Industrial Measurement Device Profile (IMDP)

***Bluetooth*® Implementation Conformance Statement (ICS) Proforma**

- **Revision:** IMDP.ICS.p2
- **Revision Date:** 2026-02-17
- **Prepared By:** Automation Working Group
- **Published during TCRL:** TCRL.pkg102

Contents

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 (IMD Server)

Prerequisite: IMDP 3/1 "IMD Server"

Item	Version	Reference	Status
1	IMDP v1.0	[1]	M

Table 0a: X.Y.Z Versions (IMD Server)

Table number reserved but not yet in use.

Table 1: X.Y Versions (Collector)

Prerequisite: IMDP 3/2 "Collector"

Item	Version	Reference	Status
1	IMDP v1.0	[1]	M

Table 1a: X.Y.Z Versions (Collector)

Table number reserved but not yet in use.

2.2 Transports

Table 2: Transport Requirements

Item	Transport	Reference	Status
1	Profile supported over BR/EDR	[1] 2.6	C.1, C.3
2	Profile supported over LE	[1] 2.6	C.2, C.3

C.1: Excluded for this Profile IF CORE 41/2 "LE Core Configuration" OR CORE 40/1 "Core-Controller".

C.2: Excluded for this Profile IF CORE 41/1 "BR/EDR Core Configuration" OR CORE 40/1 "Core-Controller".

C.3: Mandatory to support at least one.

2.3 Roles

Table 3: Role Requirements

Item	Role	Reference	Status
1	IMD Server	[1] 2.1	C.1
2	Collector	[1] 2.1	C.1

C.1: Mandatory to support at least one.

2.4 IMD Server role

2.4.1 Service references (IMD Server)

Table 4: Services Included in IMD Server

Prerequisite: IMDP 3/1 "IMD Server"

Item	Service	Reference	Status	Inter-Layer Dependency
1	Industrial Measurement Device Service	[1] 3	M	[2] IMDS
2	Device Information Service	[1] 3	M	[3] DIS
3	Battery Service	[1] 3	O	[4] BAS
4	Elapsed Time Service	[1] 3	C.1	[5] ETS

C.1: Mandatory IF IMDP 5/1 "IMD Historical Data characteristic", otherwise Optional.

2.4.2 Industrial Measurement Device Service (IMD Server)

Table 5: Main Features of Industrial Measurement Device Service

Prerequisite: IMDP 3/1 "IMD Server"

Item	Capability	Reference	Status	Inter-Layer Dependency
1	IMD Historical Data characteristic	[1] 3	O	[2] IMDS 4/14
2	Industrial Measurement Device Service UUID in AD Type field of Advertising Data	[1] 3.1.1.1	C.1	N/A
3	Local Name included in AD or Scan Response	[1] 3.1.1.2	C.1	N/A
4	Appearance included in AD or Scan Response	[1] 3.1.1.4	C.1	N/A
5	Service Data in AD	[1] 3.1.1.1	C.1	N/A

C.1: Optional IF IMDP 2/2 "Profile supported over LE", otherwise Excluded.

2.4.3 Device Information Service requirements (IMD Server)

Table 6: Device Information Service Requirements (IMD Server)

Prerequisite: IMDP 3/1 "IMD Server"

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Manufacturer Name String Characteristic	[1] 3.2	M	[3] DIS 2/2
2	Serial Number String Characteristic	[1] 3.2	M	[3] DIS 2/4
3	Hardware Revision String Characteristic	[1] 3.2	M	[3] DIS 2/5
4	Firmware Revision String Characteristic	[1] 3.2	M	[3] DIS 2/6

2.4.4 Elapsed Time Service requirements (IMD Server)

Table 7: Elapsed Time Service Requirements (IMD Server)

Prerequisite: IMDP 4/4 "Elapsed Time Service"

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Current Elapsed Time characteristic with write	[1] 3.4	O	[5] ETS 4/2

2.4.5 GAP requirements (IMD Server)

Table 8: GAP Requirements (IMD Server)

Prerequisite: IMDP 3/1 "IMD Server" AND IMDP 2/2 "Profile supported over LE"

