

vibro-meter®

Welcome to WEBINAR II



Technical Introduction

SpeedSys300

Overspeed Detection System

Host:

- Matias Canedo, Customer Support Engineer

Date: 21.10.20



SPEEDSYS300 OVERVIEW

DESIGN CONCEPT

SpeedSys300 is designed as **in independent layer of protection**; to be **fundamentally simple and robust**. It delivers fast and reliable protection for speed and acceleration and **complies to all industry standards including SIL and ATEX**.

Key features

SpeedSys300 ODS301



GENERAL FEATURES

- Different input Sensors technologies:
Eddy-Current, Hall Effect, VR
- Advanced Self Diagnostics
- Galvanically separated inputs
- Modular
- USB Interface
- Event Log
- DIN rail mounted



SIL BY DESIGN

- High Proof Test interval (10 years)
- Extensive Proof Test function
- Proof Test command (PLC)
- Fast reaction time ($\leq 8\text{ms}$)
- 2 SAFETY relays (Overspeed, Underspeed or Acceleration limits)
- Diagnostic status
- 2oo3 voting, hardwire or external (PLC)



COMPLIANCE & CERTIFICATIONS

➤ Industrial standards

SIL 2, SIL 3 (IEC61508)

API670, API612 compliant

ATEX (IECEX) Zone 0,1,2

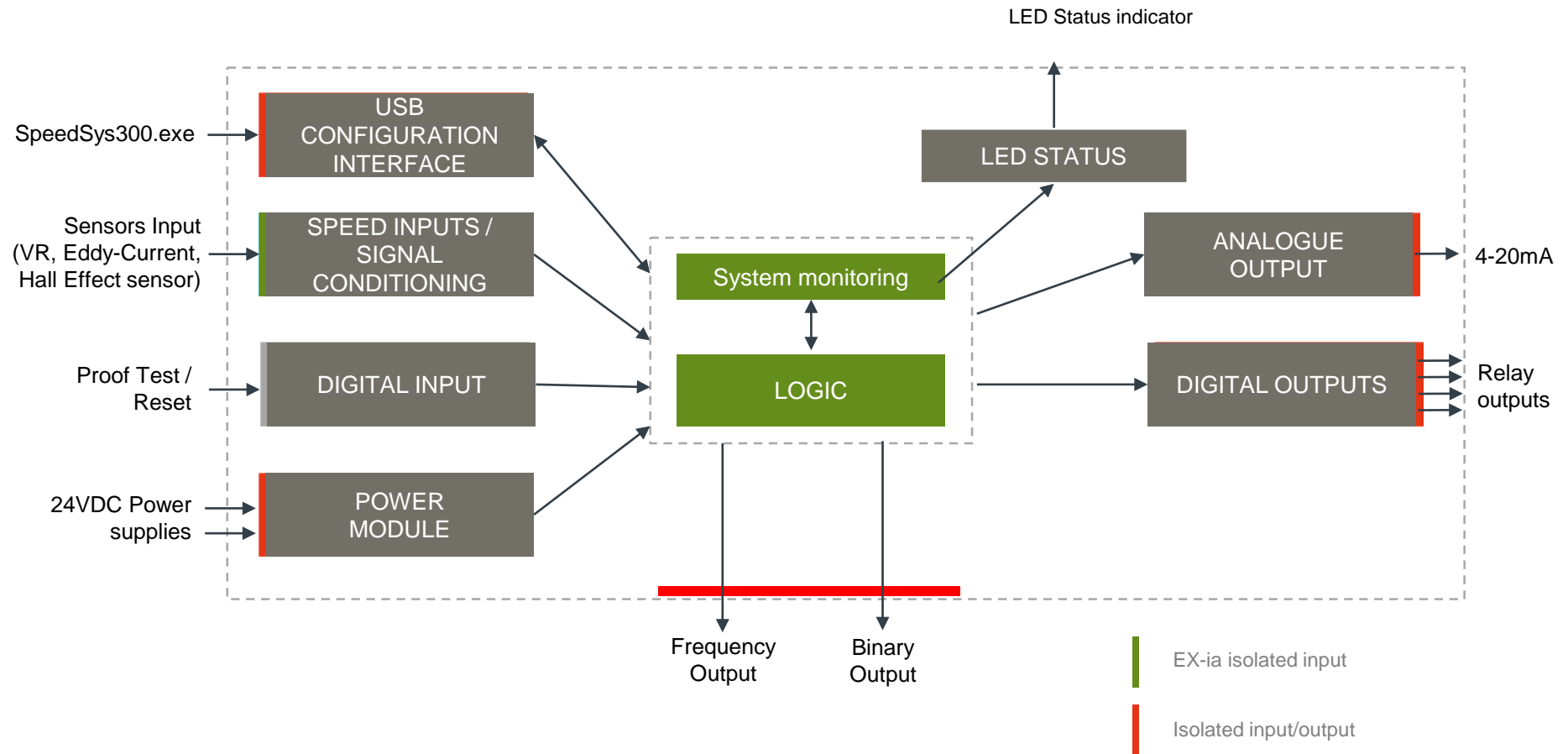
➤ International standards

Europe: CE

USA/Canada: cMETus (with FCC)

Block Diagram

SpeedSys300 ODS301



Architecture

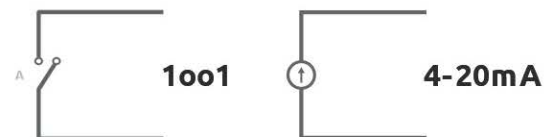
SpeedSys300 ODS301

Sensors

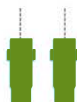
Modules

Configuration

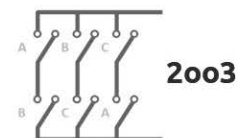
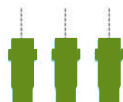
SIL2



SIL2



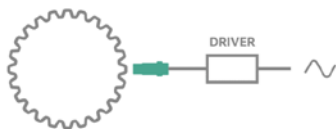
SIL3



Sensor input compatibility

SpeedSys300 ODS301

Eddy-Current

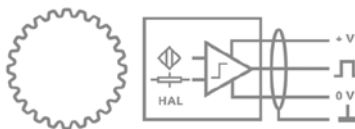


2-wire (current signal)

e.g. Meggitt TQ9xx / IQS9xx type

- **Signal:** current modulated signal
- **Monitoring:** Current driver with self-monitoring technology: Probe OK limit 15,5 mA ... 20,5 mA (programmable)
- **ATEX:** Ex ia Gas & Dust, Ex ec, for installations in zones 0,1 or 2
- **SIL:** SIL2 (IEC 61508), PL c Cat 1 (ISO 13849)
- **Temperature:** -40 to 180°C (sensor)
- **Frequency:** up to 20kHz

Electronic Hall Effect

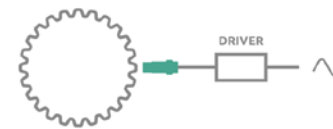


3-wire, e.g. Jaquet DSF series

(DSF 1210.00 SHV Ex ATEX, 5m sensor)

- **Signal:** square wave (voltage)
- **Monitoring:** N.A.
- **ATEX:** Ex ia Gas & Dust, for installations in zone 1 or 2
- **SIL:** N.A.
- **Temperature:** -40 to 125°C
- **Frequency:** up to 20kHz

Magnetic Pickups (VR)



2-wire, e.g. Jaquet DSE series

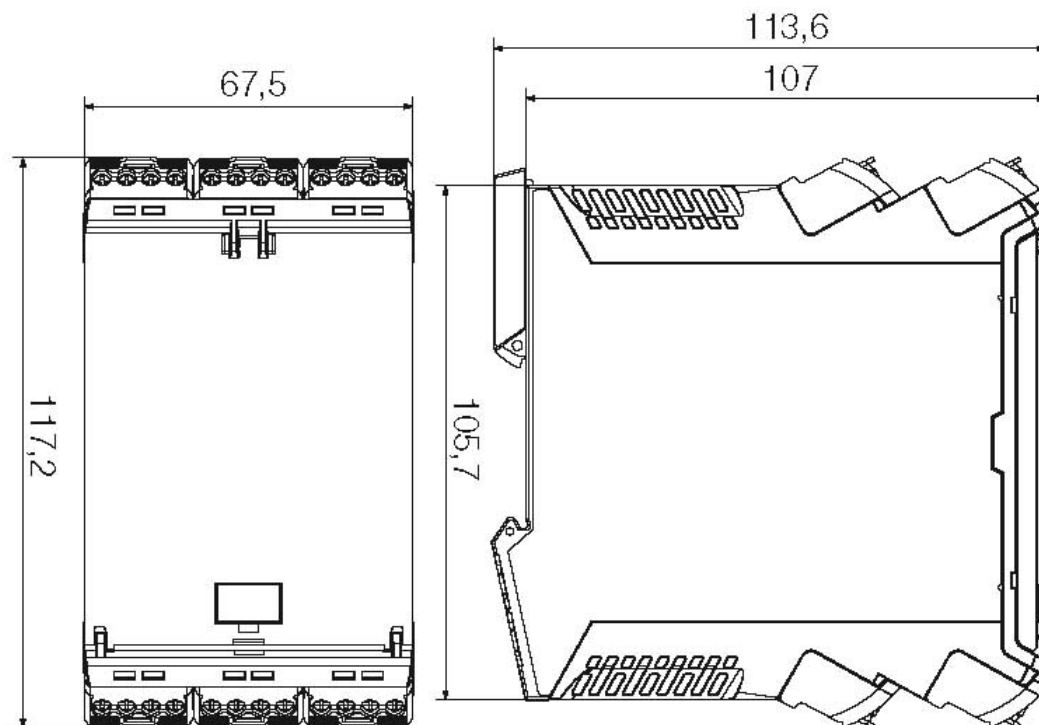
(DSE 1210.35 SHZ SIL sensor)

- **Signal:** sinus wave (voltage). Signal output is variable, dependent of the speed, can generate high signal amplitudes (> 80V RMS)
- **Monitoring:** N.A.
- **ATEX:** N.A.
- **SIL:** SIL2/SIL3 (IEC 61508), PL e CAT 3 (ISO 13849)
- **Temperature:** -40 to 150°C
- **Frequency:** not suitable for low speed

