Connectors

**Board-to-Board Connectors**

**Board-to-Board Connectors WR-BTB**
- Pitch: 0.8 mm – 1 mm
- Gender: Female – Male
- Type: Vertical
- Mount: SMT

**Pin Header / Socket Header WR-PHD**
- Pitch: 1.27 mm – 2.54 mm
- Mount: SMT – THT
- Type: Angled – Straight
- Profile: Low
- Rows: Dual – Single

**Mini Module Connector WR-MM / PCB Type**
- Gender: Female – Male
- Mount: SMT – THT
- Type: Angled – Straight
- Polarization: No – Yes
- Pins: 4 – 26

**Mini Module Connector WR-MM / Cable Type**
- Gender: Male – IDC
- Mount: SMT – THT
- Type: Right Angled – Vertical
- Pins: 2 – 24

**Wire-to-Board Connectors**

**WR-BHD Box Headers**
- Pitch: 2 mm – 2.54 mm
- Gender: Male
- Mount: SMT – THT
- Type: Angled – Straight
- Pins: 6 – 64

**WR-BHD IDC Connectors & Tools**
- Pitch: 2 mm – 2.54 mm
- Gender: Female – Male
- Pins: 6 – 64

**Ribbon Flat Cable WR-CAB**
- Pitch: 1 mm – 1.27 mm

**Fast Connector WR-FAST**
- Pitch: 5.08 mm – 7.62 mm
- Mount: THT
- Type: Right Angled – Vertical

**WR-WTB Male Headers**
- Pitch: 1 mm – 3.96 mm
- Type: Horizontal – Vertical
- Mount: SMT – THT

**WR-WTB Female Terminal Housing, Crimp & Pre-crimped Contacts**
- Pitch: 1 mm – 3.96 mm
- Type: Crimp Terminal – Terminal Housing

**WR-MPC4 Male Headers**
- Pitch: 4.2 mm
- Mount: THT
- Type: Right Angled – Vertical
- Pins: 2 – 24

**WR-MPC4 Female Receptacle, Terminals, Pre-crimped Contacts**
- Pitch: 4.2 mm
- Type: Crimp Terminal – Receptacle Housing
- Pins: 2 – 24

**WR-MPC3 Male Headers**
- Pitch: 3 mm
- Mount: SMT – THT
- Type: Right Angled – Vertical
- Pins: 2 – 24

**WR-MPC3 Female Receptacle, Terminals, Pre-crimped Contacts**
- Pitch: 3 mm
- Type: Crimp Terminal – Receptacle Housing
- Pins: 2 – 24

**Pre-crimped Wire WR-WTB, WR-MPC4, WR-MPC3**
- Tool: Crimping Tool – Wear Parts

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### FPC Connector and FFC Cable

<table>
<thead>
<tr>
<th>Connector Type</th>
<th>Pitch</th>
<th>Mount</th>
<th>Type</th>
<th>Contact Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZIP Connector WR-FPC</td>
<td>0.5 mm ~ 1 mm</td>
<td>SMT</td>
<td>Horizontal ~ Vertical</td>
<td>Bottom Contact ~ Type A</td>
</tr>
<tr>
<td>LIF Connector WR-FPC</td>
<td>1 mm</td>
<td>SMT</td>
<td>Horizontal ~ Vertical</td>
<td>Top Contact ~ Type A</td>
</tr>
<tr>
<td>Flat Flexible Cable WR-FFC</td>
<td>0.5 mm ~ 1 mm</td>
<td></td>
<td>Type 1 ~ Type 2</td>
<td>Length 50 mm ~ 200 mm</td>
</tr>
</tbody>
</table>

### Input/Output Connectors

#### Card Connector WR-CRD
- **Type**: Header – Stacked
- **Application**: Compact Flash – Nano SIM

#### Modular Jacks WR-MJ
- **Type**: 45° ~ Vertical
- **Pitch**: 0.5 mm ~ 1 mm
- **Mount**: SMT ~ THT
- **Number of Pins (P/NC)**: 4P/4C ~ 8P/8C
- **Tab Position**: Down ~ Up & Down

