MIDGE cellular routers, specially designed for SCADA & Telemetry mission critical applications, are well suited to many different wireless applications like POS, ATM, Lottery and Security/Surveillance applications.

MIDGE is Linux OS based and has been designed with attention to detail, performance, quality and reliability. All relevant state-of-the-art concepts have been carefully implemented.

MIDGE is well proven within the market since 2012 in thousands of industrial installations in tens of countries worldwide providing 24/7 reliable service.

MIDGE2, the 2nd generation of MIDGE with 2 SIM cards and 4 Ethernet ports, introduced in 2018, is the top equipment for SCADA communication if a cellular network is required.

MIDGE together with RipEX radio modems offers an unrivalled solution for combining Cellular and UHF/VHF licensed radio in a single hybrid network.

Both provide the same customized serial SCADA protocols on COM interfaces.

- 4G / 3G / 2G
- Global connectivity
- Dual SIM
4x ETH, 1x COM, 1x USB
1x DO, 1x DI
- 40°C to +70°C
12 – 24 VDC
Expansion ready - mPCIe
IPsec, OpenVPN, AES256
Firewall, RADIUS

IP behaviour

Switch - switched or routed Ethernet ports
Terminal server - two Serial-Ethernet converters
Subnets - one additional IP alias on each Ethernet
VLAN - 802.1q & 5 VLANs to each Ethernet
NAPT - masquerading, IP/Mask/Port translation supported
Tunnels - IPsec, OpenVPN, GRE, PPTP
QoS - prioritization from interfaces and/or applications
Static and dynamic routing - Multipath routes, OSPF, BGP

Security

Digitally signed FW
Management - https, ssh
Role-based access control
RADIUS - authentication using remote RADIUS server
AES256 encryption
IPsec - encrypted end-to-end tunnel
OpenVPN - encrypted single server to multiple clients tunnel
Firewall - Layer 2 - MAC, Layer 3 - IP, Layer 4 - TCP/UDP

Scalability

mPCIe slot - for standard boards (GPS, 2nd cellular module...)
Proprietary slot - COM/IO expansion board RS232/RS485 plus 1x DI, 1x DO

Software

SDK - Software Development Kit
LXC - Linux Container
Reliability

- Heavy-duty industrial components
- Industrial hardened design
- Metal case
- -40°C to +70°C
- VRRP - Virtual Router Redundancy Protocol
- Fallback management
- Automatic connect recovery
- 3 year warranty

Diagnostics & Management

- Web interface or CLI via SSH
- Monitoring - save to file analysis of all Eth interfaces
- Graphs - Eth/WAN network traffic
- SNMP v3 including Traps and Informs
- HW Alarm input, HW Alarm output
- SMS /E-mail Event notification
- External flash disc – aut. configuration, FW upgrade

Hybrid networks

- Ready to be combined with RipEX radio modems within one hybrid network
- The same serial SCADA protocol FW drivers like in RipEX: Modbus, IEC101, DNP3, PR2000, Comli, DF1, Proﬁbus, Async Link, C24, Cactus, RP570, Slip, Siemens 3964(R)
- TCP(UDP) protocols can be handled transparently or using Terminal server
- Embedded Modbus RTU / Modbus TCP converter

Technical parameters

| Cellular interface | Frequency bands E | 4G: B20, B5, B8, B3, B1, B7  
|                   | 2G: 850, 900, 1800, 1900 MHz | 3G: B5, B8, B2, B1 |
|                   | Frequency bands P | 4G: B28, B5, B8, B3, B1, B7  
|                   | 2G: 850, 900, 1800, 1900 MHz | 3G: B5, B8, B2, B1 |
|                   | Frequency bands A | 4G: B17, B5, B4, B2, B7  
<p>|                   | 2G: 850, 900, 1800, 1900 MHz | 3G: B5, B8, B4, B2, B1 |
|                   | Data rates | up to 150 Mbps downlink / 50 Mbps uplink |
|                   | SIM slot | 2× Micro SIM |
| Electrical | Primary power | 12 – 24 VDC, +/- 20% |
| Power consumption | Average 7W (including max. 2.5W on USB port) |
| Interfaces | Ethernet | 4× Ethernet 10/100 Base-T, Auto MDX, 4× RJ45, bridged or routed |
|             | COM | 1× RS232, 300 - 115 200 bps, screws, RxD, TxD, GND |
|             | USB | 1× USB host USB2.0 |
|             | Inputs / Outputs | 1× DI, 1× DO |</p>
<table>
<thead>
<tr>
<th><strong>Antenna</strong></th>
<th>2× SMA female - receive diversity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expansion</strong></td>
<td>COM / IO: RS232/RS485 pus 1× DI, 1× DO</td>
</tr>
</tbody>
</table>

### Environmental

- **IP Code (Ingress Protection)**: IP40
- **MTBF (Mean Time Between Failure)**: > 220,000 hours (> 25 years)
- **Operating temperature**: -40°C to +70°C
- **Operating humidity**: 5 to 95% non-condensing
- **Storage**: -40°C to +85°C (-40°F to +185°F) / 5 to 95% non-condensing

### Mechanical

- **Casing**: Metal
- **Dimensions**: 125 H × 45 W × 110 D mm (4.9 ×1.8 × 4.3 in)
- **Weight**: 450 g (1.0 lbs)
- **Mounting**: DIN rail, flat-bracket

### Security

- **Management**: HTTP, HTTPS, SSH
- **Access accounts**: 2 levels (User, Admin)
- **Encryption**: Yes (AES256) with IPsec, OpenVPN
- **IPsec**: Yes
- **Firewall**: Layer 2 – MAC, Layer 3 – IP, Layer 4 – TCP/UDP, SMS filter
- **RADIUS**: Yes

### SW

- **Fallback management**: Yes
- **Connection supervision**: Yes
- **Automatic connect recovery**: Yes
- **SMS management**: Yes
- **Software Development Kit**: Full featured
- **Linux container**: LXC
- **SMS / E-mail event notification**: Yes / Yes
- **Routing**: Static / Dynamic
- **BGP / OSPF**: Yes / Yes
- **QoS**: Yes
- **NAPT**: Yes
- **User protocols on Ethernet**: Yes
- **User protocols on COM**: Modbus RTU, DNP3, IEC101, DF1, COMLI, C24, Cactus, ITT Flyght, RP570, Siemens 3964(R), UNI
- **Serial to IP convertors**: Modbus RTU / Modbus TCP, Terminal server
- **VPN**: OpenVPN, IPsec, PPTP, GRE
- **VRRP**: Yes
- **NTP**: Client / Server
- **SNMP**: v1, v2c, v3
- **Type Approval**: CE, FCC - pending
MIDGE2 – Cellular Router