SPEEDSYS300 SPECIFICATIONS

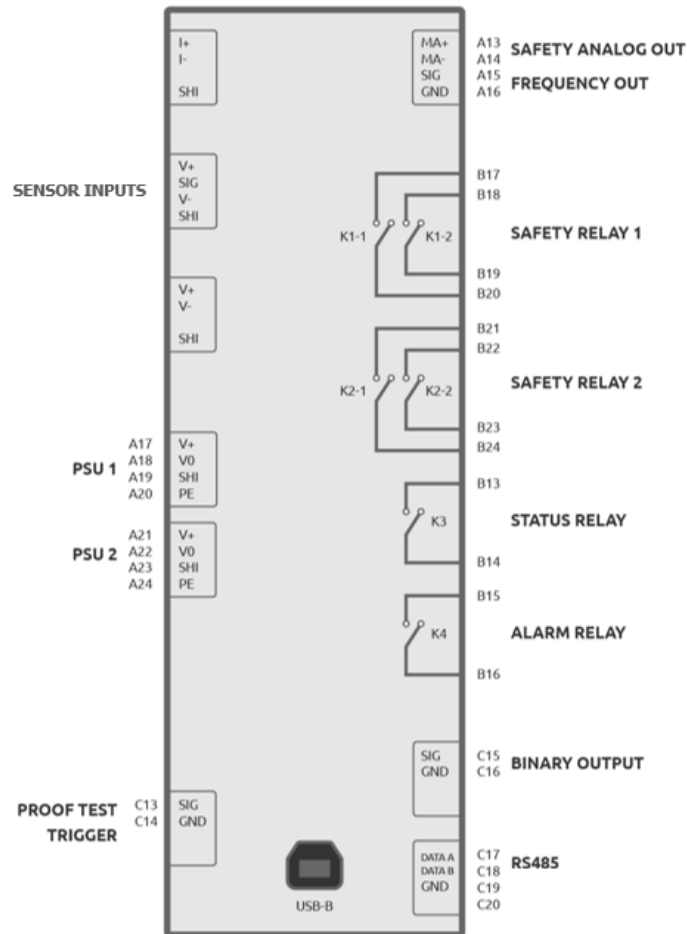
Module dimensions

SpeedSys300 ODS301



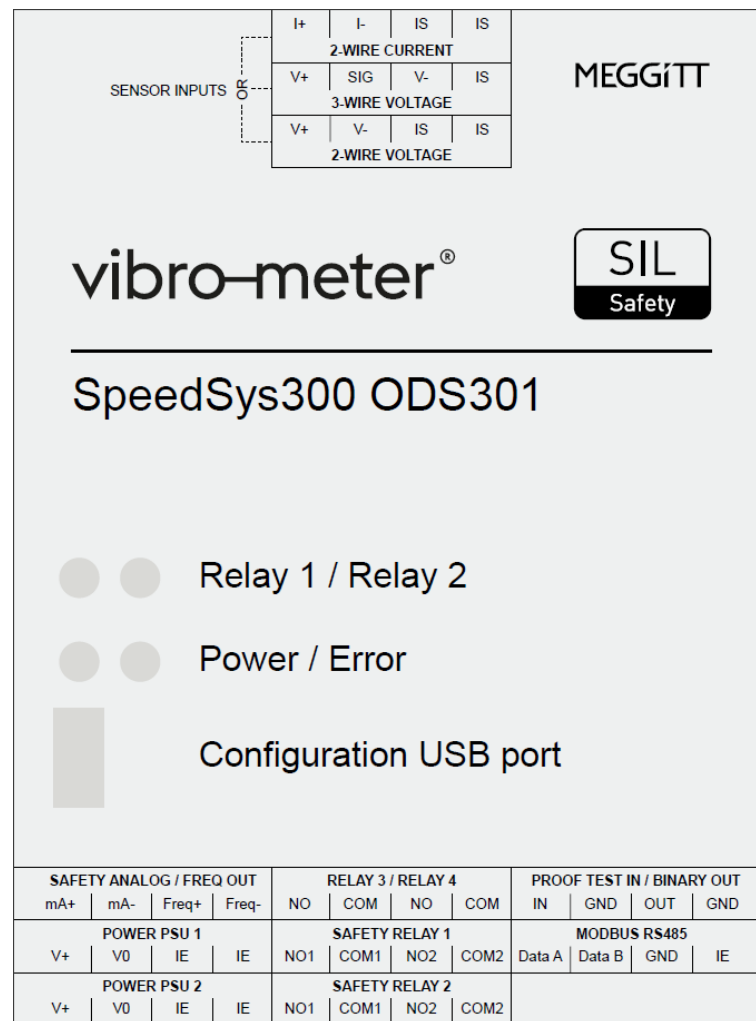
Module connections

SpeedSys300 ODS301



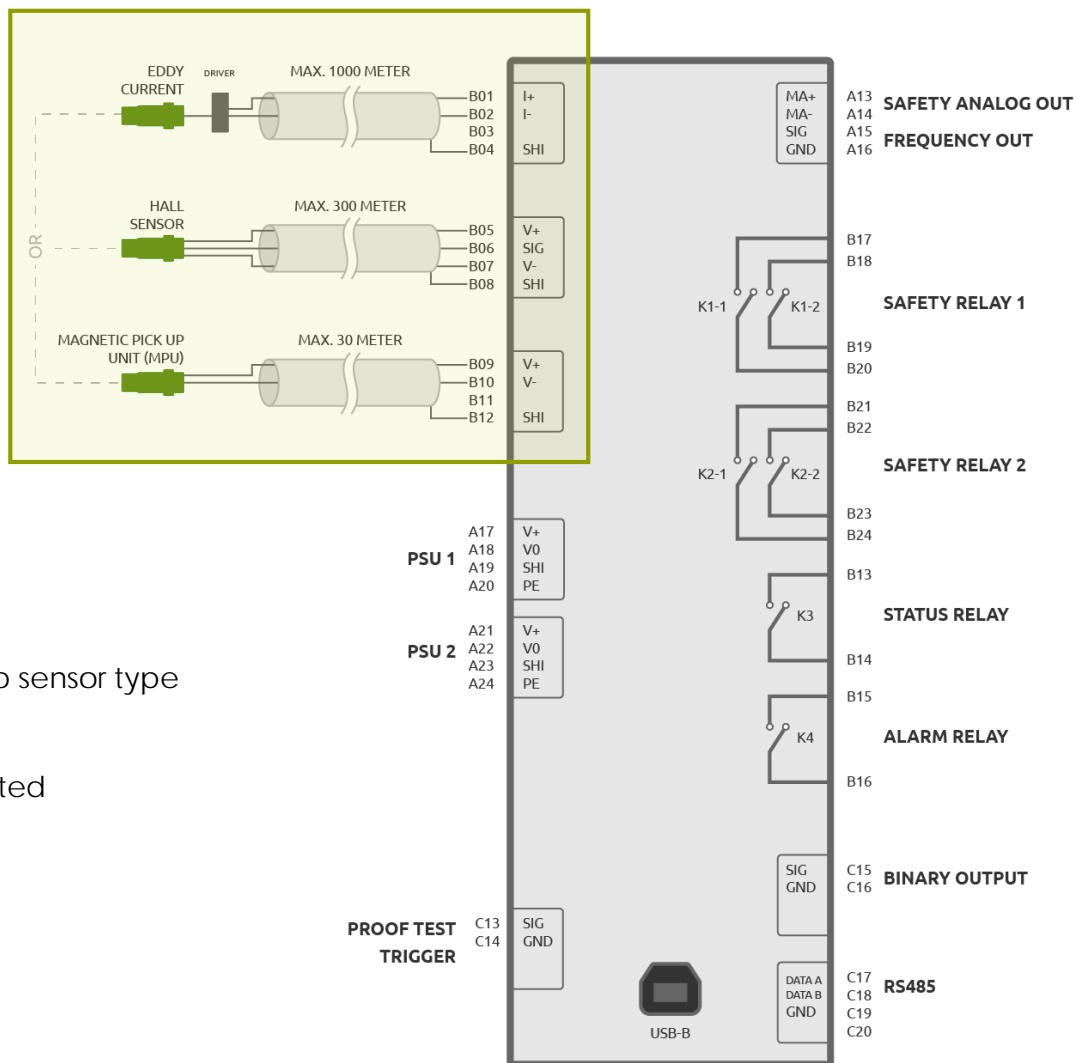
Module connections

SpeedSys300 ODS301



Sensor Inputs

SpeedSys300 ODS301



➤ Sensor Inputs (3)

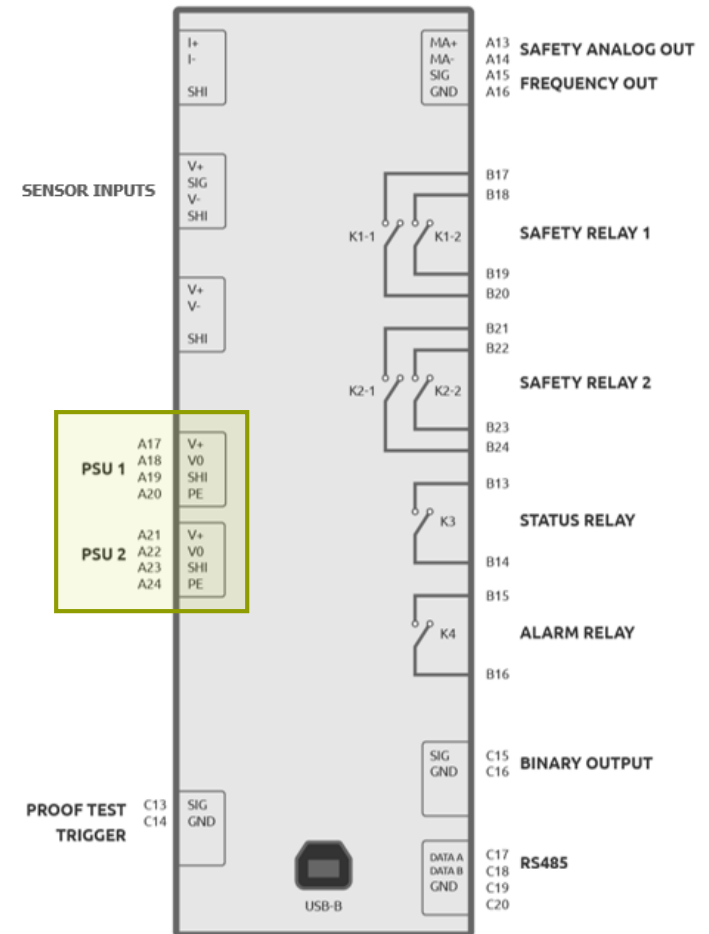
- Only **ONE** sensor input per module
- Appropriate power supply according to sensor type (current / voltage / none)
- Inputs (sensors) are galvanically protected

Power Supply

SpeedSys300 ODS301

➤ POWER SUPPLY (2)

- 24 VDC nominal (18 to 36VDC)
- Two separate inputs to support external power supply redundancy
- Power consumption: max. 5.3W (220mA at 24VDC)

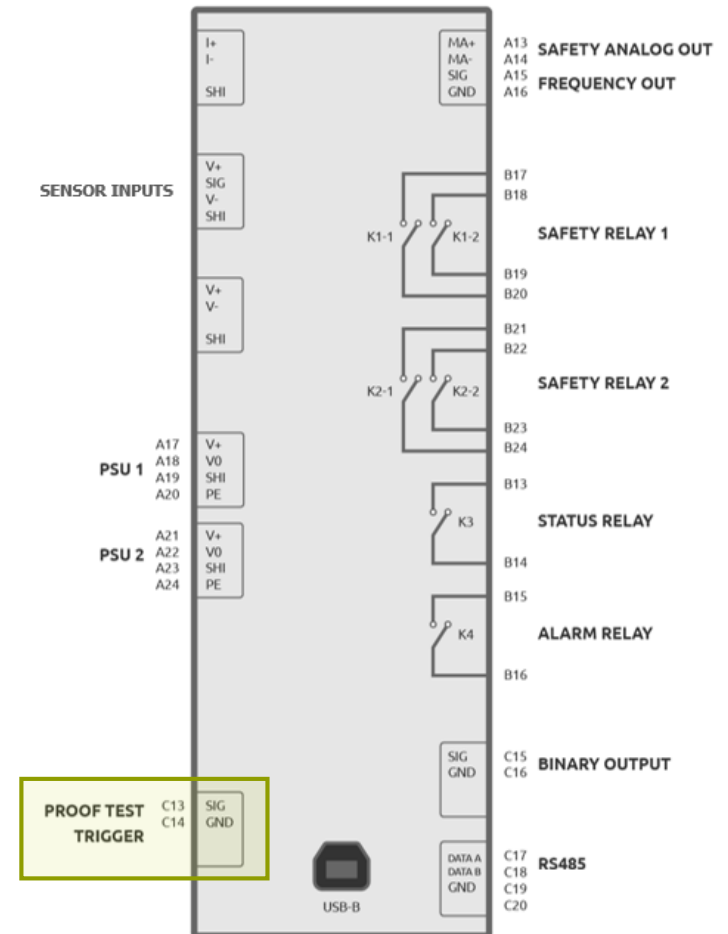


Digital Input

SpeedSys300 ODS301

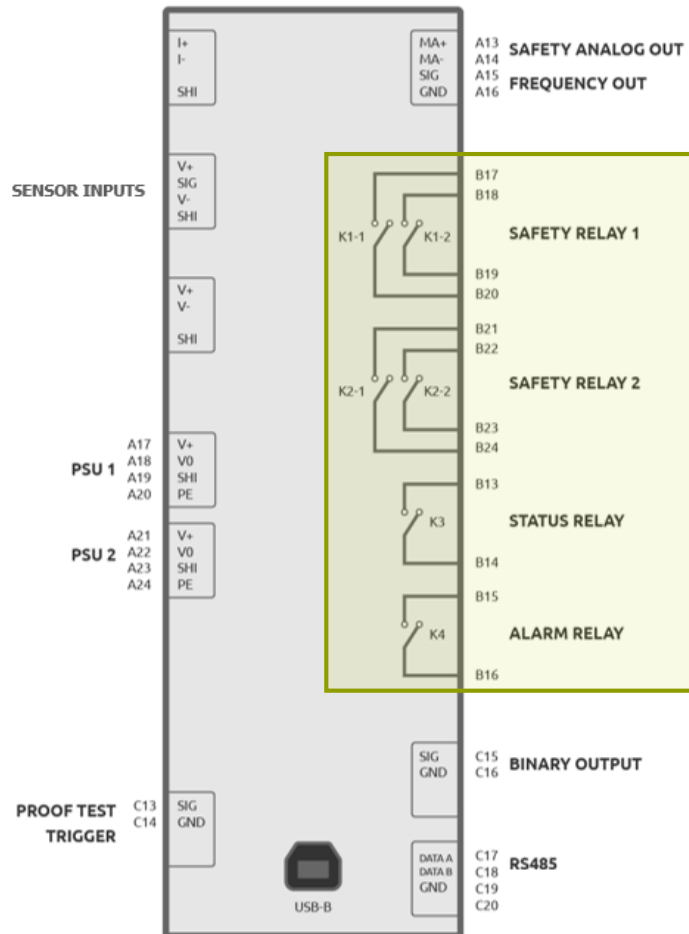
➤ DIGITAL INPUT (1)