#### Input/Output Connectors

<table>
<thead>
<tr>
<th>Connector Type</th>
<th>Pitch</th>
<th>Mount</th>
<th>Type</th>
<th>Contact Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>USB Connector WR-COM</td>
<td></td>
<td>SMT ~ THT</td>
<td>Horizontal ~ Vertical</td>
<td>Application: Micro-USB 2.0 ~ USB 3.1</td>
</tr>
<tr>
<td>HDMI Connector WR-HDMI</td>
<td></td>
<td>SMT</td>
<td>Horizontal</td>
<td>Application: HDMI ~ MiniHDMI</td>
</tr>
</tbody>
</table>

### Coaxial Connectors

#### WR-SMA
- **Frequency Range**: DC ~ 18 GHz
- **Impedance**: 50 Ω
- **Gender**: Jack ~ Plug
- **Orientation Type**: Right Angle ~ Straight
- **Mount**: SMT ~ THT
- **Interface**: MIL-STD-348

#### WR-RPSMA
- **Frequency Range**: DC ~ 18 GHz
- **Impedance**: 50 Ω
- **Gender**: Jack
- **Orientation Type**: Right Angle ~ Straight
- **Mount**: End Launch ~ THT
- **Interface**: MIL-STD-348

#### WR-SMB
- **Frequency Range**: DC ~ 4 GHz
- **Impedance**: 50 Ω
- **Gender**: Jack ~ Plug
- **Orientation Type**: Right Angle ~ Straight
- **Mount**: Crimp ~ THT
- **Interface**: MIL-STD-348

#### WR-MCX
- **Frequency Range**: DC ~ 6 GHz
- **Impedance**: 50 Ω
- **Gender**: Jack ~ Plug
- **Orientation Type**: Right Angle ~ Straight
- **Mount**: Crimp ~ THT
- **Interface**: IEC 61169-36

#### WR-SMP
- **Frequency Range**: DC ~ 12 GHz
- **Impedance**: 50 Ω
- **Orientation Type**: Right Angle ~ Straight
- **Mount**: THT ~ THT
- **Interface**: MIL-STD-348

#### WR-MMCX
- **Frequency Range**: DC ~ 6 GHz
- **Impedance**: 50 Ω
- **Gender**: Jack ~ Plug
- **Orientation Type**: Right Angle ~ Straight
- **Mount**: Crimp ~ THT
- **Interface**: IEC 61169-52

### New!
- **WR-SMB**
- **WR-MCX**
- **WR-SMP**
- **WR-MMCX**
Coaxial Connectors

WR-UMRF
- Frequency Range: DC~6 GHz
- Impedance: 50 Ω
- Nominal Outer Cable Diameter: 1.13 mm – 1.37 mm
- Cable Jacket Color: Black – Grey

Adaptor WR-ADPT
- Frequency Range: DC~18 GHz
- Gender 1: Jack – Plug
- Gender 2: Jack – Plug
- Impedance: 50 Ω

Extended
Cable Assemblies WR-CXASY
- Frequency Range: DC~18 GHz
- Cable Type: Flexible – Hand-Formable

WR-DC Power Jack Connectors

WR-DC Power Jack
- Type: Right Angled – Vertical
- Mount: SMT – THT
- Shielding: Plastic – Shielded

Terminal Blocks

Wire Protector System WR-TBL
- Pitch: 3.5 mm – 10 mm
- PCB/Cable/Panel: PCB
- Wire Section: 14 to 30 (AWG) 2.08 to 0.0509 (mm²) – 30 to 14 (AWG) 0.05 to 2.08 (mm²)
- Rated Current: [AF] 10 A – 16 A
- Rated Current: [UL] 10 A – 18 A
- Rated Current: [VDE] 13.5 A – 24 A

Rising Cage Clamp System WR-TBL
- Pitch: 2.54 mm – 10.16 mm
- PCB/Cable/Panel: PCB
- Wire Section: 6 to 30 (AWG) 13.30 to 0.52 (mm²) – 30 to 18 (AWG) 0.0509 to 0.823 (mm²)
- Rated Current: [AF] 10 A – 30 A
- Rated Current: [UL] 6 A – 57 A
- Rated Current: [VDE] 10 A – 57 A

