

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Fibre optic active components and devices – Package and interface standards –
Part 17: Transmitter and receiver components with dual coaxial RF connectors
(standards.iteh.ai)

Composants et dispositifs actifs à fibres optiques – Normes de boîtiers et
d'interface – <https://standards.iteh.ai/catalog/standards/sist/53d57551-148e-4581-9a81->
Partie 17: Composants émetteurs et récepteurs munis de connecteurs coaxiaux
RF doubles



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d'interface –**

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RF doubles**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIBRE OPTIC ACTIVE COMPONENTS AND DEVICES –
PACKAGE AND INTERFACE STANDARDS –**
**Part 17: Transmitter and receiver components
with dual coaxial RF connectors**

FOREWORD

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International Standard IEC 62148-17 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics.

This standard is to be read in conjunction with IEC 62148-1.

The text of this standard is based on the following documents:

FDIS	Report on voting
86C/1165/FDIS	86C/1186/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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[IEC 62148-17:2013](#)

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FIBRE OPTIC ACTIVE COMPONENTS AND DEVICES – PACKAGE AND INTERFACE STANDARDS –

Part 17: Transmitter and receiver components with dual coaxial RF connectors

1 Scope

This part of IEC 62148 covers physical interface specification of transmitter and receiver components with dual coaxial RF connectors.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

IEC 60874-1, *Fibre optic interconnecting devices and passive components – Connectors for optical fibres and cables – Part 1: Generic specification*

[IEC 62148-17:2013](#)

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

IEC Guide 107, *Electromagnetic compatibility – Guide to the drafting of electromagnetic compatibility publications*

3 Abbreviations

For the purposes of this document, the following abbreviations apply.

EMwL	External modulator with laser diode
LD	Laser diode
PD	Photo diode
PCB	Printed circuit board
PIN PD	Photo diode with PIN structure
SMPM	Sub-miniature push-on miniature
TEC	Thermo-electric cooler
TIA	Trans-impedance amplifier

4 Electromagnetic compatibility (EMC) requirements

The components specified in this part of IEC 62148 shall comply with suitable requirements for electromagnetic compatibility (in terms of both emission and immunity), depending on particular usage/environment in which they are intended to be installed or integrated.

Guidance to the drafting of such EMC requirements is provided in IEC Guide 107. Guidance for electrostatic discharge (ESD) is still under study.

5 Classification

The transmitter and receiver components with dual coaxial RF connectors described in this standard are classified as type 5 according to the definitions of IEC 62148-1.

6 Specification of transmitter component with dual coaxial RF connectors

6.1 General

The intention of this clause is to specify adequately the physical requirements of an optical transmitter component with an EMwL, a modulator driver IC, a TEC and dual coaxial RF input connectors. It will enable mechanical interchangeability of components complying with this specification both for the PCB and for any panel mounting requirement.

6.2 Pigtail interface

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

All optical connectors defined in IEC 60874-1 are applicable if a pigtail is to be terminated with an optical connector.

ITeH STANDARD PREVIEW

6.3 Electrical interface (standards.iteh.ai)

6.3.1 General

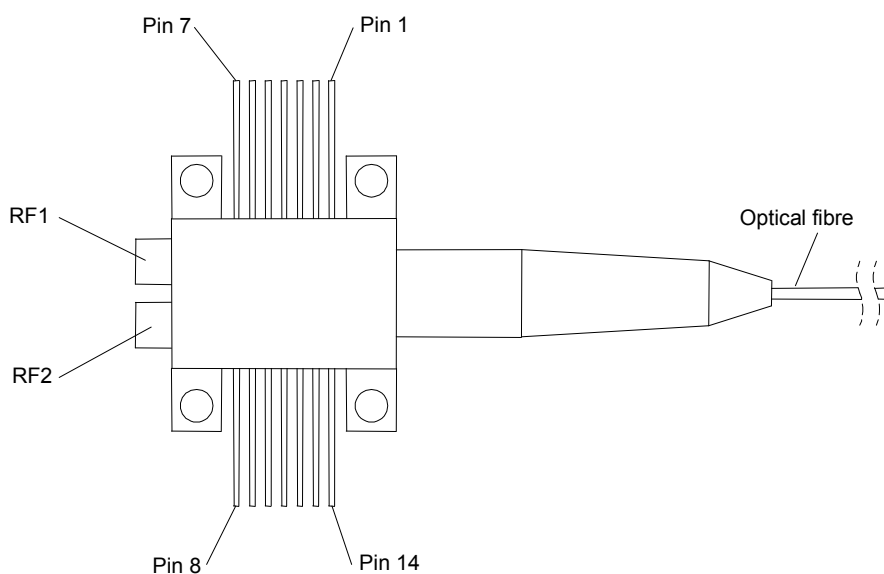
The electrical interface in this specification defines only the basic functionality of each pin.

