# ELECTRO·SENSORS

# SpeedTalker-DN (XP)
## DeviceNet Shaft Speed Sensor with Alarms

# USER'S MANUAL
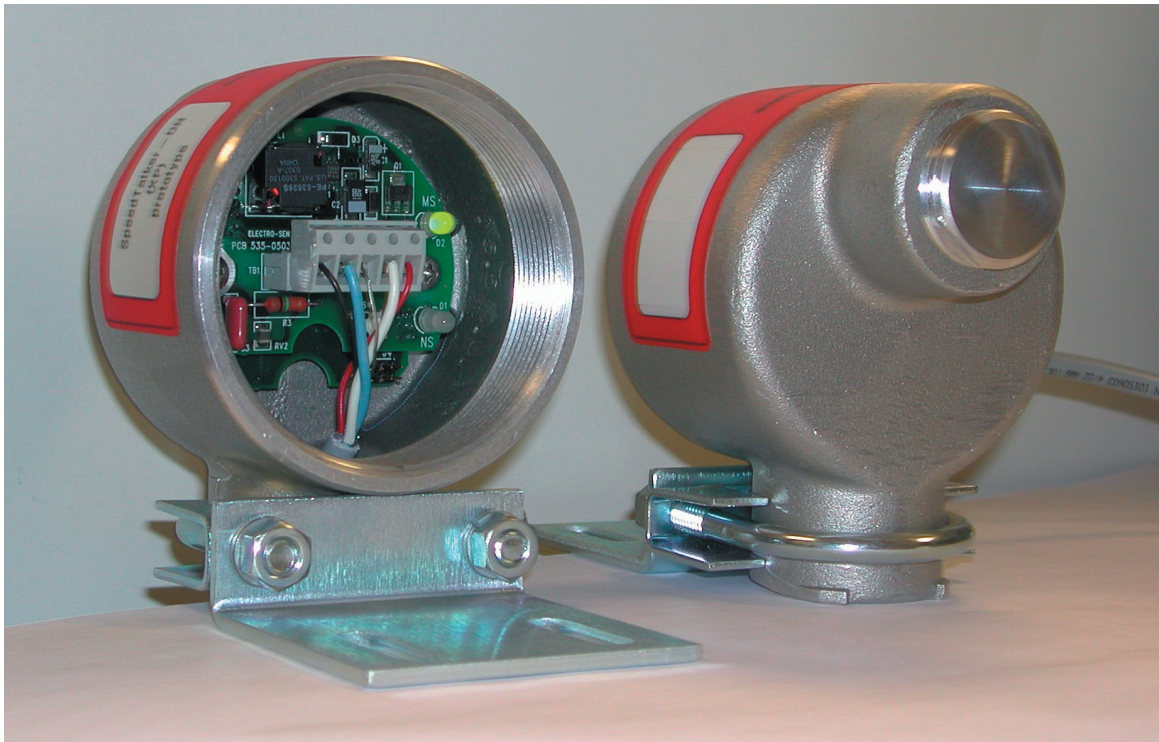


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DeviceNet
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# Organization

# 1.    Overview

The SpeedTalker-DN (XP) continuously monitors rotating shaft speed, providing measured RPM and the status of up to four alarm functions over DeviceNet.

Measurable speed ranges from 0.0 to 6,553.5 RPM.  Each configurable alarm function has on/off, overspeed/underspeed,  speed threshold, delay time and minimum on-time settings.

All configuration is handled over DeviceNet with parameter settings stored in non-volatile memory.  An electronic data sheet file (EDS) is provided to aid configuration.

Speed measurement and alarm status are provided over the Poll I/O connection.  Alarm status is also provided over the COS I/O connection for applications requiring sensor-initiated underspeed and/or overspeed notification (e.g. 'zero-speed' sensing).

# 2.    Operation

## 2.1    Indicator LEDs

The Network Status and Module Status indicators are located inside the enclosure (remove round cover to view them).  They are provided to aid setup, diagnostics and troubleshooting.  Their operation is standard DeviceNet.

| LED state | Network Status (NS) | Module Status (MS) |
|---|---|---|
| Off | Not powered / not on-line | Not powered |
| Flashing Green | On-line, not connected | Device Standby |
| Green | On-line, connected | Device Operational |
| Flashing Red | IO connection timed-out | Minor Fault |
| Red | Comm fault | Unrecoverable Fault |
| Flashing Red/Green | | Device Self-Testing |

## 2.2    Speed measurement

SpeedTalker-DN (XP) detects alternating magnetic pulses from a shaft-mounted rotating Pulser Disk or Pulser Wrap and converts the pulse frequency into measured speed (RPM) units.  The RPM value is given in the Measured Speed attribute of the Speed object and is also part of the Assembly object's Data attribute (Poll I/O connection).  See the Device Profile for details.

The Measured Speed is governed by two configuration parameters:

Target Pulses/Rev (PPR)

Set this to the pulses per revolution of the Pulser Disk/Wrap used.

