

# RJ-45 WITH INTEGRATED 10/100 BASE Tx LAN MAGNETICS

RJmag™

## FEATURES

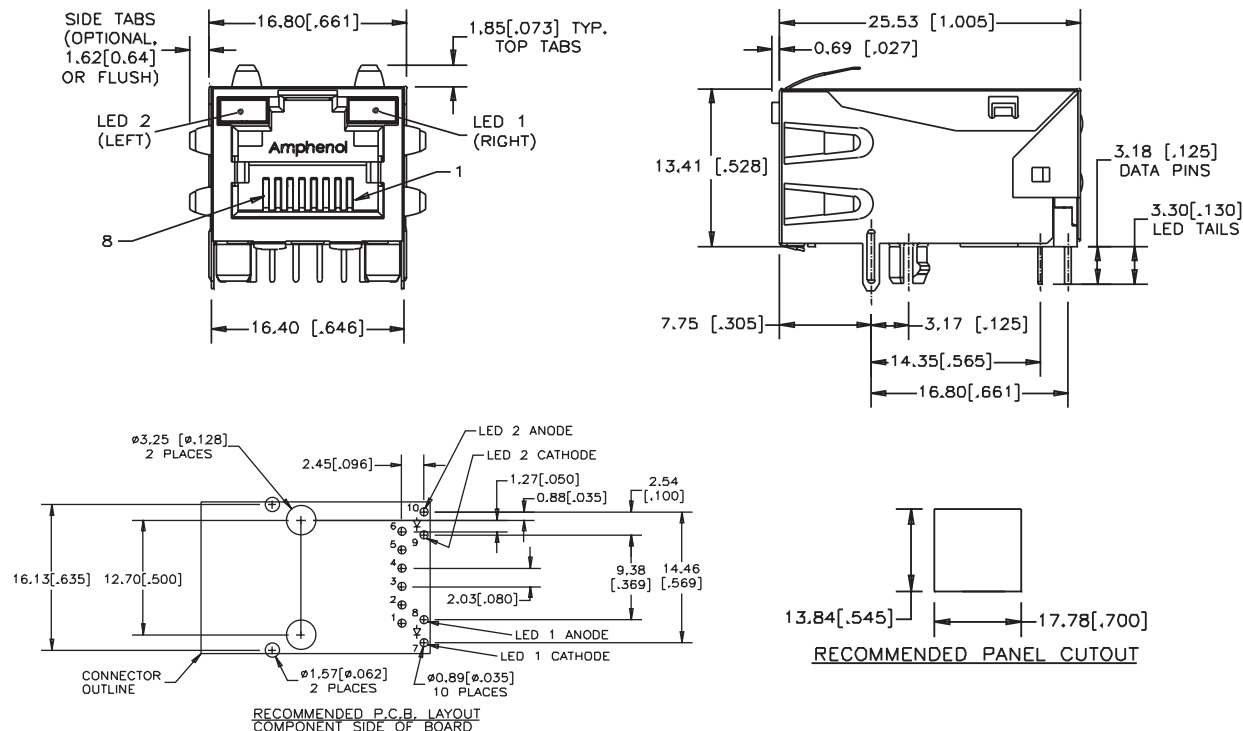
The RJmag is a family of modular jacks with integrated Ethernet Magnetics. The RJmag is available with integrated common mode chokes, isolation transformers, termination circuitry and two LED's per port.

- Reduces the required board space, component count, and manufacturing cost per port
- Eliminates the need for a separate Magnetics package between the RJ-45 and Transceiver
- Simplifies board layout
- Available in 1, 4, and 8 port configuration
- Complies with IEEE 802.3



## MECHANICAL

### RJMG-63xx-xx-01



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### PINOUT

| PIN | SYMBOL |
|-----|--------|
| 1   | Tct    |
| 2   | Tx+    |
| 3   | Tx-    |
| 4   | Rx+    |
| 5   | Rx-    |
| 6   | Rct    |
| 7   | LED1-  |
| 8   | LED1+  |
| 9   | LED2-  |
| 10  | LED2+  |