- Digital input for RESET or PROOF TEST (programmable)
- Low (< 5VDC) enables the control input
- High (> 15VDC) disables the control input



Relay Outputs

SpeedSys300 ODS301



➤ SAFETY RELAYS (2)

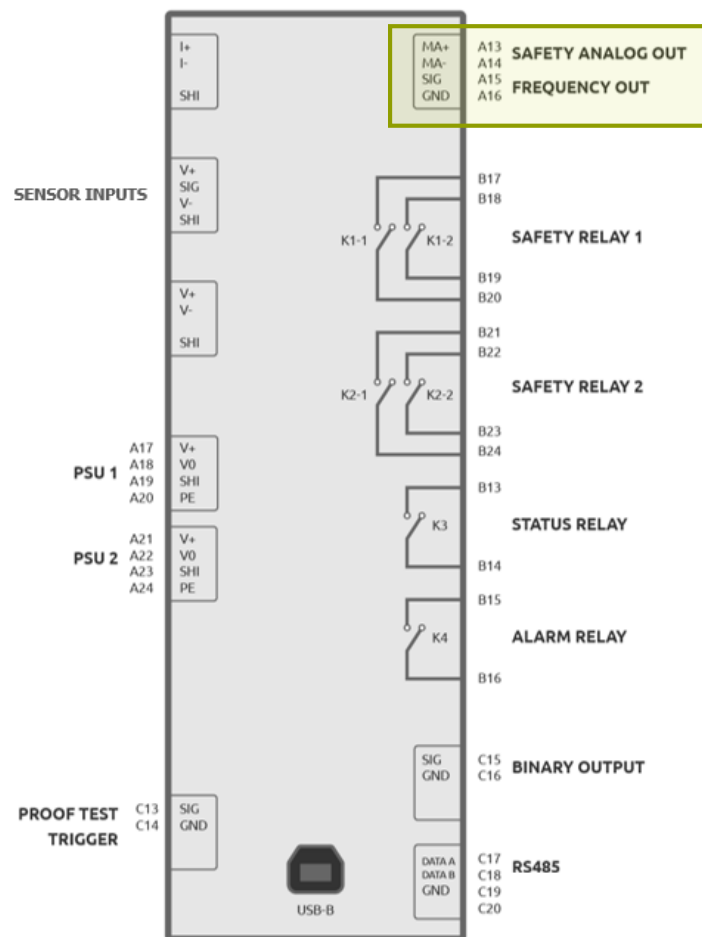
- RL#1 and RL#2 used for protection functions
- Normally De-Energized relays (NDE type) with Normally Open contacts (NO); without power supply, contacts will open -> Fail Safe
- Double-pole single-throw (DPST) safety relays – certified for SIL safety loops
- Overspeed, Underspeed, Acceleration function thresholds are freely configurable
- Diagnostic or “Safe State” condition is included
- Hysteresis and time delay are freely configurable
- Contacts change-over: 30 VDC, max. 2 A
- LED status indicators (ORANGE / OFF)

➤ ADDITIONAL RELAYS (2)

- RL#3 and RL#4 used for auxiliary functions
- Configurable NDE or NE type (*Inverted*)
- SPST relays for non SAFETY outputs

Analog / Frequency Output

SpeedSys300 ODS301



➤ SAFETY ANALOG OUTPUT (1)

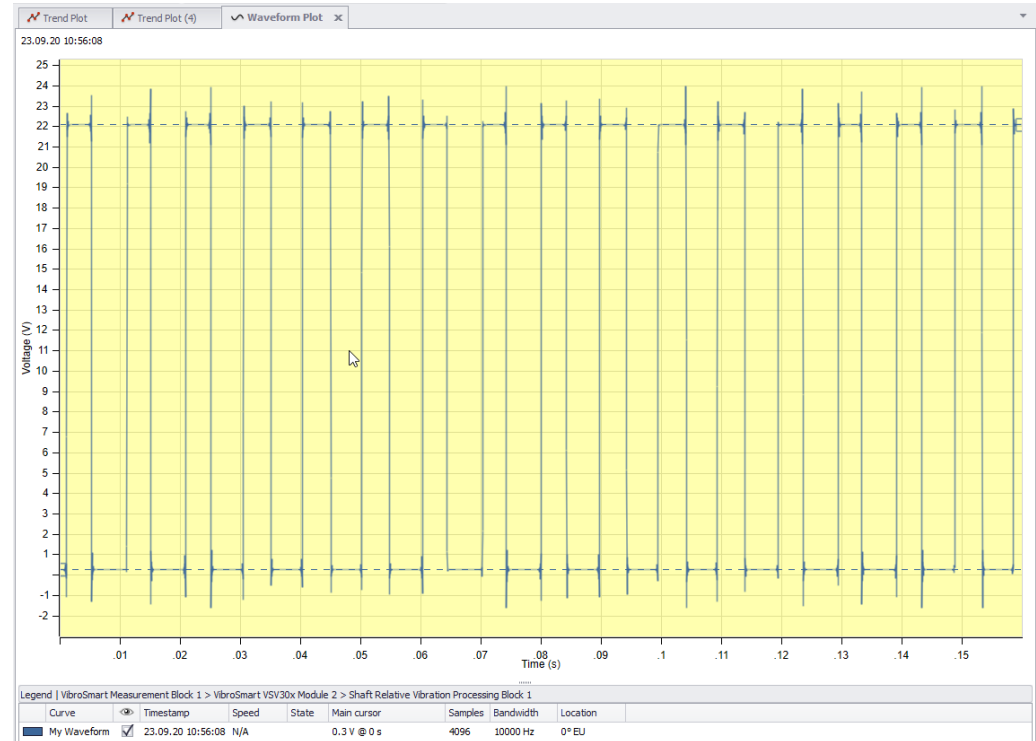
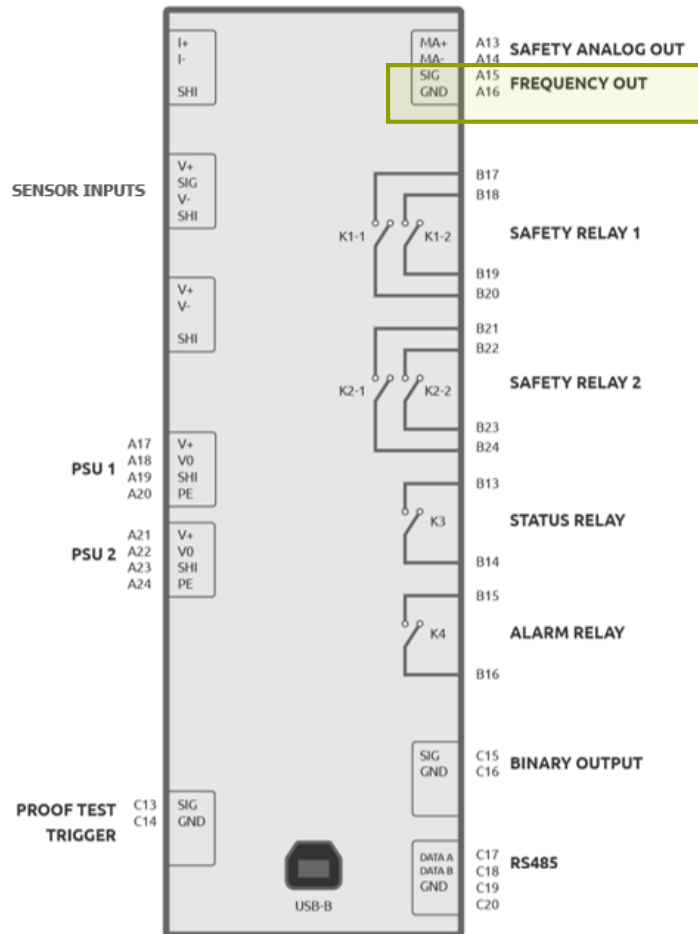
- 4 ... 20 mA certified for SIL safety loops
- 16 bit resolution
- Scaling freely configurable
- Response time: ≤ 100 ms
- Accuracy: Current output 0.1% referenced to 20mA of the end value or better, programmable

➤ FREQUENCY OUTPUT (1)

- Open collector output signal (up to 24VDC, 100mA)
- Provides a binary / digital output (HIGH / LOW signal)
- This signal is equivalent to the measured and processed input signal (a fixed processing time delay is present, same among multiple ODS301 modules)
- It can be used as interface with other systems (e.g. detect the sense of rotation)

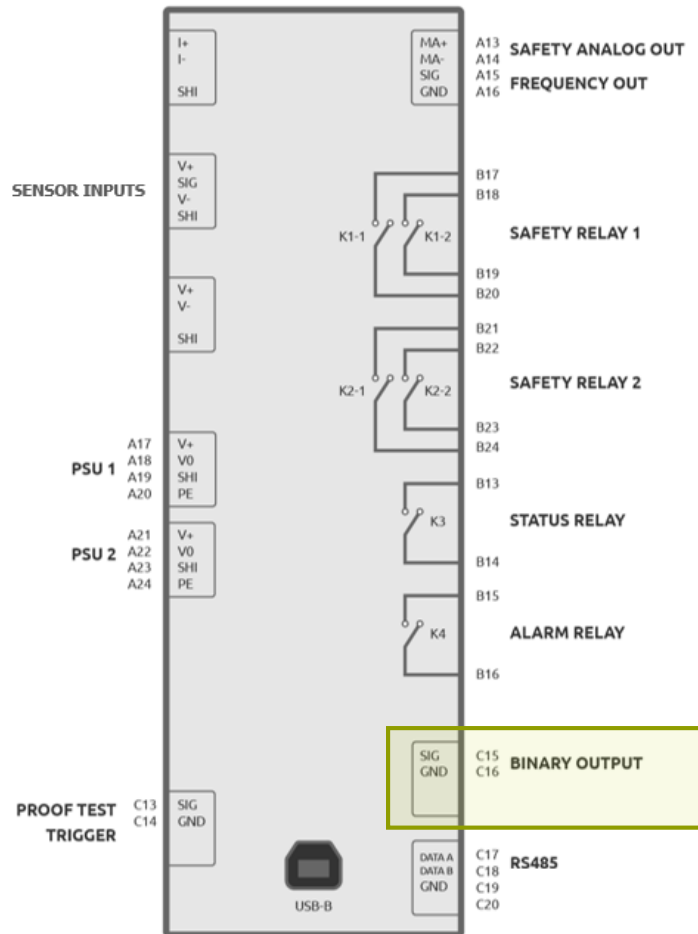
Frequency Output

SpeedSys300 ODS301



Binary output

SpeedSys300 ODS301

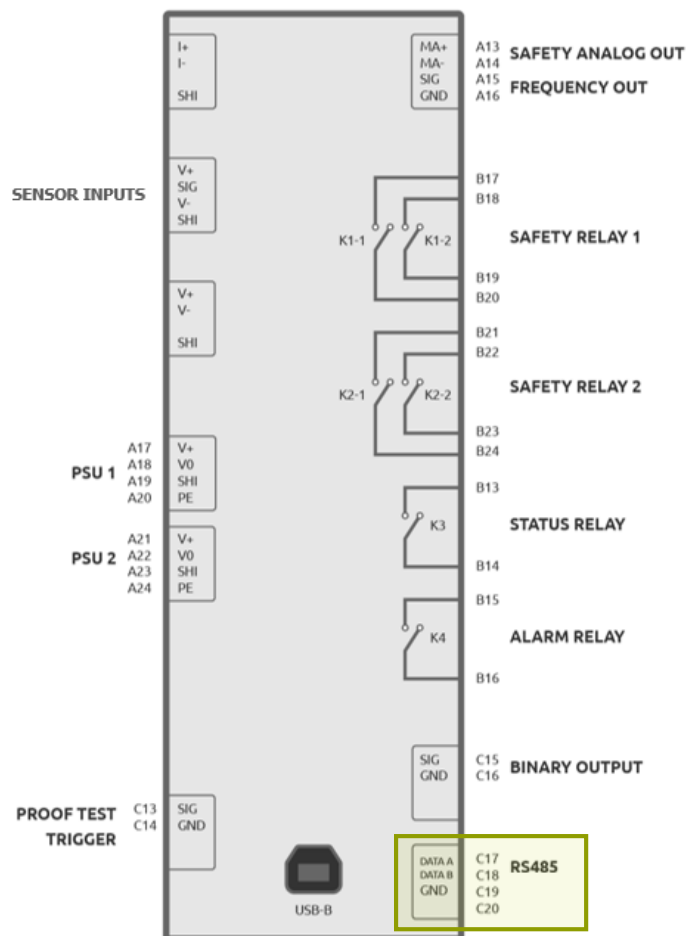


➤ BINARY OUTPUT (1)