Note that the Target PPR is *one-half* the number of Pulser Disk/Wrap magnets.

Minimum measurable speed

Sets the minimum shaft speed (RPM) below which the *measured* RPM will be zero.  This is particularly useful in slower speed applications to reduce the time taken to detect zero RPM.

## 2.3    Alarm functions

Four configurable alarm functions (Alarm 4...1) are provided for detecting underspeed or overspeed conditions.  Each may be used individually or in any combination with the others.  All have identical capabilities and each works independently of the others.

The states (Alarmed/Not-Alarmed) of the four alarm functions are given in the low four  bits of the Alarm Status attribute of the Alarm object and is part of the Assembly object's Data attribute (Poll I/O connection).

Alarm Status is also available over the COS I/O connection for applications requiring sensor-initiated underspeed and/or overspeed notification.  See the Device Profile for details.

The following three configuration parameters apply to *all four* alarm functions:

Alarm 4...1 ON/OFF

The low four bits of this parameter selectively turn the alarm functions ON/OFF.

Alarm 4...1 Over/Under

The low four bits of this parameter set alarm overspeed/underspeed functionality for the alarm functions. When set for overspeed, a function becomes alarmed when measured speed is *greater than* the Overspeed Alarmed trip-point and becomes not-alarmed when it is *less than* the Not-Alarmed trip-point. When set for underspeed, a function becomes alarmed when measured speed is *less than* the Underspeed Alarmed trip-point and becomes not-alarmed when it is *greater than* the Not-Alarmed trip-point.

Alarm threshold hysteresis

Works with each function's Alarm Threshold and Over/Under setting to determine the RPM trip-point for *exiting* the Alarmed state.  It has no effect on the RPM trip-point for *entering* the Alarmed state.

| | |
|---|---|
| Over/Underspeed Alarmed trip-point: | Alarm Threshold |
| Overspeed Not-Alarmed trip-point: | (1 - %Hysteresis/100) * Alarm Threshold |
| Underspeed Not-Alarmed trip-point: | (1 + %Hysteresis/100) * Alarm Threshold |
| Example        for %Hysteresis = 1%, Alarm Threshold = 100.0 RPM, Overspeed: | |
| | Alarmed trip-point = 100 RPM, Not-Alarmed trip-point = 99.0 RPM |

*Each* alarm function has the following configuration parameters:

Alarm threshold

Sets the RPM trip-point for *entering* the Alarmed state.  Also works with the Alarm threshold hysteresis and the function's Over/Under setting to determine the RPM trip-point for *exiting* the Alarmed state.

| | |
|---|---|
| Over/Underspeed Alarmed trip-point: | Alarm Threshold |
| Overspeed Not-Alarmed trip-point: | (1 - %Hysteresis/100) * Alarm Threshold |
| Underspeed Not-Alarmed trip-point: | (1 + %Hysteresis/100) * Alarm Threshold |

Alarm ON delay

Sets the time that measured speed must be continuously at alarm levels before the function enters the Alarmed state.  This setting is useful for avoiding nuisance alarms resulting from transient speed excursions into alarm levels.

Alarm ON minimum time

Sets the minimum time a function stays Alarmed once it has entered the Alarmed state.

# 3.    Setup

### 3.1    Mechanical installation

The SpeedTalker-DN (XP) may be mounted on rigid conduit or with the mounting bracket assembly (provided).

The gap (A) between the sensing head and the Pulser Disk/Wrap must be 1/16 to 1/4 inch.

The center line of the magnets (B) must allign with the center of the sensing head as the Pulser Disk/Wrap rotates.

After mounting, remove the round cover and pull network cable through the conduit port into the enclosure.
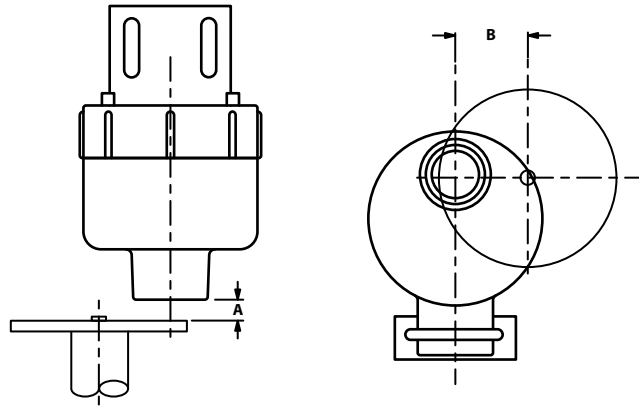
**With Pulser Disk Target**
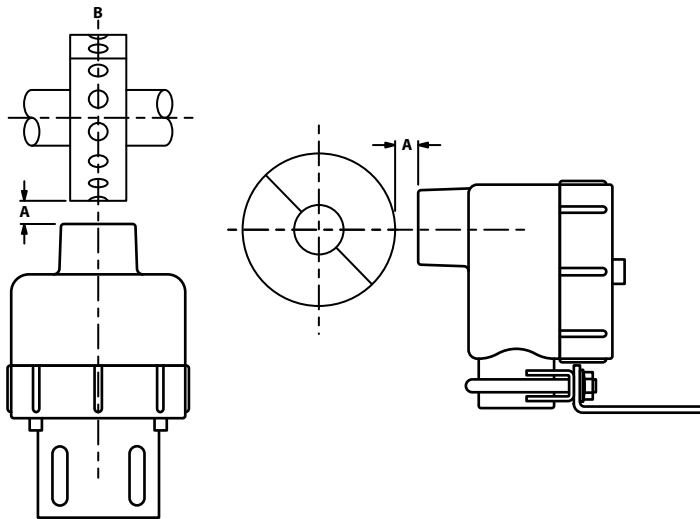
**With Pulser Wrap Target**