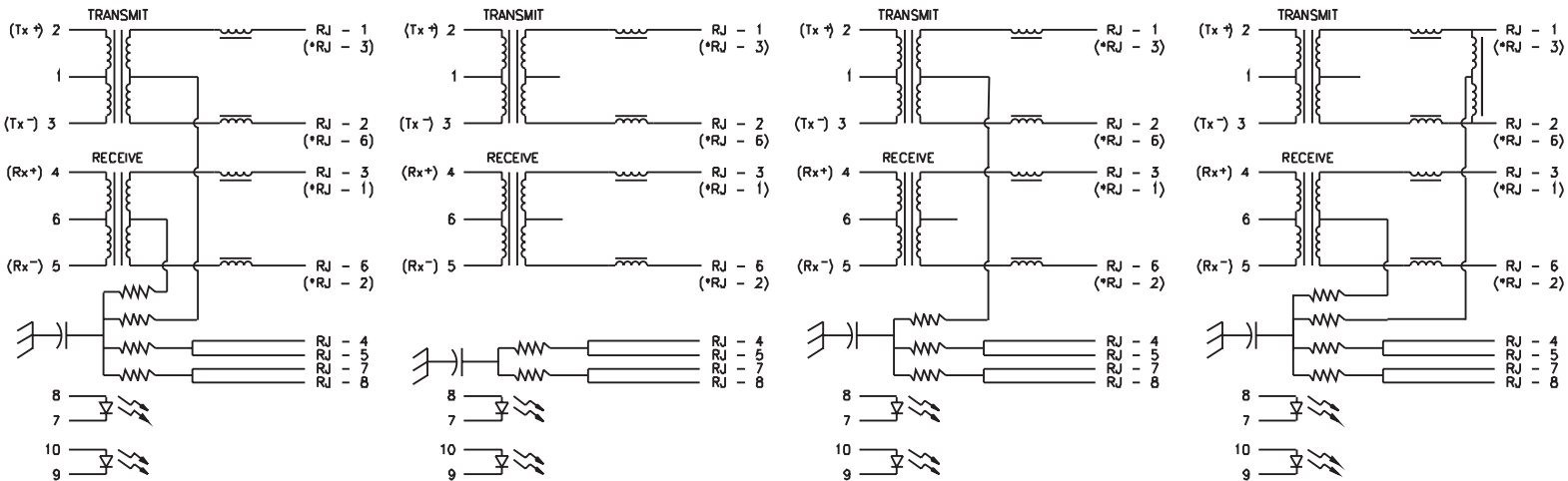
## MATERIAL SPECIFICATIONS

- Plastic housing:** thermoplastic polyester  
flammability rating UL 94V-0
- Contacts:** Phosphor bronze
- Plating:** 50 microinches [1.27 microns] min.  
nickel overall  
50 microinches [1.27 microns] min.  
gold on mating surfaces  
100 microinches [2.54 microns] min.  
tin/lead on contact tails
- Shield:** Copper alloy tin-lead plated

# ELECTRICAL PERFORMANCE

|   | Insertion Loss db MAX |           | Return Loss db MAX |          |           |            | Common to differential mode rejection dB min | Common to common mode rejection dB min | OCL H 100 KHz 8mA DC Bias | Crosstalk dB MAX |              | Hipot Vrms min |
|---|-----------------------|-----------|--------------------|----------|-----------|------------|--|--|---------------------------|------------------|--------------|----------------|
|   | 1-10 MHz              | 1-100 MHz | 1-10 MHz           | 1-30 MHz | 30-60 MHz | 60-100 MHz | 0-100 MHz                                    | 0-100 MHz                              |                           | Pair to pair     | LED to Tx/Rx |                |
|   |                       |           |                    |          |           |            |  |  |                           | 0-100 MHz        |              |                |
| 10/100 Base T Electrical Characteristic | -                     | 1.0       | -                  | -18      | -16       | -10        | 35   | 38                                     | 400                       | -35              | -50          | 1500           |
| 10 Base T Electrical Characteristic     | 1.0                   | -         | -16                | -        | -         | -          | 35   | 38                                     | -                         | -35              | -50          | 1500           |

