

**RJ45G1 R12D 3.3E4G/Y TY****Weidmüller Interface GmbH & Co. KG**

Klingenbergstraße 26

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Germany

www.weidmueller.com



RJ45 transmitter sockets (magnetics) for gigabit applications (1000 base-T) with integrated compensation actively counteracts inductive and capacitive couplings and saves space on the PCB.

The product range encompasses the following designs:

- 90°, lying (horizontal) and 180°, standing (vertical)
- latch up / latch down
- THT, THR or SMD soldering processes
- Wide range of different design types, also with integrated LEDs and shield contact tabs
- Transmission rates of up to 1 Gbps
- Packed either in a tray (TY) or on a roll (tape-on-reel, RL)
- Compatible with modular RJ45 connector according to ANSI / TIA-1096-A and IEC 60603
- Dielectric strength  $\geq 1500$  V AC RMS (2250 V AC peak value) according to IEEE 802.3
- Dielectric strength  $\geq 1500$  V AC (peak value) or  $\geq 1500$  V DC according to IEC 60603
- Compliance with IEEE 802.3 requirements (1000Base-T, 1 Gbps, IEEE 802.3ab or 100Base-Tx, 100 Mbps, IEEE 802.3u)

Properties and advantages:

- Extended temperature range of  $-40$  °C to  $+85$  °C for maximum performance
- Reinforced gold layer ( $30\mu$ ) for improved corrosion protection

- At least 0.3mm stand-off ensures a perfect soldering result

**General ordering data**

|            |  |
|------------|--|
| Version    | PCB plug-in connector, RJ45 jacks transformer, 1000 Mbps, THT/THR solder connection, 90°, Latch option: bottom, Shield tabs: 6 tabs, 30...80 $\mu$ Ni / $\geq 30$ $\mu$ Au, LED: Yes, green, yellow, Number of poles: 10, Tray (manual assembly) |
| Order No.  | <a href="#">2544500000</a>   |
| Type       | RJ45G1 R12D 3.3E4G/Y TY  |
| GTIN (EAN) | 4050118554267  |
| Qty.       | 80 pc(s).  |
| Packaging  | Tray (manual assembly)   |

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## Technical data

## Dimensions and weights

|                          |            |                 |            |
|--------------------------|------------|-----------------|------------|
| Depth                    | 21.5 mm    | Depth (inches)  | 0.846 inch |
| Height                   | 16.9 mm    | Height (inches) | 0.665 inch |
| Height of lowest version | 13.6 mm    | Width           | 31.2 mm    |
| Width (inches)           | 1.228 inch | Net weight      | 7 g        |

## System specifications

|                                  |                   |                                |  |
|----------------------------------|-------------------|--------------------------------|--|
| Colour of left LED               | green             | Colour of right LED            | yellow   |
| Forward current                  | 20 mA             | Forward voltage, max.          | 2.6 V  |
| Forward voltage, min.            | 1.8 V             | LED                            | Yes  |
| Latch option                     | bottom            | Mounting onto the PCB          | THT/THR solder connection                          |
| Number of poles                  | 10                | Number of solder pins per pole | 1  |
| Outgoing elbow                   | 90°               | Performance-Category           | 1000 Mbps  |
| Pitch in inches (P)              | 0.05 "            | Pitch in mm (P)                | 1.27 mm  |
| Plugging cycles                  | 750               | Product family                 | OMNIMATE Data - RJ45 transformer jack              |
| Protection degree                | IP20              | Shield surface                 | nickel-plated                                      |
| Shield tabs                      | 6 tabs            | Shielding                      | Yes  |
| Shielding material               | Brass             | Solder pin dimensions          | Octagonal  |
| Solder pin length (l)            | 3.3 mm            | Soldering process              | Reflow soldering, Manual soldering, Wave soldering |
| Tolerance of solder pin position | ± 0.15 mm         | Transmission rate              | 1000 Mbps  |
| Type of connection               | Solder connection |                                |  |

## Electrical properties

|  |           |                                       |           |
|--|-----------|---------------------------------------|-----------|
| Dielectric strength, contact / contact | 1000 V DC | Dielectric strength, contact / shield | 1500 V DC |
| Rated current                          | 0.80 A    | Rated voltage                         | 125 V     |