Screwless System WR-TBL
- Pitch: 2.5 mm – 10.16 mm
- PCB/Cable/Panel: PCB
- Wire Section: 10 to 24 (AWG) 5.26 to 0.205 (mm²) – 26 to 20 (AWG) 0.129 to 0.518 (mm²)
- Rated Current: [AF] 6 A
- Rated Current: [UL] 3 A – 30 A
- Rated Current: [VDE] 2 A – 16 A

Pluggable Cable System WR-TBL
- Pitch: 2.5 mm – 10.16 mm
- PCB/Cable/Panel: Cable – PCB
- Wire Section: 12 to 22 (AWG) 3.31 to 0.129 (mm²) – 30 to 14 (AWG) 0.0509 to 2.08 (mm²)
- Rated Current: [AF] 12 A
- Rated Current: [UL] 5 A – 20 A
- Rated Current: [VDE] 10 A – 20 A

Fuse Holder

WR-FSH
- Cover Type: Clip Cover – Turn’n lock

Battery Holder

WA-BCMC/WA-BCPH
- Mount: SMT – THT
- Battery Type: 2016, 2020, 2025, 2032 – 2450

LED Connectors

WR-LECO
- Pitch: 1.5 mm – 4 mm
- Type: Angled – Straight
# Switches

## Tact Switches

<table>
<thead>
<tr>
<th>Switch Type</th>
<th>Dimensions</th>
<th>Height</th>
<th>Operation Force</th>
<th>Electrical Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 x 12 mm THT WS-TATV</td>
<td>4.3 mm – 8.5 mm</td>
<td>4.3 mm – 8.5 mm</td>
<td>160 g – 360 g</td>
<td>200000 Cycles – 500000 Cycles</td>
</tr>
<tr>
<td>12 x 12 mm SMT WS-TASV</td>
<td>4.3 mm – 8.5 mm</td>
<td>0.8 mm – 1.5 mm</td>
<td>160 g – 260 g</td>
<td>200000 Cycles – 500000 Cycles</td>
</tr>
<tr>
<td>6 x 6 mm SMT / J-Bend with ground terminal WS-TASV</td>
<td>3.7 mm</td>
<td>0.35 mm</td>
<td>160 g</td>
<td>500000 Cycles</td>
</tr>
<tr>
<td>6 x 6 mm SMT / J-Bend side push with Boss design WS-TASU</td>
<td>4.5 x 4.5 mm</td>
<td>0.55 mm – 3.8 mm</td>
<td>160 g – 260 g</td>
<td>300000 Cycles – 500000 Cycles</td>
</tr>
<tr>
<td>6 x 6 mm SMT side push WS-TASU</td>
<td>3.7 x 3.7 mm</td>
<td>0.35 mm</td>
<td>160 g</td>
<td>100000 Cycles – 200000 Cycles</td>
</tr>
<tr>
<td>6 x 2.6 mm SMT with ground terminal WS-TATV</td>
<td>3.0 mm</td>
<td>1.4 mm</td>
<td>160 g</td>
<td>1000000 Cycles</td>
</tr>
</tbody>
</table>

## Dip Switches

<table>
<thead>
<tr>
<th>Switch Type</th>
<th>Dimensions</th>
<th>Actuator Type</th>
<th>Poles</th>
<th>Operation Force</th>
<th>Electrical Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.54 mm THT Compact WS-DITV</td>
<td>2.54 mm</td>
<td>Flat Type – Raise Type</td>
<td>1 – 12</td>
<td>800 g</td>
<td></td>
</tr>
<tr>
<td>2.54 mm THT Small Compact WS-DITV</td>
<td>2.54 mm</td>
<td>Flat Type – Raise Type</td>
<td>1 – 12</td>
<td>600 g</td>
<td></td>
</tr>
<tr>
<td>2.54 mm SMT Small Compact WS-DISV</td>
<td>2.54 mm</td>
<td>Flat Type – Raise Type</td>
<td>1 – 12</td>
<td>600 g</td>
<td></td>
</tr>
</tbody>
</table>
**Dip Switches**

1. **1.27 mm SMT Small Compact WS-DISV**
   - Actuator Type: Flat Type
   - Poles: 1 ~ 12
   - Operation Force: 500 g
   - Washable: Yes

