GP2W1001YP0F

IrDA Compliant Transceiver Module
9.6 kb/s to 4 Mb/s (FIR)
Low Profile
Low Consumption Current

■Description

The **GP2W1001YP0F** is an infrared transceiver module for IrDA ver. 1.4 (FIR).
The transceiver consisits of a pin-photo diode, infrared emitter and control IC in a single package.

■Features

1. Compliant with the IrDA 1.4 (FIR)
   Transmission speed : 9.6 kb/s to 4 Mb/s
   Transmission distance : 1 m
2. Small package
   L 10.0 × W 4.38 × H 3.53 mm
3. Peak emission wavelength : 880 nm
4. Side view type
5. Soldering reflow type
6. Shield type
7. Low consumption current due to shutdown function
   (Consumption current at shutdown mode : Max. 1.0 μA)
8. Operates from 2.7 to 5.5 V

■Agency approvals/Compliance

1. Compliant with IEC60825-1 class 1 eye safety standard
2. Compliant with RoHS directive (2002/95/EC)
3. **Content status of six substances specified in " Management Methods for Control of Pollution Caused by Electronic Information Products Regulation " (popular name : *China RoHS*) (Chinese : 电子信息产品污染控制管理办法)**
   ; refer to page 13
4. Lead (Pb) free device

■Applications

1. Mobile equipment
   (Cellular phone, Pager, Smart phone, PDAs, Portable printer, etc.)
2. Digital imaging equipment
   (Digital camera, Photo imaging printer)
3. POS equipment
4. Personal computers
5. Personal information tools