## Material data

|                                  |                            |                             |                   |
|----------------------------------|----------------------------|-----------------------------|-------------------|
| Insulating material              | PA 9T                      | Colour                      | black             |
| Colour chart (similar)           | RAL 9011                   | Insulating material group   | II                |
| Comparative Tracking Index (CTI) | ≥ 500                      | Moisture Level (MSL)        | 1                 |
| UL 94 flammability rating        | V-0                        | Contact base material       | Phosphorus bronze |
| Contact material                 | Cu-alloy                   | Contact surface             | Gold over nickel  |
| Layer structure of plug contact  | 30...80 µ" Ni / ≥ 30 µ" Au | Storage temperature, min.   | -40 °C            |
| Storage temperature, max.        | 85 °C                      | Operating temperature, min. | -40 °C            |
| Operating temperature, max.      | 85 °C                      |                             |                   |

## Packing

|           |                        |            |        |
|-----------|------------------------|------------|--------|
| Packaging | Tray (manual assembly) | VPE length | 319 mm |
| VPE width | 192 mm                 | VPE height | 69 mm  |

## Classifications

|             |             |             |             |
|-------------|-------------|-------------|-------------|
| ETIM 6.0    | EC002637    | ETIM 7.0    | EC002637    |
| ETIM 8.0    | EC002637    | ETIM 9.0    | EC002637    |
| ECLASS 9.0  | 27-44-04-02 | ECLASS 9.1  | 27-44-04-02 |
| ECLASS 10.0 | 27-44-04-02 | ECLASS 11.0 | 27-46-02-01 |
| ECLASS 12.0 | 27-46-02-01 | ECLASS 13.0 | 27-46-02-01 |

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Approvals



ROHS Conform

UL File Number Search UL Website

Certificate No. (cURus) E471884

**Downloads**Approval/Certificate/Document of Con-  
formity[Certificate of Compliance](#)

Engineering Data

[CAD data – STEP](#)

Product Change Notification

[PCN](#)[PCN](#)

Catalogues

[Catalogues in PDF-format](#)

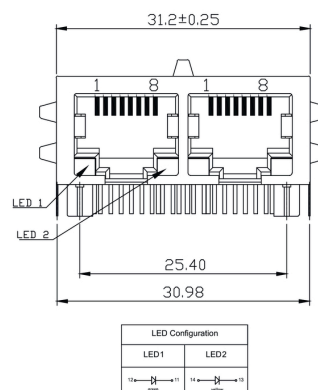
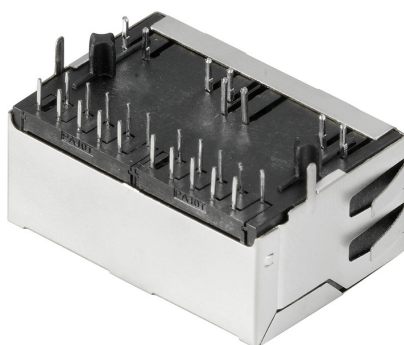
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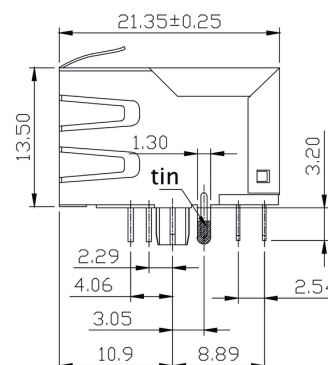
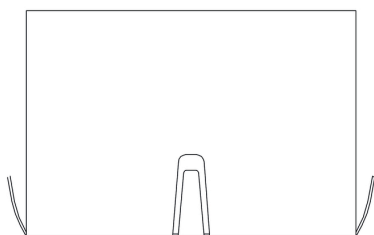
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## Drawings