2. **2.54 mm THT right angled Compact WS-DITU**
   - Actuator Type: Flat Type
   - Poles: 2 ~ 10
   - Operation Force: 800 g

**Rotary Switches**

1. **10 x 10 mm SMT IP67 WS-ROSV**
   - Number of Position: 10 ~ 16
   - Actuator Type: Arrow Type
   - Code: Complement Code
   - Washable: Yes

2. **10 x 10 mm SMT IP67 WS-ROTV**
   - Number of Position: 8 ~ 16
   - Actuator Type: Arrow Type
   - Code: Real Code
   - Washable: Yes

3. **10 x 10 mm THT right angled WS-ROTU**
   - Number of Position: 10 ~ 16
   - Actuator Type: Cross Type
   - Code: Real Code
   - Washable: Yes

4. **10 x 10 mm Segment Wheel & Spindle WS-ROTV / ROSV / ROTU**
   - Color: Black ~ Red

5. **7 x 7 mm SMT IP67 WS-ROSV**
   - Number of Position: 10 ~ 16
   - Actuator Type: Arrow Type
   - Code: Real Code
   - Washable: Yes

**Incremental Encoder Switches**

1. **11.7 x 13.75 mm THT Encoder Metal Shaft with Threaded Bushing WS-ENTV**
   - Detection: 16 Positions ~ 30
   - Resolution: 8 Pulse/360° ~ 20 Pulse/360°

2. **11.7 x 12 mm THT Encoder Metal Shaft with Plain Bushing WS-ENTV**
   - Detection: 30 Positions
   - Resolution: 15 Pulse/360°

**Slide Switches**

1. **8.7 x 3.0 mm SMT WS-SL5U Same side connection**
   - Switching Function: On-On
   - Electrical Life: 10000 Times
   - Schematic: SPDT

**Detector Switches**

1. **4.7 x 3.8 mm SMT WS-DESV**
   - Schematic: SPST-NO
   - Operation Force: 60 g
   - Electrical Life: 100000 Cycles

2. **5.7 x 4.0 mm SMT WS-DESU**
   - Schematic: SPST-NC ~ SPST-NO
   - Operation Force: 100 g
   - Electrical Life: 100000 Cycles

**Micro Switches**

1. **12.8 x 5.8 mm THT Micro switch WS-MITV**
   - Vertical operation
   - Operation Force: 80 g ~ 150 g
   - Releasing Force: 5 g ~ 20 g
   - Schematic: SPDT

2. **12.8 x 5.8 mm THT Micro switch WS-MITV**
   - Right angle operation
   - Operation Force: 150 g
   - Releasing Force: 5 g ~ 20 g
   - Schematic: SPDT

**Push Button Switches**

1. **9.8 x 18.5 mm THT right angled WS-PBTV**
   - Operation Force: 250 g
   - Electrical Life: 300000 Cycles
   - Schematic: SPDT

2. **6.7 x 2.7 mm SMT WS-SL5U Same Side Connection**
   - Switching Function: On-On
   - Electrical Life: 100000 Steps
   - Schematic: DPDT

**NEW!**

- Dip Switches: 2.54 mm THT right angled Compact WS-DITU
- Rotary Switches: 10 x 10 mm SMT IP67 WS-ROTV
- Incremental Encoder Switches: 11.7 x 13.75 mm THT Encoder Metal Shaft with Threaded Bushing WS-ENTV
- Slide Switches: 8.7 x 3.0 mm SMT WS-SL5U Same side connection
- Detector Switches: 5.7 x 4.0 mm SMT WS-DESU
- Micro Switches: 12.8 x 5.8 mm THT Micro switch WS-MITV (vertical)
- Push Button Switches: 9.8 x 18.5 mm THT right angled WS-PBTV
Push Button Switches

9.8 x 18.5 mm SMT Side Push WS-PBSU
- Schematic: 2PDT
- Operation Force: 250 g
- Electrical Life: 30000 Cycles

Caps for 9.8 x 18.5 mm WS-PBSU / WS-PBTU
- Color: Black – Red

250 VAC Rocker Switches

19.2 x 12.9 mm Panel Cut-out WS-RSTV
- 0.187” Quick Connect
- Tab Width: 4.75 mm
- Schematic: DPST – SPST
- Actuator Color: Black

