DSP based OEM Radio Transceiver with Built-in wireless link Monitoring and Management Tools:

• Both Licensed and Unlicensed operation modes
• 8 miles Maximum Distance Range
• Data Speed over the air 38400 bps at 25 kHz and 19200 bps at 12.5 kHz
• Programmable Output Power (30 mW to 1 W)
• Advanced Forward Error Correction (FEC)
• UART serial interface with RTS/CTS flow control support
• Data Speed over the serial port 9600 to 115200 bps
• Testing, monitoring and control of the unit over the air
• AlphaWave SuperScan® - automatic search and select for best frequency/channel

The AW100Tx radio transceiver provides a high-speed Point-to-Point and Point-to-Multipoint wireless data transfer at up to 38.4 kbps. AW100Tx supports user selectable modulation techniques (GMSK, 4FSK, DBPSK, DQPSK, D8PSK, or D16QAM), which allows the user to achieve the highest data speed for a given range (up to 8 miles). It also includes a selectable error correction, which improves the functioning of the radio modem under interference.

The unmatched features of AW100Tx include data scrambling, frequency hopping, user selectable transmit output power level, low power consumption sleep modes, autoscanning for base and plug-and-play installation for remote terminals. AW100Tx supports two separate Application Data and Maintenance modes of single UART serial port.

The built-in software tools provide the wireless link testing, units’ status and error statistics monitoring as well as units’ settings change over the air. The software of the AW100Tx radio transceiver resides in a flash memory. The updating of the radio modem programs is entirely software-based. The flash memory is re-programmable through an UART interface or over the air.
AW100Tx

General Specification
- Input Voltage: 4.2 V ± 5 %
- Power Consumption (average): 3 W – transmit with 50% duty cycle (1 W TPO)
- 1 W – receive mode
- Operation Temperature: -40°C ... +60°C
- Storage Temperature: -40°C ... +80°C
- Dimensions: L: 80 mm x W: 46.5 mm x H: 7.6/9.5 mm
- Weight: 41 g

Features
- DSP-Modem
- Multi-Modulation Technologies
- Zero-IF Technologies
- 138 - 174 MHz Frequency Range
- Up to 115200 bps Data Rate
- Embedded Firmware Compensation for Operation and Extremely Low at High Temperatures
- Compact Design

External Connectors:
RF Connector
J2 is Antenna Input / Output Connector: MMCX RIGHT ANGLE PCB JACK, AMPHENOL P/N 908-24100.

