Automation IO Service (AIOS)

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

- **Revision:** AIOS.ICS.p2
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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

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

2.2 Transports

Table 1: Transport Requirements

Item	Transport	Reference	Status
1	Service supported over BR/EDR	[1] 1.3	C.1, C.3
2	Service supported over LE	[1] 1.3	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 Service requirements

Table 2: Service Requirements

Item	Feature	Reference	Status
1	Automation IO Service	[1] 2	M
2	Digital characteristic	[1] 3	C.1
3	Digital characteristic: Multiple instances	[1] 3	C.8
4	Digital characteristic: Readable	[1] 3.1	O
5	Digital characteristic: Writable	[1] 3.1	O
6	Digital characteristic: Notifications	[1] 3.1.1	C.2
7	Digital characteristic: Indications	[1] 3.1.1	C.2
8	Digital characteristic: Number of Digitals Descriptor	[1] 3.1.2	C.6
9	Digital characteristic: Value Trigger Settings Descriptor	[1] 3.1.1, 3.5	O
10	Digital characteristic: Time Trigger Settings Descriptor	[1] 3.1.1, 3.5	O
11	Digital characteristic: Presentation Format Descriptor	[1] 3.1.2	C.9
12	Digital characteristic: Characteristic Extended Properties Descriptor	[1] 3.1.2	O
13	Digital characteristic: User Description Descriptor	[1] 3.1.2	O
14	Digital characteristic: Writable User Description Descriptor	[1] 3.1.2	O
15	Digital characteristic: Write Without Response	[1] 3	O
16	Analog characteristic	[1] 3	C.1
17	Analog characteristic: Multiple instances	[1] 3	C.7
18	Analog characteristic: Readable	[1] 3.2	O
19	Analog characteristic: Writable	[1] 3.2	O

Item	Feature	Reference	Status
20	Analog characteristic: Notifications	[1] 3.2.1	C.3
21	Analog characteristic: Indications	[1] 3.2.1	C.3
22	Analog characteristic: Value Trigger Settings Descriptor	[1] 3.2.1, 3.5	O
23	Analog characteristic: Time Trigger Settings Descriptor	[1] 3.2.1, 3.5	O
24	Analog characteristic: Presentation Format Descriptor	[1] 3.2.2	C.5
25	Analog characteristic: Characteristic Extended Properties Descriptor	[1] 3.2.2	O
26	Analog characteristic: User Description Descriptor	[1] 3.2.2	O
27	Analog characteristic: Writable User Description Descriptor	[1] 3.2.2	O
28	Analog characteristic: Valid Range Descriptor	[1] 3.2.2	O
29	Analog characteristic: Write Without Response	[1] 3	O
30	Aggregate characteristic	[1] 3	O
31	Aggregate characteristic: Notifications	[1] 3.3.1	C.4
32	Aggregate characteristic: Indications	[1] 3.3.1	C.4
33	Aggregate characteristic: Triggered by Trigger Settings Descriptor in the included Digital or Analog	[1] 3.3.1, 3.5	O

C.1: Mandatory to support at least one.

C.2: Optional to support one and only one IF AIOS 2/2 “Digital characteristic” otherwise Excluded IF AIOS 2/31 “Aggregate characteristic: Notifications” OR AIOS 2/32 “Aggregate characteristic: Indications”, otherwise Optional.

C.3: Optional to support one and only one IF AIOS 2/16 “Analog characteristic”, otherwise Excluded IF AIOS 2/31 “Aggregate characteristic: Notifications” OR AIOS 2/32 “Aggregate characteristic: Indications”, otherwise Optional.

C.4: Excluded IF AIOS 2/6 “Digital characteristic: Notifications” OR AIOS 2/7 “Digital characteristic: Indications” OR AIOS 2/20 “Analog characteristic: Notifications” OR AIOS 2/21 “Analog characteristic: Indications”, otherwise Optional.

C.5: Mandatory IF AIOS 2/17 “Analog characteristic: Multiple instances”, otherwise Optional.

C.6: Mandatory IF AIOS 2/2 “Digital characteristic”, otherwise Excluded.

C.7: Optional IF AIOS 2/16 “Analog characteristic”, otherwise Excluded.

C.8: Optional IF AIOS 2/2 “Digital characteristic”, otherwise Excluded.

C.9: Mandatory IF AIOS 2/3 “Digital characteristic: Multiple instances”, otherwise Optional.

2.4 GATT requirements

Table 3: GATT Requirements

Item	Feature	Reference	Status	Inter-Layer Dependency
1	No longer used	N/A	N/A	N/A
2	GATT Server over BR/EDR	[1] 1.4	C.7	[2] GATT 1a/4
3	GATT Server over LE	[1] 1.4	C.8	[2] GATT 1a/3
4	Write Characteristic Value	[1] 1.4	C.1	[2] GATT 4/14
5	Write without Response	[1] 1.4	C.2	[2] GATT 4/12
6	Single Notification	[1] 1.4	C.3	[2] GATT 4/17
7	Indications	[1] 1.4	C.4	[2] GATT 4/18

Item	Feature	Reference	Status	Inter-Layer Dependency
8	Write Characteristic Descriptors	[1] 1.4	C.6	[2] GATT 4/21
9	Read Characteristic Descriptors	[1] 1.4	C.5	[2] GATT 4/19

C.1: Mandatory IF AIOS 2/5 “Digital characteristic: Writable” OR AIOS 2/19 “Analog characteristic: Writable” OR AIOS 2/3 “Digital characteristic: Multiple instances” OR AIOS 2/17 “Analog characteristic: Multiple instances”, otherwise Optional.

