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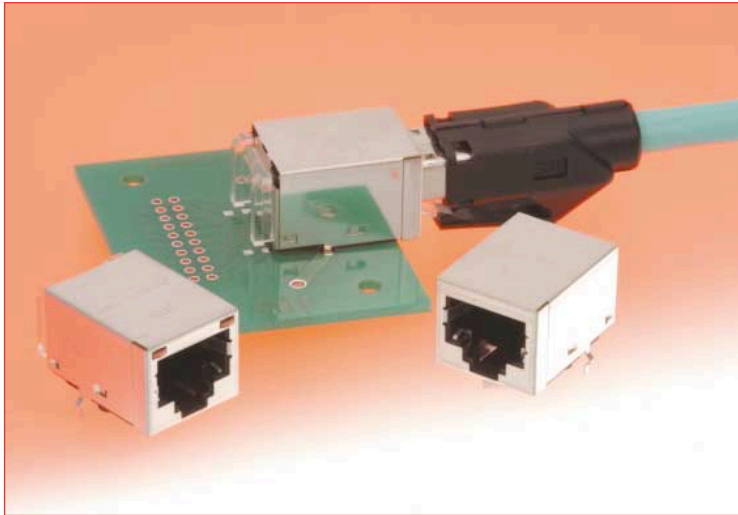
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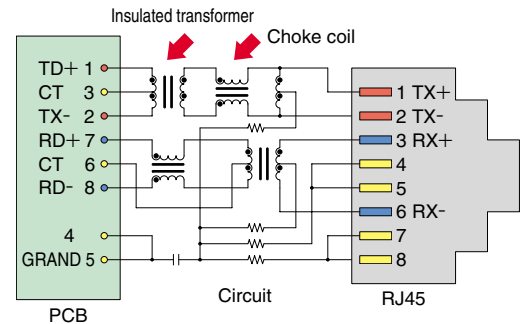


# RJ45 Modular Jack Connectors with Pulse Transformers

## TM11RD - 5TANA Series



Pulse Transformer Circuit Diagram



### ■ Features

#### 1. Pulse Transformers Support FastEthernet

Equipped with built-in insulation transformers and common mode choke coils, withstanding voltage of 1.5 kV and supporting 100Base-Tx and 10Base-T.

#### 2. Incorrect Plug Insertion Prevention Key

A built-in key offers protection against insertion of 6-conductor type modular plug.

#### 3. Built-in optical indicators

Optical indicators are integral part of the connectors, saving space on the board. There is no emission of any electrical noise.

#### 4. EMI protection

Metal shield covers the outer surfaces of the connectors assuring complete protection against electromagnetic interference.

#### 5. FCC standards

Meets requirements of FCC Title 47, Part 68, Subpart F.

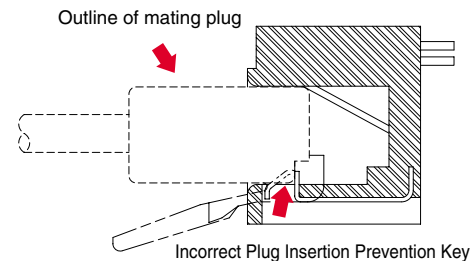
#### 6. Environmental considerations

Plating compounds are lead-free.

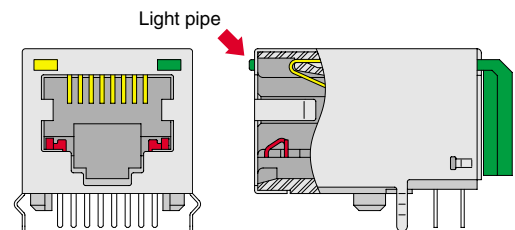
### ■ Applications

Notebook PC's, telecommunication hubs, routers, bridges and ATM transmission equipment, Ethernet switches and networking equipment, office equipment, test and measurement equipment.

RJ11 (6 position) plug insertion prevention



Built-in optical indicators



\* Light colors are determined by the color of LED's used.

## Product Specifications

Ratings	Voltage rating 125V AC	Operating temperature range: -25°C to +80°C (Note)
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	Item	Specification	Conditions
Connector	1.Insertion resistance	-2dB min.	1 to 65MHz
	2.Insulation resistance	100M ohms min.	100V DC
	3.Withstanding voltage	No flashover or insulation breakdown.	Basic terminal between 123-45-768 500V AC / one minute Primary (RJ45 side) to secondary (PCB side) 1500V AC / one minute Terminal to shield 1500V AC / one minute
Pulse transformer	4.Insertion resistance	-1dB min.	1 to 65MHz
	5.Return loss	-20 dB max.	1 to 10 MHz
		-16 dB max.	10 to 30 MHz
		-12 dB max.	30 to 60 MHz
		-10 dB max.	60 to 80 MHz
6.Inductance	350μH min.	0.1V, 100KHz, 8mADC	
7.Cross talk (Reference)	-40 dB max.	1 to 30 MHz	
	-35 dB max.	30 to 60 MHz	
	-30 dB max.	60 to 100 MHz	
8.Common mode rejection ratio (Reference)	-30 dB max.	1 to 50 MHz	
	-20 dB max.	50 to 150 MHz	

Note: Includes temperature rise caused by current flow.