# SCHEMATIC



SCHEMATIC (RJMG-6XXX-3X-01)

SCHEMATIC (RJMG-6XXX-4X-01, RJMG-6XXX-5X-01)

SCHEMATIC (RJMG-6XXX-6X-01)

SCHEMATIC (RJMG-6XXX-7X-01)

# PART NUMBERING SYSTEM

RJMG - 6 3 1 2 - 7 1 - 0 1

- LED 1 (Right Side):**
- 0 - LED hole blocked
  - 1 - Green
  - 2 - Yellow
  - 3 - Red
  - 4 - Bi-color Green/Yellow
  - 5 - Bi-color Red/Green
  - 6 - Bi-color Green/Orange
  - 6 - Bi-color Red/Yellow

**LED 2 (Left Side):**  
See LED 1 options

**Number of Ports**

- 01 - 1 Port
- 04 - 4 Port
- 08 - 8 Port

**Turns Ratio (Transmit)**

- 1 - 1:1
- 2 - 1.25:1
- 3 -  $\sqrt{2}$ :1
- 4 - 2:1
- 5 -  $1:\sqrt{2}$  (10 Base T only)
- 6 - 1:2 (10 Base T only)

**Termination Option:**

- 3 - 4 x 75 ohm resistors, 68 pF cap
  - 4 - 2 x 0 ohm resistors, 68 pF cap
  - 5 - 2 x 75 ohm resistors, 68 pF cap
  - 6 - 3 x 75 ohm resistors, 1000 pF cap
  - 7 - 4 x 75 ohm resistors, 1000 pF cap (with transmit shunt choke)
  - 8 - 4 x 75 ohm resistors, 1000 pF cap
- (Other terminations are available upon request.)

