

Industrial Measurement Device Service (IMDS)

Bluetooth® Implementation Conformance Statement (ICS) Proforma

- **Revision:** IMDS.ICS.p0 edition 2
- **Revision Date:** 2025-08-05
- **Prepared By:** Automation Working Group
- **Published during TCRL:** TCRL.2024-2-addition



This document, regardless of its title or content, is not a Bluetooth Specification as defined in the Bluetooth Patent/Copyright License Agreement (“PCLA”) and Bluetooth Trademark License Agreement. Use of this document by members of Bluetooth SIG is governed by the membership and other related agreements between Bluetooth SIG Inc. (“Bluetooth SIG”) and its members, including the PCLA and other agreements posted on Bluetooth SIG’s website located at www.bluetooth.com.

THIS DOCUMENT IS PROVIDED “AS IS” AND BLUETOOTH SIG, ITS MEMBERS, AND THEIR AFFILIATES MAKE NO REPRESENTATIONS OR WARRANTIES AND DISCLAIM ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY, TITLE, NON-INFRINGEMENT, FITNESS FOR ANY PARTICULAR PURPOSE, THAT THE CONTENT OF THIS DOCUMENT IS FREE OF ERRORS.

TO THE EXTENT NOT PROHIBITED BY LAW, BLUETOOTH SIG, ITS MEMBERS, AND THEIR AFFILIATES DISCLAIM ALL LIABILITY ARISING OUT OF OR RELATING TO USE OF THIS DOCUMENT AND ANY INFORMATION CONTAINED IN THIS DOCUMENT, INCLUDING LOST REVENUE, PROFITS, DATA OR PROGRAMS, OR BUSINESS INTERRUPTION, OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR PUNITIVE DAMAGES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, AND EVEN IF BLUETOOTH SIG, ITS MEMBERS, OR THEIR AFFILIATES HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

This document is proprietary to Bluetooth SIG. This document may contain or cover subject matter that is intellectual property of Bluetooth SIG and its members. The furnishing of this document does not grant any license to any intellectual property of Bluetooth SIG or its members.

This document is subject to change without notice.

Copyright © 2025 by Bluetooth SIG, Inc. The Bluetooth word mark and logos are owned by Bluetooth SIG, Inc. Other third-party brands and names are the property of their respective owners.

Contents

1	General principles	4
1.1	Implementation Under Test (IUT) identification	4
1.2	Enforcement of inter-layer dependencies	4
2	ICS declarations.....	5
2.1	Versions	5
2.2	Transports.....	5
2.3	Features.....	5
2.4	IMD Control.....	14
2.5	RACP	14
2.6	GATT requirements	16
2.7	SDP requirements.....	16
3	References	17
4	Revision history and acknowledgments	18

1 General principles

1.1 Implementation Under Test (IUT) identification

Using the Bluetooth SIG qualification tool, the implementer is expected to declare details about what will be implemented.

1.2 Enforcement of inter-layer dependencies

This ICS includes one or more tables with inter-layer dependencies (ILDs). ILDs are used for specification requirements that are dependent on other supporting specifications. ILDs can refer to an individual ICS item in a separate layer (individual ILD), or it can refer to the full layer (full-layer ILD).

ILDs residing in an X2Core layer will be enforced from the Bluetooth SIG qualification tool in the following conditions, depending on where the referred ILD is residing:

Referred ILD resides in	Individual ILD	Full-layer ILD
Controller layer	Core-Complete configuration, or Referred layer is supported	N/A
Lower HCI layer	HCI is supported	N/A
Upper HCI layer	Core-Host configuration, or UHCI is supported	N/A
Host layer	Core-Host configuration, or Core-Complete configuration, or Referred layer is supported	N/A
X2Core layer	Core-Host configuration, or Core-Complete configuration, or Referred layer is supported	Core-Host configuration, or Core-Complete configuration

Table 1.1: Enforcement of an ILD within the Bluetooth SIG qualification tool

2 ICS declarations

2.1 Versions

Table 0: X.Y Versions

Item	Version	Reference	Status
1	Industrial Measurement Device Service v1.0	[1]	M

Table 1: X.Y.Z Versions

Table number reserved but not yet in use.

2.2 Transports

Table 2: Transport Requirements

Item	Transport	Reference	Status
1	Service supported over BR/EDR	[1] 2.4	C.1, C.3
2	Service supported over LE	[1] 2.4	C.2, C.3

C.1: Excluded for this Service IF CORE 41/2 “LE Core Configuration”.

C.2: Excluded for this Service IF CORE 41/1 “BR/EDR Core Configuration”.

C.3: Mandatory to support at least one.

