

INTERNATIONAL STANDARD



**Fibre optic active components and devices – Package and interface standards –
Part 6: ATM-PON transceivers**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FIBRE OPTIC ACTIVE COMPONENTS AND DEVICES –
PACKAGE AND INTERFACE STANDARDS –****Part 6: ATM-PON transceivers**

FOREWORD

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International Standard IEC 62148-6 has been prepared by subcommittee 86C: Fibre optic systems and active devices, of IEC technical committee 86: Fibre optics.

This second edition cancels and replaces the first edition published in 2003, and constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) inconsistency of types in Clause 4 has been resolved;
- b) part and titles list in the Foreword has been deleted;
- c) references have been updated.

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

CDV	Report on voting
86C/1590/CDV	86C/1613/RVC

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

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

A list of all parts in 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 document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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- withdrawn,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

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INTRODUCTION

Fibre optic transceivers are used to convert electrical signals into optical signals and vice versa. This document covers the physical interface for transceivers for ATM-PON systems. This transceiver is designed as a 24-pin package for use with through holes on the printed circuit board.

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

Part 6: ATM-PON transceivers

1 Scope

This part of IEC 62148 covers the physical interface specification of optical transceivers for asynchronous transfer mode-passive optical network (ATM-PON) systems recommended by the International Telecommunication Union (ITU) as ITU Recommendation G.983.1.

2 Normative references

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

~~IEC 60793: all parts, Optical fibres~~

IEC 60793-2 (all parts), *Optical fibres – Part 2: Product specifications*

IEC 60874 (all parts), *Fibre optic interconnecting devices and passive components – Connectors for optical fibres and cables*

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

<https://standards.iteh.ai/catalog/standards/iec/ed397cf8-078b-4215-9e17-53fa5ad15fd2/iec-62148-6-2020>

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

ITU-T Recommendation G.652, *Characteristics of a single-mode optical fibre and cable*

ITU-T Recommendation G.657, *Characteristics of a bending-loss insensitive single-mode optical fibre and cable*

ITU-T Recommendation G.983.1, *Broadband optical access systems based on Passive Optical Networks (PON)*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 62148-1, ITU-T Recommendation G.983.1 and the following apply.

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

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

3.1.1

OAN

optical access network

set of access links sharing the same network-side interfaces and supported by optical access transmission systems

Note 1 to entry: The OAN ~~may~~ can include a number of ODNs connected to the same OLT.

Note 2 to entry: This note applies to the French language only.

3.1.2

ODN

optical distribution network

apparatus or component that provides the optical transmission means from the OLT to the users, and vice versa

Note 1 to entry: The ODN utilizes passive optical components.

Note 2 to entry: This note applies to the French language only.

3.1.3

OLT

optical line termination

apparatus that provides the network-side interface of the OAN, and is connected to one or more ODNs

Note 1 to entry: This note applies to the French language only.

3.1.4

ONU

optical network unit

apparatus that provides (directly or remotely) the user-side interface of the OAN, and is connected to the ODN

Note 1 to entry: This note applies to the French language only.

3.2 Abbreviated terms

ATM-PON	asynchronous transfer mode-passive optical network
CDR	clock and data recovery
LD	laser diode
IC	integrated circuit

4 Classification

This document, which gives the interface standards of optical transceiver modules for ATM-PON systems, specifies the interface of a type 3 module with LD driver circuits and clock and data recovery (CDR) ICs for ONU module which is described in IEC 62148-1.

~~Fibre optic transceiver modules are classified into 5 types of forms according to the combination of mating types of electrical and optical interfaces. Details are described in IEC 62148-1. The 5 types are as follows:~~

~~Type 1: Fibre optic connector interface with direct solderable type electrical terminals.~~

~~Type 2: Fibre optic connector interface with plug-in type electrical terminals.~~

~~Type 3: Fibre optic pigtail interface with direct solderable type electrical terminals.~~

~~Type 4: Fibre optic pigtail interface with plug-in type electrical terminals.~~

~~Type 5: Modules are not classified into type 1 – type 4. (A typical example is a module that has both electrical connectors and non-connector type terminals as an electrical~~

~~interface such as a coaxial connector for signal and lead terminals for the power supply.)~~

5 Optical interface

5.1 General

The intent of this document is to adequately specify the physical requirements of an optical transceiver that will enable mechanical interchangeability of transceivers to this document both at the printed circuit board and for any panel mounting requirement.

5.2 Pigtail interface

All optical fibres defined in IEC 60793-2 (all parts), ITU-T Recommendation G.652, and ITU-T Recommendation G.657 are applicable.

All optical connectors defined in IEC 60874 (all parts) and IEC 61754 (all parts) are applicable if a pigtail is to be terminated with an optical connector.

6 Electrical interface

6.1 General

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

6.2 Numbering of electrical terminals

Pin numbering assignments are shown in Figure 1 (electrical terminals viewed from the top of the module with pins underneath).