**Amphenol**<sup>®</sup>

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# RJmag OVER STACKED USB

RJ-45 WITH INTEGRATED 10/100 BASE TX LAN MAGNETICS OVER A STACKED TYPE A USB

RJmag™

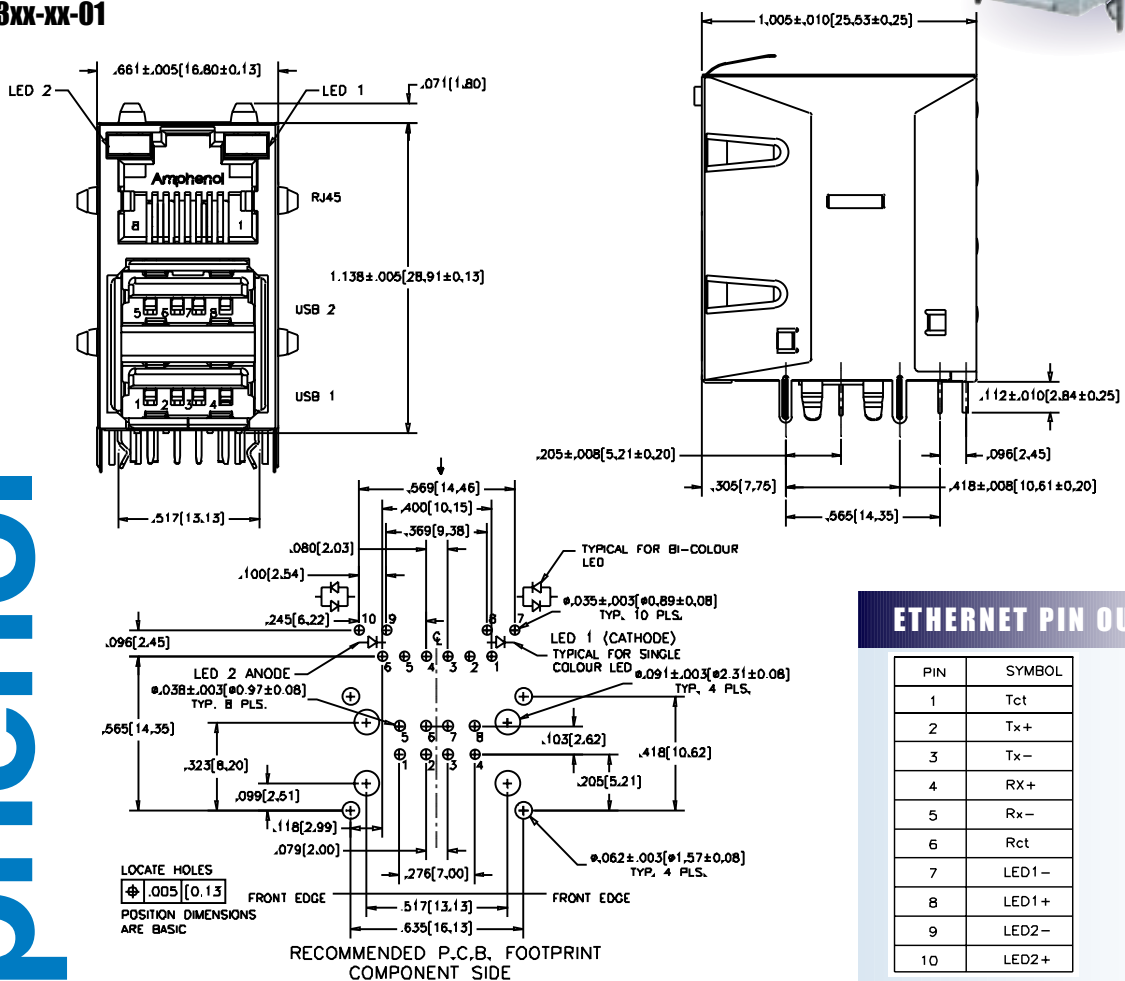
## FEATURES

The RJmag is a family of modular jacks with integrated Ethernet Magnetics. The RJmag is available with integrated common mode chokes, isolation transformers, termination circuitry and two LED's per port. The RJmag over USB was designed to save board and panel space on PC motherboard applications.

- Reduces the required board space, component count, and manufacturing cost per port
- Eliminates the need for a separate Magnetics package between the RJ-45 and Transceiver
- Simplifies board layout
- Complies with IEEE 802.3

## MECHANICAL

### RJMG-73xx-xx-01



## MATERIAL SPECIFICATIONS

- Plastic housing:** thermoplastic polyester flammability rating UL 94V-0
- Contacts:** Phosphor bronze
- Plating:** 50 microinches [1.27 microns] min. nickel overall  
 50 microinches [1.27 microns] min. gold on RJ mating surfaces  
 100 microinches [2.54 microns] min. tin/lead on contact tails
- Shield:** Copper alloy tin-lead plated

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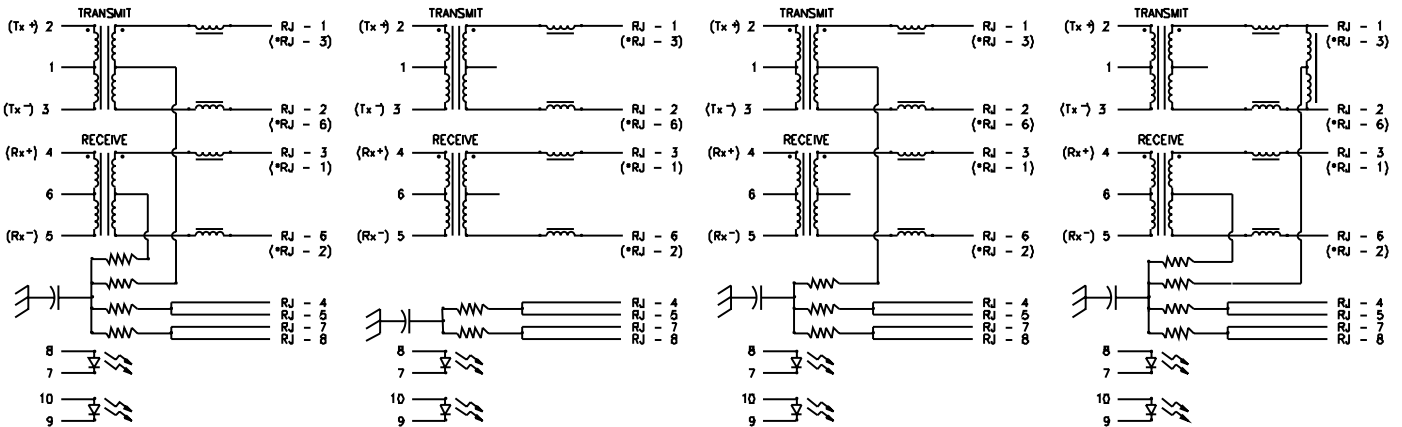
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## ELECTRICAL PERFORMANCE