2.3 Features

Table 3: Industrial Measurement Device Service Features

Item	Feature	Reference	Status
1	Multiple IMD Measurement characteristics (of the same UUID) Support	[1] 3.1	O
2	Custom Trigger Support	[1] 3.1.2.5	O

Table 4: Industrial Measurement Device Service

Item	Capability	Reference	Status
1	IMD Measurement characteristic	[1] 3.1	M
2	Writable IMD Measurement characteristic	[1] 3.1	O
3	IMD Status characteristic	[1] 3.2	O
4	IMDS Descriptor Value Changed characteristic	[1] 3.3	C.1
5	First Use Date characteristic	[1] 3.4	O
6	Writable First Use Date characteristic	[1] 3.4	C.2
7	Life Cycle Data characteristic	[1] 3.5	O
8	Writable Life Cycle Data characteristic	[1] 3.5	C.3
9	Work Cycle Data characteristic	[1] 3.6	O
10	Writable Work Cycle Data characteristic	[1] 3.6	C.4

Item	Capability	Reference	Status
11	Work Cycle Data characteristic Notifications	[1] 3.6	C.4
12	Service Cycle Data characteristic	[1] 3.7	O
13	IMD Control characteristic	[1] 3.8	O
14	IMD Historical Data characteristic	[1] 3.9	O
15	Record Access Control Point characteristic	[1] 3.10	O

C.1: Mandatory IF IMDS 13/2 “Autonomous Measurement Description descriptor changes” OR IMDS 13/5 “Autonomous Characteristic User Description descriptor changes” OR IMDS 13/7 “Autonomous Manufacturer Limits descriptor changes” OR IMDS 13/10 “Autonomous Process Tolerances descriptor changes” OR IMDS 13/13 “Autonomous Trigger Settings descriptor changes” OR IMDS 13/15 “Autonomous Valid Range descriptor changes” OR IMDS 13/4 “Writable Characteristic User Description descriptor” OR IMDS 13/9 “Writable Process Tolerances descriptor” OR IMDS 13/12 “Writable Trigger Settings descriptor”, otherwise Excluded.

C.2: Optional IF IMDS 4/5 “First Use Date characteristic”, otherwise Excluded.

C.3: Optional IF IMDS 4/7 “Life Cycle Data characteristic”, otherwise Excluded.

C.4: Optional IF IMDS 4/9 “Work Cycle Data characteristic”, otherwise Excluded.

Table 5: IMD Measurement Characteristic

Prerequisite: IMDS 4/1 “IMD Measurement characteristic”

Item	Feature	Reference	Status
1	Acceleration characteristic	[1] 3.1, [3], [4]	C.1
2	Writable Acceleration characteristic	[1] 3.1, [3], [4]	C.2
3	Force characteristic	[1] 3.1, [3], [4]	C.1
4	Writable Force characteristic	[1] 3.1, [3], [4]	C.3
5	Linear Position characteristic	[1] 3.1, [3], [4]	C.1
6	Writable Linear Position characteristic	[1] 3.1, [3], [4]	C.4
7	Rotational Speed characteristic	[1] 3.1, [3], [4]	C.1
8	Writable Rotational Speed characteristic	[1] 3.1, [3], [4]	C.5
9	Length characteristic	[1] 3.1, [3], [4]	C.1
10	Writable Length characteristic	[1] 3.1, [3], [4]	C.6
11	Torque characteristic	[1] 3.1, [3], [4]	C.1
12	Writable Torque characteristic	[1] 3.1, [3], [4]	C.7
13	Temperature characteristic	[1] 3.1, [3], [4]	C.1
14	Writable Temperature characteristic	[1] 3.1, [3], [4]	C.8

C.1: Mandatory to support at least one.

C.2: Optional IF IMDS 5/1 “Acceleration characteristic”, otherwise Excluded.

C.3: Optional IF IMDS 5/3 “Force characteristic”, otherwise Excluded.

C.4: Optional IF IMDS 5/5 “Linear Position characteristic”, otherwise Excluded.

C.5: Optional IF IMDS 5/7 “Rotational Speed characteristic”, otherwise Excluded.

C.6: Optional IF IMDS 5/9 “Length characteristic”, otherwise Excluded.

C.7: Optional IF IMDS 5/11 “Torque characteristic”, otherwise Excluded.

C.8: Optional IF IMDS 5/13 “Temperature characteristic”, otherwise Excluded.



Table 6: Acceleration Characteristic Descriptors*Prerequisite: IMDS 5/1 “Acceleration characteristic”*

Item	Capability	Reference	Status
1	Measurement Description descriptor	[1] 3.1.2.1	C.1
2	Autonomous Measurement Description descriptor changes	[1] 3.3	C.2
3	Characteristic User Description descriptor	[1] 3.1.2.2	O
4	Writable Characteristic User Description descriptor	[1] 3.1.2.2	C.3
5	Autonomous Characteristic User Description descriptor changes	[1] 3.3	C.3
6	Manufacturer Limits descriptor	[1] 3.1.2.3	O
7	Autonomous Manufacturer Limits descriptor changes	[1] 3.3	C.4
8	Process Tolerances descriptor	[1] 3.1.2.4	O
9	Writable Process Tolerances descriptor	[1] 3.1.2.4	C.5
10	Autonomous Process Tolerances descriptor changes	[1] 3.3	C.5
11	Trigger Settings descriptor	[1] 3.1.2.5	O
12	Writable Trigger Settings descriptor	[1] 3.1.2.5	C.6
13	Autonomous Trigger Settings descriptor changes	[1] 3.3	C.6
14	Valid Range descriptor	[1] 3.1.2.6	O
15	Autonomous Valid Range descriptor changes	[1] 3.3	C.7
16	Characteristic Extended Properties descriptor	[1] 3.1.2	C.8

- C.1: Mandatory IF IMDS 3/1 “Multiple IMD Measurement characteristics (of the same UUID) Support”, otherwise Optional.
- C.2: Optional IF IMDS 6/1 “Measurement Description descriptor”, otherwise Excluded.
- C.3: Optional IF IMDS 6/3 “Characteristic User Description descriptor”, otherwise Excluded.
- C.4: Optional IF IMDS 6/6 “Manufacturer Limits descriptor”, otherwise Excluded.
- C.5: Optional IF IMDS 6/8 “Process Tolerances descriptor”, otherwise Excluded.
- C.6: Optional IF IMDS 6/11 “Trigger Settings descriptor”, otherwise Excluded.
- C.7: Optional IF IMDS 6/14 “Valid Range descriptor”, otherwise Excluded.
- C.8: Mandatory IF IMDS 6/4 “Writable Characteristic User Description descriptor”, otherwise Excluded.

