

## IN-LINE DATA BUS COUPLERS

Data Bus Coupler is the electronic module where the connection(s) between the Stub(s)/ Node(s) and the Data Bus are made. It consists of Bus In, Bus out connections and at least one stub connection. The stub connection is made using a coupling transformer and two fault isolation resistors on the Data Bus end.

The Couplers with cables attached are known as In-line Data bus Couplers.

The purpose of the Data Bus Couplers is to prevent a short on a single stub from shorting the main Data Bus i.e. to isolate the main Bus from the terminals, to reduce reflections and maintain signal impedance levels.

Compupower provides In-line Data Bus Couplers with Single and Dual Stubs. These Couplers are available with and without internal terminations and are for use in applications where mounting can be accomplished by wiring the Coupler into the harness.

Data Bus Couplers can be supplied with a variety of connectors and cables (10614-9 or MIL-C-17/176-00002) or without connectors for splicing or integrating into harnesses.

Couplers can be ordered with custom cable lengths and a variety of connectors for direct installation on any system. Using In-line Couplers in Harness/Network reduces the number of connectors which significantly improves the reliability.

All resistors are 1Watt per MIL-R-39007 and mounted away from the transformer to minimize heating effects. The transformers are manufactured to MIL-T-21038.

All Couplers are 100% tested and certified. For maximum system reliability, several Couplers can be connected in series (chain linked) as harness with no splices.

### **Features:**

- ❖ 1 Watt Isolation resistors
- ❖ 1 Watt Terminating resistors
- ❖ -55°C to +125°C operating temperature.

### **Benefits:**

- ❖ Qualified and type approved for flight and space applications
- ❖ Low cost
- ❖ Highly reliable
- ❖ Small and lightweight
- ❖ Fast delivery
- ❖ Can be supplied as a complete harness as per customer specifications



**COMPUPOWER**  
PRIVATE LIMITED

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### **Electrical specifications:**

❖ Coupler Module	:	Encapsulated with the following components * Coupler Transformer to MIL-T-21038 * Fault protection Resistors to MIL-R-39007
❖ Transformer Turns ratio	:	1:1.41± 3% (Compliant to MIL-T-21038 Std)
❖ Input Impedance	:	3000Ω Minimum (75KHz to 1MHz)
❖ Droop	:	20% maximum (250KHz)
❖ Overshoot and ringing	:	±1V peak (250KHz square wave with 100ns maximum rise and fall time)
❖ Common mode rejection	:	>45dB at 1.0MHz
❖ Fault protection	:	Resistor in series with each Bus winding connection equal to 59±1%Ω, 1W or 58.5±2%Ω
❖ Termination	:	78 ± 2%Ω, 1W
❖ Operating Temperature	:	-55°C to +125°C
❖ Storage Temperature	:	-55°C to +130°C
❖ Stub Voltage	:	1.0V to 14.0V p-p, line-line
❖ Cable type	:	10614-9 or MIL-C-17/176-00002



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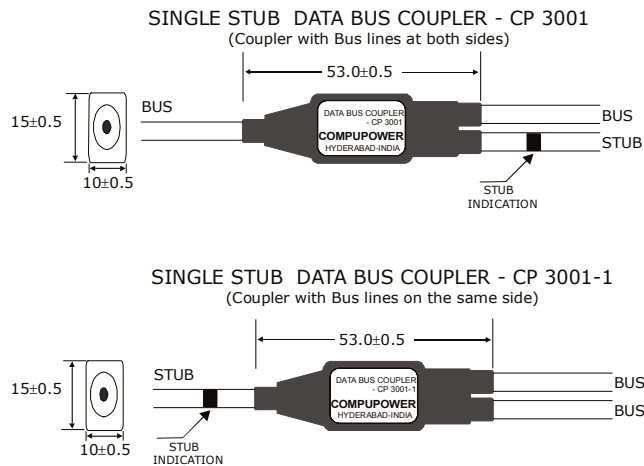
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**In-line Coupler types:**