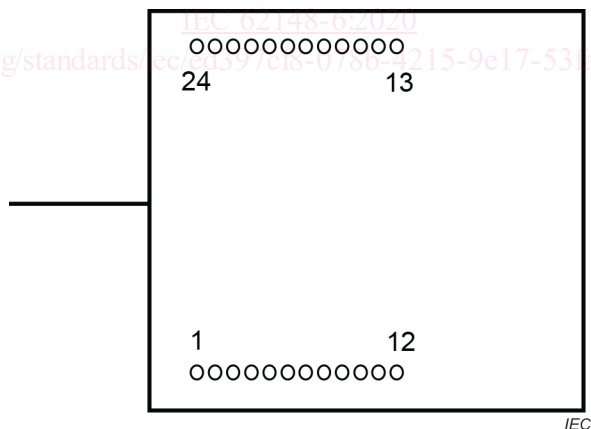


Figure 1 – Numbering assignments of electrical terminals (viewed from above with pins underneath)

6.3 Electrical terminal assignment

Electrical terminal assignment is based on Table 1 and Table 2, which provide the definitions of the pin functions for the transmitter section and the receiver section of the transceiver, respectively.

Table 1 – Pin function definitions: transmitter section of the transceiver

Pin number	Terminal identification	Functional description	Notes
1	Tx V_{CC}	Transmitter power supply	
2	Tx GND	Transmitter ground	
3	Bias cont (p)	Transmitter bias control, positive	Optional
4	Bias cont (n)	Transmitter bias control, negative	Optional
5	NC		
6	Clock in (p)	Transmitter clock in, positive	
7	Clock in (n)	Transmitter clock in, negative	
8	Tx GND	Transmitter ground	
9	Data in (p)	Transmitter data in, positive	
10	Data in (n)	Transmitter data in, negative	
11	Shut down	Transmitter shut down	
12	Tx V_{CC}	Transmitter power supply	

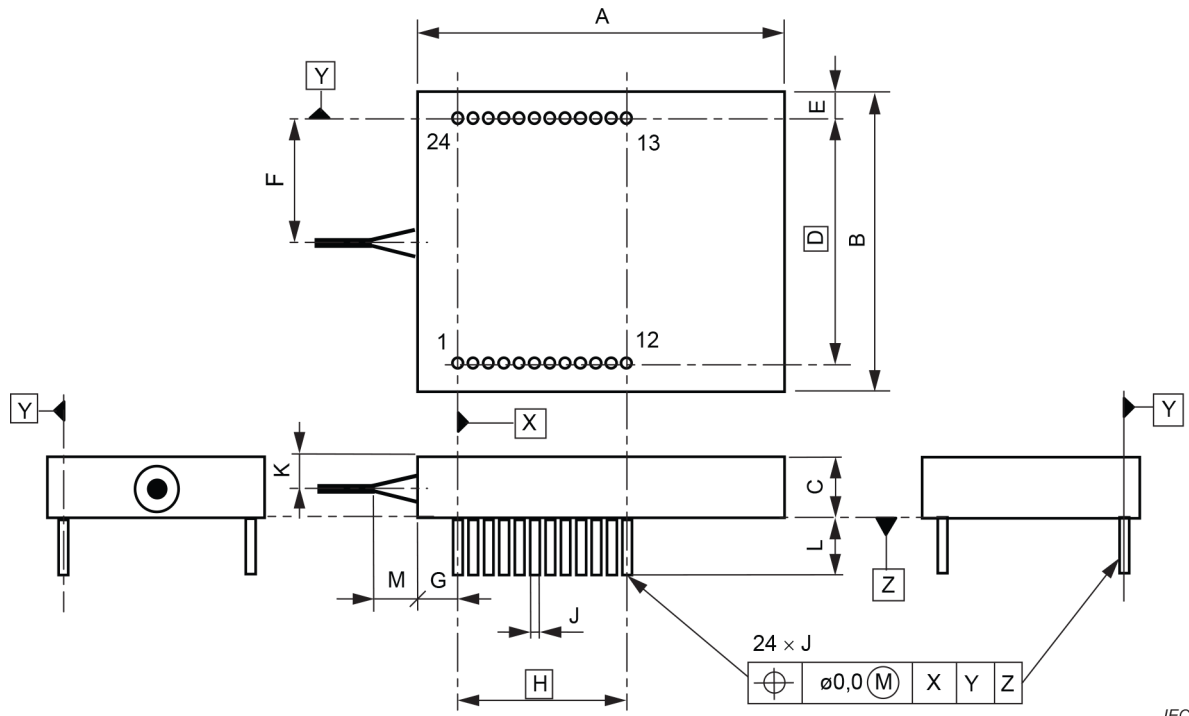
Table 2 – Pin function definitions: receiver section of the transceiver

Pin number	Terminal identification	Functional description
13	Rx V_{CC}	Receiver power supply
14	NC	
15	Data out (n)	Receiver data out, negative
16	Data out (p)	Receiver data out, positive
17	Rx GND	Receiver ground
18	Clock out (n)	Receiver clock out, negative
19	Clock out (p)	Receiver clock out, positive
20	Rx alarm	Receiver alarm
21	NC	
22	NC	
23	Rx GND	Receiver ground
24	Rx V_{CC}	Receiver power supply

7 Outline

7.1 Drawing of case outline

The case outline drawing, as well as the dimensions, are shown in Figure 2.



IEC

Dimensions of case outline

Dimension	Minimum mm	Maximum mm	Notes
A		55,00	
B		43,00	
C		8,90	
D	35,56		Basic dimension
E		3,72	
F		35,56	a
G		24,52	
H	27,94		Basic dimension ^b
J	0,45	0,70	
K	0,15	8,75	
L	3,10		
M		40,00	Strain relief ^c
^a This item shall be specified by each vendor. ^b All 24 pins are treated as a single pattern. ^c Some vendors do not use the strain relief.			

Figure 2 – Case outline

7.2 Drawing of case footprint

The drawing of the case footprint and the dimensions are shown in Figure 3.