Main Connector (J1)
16-Lead Header Connector, ECS Corp: P/N 9616-D1-01-03

<table>
<thead>
<tr>
<th>PIN #</th>
<th>Signal Designator</th>
<th>Signal name</th>
<th>Description</th>
<th>I/O</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
<td>GND</td>
<td>Ground</td>
<td>-</td>
<td>Signal and Chassis Ground</td>
</tr>
<tr>
<td>2</td>
<td>DSP UART 1</td>
<td>TXD</td>
<td>Transmitted Data</td>
<td>TTL Input</td>
<td>Serial Data Input</td>
</tr>
<tr>
<td>3</td>
<td>DSP UART 2</td>
<td>RXD</td>
<td>Received Data</td>
<td>TTL Output</td>
<td>Output for received serial data</td>
</tr>
<tr>
<td>4</td>
<td>DPORT3</td>
<td>DTR</td>
<td>Data Terminal Ready</td>
<td>TTL Input</td>
<td>Control line can be used as a backup method for entering Command mode. (0V) – Maintenance Mode; (3.3V) – Data Mode An internal 100K pull-up enables Data Mode if this signal is left unconnected. Maintenance Mode is also accessible by transmitting an escape sequence.</td>
</tr>
<tr>
<td>5</td>
<td>DPORT1</td>
<td>CTS</td>
<td>Clear to Send</td>
<td>TTL Output</td>
<td>Used to control transmit flow from the user to the radio; (0V) – Transmit buffer not full, continue transmitting (3.3V) – Transmit buffer full, stop transmitting</td>
</tr>
<tr>
<td>6</td>
<td>TTL1</td>
<td>SLEEP</td>
<td>Sleeps/wakes</td>
<td>TTL Input</td>
<td>In sleep mode, all radio functions are disabled consuming less than 50µA. An internal 10K pull-down wakes up the radio if this signal is left unconnected. At wake up, any user programmed configuration settings are refreshed from flash memory, clearing any temporary settings that may have been set (3.3V) – Sleep Radio; (0V) – Wake Radio As an option could be used as TTL Input Line 1.</td>
</tr>
<tr>
<td>7</td>
<td>DPORT3</td>
<td>MDM_GRN</td>
<td>Data Carrier Detect</td>
<td>TTL Output</td>
<td>Used by remotes to indicate that the remote has successfully acquired the signal from base station: (0V) 1 – Carrier detected (synchronized) (3.3V) 0 – No carrier detected (not synchronized)</td>
</tr>
<tr>
<td>8</td>
<td>DPORT4</td>
<td>RTS</td>
<td>Request to Send</td>
<td>TTL Input</td>
<td>Gates the flow of receive data from the radio to the user on or off. An internal 10K pull-down enables data receive if this signal is left unconnected. In normal operation this signal should be asserted; (0V) – Receive data (RxD) enabled (3.3V) – Receive data (RxD) disabled</td>
</tr>
<tr>
<td>9</td>
<td>DPORT2</td>
<td>DSR</td>
<td>Data Set Ready</td>
<td>TTL Output</td>
<td>Used to control transmit flow from the user to the radio; (0V) – Receive buffer has data to transfer; (3.3V) 0 – Receive buffer is empty</td>
</tr>
<tr>
<td>10</td>
<td>RES CONT</td>
<td>RESCONT</td>
<td>Reset the radio</td>
<td>TTL Input</td>
<td>Reset the radio by shortening this pin to the ground.</td>
</tr>
<tr>
<td>11</td>
<td>TTL01</td>
<td>TTIOUT1</td>
<td>TTL Output Line 1</td>
<td>TTL Output</td>
<td>Reserve line</td>
</tr>
<tr>
<td>12</td>
<td>TTL02</td>
<td>TTIOUT2</td>
<td>TTL Output Line 2</td>
<td>TTL Output</td>
<td>Reserve line</td>
</tr>
<tr>
<td>13</td>
<td>GND</td>
<td>GND</td>
<td>Ground</td>
<td>-</td>
<td>Signal and Chassis Ground</td>
</tr>
<tr>
<td>14</td>
<td>TTL2</td>
<td>TTI LIN</td>
<td>TTL Input</td>
<td>TTL Input</td>
<td>An internal 10K pull-up resistor is applied.</td>
</tr>
<tr>
<td>15</td>
<td>VCC-36</td>
<td>PWR</td>
<td>Power Supply External</td>
<td>Regulated positive 4.2V DC from ext. Power Supply</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>VCC-36</td>
<td>PWR</td>
<td>Power Supply External</td>
<td>Regulated positive 4.2V DC from ext. Power Supply</td>
<td></td>
</tr>
</tbody>
</table>

Radio Transmitter Specifications
- Component | Details |
- Transmitter Output Power | +15...+30 dBm in 1 dB step / 50 Ω |
- Carrier Power Stability | +1 dB / -2 dB |

Radio Transceiver Specifications
- Component | Details |
- Frequency Range | 138-174 MHz |
- Channel Spacing | 25/20/12.5/6.25 kHz |
- Carrier Frequency Stability | ±1 ppm |
- Modulation | DQPSK/D8PSK/D16QAM |
- Communication Mode | Half duplex, simplex |

Radio Receiver Specifications
- Component | Details |
- Receiver Sensitivity for DBPSK (BER 1x 10^-4) | -113 dBm for 25 kHz Channel Spacing |
- Receiver Sensitivity for DQPSK (BER 1x 10^-4) | -110 dBm for 25 kHz Channel Spacing |

Modem Specification
- Component | Details |
- Interface Connector | UART1 (serial port) |
- Interface Connector | 16-Lead Connector |
- Data Speed of Serial Interface | 9600 – 115200 bps |
- Data Rate of Radio Interface (25 kHz Channel Spacing) | 7500 bps – DBPSK/D8PSK/D16QAM |
- Data Rate of Radio Interface (12.5 kHz Channel Spacing) | 4800 bps – DBPSK/D8PSK/D16QAM |
- Data Rate of Radio Interface (6.25 kHz Channel Spacing) | 2400 bps – DBPSK/D8PSK/D16QAM |
- Forward Error Correction (FEC) | Reed-Solomon Error Correction |
- Data scrambling | Yes |

Compliance
- Parameter | Specification |
- FCC | Part 90 |
- Industry Canada | RSS-210 |
- ETSI | ETSI EN 300 113-2, ETSI EN 301 489-1, ETSI EN 301 489-5 |

Dimensions [in]
- Width: 3.00 mm
- Height: 3.00 mm
- Thickness: 0.60 mm

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Specifications are typical and subject to change without prior notice.