### 3.2 Wiring, power-up and getting on-line

1. After mounting and pulling DeviceNet cable into the enclosure, remove the connector plug from its socket and connect the color-coded DeviceNet cable wires to the corresponding connector plug terminals.

Can- (Blue)   Sheild   Can+ (White)
V- (Black)   V+ (Red)

Module Status
Network Status

MS

NS
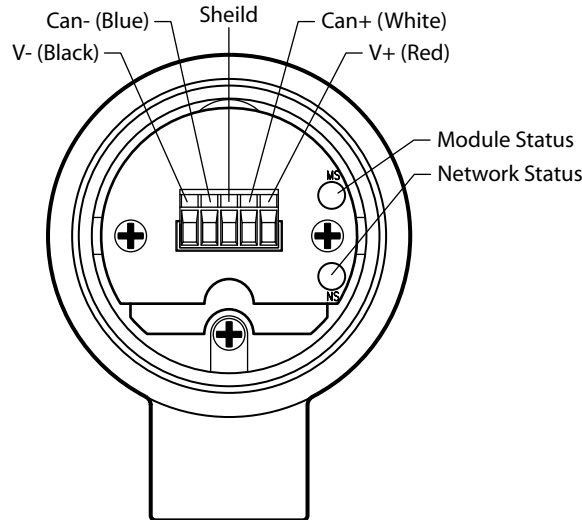
**Connector terminals and Indicator LEDs**

2. Re-install the connector plug.
3. If the network is powered, the LEDs will sequence through a brief test:
   Network Status OFF, Module Status GREEN-RED-GREEN, Network Status GREEN-RED-OFF.
4. If there are no MAC ID or Baud Rate conflicts on the network, the Network Status LED should then flash GREEN indicating the node is on-line but not connected.

### 3.3 Set MAC ID, Baud Rate (DeviceNet Commissioning Tool required)

1. Once on-line, scan the network to find the SpeedTalker-DN (XP). Once found, you may change the MAC ID and/or Baud Rate. The factory defaults are MAC ID 63 and Baud Rate 125k.
2. MAC ID changes take effect immediately, initiating a reset sequence similar to that of power-on. Baud Rate changes don't take effect until SpeedTalker-DN (XP) power is cycled off/on.

### 3.4 Configure SpeedTalker parameters (DeviceNet Configuration Tool required)

1. Register the SpeedTalker-DN (XP) EDS file with your DeviceNet Configuration Tool. Your DeviceNet Configuration Tool uses this file to create a user-friendly interface to the configuration parameters.
2. Speed configuration parameters:
   - 2.1 Target Pulses/Rev (PPR)
     Enter the PPR for the Pulser Disk/Wrap used.
       Note: The PPR is *one-half* the number of Pulser Disk/Wrap magnets.
   - 2.2 Minimum measurable speed
     Enter the minimum shaft speed (RPM) below which you want the *measured* RPM to be zero.
   
   Speed parameters may be changed in either order. Changes take effect immediately.
3. Alarm configuration parameters:
   Set the configuration parameters for any/all desired Alarm functions.
   Alarm parameters may be changed in any order. Changes take effect immediately.

### 3.5    Configure Scanner (DeviceNet Configuration Tool required)

1.    Add the SpeedTalker to the Scanner's scanlist:
      Select the SpeedTalker-DN (XP) from the Scanner's list of available devices and add it to the scanlist.

2.    Select and map the SpeedTalker Inputs:

      2.1    Select the desired SpeedTalker-DN (XP) input (Poll or COS) from the Scanner's list of available inputs.
             The Poll connection produces the Assembly Object's data attribute value (Class ID = 4, Instance = 101, Attribute = 3).
             The COS connection produces the Alarm Object's Alarm Status attribute value  (Class ID = 101, Instance = 1, Attribute = 16).

      2.2    Map the selected input to the desired Scanner memory locations.
             For the Poll connection, set the byte offset and bit length to map the desired Data Component (Speed Value, Alarm Status or both) from the I/O Assembly.  **See 4.2  I/O Data Format for details.**
                     For Speed Value only, set the byte offset to 0 and bit length to 16.
                     For Alarm Status only, set the byte offset to 2 and bit length to 8.
                     For both, set the byte offset to 0 and bit length to 24.