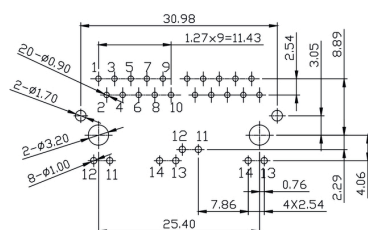
## Dimensioned drawing



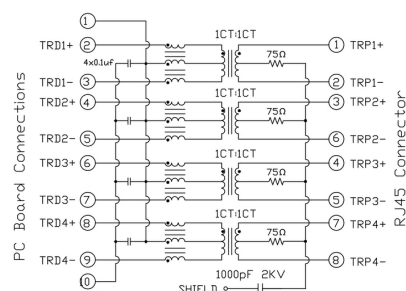
## Dimensioned drawing



## PCB design



## Wiring diagram



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**Drawings**

|      |    |   |   |   |     |   |   |       |    |  |
|------|----|---|---|---|-----|---|---|-------|----|--|
| RJ45 | G1 | R | 1 | U | 3.2 | E | 4 | GY/GY | TY | RJ45G1 R1U 3.2E4GY/GY TY                       |
|      |    |   |   |   |     |   |   |       |    |  |
|      |    |   |   |   |     |   |   |       |    | <b>Packaging</b>                               |
|      |    |   |   |   |     |   |   |       |    | <b>TY</b>                                      |
|      |    |   |   |   |     |   |   |       |    | Tray in box (manual assembly)                  |
|      |    |   |   |   |     |   |   |       |    | Tape on <b>Reel</b> (automated assembly)       |
|      |    |   |   |   |     |   |   |       |    | <b>LED</b>                                     |
|      |    |   |   |   |     |   |   |       |    | <b>Y/G</b>                                     |
|      |    |   |   |   |     |   |   |       |    | Yellow/Green                                   |
|      |    |   |   |   |     |   |   |       |    | <b>G/Y</b>                                     |
|      |    |   |   |   |     |   |   |       |    | Green/Yellow (standard)                        |
|      |    |   |   |   |     |   |   |       |    | <b>GY/GY</b>                                   |
|      |    |   |   |   |     |   |   |       |    | Green-Yellow/Green-Yellow                      |
|      |    |   |   |   |     |   |   |       |    | <b>O/G</b>                                     |
|      |    |   |   |   |     |   |   |       |    | Orange/Green                                   |
|      |    |   |   |   |     |   |   |       |    | <b>R/O</b>                                     |
|      |    |   |   |   |     |   |   |       |    | Red/Orange                                     |
|      |    |   |   |   |     |   |   |       |    | ... (further combinations possible)            |
|      |    |   |   |   |     |   |   |       |    | <b>N</b>                                       |
|      |    |   |   |   |     |   |   |       |    | without LED                                    |
|      |    |   |   |   |     |   |   |       |    | <b>Contact surface thickness</b>               |
|      |    |   |   |   |     |   |   |       |    | <b>4</b>                                       |
|      |    |   |   |   |     |   |   |       |    | 1 = 3µ", 2 = 6µ", 3 = 15µ", 4 = 30µ", 5 = 50µ" |
|      |    |   |   |   |     |   |   |       |    | <b>EMI tabs (ground fingers)</b>               |
|      |    |   |   |   |     |   |   |       |    | <b>E</b>                                       |
|      |    |   |   |   |     |   |   |       |    | E = with EMI tabs                              |
|      |    |   |   |   |     |   |   |       |    | <b>N</b>                                       |
|      |    |   |   |   |     |   |   |       |    | N = without EMI tabs                           |
|      |    |   |   |   |     |   |   |       |    | <b>Solder Pin length</b>                       |
|      |    |   |   |   |     |   |   |       |    | <b>3.2</b>                                     |
|      |    |   |   |   |     |   |   |       |    | 3.2 mm   |
|      |    |   |   |   |     |   |   |       |    | <b>1.6</b>                                     |
|      |    |   |   |   |     |   |   |       |    | 1.6 mm   |
|      |    |   |   |   |     |   |   |       |    | <b>D</b>                                       |
|      |    |   |   |   |     |   |   |       |    | SMD  |
|      |    |   |   |   |     |   |   |       |    | <b>Direction, latch style</b>                  |
|      |    |   |   |   |     |   |   |       |    | <b>U</b>                                       |
|      |    |   |   |   |     |   |   |       |    | Horizontal (90°, side entry), latch up         |
|      |    |   |   |   |     |   |   |       |    | <b>D</b>                                       |
|      |    |   |   |   |     |   |   |       |    | Horizontal (90°, side entry), latch down       |
|      |    |   |   |   |     |   |   |       |    | <b>V</b>                                       |
|      |    |   |   |   |     |   |   |       |    | Vertical (180°, top entry)                     |
|      |    |   |   |   |     |   |   |       |    | <b>Y</b>                                       |
|      |    |   |   |   |     |   |   |       |    | Diagonal (45°), latch up                       |
|      |    |   |   |   |     |   |   |       |    | <b>Number of Ports</b>                         |
|      |    |   |   |   |     |   |   |       |    | <b>1</b>                                       |
|      |    |   |   |   |     |   |   |       |    | 1 Port   |
|      |    |   |   |   |     |   |   |       |    | <b>12; 14; ...</b>                             |
|      |    |   |   |   |     |   |   |       |    | multi ports side by side, Multiport            |
|      |    |   |   |   |     |   |   |       |    | <b>21; 41; ...</b>                             |
|      |    |   |   |   |     |   |   |       |    | multi ports about each other, Multilevel       |
|      |    |   |   |   |     |   |   |       |    | <b>Assembly on PCB</b>                         |
|      |    |   |   |   |     |   |   |       |    | <b>R</b>                                       |
|      |    |   |   |   |     |   |   |       |    | Through Hole Reflow - THR                      |
|      |    |   |   |   |     |   |   |       |    | Soldering process: Wave or Reflow soldering    |
|      |    |   |   |   |     |   |   |       |    | <b>S</b>                                       |
|      |    |   |   |   |     |   |   |       |    | Surface Mount Technology - SMT                 |
|      |    |   |   |   |     |   |   |       |    | Soldering process: Reflow soldering            |
|      |    |   |   |   |     |   |   |       |    | <b>T</b>                                       |
|      |    |   |   |   |     |   |   |       |    | Through Hole Technology - THT                  |
|      |    |   |   |   |     |   |   |       |    | Soldering process: Wave                        |
|      |    |   |   |   |     |   |   |       |    | <b>Performance Category</b>                    |
|      |    |   |   |   |     |   |   |       |    | <b>C5</b>                                      |
|      |    |   |   |   |     |   |   |       |    | Category 5                                     |
|      |    |   |   |   |     |   |   |       |    | <b>C6</b>                                      |
|      |    |   |   |   |     |   |   |       |    | Category 6                                     |
|      |    |   |   |   |     |   |   |       |    | <b>C6A</b>                                     |
|      |    |   |   |   |     |   |   |       |    | Category 6A                                    |
|      |    |   |   |   |     |   |   |       |    | <b>C5e</b>                                     |
|      |    |   |   |   |     |   |   |       |    | Category 5e                                    |
|      |    |   |   |   |     |   |   |       |    | <b>M</b>                                       |
|      |    |   |   |   |     |   |   |       |    | 10/100 Mbit                                    |
|      |    |   |   |   |     |   |   |       |    | <b>G1</b>                                      |
|      |    |   |   |   |     |   |   |       |    | 10/100/1000 Mbit                               |
|      |    |   |   |   |     |   |   |       |    | <b>G10</b>                                     |
|      |    |   |   |   |     |   |   |       |    | 10 Gbit  |
|      |    |   |   |   |     |   |   |       |    | <b>U</b>                                       |
|      |    |   |   |   |     |   |   |       |    | Unshielded                                     |
|      |    |   |   |   |     |   |   |       |    | <b>MP</b>                                      |
|      |    |   |   |   |     |   |   |       |    | 10/100 Mbit with POE                           |
|      |    |   |   |   |     |   |   |       |    | <b>MP+</b>                                     |
|      |    |   |   |   |     |   |   |       |    | 10/100 Mbit with POE+                          |