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Peripheral	[1] 2.4.1	M	[7] GAP 5/3

2.5 Collector role

2.5.1 Service references (Collector)

Table 9: Services Included in Collector Role

Prerequisite: IMDP 3/2 "Collector"

Item	Service	Reference	Status
1	Discover Industrial Measurement Device Service	[1] 4	M
2	Discover Device Information Service	[1] 4	O
3	Discover Battery Service	[1] 4	O
4	Discover Elapsed Time Service	[1] 4	O

2.5.2 Industrial Measurement Device Service (Collector role)

Table 10: Discover Industrial Measurement Device Service Characteristics

Prerequisite: IMDP 9/1 "Discover Industrial Measurement Device Service"

Item	Capability	Reference	Status
1	Discover IMD Measurement characteristic	[1] 4	M
2	Discover Measurement Description descriptor	[1] 4	O
3	Discover Characteristic User Description descriptor	[1] 4	O
4	Discover Manufacturer Limits descriptor	[1] 4	O
5	Discover Process Tolerances descriptor	[1] 4	O
6	Discover Trigger Settings descriptor	[1] 4	O
7	Discover Valid Range descriptor	[1] 4	O
8	Discover IMDS Descriptor Value Changed characteristic	[1] 4	O

Item	Capability	Reference	Status
9	Discover First Use Date characteristic	[1] 4	O
10	Discover Life Cycle Data characteristic	[1] 4	O
11	Discover Work Cycle Data characteristic	[1] 4	O
12	Discover Service Cycle Data characteristic	[1] 4	O
13	Discover IMD Control characteristic	[1] 4	O
14	Discover IMD Historical Data characteristic	[1] 4	O
15	Discover Record Access Control Point characteristic	[1] 4	O
16	Discover IMD Status characteristic	[1] 4	O

Table 11: IMD Measurement Characteristics

Prerequisite: IMDP 10/1 "Discover IMD Measurement characteristic"

Item	Capability	Reference	Status
1	Acceleration	[1] 4, [8], [9]	C.1
2	Force	[1] 4, [8], [9]	C.1
3	Linear Position	[1] 4, [8], [9]	C.1
4	Rotational Speed	[1] 4, [8], [9]	C.1
5	Length	[1] 4, [8], [9]	C.1
6	Torque	[1] 4, [8], [9]	C.1
7	Temperature	[1] 4, [8], [9]	C.1

C.1: Mandatory to support at least one.

Table 12: Industrial Measurement Device Service Procedure Requirements

Prerequisite: IMDP 9/1 "Discover Industrial Measurement Device Service"

Item	Capability	Reference	Status
1	Read IMD Measurement characteristic	[1] 4.4.2	O
2	Notify IMD Measurement characteristic	[1] 4.4.2	O
3	Write IMD Measurement characteristic	[1] 4.4.2	O
4	Read Measurement Description descriptor	[1] 4.4.2.1	C.1
5	Read Characteristic User Description descriptor	[1] 4.4.2.2	C.2
6	Write Characteristic User Description descriptor	[1] 4.4.2.2	C.2
7	Read Manufacturer Limits descriptor	[1] 4.4.2.3	C.3
8	Read Process Tolerances descriptor	[1] 4.4.2.4	C.4
9	Write Process Tolerances descriptor	[1] 4.4.2.4	C.4
10	Read Trigger Settings descriptor	[1] 4.4.2.5	C.5
11	Write Trigger Settings descriptor	[1] 4.4.2.5	C.5
12	Read Valid Range descriptor	[1] 4.4.2.6	C.6
13	Read Characteristic Extended Properties descriptor	[1] 4.4.2.2	O
14	Indicate IMDS Descriptor Value Changed characteristic	[1] 4.4.4	C.7
15	Read First Use Date characteristic	[1] 4.4.5	C.8