IEC 62148-17:2013

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6.3.2 Numbering of electrical terminals

Terminal numbering assignments are shown in Figure 1.



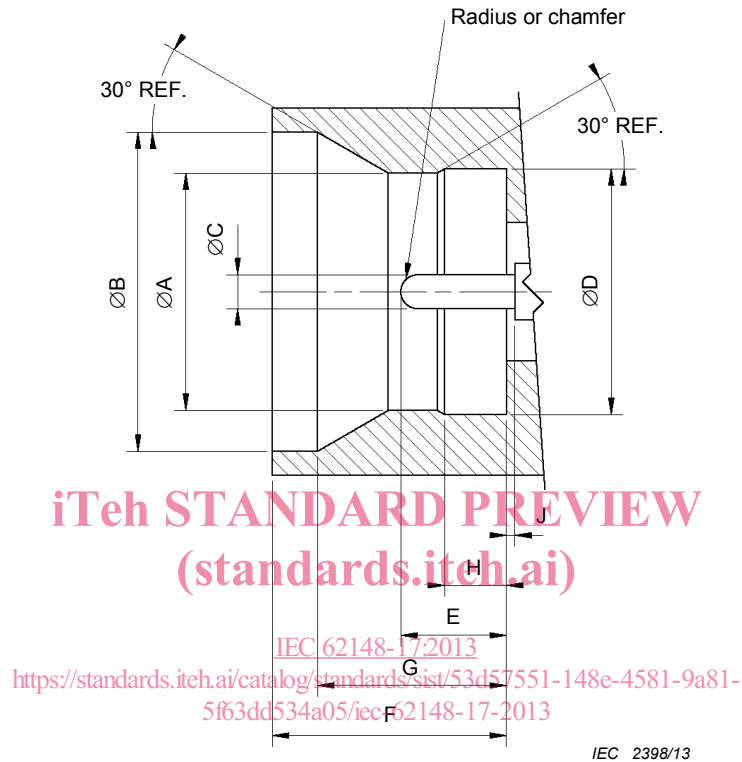
IEC 2397/13

Figure 1 – Electrical terminal numbering assignments for transmitter component with dual coaxial RF connectors

6.3.3 Coaxial connector

The transmitter component has male type coaxial connectors as RF1 and RF2 terminals. The connector can handle RF electrical signals and is compatible with the SMPM connector, which is defined in Figure 2.

NOTE If the SMPM connector is standardized in IEC, the reference will be added in a future edition.



Reference	Dimensions mm	
	Minimum	Maximum
A \varnothing	2,11	2,16
B \varnothing	2,82	2,92
C \varnothing	0,28	0,33
D \varnothing	2,18	2,24
E	0,76	1,14
F	2,08	2,13
G	1,57	1,83
H	0,53	0,58
J	0,00	-

Figure 2 – Coaxial RF connector interface

6.3.4 Electrical terminal assignment

The basic functionalities of each electrical terminal for transmitter components are defined in Table 1.

Table 1 – Terminal function definitions

Terminal number	Symbol	Function
1	LDA	LD anode
2	PDA	PD anode
3	V_b	Modulator bias
4	V_m	Modulator modulation
5	V_{ss}	Driver IC supply voltage
6	V_x	Cross point control voltage
7	–	Vendor option
8	–	Vendor option
9	–	Vendor option
10	GND	Case ground
11	–	Vendor option (reserved for thermistor)
12	RTH	Thermistor
13	TEC (–)	TEC cathode
14	TEC (+)	TEC anode
RF1	IN or INB	RF input
RF2	INB or IN	RF input
NOTE TEC acts as an EMWL chip-cooler in the bias direction described here. When it is biased reversely, its function is changed into heating.		
Polarity of RF outputs shall be defined by each vendor.		

