ITS-RS4

High-performance V2X enabled roadside unit with edge computing

Designed for Cooperative ITS deployment, the fourth generation ITS-RS4 from Commsignia is the ultimate V2X communication solution for roadside applications and future edge computing solution. The platform combines a high performance application CPU with real-time V2X software stack and radio interfaces with the ability to connect it with sensors along the road. Enhanced security solutions, IP66/IP67 enclosure and Industrial grade design offers a professional solution for equipment operators and makes TMC integration easy and secure.

- Edge computing
- Pedestrian Safety
- Sensor fusion /w existing ITS sensors
- Interoperable with all major vendors globally
- Minimized TCO with durable design
- Reduced risk
- Improved performance (DSRC / ETSI-G5, C-V2X)
- Reduced deployment cost

V2X interface
- Dedicated next generation V2X chipset
- Dual-channel operation
- Extended radio coverage with a single unit
- Complete Real-Time V2X Stack (ETSI, IEEE, SAE, ISO)
- Available with Autotalks / NXP / Marvell / Qualcomm 9150 V2X chipset

Security
- Tamper protected, Supervised system / housing
- Easy and secure remote configuration
- Support for future security upgrade
- Cryptographic Acceleration (HSM) for V2X
- Tamper proof certificate storage (HSM)

Support and Maintenance
- Software Development Kit: Linux and RTOS available for normal and time critical application development
- 4 level technical customer support
- User & Programmer’s guide
- Available APIs: native C / remote C / remote Java / remote ASN.1
- Sample applications

Competitive features
- Powerful application CPU
- Pedestrian safety
- Embedded Commsignia V2X Stack
- Available Software Upgrades
- IP67 Enclosure and connectors
- Wide range of wired and wireless interfaces
- Sensor fusion /w camera, radar LiDAR

Easy integration
- Remote Management Tool
- Power over Ethernet (PoE)
- Remote logging
- Statistics and Reports
- Various TMC interfaces (DATEX II, NTCIP, …)

V2X Software
All V2X communication solutions are based on the same compact V2X software core which is available as separate product supporting several platforms. Each layer of the Software Stack contains several network blocks enabling applications to transmit and receive standard compliant V2X messages over the air.
**CORE FEATURES**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>1GHz Freescale/NXP i.MX 6</td>
</tr>
<tr>
<td>OS</td>
<td>Linux / RTOS (V2X)</td>
</tr>
<tr>
<td>RAM</td>
<td>2 GB DDR3 SDRAM</td>
</tr>
<tr>
<td>FLASH</td>
<td>4 GB eMMC</td>
</tr>
<tr>
<td>STORAGE</td>
<td>Dual micro SD Card slot</td>
</tr>
<tr>
<td>ETHERNET</td>
<td>10/100/1000 Mbps Ethernet PoE</td>
</tr>
<tr>
<td>EXTERNAL I/O</td>
<td>Dual USB 2.0, GPIO</td>
</tr>
<tr>
<td>SUPERVISOR</td>
<td>Yes</td>
</tr>
<tr>
<td>POWER SUPPLY</td>
<td>8-32 VDC / PoE (surge and reverse polarity protected)</td>
</tr>
<tr>
<td>BACKUP POWER</td>
<td>Yes (10s Store &amp; Shutdown) (optional)</td>
</tr>
<tr>
<td>POSITIONING</td>
<td>Advanced GNSS</td>
</tr>
<tr>
<td>WiFi</td>
<td>Dual band a/b/g/n Mini PCIe slot #1 only (optional)</td>
</tr>
<tr>
<td>Bluetooth</td>
<td>Yes (optional)</td>
</tr>
<tr>
<td>CELLULAR</td>
<td>3G / LTE (MiMo) Mini PCIe slot #2 only</td>
</tr>
<tr>
<td>IMU</td>
<td>3 axis gyroscope BOSCH, 3 axis accelerometer BMM160, 3 axis magnetometer BMM150</td>
</tr>
</tbody>
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**AVAILABLE V2X RADIO VARIANTS**

- Autotalks Sector
- NXP TEF5100 (RF Transceiver) & SAF5100 (Baseband)
- Marvell SDIO (88W8987PA)
- Qualcomm 9150

**SECURITY**

- Hardware Security Module (HSM) SLI97
- ECDSA verification (> 2000 verifications), encryption (< 50 usec signing delay)
- NIST and Brainpool verification, encryption
- Secure boot, encrypted storage, tamper proof system
- EAL6+ certified and available with up to 1MB of secure SOLID FLASH
- ARM TrustZone including the TZ architecture

**ENCLOSURE**

- Protection: NEMA4X - IP67, vibration proof waterproof outdoor enclosure
- Mount: pole and wall mountable
- Dimensions: configuration dependent

**CONNECTORS**

<table>
<thead>
<tr>
<th>Connector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATA</td>
<td>1 x ETH, 2 x USB, 1 x CAN, 1 x OBD-II</td>
</tr>
<tr>
<td>POWER</td>
<td>Power connector</td>
</tr>
<tr>
<td></td>
<td>Reset button</td>
</tr>
<tr>
<td></td>
<td>3 x Bicolor LEDs</td>
</tr>
<tr>
<td></td>
<td>3 x OUTPUT &amp; 5 x INPUT</td>
</tr>
<tr>
<td>ANTENNA</td>
<td>2 x V2X, 2 x WiFi, 2 x LTE/3G, 1 x GNSS</td>
</tr>
<tr>
<td>OTHER</td>
<td>2 x Mini PCIe slots</td>
</tr>
<tr>
<td>VIDEO</td>
<td>HDMI 1.4a</td>
</tr>
<tr>
<td>LINE OUT</td>
<td>3.5mm jack</td>
</tr>
</tbody>
</table>

**V2X INTEGRATION**

Over the years, Commsignia gained a tremendous amount of advantage and experience in V2X on-board unit deployment and operation.

- Participating in deployment and OEM/Tier-1 trials
- Fusion algorithms for ADAS systems
- Day1 / Day2 applications
- Sensor data integration

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