**Composición**

**SPACE**

**SOFTWARE-RADIO SATELLITE COMUNICATIONS IP MODEMS**

Satellite communications, earth observation, navigation and positioning and control stations.

Indra company.com
**SOFTWARE-RADIO SATELLITE COMMUNICATIONS IP MODEM**

**Highlights**
- Software-defined radio IP router modem
- EPM and non-EPM modem ready for satcom OTM
- Multiwaveform IP router modem
- SNMP IP interface.

**Multiwaveform IP router modem**

**EPM and non-EPM modem ready for satcom OTM**

**Introduction**

The modem is designed based on the software radio paradigm, offering a different approach to telecommunications.

- Waveforms are selected through the keyboard and display.
- SR40 and SR50 can work both as part of a fully automated DAMA network (requires SR50) or setting up point to point links. In both scenarios, the modem can be integrated in existing networks to improve performance and flexibility when integrated in existing networks.
- Optional closed interface and TOFP architecture.

**Hardware Specifications**

- **SR40**
  - 10 Mbit/s packet mode
  - Low pressure (air transportation)
  - MIL-STD-810-F M 514.5
- **SR50**
  - 100 Mbit/s packet mode
  - Low pressure (air transportation)
  - MIL-STD-810-F

**Environmental Specifications**

- **SR40**
  - Storage and transport temperature: 0°C to 70°C
  - Operation temperature: -25°C to 70°C
- **SR50**
  - Storage and transport temperature: 0°C to 70°C
  - Operation temperature: -15°C to 55°C

**General Specifications (all models)**

- **SR40**
  - Power consumption: 100W maximum
  - Weight: 120 kg
- **SR50**
  - Power consumption: 150W maximum
  - Weight: 180 kg

**Waveform Specifications**

<table>
<thead>
<tr>
<th>Waveform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waveform based on ESTI EN 302 307</td>
</tr>
<tr>
<td>Performance</td>
</tr>
<tr>
<td>Modulation</td>
</tr>
<tr>
<td>FEC</td>
</tr>
<tr>
<td>BW</td>
</tr>
<tr>
<td>User data rates</td>
</tr>
<tr>
<td>500 kHz – 5 MHz</td>
</tr>
<tr>
<td>QPSK, 8 PSK, 16 APSK</td>
</tr>
<tr>
<td>LDPC/BCH</td>
</tr>
<tr>
<td>64 kbps – 2048 kbps</td>
</tr>
<tr>
<td>Spreading factor</td>
</tr>
<tr>
<td>2, 4, 8, 16, 31, 63 and 127</td>
</tr>
<tr>
<td>Hopping rate</td>
</tr>
<tr>
<td>2000 hops/second</td>
</tr>
<tr>
<td>8 kbps – 1522 kbps</td>
</tr>
<tr>
<td>User data rates</td>
</tr>
<tr>
<td>Single carrier using QPSK to IESS308 standard</td>
</tr>
<tr>
<td>10 MHz (internal or external)</td>
</tr>
<tr>
<td>Clock reference</td>
</tr>
<tr>
<td>950 MHz to 1450 MHz or 950 MHz to 2150 MHz</td>
</tr>
<tr>
<td>IF frequency</td>
</tr>
<tr>
<td>70 MHz +/- 20 MHz</td>
</tr>
<tr>
<td>General specifications (all modes)</td>
</tr>
<tr>
<td>Power consumption</td>
</tr>
<tr>
<td>100W maximum</td>
</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
<td>Environment specifications</td>
</tr>
<tr>
<td>Storage and transport temperature</td>
</tr>
<tr>
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</tr>
<tr>
<td>Operation temperature</td>
</tr>
<tr>
<td>-25°C to 70°C</td>
</tr>
<tr>
<td>External sync interfaces for PPS or blanking</td>
</tr>
<tr>
<td>Jammer</td>
</tr>
</tbody>
</table>

**SR40 / SR50**

**COMMENTS**

- **SR50**
  - Commanded (through user interface) and automatic power control for all waveforms
  - Bursty (point-to-point) and general purpose applications
  - SR40 and SR50 can work both as part of a fully automated DAMA network (requires SR50) or setting up point to point links. In both scenarios, the modem can be integrated in existing networks to improve performance and flexibility when integrated in existing networks.
- **SR50**
  - Commanded (through user interface) and automatic power control for all waveforms
  - Bursty (point-to-point) and general purpose applications
  - SR40 and SR50 can work both as part of a fully automated DAMA network (requires SR50) or setting up point to point links. In both scenarios, the modem can be integrated in existing networks to improve performance and flexibility when integrated in existing networks.

**SR40 / SR50**

**COMMENTS**

- Commanded (through user interface) and automatic power control for all waveforms
- Bursty (point-to-point) and general purpose applications
- SR40 and SR50 can work both as part of a fully automated DAMA network (requires SR50) or setting up point to point links. In both scenarios, the modem can be integrated in existing networks to improve performance and flexibility when integrated in existing networks.
SOFTWARE-RADIO SATELLITE COMMUNICATIONS IP MODEM

**Highlights**

- Software-defined radio IP router modem
- EPM and non-EPM modem ready for satcom OTM
- Multiwaveform IP router modem
- SNMP IP interface.

**Introduction**

This modem is designed based on the software-radio paradigm to enable the ability to change frequency and waveforms through the keyboard and display. SR40 and SR50 can work both as part of a DAMA network (requires additional equipment) or setting up point to point links. In both scenarios, the core of the modem is an advanced signal processing board based on state-of-the-art DSP and FPGA. IF frequency at 70 MHz uses frequency hopping waveform based on IESS308 standard.