## Type codes

Creation date May 1, 2024 5:10:48 PM CEST

Catalogue status 20.04.2024 / We reserve the right to make technical changes.

## Recommended wave soldering profiles

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### Single Wave:



### Double Wave:



### Wave soldering profiles

Wired connection elements should be processed in accordance with the DIN EN 61760-1 standard. We have included two recommendations for practical wave soldering profiles, with which Weidmüller PCB terminals and connectors are qualified.

When choosing a suitable profile for your application, the following factors also need to be considered:

- PCB thickness
- Proportion of Cu in the layers
- Single/double-sided assembly
- Product range
- Heating and cooling rates

The single and double wave profiles each indicate the recommended operating range, including the maximum soldering temperature of 260°C. In practice, the maximum soldering temperature is quite often well below the above maximum profile.

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## Recommended reflow soldering profile

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## Reflow soldering profile

The perfect soldering profile for SMT Surface Mount Technology is one the most exiting question in SMT production. But there are more than one correct answer: The diagram of temperature-on-time is related to processing features of solder paste and to maximum load of components.

We have to consider the following parameters:

- Time for pre heating
- Maximum temperature
- Time above melting point
- Time for cooling
- Maximum heating rate
- Maximum cooling rate

We recommend a typical solder profile with associated process limits. With preheating components and board are prepared smoothly for the solder phase. Heating rate is typically  $\leq +3\text{K/s}$ . In parallel the solder paste is 'activated'. The time above melting point of 217°C the paste gets liquid and components and boards begin to connect. The maximum temperature of 245°C to 254°C should stay between 10 and 40 seconds. In the cooling phase at  $\geq -6\text{K/s}$  solder is cured. Board and components cool down while avoiding cold cracks.