



**SLOVENSKI STANDARD**  
**oSIST prEN IEC 62148-22:2022**

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**Aktivne optične komponente in naprave - Standardi za ohišja in vmesnike - 22. del:  
Neposredno modulirana laserska ohišja 25 Gbit/s z enoto za nadzor temperature**

Fibre optic active components and devices - Package and interface standards - Part 22:  
25 Gbit/s directly modulated laser packages with temperature control unit

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**Ta slovenski standard je istoveten z: prEN IEC 62148-22:2022**

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**ICS:**

33.180.20	Povezovalne naprave za optična vlakna	Fibre optic interconnecting devices
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# 86C/1804/CDV

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SECRETARIAT: United States of America	SECRETARY: Mr Fred Heismann
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
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TITLE:

**Fibre optic active components and devices - Package and interface standards - Part 22: 25 Gbit/s directly modulated laser packages with temperature control unit**

PROPOSED STABILITY DATE: 2026

NOTE FROM TC/SC OFFICERS:

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**FIBRE OPTIC ACTIVE COMPONENTS AND DEVICES – PACKAGE AND  
INTERFACE STANDARDS**
**Part 22: 25 Gbit/s Directly modulated laser packages with temperature  
control unit**

## FOREWORD

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IEC 62148-22 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
86C/XX/FDIS	86C/XX/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement,

121 available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by  
122 IEC are described in greater detail at [www.iec.ch/standardsdev/publications](http://www.iec.ch/standardsdev/publications).

123 A list of all parts of the IEC 62148 series, published under the general title *Fibre optic active*  
124 *components and devices – Package and interface standards*, can be found on the IEC  
125 website.

126 The committee has decided that the contents of this document will remain unchanged until the  
127 stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to  
128 the specific document. At this date, the document will be

- 129 • reconfirmed,
- 130 • withdrawn,
- 131 • replaced by a revised edition, or
- 132 • amended.

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133

## INTRODUCTION

134 Fibre optic laser devices are used to convert electrical signals into optical signals. This  
135 international standard covers the physical dimensions and interfaces for directly modulated  
136 laser (DML) packages which are intended to be applied to 25 Gbit/s transceivers.

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137 **FIBRE OPTIC ACTIVE COMPONENTS AND DEVICES – PACKAGE AND**  
138 **INTERFACE STANDARDS**

139  
140 **Part 22: 25 Gbit/s Directly modulated laser packages with temperature**  
141 **control unit**  
142

143 **1 Scope**

144 This part of IEC 62148 defines the physical dimensions and interface specifications for  
145 directly modulated laser (DML) devices used in optical telecommunication and optical data  
146 transmission applications.

147 The intent of this document is to adequately specify the physical requirements for DML  
148 devices so as to enable mechanical interchangeability of laser devices or transmitters  
149 complying with this document both at the printed circuit board and for any panel-mounting  
150 requirements.

151 **2 Normative references**

152 The following documents are referred to in the text in such a way that some or all of their  
153 content constitutes requirements of this document. For dated references, only the edition  
154 cited applies. For undated references, the latest edition of the referenced document (including  
155 any amendments) applies.

156 IEC 60793-2-50, *Optical fibres – Part 2-50: Product specifications – Sectional specification for*  
157 *class B single-mode fibres*

158 IEC 61753 (all parts), *Fibre optic interconnecting devices and passive components –*  
159 *Performance standards*

160 IEC 61754 (all parts), *Fibre optic interconnecting devices and passive components – Fibre*  
161 *optic connector interfaces*

162 IEC 61755 (all parts), *Fibre optic interconnecting devices and passive components – Fibre*  
163 *optic connector optical interfaces*

164 IEC 61754-20, *Fibre optic interconnecting devices and passive components – Fibre optic*  
165 *connector interfaces – Part 20: Type LC connector family*

166 IEC 61754-36, *Fibre optic interconnecting devices and passive components – Fibre optic*  
167 *connector interfaces Part 36: Type SAC connector family*

168 IEC 61754-37, *Fibre optic interconnecting devices and passive components – Fibre optic*  
169 *connector interfaces Part 37: Type MDC connector family*

170 IEC 62148-1, *Fibre optic active components and devices – Package and interface standards –*  
171 *Part 1: General and guidance*

172 **3 Terms, definitions and abbreviated terms**

173 For the purposes of this document, the terms and definitions given in IEC 62148-1 and the  
174 following apply.

175 ISO and IEC maintain terminological databases for use in standardization at the following  
176 addresses:

- 177 • IEC Electropedia: available at <http://www.electropedia.org/>
- 178 • ISO Online browsing platform: available at <http://www.iso.org/obp>