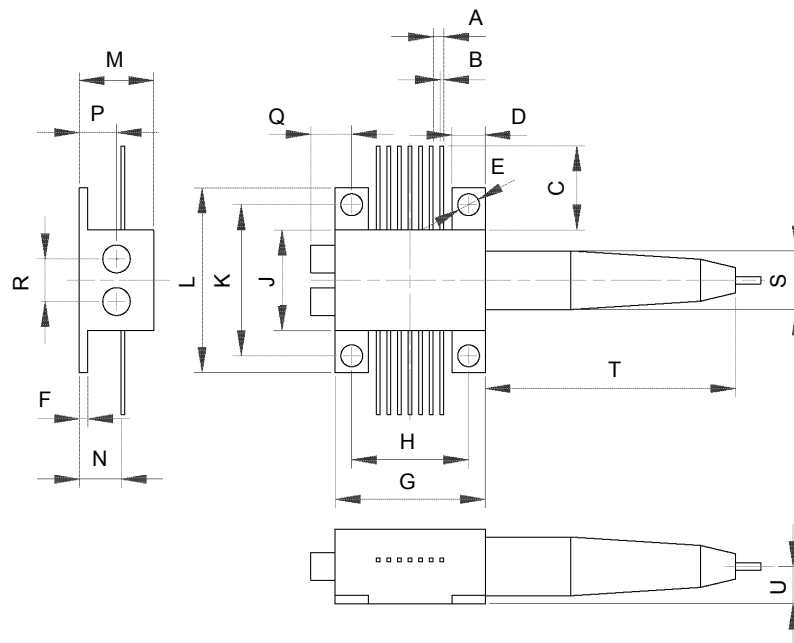
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6.4 Package outline and footprint

6.4.1 Drawing of package outline

A drawing of the package outline as well as the dimensions is given in Figure 3.



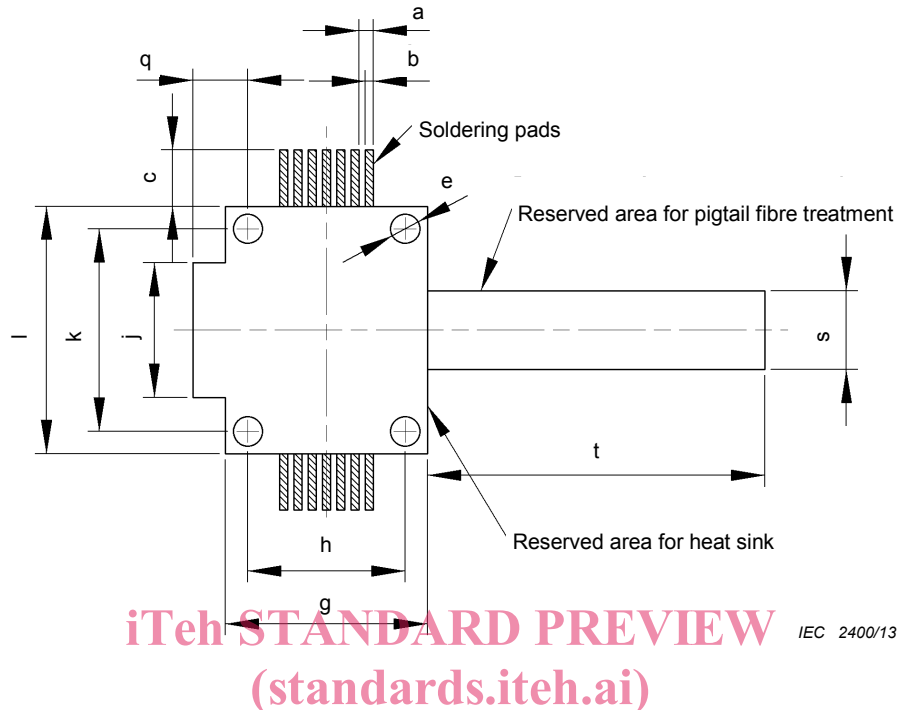
IEC 2399/13

Reference	Dimensions mm		Notes
	Minimum	Maximum	
A	1,27		Basic dimension
B	0,45		
C	10,0		
D	3,75	4,25	
E	2,6		Diameter, basic dimension
F	–	1,0	
G	17,75	18,25	
H	13,9	14,1	
J	11,75	12,25	
K	17,9	18,1	
L	21,75	22,25	
M	–	8,9	
N	4,6	5,0	
P	4,45		Basic dimension
Q	4,65	5,15	(Typical 4,9 mm)
R	5,08		Basic dimension
S	–	7,0	Diameter
T	–	30	
U	4,45		Basic dimension

Figure 3 – Package outline drawing

6.4.2 Drawing of footprint

A drawing of the case footprint as well as the dimensions is given in Figure 4.



Reference	Dimensions mm		Notes
	Minimum	Maximum	
a	1,27	-	Basic dimension
b	0,45	-	
c	-	-	Specified by each vendor
e	2,6	-	Hole diameter, basic dimension
g	18,25	-	
h	14	-	Basic dimension
j	12,25	-	
k	18	-	Basic dimension
l	22,25	-	
q	5,15	-	
s	7,0	-	
t	30	-	

Figure 4 – Recommended pattern layout for the PCB

7 Specification of receiver component with dual coaxial RF connectors

7.1 General

The intention of this clause is to specify adequately the physical requirements of an optical receiver component with a PIN PD, TIA IC and dual coaxial RF output connectors. It will enable mechanical interchangeability of components complying with this specification both for the PCB and for any panel mounting requirement.