

PEER Protocol Connector

PEER protocol devices

- Name: **PEER**
- Version: 1.0.0.0
- Protocol: PEER (peer-to-peer, vital, session-based)
- Interface: Serial (RS-232 / RS-485)
- Runtime: .NET Standard 2.0 (Multiplatform)
- Configuration:
 - Devices / Channels / Nodes / Points

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Overview

The PEER connector implements the **PEER protocol** (ASTS USA, SM 9726), a peer-to-peer, session-based, vital serial signaling protocol used in railway and transit wayside applications. Unlike master/poll protocols, each pair of stations establishes a permanent communication session and exchanges the full operand interface of a station whenever a value changes; link integrity is maintained by periodic status/data messages paced by the heartbeat interval.

Compatible devices include the **Ansaldo STS Microlok II**. The protocol name is **PEER**; Microlok II is named only as a compatible device model.

| Communication Driver Information | |
|----------------------------------|---|
| Driver name | PEER |
| Assembly Name | T.ProtocolDriver.PEER |
| Assembly Version | 1.0.0.0 |
| Multiplatform | True |
| Devices supported | Ansaldo STS Microlok II and other PEER protocol compatible stations |
| Manufacturer | Ansaldo STS (ASTS USA) |
| Protocol | PEER |
| Interface | Point-to-point asynchronous serial (RS-232 / RS-485) |

Channel Configuration

Protocol Options

Not used in this driver.

Serial Settings

PEER is a point-to-point asynchronous serial protocol. The serial port settings default to values appropriate for a PEER link:

- **Baud Rate:** 19200 (supported range 300..38400)
- **Data Bits:** 8
- **Stop Bits:** 1
- **Parity:** None (message integrity is provided by the CRC-31 security field, so parity is not required)

Node Configuration

Station Configuration

A PEER station is identified by its own station address and the partner (peer) address. Vitality is a property of the station: a station defines vital or non-vital operands, never both. The configurable station parameters are:

- **LocalAddress:** this unit's PEER station address (source). Integer 0–65535.
- **PeerAddress:** partner peer station address (destination). Integer 0–65535.
- **Vital:** when checked, the station is vital and uses the Vital CRC-31 init value. Uncheck for a non-vital station.
- **AckTimeout:** acknowledge timeout in milliseconds. Default: 1000.
- **HeartbeatInterval:** heartbeat interval in milliseconds (100). Default: 4000.

The station string is semicolon-separated: `LocalAddress;PeerAddress;Vital;AckTimeout;HeartbeatInterval` (for example, `10;20;true;1000;4000` for a vital station with local address 10 and peer address 20).

Point Configuration

Address

The PEER driver uses a concatenated address format: `<ClassCode><Index>[.<Bits>]`

- **ClassCode:** the operand class — BO (Boolean Output), BI (Boolean Input), NO (Numeric Output), NI (Numeric Input).
- **Index:** ordinal position of the operand within its class (0-based, 0–255).
- **.Bits:** numeric size in bits — 8, 16, 24 or 32. Required for numeric operands (NO/NI), omitted for boolean operands (BO/BI).

Vitality is inherited from the station and is **not** encoded in the point address. Numeric values are transmitted big-endian on the wire.

| Example | Meaning |
|---------|--------------------------------|
| BO0 | Boolean Output, index 0 |
| BI3 | Boolean Input, index 3 |
| NO0.8 | Numeric Output, index 0, 8-bit |
| NI2.16 | Numeric Input, index 2, 16-bit |

Write Group

Output operands (BO/NO) are transmitted as a single data message carrying the whole operand interface of the station's class group. Output points are therefore configured within a **WriteGroup** AccessType so that all values of the group are sent together.

Notes and Limitations

The current release implements operand read/write over an established PEER link using Header Format 1 (sync \$F4, 2-byte addressing). Message types supported: 01 (Initialization), 02 (Vital Data), 03 (Non-Vital Data), 04 (Status) and 06 (Service Signal / ACK-NAK). Message security uses CRC-31 (ATCS Specification 200, Appendix Y), with the Vital CRC-31 init value applied to vital messages.

The following are not included in this release: ATCS WAN addressing (Header Format 2, sync \$F5), HMAC headers (\$FE), diagnostic message types (05/07/08/09/0A) and OSS message types (0B/0C).

Driver Revision History

| PEER Revision History | |
|-----------------------|--|
| Version | Notes |
| 1.0.0.0 | Initial release. Operand read/write over a PEER serial link (Header Format 1, 2-byte addressing); vital and non-vital stations; CRC-31 security. |

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