### 179 3.1 Terms and definitions

#### 180 3.1.1

##### 181 pigtail package

182 package type of photonic devices which has a length of fibre attachment for both optical input  
183 and output ports

184 [SOURCE: IEC 62148-15:2021]

#### 185 3.1.2

##### 186 TOSA module

187 optical module that converts electrical signals into optical signals and that is connected to an  
188 optical fibre

189 [SOURCE: IEC 62148-18:2014]

### 190 3.2 Abbreviated terms

191 CAN airtight sealed metal container (see IEC 60747-1)

192 DML directly modulated laser

193 LD laser diode

194 MPD monitor photodiode

195 NC not connected

196 PD photodiode

197 RH heat resistor

198 RTH thermistor resistor

199 TEC thermo-electric cooler

200 TO transistor outline

201 TOSA transmitter optical subassembly

## 202 4 Specification of the optical interface

### 203 4.1 Optical connector interface

204 This standard applies to the LC optical connector interfaces. Detailed dimensions of the  
205 optical receptacle are specified in IEC 61754-20.

### 206 4.2 Pigtail interface

207 All single-mode optical fibres defined in IEC 60793-2-50 are applicable.

208 All optical connectors defined in the IEC 61753 series, IEC 61754 series, and IEC 61755  
209 series are applicable when a pigtail is to be terminated with an optical connector.

## 210 5 Specification of electrical interface

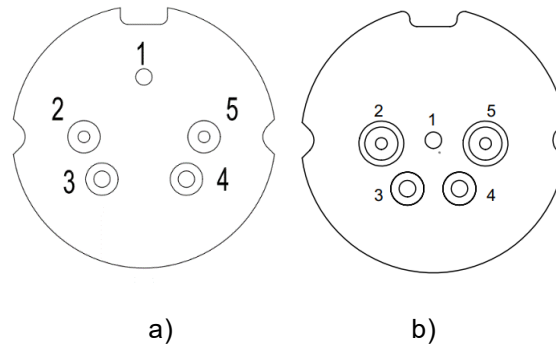
### 211 5.1 General

212 The specifications for the electrical interfaces of DML TO CAN packages are described in 5.2.  
213 The specifications for the electrical interfaces of DML for TOSA and DML pigtail packages are  
214 described in 5.3. The electrical interface specifications define only the basic functionality of  
215 each pin.

### 216 5.2 Electrical interface specifications for DML TO CAN package

#### 217 5.2.1 5-pin

218 The electrical terminal numbering assignments for 5-pin type TO CAN packages with  
219 temperature control unit are shown in Figure 1. The pin function definitions for 5-pin TO CAN  
220 packages are specified in Table 1.



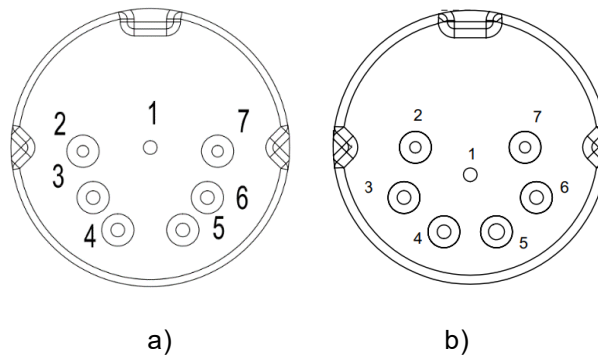
**Figure 1 – Electrical terminal numbering assignments for 5-pin type TO CAN packages with temperature control unit**

**Table 1 – Pin function definitions for 5-pin type DML TO CAN packages**

Pin number	Function	
	Option 1	Option 2
1	Ground/MPD anode/RH cathode	Ground /RH cathode
2	LD anode	LD anode
3	RH anode	RH anode/MPD anode
4	MPD cathode	MPD cathode
5	LD cathode	LD cathode

**5.2.2 7-pin**

The electrical terminal numbering assignments for 7-pin type TO CAN packages with temperature control unit are shown in Figure 2. The pin function definitions for 7-pin TO CAN packages are specified in Table 2.



**Figure 2 – Electrical terminal numbering assignments for 7-pin type TO CAN packages with temperature control unit**

**Table 2 (1/2) – Pin function definitions for 7-pin type DML TO CAN packages**

Pin number	Function		
	Option 1	Option 2	Option 3
1	Ground/RH cathode /MPD cathode	Ground	Ground /RH cathode /MPD anode
2	LD anode	LD anode	LD anode