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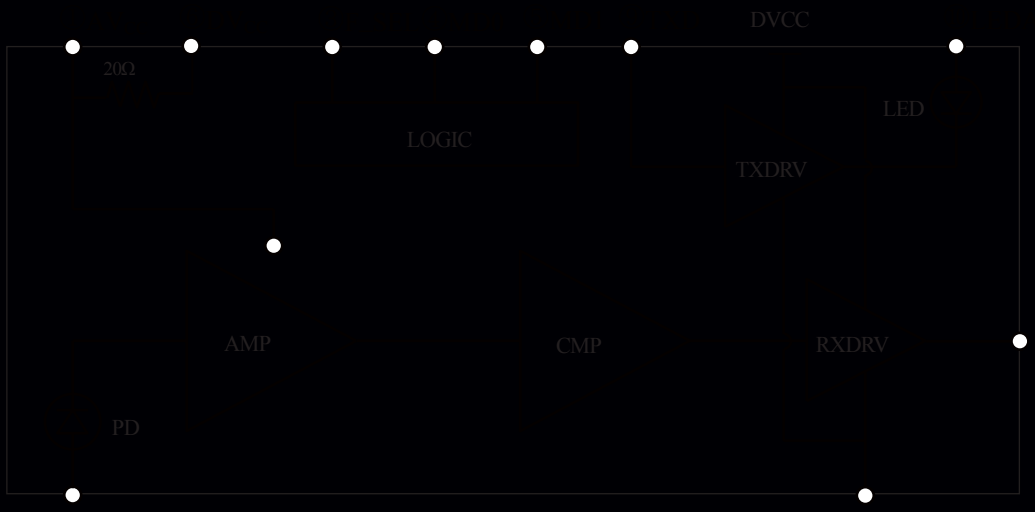
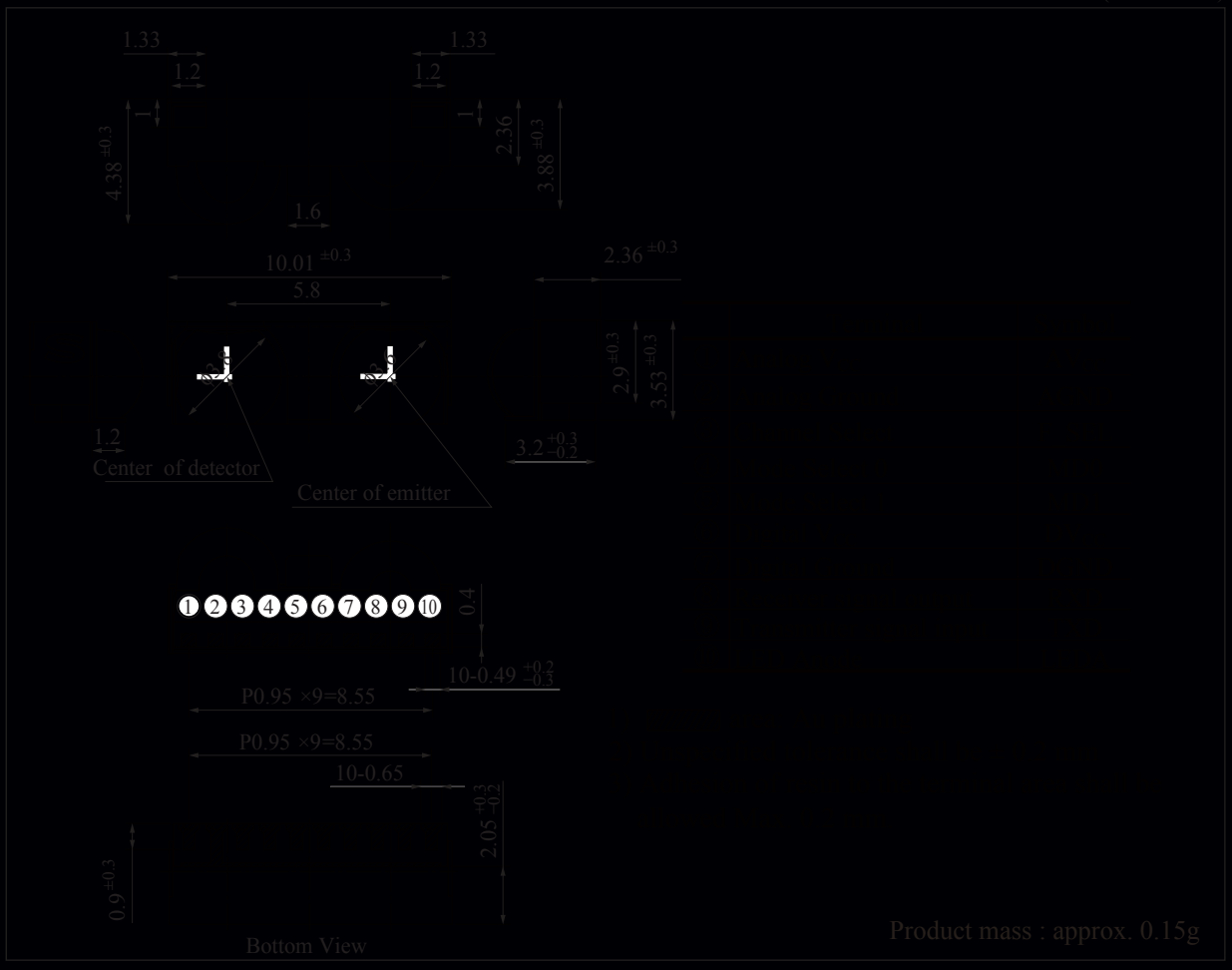
Date Mar.01.2007

■Block diagram



■Outline Dimensions

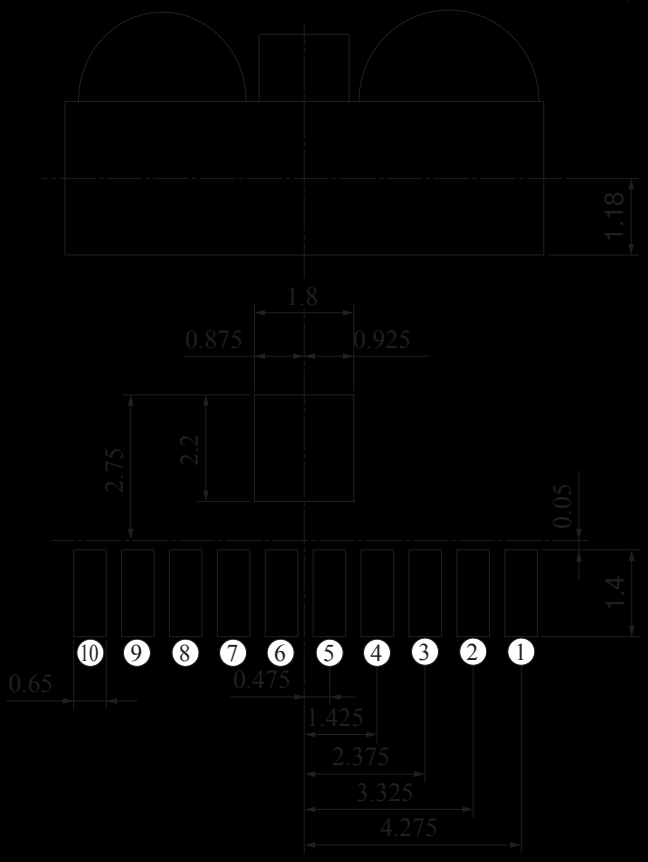
(Unit : mm)