**Multiwaveform IP router modem**

- **SR40** and **SR50**
- **Introduction**

- **MODEM**
- **COMMUNICATIONS IP**
- **SATellite**
- **SOFTWARE-RADIO**

**Modem**

- **SR40** and **SR50**
- **Introduction**

- **Siemens**
- **Keysight**
- **Agilent**

**General specifications (all models)**

- **Dimensions**
- **Vibration**
- **Operations**
- **Temperature**
- **Humidity**
- **Altitude**
- **Operating qualifications**

- **Spurious emissions**
- **Immunity**
- **Switching power**
- **Cooling**
- **Power supply**

**Environmental specifications**

- **Humidity**
- **Temperature**
- **Operating temperature**
- **Storage temperature**
- **Operating environment**

- **General specifications (all modes)**

**General specifications**

- **Dimensions**
- **Weight**
- **Power consumption**
- **Acoustics**
- **RCS**

**Environmental specifications**

- **Temperature**
- **Humidity**
- **Altitude**
- **Vibration**
- **Shock**
- **Dust and Pollution**

**Waveform specifications**

- **DVB-S2 waveform with ACM**
- **Single carrier QSPK hopping for highest level of security and interception**
- **Proprietary spreading (direct sequence) for reduced spectrum density of the SCPC**

**Technical specifications**

- **Comms**
- **Performance**
- **CCM/VCM/ACM**
- **FEC**
- **Modulation**

**VHF Bandwidth Specifications**

- **20 kHz – 10 MHz**
- **BW**

**General specifications (all models)**

- **Dimensions**
- **Weight**
- **Power consumption**
- **Acoustics**
- **RCS**

**Environmental specifications**

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- **20 kHz – 10 MHz**
- **BW**
### Software-Radio Satellite Communications IP MODEMs

Satellite communications, earth observation, navigation and positioning and control stations.

**Indra company.com**

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**Ordering Information**

<table>
<thead>
<tr>
<th>MODEL NAME</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SR40</strong></td>
<td>SR40 + TCP/IP hardware acceleration and compression</td>
</tr>
<tr>
<td><strong>SR40+</strong></td>
<td>SR40 + DVB-S2 with ACM</td>
</tr>
<tr>
<td><strong>SR50</strong></td>
<td></td>
</tr>
</tbody>
</table>
**SOFTWWARE-RADIO SATELLITE COMMUNICATIONS IP MODEM**

**Introduction**

This modem is designed based on the EPM and non-EPM modem. The modem can be integrated into a network through a standard router. SR40 and SR50 can work both as part of a DAMA network (requires installation of the Network Management System) or setting up point to point links. In both scenarios, the modem can be integrated into the network through standard router modes in order to provide the greatest flexibility when integrated in existing networks.

**Highlights**

- Software-defined radio IP router modem ready for satcom OTM
- Multiwaveform IP router modem
- SNMP IP interface.
- Five waveforms available: SCPC, SCPC (DVB-S2), SCPC (ST ANAG 4606), QSPK
dhopping waveform based on ST ANAG 4486 and DVB-S2 with ACM
- External sync interfaces for PPS and blanking
- SW jamming detector
- Internal sync interfaces for PPS and blanking
- No fans for higher reliability
- New customer-defined waveforms

**SR40 / SR50**

**Introduction**

This modem is designed based on the EPM and non-EPM modem. The modem can be integrated into a network through a standard router. SR40 and SR50 can work both as part of a DAMA network (requires installation of the Network Management System) or setting up point to point links. In both scenarios, the modem can be integrated into the network through standard router modes in order to provide the greatest flexibility when integrated in existing networks.

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- External sync interfaces for PPS and blanking
- SW jamming detector
- Internal sync interfaces for PPS and blanking
- No fans for higher reliability
- New customer-defined waveforms

**Specifications**

- **Bandwidth:**
  - 500 kHz – 5 MHz
- **Modulation:**
  - QPSK, 8 PSK, 16 APSK
- **FEC (selectable):**
  - Convolutional 1/2 or 3/4 Reed-Solomon Turbo codes 1/2, 1/3, 3/4
- **Spreading factor:**
  - 2, 4, 8, 16, 31, 63 and 127
- **User data rates:**
  - 64 kbps – 2048 kbps
- **Performance:**
  - Meets IESS308
- **General specifications (all modes):**
  - Clock reference: 10 MHz (internal or external)
  - L band frequency: 950 MHz to 1450 MHz or 950 MHz to 2150 MHz
  - IF frequency: 70 MHz +/- 20 MHz
  - Dimensions:
    - 1U 19” frame 400 mm depth
  - Storage and transport temperature:
    - -15º C < T < +55º C
  - Operation temperature:
    - -25º C < T < 70º C
  - Environmental specifications:
    - Vibration:
      - MIL-STD-810-F M 514.5
    - Low pressure (air transportation):
      - MIL-STD-810 F
    - Operating humidity:
      - 0-95%*, non-condensing (*with coating, 90% without)
      - 100 Kbps – 30 MSps
  - Jammer:
    - CCM/VCM/ACM
  - SW jamming detector
- **General specifications:**
  - Clock data rates:
    - 64 kbps – 1522 kbps
  - Syncing interface:
    - 128, 256, 512, 1024, 2048, 4096 kbps
  - G.703 (interface)
Software-Radio Satellite Communications IP Modems

Satellite communications, earth observation, navigation and positioning and control stations.

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