## Materials

Component	Material	Finish/Color	Remarks
Insulator	PBT	Black	UL94V-0
Contacts	Copper alloy	Contact area : Gold plated Termination area: Tin plated	
Shield	Copper alloy	Tin plated	
Incorrect insertion prevention key	Stainless		
Pulse transformer	—	—	
Optical pipe	Polycarbonate	Clear	UL94V-0

## Ordering information

**TM11 R D - 5 T A NA - A - 8 8 - LP**

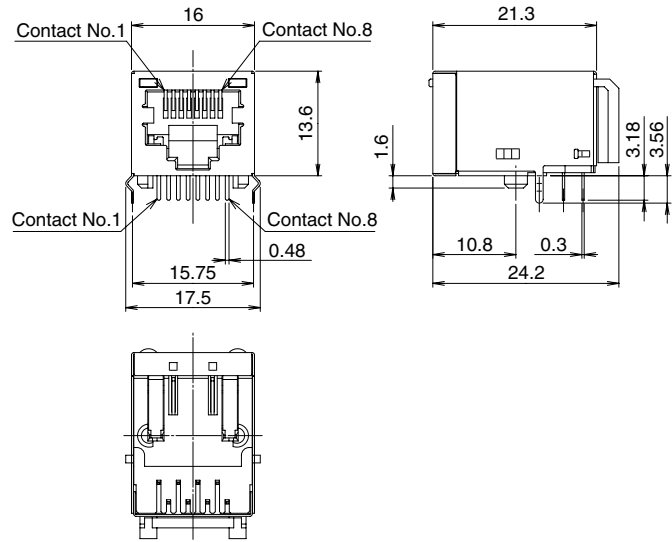
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

① Series name	: TM11
② Connector type	R: Jack
③ Direction of locking lever (mating plug)	D: Down
④ Jack suffix number	: 5
⑤ Transformer	T: With transformer
⑥ Transformer type	A: Transformer circuit type
⑦ Incorrect insertion prevention key	NA-A: With built-in key
⑧ Jack opening code	8: 8 contacts
⑨ Number of inserted contacts	8: 8 contacts
⑩ Optical pipe	LP: With optical pipe inserted Blank: Without optical pipe

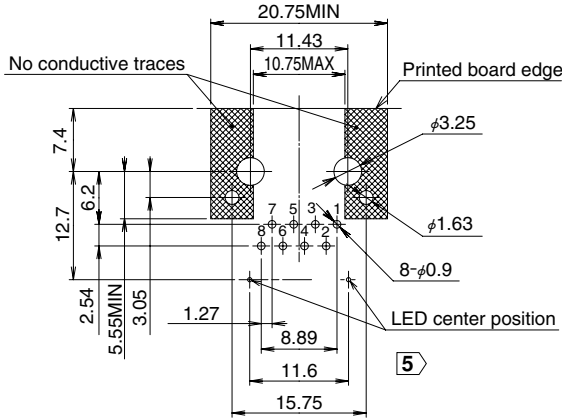
## ■ Modular Jack Connectors (With built-in optical pipe)



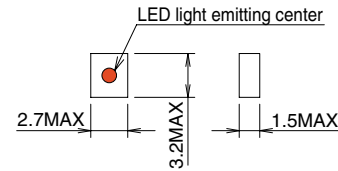
Part Number	CL No.	RoHS
TM11RD-5TANA-A-88-LP	CL222-2936-3	YES



