NAMC-DISCOVERY

MICROTCA DEVELOPMENT KIT

DESIGNED BY N.A.T. GMBH

QUICK START GUIDE V1.0

HW REVISION 1.2
CAUTION

Electrostatic discharge, incorrect board installation, and uninstallation can damage circuits or shorten their lifetime. Before touching integrated circuits, ensure to take all required precautions for handling electrostatic devices.

Avoid touching gold contacts of the connectors to ensure proper contact.

Make sure that the board and its attachments are undamaged and complete according to delivery note.

It is assumed, that the NAMC-DISCOVERY is handled by qualified personnel only!

SAFETY

To prevent injury, do not touch the fan during operation.

The components on the NAMC-DISCOVERY as well as on the Test-AMC can heat up during operation, so do not touch any components meanwhile. Take in consideration that cooling down of the components can take a while after shutting down the system.

During operation, use the provided fan and/or another cooling device to protect the Test-AMC from overheating. Additional cooling may be mandatory, as depending on the conditions of the Test-AMC or the environmental situation, the provided fan might not be sufficient to keep the Test-AMC's temperature in a tolerable range.

Note: While in extender mode, the display does not give any temperature information. Make sure to monitor temperatures via a debugging tool etc.

To prevent devices from damaging, make sure to not attach any other USB-plug to the USB power supply for the fan.

If using any other than the provided AC/DC connector for external power supply, make sure it supports the same pinout.
The content of the NAMC-DISCOVERY Development Kit is shown in the picture below.

The cable set, which is mandatory for operation in Extender Mode (MTCA/PCIe), includes:

- **NAMC-DISCOVERY-ADDCabMGMT** (Cable for Power + Management Signals)
- **NAMC-DISCOVERY-ADDCabFAB** (Optional cable for common fabric signals)
- **NAMC-DISCOVERY-ADDCabFAB** (Optional cable for extended fabric signals)
- Ethernet Cable
- Power Cable
- USB Cable
ATTACHING THE GUIDE RAIL

To provide mechanical stability to the Test-AMC, a guide needs to be installed on the NAMC-DISCOVERY Base PCB. Please use the provided screws (M3 Torx 9) and tighten both screws in turns to prevent the guide from tilting and damaging the PCB.

According to the conditions of the Test-AMC and the particular needs of the testing procedure, the guide can be mounted in four different positions shown in the following picture.

If double-wide AMCs are used, the guide needs to be mounted at locations 1 and 2 as to mechanical restrictions.

Please avoid demounting and remounting the guide if not necessary, to prevent the NAMC-DISCOVERY Base PCB and the guide’s screw threads from damaging.
ATTACHING THE FAN

The provided fan needs to be installed in its cradle, with airflow directing from PCB edge towards the test AMC.

For power supply, one of the connectors marked as #2 and #3 in the picture above can be used.
As shown below, the screw holes of the cradle do not match the dedicated screw openings in the fan’s housing, so the provided screws intentionally press the fan housing against the backside of the cradle.

If mounting the fan for the first time, tightening the screws may appear stiff. This is normal, as there is no screw thread in the cradle’s holes. Be careful and tight the screws alternately, until the fan’s housing is fixed in the cradle.
**INSERTING THE Test-AMC**

It is mandatory to insert the Test-AMC with the Hot-Swap Handle directing towards the fan. Otherwise, the **NAMC-DISCOVERY** as well as the Test-AMC may be damaged. The **NAMC-DISCOVERY** has a label for orientation printed on the PCB.

It is mandatory to insert and extract the Test-AMC in straight direction. Do not try to lever the board in or out as it might damage the connector of the Test-AMC as well as of the **NAMC-DISCOVERY**.
**STANDALONE MODE**

The **NAMC-DISCOVERY** features an embedded MCH (eMCH), whereby it is able to operate the Test-AMC independently from a MTCA-Chassis.

*Note:* if backplane testing is desired, cable #2 and #3 must be connected to the **ADDLoopback**-PCB.

This setting requires an 12V external power supply via banana plugs on connectors #1 (12V) and #2 (GND) or via the external power connector on Pin #3.
EXTENDER MODE

In Extender Mode (MicroTCA) the **NAMC-DISCOVERY** acts as an AMC extender, to be connected to a MicroTCA-Chassis.
In Extender Mode (PCie) the **NAMC-DISCOVERY** acts as an AMC extender, to be connected to a PCI Express x8 slot (typically found on PC or Server mainboards).

In both cases, cable #3 is mandatory for management and power connection towards the MTCA-Chassis/the PC as well as cable #1 for data connection on AMC ports 0, 4-11, TCLKA-B, FCLKA, and JTAG.

**MTCA-Extender Mode only:** if signal connections on AMC ports 1-3, 12-20, and TCLKC-D are desired, cable #2 must also be used.
Mode Select Switch

The mode select switch determines the operation mode of the NAMC-Discovery.

<table>
<thead>
<tr>
<th>Switch #</th>
<th>Operation Mode</th>
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<tbody>
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<td>1</td>
<td>ON</td>
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<td></td>
<td>Off</td>
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<td>Standalone Mode</td>
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<td>2</td>
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<td>Off</td>
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<td>Altera FPGA</td>
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<td>3</td>
<td>ON</td>
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<td>Off</td>
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<td></td>
<td>Local JTAG connection</td>
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<td>JTAG via backplane</td>
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