ABB’s VHF/UHF radio modems are used for the implementation of high performance wireless SCADA networks.

Thanks to their extraordinary intelligence, speed, and switching time, they are suitable for all types of networks where emphasis is placed on speed and reliability.

In contrast to standard radio modems on the market a unique, highly secure and efficient system protocol is used on the radio channel and individual protocols (Modbus, IEC, DNP3, Profibus, etc.) are supported for communication over serial or Ethernet interface.

Modems are manufactured in simplex, half-duplex and full-duplex options with an output power of 5 or 25 Watt.

**Typical areas of use**

- Telemetry and SCADA for:
  - water supply
  - oil & gas supply
  - electric power distribution automation

**User port modules**

- Serial interfaces:
  - available variants: 2xRS232, 1xRS232 (optically isolated), 1xRS422/485.
- Ethernet:
  - fully-fledged Ethernet interface automatically sets communication to a speed of 10 or 100 Mbit/s.

**GPS receiver:**

- precise time sync telegram delivered to RTU.

**I/O:**

- I/O input module with 2xAI, 2xAO, 2xDI, 2xDO. Communication with the I/O board over protocol Modus. Other protocols are implemented as required.

**Control and diagnostics**

- All SCADA radio system components are set up and controlled using programs based on MS Windows and Linux. The programs communicate with the radio network via serial port or Ethernet either directly with the local device or remotely with any other device in the system. Remote network supervision becomes therefore much simpler and reliable as multiple access points can be utilized.

- Control programs can be used for setting up or diagnosis of the radio parameters, the communication parameters and the user interfaces. They also support monitoring of operation on the radio channel and on user interfaces, obtaining statistics, etc.

- It is possible to save and load a file with the complete device configuration. Equipment firmware can be locked at several levels against unauthorized access.
Benefits

ABB product portfolio
- ABB SCADA know how and integration capabilities
- ABB's aligned telemetry and SCADA portfolio

Performance
- Long range coverage (without the need for direct visibility)
- High system gain
- Complies with ETSI EN 300113 for Listen Before Transmit, FCC, RSS, ECE10

Flexibility
- Stationary networks of various types: point-to-point, point to multipoint, multipoint-to-multipoint
- Sequential polling as well as spontaneous transmission thanks to a sophisticated avoidance mechanism
- Addressable and protocol oriented units: more than 70 industrial protocols are presently supported
- Store & Forward with unlimited re-transmission
- Wireless router bridge

Technical data

<table>
<thead>
<tr>
<th>Frequency bands</th>
<th>AR160</th>
<th>135-180MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AR300</td>
<td>290-350 MHz</td>
</tr>
<tr>
<td></td>
<td>AR400</td>
<td>350-470 MHz</td>
</tr>
<tr>
<td>Speed in radio channel</td>
<td>10.84 kbps in 12.5 kHz</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>21.68 kbps in 25 kHz</td>
</tr>
<tr>
<td>Data rate at input port</td>
<td>150 b/sec to 115 kb/sec</td>
<td></td>
</tr>
<tr>
<td>Rx-Tx switching time</td>
<td>&lt; 1.5 ms</td>
<td></td>
</tr>
<tr>
<td>Receiver sensitivity (as derived by PER) in the 12.5 kHz channel</td>
<td>&gt; -110 dB @BER 10^-6</td>
<td></td>
</tr>
<tr>
<td>Output power software adjustable</td>
<td>0.1-5 W (25 W)</td>
<td></td>
</tr>
<tr>
<td>Optional modules</td>
<td>5 slots</td>
<td></td>
</tr>
<tr>
<td>Antenna connector</td>
<td>N-female</td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>13.8 V (10.8-15.6 V) DC</td>
<td></td>
</tr>
<tr>
<td>Idle consumption (Rx)</td>
<td>380 mA (eth +40 mA, I/O +50 mA, GPS +15 mA)</td>
<td></td>
</tr>
<tr>
<td>Consumption during transmission (Tx)</td>
<td>1.6 A / 1 W; 2.0 A / 5 W</td>
<td></td>
</tr>
<tr>
<td>Consumption in SLEEP mode</td>
<td>2.5 mA</td>
<td></td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-25 °C to +60 °C (ETSI 300 113: -25 °C to +55 °C)</td>
<td></td>
</tr>
<tr>
<td>Case dimensions</td>
<td>208 x 108 x 63 mm</td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>DIN rail or 4 x M4 screws</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>1.2 kg</td>
<td></td>
</tr>
</tbody>
</table>

Compliant with standard for
- Radio parameters: ETSI EN 300 113-2 V 1.4.1, FCC part 90, RSS119
- EMC (electromagnetic compatibility): ETSI EN 301 489-5 V 1.3.1
- Electrical safety: CENELEC EN 60 950:2001

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