C.2: Mandatory IF AIOS 2/15 “Digital characteristic: Write Without Response” OR AIOS 2/29 “Analog characteristic: Write Without Response”, otherwise Optional.

C.3: Mandatory IF AIOS 2/6 “Digital characteristic: Notifications” OR AIOS 2/20 “Analog characteristic: Notifications” OR AIOS 2/31 “Aggregate characteristic: Notifications”, otherwise Optional.

C.4: Mandatory IF AIOS 2/7 “Digital characteristic: Indications” OR AIOS 2/21 “Analog characteristic: Indications” OR AIOS 2/32 “Aggregate characteristic: Indications”, otherwise Optional.

C.5: Mandatory IF AIOS 2/2 “Digital characteristic” OR AIOS 2/20 “Analog characteristic: Notifications” OR AIOS 2/21 “Analog characteristic: Indications” OR AIOS 2/22 “Analog characteristic: Value Trigger Settings Descriptor” OR AIOS 2/23 “Analog characteristic: Time Trigger Settings Descriptor” OR AIOS 2/24 “Analog characteristic: Presentation Format Descriptor” OR AIOS 2/25 “Analog characteristic: Characteristic Extended Properties Descriptor” OR AIOS 2/26 “Analog characteristic: User Description Descriptor” OR AIOS 2/28 “Analog characteristic: Valid Range Descriptor” OR AIOS 2/31 “Aggregate characteristic: Notifications” OR AIOS 2/32 “Aggregate characteristic: Indications”, otherwise Optional.

C.6: Mandatory IF AIOS 2/6 “Digital characteristic: Notifications” OR AIOS 2/7 “Digital characteristic: Indications” OR AIOS 2/9 “Digital characteristic: Value Trigger Settings Descriptor” OR AIOS 2/10 “Digital characteristic: Time Trigger Settings Descriptor” OR AIOS 2/14 “Digital characteristic: Writable User Description Descriptor” OR AIOS 2/20 “Analog characteristic: Notifications” OR AIOS 2/21 “Analog characteristic: Indications” OR AIOS 2/22 “Analog characteristic: Value Trigger Settings Descriptor” OR AIOS 2/23 “Analog characteristic: Time Trigger Settings Descriptor” OR AIOS 2/27 “Analog characteristic: Writable User Description Descriptor” OR AIOS 2/31 “Aggregate characteristic: Notifications” OR AIOS 2/32 “Aggregate characteristic: Indications”, otherwise not defined.

C.7: Mandatory IF AIOS 1/1 “Service supported over BR/EDR”, otherwise not defined.

C.8: Mandatory IF AIOS 1/2 “Service supported over LE”, otherwise not defined.

2.5 SDP requirements

Table 4: SDP Requirements

Prerequisite: AIOS 1/1 “Service supported over BR/EDR”

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

3 References

[1] Automation IO Service Specification, Version 1.0

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

4 Revision history and acknowledgments

Revision History

Publication Number	Revision Number	Date	Comments
	1.0.0r0	2015-04-21	Initial Draft
0	1.0.0	2015-07-21	Prepared for publication.
	1.0.0 edition 2r00	2018-11-20	Editorial changes only. Template updated. Revision History and contributors moved to the end of the document.
	1.0.0 edition 2	2019-11-11	Updated copyright page and confidentiality markings to support new Documentation Marking Requirements, performed minor formatting updates, and accepted all tracked changes to prepare for edition 2 publication.
	p1r00–r01	2022-07-20 – 2022-10-13	TSE 19175 (rating 1): Updated to align with current ICS conventions/template. Removed Support columns and added Inter-Layer Dependency columns. Revised document numbering convention, setting last release publication of 1.0.0 as p0; added Publication Number column to Revision History.
1	p1	2023-02-07	Approved by BTI on 2022-12-28. Prepared for TCRL 2022-2 publication.
	p2r00–r01	2025-04-21 – 2025-04-24	TSE 27311 (rating 1): Updated the Status value for AIOS 1/1 and AIOS 1/2. In Table 1, added conditions C.1 and C.2 and renumbered C.1 as C.3. Updated C.3 in Table 1 and C.1–C.3 in Table 2. Updated the feature name for AIOS 3/6. Incorporated editorials to align the document with the latest ICS template, including updates to Section 1 and the addition of a section heading for the ICS declarations section.
2	p2	2025-07-08	Approved by BTI on 2025-06-15. Prepared for TCRL pkg100 publication.

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