27.6 x 13.8 mm Panel Cut-out WS-RSTV, 0.25
- 0.187” Quick connect
- Tab Width: 6.3 mm
- Schematic: SPST
- Actuator Color: Black

IP65 Ø20.2 mm Panel Cut-Out WS-RSTV, 0.187
- 0.187” Quick connect
- Tab Width: 4.8 mm
- Schematic: SPST
- Actuator Color: Black

Ø 20.2 mm Panel Cut-Out WS-RSTV, 0.187
- 0.187” Quick Connect
- Tab Width: 4.8 mm
- Schematic: DPST – SPST
- Actuator Color: Black

NEW!
Illuminated Ø 20.2 mm Panel Cut-out WS-
RSTV, 0.187” Quick connect
- Tab Width: 4.8 mm
- Schematic: SPST
- Voltage: 110 V (AC) – 220 V (AC)
- Actuator Color: Amber Transparent – Red Transparent

NEW!
Protection cover for WS-RSTV Rocker Switch
cut out Ø20.2 mm
- Size/Size: Ø24.4mm
- Material: PVC
- Color: Transparent

Illuminated Switches

12 x 12 mm THT Illuminated Tact Switch WS-
TATL
- Height: 8.2 mm
- Emitting Color: Blue – Yellow
- Electrical Life: 100000 Times

Caps for 12 x 12 mm WS-TATL
- Base Color: Black – Transparent

6.8 x 4.5 mm SMT Illuminated Tact Switch
WS-TASL
- Height: 2.5 mm
- Emitting Color: Blue & Blue – Yellow & Yellow
- Electrical Life: 50000 Times

20 x 20 mm THT Illuminated Rotary Push
Button Switch WS-RPTL
- Height: 14.45 mm
- Emitting Color: Red & Bright Green

Caps for 15 x 15mm Illuminated Push Button
switch WS-PBTL
- Base Color: Transparent

15 x 15 mm THT Illuminated Push Button
switch WS-PBTL
- Height: 19.5 mm
- Emitting Color: Red & Green – Red & Green & Blue

SMT Spacers

WP-SMRA
- Material: Brass
- Length: 5.5 mm – 7 mm
- Inner Diameter: 3.3 mm
- Inner Thread: M2 – M3

WA-SMSSR
- Material: PA66 – Steel
- Length: 2 mm – 10 mm
- Color: Red
- Inner Diameter: 2.1 mm – 4.2 mm

WA-SMST
- Material: Steel
- Length: 1 mm – 16 mm
- Hole Diameter: 3.3 mm

WA-SMST Automotive
- Material: Steel
- Length: 1 mm – 15 mm
- Thread: M3

WA-SCAP
- Material: PA66
- Color: Black – Red

WA-SCRW
- Material: Nylon 66
- Thread: M3
- Length: 4 mm – 10 mm
- Color: Natural

Assembly

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### REDCUBE SMT

<table>
<thead>
<tr>
<th>Model</th>
<th>Thread Type</th>
<th>Thread Length</th>
<th>Rated Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>WP-SMBU</td>
<td>M3 – M5</td>
<td>4 mm – 6 mm</td>
<td>50 A – 70 A</td>
</tr>
<tr>
<td>WP-SMRT</td>
<td>M3 – M5</td>
<td>5.6 mm</td>
<td>85 A</td>
</tr>
<tr>
<td>WP-SMSH</td>
<td></td>
<td>5 mm</td>
<td>50 A</td>
</tr>
<tr>
<td>WP-SMRA</td>
<td>M3</td>
<td></td>
<td>50 A</td>
</tr>
</tbody>
</table>

### REDCUBE THR

<table>
<thead>
<tr>
<th>Model</th>
<th>Thread Type</th>
<th>Thread Length</th>
<th>Rated Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>WP-THRBU</td>
<td>M3 – M5</td>
<td>2.5 mm – 4 mm</td>
<td>50 A – 85 A</td>
</tr>
<tr>
<td>WP-THRSH</td>
<td></td>
<td>5 mm – 7 mm</td>
<td>50 A – 85 A</td>
</tr>
</tbody>
</table>