Table 7: Force Characteristic Descriptors*Prerequisite: IMDS 5/3 “Force characteristic”*

Item	Capability	Reference	Status
1	Measurement Description descriptor	[1] 3.1.2.1	C.1
2	Autonomous Measurement Description descriptor changes	[1] 3.3	C.2
3	Characteristic User Description descriptor	[1] 3.1.2.2	O
4	Writable Characteristic User Description descriptor	[1] 3.1.2.2	C.3
5	Autonomous Characteristic User Description descriptor changes	[1] 3.3	C.3
6	Manufacturer Limits descriptor	[1] 3.1.2.3	O

Item	Capability	Reference	Status
7	Autonomous Manufacturer Limits descriptor changes	[1] 3.3	C.4
8	Process Tolerances descriptor	[1] 3.1.2.4	O
9	Writable Process Tolerances descriptor	[1] 3.1.2.4	C.5
10	Autonomous Process Tolerances descriptor changes	[1] 3.3	C.5
11	Trigger Settings descriptor	[1] 3.1.2.5	O
12	Writable Trigger Settings descriptor	[1] 3.1.2.5	C.6
13	Autonomous Trigger Settings descriptor changes	[1] 3.3	C.6
14	Valid Range descriptor	[1] 3.1.2.6	O
15	Autonomous Valid Range descriptor changes	[1] 3.3	C.7
16	Characteristic Extended Properties descriptor	[1] 3.1.2	C.8

- C.1: Mandatory IF IMDS 3/1 “Multiple IMD Measurement characteristics (of the same UUID) Support”, otherwise Optional.
- C.2: Optional IF IMDS 7/1 “Measurement Description descriptor”, otherwise Excluded.
- C.3: Optional IF IMDS 7/3 “Characteristic User Description descriptor”, otherwise Excluded.
- C.4: Optional IF IMDS 7/6 “Manufacturer Limits descriptor”, otherwise Excluded.
- C.5: Optional IF IMDS 7/8 “Process Tolerances descriptor”, otherwise Excluded.
- C.6: Optional IF IMDS 7/11 “Trigger Settings descriptor”, otherwise Excluded.
- C.7: Optional IF IMDS 7/14 “Valid Range descriptor”, otherwise Excluded.
- C.8: Mandatory IF IMDS 6/4 “Writable Characteristic User Description descriptor”, otherwise Excluded.

Table 8: Linear Position Characteristic Descriptors

Prerequisite: IMDS 5/5 “Linear Position characteristic”

Item	Capability	Reference	Status
1	Measurement Description descriptor	[1] 3.1.2.1	C.1
2	Autonomous Measurement Description descriptor changes	[1] 3.3	C.2
3	Characteristic User Description descriptor	[1] 3.1.2.2	O
4	Writable Characteristic User Description descriptor	[1] 3.1.2.2	C.3
5	Autonomous Characteristic User Description descriptor changes	[1] 3.3	C.3
6	Manufacturer Limits descriptor	[1] 3.1.2.3	O
7	Autonomous Manufacturer Limits descriptor changes	[1] 3.3	C.4
8	Process Tolerances descriptor	[1] 3.1.2.4	O
9	Writable Process Tolerances descriptor	[1] 3.1.2.4	C.5
10	Autonomous Process Tolerances descriptor changes	[1] 3.3	C.5
11	Trigger Settings descriptor	[1] 3.1.2.5	O
12	Writable Trigger Settings descriptor	[1] 3.1.2.5	C.6
13	Autonomous Trigger Settings descriptor changes	[1] 3.3	C.6
14	Valid Range descriptor	[1] 3.1.2.6	O
15	Autonomous Valid Range descriptor changes	[1] 3.3	C.7
16	Characteristic Extended Properties descriptor	[1] 3.1.2	C.8

- C.1: Mandatory IF IMDS 3/1 “Multiple IMD Measurement characteristics (of the same UUID) Support”, otherwise Optional.
- C.2: Optional IF IMDS 8/1 “Measurement Description descriptor”, otherwise Excluded.
- C.3: Optional IF IMDS 8/3 “Characteristic User Description descriptor”, otherwise Excluded.
- C.4: Optional IF IMDS 8/6 “Manufacturer Limits descriptor”, otherwise Excluded.
- C.5: Optional IF IMDS 8/8 “Process Tolerances descriptor”, otherwise Excluded.
- C.6: Optional IF IMDS 8/11 “Trigger Settings descriptor”, otherwise Excluded.
- C.7: Optional IF IMDS 8/14 “Valid Range descriptor”, otherwise Excluded.
- C.8: Mandatory IF IMDS 8/4 “Writable Characteristic User Description descriptor”, otherwise Excluded.