- Open collector output signal (up to 24VDC, 90mA)
- Provides a binary / digital output (HIGH / LOW signal)
- It can be configured to indicate any of the functions of the module (Overspeed, Diagnostic, etc.)
- Called *Digital Out* in SpeedSys SW

Modbus interface

SpeedSys300 ODS301



➤ RS485 (1)

- Modbus RTU serial (RS485 - 2wires) interface
- Communicate ODS301 information with third-party systems such as DCS or PLC (read only)
- Communication settings fully configurable (COM port, baud rate, etc.)
- Default Modbus list

5.1.3 Current values

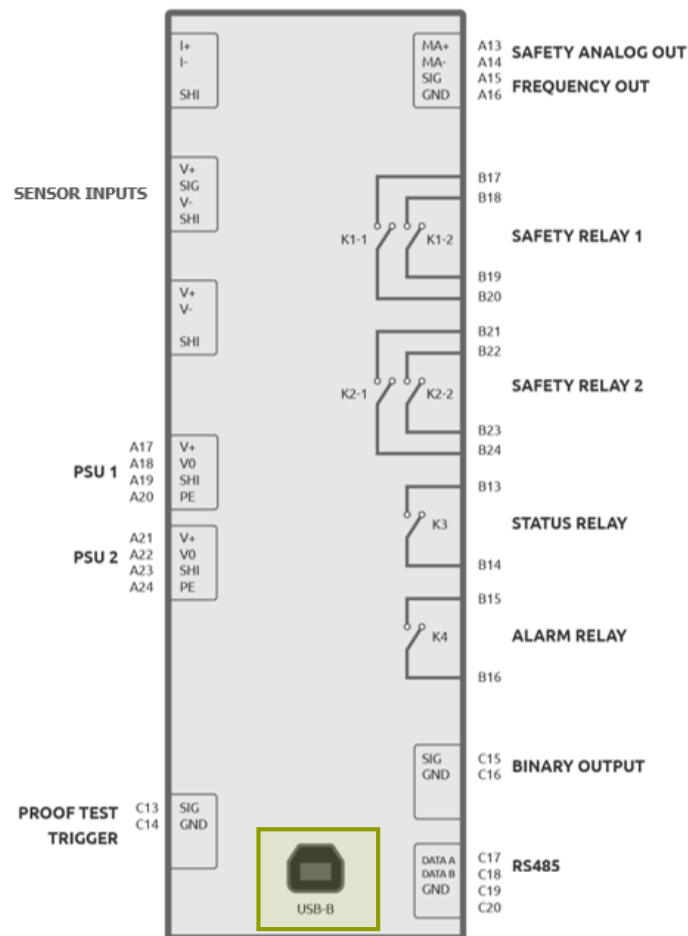
All data in this block are read-only.

Adr.	Name	Type	Range	Access	Description
0500	curr_rpm	single		R/O	Current velocity [RPM]
0502	curr_acc	single		R/O	Current acceleration [RPM/s]
0504	curr_freq	single		R/O	Current input frequency used as base for velocity calculation [Hz].
0506	curr_acc_freq	single		R/O	Current input frequency used for acceleration calculation [Hz]
0508	curr_acc_base	single		R/O	Current acceleration [Hz/s]. Used as base for RPM/s calculation
0510	curr_aout	single		R/O	Current analog output value [mA]
0512	curr_aout_fb	single		R/O	Current analog output feed back value [mA]

USB interface

SpeedSys300 ODS301

- USB Mini-B (1)
- Computer interface for **SpeedSys300** software
- USB/Serial interface (auto discovery)



SPEEDSYS300 CONFIGURATION

SpeedSys Configuration

Foreword

- Always start from a configuration template, e.g. "Meggitt TQ/IQS 2 wire.ssy"
- It is possible to modify a configuration if not connected to a SpeedSys300 module

The screenshot displays the SpeedSys configuration software interface. The main window is titled "SpeedSys" and has a menu bar with "File", "Access level", "Settings", and "Device default". Below the menu bar is a tabbed interface with tabs for "DEVICE", "MEASUREMENT", "OUTPUT", "DIAGNOSTICS", "PROCESS DATA", "DEVICE STATUS", "REPORT", and "EVENT LOG". The "DEVICE" tab is selected, showing configuration settings for a SpeedSys 300 module.

Configuration - user

Location tag	⊖	SSY 100 USER TAG
Machine tag	⊖	
Device tag	⊖	
Device comment	⊖	
MODBUS address	⊖	1
MODBUS transmission speed	⊖	19200 baud
MODBUS parity check	⊖	none
MODBUS line termination	⊖	Inactive
User setup CRC	⊖	6B2A

Configuration - admin

Voting structure	⊖	1001
Trip chain ID	⊖	SSY 100 ADM. TAG
Trip chain position	⊖	
Admin tag	⊖	
Device comment	⊖	
Device setup CRC	⊖	1A72

Password - admin

Change admin password	⊖	Activate <input type="checkbox"/>	Show password...
Admin password CRC	⊖		

SpeedSys 300™

PC interface

Access level
User

Device status
Not connected!

Serial number

Tag number

Read device settings

Enter programming mode

Program device settings

Abort programming mode

☐ Off-line mode

MEGGITT

Version 0.07

SpeedSys Configuration

Device tab (general settings)

- Configure module tags
- Manage Modbus interface settings
- Manage admin password (only if device is *Connected*)

The screenshot displays the SpeedSys configuration software interface. The 'DEVICE' tab is selected, showing various configuration sections. A red box highlights the 'Modbus RTU settings' section, which includes the following parameters:

Parameter	Value
MODBUS address	1
MODBUS transmission speed	19200 baud
MODBUS parity check	none
MODBUS line termination	Inactive

Other configuration sections visible include:

- Configuration - user:** Location tag, Machine tag, Device tag, Device comment, User setup CRC (6B2A).
- Configuration - admin:** Voting structure (1001), Trip chain ID (SSY 100 ADM. TAG), Trip chain position, Admin tag, Device comment, Device setup CRC (1A72).
- Password - admin:** Change admin password (Activate checkbox), Admin password CRC.

On the right side, the 'SpeedSys 300™' status panel shows:

- PC interface
- Access level: User
- Device status: Not connected!
- Serial number
- Tag number
- Buttons: Read device settings, Enter programming mode, Program device settings, Abort programming mode
- Off-line mode checkbox
- MEGGITT logo
- Version 0.07

SpeedSys Configuration

Measurement tab (sensor & signal settings)

- Configure wheel properties
- Configure wheel teeth number
- Configure sensor type

The screenshot displays the SpeedSys 300 configuration software. The 'MEASUREMENT' tab is selected, showing various settings for the speed sensor. The 'Measurement' section includes fields for direction, sensing surface, wheel module, pulses per revolution, rated speed, sensor type, trigger levels, and trigger edge. The 'Advanced settings' section includes frequency calculation averaging, reaction time, acceleration calculation, lookup depth, lookup factor, and CRC. The right sidebar shows the device status as 'Not connected!' and includes buttons for reading settings, entering programming mode, and aborting programming mode. The Meggitt logo and version 0.07 are also visible.

Measurement			
Measurement direction	<input type="radio"/>	Radial	
Speed sensing surface	<input type="radio"/>	Involuted	
Speed wheel module	<input type="radio"/>	4.0	
No. of pulses per revolution	<input type="radio"/>	50	
Rated speed	<input type="radio"/>	5000.00	RPM
Sensor type	<input type="radio"/>	Current loop sensor	
Trigger level - current	<input type="radio"/>	18.00	mA
Trigger level - voltage	<input type="radio"/>	3.00	V
Trigger edge	<input type="radio"/>	Rising	

Advanced settings			
Frequency calculation averaging	<input type="radio"/>	4	Pulses
Calc. reaction time (Th + Tm)	<input type="radio"/>	8.0	ms
Acceleration calc. averaging	<input type="radio"/>	100	Pulses
Acceleration lookup depth	<input type="radio"/>	100	Pulses
Acceleration lookup factor	<input type="radio"/>	0	
Measurement setup CRC	<input type="radio"/>	C76C	

SpeedSys 300™
PC interface

Access level
User

Device status
Not connected!

Serial number

Tag number

Read device settings

Enter programming mode

Program device settings

Abort programming mode

☐ Off-line mode

MEGGITT

Version 0.07

SpeedSys Configuration

Measurement tab (sensor & signal settings)

M SpeedSys
File Access level Settings Device default

DEVICE MEASUREMENT OUTPUT DIAGNOSTICS PROCESS DATA

Measurement

Measurement direction	⊙	Radial
Speed sensing surface	⊙	Involuted
Speed wheel module	⊙	4.0
No. of pulses per revolution	⊙	50
Rated speed	⊙	5000.00 RPM
Sensor type	⊙	Current loop sensor
Trigger level - current	⊙	Current loop sensor
Trigger level - voltage	⊙	3-Wire Hall sensor
Trigger edge	⊙	2-Wire inductive sensor
		Rising

M SpeedSys
File Access level Settings Device default

DEVICE MEASUREMENT OUTPUT DIAGNOSTICS PROCESS DATA DEVICE ST

Measurement

Measurement direction	⊙	Radial
Speed sensing surface	⊙	Involuted
Speed wheel module	⊙	4.0
No. of pulses per		
Rated speed		
Sensor type		
Trigger level - cur		
Trigger level - volt		
Trigger edge		Rising

Speed sensing surface

[TEXT] - Input for report -
Involute: typical gear wheel shape
Slotted: squared teeth on speed wheel.
Pole band: toothed band around machine shaft.
Holes: drilled holes, typically axially located.

SpeedSys Configuration

Output tab (relay settings)

- RL#1 Overspeed : 500 rpm
- RL#2 Overspeed : 1000 rpm
- RL#3 Underspeed: 50 rpm
- RL#4 Acceleration: 300 rpm/s
- DOP: Diagnostics
- ANO: 4-20 mA / 0-5000 rpm

SpeedSys

File Access level Settings Device default

DEVICE MEASUREMENT OUTPUT DIAGNOSTICS PROCESS DATA DEVICE STATUS REPORT EVENT LOG

Digital outputs

	Relay 1	Relay 2	Relay 3	Relay 4	Digital output
Latching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inverted	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
One shot time	1.000	1.000	1.000	1.000	1.000 s
Diagnostics (safe state)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Test and reset	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overspeed	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overspeed limit	500.00	1000.00	1000.00	1000.00	1000.00 RPM
Overspeed hysteresis	100.00	100.00	100.00	100.00	100.00 RPM
Overspeed delay	0.000	0.000	0.000	0.000	0.000 s
Underspeed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Underspeed limit	50.00	50.00	50.00	50.00	50.00 RPM
Underspeed hysteresis	5.00	5.00	5.00	5.00	5.00 RPM
Underspeed delay	0.000	0.000	0.000	0.000	0.000 s
Acceleration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Acceleration limit	300.00	300.00	300.00	300.00	300.00 RPM/s
Acceleration hysteresis	30.00	30.00	30.00	30.00	30.00 RPM/s
Acceleration delay	0.000	0.000	0.000	0.000	0.000 s
Acceleration cut-in speed	300.00	RPM			

Analog output

Speed value for 4 mA	0.00	RPM
Speed value for 20 mA	5000.00	RPM
Analog output range	3.80	to 20.50 mA
Error output current	3.60	mA
Output settings CRC	923C	

SpeedSys 300™

PC interface

Access level
User

Device status
Not connected!

Serial number

Tag number

Read device settings

Enter programming mode

Program device settings

Abort programming mode

☐ Off-line mode

MEGGITT

Version 0.07

SpeedSys Configuration

Diagnostic tab

- Configure Sensor OK range
- Configure Digital Input (RESET)
- Latch/Unlatch the various statuses

SpeedSys 300™

PC interface

Access level: User

Device status: Not connected!