Description	Part No.
Single Stub Coupler (Coupler with Bus lines at both sides)	CP 3001
Single Stub Coupler (Coupler with Bus lines on the same side)	CP 3001-1
Single Stub Coupler with Terminator (Coupler with Bus and Stub lines located at the same side)	CP 3001-TR
Single Stub Coupler with Terminator (Coupler with Bus and Stub lines on opposite side)	CP 3001-1-TR
Dual Stub Coupler (Coupler with Bus lines at both sides)	CP 3002
Dual Stub Coupler (Coupler with Bus lines on the same side)	CP 3002-1
Dual Stub Coupler with Terminator (Coupler with one Stub parallel to Bus line and other stub at the other side)	CP 3002-TR
Three Stub Coupler (Coupler with Bus lines at both sides)	CP 3003
Three Stub Coupler (Coupler with Bus lines on the same side)	CP 3003-1
Three Stub Coupler with Terminator (Coupler with one Stub parallel to Bus line and two Stubs at the other side)	CP 3003-TR
Three Stub Coupler with Terminator (Coupler with Stubs on the opposite side of the Bus line)	CP 3003-1-TR
Four Stub Coupler (Coupler with Bus lines at both sides)	CP 3004
Four Stub Coupler (Coupler with Bus lines on the same side)	CP 3004-1
Four Stub Coupler with Terminator (Coupler with two Stubs parallel to Bus line and two Stubs at the other side)	CP 3004-TR
Molded Terminator	CP 78TR

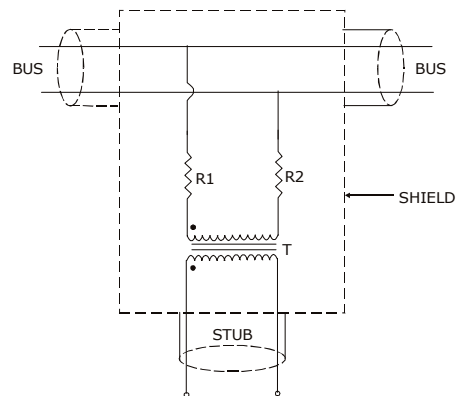


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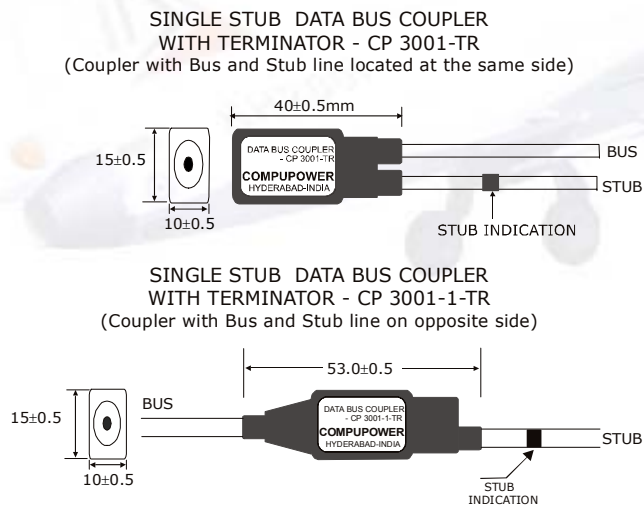


Note: All dimensions are in mm

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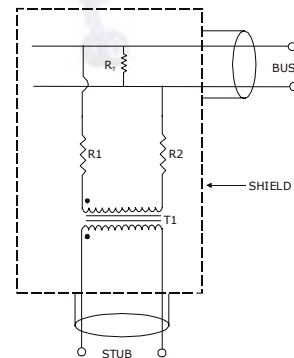


R1 & R2: ISOLATION RESISTORS  
T: TRANSFORMER



Note: All dimensions are in mm

SCHEMATIC

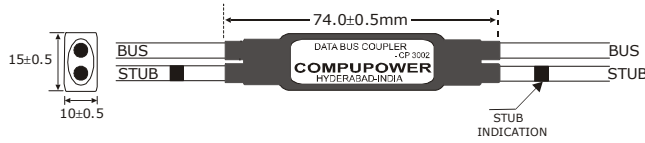


R1 & R2: ISOLATION RESISTORS  
Rt: TERMINATING RESISTOR  
T: TRANSFORMER

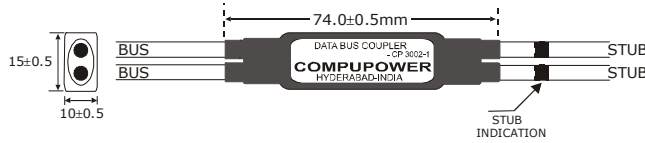


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**DUAL STUB COUPLER - CP 3002**  
(Coupler with Bus lines at both sides)