■Recommended PCB Foot Pattern

Dimensions are shown for reference

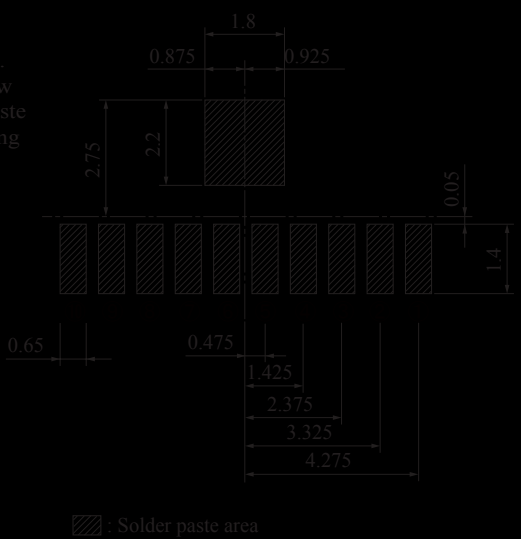
(Unit:mm)



■Recommended Size of Solder Creamed Paste (Reference)

(unit : mm)

Dimensions are shown for reference.
Please open the solder mask as below so that the size of solder creamed paste for this device before reflow soldering must be as large as one of the foot pattern land indicated for reference.



: Solder paste area

■Absolute Maximum Ratings (Ta=25°C)

■Electro-optical Characteristics

■Recommended Operating Conditions

(Ta=25°C)

■Truth Table

Input		Output	
TXD (Transmitter)	Receiver	State of LED (Transmitter)	RXD terminal
High	–	ON	X
Low	ON	OFF	Low
Low	OFF	OFF	High

■Input Output Logic Table

MD0	MD1	F_SEL	TXD	RXD terminal mode	TXO *2	Remarks
1	0	X	0	Shut down	Shut down	–
↘	0	1	0	RXA	X	Latch TXD
↘	0	1	1	RXB	X	Latch TXD
0	0	0	X	RXA	HPW	TXO Output High Power mode
0	1	0	X	↓	MPW	TXO Output Middle Power mode
1	1	0	X	↓	LPW	TXO Output Low Power mode
0	0	1	X	RXB	HPW	TXO Output High Power mode
0	1	1	X	↓	MPW	TXO Output Middle Power mode
1	1	1	X	↓	LPW	TXO Output Low Power mode

*1 F_SFL → 0:reset latching state of TXD, and turn to RXA channel.
*2 When a power supply is on, F_SFL should be Low.
*3 When communication starts from RXB channel mode, once select RXA channel mode and change RXB channel mode.
*4 RXA:RXA channel mode:115kb/s or less (SIR 115.2kb/s, 9600b/s)
*5 RXB:RXB channel mode:115kb/s or more (FIR 1.152Mb/s, 4Mb/s)

Fig.1 Recommended External Circuit

(Note)1. Component chooses the most suitable constant of C_1,C_2,C_3,C_4 and C_5 according to the noise level and noise frequency of a power supply.
Depending on the noise level of a power supply, and noise frequency, a noise may be unable to be removed only by capacitor of a standard circuit.
At this time, pulses other than a signal may be outputted from a RXD terminal in a specific communication distance.
Please confirm with the system that it is satisfactory with each transmission speed in all communication distance at the time of examination.
When there is a noise ingredient which cannot be removed only by C_1,C_2,C_3, please insert Rx(1 to 10Ω) and it after a check.
When there is a problem, please use it after a check as a noise measure Circuit.
2.Don't connect an Avcc terminal with power supply because it is the connection of only capacitor.