### 3.6    Interpreting I/O data

1.    Speed Value
      Data type:       16-bit unsigned integer (UINT)
      User-units:      RPM
      Resolution:      0.1 RPM
                       Minimum value (0x0000) represents 0.0 RPM
                       Maximum value (0xFFFF) represents 6,553.5 RPM.
      Source:          Speed Object's Measured Speed attribute (class/inst./attr. 100/1/3)


2.    Alarm Status
      Data type:       8-bit boolean (BYTE)
      Bit assignment:
                       Bit 0    Alarm 1 status
                       Bit 1    Alarm 2 status
                       Bit 2    Alarm 3 status
                       Bit 3    Alarm 4 status
                       Bit 4    0 (unused)
                       Bit 5    0 (unused)
                       Bit 6    0 (unused)
                       Bit 7    0 (unused)
      Bit encoding:
                       0 - Not Alarmed
                       1 - Alarmed
      Source:          Alarm Object's Alarm Status attribute (class/inst./attr. 101/1/16)

# 4.    Device Profile

## 4.1    Object model
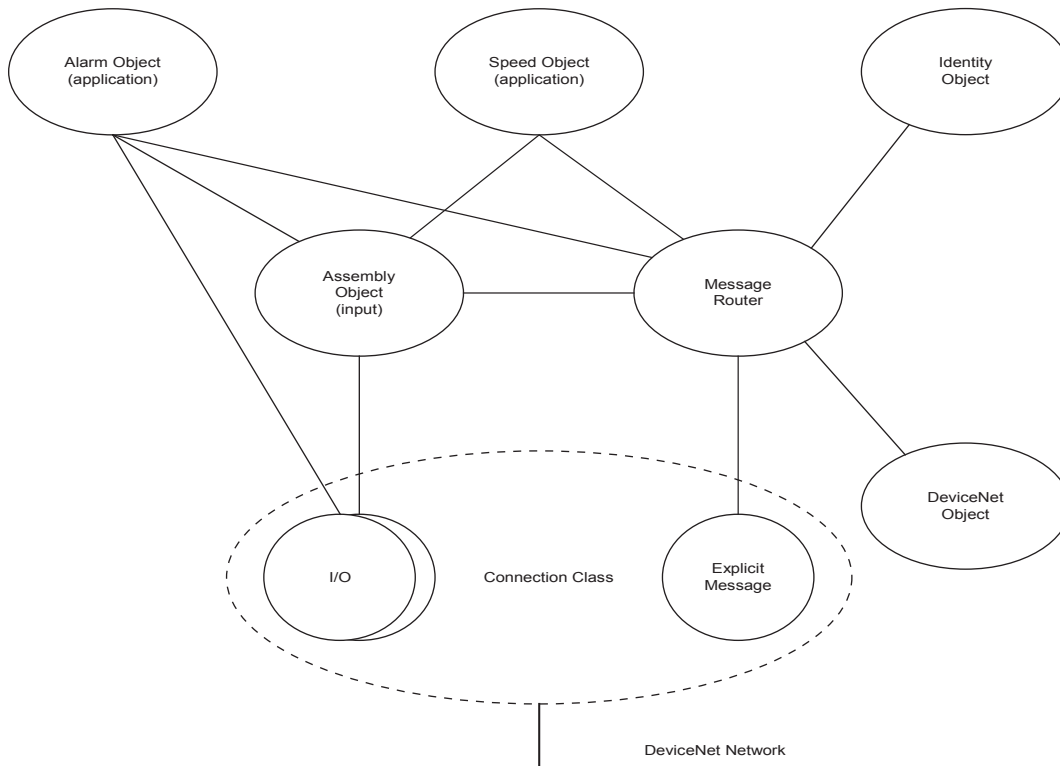


## 4.1.1   Objects present (generic device profile)

| Object | Class ID code | Optional/required | # Instances |
|---|---|---|---|
| Identity | 1 | Required | 1 |
| Message Router | 2 | Required | 1 |
| DeviceNet | 3 | Required | 1 |
| Assembly | 4 | Required | 1 |
| Connection | 5 | Required | 3 (Exp Mes, Poll I/O, COS I/O) |
| Speed (application) | 100 | [≥ 1 app. obj. req'd] | 1 |
| Alarm (application) | 101 | [≥ 1 app. obj. req'd] | 1 |

## 4.1.2   Object Interfaces

| Object | Interface |
|---|---|
| Identity | Message Router |
| Message Router | Explicit Messaging Connection Instance |
| DeviceNet | Message Router |
| Assembly | Poll I/O Connection or Message Router |
| Connection(s) | Message Router |
| Speed (application) | Assembly or Message Router |
| Alarm (application) | COS I/O Connection, Assembly or Message Router |

