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| IALA Recommendation |

Rnnnn

VDE Protocol Format IdentifierS

Edition 0.1

Date (of approval by Council)

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Revisions to this document are to be noted in the table prior to the issue of a revised document.

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| Date | Details | Approval |
| 2025-07-28 | 1st draft |  |
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THE COUNCIL

**RECALLING**:

1. The function of IALA with respect to Safety of Navigation, the efficiency of maritime transport and the protection of the environment.
2. Article 8 of the IALA Constitution regarding the authority, duties and functions of the Council.
3. The work of IALA in defining and implementing the Automatic Identification System (AIS).
4. The VHF Data Exchange System (VDES) includes functions for AIS, Application Specific Messages (ASM), and VHF data exchange (VDE).
5. That the VDES is coordinated by IALA in consultation with the International Telecommunication Union (ITU), the International Maritime Organization (IMO) and the International Electrotechnical Commission (IEC).

**RECOGNIZING**:

1. The need of a harmonized way to indicate to the maritime applications the data format used inside VDE data packets,
2. to enable applications to use the data.

**CONSIDERING** the advice of the e-Navigation Committee, now the Digital Technologies Committee (DTEC), provided to the Council at its 64th Session,

**ADOPTS** the Recommendation on VDE Protocol Format Identifiers (VPFI),

**RECOMMENDS** National members and other appropriate authorities providing Marine Aids to Navigation services comply with the here defined VPFI Rules,

**INVITES** Members and Marine Aids to Navigation authorities worldwide to implement the provisions of the Recommendation,

**REQUESTS** members and sister organizations that are involved in VDE application design to keep the Recommendation under review and to propose amendments, as necessary.

REVOKES The contents of Section 2.2.1 and Annex B (VDES Protocol Identifiers) of IALA Guideline G1117 Edition 3.0.

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1. The VDE Protocol FormaT Identifier

# Introduction

The VDE Protocol Format Identifier (VPFI) has the purpose to allow VDE applications to uniquely identify how to interpret the digital content of VDE messages.

# Concept

The VPFI is a unique number in the range from 0 to infinite that uniquely and globally identifies the specific protocol or data format for the digital content that is following the VPFI in the data that is received or sent via VDE-TER or VDE-SAT.

This recommendation identifies a given identifier number and the associated application guideline or reference using that VPFI.

Table 1 Variable size of the VPFI in VDE Data as seen on the application interface of the VDES Transceiver (PI); shown are examples with 1, 2 or 3 bytes of VPFI; more bytes can be used, the concept stays the same.

|  |  |  |  |
| --- | --- | --- | --- |
| **Byte** | **1-Byte VPFI** | **2- byte VPFI** | **3-byte VPFI** |
| 1 | VDE Protocol Identifier (VPFI) | VDE Protocol Identifier (VPFI) | VDE Protocol Identifier (VPFI) |
| 2 | VDE Application Data |
| 3 | VDE Application Data |
| 4 | VDE Application Data |
| 5 … n |

## VDES Protocol Format Identifiers

The different bytes in a VPFI are identified as Levels.

As indicated in Table 1,

A 1-byte “Level 1” VPFI provides room to distinguish 128 protocols or data formats.

A 2-byte “Level 2” VPFI provides room to distinguish 1282 = 16,384 protocols or data formats.

A 3-byte “Level 3” VPFI provides room to distinguish 1283 = 2,097,152 protocols or data formats.

A N-byte “Level N” VPFI provides room to distinguish 128N protocols or data formats.

There is no limit as to how many bytes can be used to identify a VPFI, which gives an unlimited amount of VDE Application Protocols that can be identified.

As a rule, only VDES or AIS internal relevant applications, or international standardized applications should use 1-byte VPFI, as there only are 128 identifiers in Level 1 and they have in common to require a minimum of overhead.

Less widely used protocols or data formats should use Level 2 VPFI.

Regional Applications should only use a Level 2 or higher level VPFI with 2 or more bytes.

### Level 1

The first byte of the VPFI identifies:

* If there follows another byte to extend the VPFI range, and
* applications that only require 1 byte of overhead to be indicated.

1. Level 1 VPFI allocations

|  |  |  |
| --- | --- | --- |
| VPFI Byte 1 content | Application Name | Reference |
| 0 | VDES Authentication Group | IALA G1192 |
| 1 | VDE Satellite Orbit Data | IALA [new Guideline on VDE Application Messages] |
| 2 | VDE Text Message | IALA [new Guideline on VDE Application Messages] |
| 3 | VDE AtoN Message with legacy support | IEC 63514 CD |
| 4 | VDE Application ACK | IALA [new Guideline on VDE Application Messages] |
| 5 | VDE ASM Container | IALA [new Guideline on VDE Application Messages] |
| 6 | AIS Position Report Retransmit | IALA [new Guideline on VDE Application Messages] |
| 7 | Maritime Messaging Service | RTCM 13900.0 Maritime Messaging Service Architecture and Protocol. |
| 8..127 | (free for assignment of very high traffic applications) |  |
| 128-255 | Dependent on how many bytes follow, see below. | See next chapter on “Level 2”. |

It is recommended that the Level 1 is used only for applications that would gain applicability by only having 1 byte of VPFI overhead.

### Level 2

An optional 2nd byte identifies:

* If there follows another byte to extend the VPFI range, and
* The 7 least significant bits of the application identifier, that with the 7 bits of the first byte give space for 214-1 = 16 383 protocol identifiers.
* Level 2 VPFI allocations

|  |  |  |  |
| --- | --- | --- | --- |
| VPFI Byte 1 content | VPFI Byte 2 content | Application Name | Reference |
| 128 | 0 | <application 1 of Level 2> |  |
| 128 | 1 | <application 2 of Level 2> |  |
| … | … | … |  |
| 128 | 127 | <application 128 of Level 2> |  |
| 129 | 0 | <application 129 of Level 2> |  |
| 129 | 1 | <application 256 of Level 2> |  |
| … | … | … |  |
| 129 | 127 | <application 384 of Level 2> |  |
| … | … |  |  |
| 255 | 127 | <application 16,384 of Level 2> |  |
| 128-255 | 128-255 | Dependent on how many bytes follow, see below. | See next chapter on “Level N”. |

### Level n

Subsequent to the 2nd byte, more bytes can be added to the VPFI if a greater application range is needed in the future. Each added byte creates a new level with 128n more applications to be fit.