Table 9: Rotational Speed Characteristic Descriptors

Prerequisite: IMDS 5/7 “Rotational Speed characteristic”

Item	Capability	Reference	Status
1	Measurement Description descriptor	[1] 3.1.2.1	C.1
2	Autonomous Measurement Description descriptor changes	[1] 3.3	C.2
3	Characteristic User Description descriptor	[1] 3.1.2.2	O
4	Writable Characteristic User Description descriptor	[1] 3.1.2.2	C.3
5	Autonomous Characteristic User Description descriptor changes	[1] 3.3	C.3
6	Manufacturer Limits descriptor	[1] 3.1.2.3	O
7	Autonomous Manufacturer Limits descriptor changes	[1] 3.3	C.4
8	Process Tolerances descriptor	[1] 3.1.2.4	O
9	Writable Process Tolerances descriptor	[1] 3.1.2.4	C.5
10	Autonomous Process Tolerances descriptor changes	[1] 3.3	C.5
11	Trigger Settings descriptor	[1] 3.1.2.5	O
12	Writable Trigger Settings descriptor	[1] 3.1.2.5	C.6
13	Autonomous Trigger Settings descriptor changes	[1] 3.3	C.6
14	Valid Range descriptor	[1] 3.1.2.6	O
15	Autonomous Valid Range descriptor changes	[1] 3.3	C.7
16	Characteristic Extended Properties descriptor	[1] 3.1.2	C.8

- C.1: Mandatory IF IMDS 3/1 “Multiple IMD Measurement characteristics (of the same UUID) Support”, otherwise Optional.
- C.2: Optional IF IMDS 9/1 “Measurement Description descriptor”, otherwise Excluded.
- C.3: Optional IF IMDS 9/3 “Characteristic User Description descriptor”, otherwise Excluded.
- C.4: Optional IF IMDS 9/6 “Manufacturer Limits descriptor”, otherwise Excluded.
- C.5: Optional IF IMDS 9/8 “Process Tolerances descriptor”, otherwise Excluded.
- C.6: Optional IF IMDS 9/11 “Trigger Settings descriptor”, otherwise Excluded.
- C.7: Optional IF IMDS 9/14 “Valid Range descriptor”, otherwise Excluded.
- C.8: Mandatory IF IMDS 9/4 “Writable Characteristic User Description descriptor”, otherwise Excluded.

Table 10: Length Characteristic Descriptors*Prerequisite: IMDS 5/9 “Length characteristic”*

Item	Capability	Reference	Status
1	Measurement Description descriptor	[1] 3.1.2.1	C.1
2	Autonomous Measurement Description descriptor changes	[1] 3.3	C.2
3	Characteristic User Description descriptor	[1] 3.1.2.2	O
4	Writable Characteristic User Description descriptor	[1] 3.1.2.2	C.3
5	Autonomous Characteristic User Description descriptor changes	[1] 3.3	C.3
6	Manufacturer Limits descriptor	[1] 3.1.2.3	O
7	Autonomous Manufacturer Limits descriptor changes	[1] 3.3	C.4
8	Process Tolerances descriptor	[1] 3.1.2.4	O
9	Writable Process Tolerances descriptor	[1] 3.1.2.4	C.5
10	Autonomous Process Tolerances descriptor changes	[1] 3.3	C.5
11	Trigger Settings descriptor	[1] 3.1.2.5	O
12	Writable Trigger Settings descriptor	[1] 3.1.2.5	C.6
13	Autonomous Trigger Settings descriptor changes	[1] 3.3	C.6
14	Valid Range descriptor	[1] 3.1.2.6	O
15	Autonomous Valid Range descriptor changes	[1] 3.3	C.7
16	Characteristic Extended Properties descriptor	[1] 3.1.2	C.8

- C.1: Mandatory IF IMDS 3/1 “Multiple IMD Measurement characteristics (of the same UUID) Support”, otherwise Optional.
- C.2: Optional IF IMDS 10/1 “Measurement Description descriptor”, otherwise Excluded.
- C.3: Optional IF IMDS 10/3 “Characteristic User Description descriptor”, otherwise Excluded.
- C.4: Optional IF IMDS 10/6 “Manufacturer Limits descriptor”, otherwise Excluded.
- C.5: Optional IF IMDS 10/8 “Process Tolerances descriptor”, otherwise Excluded.
- C.6: Optional IF IMDS 10/11 “Trigger Settings descriptor”, otherwise Excluded.
- C.7: Optional IF IMDS 10/14 “Valid Range descriptor”, otherwise Excluded.
- C.8: Mandatory IF IMDS 10/4 “Writable Characteristic User Description descriptor”, otherwise Excluded.