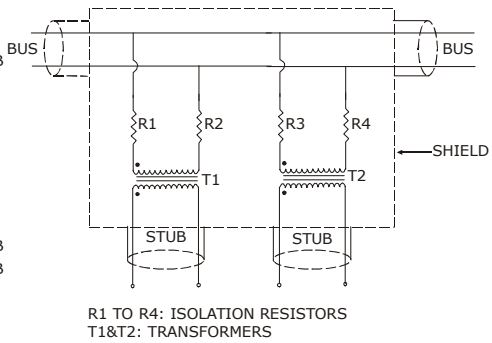


**DUAL STUB COUPLER - CP 3002-1**  
(Coupler with Bus lines on the same side)

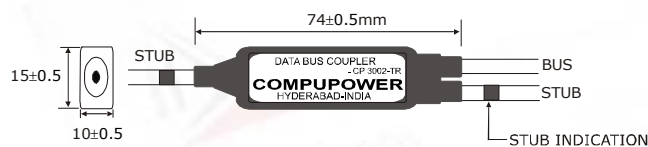


Note: All dimensions are in mm

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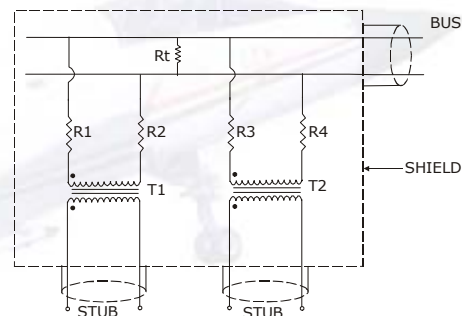


**DUAL STUB DATA BUS COUPLER WITH TERMINATOR - CP 3002-TR**  
(Coupler with one Stub parallel to Bus line and other stub at the other side)



Note: All dimensions are in mm

**SCHEMATIC**

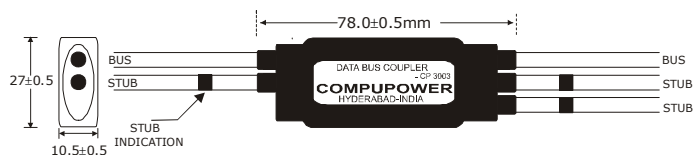


R1 TO R4: ISOLATION RESISTORS  
Rt: TERMINATING RESISTOR  
T1&T2: TRANSFORMERS

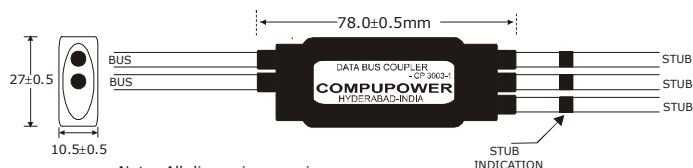


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### THREE STUB COUPLER - CP 3003 (Coupler with Bus lines at both sides)

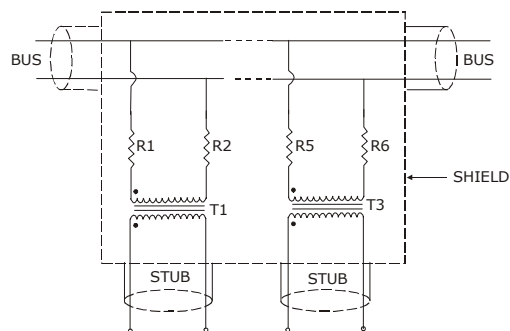


### THREE STUB COUPLER - CP 3003-1 (Coupler with Bus lines on the same side)



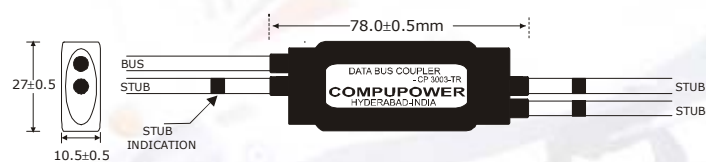
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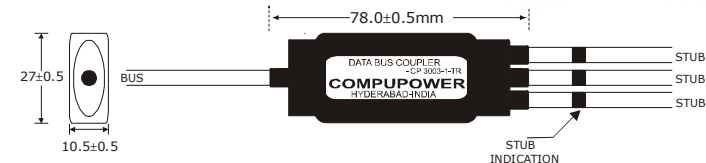


R1 TO R6: ISOLATION RESISTORS  
T1-T3: TRANSFORMERS

### THREE STUB COUPLER WITH TERMINATOR - CP 3003-TR (Coupler with one Stub parallel to Bus line and two Stubs at the other side)

