

Edition 1.0 2021-04

PUBLICLY AVAILABLE SPECIFICATION PRE-STANDARD

Maritime navigation and radio communication equipment and systems – Digital interfaces – Part 103: Single talker and multiple listeners – New and amended sentences and Talker IDs

<u>IEC PAS 61162-103:2021</u> https://standards.iteh.ai/catalog/standards/sist/0db8d0b5-19a5-4793bd92-t953244619fc/iec-pas-61162-103-2021





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IEC Central Office 3, rue de Varembé CH-1211 Geneva 20 Switzerland

Tel.: +41 22 919 02 11 info@iec.ch www.iec.ch

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PRE-STANDARD

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 33.060

ISBN 978-2-8322-9598-4

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CONTENTS

FOREWORD				
INTRODUCTION				
1 Scope	6			
2 New content to IEC 61162-1	6			
2.1 Field definitions	6			
2.2 Approved sentences	6			
2.2.1 DDC – Display dimming control	6			
2.2.2 EPM – Command or report long equipment property value	9			
2.2.3 NLS – Navigation light status	11			
2.2.4 SEL – Selection report	12			
2.2.5 SLM – Steering location/mode	12			
2.2.6 VBC – Water-referenced and ground-referenced docking log speed data	14			
Bibliography	15			

Table 1 –	alker identifier mnemonics۴
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – DIGITAL INTERFACES –

Part 103: Single talker and multiple listeners – New and amended sentences and Talker IDs

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IEC PAS 61162-103 has been processed by IEC technical committee 80: Maritime navigation and radiocommunication equipment and systems.

The text of this PAS is based on the following document:	This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document
Draft PAS	Report on voting
80/985/DPAS	80/992/RVDPAS

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INTRODUCTION

This document is circulated as an IEC Publicly Available Specification (IEC/PAS). This agreed process allows the new information needed to implement new sentences in a shorter time-scale than revising the appropriate international standards. This document provides information on sentences to support more functionality than available in the published 5th edition of IEC 61162-1.

This PAS has been developed in conjunction with the IEC TC 80 WG6 and the NMEA.

This PAS will be replaced at a future date by, or be included within, a revision of IEC 61162-1.

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MARITIME NAVIGATION AND RADIOCOMMUNICATION EQUIPMENT AND SYSTEMS – DIGITAL INTERFACES –

Part 103: Single talker and multiple listeners – New and amended sentences and Talker IDs

1 Scope

IEC 61162-1:2016 supports the transfer of data between various equipment. This document specifies more equipment Talker IDs, amends existing sentences and introduce new sentences to facilitate more functionality between equipment.

2 New content to IEC 61162-1

2.1 Field definitions

Additional field definitions are indicated in Table 1.

Table 1 – Talker identifier mnemonics

Talker device	Identifier
Automation – Alarm and monitoring system	JA
Automation – Reefer monitoring system	JB
Automation – Power management system ai/catalog/standards/sist/0db8d0b5-19a5-4793-	JC
Automation – Propulsion control system 1953244619fc/iec-pas-61162-103-2021	JD
Automation – Engine control console	JE
Automation – Propulsion boiler	JF
Automation – Auxiliary boiler	JG
Automation – Electronic governor system	JH
Night vision	NV
Electronic record book	RB
Rudder angle indicator	RI
Steering control system/device	SC
System managament	SM
Track control system	тс

2.2 Approved sentences

2.2.1 DDC – Display dimming control

The DDC sentence provides controls for equipment display dimming presets. display brightness percentage and selection of colour palette.

Transmitting and receiving equipment may support unidirectional or bidirectional communications as determined by the manufacturer.

When this sentence is sent as a command and not supported or not accepted by the recipient, the receiving equipment may generate a NAK sentence response providing an appropriate "reason code". Additionally the receiving equipment may generate a DDC status report sentence which provides the current dimming state of the receiving equipment.

NOTE The following luminance values are the preferred values to allow uniform dimming with one DDC transmitter, without the need to pre-compute and store a brightness and colour palette value for every display in a multi-display system. These values are in conformance with IEC 62288 Presentation of navigation-related information on shipborne navigational displays (ECDIS colour brightness requirements). A device with a monochrome display may adjust its display brightness to respect the colour palette selection, to match the luminance of a device with a colour display for each selected colour palette. The value 49, center position on the brightness scale, represents the calibrated position for calibrated displays.