|   | Insertion Loss db MAX |           | Return Loss db MAX |          |           |            | Common to differential mode rejection dB min | Common to common mode rejection dB min | OCI $\mu$ H<br>100 KHz<br>8mA DC<br>Bias | Crosstalk dB MAX |     | Hipot Vrms min |
|---|-----------------------|-----------|--------------------|----------|-----------|------------|--|--|--|------------------|-----|----------------|
|   | 1-10 MHz              | 1-100 MHz | 1-10 MHz           | 1-30 MHz | 30-60 MHz | 60-100 MHz | 0-100 MHz                                    | Pair to pair                           |  | LED to Tx/Rx     |     |                |
|   |                       |           |                    |          |           |            |  | 0-100 MHz                              |  |                  |     |                |
| 10/100 Base T Electrical Characteristic | -                     | 1.0       | -                  | -18      | -16       | -10        | 35   | 38                                     | 400                                      | -35              | -50 | 1500           |
| 10 Base T Electrical Characteristic     | 1.0                   | -         | -16                | -        | -         | -          | 35   | 38                                     | -  | -35              | -50 | 1500           |

## SCHEMATIC



SCHEMATIC (RJMG-73xx-3x-01)  
SCHEMATIC (RJMG-73xx-8x-01)

SCHEMATIC (RJMG-73xx-4x-01, RJMG-73xx-5x-01)

SCHEMATIC (RJMG-73xx-6x-01)

SCHEMATIC (RJMG-73xx-7x-01)

## PART NUMBERING SYSTEM

RJMG - 7 3 X X - X X - 0 1

### LED 1 (Right Side):

- 0 - LED hole blocked
- 1 - Green
- 2 - Yellow
- 3 - Red
- 4 - Green/Yellow
- 5 - Red/Green
- 6 - Green/Orange
- 7 - Red/Yellow

### LED 2 (Left Side):

See LED 1 options

### Number of Ports

- 01 - 1 Port

### Turns Ratio (Transmit)

- 1 - 1:1
- 2 - 1.25:1
- 3 -  $\sqrt{2}$ :1
- 4 - 2:1
- 5 -  $1:\sqrt{2}$  (10 Base T only)
- 6 - 1:2 (10 Base T only)

### Termination Option:

- 3 - 4 x 75 ohm resistors, 68 pF cap
- 4 - 2 x 0 ohm resistors, 68 pF cap
- 5 - 2 x 75 ohm resistors, 68 pF cap
- 6 - 3 x 75 ohm resistors, 68 pF cap
- 7 - 4 x 75 ohm resistors, 1000 pF cap (transmit shunt choke)
- 8 - 4 x 75 ohm resistors, 1000 pF cap

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# RJmag-Gigabit

RJ  
mag™  
GIGABIT

## RJ-45 WITH INTEGRATED 10/100/1000 BASE TX LAN MAGNETICS

### FEATURES

The RJmag is a family of modular jacks with integrated Ethernet Magnetics. The RJmag is available with integrated common mode chokes, isolation transformers, termination circuitry and two LED's per port.