Table 11: Torque Characteristic Descriptors*Prerequisite: IMDS 5/11 “Torque characteristic”*

Item	Capability	Reference	Status
1	Measurement Description descriptor	[1] 3.1.2.1	C.1
2	Autonomous Measurement Description descriptor changes	[1] 3.3	C.2
3	Characteristic User Description descriptor	[1] 3.1.2.2	O
4	Writable Characteristic User Description descriptor	[1] 3.1.2.2	C.3
5	Autonomous Characteristic User Description descriptor changes	[1] 3.3	C.3
6	Manufacturer Limits descriptor	[1] 3.1.2.3	O
7	Autonomous Manufacturer Limits descriptor changes	[1] 3.3	C.4

Item	Capability	Reference	Status
8	Process Tolerances descriptor	[1] 3.1.2.4	O
9	Writable Process Tolerances descriptor	[1] 3.1.2.4	C.5
10	Autonomous Process Tolerances descriptor changes	[1] 3.3	C.5
11	Trigger Settings descriptor	[1] 3.1.2.5	O
12	Writable Trigger Settings descriptor	[1] 3.1.2.5	C.6
13	Autonomous Trigger Settings descriptor changes	[1] 3.3	C.6
14	Valid Range descriptor	[1] 3.1.2.6	O
15	Autonomous Valid Range descriptor changes	[1] 3.3	C.7
16	Characteristic Extended Properties descriptor	[1] 3.1.2	C.8

- C.1: Mandatory IF IMDS 3/1 “Multiple IMD Measurement characteristics (of the same UUID) Support”, otherwise Optional.
- C.2: Optional IF IMDS 11/1 “Measurement Description descriptor”, otherwise Excluded.
- C.3: Optional IF IMDS 11/3 “Characteristic User Description descriptor”, otherwise Excluded.
- C.4: Optional IF IMDS 11/6 “Manufacturer Limits descriptor”, otherwise Excluded.
- C.5: Optional IF IMDS 11/8 “Process Tolerances descriptor”, otherwise Excluded.
- C.6: Optional IF IMDS 11/11 “Trigger Settings descriptor”, otherwise Excluded.
- C.7: Optional IF IMDS 11/14 “Valid Range descriptor”, otherwise Excluded.
- C.8: Mandatory IF IMDS 11/4 “Writable Characteristic User Description descriptor”, otherwise Excluded.

Table 12: Temperature Characteristic Descriptors

Prerequisite: IMDS 5/13 “Temperature characteristic”

Item	Capability	Reference	Status
1	Measurement Description descriptor	[1] 3.1.2.1	C.1
2	Autonomous Measurement Description descriptor changes	[1] 3.3	C.2
3	Characteristic User Description descriptor	[1] 3.1.2.2	O
4	Writable Characteristic User Description descriptor	[1] 3.1.2.2	C.3
5	Autonomous Characteristic User Description descriptor changes	[1] 3.3	C.3
6	Manufacturer Limits descriptor	[1] 3.1.2.3	O
7	Autonomous Manufacturer Limits descriptor changes	[1] 3.3	C.4
8	Process Tolerances descriptor	[1] 3.1.2.4	O
9	Writable Process Tolerances descriptor	[1] 3.1.2.4	C.5
10	Autonomous Process Tolerances descriptor changes	[1] 3.3	C.5
11	Trigger Settings descriptor	[1] 3.1.2.5	O
12	Writable Trigger Settings descriptor	[1] 3.1.2.5	C.6
13	Autonomous Trigger Settings descriptor changes	[1] 3.3	C.6
14	Valid Range descriptor	[1] 3.1.2.6	O

Item	Capability	Reference	Status
15	Autonomous Valid Range descriptor changes	[1] 3.3	C.7
16	Characteristic Extended Properties descriptor	[1] 3.1.2	C.8

- C.1: Mandatory IF IMDS 3/1 “Multiple IMD Measurement characteristics (of the same UUID) Support”, otherwise Optional.
- C.2: Optional IF IMDS 12/1 “Measurement Description descriptor”, otherwise Excluded.
- C.3: Optional IF IMDS 12/3 “Characteristic User Description descriptor”, otherwise Excluded.
- C.4: Optional IF IMDS 12/6 “Manufacturer Limits descriptor”, otherwise Excluded.
- C.5: Optional IF IMDS 12/8 “Process Tolerances descriptor”, otherwise Excluded.
- C.6: Optional IF IMDS 12/11 “Trigger Settings descriptor”, otherwise Excluded.
- C.7: Optional IF IMDS 12/14 “Valid Range descriptor”, otherwise Excluded.
- C.8: Mandatory IF IMDS 12/4 “Writable Characteristic User Description descriptor”, otherwise Excluded.

Table 13: IMD Measurement Characteristic Descriptors

Prerequisite: IMDS 4/1 “IMD Measurement characteristic”

Item	Capability	Reference	Status
1	Measurement Description descriptor	[1] 3.1.2.1	C.1
2	Autonomous Measurement Description descriptor changes	[1] 3.3	C.2
3	Characteristic User Description descriptor	[1] 3.1.2.2	C.3
4	Writable Characteristic User Description descriptor	[1] 3.1.2.2	C.4
5	Autonomous Characteristic User Description descriptor changes	[1] 3.3	C.5
6	Manufacturer Limits descriptor	[1] 3.1.2.3	C.6
7	Autonomous Manufacturer Limits descriptor changes	[1] 3.3	C.7
8	Process Tolerances descriptor	[1] 3.1.2.4	C.8
9	Writable Process Tolerances descriptor	[1] 3.1.2.4	C.9
10	Autonomous Process Tolerances descriptor changes	[1] 3.3	C.10
11	Trigger Settings descriptor	[1] 3.1.2.5	C.11
12	Writable Trigger Settings descriptor	[1] 3.1.2.5	C.12
13	Autonomous Trigger Settings descriptor changes	[1] 3.3	C.13
14	Valid Range descriptor	[1] 3.1.2.6	C.14
15	Autonomous Valid Range descriptor changes	[1] 3.3	C.15
16	Characteristic Extended Properties descriptor	[1] 3.1.2	C.16