D = Day time setting, with a luminance of the brightest colour of 80 cd/m^2 at brightness percentage value 49

K = Dusk setting, with a luminance of the brightest colour of 36 cd/m² at brightness percentage value 49

N = Night time setting, with a luminance of the brightest colour of 5 cd/m² at brightness percentage value 49

O = Non-luminous setting, without luminance at any brightness percentage value

\$--DDC,a,xx,a,a,a*hh<CR><LF>



Comments:

- 1) The display dimming preset field contains an indicator that may be associated with a preset dimmed level consisting of both brightness and colour palette in the receiving equipment. <u>IEC PAS 61162-103</u>
 - D = Day time setting https://standards.iteh.ai/catalog/standards/sist/0db8d0b5-19a5-4793-
 - K = Dusk setting bd92-f953244619fc/iec-pas-61162-103-2021
 - N = Night time setting
 - O = Non-luminous (i.e.backlighting off) setting

Actual display brightness levels for the display dimming preset indicators above are dependant upon the capabilities provided by the manufacturer of the equipment. Upon receipt of the DDC sentence, the device shall switch its display brightness and may switch to the preset value the operator or manufacturer had determined for the corresponding indicator value. If the equipment had no brightness or dimming preset capability this field would be ignored.

NOTE 1 If the receiving equipment has preset capability and this field contains a valid value the content of separate brightness percentage and colour palette fields transmitted within the same sentence can be ignored by the receiving equipment.

NOTE 2 If the receiving equipment has no preset capability a DDC transmitting device can populate brightness and palette fields to use the brightness percentage and colour palette fields as an alternative to using stored presets in the receiving equipment.

- 2) The brightness percentage field contains a value from zero to ninety nine. The value zero, provided as 00, indicates that the display's brightness shall be set to its most dimmed level, as determined by the capabilities of the equipment. The value ninety nine, provided as 99, indicates that the display brightness shall be set to the brightest level, as determined by the capabilities of the equipment. Values between 0 and 99 correspond to some percentage of brightness, as determined by the equipment receiving this sentence, such as a gamma 2.2 corrected brightness curve. Where the colour palette filed is supported, the actual display luminance is always a combination of this value and the colour palette field.
- 3) The colour palette field contains an indicator that may be associated with the selected colour palette in the receiving equipment.
 - D = Day time setting
 - K = Dusk setting
 - N = Night time setting
 - O = Non-luminous (i.e.backlighting off) setting

If the receiving equipment does not support colour palettes it may ignore values in this field rather than discard sentences where this field is not a null field. This way a display controller can by default send sentences where the colour palette field is not a null field, thus avoiding unnecessary per-display configuration.

4) This field is used to indicate a sentence that is a status report of current settings or a configuration command changing settings. This field shall not be a null field.

R = Sentence is a status report of current settings (use for a reply to a query).

C = Sentence is a configuration command to change settings. A sentence without "C" is not a command.

The DDC sentence may be sent as a report of settings (i.e. R flag set); in response to a standard query sentence, as an unsolicited notification e.g. on start-up or after the brightness or colour palette has been adjusted by other means, in response to a valid command sentence or in response to an invalid command sentence.

When the Sentence status flag is set to "R" and the Command mode is set to "O" then the DDC sentence is a report of the current operational dimming state.

When the Sentence status flag is set to "R" and the Command mode is set to "P" then the DDC sentence is a report of the settings for the preset specified in the display dimming preset field. If there are multiple preset settings to be conveyed, then there shall be multiple DDC sentences of this form, each with the appropriate data fields populated to convey each setting.

The standard query sentence has no means to identify a specific DDC setting and therefore the response from the display equipment may consist of multiple sentences where stored presets are provided and/or a single sentence indicating the current state. If no presets are provided by the receiving equipment only a single sentence indicating the current state is provided.

5) This field is used to indicate that this sentence is used to change the stored settings or used to change the current state of the receiving equipment. This field shall not be a null field.

O = Sentence is relevant to current operational settings

P = Sentence is relevant to stored 'Preset' settings

Examples and guidance for device manufacturers:

>> indicates Controller sends to Display.

<< indicates Display sends to Controller. In these examples the "Dimming controllers' typically have talker IDs of "II" and "IN".

In these examples the 'Displays' have talker IDs of "EI", "GN" and "GP".

In some of these examples the responses from the Displays are omitted for brevity.