### 4.1.3 Objects that affect behavior

| Object | Effect on behavior |
|---|---|
| Identity | Supports the Reset service |
| Message Router | No effect |
| DeviceNet | Configures port attributes (baud, MAC ID, BOI proc.) |
| Assembly | Defines I/O data format |
| Connection | Contains the number of logical ports into or out of device |
| Speed (application) | Configures pulser-disk ppr, minimum measurable speed |
| Alarm (application) | Configures speed thresholds, time delays, min. ON times, over/under functionality, ON/OFF and hysteresis for Alarm 4... Alarm 1 functions |

### 4.1.4 Object instance attributes (by Class, Instance)

**Identity Object (Class ID = 1, Instance = 1)**

| Attrib. ID | Access Rule | Name | Data Type | Value |
|---|---|---|---|---|
| 1 | Get | Vendor ID | UINT | 804 |
| 2 | Get | Device Type | UINT | 0 (generic profile) |
| 3 | Get | Product Code | UINT | 1 |
| 4 | Get | Revision | STRUCT of | |
| | | Major rev. | USINT | --- |
| | | Minor rev. | USINT | --- |
| 5 | Get | Status | WORD | [realtime code] |
| 6 | Get | Serial Number | UDINT | [unique code] |
| 7 | Get | Product Name | SHORT- STRING | "SpeedTalker-DN (XP)" |
| 8 | Get | State | USINT | 0-5 (like MS) |

**Message Router Object (Class ID = 2, Instance = 1)**

No externally visible interface to this object instance.

**DeviceNet Object (Class ID = 3, Instance = 1)**

| Attrib ID | Access Rule | Name | Data Type | Value |
|---|---|---|---|---|
| 1 | Get/Set | MAC ID | USINT | 63 (fac. def.) |
| 2 | Get/Set | Baud Rate | USINT | 0 (fac. def. 125k) |
| 3 | Get/Set | BOI | BOOL | 0 (fac. def. OFF) |
| 4 | Get/Set | Bus-Off Counter | USINT | 0 (reset val) |
| 5 | Get | Allocation Info | STRUCT of: | |
| | | Allocation Choice | BYTE | [alloc byte] |
| | | Master's MAC ID | USINT | [master MAC ID dependent] |

**Assembly Object (Class ID = 4, Instance = 101)**

| Attrib ID | Access Rule | Name | Data Type | Value | |
|---|---|---|---|---|---|
| 3 | Get | Data | Array of bytes: | Speed (low) | |
| | | | | Speed (high) | |
| | | | | Alarm4...1 | |

**Explicit Messaging Connection Object (Class ID = 5, Instance = 1)**

| Attribute ID | Access Rule | Name | Data Type | Value |
|---|---|---|---|---|
| 1 | Get | State | USINT | 0x00 (reset) |
| 2 | Get | instance_type | USINT | 0x00 (explicit) |
| 3 | Get | transportClass_trigger | BYTE | 0x83 |
| 4 | Get | produced_connection_id | UINT | [slave MAC ID dependent] |
| 5 | Get | consumed_connection_id | UINT | [slave MAC ID dependent] |
| 6 | Get | initial_comm_characteristics | BYTE | 0x21 (prod grp 2, cons grp 2) |
| 7 | Get | produced_connection_size | UINT | 37 |
| 8 | Get | consumed_connection_size | UINT | 37 |
| 9 | Get/Set | expected_packet_rate | UINT | 2500 (default in mS) |
| 12 | Get | watchdog_timeout_action | USINT | 1 (default - auto delete) |
| 13 | Get | produced_conn_path_length | UINT | 0 (default) |
| 14 | Get | produced_connection_path | EPATH | Empty |
| 15 | Get | consumed_conn_path_length | UINT | 0 (default) |
| 16 | Get | consumed_connection_path | EPATH | Empty |
| 17 | Get | production_inhibit_time | UINT | 0 (mS) |

**Poll I/O Connection Object (Class ID = 5, Instance = 2)**

| Attribute ID | Access Rule | Name | Data Type | Value |
|---|---|---|---|---|
| 1 | Get | State | USINT | 0x00 (reset) |
| 2 | Get | instance_type | USINT | 0x01 (I/O) |
| 3 | Get | transportClass_trigger | BYTE | 0x83 |
| 4 | Get | produced_connection_id | UINT | [slave MAC ID dependent] |
| 5 | Get | consumed_connection_id | UINT | [slave MAC ID dependent] |
| 6 | Get | initial_comm_characteristics | BYTE | 0x01 (prod grp 1, cons grp 2) |
| 7 | Get | produced_connection_size | UINT | 3 |
| 8 | Get | consumed_connection_size | UINT | 0 |
| 9 | Get/Set | expected_packet_rate | UINT | [must be set] |
| 12 | Get | watchdog_timeout_action | USINT | 0 (default - Timed Out state) |
| 13 | Get | produced_conn_path_length | UINT | 6 |
| 14 | Get | produced_connection_path | EPATH | "20 04 24 65 30 03" |
| 15 | Get | consumed_conn_path_length | UINT | 6 |
| 16 | Get | consumed_connection_path | EPATH | "20 64 24 01 30 04" |
| 17 | Get/Set | production_inhibit_time | UINT | 0 (mS) |