- C.1: Mandatory IF IMDS 6/1 “Measurement Description descriptor” OR IMDS 7/1 “Measurement Description descriptor” OR IMDS 8/1 “Measurement Description descriptor” OR IMDS 9/1 “Measurement Description descriptor” OR IMDS 10/1 “Measurement Description descriptor” OR IMDS 11/1 “Measurement Description descriptor” OR IMDS 12/1 “Measurement Description descriptor”, otherwise Excluded.
- C.2: Mandatory IF IMDS 6/2 “Autonomous Measurement Description descriptor changes” OR IMDS 7/2 “Autonomous Measurement Description descriptor changes” OR IMDS 8/2 “Autonomous Measurement Description descriptor changes” OR IMDS 9/2 “Autonomous Measurement Description descriptor changes” OR IMDS 10/2 “Autonomous Measurement Description descriptor changes” OR IMDS 11/2 “Autonomous Measurement Description descriptor changes” OR IMDS 12/2 “Autonomous Measurement Description descriptor changes”, otherwise Excluded.

- descriptor changes" OR IMDS 12/2 "Autonomous Measurement Description descriptor changes", otherwise Excluded.
- C.3: Mandatory IF IMDS 6/3 "Characteristic User Description descriptor" OR IMDS 7/3 "Characteristic User Description descriptor" OR IMDS 8/3 "Characteristic User Description descriptor" OR IMDS 9/3 "Characteristic User Description descriptor" OR IMDS 10/3 "Characteristic User Description descriptor" OR IMDS 11/3 "Characteristic User Description descriptor" OR IMDS 12/3 "Characteristic User Description descriptor", otherwise Excluded.
- C.4: Mandatory IF IMDS 6/4 "Writable Characteristic User Description descriptor" OR IMDS 7/4 "Writable Characteristic User Description descriptor" OR IMDS 8/4 "Writable Characteristic User Description descriptor" OR IMDS 9/4 "Writable Characteristic User Description descriptor" OR IMDS 10/4 "Writable Characteristic User Description descriptor" OR IMDS 11/4 "Writable Characteristic User Description descriptor" OR IMDS 12/4 "Writable Characteristic User Description descriptor", otherwise Excluded.
- C.5: Mandatory IF IMDS 6/5 "Autonomous Characteristic User Description descriptor changes" OR IMDS 7/5 "Autonomous Characteristic User Description descriptor changes" OR IMDS 8/5 "Autonomous Characteristic User Description descriptor changes" OR IMDS 9/5 "Autonomous Characteristic User Description descriptor changes" OR IMDS 10/5 "Autonomous Characteristic User Description descriptor changes" OR IMDS 11/5 "Autonomous Characteristic User Description descriptor changes" OR IMDS 12/5 "Autonomous Characteristic User Description descriptor changes", otherwise Excluded.
- C.6: Mandatory IF IMDS 6/6 "Manufacturer Limits descriptor" OR IMDS 7/6 "Manufacturer Limits descriptor" OR IMDS 8/6 "Manufacturer Limits descriptor" OR IMDS 9/6 "Manufacturer Limits descriptor" OR IMDS 10/6 "Manufacturer Limits descriptor" OR IMDS 11/6 "Manufacturer Limits descriptor" OR IMDS 12/6 "Manufacturer Limits descriptor", otherwise Excluded.
- C.7: Mandatory IF IMDS 6/7 "Autonomous Manufacturer Limits descriptor changes" OR IMDS 7/7 "Autonomous Manufacturer Limits descriptor changes" OR IMDS 8/7 "Autonomous Manufacturer Limits descriptor changes" OR IMDS 9/7 "Autonomous Manufacturer Limits descriptor changes" OR IMDS 10/7 "Autonomous Manufacturer Limits descriptor changes" OR IMDS 11/7 "Autonomous Manufacturer Limits descriptor changes" OR IMDS 12/7 "Autonomous Manufacturer Limits descriptor changes", otherwise Excluded.
- C.8: Mandatory IF IMDS 6/8 "Process Tolerances descriptor" OR IMDS 7/8 "Process Tolerances descriptor" OR IMDS 8/8 "Process Tolerances descriptor" OR IMDS 9/8 "Process Tolerances descriptor" OR IMDS 10/8 "Process Tolerances descriptor" OR IMDS 11/8 "Process Tolerances descriptor" OR IMDS 12/8 "Process Tolerances descriptor", otherwise Excluded.
- C.9: Mandatory IF IMDS 6/9 "Writable Process Tolerances descriptor" OR IMDS 7/9 "Writable Process Tolerances descriptor" OR IMDS 8/9 "Writable Process Tolerances descriptor" OR IMDS 9/9 "Writable Process Tolerances descriptor" OR IMDS 10/9 "Writable Process Tolerances descriptor" OR IMDS 11/9 "Writable Process Tolerances descriptor" OR IMDS 12/9 "Writable Process Tolerances descriptor", otherwise Excluded.
- C.10: Mandatory IF IMDS 6/10 "Autonomous Process Tolerances descriptor changes" OR IMDS 7/10 "Autonomous Process Tolerances descriptor changes" OR IMDS 8/10 "Autonomous Process Tolerances descriptor changes" OR IMDS 9/10 "Autonomous Process Tolerances descriptor changes" OR IMDS 10/10 "Autonomous Process Tolerances descriptor changes" OR IMDS 11/10 "Autonomous Process Tolerances descriptor changes" OR IMDS 12/10 "Autonomous Process Tolerances descriptor changes", otherwise Excluded.
- C.11: Mandatory IF IMDS 6/11 "Trigger Settings descriptor" OR IMDS 7/11 "Trigger Settings descriptor" OR IMDS 8/11 "Trigger Settings descriptor" OR IMDS 9/11 "Trigger Settings descriptor" OR IMDS 10/11 "Trigger Settings descriptor" OR IMDS 11/11 "Trigger Settings descriptor" OR IMDS 12/11 "Trigger Settings descriptor", otherwise Excluded.
- C.12: Mandatory IF IMDS 6/12 "Writable Trigger Settings descriptor" OR IMDS 7/12 "Writable Trigger Settings descriptor" OR IMDS 8/12 "Writable Trigger Settings descriptor" OR IMDS 9/12 "Writable Trigger Settings descriptor" OR IMDS 10/12 "Writable Trigger Settings descriptor" OR