Item	Capability	Reference	Status
16	Write First Use Date characteristic	[1] 4.4.5	C.8
17	Read Life Cycle Data characteristic	[1] 4.4.6	C.9
18	Write Life Cycle Data characteristic	[1] 4.4.6	C.9
19	Read Work Cycle Data characteristic	[1] 4.4.7	C.10
20	Write Work Cycle Data characteristic	[1] 4.4.7	C.10
21	Notify Work Cycle Data characteristic	[1] 4.4.7	C.10
22	Read Service Cycle Data characteristic	[1] 4.4.8	C.11
23	Write Service Cycle Data characteristic	[1] 4.4.8	C.11
24	Write IMD Control characteristic	[1] 4.4.9	C.12
25	Notify IMD Historical Data characteristic	[1] 4.4.10	C.13
26	Write Record Access Control Point	[1] 4.4.10.2	C.14
27	Indicate Record Access Control Point	[1] 4.4.9.1	C.14
28	Notify IMD Status characteristic	[1] 4.4.3	C.15

C.1: Optional IF IMDP 10/2 “Discover Measurement Description descriptor”, otherwise Excluded.

C.2: Optional IF IMDP 10/3 “Discover Characteristic User Description descriptor”, otherwise Excluded.

C.3: Optional IF IMDP 10/4 “Discover Manufacturer Limits descriptor”, otherwise Excluded.

C.4: Optional IF IMDP 10/5 “Discover Process Tolerances descriptor”, otherwise Excluded.

C.5: Optional IF IMDP 10/6 “Discover Trigger Settings descriptor”, otherwise Excluded.

C.6: Optional IF IMDP 10/7 “Discover Valid Range descriptor”, otherwise Excluded.

C.7: Mandatory IF IMDP 10/8 “Discover IMDS Descriptor Value Changed characteristic”, otherwise Excluded.

C.8: Optional IF IMDP 10/9 “Discover First Use Date characteristic”, otherwise Excluded.

C.9: Optional IF IMDP 10/10 “Discover Life Cycle Data characteristic”, otherwise Excluded.

C.10: Optional IF IMDP 10/11 “Discover Work Cycle Data characteristic”, otherwise Excluded.

C.11: Optional IF IMDP 10/12 “Discover Service Cycle Data characteristic”, otherwise Excluded.

C.12: Optional IF IMDP 10/13 “Discover IMD Control characteristic”, otherwise Excluded.

C.13: Optional IF IMDP 10/14 “Discover IMD Historical Data characteristic”, otherwise Excluded.

C.14: Optional IF IMDP 10/15 “Discover Record Access Control Point characteristic”, otherwise Excluded.

C.15: Mandatory IF IMDP 10/16 “Discover IMD Status characteristic”, otherwise Excluded.

Table 13: IMD Control Op Code Support

Prerequisite: IMDP 12/24 “Write IMD Control characteristic”

Item	Capability	Reference	Status
1	Request to start measurement	[1] 4.4.9.1	O
2	Request to abort current operation	[1] 4.4.9.2	O

Table 14: RACP Procedures

Prerequisite: IMDP 12/26 "Write Record Access Control Point"

Item	Capability	Reference	Status
1	Delete Stored Records	[1] 4.4.10.2.4	O
2	Abort Operation	[1] 4.4.10.2.5	M
3	Report Number of Stored Records	[1] 4.4.10.2.2	M
4	Combined Report	[1] 4.4.10.2.3	M

Table 15: RACP Delete Stored Records

Prerequisite: IMDP 14/1 "Delete Stored Records"

Item	Capability	Reference	Status
1	All records	[1] 4.4.10.2.4	M
2	Less than or equal to with Sequence Number operand	[1] 4.4.10.2.4	M
3	Less than or equal to with Timestamp operand	[1] 4.4.10.2.4	O
4	Greater than or equal to with Sequence Number operand	[1] 4.4.10.2.4	O
5	Greater than or equal to with Timestamp operand	[1] 4.4.10.2.4	O
6	Within range of (inclusive) with Sequence Number operand	[1] 4.4.10.2.4	O
7	Within range of (inclusive) with Timestamp operand	[1] 4.4.10.2.4	O
8	First record	[1] 4.4.10.2.4	O
9	Last record	[1] 4.4.10.2.4	O

Table 16: RACP Report Number of Stored Records

Prerequisite: IMDP 14/3 "Report Number of Stored Records"