Serial number

Tag number

Read device settings

Enter programming mode

Program device settings

Abort programming mode

☐ Off-line mode

MEGGITT

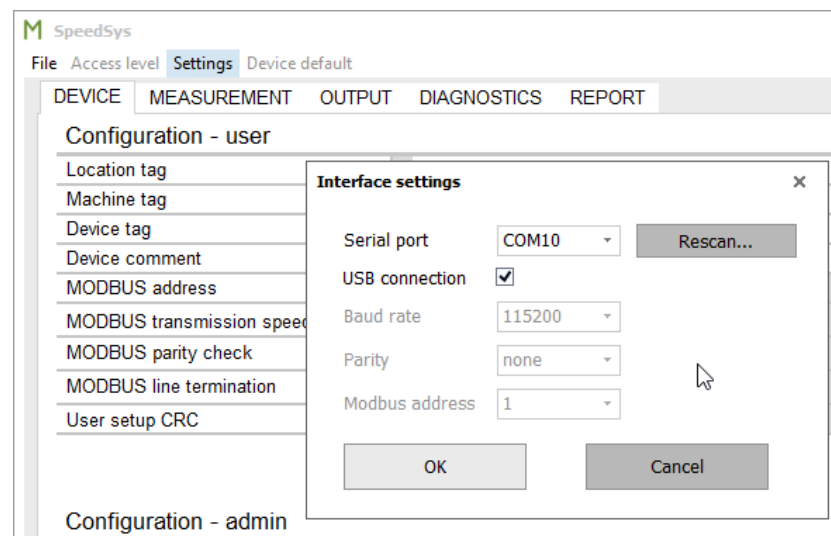
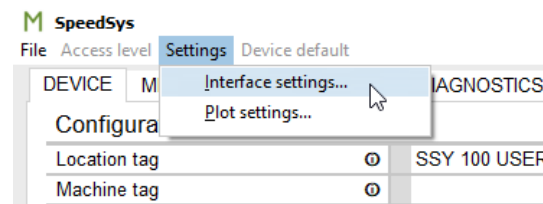
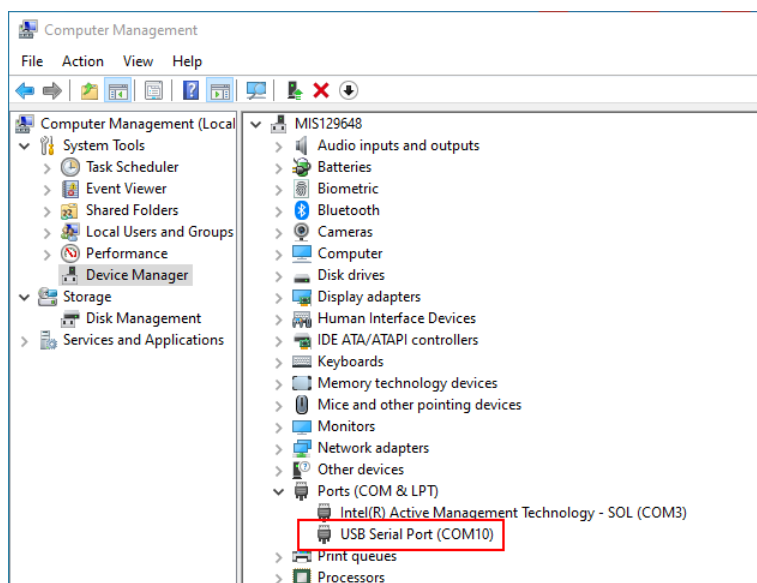
Version 0.07

DEVICE	MEASUREMENT	OUTPUT	DIAGNOSTICS	PROCESS DATA	DEVICE STATUS	REPORT	EVENT LOG
Diagnostics							
Sensor 'OK' current range	16.00	to	25.00	mA			
Sensor 'OK' voltage range	0.10	to	20.00	V			
Latch sensor error	<input type="checkbox"/>						
Latch threshold readback error	<input type="checkbox"/>						
Bad pulses limit	10000	pulses					
Latch bad pulses error	<input type="checkbox"/>						
Analog output readback difference	0.10	mA					
Latch analog-out readback error	<input type="checkbox"/>						
Disable analog output check	<input type="checkbox"/>						
Disable analog error raising	<input type="checkbox"/>						
Test and reset action	<input type="checkbox"/>		Run 'Test and reset'				
Disable USB safe state	<input type="checkbox"/>		Run 'Test and reset'				
Latch USB activation	<input type="checkbox"/>		Run 'Diagnostics' and 'Test and reset'				
Disable initial safe state	<input checked="" type="checkbox"/>						
Latch safety parameter error	<input type="checkbox"/>						
Latch non-safety parameter error	<input type="checkbox"/>						
Latch invalid parameter error	<input type="checkbox"/>						
Latch factory settings error	<input type="checkbox"/>						
Latch main supply error	<input type="checkbox"/>						
Latch rail supply error	<input type="checkbox"/>						
Latch CPU supply error	<input type="checkbox"/>						
Latch CPU temperature error	<input type="checkbox"/>						
Latch slave supply error	<input type="checkbox"/>						
Latch slave communication error	<input type="checkbox"/>						
Latch slave UART watchdog	<input type="checkbox"/>						
Latch slave runtime watchdog	<input type="checkbox"/>						
Latch slave startup watchdog	<input type="checkbox"/>						
Diagnostics settings CRC	41E1						

SpeedSys Configuration

Communication settings

- Connect laptop to USB interface
- On Settings -> Interface Settings... Select the right COM port (automatic COM port discovery mechanism)



SpeedSys Configuration

Device status: *Operating*

The screenshot displays the SpeedSys configuration software interface. The main window has a menu bar with 'File', 'Access level', 'Settings', and 'Device default'. Below the menu bar are several tabs: 'DEVICE', 'MEASUREMENT', 'OUTPUT', 'DIAGNOSTICS', 'PROCESS DATA', 'DEVICE STATUS', 'REPORT', and 'EVENT LOG'. The 'DEVICE' tab is active, showing configuration settings for a user and an admin. The 'DEVICE STATUS' tab is also visible, showing the device status as 'Operating', which is highlighted with a red box. The 'Access level' is set to 'User'. The 'Serial number' is 'ISTEC_B5' and the 'Tag number' is empty. The 'Read device settings' button is highlighted. The 'Enter programming mode' button is also visible. The 'Program device settings' button is disabled. The 'Abort programming mode' button is disabled. The 'Off-line mode' checkbox is unchecked. The 'MEGGITT' logo is displayed at the bottom right of the interface. The 'Version 0.07' is displayed at the bottom right of the interface.

SpeedSys 300™
PC interface
COM10 (USB)

Access level
User

Device status
Operating

Serial number
ISTEC_B5

Tag number

Read device settings

Enter programming mode

Program device settings

Abort programming mode

☐ Off-line mode

MEGGITT

Version 0.07

Configuration - user

Location tag	<input type="radio"/>	SSY 100 USER TAG
Machine tag	<input type="radio"/>	
Device tag	<input type="radio"/>	
Device comment	<input type="radio"/>	
MODBUS address	<input type="radio"/>	1
MODBUS transmission speed	<input type="radio"/>	19200 baud
MODBUS parity check	<input type="radio"/>	none
MODBUS line termination	<input type="radio"/>	Inactive
User setup CRC	<input type="radio"/>	6B2A

Configuration - admin

Voting structure	<input type="radio"/>	1001
Trip chain ID	<input type="radio"/>	SSY 100 ADM. TAG
Trip chain position	<input type="radio"/>	
Admin tag	<input type="radio"/>	
Device comment	<input type="radio"/>	
Device setup CRC	<input type="radio"/>	1A72

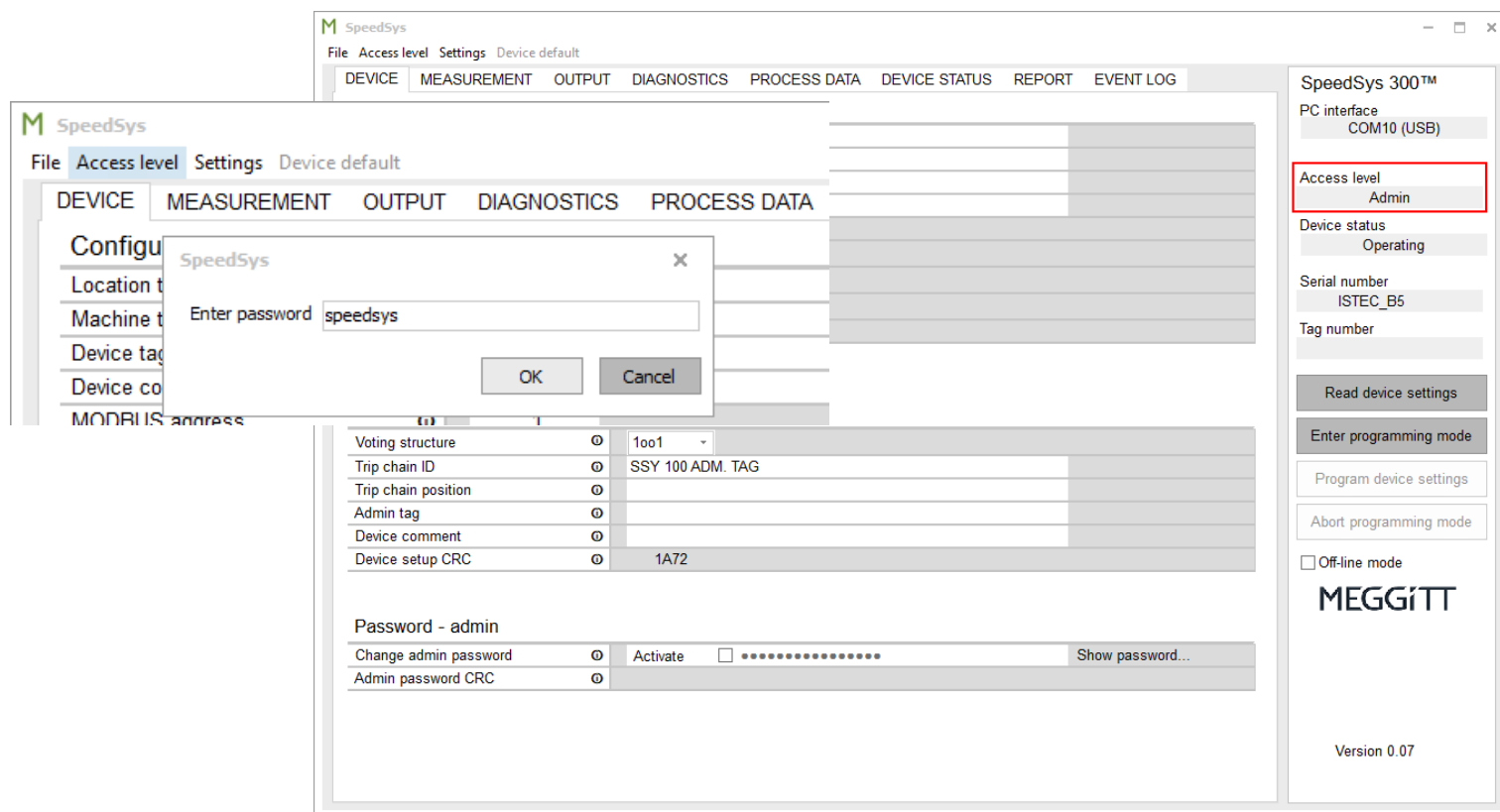
Password - admin

Change admin password	<input type="radio"/>	Activate <input type="checkbox"/>	Show password...
Admin password CRC	<input type="radio"/>		

