ERmet ZDplus
High Speed Differential Hard Metric Connector System

The ERmet ZDplus connector is an enhancement of the ERmet ZD family. This high-speed differential Hard Metric connector system enables data rates of 20 Gbit+. The ERmet ZDplus is based on the principal mechanical design of the proven ERmet ZD with the same dimensions. To enable higher data rates ERNI Electronics has optimized the signal routing and the pressfit termination of the female connector. To benefit from the maximum performance of the new ERmet ZDplus the usage of backdrilling is recommended. Decreasing via stub length and the related “stub effect” by backdrilling significantly reduces the reflections and the overall BER (Bit Error Rate) of the interconnect.

The first product of the ERmet ZD+® family is the 4-pair right angle female connector with pressfit termination. The ERmet ZDplus female connector is mating compatible to the existing ERmet ZD male connector. This means, that existing backplane designs do not need layout changes on the backplane side, if customers want to upgrade their systems. Of course the layout on the daughter cards has to be modified if using the new ERmet ZDplus female parts.

Features
- Data rate performance per differential pair with standard ERmet ZD male connector 15+ Gbit/s (optional with ERmet ZDplus male connector 20+ Gbit/s)
- 40 differential pairs per inch
- Mating compatible to standard ERmet ZD male connectors, backwards compatible to existing backplane systems
- Improved crosstalk behaviour
- Improved layout on daughter cards
- Meets the performance requirements of next generation processor technology
### ERmet ZDplus

**High Speed Differential Hard Metric Connector System**

**Electrical And Mechanical Characteristics**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Pressfit Male- and Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of pins</td>
<td>4-pair</td>
</tr>
</tbody>
</table>

### Technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Climate category</strong></td>
<td>DIN EN 60068-1 test b -55/125/56</td>
</tr>
<tr>
<td><strong>Temperature range</strong></td>
<td>-55/125 °C</td>
</tr>
<tr>
<td><strong>Air- and creepage distance</strong></td>
<td>0.5 mm</td>
</tr>
</tbody>
</table>

**Operating voltage**

- DIN EN 60068-1: Test b, -55/125/56
- The permissible operating voltages depend on the customer application and on the applicable or specified safety requirements.
- Insulation coordination according to IEC 60664-1 has to be regarded for the complete electrical device. Therefore, the maximum creepage and clearance distances of the mated connectors are specified for consideration as a part of the whole current path.
- In practice, reductions in creepage or clearance distances may occur due to the conductive pattern of the printed board or the wiring used, and have to be taken into account separately.
- As a result the creepage and clearance distances for the application may be reduced compared to those of the connector.

**Dielectric strength**

- IEC 60512 test 4a: contact pair - contact pair 500 V rms
- Contact pair - shield 150 V rms
- Contact - contact 150 V rms

**Contact resistance**

- IEC 60512 test 2a: < 50 mΩ (Signal)
- < 15 mΩ (Shield)

**Insulation resistance**

- IEC 60512 test 3a: > 10^4 MΩ

**Vibration, sine**

- IEC 60512 test 6d: 10 – 2000 Hz, 20 g

**Contact interruption (while vibration test)**

- IEC 60512 test 2e: < 1 µs

**Shock, halfsine**

- IEC 60512 test 6c: 50 g, 11 ms

**Contact interruption (while shock test)**

- IEC 60512 test 2e: < 1 µs

**Mechanical operation (mating cycles)**

- IEC 60512 test 9a: > 250 mating cycles

**Insertion and withdrawal force**

- IEC 60512 test 13b: Insertion force: max. 0.35 N/pin (Signal), max. 0.3 N/pin (Shield)
- Withdrawal force: min. 0.15 N/pin
**ERmet ZDplus**  
*High Speed Differential Hard Metric Connector System*  
*Electrical And Mechanical Characteristics*

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<td>4-pair</td>
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<tr>
<td><strong>Signal transmission data</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Differential impedance</td>
<td>100 Ω</td>
<td></td>
</tr>
</tbody>
</table>
| Data rate per pair   | 15+ Gbit/s (with standard ERmet ZD male connector)  
                       | 20+ Gbit/s (with ERmet ZDplus male connector)      |
| **Housing materials**|          |                           |
| Plastic material     | LCP      |                           |
| CTI value            | IEC 112  | CTI 175                   |
| UL flame rating      | UL 94 V-0| E83005                    |
| UL file              | E83005   |                           |
| **Contact materials**|          |                           |
| Base material        | Cu alloy |                           |
| Mating area          | Gold plated|                             |
| Termination area     | Sn       |                           |
| **Environment compatibility** |      |                           |
| Recycling            | no flame-retardent additives, no toxic additives, allow easy recycling |
| **Product Approval** |          |                           |
| UL/CSA               | E84703   |                           |
ERmet ZDplus
High Speed Differential Hard Metric Connector System
Right Angle Female Connectors 4 Pair

Dimensional Drawing

Lochbild für Leiterplatte
(Bestückungsseite)

Board hole pattern
(Component mounting side)

EN-Zone für durchkontaktierte
Löcher Ø 0.46 ± 0.05
compliant zone for through hole
Ø 0.46 ± 0.05

Oberfläche der Tochterplatine
Top surface of daughter card

1) Ø 0.46 ± 0.05 Diameter of finished plated-through hole
Ø 0.46 ± 0.05 Diameter of drilled hole

0.46 ± 0.05 Durchmesser des metallisierten Loches

0.55 ± 0.02 Bohrdurchmesser des Loches
Ø 0.55 ± 0.02 Diameter of drilled hole

Schichtaufbau im metallisierten Loch
siehe Zeichnung 384191

Metal plating of plated-through hole
see drawing 384191
ERmet ZDplus
High Speed Differential Hard Metric Connector System
Standard Vertical Male Connectors 4 Pair

Dimensional Drawing

EE-Zone für durchkontaktierte Löcher ø 0.6 ±0.05
compliant zone for through hole ø 0.6 ±0.05

Board hole pattern (Component mounting side)

Lochbild für Leiterplatte (Bestückungsseite)
**ERmet ZDplus**

**High Speed Differential Hard Metric Connector System**

**Metal Plating of Plated Through-holes**

**Hole design ø0.46 mm**

Durchmesser des metallisierten Loches

Diameter of finished plated-through hole

Bohrungsdurchmesser des Loches

Diameter of drilled hole

Restringbreite

Restring width

min. 0.05 mm

max. 10 µm Sn 1)

min. 25 µm Cu

max. 10 µm Sn

**Hole design ø0.6 mm**

Durchmesser des metallisierten Loches

Diameter of finished plated-through hole

Bohrungsdurchmesser des Loches

Diameter of drilled hole

Restringbreite

Restring width

min. 0.05 mm

max. 15 µm Sn

min. 25 µm Cu

max. 15 µm Sn

1) To keep the max. tolerance for the "Diameter of finished plated-through hole" the plated-through hole, rest ring width and min. thickness of Cu plating.

For other platings, such as NiAu, chem. Sn or blanc Cu the recommended dimensions have to be respected for the diameter of drilled hole, diameter of plated-thru hole, rest ring width and min. thickness of Cu plating.

Metal plating and dimensions in accordance with IEC 60352-5.