**COS I/O Connection Object (Class ID = 5, Instance = 4)**

| Attribute ID | Access Rule | Name | Data Type | Value |
|---|---|---|---|---|
| 1 | Get | State | USINT | 0x00 (reset) |
| 2 | Get | instance_type | USINT | 0x01 (I/O) |
| 3 | Get | transportClass_trigger | BYTE | 0x12 or 0x10 [per ack setting] |
| 4 | Get | produced_connection_id | UINT | [slave MAC ID dependent] |
| 5 | Get | consumed_connection_id | UINT | [slave MAC ID dependent] |
| 6 | Get | initial_comm_characteristics | BYTE | 0x01 or 0x0F [per ack setting] |
| 7 | Get | produced_connection_size | UINT | 1 |
| 8 | Get | consumed_connection_size | UINT | 0 |
| 9 | Get/Set | expected_packet_rate | UINT | [must be set] |
| 12 | Get | watchdog_timeout_action | USINT | 0 (default - Timed Out state) |
| 13 | Get | produced_conn_path_length | UINT | 6 |
| 14 | Get | produced_connection_path | EPATH | "20 65 24 01 30 10" |
| 15 | Get | consumed_conn_path_length | UINT | 6 |
| 16 | Get | consumed_connection_path | EPATH | "20 64 24 01 30 04" |
| 17 | Get/Set | production_inhibit_time | UINT | 0 (mS) |

**Speed (application) Object (Class ID = 100, Instance = 1)**

| Attribute ID | Access Rule | Name | Data Type | Value |
|---|---|---|---|---|
| 1 | Get/Set | PPR | UINT | 8 (fac. def),  range: 1 -> 256 |
| 2 | Get/Set | Minimum Speed | UINT | 10 (fac. def.), range: 1 -> 65535 |
| 3 | Get | Measured Speed | UINT | [measured RPM] |

**Alarm (application) Object (Class ID = 101, Instance = 1)**

| Attribute ID | Access Rule | Name | Data Type | Value |
|---|---|---|---|---|
| 1 | Get/Set | Alarm 1 Threshold | UINT | 10 (fac. def), range 1 -> 65535 |
| 2 | Get/Set | Alarm 1 On Delay Time | USINT | 0 (fac. def), range 0 -> 250 |
| 3 | Get/Set | Alarm 1 On Minimum Time | USINT | 0 (fac. def), range 0 -> 250 |
| 4 | Get/Set | Alarm 2 Threshold | UINT | 10 (fac. def), range 1 -> 65535 |
| 5 | Get/Set | Alarm 2 On Delay Time | USINT | 0 (fac. def), range 0 -> 250 |
| 6 | Get/Set | Alarm 2 On Minimum Time | USINT | 0 (fac. def), range 0 -> 250 |
| 7 | Get/Set | Alarm 3 Threshold | UINT | 10 (fac. def), range 1 -> 65535 |
| 8 | Get/Set | Alarm 3 On Delay Time | USINT | 0 (fac. def), range 0 -> 250 |
| 9 | Get/Set | Alarm 3 On Minimum Time | USINT | 0 (fac. def), range 0 -> 250 |
| 10 | Get/Set | Alarm 4 Threshold | UINT | 10 (fac. def), range 1 -> 65535 |
| 11 | Get/Set | Alarm 4 On Delay Time | USINT | 0 (fac. def), range 0 -> 250 |
| 12 | Get/Set | Alarm 4 On Minimum Time | USINT | 0 (fac. def), range 0 -> 250 |
| 13 | Get/Set | Threshold % Hysteresis | USINT | 10 (fac. def), range 0 -> 250 |
| 14 | Get/Set | Alarm 4...1 Overspeed/Underspeed Select | BYTE | 0x00 (fac. def), bit encoding: 1 OVER, 0 UNDER |
| 15 | Get/Set | Alarm 4...1 On/Off Settings | BYTE | 0x00 (fac. def), bit encoding: 1 ON, 0 OFF |
| 16 | Get | Alarm (4...1) Status | BYTE | bit encoding: 1 ALARMED, 0 NOT ALARMED |

**Application Object (Speed, Alarm) attribute user units:**

Speed settings/measurements are in RPM.

Time settings are in seconds.

Hysteresis settings are in %.

**Application Object (Speed, Alarm) attribute encoding:**

User-units resolution for all integer type (UINT, USINT) attributes (except PPR) is 0.1 (e.g. integer change of 1 equals 0.1 change in RPM, seconds or %).

User-units resolution for PPR attribute is 1 (integer change of 1 equals PPR change of 1).