SpeedSys Configuration

Access level

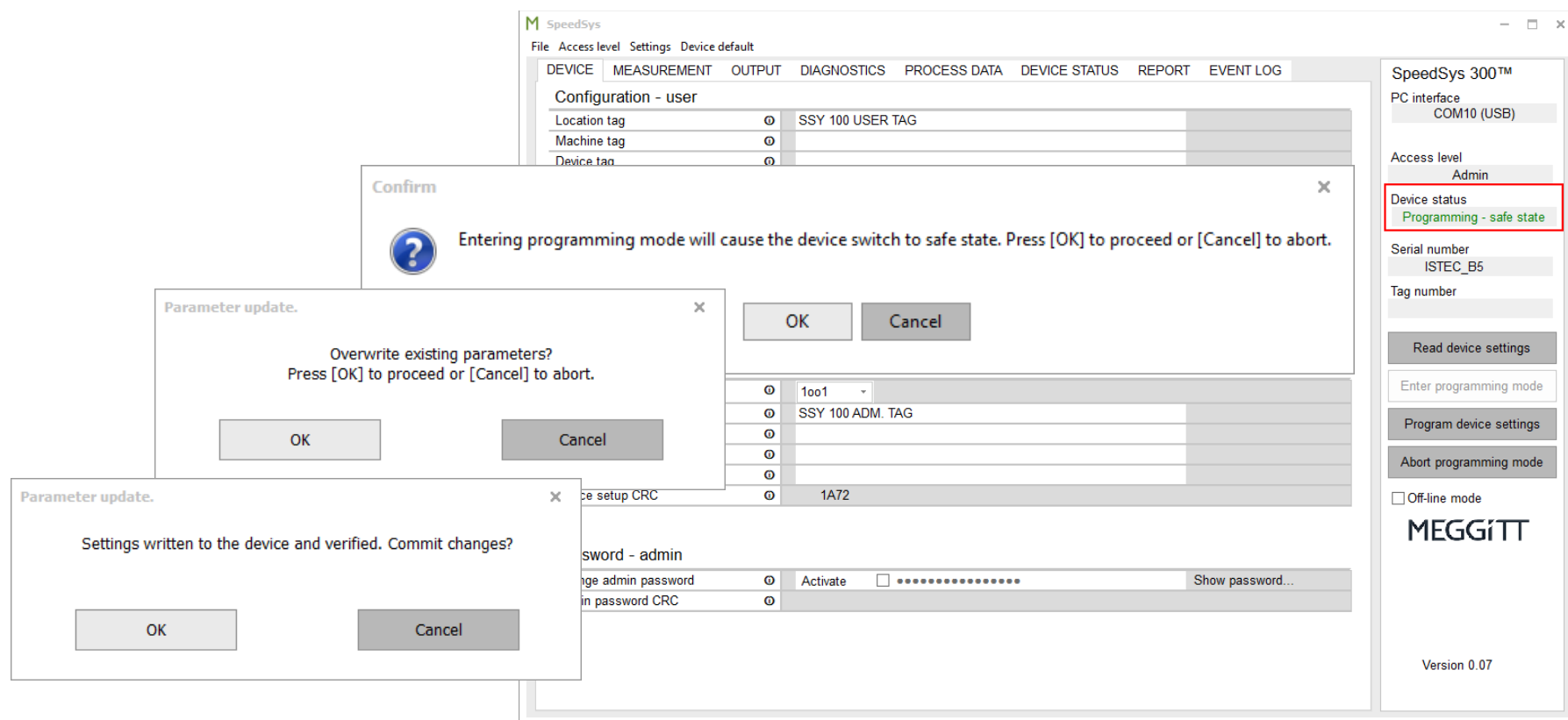
- To activate changes, one has to increase access level to Administrator, *Access level* -> **Admin**
- Default password is "**speedsys**"



SpeedSys Configuration

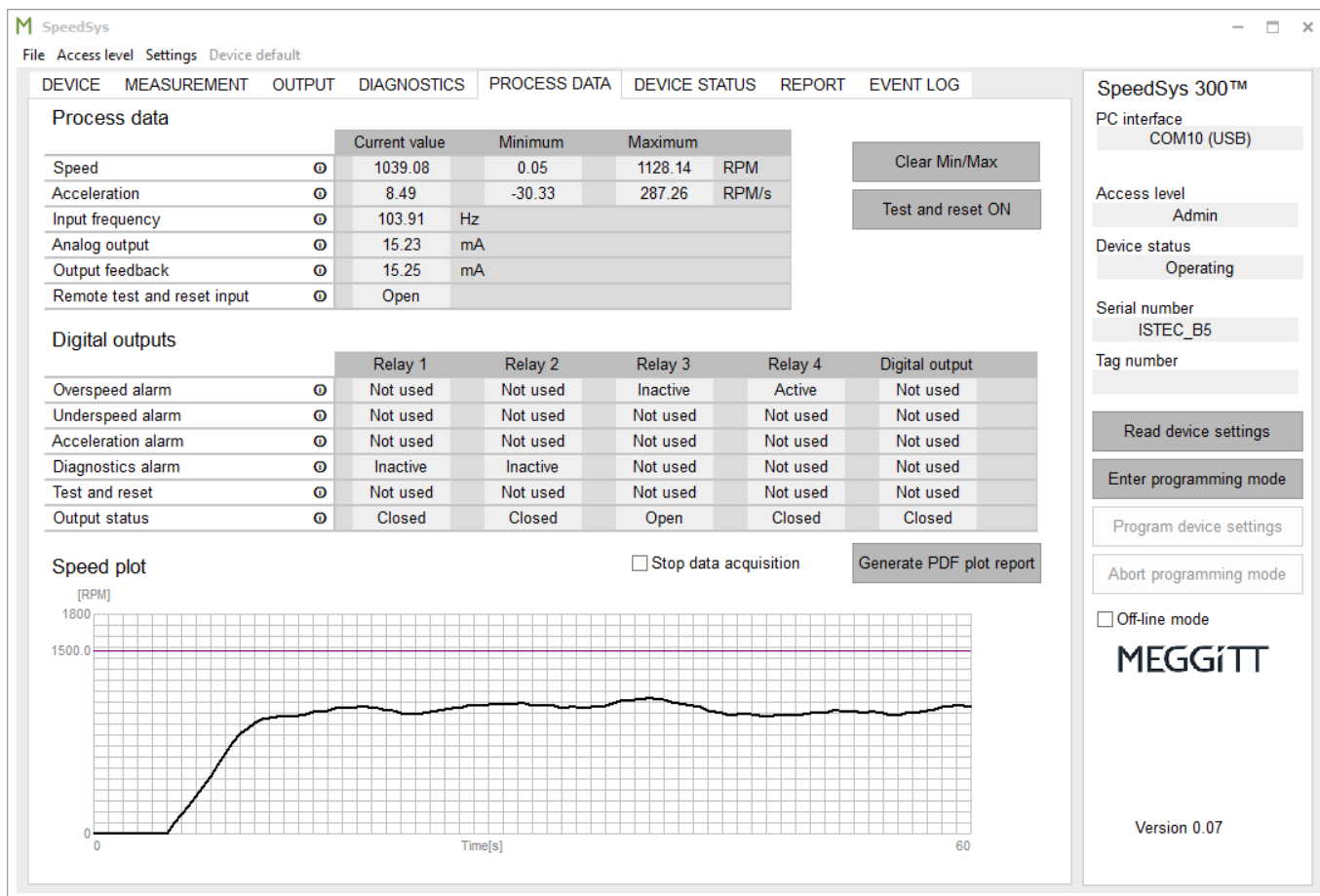
Device status: *Programming*

- Once connected to the module, one can *Read Device settings*.
- If logged with Admin privileges, one can *Enter programming mode* and activate *Program device settings*.



SpeedSys Configuration

Process Data tab (live readings)



SpeedSys Configuration

Device Status tab (live readings)

SpeedSys 300™
PC interface
COM10 (USB)

Access level
Admin

Device status
Operating

Serial number
ISTEC_B5

Tag number

Read device settings

Enter programming mode

Program device settings

Abort programming mode

☐ Off-line mode

MEGGITT

Version 0.07

File Access level Settings Device default

DEVICE MEASUREMENT OUTPUT DIAGNOSTICS PROCESS DATA DEVICE STATUS REPORT EVENT LOG

Diagnostic data

		Current value	Minimum	Maximum
CPU Vcc	⊖	3.34	V	
CPU temperature	⊖	45.41	°C	
Rail supply voltage	⊖	12.40	V	
Main supply voltage	⊖	22.35	V	
Slave Vcc	⊖	3.28	3.28	3.28 V
Sensor supply voltage	⊖		21.49	21.51 V
Sensor voltage - chan. #1	⊖		0.00	0.01 V
Sensor voltage - chan. #2	⊖		0.00	0.01 V
Sensor current - chan. #1	⊖		17.36	20.46 mA
Sensor current - chan. #2	⊖		17.10	20.21 mA
Frequency	⊖	97.32	Hz	
Frequency acceleration	⊖	-0.01	Hz/s	
Firmware version	⊖	1.13		
ROM CRC	⊖	E6C7		
Hardware version	⊖	0.8.4		

Error status

	Error code	Error description
Current error	⊖ 00000000	
Error memory	⊖ 00000000	

Reset error memory

SpeedSys Configuration

Report tab

➤ Generate PDF Reports

The screenshot shows the SpeedSys configuration software interface. The main window has a menu bar with 'File', 'Access level', 'Settings', and 'Device default'. Below the menu bar is a tabbed interface with 'DEVICE', 'MEASUREMENT', 'OUTPUT', 'DIAGNOSTICS', 'PROCESS DATA', 'DEVICE STATUS', 'REPORT', and 'EVENT LOG'. The 'REPORT' tab is selected, showing a 'Content' table with columns for 'Device', 'Measurement', 'Output', and 'Diagnostics'. Each row has a radio button and a checkbox, all of which are checked. A 'Generate PDF report' button is located at the bottom right of the main window.

The sidebar on the right contains the following information:

- SpeedSys 300™
- PC interface: COM10 (USB)
- Access level: Admin
- Device status: Operating
- Serial number: ISTECH_B5
- Tag number: (empty)
- Buttons: Read device settings, Enter programming mode, Program device settings, Abort programming mode
- Off-line mode: ☐ Off-line mode
- MEGGITT logo
- Version 0.07

SpeedSys configuration report

Created: 13.10.2020 08:04

Serial number

Page 1 of 4

Configuration - user

Location tag: SSY 100 USER TAG
 Machine tag:
 Device tag:
 Device comment:
 MODBUS address: 1
 MODBUS transmission speed: 19200
 MODBUS parity check: none
 MODBUS line termination: Inactive
 User setup CRC: 8B2A

Configuration - admin

Voting structure: 1oo1
 Trip chain ID: SSY 100 ADM. TAG
 Trip chain position:
 Admin tag:
 Device comment:
 Device setup CRC: 1A72

SpeedSys configuration report

Created: 13.10.2020 08:04

Serial number

Page 3 of 4

Digital outputs

	Relay 1	Relay 2	Relay 3	Relay 4	Digital out
Latching	OFF	OFF	OFF	OFF	OFF
Inverted	ON	ON	ON	ON	ON
One shot time	1.000	1.000	1.000	1.000	1.000 s
Diagnostic or 'safe state'	ON	ON	ON	OFF	OFF
Partial proof test	OFF	OFF	OFF	OFF	OFF
Overspeed	ON	ON	OFF	OFF	OFF
Overspeed limit	1040.00	1100.00	1000.00	1000.00	1000.00 RPM
Overspeed hysteresis	20.00	1.00	100.00	100.00	100.00 RPM
Overspeed delay	1.000	0.000	0.000	0.000	0.000 s
Underspeed	OFF	OFF	OFF	OFF	OFF
Underspeed limit	50.00	50.00	50.00	50.00	50.00 RPM
Underspeed hysteresis	5.00	5.00	5.00	5.00	5.00 RPM
Underspeed delay	0.000	0.000	0.000	0.000	0.000 s
Acceleration	OFF	OFF	OFF	OFF	OFF
Acceleration limit	300.00	300.00	300.00	300.00	300.00 RPM/s
Acceleration hysteresis	30.00	30.00	30.00	30.00	30.00 RPM/s

SpeedSys Configuration

Event Log tab

The screenshot displays the SpeedSys Configuration software interface. The 'EVENT LOG' tab is selected, showing a table of events and an error codes summary.

