Effortless integration into the automation network as standard field device

Rapid modeling of the data flow between field and application with IoT editor Node-RED

Direct OPC UA / MQTT communications to IoT capable field devices in parallel to the PLC

Trusted platforms due to secured boot

With container environment Docker for own software

IoT Gateways for IT/OT Edge, integrated Industry and Automation projects

netIOT Edge Gateways securely connect automation networks with Cloud or IoT directed application. As field devices they exchange cyclic IO data with the PLC and communicate furthermore with IoT capable field devices over OPC UA or MQTT directly. This real-time field data build the basis for intelligent IoT applications of cyber-physical processes in ERP/CRM systems in modern M2M enterprise solutions.

Integrated security mechanisms such as physical separation of the OT network and the IT network, a trusted operating system, the execution of signed firmware and packets only and the usage of encryption techniques of the latest standards are securing the data integrity and protecting against any kind of data theft.

The web based IoT wiring editor Node-RED serves to configure the data flow in the devices. Data apps and profiles are created herein in minutes with over 70 predefined function blocks called „nodes“. Features in addition to this set for the otherwise closed gateways are available on demand as netIOT Service products. Available are native cloud connectors to specific cloud solutions for post installation or services such as software adaptations and many more. Own software can be deployed on the system additionally using the preinstalled container software Docker.
EDGE GATEWAYS FOR AUTOMATION NETWORKS – netIOT Edge

Maximum Security
- Physical separation of OT automation and IT Cloud network avoids mutual attacks
- Start of signed software only protects against manipulation and secures device integrity
- Data encryption according to the latest state of technology against electronic eavesdropping and data theft

Seamless Integration
- Compatible with existing installations for simple upgrade
- Seamless integration with standardized device description files
- No programming skill necessary, simple configuration of the IO size is enough

Pre-Installed Software Packages
- For data acquisition from the shop floor
  - PLC access
  - OT network and fieldbus access
  - OPC UA technology support
- For data processing engineering with Node-RED and Edge
- Analytics with Informix for Cloud/IT applications
  - OPC UA and MQTT technology support
- Docker technology on board
- IP Routing and Network Address Translation
- Public Key Infrastructure (PKI) Management

Direct IoT communication
- For devices with OPC UA and MQTT protocol support
- In parallel to the PLC over a direct communication channel
- With data semantics for easy abstraction in the Cloud

The gateway as the central element in the netIOT offerings
negotiates between automation devices, cloud and applications

netIOT is a technology and service offer with the aim of exchanging data of components of an automation system with a cloud or IoT directed applications. It opens the door for centrally managed enterprise communications down to the field level.

netIOT is carried by the domains netIOT Interface, netIOT Edge and netIOT Service. netIOT Service provides software packages and development services for all matters around cloud and IoT technology. netIOT Edge provides the central network access via gateways and is responsible for data mining, preprocessing and negotiation. The domain netIOT Interface focuses on IoT enabled netX network controllers and communication modules capable of transmitting key telemetry data over IoT protocols in addition to their IO data.
# PRODUCT INFORMATION

## TECHNICAL DATA

### Functions

<table>
<thead>
<tr>
<th>Applications</th>
<th>„Connect“</th>
<th>„Remote“</th>
<th>„On-Premise“</th>
</tr>
</thead>
<tbody>
<tr>
<td>For IoT applications with limited quantity scale</td>
<td>For demanding IoT applications with larger quantity scale: Sufficient performance</td>
<td>For data-intensive &amp; complex IoT applications with demand on max. performance, connectivity and memory size</td>
<td></td>
</tr>
</tbody>
</table>

| OT networks | PROFINET, EtherNet/IP, Modbus/TCP | PROFINET, EtherNet/IP, Modbus/TCP | PROFINET, EtherNet/IP, Modbus/TCP; PROFINET, EtherCAT in listening mode |

| IoT data mining and distribution | MQTT broker/client, OPC UA client/server | MQTT broker/client, OPC UA client/server, serial | MQTT broker/client, OPC UA client/server, serial |

| Data mining, processing and cloud connectivity | Node-RED, Docker (ARMv7) | Node-RED, Docker (x64), native cloud connectors* (e.g. SAP) | Node-RED, Docker (x64), IBM Informix, native cloud connectors* (e.g. SAP) |

| Web services (REST) | Edge Server: OT network scan, diagnostics, device status | Edge Server: OT network scan, diagnostics, device status | Edge Server: OT network scan, diagnostics, device status |

### Security

<table>
<thead>
<tr>
<th>Technical Data</th>
<th>„Connect“</th>
<th>„Remote“</th>
<th>„On-Premise“</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure Linux, HTTPS, TLS</td>
<td>Secure Linux, HTTPS, TLS</td>
<td>Secure Linux, UEFI boot, HTTPS, TLS</td>
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</tbody>
</table>

### Technical Data

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<thead>
<tr>
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<tbody>
<tr>
<td>-20 °C ... +60 °C</td>
<td>-20 °C ... +65 °C</td>
<td>±0 °C ... +50 °C</td>
<td></td>
</tr>
</tbody>
</table>

| Power supply         | +18V ... +30V DC | +9.6V ... +28.8V DC | +19.2V ... +28.8V DC |

| Dimensions (L x W x H) | 105 x 35 x 140 mm | 100 x 63 x 120 mm | 157 x 85 x 182 mm |

| CPU                  | 1.2 GHz Broadcom BCM2837 (4x ARMv7) | 1.33 GHz Atom®, Intel® E3805 (2x x86) | 2 GHz Celeron®, Intel® J1900 (4x x86) |

| IT connection        | 1x 10/100MBit, Microchip LAN9514 | 2x 10/100/1000MBit, Intel® I210AT | 2x 10/100/1000MBit, Intel® I210AT |

| OT connection        | 2x 10/100MBit, Hilscher netX 51 | 2x 10/100MBit, Hilscher netX 100 | 2x 10/100MBit, Hilscher netX 100 |

| Memory               | 1 GB LPDDR2 RAM, 8 GB SD memory (3000 P/E) | 2 GB DDR3 RAM, 16 GB eMMC flash memory (3000 P/E) | 8 GB DDR3 RAM, 128 GB solid state disk drive |

| Real-Time clock      | yes, maintenance free | yes, battery (service interval 10 years) | yes, battery (service interval 10 years) |

| Wi-Fi                | 802.11b/g/n (fixed antenna) | Option: 802.11b/g/n (2x SMA female out) | 802.11b/g/n (2x SMA female out) |

| Display connection   | HDMI (usable via Docker) | - | DVI-I or DP (usable via Docker) |

| USB                  | 4x USB 2.0 (500mA), max. load 1A | 1x USB 2.0 (500mA), 1x USB 3.0 (900mA) | 3x USB 2.0 (500mA), 1x USB 3.0 (900mA) |

| Serial               | - | 1x RS232/485 (BIOS switchable) | 2x RS232/422/485 (BIOS switchable) |

| Certification        | CE, FCC, UL | CE | CE, FCC, UL |

# Article Overview

<table>
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<tbody>
<tr>
<td>NIO T-E-TIJCX-GB-RE</td>
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<tr>
<td>NIO T-E-TIB100-GB-RE</td>
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<tr>
<td>NIO T-E-TIB100-GB-RE WF</td>
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<tr>
<td>NIO T-E-TP51-EN-RE</td>
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*Note: All technical data may be changed without further notice.*