Fig.2 Output Waveform Specification(Receiver side)($C_L \leq 10pF$)

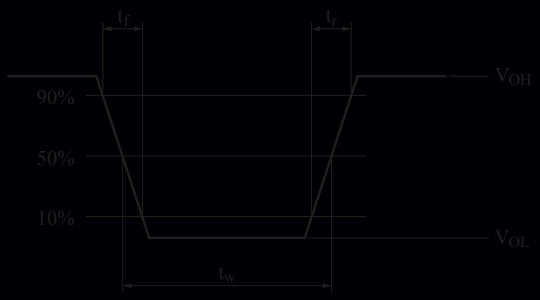
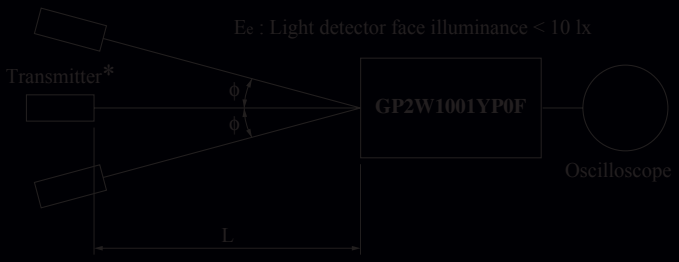


Fig.3 Standard Optical System(Receiver side)



ϕ : Indicates horizontal and vertical directions.

The light emitting diode (SHARP **GL710**, λ_P=850 to 900nm) is used as the transmitter, where the following continuous signals are transmitted.
In Fig.3, output signal shall be complete receiver side electro-optical characteristics.

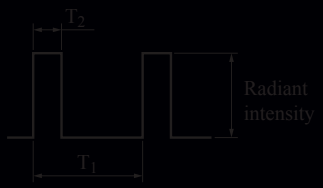


Fig.4 Output Waveform Specification(Transmitter side)

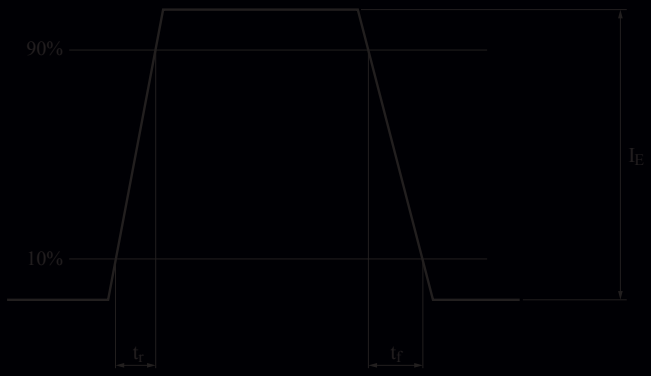


Fig.5 Standard Optical System(Transmitter side)