Event Log Table:

Entry No	Time	Event	Value
1	- 14s	Overspeed alarm OFF	976.709
2	- 18s	Overspeed alarm OFF	1097.040
3	- 18s	Overspeed alarm ON	1101.129
4	- 18s	Overspeed alarm OFF	1098.843
5	- 18s	Overspeed alarm ON	1102.736
6	- 18s	Overspeed alarm OFF	1091.883
7	- 18s	Overspeed alarm ON	1103.099
8	- 18s	Overspeed alarm OFF	1093.838
9	- 18s	Overspeed alarm ON	1100.035
10	- 18s	Overspeed alarm OFF	1094.807
11	- 18s	Overspeed alarm ON	1101.016
12	- 18s	Overspeed alarm OFF	1096.158
13	- 18s	Overspeed alarm ON	1103.105
14	- 18s	Overspeed alarm OFF	1096.993
15	- 18s	Overspeed alarm ON	1104.282
16	- 18s	Overspeed alarm OFF	1098.516
17	- 18s	Overspeed alarm ON	1105.328
18	- 18s	Overspeed alarm OFF	1099.720
19	- 18s	Overspeed alarm ON	1106.333
20	- 18s	Overspeed alarm OFF	1094.311
21	- 18s	Overspeed alarm ON	1107.613
22	- 18s	Overspeed alarm OFF	1095.902
23	- 18s	Overspeed alarm ON	1108.974
24	- 18s	Overspeed alarm OFF	1096.484
25	- 18s	Overspeed alarm ON	1100.530
26	- 18s	Overspeed alarm OFF	1097.268
27	- 18s	Overspeed alarm ON	1101.680
28	- 18s	Overspeed alarm OFF	1098.971
29	- 20s	Overspeed alarm ON	1103.075
30	- 20s	Overspeed alarm OFF	1099.656
31	- 20s	Overspeed alarm ON	1101.913

Error codes summary:

Code (HEX)	Description
0000 0001	Non-safety parameter error
0000 0002	Safety parameter error
0000 0004	Factory settings error
0000 0008	RAM parity error
0000 0010	Self-check failed
0000 0020	ROM CRC error
0000 0040	RAM check error
0000 0080	Sensor error
0000 0100	Watchdog reset detected
0000 0200	Bad pulse detected
0000 0400	Slave communication error
0000 0800	Comparator threshold readback error
0000 1000	Slave supply out of range
0000 2000	Analog output readback error
0000 4000	Rail supply out of range
0000 8000	Main supply out of range
0001 0000	CPU supply out of range
0002 0000	Relays partial stroke test failed
0004 0000	Parameter value out of range
0008 0000	CPU temperature out of range
0010 0000	USB interface activated
0020 0000	Initial safe state
0040 0000	Slave UART watchdog error
0080 0000	Slave runtime watchdog error
0100 0000	Slave startup watchdog error

Right Panel:

SpeedSys 300™
PC interface
COM10 (USB)

Access level
User

Device status
Operating

Serial number
ISTEC_B5

Tag number

Read device settings

Enter programming mode

Program device settings

Abort programming mode

☐ Off-line mode

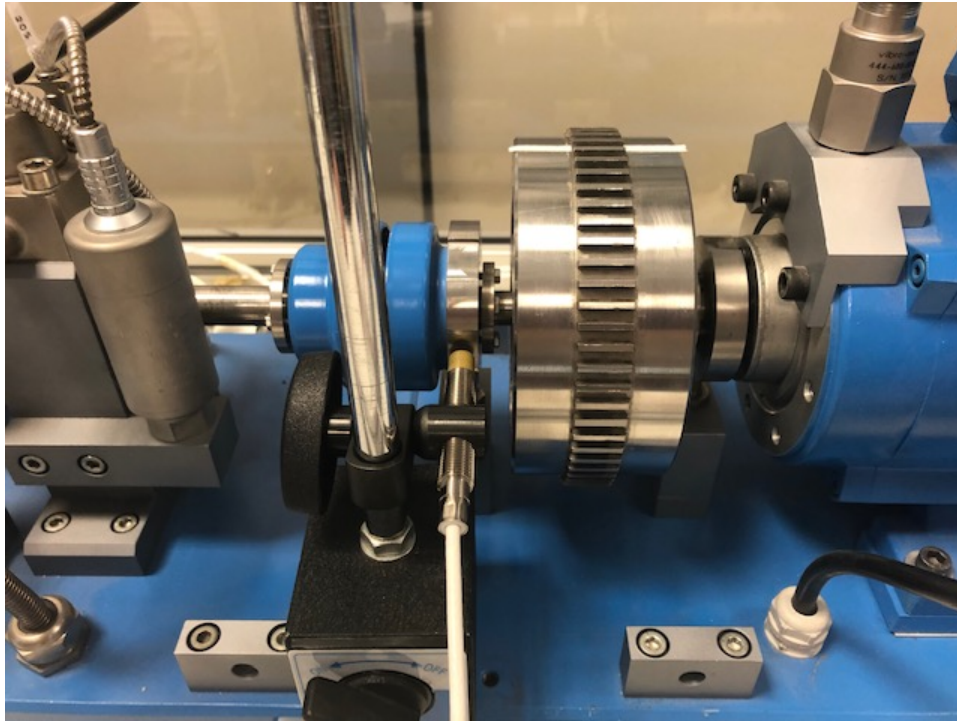
MEGGITT

Version 0.07

SPEEDSYS300 DEMONSTRATION

Demonstration

Speed Sensor



- Pole wheel with six (6) teeth per revolution
- TQ/IQS 9xx (4mm range)

Demonstration

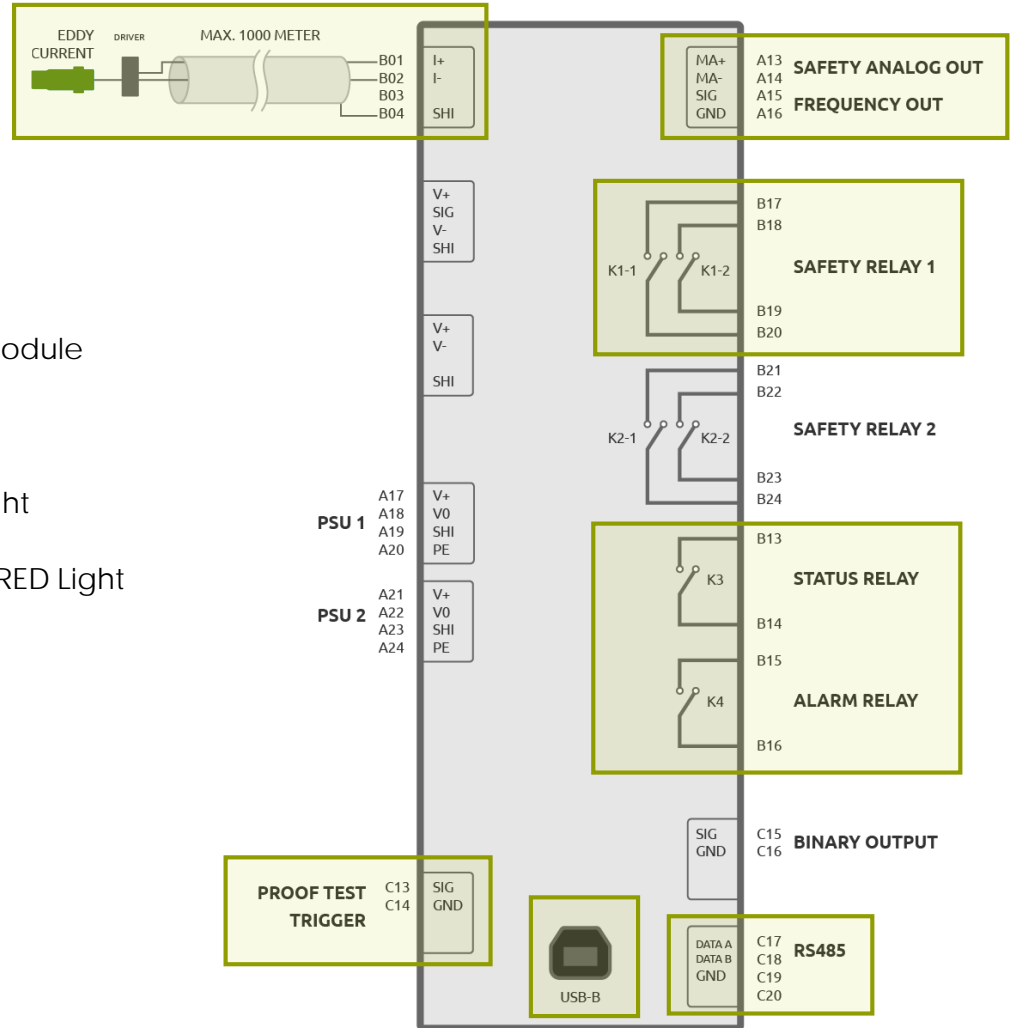
Overspeed Detection System



- SpeedSys ODS301 as Overspeed Protection System, providing protection outputs to Control System
- VibroSmart VSV300 as Control System ("DCS")
- VibroSight Modbus Client as Modbus interface
- Pilot lights as visual feedback
- Contact switch as RESET command

Demonstration

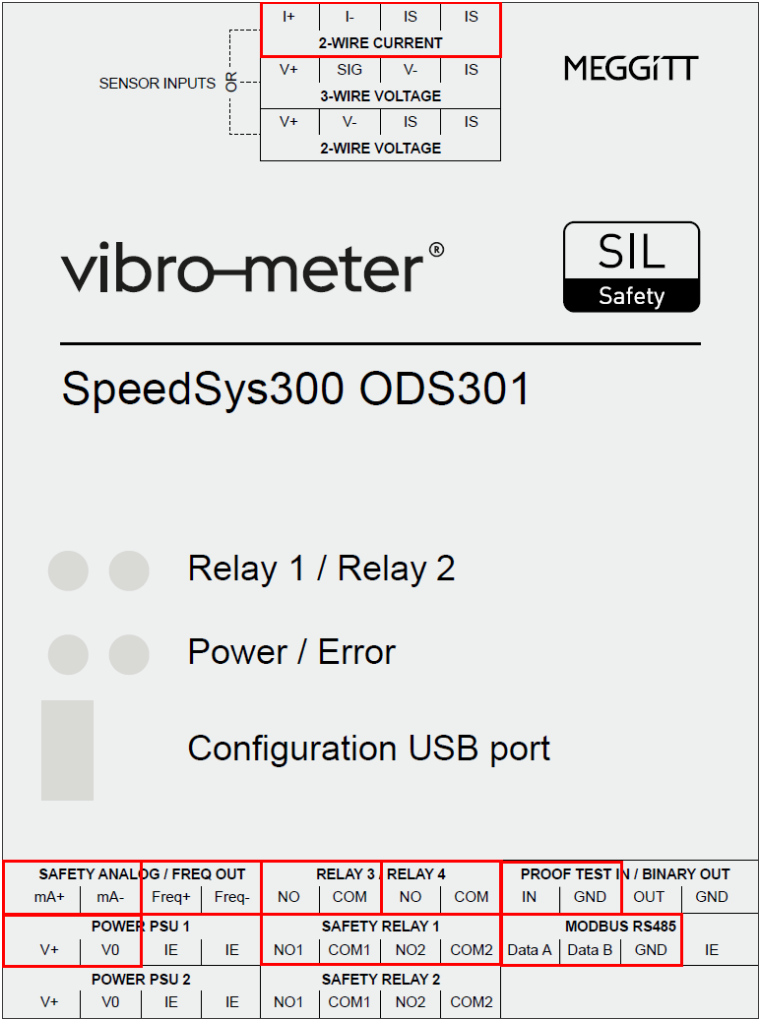
Wiring layout



- TQ/IQS 9xx (1.25uA/um) Sensor Input
- USB-B connection between laptop and ODS301 module
- SAFETY Relay 1 (DIAGNOSTIC) to GREEN light
- Relay 3 (OVS WR) to VibroSmart CH.2 / YELLOW Light
- Relay 4 (OVS TRIP - Latched) to VibroSmart CH.1 / RED Light
- Analog 4-20mA output to VibroSmart AUX CH.
- Serial RS485 Modbus communication to VibroSight
 - Exsys EX-1333V serial adaptor
- Control Input (RESET) from contact switch
- Frequency Output to VibroSmart CH.1

Demonstration

Wiring layout



Demonstration

Relay settings

- Configure DIAGNOSTIC (RL#1)
- Configure OVR WR (RL#3)
- Configure OVR TRIP (RL#4)
- Configure analog output scaling

SpeedSys

File Access level Settings Device default

DEVICE MEASUREMENT OUTPUT DIAGNOSTICS PROCESS DATA DEVICE STATUS REPORT EVENT LOG

Digital outputs

	Relay 1	Relay 2	Relay 3	Relay 4	Digital output	
Latching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Inverted	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
One shot time	1.000	1.000	1.000	1.000	1.000	s
Diagnostics (safe state)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Test and reset	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Overspeed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Overspeed limit	500.00	1000.00	1040.00	1100.00	1000.00	RPM
Overspeed hysteresis	50.00	100.00	20.00	0.00	100.00	RPM
Overspeed delay	1.000	1.000	1.000	0.000	1.000	s
Underspeed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Underspeed limit	50.00	50.00	500.00	50.00	50.00	RPM
Underspeed hysteresis	5.00	5.00	5.00	5.00	5.00	RPM
Underspeed delay	0.000	0.000	0.000	0.000	0.000	s
Acceleration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Acceleration limit	300.00	300.00	300.00	300.00	300.00	RPM/s
Acceleration hysteresis	30.00	30.00	30.00	30.00	30.00	RPM/s
Acceleration delay	0.000	0.000	0.000	0.000	0.000	s
Acceleration cut-in speed	300.00	RPM				

Analog output

Speed value for 4 mA	0.00	RPM
Speed value for 20 mA	1500.00	RPM
Analog output range	3.80	to 20.50 mA
Error output current	3.60	mA
Output settings CRC	7043	