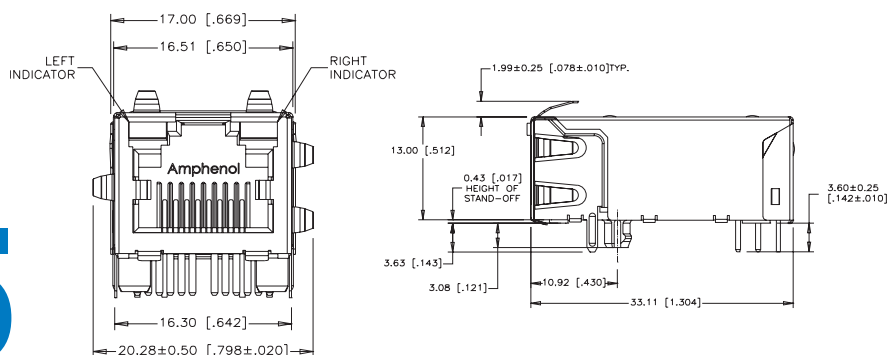
- Reduces the required board space, component count, and manufacturing cost per port
- Eliminates the need for a separate Magnetics package, terminations and LEDs between the RJ-45 and Transceiver
- Simplifies board layout
- Complies with IEEE 802.3
- Compatible with a variety of Gigabit Ethernet transceiver ICs and 10/100 Base TX transceiver ICs
- Storage temperature -40°C to +85°C