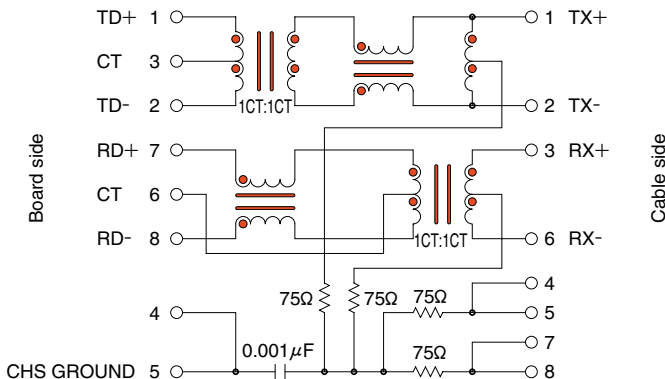
### ◆ Recommended PCB mounting pattern



### 4 Suggested dimensions of LEDs



### ◆ Pulse Transformer Circuit Diagram

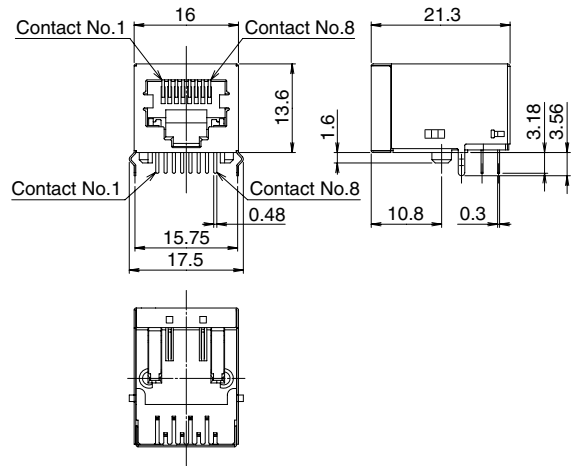
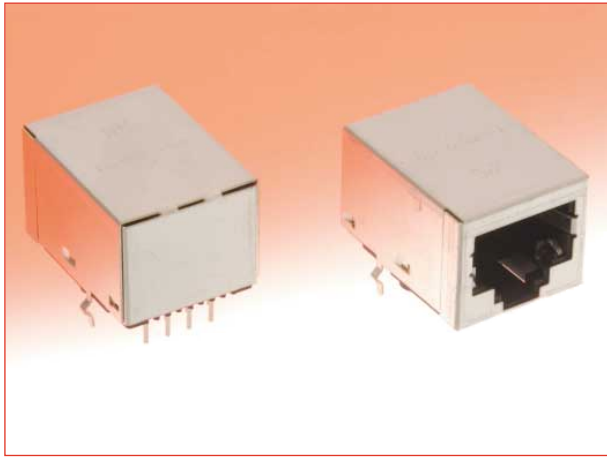


### ● Precautions

- Hirose Electric did not check the compatibility with the PHY chip. When replacing other manufacturers jack it is recommended to verify the compatibility with the actual equipment.
- This connector is mounted on the board using wave or manual soldering. Do not use reflow soldering.
- Recommended board thickness: 1.6mm
- To assure correct operation of the indicator light pipes LED's must be installed directly on the PCB, within recommended dimensions and with light emitting center in upward direction.
- Mount the LED so that the center of the light emitting center aligns with the center point as dimensioned on the Recommended PCB mounting pattern above.
- Verify the actual LED's mounting pattern with it's manufacturer, then add it to the PCB mounting pattern, assuring the correct placement of the center point.
- IPA cleaning at room temperature is recommended for the cleaning of this product.

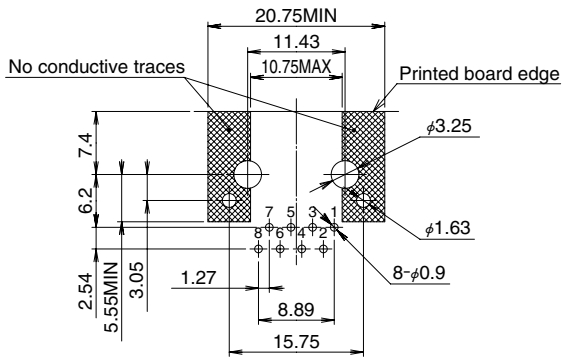
When an aqueous cleaning agent is to be used, there is a concern that the light pipe (made of polycarbonate resin) may change color; therefore, please make a selection based on a table showing the effects on the resin. These tables are issued by the various manufacturers of cleaning agents.