SpeedSys 300™

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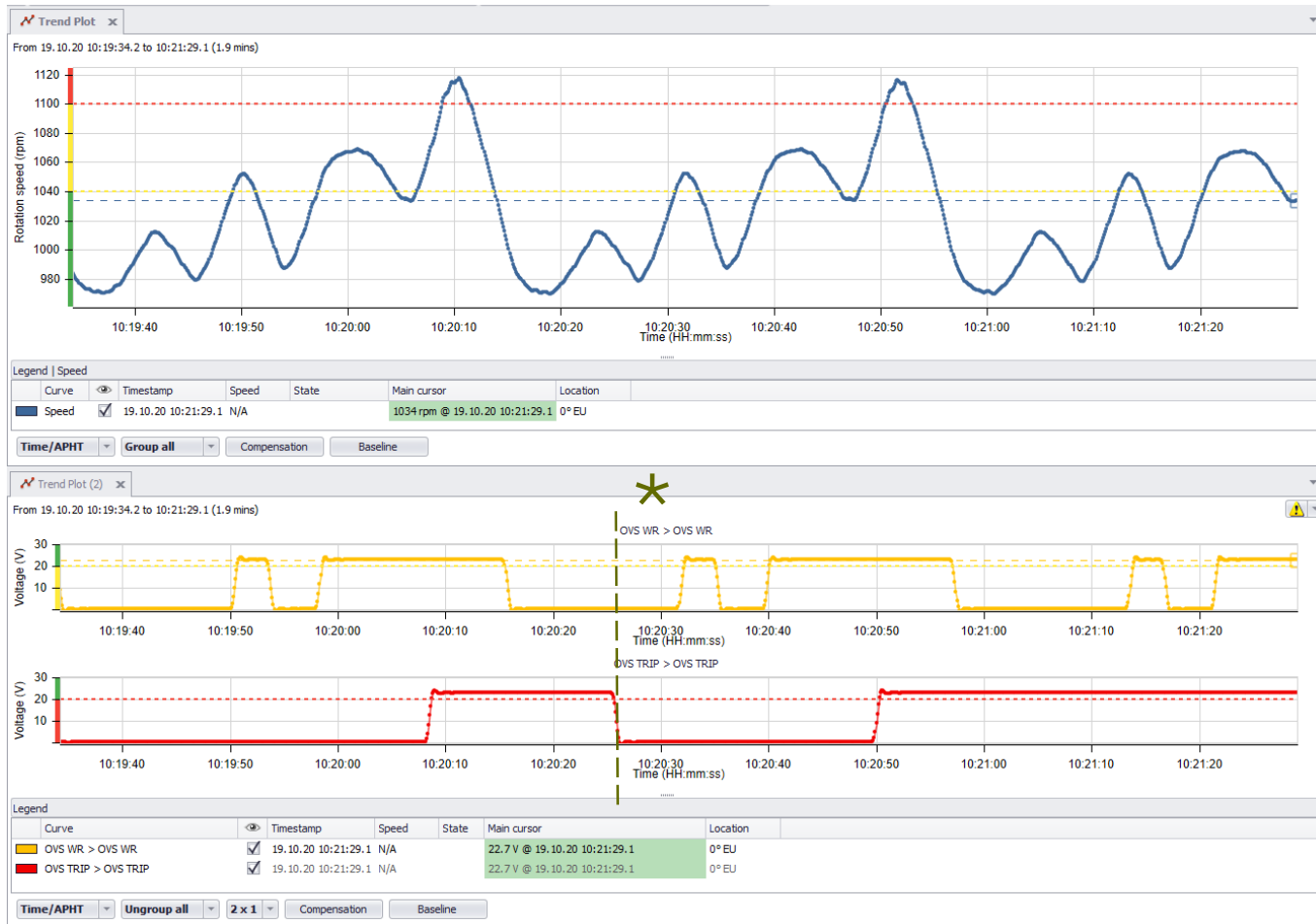
☐ Off-line mode

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Demonstration

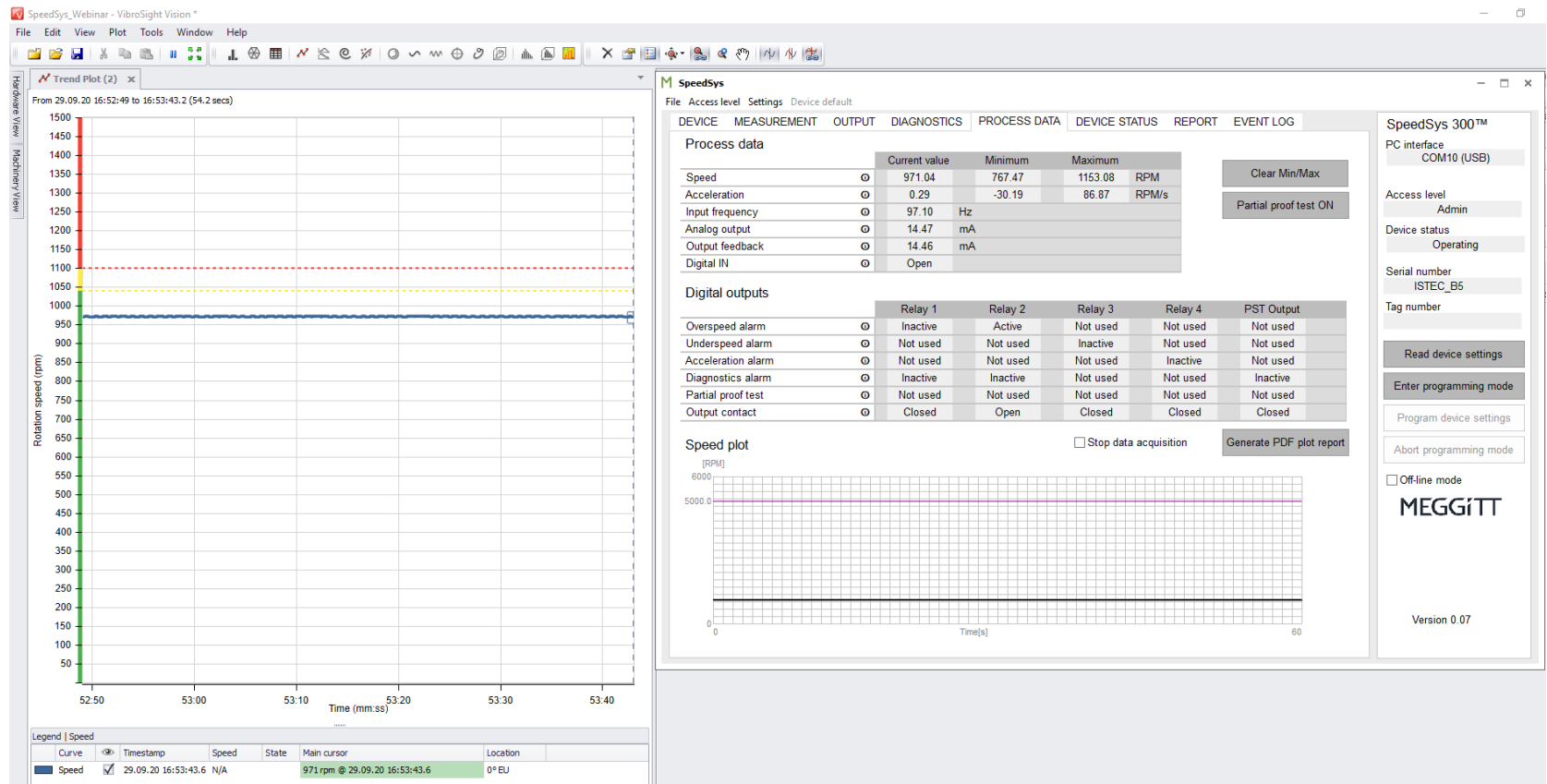
Speed vs. relay outputs



RL#4 (OVS TRIP) remains open, until RESET condition (*), because latched condition

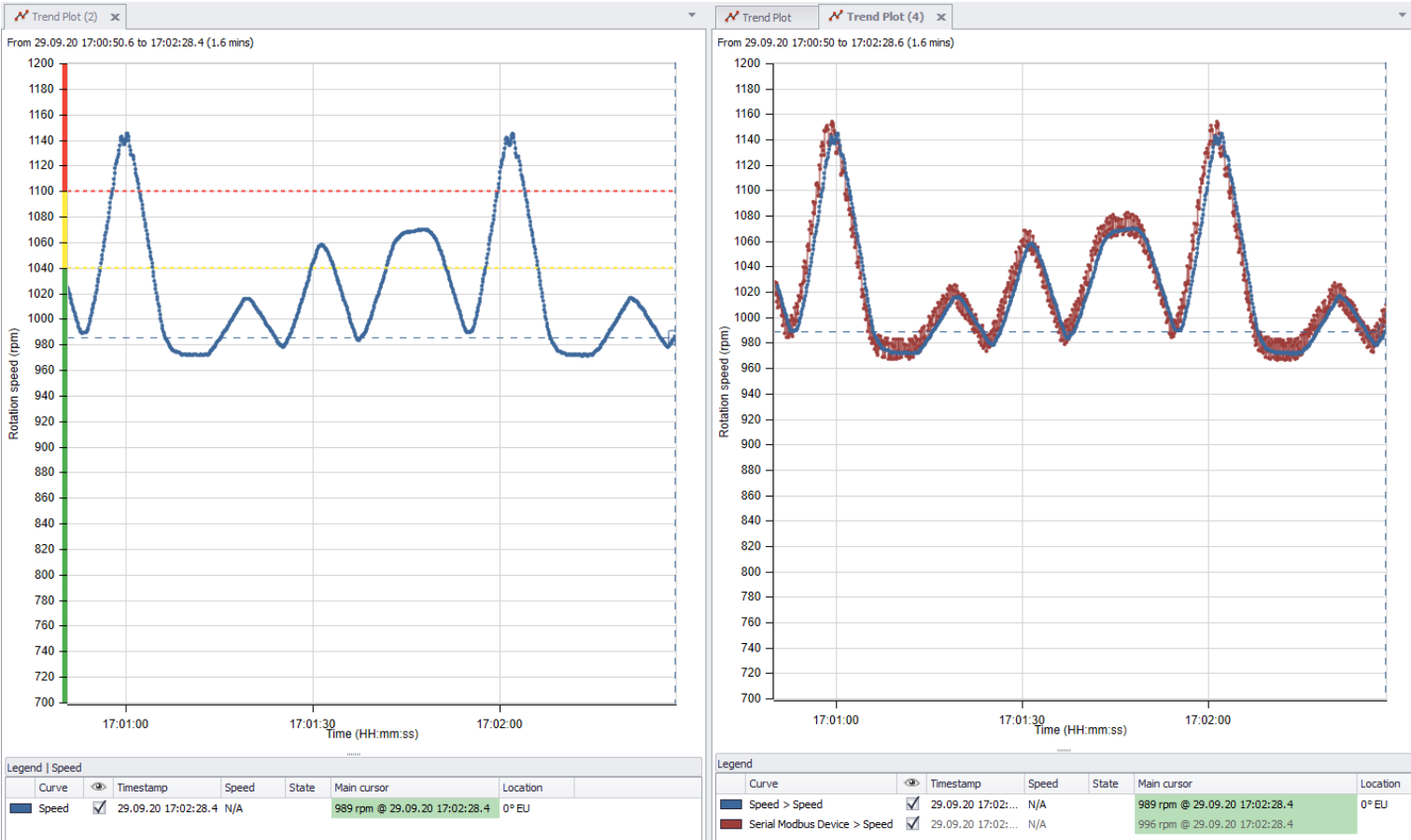
Demonstration

Readings at constant speed



Demonstration

Analog vs. Modbus readings



NEXT STEPS



Demo units

Available for ordering

Demo modules for testing are now available for quote

- ✓ CHF 1'602.- a 46% price reduction (regular module list price CHF 3'944)
no additional discount will be applied
- ✓ Not for sales - **demo** label
- ✓ One time effort – quoting will be open until end of 2020
- ✓ Availability expected for February 2021

SpeedSys300 DEMO Module

PNR: 600-047-000-001





Tool Kit

Want to learn more?

Tool Kit e-mail :

- ✓ Today's presentation
- ✓ Today's webinar recording /demo film
- ✓ Articles – www.meggittsensing.com/energy/blog

Launch status

- **October 2020** - Availability to quote
- **Q1 2021** - Product entry into service (ready to ship)



Save the date

webinar agenda



VM600^{MK2} product introduction

- ✓ Wednesday, **November 18th**
- ✓ Sessions: 10h30 am CET & 04h30 pm CET



Vibro-meter competitive analysis

- ✓ Wednesday, **December 9th**
- ✓ Hosted by the new TCoE
- ✓ Sessions: 10h30 am CET & 04h30 pm CET

Q&A

How would you rate today's session?

Go to www.menti.com and use the code 28 18 7

Thank you!



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