	Example Commands AS 61162-103:2021	Example Sentence(s)
1	Change operational dimming state of the receiving equipment. – Set to Brightness percentage '75' and 'D' Colour palette.	- 193,4,93,75,D,C,O*22 <cr><lf> 21</lf></cr>
	The display may respond indicating its state.	<< \$GNDDC,,75,D,R,0*3D <cr><lf></lf></cr>
2	Change preset dimming state of receiving equipment	<pre>>> \$IIDDC,D,75,D,C,P*7E<cr><lf></lf></cr></pre>
	 Store Brightness percentage '75' and day Colour palette as preset 'D' by setting Command mode to 'P'. 	
	Optionally a receiving equipment with full or half duplex communications may respond to give positive acknowledgement.	
	 Report stored Brightness percentage and Colour palette for preset 'D' identified by Sentence status flag 'R' and Command mode to 'P'. 	<< \$EIDDC,D,75,D,R,P*63 <cr><lf></lf></cr>
3	Change the preset dimming state of receiving equipment	<pre>>> \$INDDC,K,,,C,P*30<cr><lf></lf></cr></pre>
	(some equipment may ignore this field).	
	 Store the current brightness percentage and colour palette as preset 'K' i.e. store the current settings. 	
4	Activate a preset (some equipment may ignore this field).	
	For receiving equipment that supports a stored preset 'D', recall that preset; otherwise set receiving equipment palette to 'D' and retain current its current operational brightness percentage Activate 'D' stored preset in the receiving equipment.	>> \$IIDDC,D,,,C,O*27 <cr><lf></lf></cr>

	Example Commands	Example Sentence(s)
5	Where the receiving equipment is a colour or monochrome display with or without notion of colour palettes;	(a)
	(a) set operational dimming state to brightness percentage '55'	>> \$1100C,D,55,D,C,0*63 <ck><lf></lf></ck>
	[the 'D' preset / palette is ignored if unsupported]	
	(b) set operational dimming state to brightness percentage '55'	(c)
	[if supported receiving equipment assumes current palette]	
	(c) set the brightness percentage to '49' and the colour palette to 'N'.	(d)
	(d) set to 'D' palette and retain current brightness percentage.	<pre>>> \$IIDDC,,,D,C,O*27<cr><lf></lf></cr></pre>
6	Optionally query the receiving equipment using the standard query	<pre>>> \$IIEIQ,DDC*32<cr><lf></lf></cr></pre>
	sentence.	<< \$EIDDC,,75,D,R,0*38 <cr><lf></lf></cr>
	Example responses to that query sentence are shown for devices with bi-directional (duplex/half duplex) communications if supported;	<< \$EIDDC,D,49,D,R,P*6C <cr><lf></lf></cr>
	(a) a calibrated colour display system and,	<< \$EIDDC,K,49,K,R,P*6C <cr><lf></lf></cr>
	 Send standard query sentence 	<< \$EIDDC,N,49,N,R,P*6C <cr><lf></lf></cr>
	 Receiving equipment responds 'R' with its current operational state 'O' and stored presets 'P'. 	<< \$EIDDC,0,00,0,R,P*61 <cr><lf></lf></cr>
	(b) un-calibrated display system which does not support colour palettes.	() >> \$TIGNO DDC*37/CR>//E>
	 Send standard query sentence 	<< \$GNDDC 49 R. 0*76 <cr>< E></cr>
	 Receiving equipment responds with sentence status flag set to 	<< \$GNDDC, D, 49, R, P*2D <cr><le></le></cr>
	'R' in each case and with Command mode field set to 'O' to indicate current state and set to 'P' stored presets, if supported.	\$GNDDC,K,36,,R,P*2A <cr><lf></lf></cr>
	(standards.iteh.ai)	<< \$GNDDC,N,05,,R,P*2F <cr><lf></lf></cr>
		<< \$GNDDC,0,00,,R,P*2B <cr><lf></lf></cr>
7	Optionally the receiving equipment may respond to an invalid DDC sentence with an NAK sentence and/or its current operational state 8d0b5	<pre>>> \$INDDC,0,99,D,C,P*70<cr><lf> -19a5-4793-</lf></cr></pre>
	In this example the receiving equipment, a GPS, does not support-103-20 storing the values requested in this preset.	21
	 Store day palette and brightness percentage '99' as 'O' palette (not supported on this equipment) 	<< \$GPNAK,IN,DDC,GPS1,10,PRESET NOT ACCEPTED*3A <cr><lf></lf></cr>
	 Receiving equipment sends NAK sentence and, 	<< \$GPDDC,,49,,R,O*68 <cr><lf></lf></cr>
	 Receiving equipment responds with sentence status flag set to 'R' and with Command mode field set to 'O' to indicate current operational state. 	

2.2.2 EPL – Command or report long equipment property value

The EPL sentence provides a method to command and report specific equipment settings when the "Value of property to be set" is longer than possible using a single EPL sentence. This sentence is a command sentence.

This sentence shall not be queried. A query for EPL sentence may result in the generation of one or more EPL messages or EPL sentences as necessary to report all configurable equipment properties and their current values.

When this sentence is sent as a command and not accepted, the receiving equipment shall generate a NAK sentence response providing an appropriate "reason code".