## ■ Modular Jack Connectors (Without built-in optical pipe)

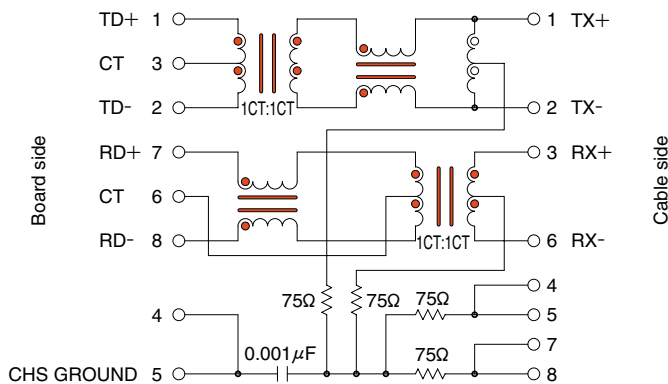


Part Number	CL No.	RoHS
TM11RD-5TANA-A-88	CL222-2932-2	YES

### ◆ Recommended PCB mounting pattern



### ◆ Pulse Transformer Circuit Diagram



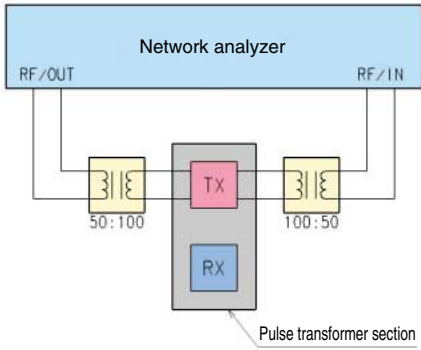
### ● Precautions

- Hirose Electric did not check the compatibility with the PHY chip. When replacing other manufacturers jacks it is recommended to verify the compatibility with the actual equipment.
- This connector is mounted on the board using wave or manual soldering. Do not use reflow soldering.
- Recommended board thickness: 1.6mm
- IPA cleaning at room temperature is recommended for the cleaning of this product. When an aqueous cleaning agent is to be used, there is a concern that the light pipe (made of polycarbonate resin) may change color; therefore, please make a selection based on a table showing the effects on the resin. These tables are issued by the various manufacturers of cleaning agents.

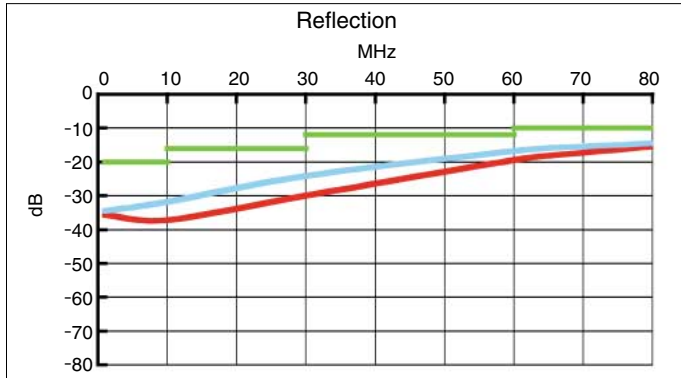
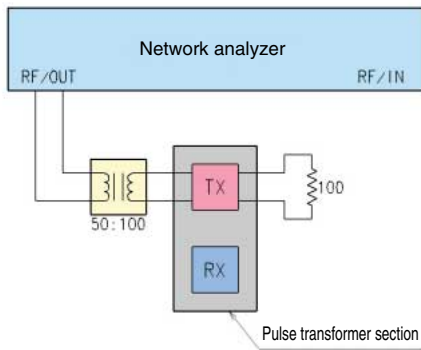
## ■ Technical Data

Measurement results of electrical characteristics

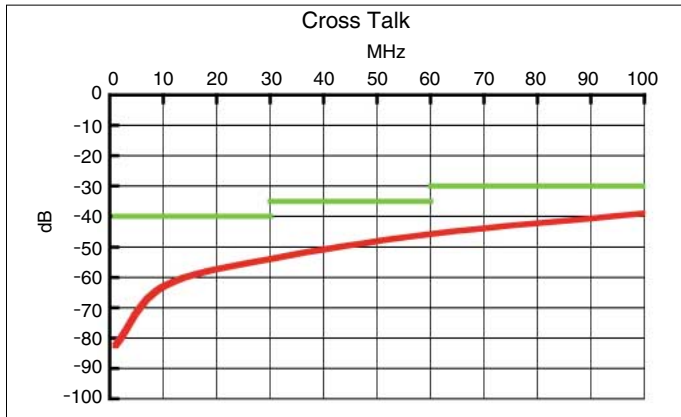
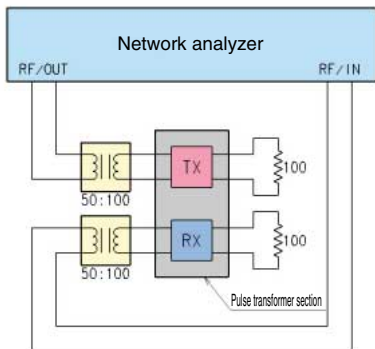
### ● Insertion Loss



### ● Reflection Loss



### ● Crosstalk (Reference)



### ● Common Mode Rejection Ratio (Reference Value)