- IMDS 11/12 “Writable Trigger Settings descriptor” OR IMDS 12/12 “Writable Trigger Settings descriptor”, otherwise Excluded.
- C.13: Mandatory IF IMDS 6/13 “Autonomous Trigger Settings descriptor changes” OR IMDS 7/13 “Autonomous Trigger Settings descriptor changes” OR IMDS 8/13 “Autonomous Trigger Settings descriptor changes” OR IMDS 9/13 “Autonomous Trigger Settings descriptor changes” OR IMDS 10/13 “Autonomous Trigger Settings descriptor changes” OR IMDS 11/13 “Autonomous Trigger Settings descriptor changes” OR IMDS 12/13 “Autonomous Trigger Settings descriptor changes”, otherwise Excluded.
- C.14: Mandatory IF IMDS 6/14 “Valid Range descriptor” OR IMDS 7/14 “Valid Range descriptor” OR IMDS 8/14 “Valid Range descriptor” OR IMDS 9/14 “Valid Range descriptor” OR IMDS 10/14 “Valid Range descriptor” OR IMDS 11/14 “Valid Range descriptor” OR IMDS 12/14 “Valid Range descriptor”, otherwise Excluded.
- C.15: Mandatory IF IMDS 6/15 “Autonomous Valid Range descriptor changes” OR IMDS 7/15 “Autonomous Valid Range descriptor changes” OR IMDS 8/15 “Autonomous Valid Range descriptor changes” OR IMDS 9/15 “Autonomous Valid Range descriptor changes” OR IMDS 10/15 “Autonomous Valid Range descriptor changes” OR IMDS 11/15 “Autonomous Valid Range descriptor changes” OR IMDS 12/15 “Autonomous Valid Range descriptor changes”, otherwise Excluded.
- C.16: Mandatory IF IMDS 6/16 “Characteristic Extended Properties descriptor” OR IMDS 7/16 “Characteristic Extended Properties descriptor” OR IMDS 8/16 “Characteristic Extended Properties descriptor” OR IMDS 9/16 “Characteristic Extended Properties descriptor” OR IMDS 10/16 “Characteristic Extended Properties descriptor” OR IMDS 11/16 “Characteristic Extended Properties descriptor” OR IMDS 12/16 “Characteristic Extended Properties descriptor”, otherwise Excluded.

2.4 IMD Control

Table 14: IMD Control Op Code Support

Prerequisite: IMDS 4/13 “IMD Control characteristic”

Item	Capability	Reference	Status
1	Request to start measurement	[1] 3.8.2.1	M
2	Request to abort current operation	[1] 3.8.2.2	M

2.5 RACP

Table 15: RACP Op Code Support

Prerequisite: IMDS 4/15 “Record Access Control Point characteristic”

Item	Capability	Reference	Status
1	Delete Stored Records	[1] 3.10.1	O
2	Abort Operation	[1] 3.10.1	M
3	Report Number of Stored Records	[1] 3.10.1	M
4	Combined Report	[1] 3.10.1	M

Table 16: Delete Stored Records Operator Support*Prerequisite: IMDS 15/1 “Delete Stored Records”*

Item	Operator	Reference	Status
1	All records	[1] 3.10.1	M
2	Less than or equal to	[1] 3.10.1	M
3	Greater than or equal to	[1] 3.10.1	O
4	Within range of (inclusive)	[1] 3.10.1	O
5	First record	[1] 3.10.1	O
6	Last record	[1] 3.10.1	O

Table 17: Abort Operation Operator Support*Prerequisite: IMDS 15/2 “Abort Operation”*

Item	Operator	Reference	Status
1	Null	[1] 3.9	M

Table 18: Report Number of Stored Records Operator Support*Prerequisite: IMDS 15/3 “Report Number of Stored Records”*