Bit assignment for BYTE type attributes

| Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|---|---|---|---|---|---|---|---|
| -- | -- | -- | -- | Alarm 4 | Alarm 3 | Alarm 2 | Alarm 1 |

## 4.2    I/O Data Format

### 4.2.1   I/O Assembly Instances

| Number | Type | Name |
|---|---|---|
| 1 | Input | Input data |

### 4.2.2   Format of I/O Assembly Data

| Byte | Bit 7 | Bit 6 | Bit 5 | Bit 4 | Bit 3 | Bit 2 | Bit 1 | Bit 0 |
|---|---|---|---|---|---|---|---|---|
| 0 | Speed Value Low | | | | | | | |
| 1 | Speed Value High | | | | | | | |
| 2 | 0 | 0 | 0 | 0 | Alarm4 | Alarm3 | Alarm2 | Alarm1 |

### 4.2.3   I/O Assembly Data Attribute Mapping

| Data Component Name | Class Name | Class Number | Inst. Number | Attribute Name | Attribute Number | Data Type |
|---|---|---|---|---|---|---|
| Speed Value | Speed | 100 | 1 | Meas. Speed | 3 | UINT |
| Alarm Status | Alarm | 101 | 1 | Status | 16 | BYTE |

**Notes:**

**Speed Value resolution is 0.1 (UINT change of 1 equals 0.1 change in RPM).**

**I/O Assembly Data (class/inst./attr. 4/101/3) is produced by the Poll connection.**

**Alarm Status (class/inst./attr. 101/1/16) is produced by the COS connection.**

## 4.3    Device Configuration
Configurable parameters and definition of public interface

### 4.3.1    Configuration parameter listing (EDS) and effect on behavior

| Number | Name | Effect on behavior |
|--------|------|--------------------|
| 1 | Target pulses/rev | Sets target +/- pulses per revolution for correct RPM reading |
| 2 | Minimum meas. speed | Sets the actual speed below which the measured speed is 0 |
| 3 | Measured speed (read-only) | [not write-able - no effect on behavior] |
| 4 | Alarm 1 threshold | Sets speed levels for Alarm1 Overspeed/Underspeed functions |
| 5 | Alarm 1 ON delay | Time that meas. speed must be at alarm-level for alarmed state |
| 6 | Alarm 1 ON min time | Minimum time Alarm 1 stays alarmed |
| 7 | Alarm 2 threshold | Sets speed levels for Alarm2 Overspeed/Underspeed functions |
| 8 | Alarm 2 ON delay | Time that meas. speed must be at alarm-level for alarmed state |
| 9 | Alarm 2 ON min time | Minimum time Alarm 2 stays alarmed |
| 10 | Alarm 3 threshold | Sets speed levels for Alarm3 Overspeed/Underspeed functions |
| 11 | Alarm 3 ON delay | Time that meas. speed must be at alarm-level for alarmed state |
| 12 | Alarm 3 ON min time | Minimum time Alarm 3 stays alarmed |
| 13 | Alarm 4 threshold | Sets speed levels for Alarm4 Overspeed/Underspeed functions |
| 14 | Alarm 4 ON delay | Time that meas. speed must be at alarm-level for alarmed state |
| 15 | Alarm 4 ON min time | Minimum time Alarm 4 stays alarmed |
| 16 | Alarm threshold hysteresis | Sets hysteresis - applies to all Alarm thresholds |
| 17 | Alarm 4...1 OVER/UNDER | bits 3...0 select Alarm 4...1 functions:  1-Overspeed / 0-Under |
| 18 | Alarm 4...1 ON/OFF | bits 3...0 turn Alarm 4...1 functions on/off:   1-ON / 0-OFF |
| 19 | Alarm (4...1) status (read-only) | [not write-able - no effect on behavior] |

### 4.3.2    Configuration Parameter Mapping (EDS)

| Number | Name | Class | | Inst. | Attrib. | Data Type |
|--------|------|-------|--|-------|---------|-----------|
| | | Name | Number | Number | Number | |
| 1 | Target pulses/rev | Speed | 100 | 1 | 1 | UINT |
| 2 | Minimum measurable speed | Speed | 100 | 1 | 2 | UINT |
| 3 | Measured speed (read-only) | Speed | 100 | 1 | 3 | UINT |
| 4 | Alarm 1 threshold | Alarm | 101 | 1 | 1 | UINT |
| 5 | Alarm 1 ON delay | Alarm | 101 | 1 | 2 | USINT |
| 6 | Alarm 1 ON min time | Alarm | 101 | 1 | 3 | USINT |
| 7 | Alarm 2 threshold | Alarm | 101 | 1 | 4 | UINT |
| 8 | Alarm 2 ON delay | Alarm | 101 | 1 | 5 | USINT |
| 9 | Alarm 2 ON min time | Alarm | 101 | 1 | 6 | USINT |
| 10 | Alarm 3 threshold | Alarm | 101 | 1 | 7 | UINT |
| 11 | Alarm 3 ON delay | Alarm | 101 | 1 | 8 | USINT |
| 12 | Alarm 3 ON min time | Alarm | 101 | 1 | 9 | USINT |
| 13 | Alarm 4 threshold | Alarm | 101 | 1 | 10 | UINT |
| 14 | Alarm 4 ON delay | Alarm | 101 | 1 | 11 | USINT |
| 15 | Alarm 4 ON min time | Alarm | 101 | 1 | 12 | USINT |
| 16 | Alarm threshold hysteresis | Alarm | 101 | 1 | 13 | USINT |
| 17 | Alarm 4...1 Over/Under | Alarm | 101 | 1 | 14 | BYTE |
| 18 | Alarm 4...1 ON/OFF | Alarm | 101 | 1 | 15 | BYTE |
| 19 | Alarm (4...1) status (read-only) | Alarm | 101 | 1 | 16 | BYTE |

