	
2.	
3.	

PART D – FORMAT OF THE DYNAMIC BENCH TEST

This part provides a sample format for the Dynamic Bench Test, which the *IMO* conducts in conjunction with the applicant, after this application and all supporting documents have been received and deemed satisfactory by the *IMO*. Applicants should refer to the *IMO* procedure "Conformance Monitoring - Conforming Meter List" for more information on the Dynamic Bench Test. Applicants must indicate a preferred testing time for the Dynamic Bench Test in Part A of this application.

Part	Task	Applicant	IMO
1	Set up load	Install a 3-element *meter* on the test bench. Connect telephone line to the *meter*. Apply 120 volts, 2.5 Amps at 0.5 Power Factor. Run *meter* at load for minimum of 31 minutes	Interrogate *meter* channels and registers.
2	Remove one potential	Disconnect one of "B" phase voltage or "C" phase voltage for 10 minutes[7]	Interrogate *meter* channels and registers.
3	Remove all potentials	Disconnect "A" phase voltage and remaining voltage phase for 10 minutes[8]	Interrogate *meter* channels and registers.
4	Reconnect all potentials	Reconnect "A", "B" and "C phase voltages.	Interrogate *meter* channels and registers.
5	Remove one current	Disconnect one of "A" or "B" or "C" phase currents for 10 minutes.	Interrogate *meter* channels and registers.
6	Remove all currents	Disconnect remaining two phase currents for 10 minutes	Interrogate *meter* channels and registers.
7	Reconnect all currents	Reconnect "A", "B" and "C" phase currents.	Interrogate *meter* channels and registers.
8	Reverse all currents	Reverse "A", "B" and "C" phase currents for 10 minutes.	Interrogate *meter* channels and registers.
9	Remove one current	Disconnect one of "A" or "B" or "C" phase currents for 10 minutes.	Interrogate *meter* channels and registers.
10	Reset time	Set up *meter* to be effectively Measurement Canada sealed. Supply read-only, read plus synchronize time, and read plus write passwords.	Attempt to reset time using each password. Note results.
11	Password Security		Access *meter* with valid and ~~/~~invalid versions of each password~~s~~

[7] Assumes "A" phase powers *meter* electronics. If "B" phase powers *meter* electronics, then disconnect one of "A" or "C" phases. If "C" phase powers *meter* electronics disconnect one of "A" or "B" phases. Does not matter which phase is disconnected if *meter* supplied at auxiliary power terminals.

[8] Substitute "B" or "C" for "A" if "B" or "C" powers *meter* electronics.

Part	Task	Applicant	IMO	
			in Part 10. Note results.	
12	Communicate with slave *meter*	Set up master and slave *meters* for remote interrogation.	Interrogate slave *meter* channels and registers.	

PART E – ATTACHMENTS LIST (FOR ATTACHED DOCUMENTS, DISKS, OR CDS)

	Attachment Name	Application Part Reference
1.		
2.		
3.		
4.		
5.		
6.		

PART F – CERTIFICATION

By signing below, you confirm that all information provided in this application is correct and is signed by an officer of your organization, usually the Primary Contact, with signing authority for agreements and contracts.

Name (Please Print)	Title
Signature	Date