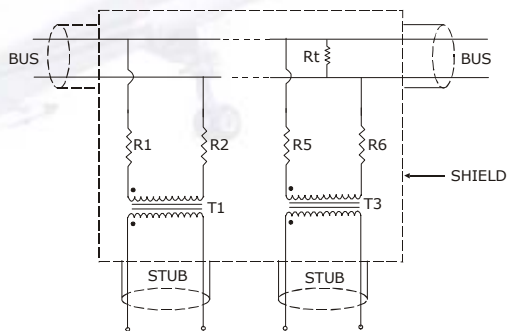


### THREE STUB COUPLER WITH TERMINATOR - CP 3003-1-TR (Coupler with Stubs on the opposite side of the Bus line)



Note: All dimensions are in mm

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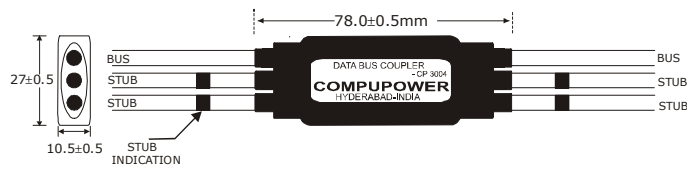
R1 TO R6: ISOLATION RESISTORS  
Rt: TERMINATING RESISTOR  
T1-T3: TRANSFORMERS



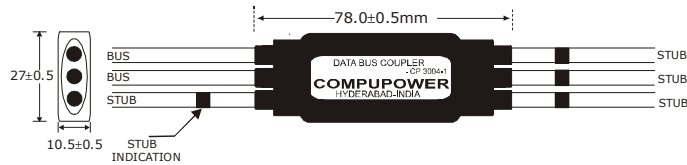
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**FOUR STUB COUPLER - CP 3004**  
(Coupler with Bus lines at both ends)

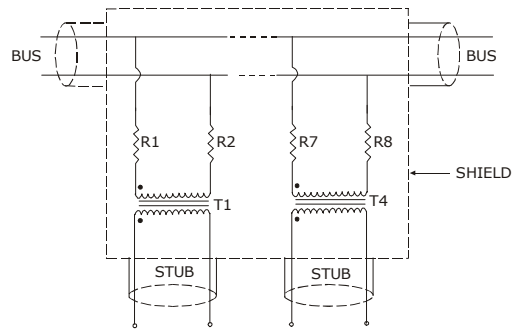


**FOUR STUB COUPLER - CP 3004-1**  
(Coupler with Bus lines on the same side)



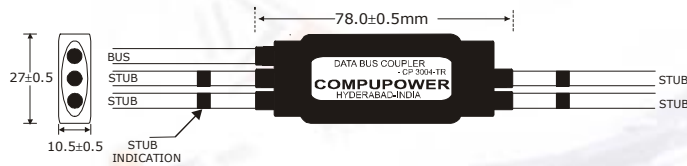
Note: All dimensions are in mm

**SCHEMATIC**



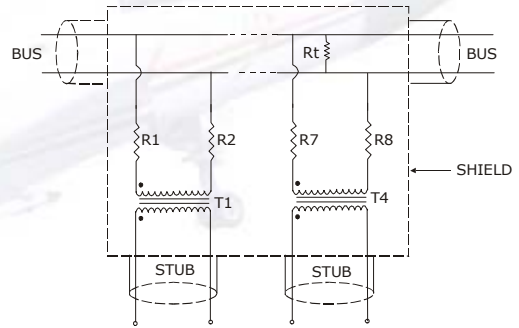
R1 TO R8: ISOLATION RESISTORS  
T1-T4: TRANSFORMERS

**FOUR STUB COUPLER WITH TERMINATOR - CP 3004-TR**  
(Coupler with two Stubs parallel to Bus line and two Stubs at the other side)



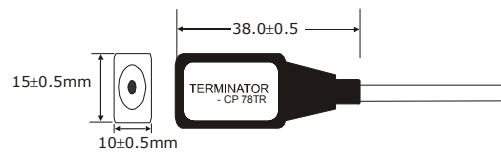
Note: All dimensions are in mm

**SCHEMATIC**



R1 TO R8: ISOLATION RESISTORS  
Rt: TERMINATING RESISTOR  
T1-T4: TRANSFORMERS

**MOLDED TERMINATOR - CP 78TR**



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