### 4.3.3 Configuration Parameter Groups (EDS)

| Group Number | Group Name | Parameter Number | Parameter Name |
|---|---|---|---|
| 1 | Speed Configuration | 1 | Target pulses/rev |
| | | 2 | Minimum measurable speed |
| | | 3 | Measured speed (read-only) |
| 2 | Alarm Configuration | 4 | Alarm 1 threshold |
| | | 5 | Alarm 1 ON delay |
| | | 6 | Alarm 1 ON min time |
| | | 7 | Alarm 2 threshold |
| | | 8 | Alarm 2 ON delay |
| | | 9 | Alarm 2 ON min time |
| | | 10 | Alarm 3 threshold |
| | | 11 | Alarm 3 ON delay |
| | | 12 | Alarm 3 ON min time |
| | | 13 | Alarm 4 threshold |
| | | 14 | Alarm 4 ON delay |
| | | 15 | Alarm 4 ON min time |
| | | 16 | Alarm threshold hysteresis |
| | | 17 | Alarm 4...1 Over/Under |
| | | 18 | Alarm 4...1 ON/OFF |
| | | 19 | Alarm (4...1) status (read-only) |
| 3 | Monitor | 3 | Measured speed (read-only) |
| | | 19 | Alarm (4...1) status (read-only) |

Note: The configuration parameters are defined in the Electronic Data Sheet (EDS) only. The SpeedTalker_DN (XP) does not contain Parameter Objects.

# 5.    Specifications

**Measurable shaft speed range**          0.0  to 6,553.5 RPM

**Pulse frequency range**          0.0112 to 31,250 Hz

**Measurement accuracy** (over temp)          0.02% max error (frequency)

**Measurement/setting resolution**          0.1 RPM

**Pulser Disk/Wrap pulses/revolution**          1 to 256 PPR

**Airgap** (sensing head to Disk/Wrap)          1/16 to 1/4 inch (2 to 6 mm)

**Operating Power** (network supplied)          11Vdc (60mA) to 25Vdc (40 mA)

**DeviceNet implementation**

| | |
|---|---|
| Node type | Group 2 Only slave |
| Connections | Poll, COS, Explicit Message |
| Profile | Generic Device |
| Baud rates | 125k, 250k, 500k |
| Indicators | Module, Network Status |
| Connector | Open style |
| Configuration | Electronic Data Sheet (EDS) |

**Operating Temperature**          -40 to 85 °C (-40 to 185 °F)

**Enclosure hazardous locations ratings**

Class I, Div 1, Group C, D
Class II Groups E, F, G
UL File: E249019

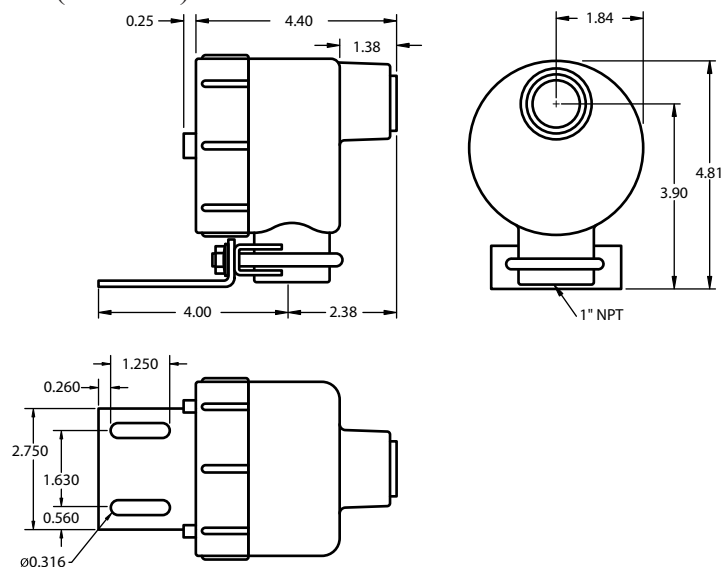**Weight** (with bracket)          2.45 Lb (1.11 kg)

**Dimensions** (with bracket)          (in inches)



*Specifications are subject to change without notice.*