Item	Operator	Reference	Status
1	All records	[1] 3.9	M
2	Less than or equal to	[1] 3.9	O
3	Greater than or equal to	[1] 3.9	M
4	Within range of (inclusive)	[1] 3.9	O
5	First record	[1] 3.9	O
6	Last record	[1] 3.9	O

Table 19: Combined Report Operator Support*Prerequisite: IMDS 15/4 “Combined Report”*

Item	Operator	Reference	Status
1	All records	[1] 3.9	M
2	Less than or equal to	[1] 3.9	M
3	Greater than or equal to	[1] 3.9	M
4	Within range of (inclusive)	[1] 3.9	M
5	First record	[1] 3.9	M
6	Last record	[1] 3.9	M

2.6 GATT requirements

Table 20: GATT Requirements

Item	Feature	Reference	Status	Inter-Layer Dependency
1	GATT Server over LE	[1] 2.5	C.1	[2] GATT 1a/3
2	GATT Server over BR/EDR	[1] 2.5	C.2	[2] GATT 1a/4
3	Write Characteristic Value	[1] 1.4	C.3	[2] GATT 4/14
4	Single Notification	[1] 1.4	M	[2] GATT 4/17
5	Indications	[1] 1.4	C.4	[2] GATT 4/18
6	Read Characteristic Descriptors	[1] 1.4	M	[2] GATT 4/19
7	Write Characteristic Descriptors	[1] 1.4	C.5	[2] GATT 4/21

C.1: Mandatory IF IMDS 2/2 “Service supported over LE”, otherwise not defined.

C.2: Mandatory IF IMDS 2/1 “Service supported over BR/EDR”, otherwise not defined.

C.3: Mandatory IF IMDS 5/2 “Writable Acceleration characteristic” OR IMDS 5/4 “Writable Force characteristic” OR IMDS 5/6 “Writable Linear Position characteristic” OR IMDS 5/8 “Writable Rotational Speed characteristic” OR IMDS 5/10 “Writable Length characteristic” OR IMDS 5/12 “Writable Torque characteristic” OR IMDS 5/14 “Writable Temperature characteristic” OR IMDS 4/6 “Writable First Use Date characteristic” OR IMDS 4/8 “Writable Life Cycle Data characteristic” OR IMDS 4/12 “Service Cycle Data characteristic” OR IMDS 4/13 “IMD Control characteristic” OR IMDS 4/15 “Record Access Control Point characteristic”, otherwise not defined.

C.4: Mandatory IF IMDS 4/4 “IMDS Descriptor Value Changed characteristic” OR IMDS 4/15 “Record Access Control Point characteristic”, otherwise not defined.

C.5: Mandatory IF IMDS 6/4 “Writable Characteristic User Description descriptor” OR IMDS 6/9 “Writable Process Tolerances descriptor” OR IMDS 6/12 “Writable Trigger Settings descriptor” OR IMDS 7/4 “Writable Characteristic User Description descriptor” OR IMDS 7/9 “Writable Process Tolerances descriptor” OR IMDS 7/12 “Writable Trigger Settings descriptor” OR IMDS 8/4 “Writable Characteristic User Description descriptor” OR IMDS 8/9 “Writable Process Tolerances descriptor” OR IMDS 8/12 “Writable Trigger Settings descriptor” OR IMDS 9/4 “Writable Characteristic User Description descriptor” OR IMDS 9/9 “Writable Process Tolerances descriptor” OR IMDS 9/12 “Writable Trigger Settings descriptor” OR IMDS 10/4 “Writable Characteristic User Description descriptor” OR IMDS 10/9 “Writable Process Tolerances descriptor” OR IMDS 10/12 “Writable Trigger Settings descriptor” OR IMDS 11/4 “Writable Characteristic User Description descriptor” OR IMDS 11/9 “Writable Process Tolerances descriptor” OR IMDS 11/12 “Writable Trigger Settings descriptor” OR IMDS 12/4 “Writable Characteristic User Description descriptor” OR IMDS 12/9 “Writable Process Tolerances descriptor” OR IMDS 12/12 “Writable Trigger Settings descriptor”, otherwise not defined.

2.7 SDP requirements

Table 21: SDP Requirements

Prerequisite: IMDS 2/1 “Service supported over BR/EDR”

Item	Feature	Reference	Status
1	SDP record present for IMDS	[1] 4	M

3 References

- [1] Industrial Measurement Device Service, Version 1.0
- [2] ICS Proforma for Generic Attribute Profile (GATT)
- [3] Permitted Characteristics (<https://www.bluetooth.com/specifications/assigned-numbers>)
- [4] GATT Specification Supplement (<https://www.bluetooth.com/specifications/assigned-numbers>)

4 Revision history and acknowledgments

Revision History

Publication Number	Revision Number	Date	Comments
0	p0	2024-10-22	Approved by BTI on 2024-09-30. IMDS v1.0 adopted by the BoD on 2024-10-15. Prepared for initial publication.
	p0ed2r00	2025-07-10	TSE 27329 (rating 1): Updated the Status for IMDS 2/1 and IMDS 2/2, added conditions C.1 and C.2, and renumbered the previous C.1 as C.3. Updated the Feature for IMDS 20/4.
	p0 edition 2	2025-08-05	Approved by BTI on 2025-08-05. Prepared for edition 2 publication.

Acknowledgments

Name	Company
Charlie Lenahan	Bluetooth SIG, Inc.