Item	Capability	Reference	Status
1	All records	[1] 4.4.10.2.2	M
2	Less than or equal to with Sequence Number operand	[1] 4.4.10.2.2	O
3	Less than or equal to with Timestamp operand	[1] 4.4.10.2.2	O
4	Greater than or equal to with Sequence Number operand	[1] 4.4.10.2.2	M
5	Greater than or equal to with Timestamp operand	[1] 4.4.10.2.2	O
6	Within range of (inclusive) with Sequence Number operand	[1] 4.4.10.2.2	O
7	Within range of (inclusive) with Timestamp operand	[1] 4.4.10.2.2	O
8	First record	[1] 4.4.10.2.2	O
9	Last record	[1] 4.4.10.2.2	O

Table 17: RACP Combined Report

Prerequisite: IMDP 14/4 "Combined Report"

Item	Capability	Reference	Status
1	All records	[1] 4.4.10.2.3	M
2	Less than or equal to with Sequence Number operand	[1] 4.4.10.2.3	M
3	Less than or equal to with Timestamp operand	[1] 4.4.10.2.3	O
4	Greater than or equal to with Sequence Number operand	[1] 4.4.10.2.3	M
5	Greater than or equal to with Timestamp operand	[1] 4.4.10.2.3	O
6	Within range of (inclusive) with Sequence Number operand	[1] 4.4.10.2.3	M
7	Within range of (inclusive) with Timestamp operand	[1] 4.4.10.2.3	O
8	First record	[1] 4.4.10.2.3	M
9	Last record	[1] 4.4.10.2.3	M

2.5.3 Device Information Service (Collector)

Table 18: Discover Device Information Service Characteristics

Prerequisite: IMDP 9/2 "Discover Device Information Service"

Item	Capability	Reference	Status
1	Discover Manufacturer Name String characteristic	[1] 4.5	O
2	Discover Serial Number String characteristic	[1] 4.5	O
3	Discover Hardware Revision String characteristic	[1] 4.5	O
4	Discover Firmware Revision String characteristic	[1] 4.5	O
5	Discover other DIS characteristics	[1] 4.5	O

2.5.4 Battery Service (Collector)

Table 19: Discover Battery Service Characteristics

Prerequisite: IMDP 9/3 "Discover Battery Service"

Item	Capability	Reference	Status
1	Discover Battery Level characteristic	[1] 4.6	O
2	Discover other BAS characteristics	[1] 4.6	O

2.5.5 Elapsed Time Service (Collector)

Table 20: Discover Elapsed Time Service Characteristics

Prerequisite: IMDP 9/4 "Discover Elapsed Time Service"

Item	Capability	Reference	Status
1	Discover Current Elapsed Time characteristic	[1] 4.7	O

2.5.6 GATT requirements (Collector)

Table 21: GATT Requirements (Collector)

Prerequisite: IMDP 3/2 "Collector"

Item	Capability	Reference	Status	Inter-Layer Dependency
1	GATT Client over LE	[1] 4.1	C.1	[6] GATT 1a/1
2	GATT Client over BR/EDR	[1] 4.1	C.2	[6] GATT 1a/2
3	Discover All Primary Services	[1] 4.1	C.3	[6] GATT 3/2
4	Discover Primary Service by Service UUID	[1] 4.1	C.3	[6] GATT 3/3
5	Discover All Characteristics of a Service	[1] 4.1	C.4	[6] GATT 3/5
6	Discover Characteristics by UUID	[1] 4.1	C.4	[6] GATT 3/6
7	Discover All Characteristic Descriptors	[1] 4.1	M	[6] GATT 3/7
8	Read Characteristic Value	[1] 4.1	M	[6] GATT 3/8
9	Write Characteristic Value	[1] 4.1	C.5	[6] GATT 3/14
10	Read Characteristic Descriptor	[1] 4.1	M	[6] GATT 3/19
11	Write Characteristic Descriptor	[1] 4.1	C.6	[6] GATT 3/21
12	Read Long Characteristic Value	[1] 4.1	C.7	[6] GATT 3/10
13	Write Long Characteristic Value	[1] 4.1	C.8	[6] GATT 3/15
14	Read Long Characteristic Descriptor	[1] 4.1	C.9	[6] GATT 3/20
15	Write Long Characteristic Descriptor	[1] 4.1	C.10	[6] GATT 3/22
16	Single Notification	[1] 4.1	M	[6] GATT 3/17
17	Indication	[1] 4.1	M	[6] GATT 3/18

C.1: Mandatory IF IMDP 2/2 "Profile supported over LE", otherwise not defined.