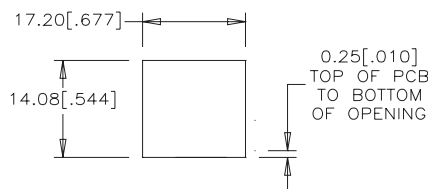
### MECHANICAL

#### RJMG-B3xx-x1-01

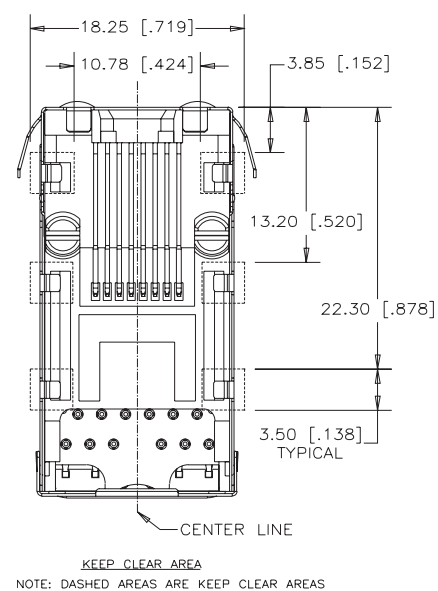
##### SHIELDED



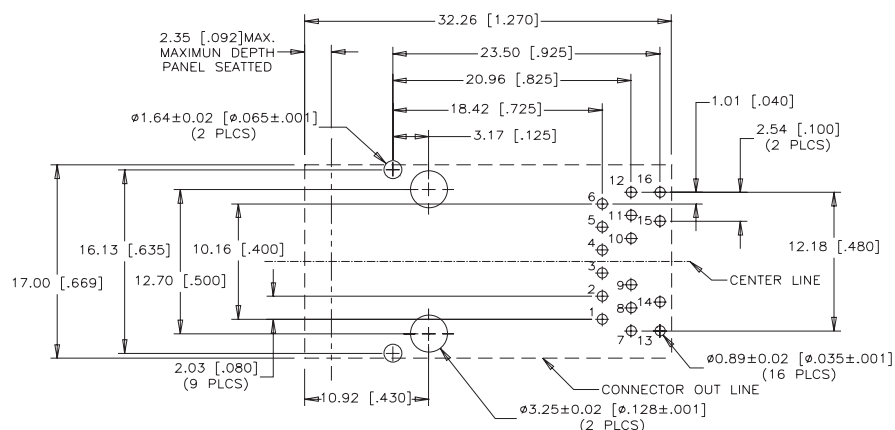
##### Recommended Panel Cutout



##### KEEPOUT AREA



##### RECOMMENDED P.C.B. LAYOUT WITH LEDs



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# ELECTRICAL PERFORMANCE

| Part Number                                   | Insertion Loss db max | Return Loss db max |                        | Common to Differential Mode Rejection dB min | Common to Common Mode Rejection dB min | Crosstalk TX/RX dB min | Crosstalk TX/RX to LED's dB max | Hipot Vrms min |
|---|-----------------------|--------------------|------------------------|--|--|------------------------|---------------------------------|----------------|
|   | 0.3 MHz-100 MHz       | 0.5 MHz to 40 MHz  | 40 MHz to 100 MHz      | 100 KHz to 100 MHz                           | 0.3 MHz to 100 MHz                     |                        |                                 |                |
| 10/100 /1000 Base T Electrical Characteristic | -1.0                  | -16                | 12 - 20 log (f/80 MHz) | -30  | -30                                    | 29 - 16.8 log (f/100)  | -45                             | 1500           |

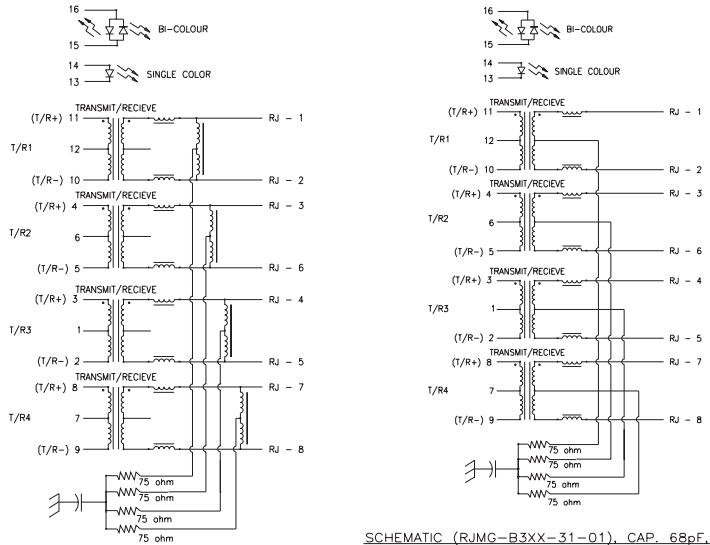
# MATERIAL SPECIFICATIONS

Plastic housing: Thermoplastic Polyester  
 Colour: Black  
 Flammability Rating: UL94V-0

Contacts (RJMag): Phosphor bronze  
 Plating: 50 Microinches [1.27 Microns] Gold over 50 Microinches [1.27 Microns] Min. nickel on mating surfaces  
 100 Microinches [2.54] tin/lead alloy on contact tails

Shield: Copper Alloy  
 Plating: tin-lead alloy

# SCHEMATICS



SCHEMATIC (RJMG-B3XX-71-01), CAP. 1000pf, 2Kv

SCHEMATIC (RJMG-B3XX-31-01), CAP. 68pF, 2Kv  
 SCHEMATIC (RJMG-B3XX-81-01), CAP. 1000pF, 2Kv

# PART NUMBERING SYSTEM

**RJMG - B 3 1 2 - 7 1 - 0 1**

Shield:  
3- Shielded

**LED 1 (Right Side):**

- 1 - Green
- 2 - Yellow
- 3 - Red
- 4 - Bi-color Green/Yellow
- 5 - Bi-color Red/Green
- 6 - Bi-color Green/Orange
- 7 - Bi-color Red/Yellow

**LED 2 (Left Side):**

See LED 1 options

Number of Ports:  
01 - 1 Port

Turns Ratio (Transmit):  
1 - 1:1

**Termination Option:**

- 3 - 4 x 75 ohm resistors, 68 pF cap (2Kv)
- 7 - 4 x 75 ohm resistors, 1000 pF cap (2Kv) (transmission shunt choke)
- 8 - 4 x 75 ohm resistors, 1000 pF cap (2Kv)



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