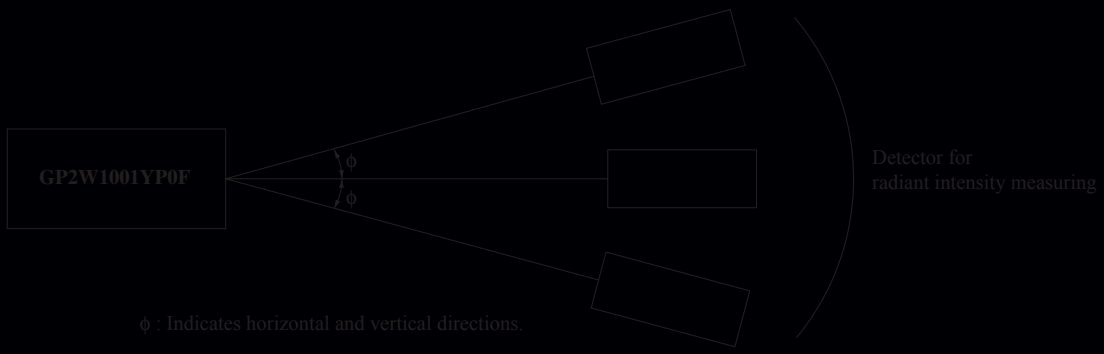


Fig.6 Recommended Circuit of Transmitter side

LEDA

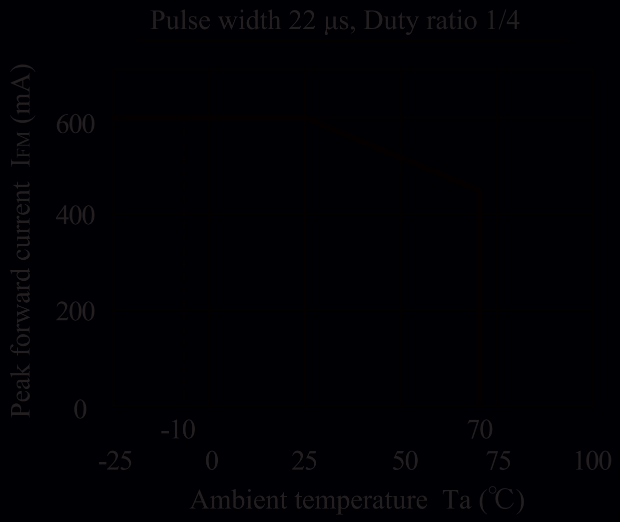
1.63µs TX

GP2W1001YP0F

V_{IN}Tx=2.8V

BR=115.2kb/s

Fig.7 Peak Forward Current vs. Ambient Temperature



■Notes

(1) When the system (program) is designed, the Turn Around Time shall be secured by considering 500 µs or more that is specified to IrDA.
Then, this Turn Around Time means the time when this device does not temporarily detect the signal light, since the transmitted light form the transceiver reaches the detector side of the transceiver.

(2) As it is necessary 1.5 ms or more (at Ta =25 °C, no input signal) to return from shut-down mode to ready-operation mode, please consider this point at the system (program) designing.
Also, please confirm thoroughly the operation in actual application.

(3) When there is much external disturbing light source is located near this transceiver and the detector face resceiver much external disturbing light, there is case that the pulse other than signal output is generated as noise on output terminal of this transceiver. Please consider the lay-out and structure to reduce disturbing light on the detector face.

(4) In case that this sensor is adopted in IR communication system, please use it according to the signal method which is specified by [Serial Infrared Physical Layer Link Specification Version 1.4] published by Infrared Data Association. False operation may happen if the different signal method is used.

(5) In circuit designing, make allowance for the degradation of light emitting diode output that results from long continuous operation. (50 % degradation/5 years)

■Soldering Method

1. In case of solder reflow

   Please carry out only one time soldering at the temperature and the time within the temperature profile as shown in the figure below.

2. Other precautions

   An infrared lamp used to heat up for soldering may cause a localized temperature rise in the resin.
   So keep the package temperature within that specified in Item 1. Also avoid immersing the resin part in the solder.
   Even if within the temperature profile above, there is the possibility that the gold wire in package is broken in case that the deformation of PCB gives the affection to lead pins. Please use after confirming the conditions fully by actual solder reflow machine.

3. Soldering

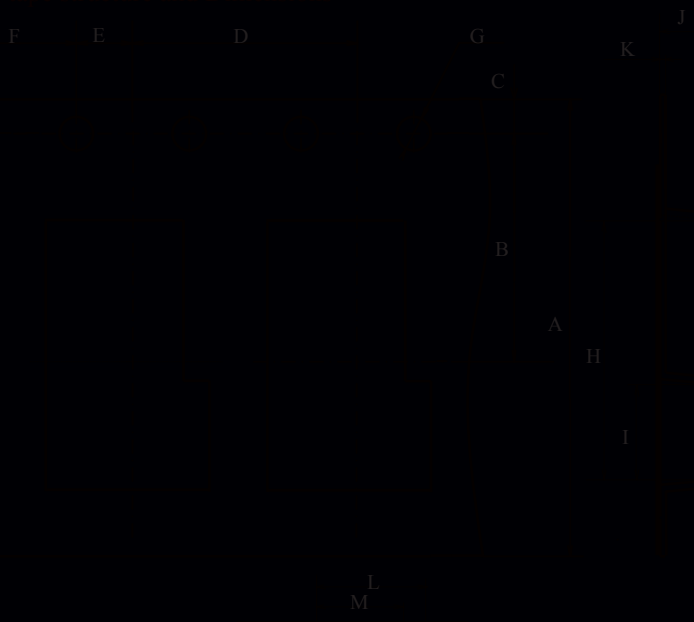
   - Soldering iron shall be less than 25W, and temperature of point of soldering iron shall use at 260°C or less.
   - Soldering time shall be within 5s.
   - Soldered product shall treat at normal temperature.