C.2: Mandatory IF IMDP 2/1 "Profile supported over BR/EDR", otherwise not defined.

C.3: Mandatory to support at least one IF IMDP 2/2 "Profile supported over LE", otherwise not defined.

C.4: Mandatory to support at least one.

C.5: Mandatory IF IMDP 12/3 "Write IMD Measurement characteristic" OR IMDP 12/16 "Write First Use Date characteristic" OR IMDP 12/18 "Write Life Cycle Data characteristic" OR IMDP 12/23 "Write Service Cycle Data characteristic" OR IMDP 12/24 "Write IMD Control characteristic" OR IMDP 12/26 "Write Record Access Control Point", otherwise not defined.

C.6: Mandatory IF IMDP 12/6 "Write Characteristic User Description descriptor" OR IMDP 12/9 "Write Process Tolerances descriptor" OR IMDP 12/11 "Write Trigger Settings descriptor", otherwise not defined.

C.7: Mandatory IF IMDP 12/17 "Read Life Cycle Data characteristic", otherwise Optional.

C.8: Mandatory IF IMDP 12/18 "Write Life Cycle Data characteristic", otherwise Optional.

C.9: Mandatory IF IMDP 12/5 "Read Characteristic User Description descriptor", otherwise Optional.

C.10: Mandatory IF IMDP 12/6 "Write Characteristic User Description descriptor", otherwise Optional.

2.5.7 GAP requirements (Collector)

Table 22: GAP Requirements (Collector)

Prerequisite: IMDP 3/2 “Collector” AND IMDP 2/2 “Profile supported over LE”

Item	Capability	Reference	Status	Inter-Layer Dependency
1	Central	[1] 2.4.1	M	[7] GAP 5/4

3 References

[1] Industrial Measurement Device Profile, Version 1.0

[2] ICS Proforma for Industrial Measurement Device Service (IMDS)

[3] ICS Proforma for Device Information Service (DIS)

[4] ICS Proforma for Battery Service (BAS)

[5] ICS Proforma for Elapsed Time Service (ETS)

[6] ICS Proforma for Generic Attribute Profile (GATT)

[7] ICS Proforma for Generic Access Profile (GAP)

[8] Permitted Characteristics (https://www.bluetooth.com/specifications/assigned-numbers)

[9] 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. IMDP v1.0 adopted by the BoD on 2024-10-15. Prepared for initial publication.
	p0ed2r00–r01	2025-07-08 – 2025-07-15	TSE 27373 (rating 1): Updated the Status field for IMDP 2/1 and IMDP 2/2, added conditions C.1 and C.2, and renumbered the previous C.1 as C.3.
	p0 edition 2	2025-08-05	Approved by BTI on 2025-08-05. Prepared for edition 2 publication.
	p1r00–r01	2025-08-14 – 2025-08-18	TSE 27558 (rating 1): Updated the ILD column for Items 8/1 and 22/1 to delete references to GAP Table 38.
1	p1	2025-11-04	Approved by BTI on 2025-10-02. Prepared for TCRL pkg101 publication.
	p2r00–r01	2025-12-04 – 2026-01-09	TSE 28169 (rating 1): Updated the conditions in the transport table to make sure the layer is excluded when the design is an implementation of the Core-Controller Configuration by adding "OR CORE 40/1 “Core-Controller”" to an already excluded transport based on Core Configuration support.
2	p2	2026-02-17	Approved by BTI on 2026-01-21. Prepared for TCRL pkg102 publication.

Acknowledgments

Name	Company
Dejan Berec	Bluetooth SIG, Inc.
Charlie Lenahan	Bluetooth SIG, Inc.