■Package specification

●Tape and Reel package
2000 pcs/reel

Taping orientation

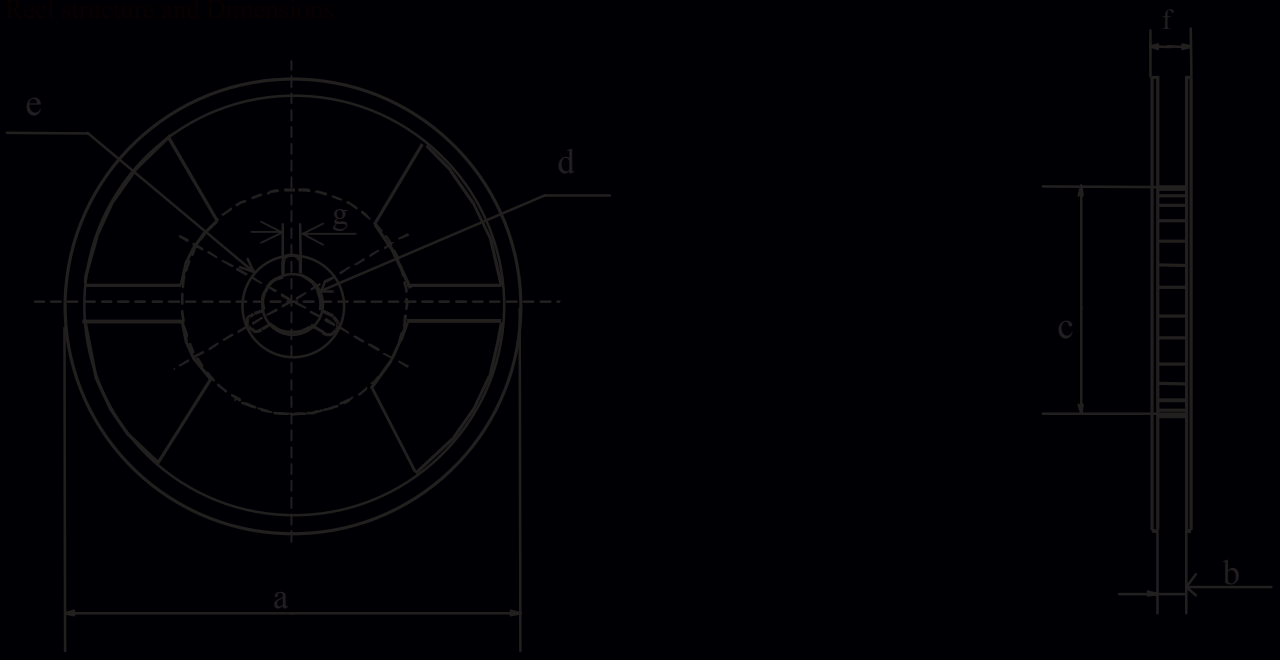
Carrier tape structure and Dimensions



Dimensions List

(Unit : mm)

Recommended Dimensions



(Unit : mm)

Direction of product insertion

●Cleaning Instructions

●Presence of ODC etc.

This product shall not contain the following materials.
And they are not used in the production process for this product.
Regulation substances : CFCs, Halon, Carbon tetrachloride, 1,1,1-Trichloroethane (Methylchloroform)

Specific brominated flame retardants such as the PBB and PBDE are not used in this product at all.

* The RoHS directive (2002/95/EC)
This product complies with the RoHS directive (2002/95/EC).
Object substances: lead, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE).

* Contents of six substances specified in "Management Methods for Control of Pollution Caused by Electronic Information Products Regulation" (China)

"○" indicates that the content of the toxic and hazardous substance in all the homogeneous materials of the part is below the concentration limit requirement, as described in SJ/T 11363-2006 standard.

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- --- Personal computers
- --- Office automation equipment
- --- Telecommunication equipment [terminal]
- --- Test and measurement equipment
- --- Industrial control
- --- Audio visual equipment
- --- Consumer electronics

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- --- Traffic signals
- --- Gas leakage sensor breakers
- --- Alarm equipment
- --- Various safety devices, etc.

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- --- Space applications
- --- Telecommunication equipment [trunk lines]
- --- Nuclear power control equipment
- --- Medical and other life support equipment (e.g., scuba).

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