MACH SYSTEMS

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SAE J2716 Interface

A multi-purpose SAE J2716 (SENT) interface, converter, and stand-alone data logger

The **SAE J2716 Interface** features four SENT channels, an Ethernet port, a USB port, a CAN(/FD) channel, four analogue channels and a MicroSD card slot. The device can be used as a SENT to Ethernet/USB/CAN(/FD) gateway, a SENT-analogue converter, a stand-alone SENT and CAN(/FD) data logger, or as an Ethernet-CAN(/FD) or a USB-CAN(/FD) interface.

FEATURES

- 4 bi-directional SENT channels
- Fast, Short serial and Enhanced serial message format support
- Short PWM Code (SPC) support
- Ethernet (10/100)
- CAN(/FD)
- USB 2.0
- 4 analogue inputs/outputs mappable onto SENT data
- MicroSD card slot for stand alone data logging and playback
- RTC with battery backup
- Web interface for easy configuration
- Free-of-charge PC application for configuration, reception, transmission and logging
- Communication protocol over Ethernet, USB and CAN(/FD) for integration
- Can be used as a USB-CAN(/FD) or Ethernet-CAN(/FD) interface
- USB or externally powered
- Aluminium enclosure
- DIN rail mounting possibility

USE-CASES

- Bi-directional SENT interface
  - SENT - Ethernet
  - SENT - USB
  - SENT - CAN(/FD)
- SENT to analogue outputs
- Analogue inputs to SENT
- Stand-alone SENT and CAN(/FD) data logger
- Ethernet/USB to CAN(/FD) interface

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The **SAE J2716 Interface** offers four bi-directional SENT channels and supports reception and transmission of Fast and Slow (both Short serial and Enhanced serial) message formats. Each SENT channel can be configured independently (direction, tick time, nibble count, pause pulse), and an intelligent filtration of incoming SENT frames can be used so that USB / CAN(/FD) / ETH communication does not get overloaded.

The device can be easily configured over its web server or with the help of the free-of-charge PC application that also offers more advanced data monitoring, logging, and simulation. The open communication protocol over Ethernet, USB, or CAN(/FD) allows easy integration of the interface into a third-party system, such as end-of-line testers and test benches.

The stand-alone data logging function allows to log both SENT and CAN(/FD) frames including an RTC timestamp on a MicroSD card. The captured data can later be converted and analysed on PC, or played back onto SENT channel(s) in real time.

The interface offers advanced SENT features such as SPC (Short PWM Code) mode, CRC fault injection (both Fast and Slow messages), and supports up to 8 data nibbles. CAN identifiers for both TX and RX are configurable which allows multiple SAE J2716 Interfaces to be used simultaneously on the same CAN bus.

Analogue channel mapping is user configurable and each can be mapped to any SENT channel's fast data. The conversion parameters such as start bit, bit length and linear coding are also configurable.

TECHNICAL SPECIFICATION

GENERAL

Web	Web interface for basic configuration
PC application	Free-of-charge PC application (Windows) for device configuration, reception and transmission of SENT Fast/Slow frames, real-time data logging
Configuration storage	Non-volatile memory for storing configuration
Firmware	Upgradable over web

SENT

Channels	4x bi-directional SENT channel
Specification	SAE J2716 (2016), Pause pulse support, SENT/SPC support
Tick time	0.5 – 90 µs
Data nibbles	1 – 8
Message format	Fast and Slow messages (Short serial and Enhanced serial)
RX message filtration	No filtration, On change, Skip frames
CRC fault injection	CRC error can be injected into both Fast or Slow TX messages

COMMUNICATION

Channels	1x Fast Ethernet (10BASE-T / 100BASE-TX, IEEE 802.3u)
	1x CAN-HS channel with CAN FD support (ISO 11898-1:2015; CAN2.0A/B; ISO CAN FD)
	1x USB 2.0 CDC (Virtual COM port)
Interface / gateway	SENT to Ethernet
	SENT to USB
Converter	SENT to analogue
Data logger	Stand-alone SENT bus and CAN(/FD) bus data logging on a MicroSD card
	Real-time playback of captured SENT frames
Integration	Communication protocol for accessing SENT and CAN(/FD) channels over Ethernet (TCP/IP), USB (VCP) and CAN(/FD)

ANALOGUE CHANNELS

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Channels	4x Multi-purpose I/O (each configurable as an analogue input or output)
Mapping	Analogue I/O can be mapped on any SENT channel's fast data
	Mapping configuration: Start bit, bit length, multiplier, offset, min/max voltage
Analogue inputs	0 – 5 V; 12-bit ADC
Analogue outputs	0 – 4.095 V (internal precise reference); 12-bit DAC

ELECTRICAL

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Power	USB-powered over USB Type-C
	External 9 - 30 V DC power input (polarity and surge protection) over a 3-pin terminal block
Consumption	100 mA @ 12 V
LEDs	6x Dual-colour LED
	2x ETH LED (RJ-45 connector)
	1x Power LED
MCU	STM32H7 (1 MB Flash, 564 KB RAM)
Transceivers	CAN FD: MCP2562FD
	Ethernet: KSZ8041
Real-time clock	On-board RTC with battery backup

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MECHANICAL

Connectors	SENT bus: 8-pin terminal block
	CAN bus, I/O, 5V output: 8-pin terminal block
	Ethernet: RJ-45
	USB 2.0: USB Type-C
	Power: 3-pin terminal block
	MicroSD card slot
Switches	1x push button
Dimensions (L x W x H)	85 x 82 x 33 mm
Weight	155 g
Operating temperature	–20 to 70 °C
Enclosure	Aluminium profile
Protection	IP20
Placement	Table (adhesive pads included)
	DIN rail (bracket sold separately)

PRODUCT IMAGES

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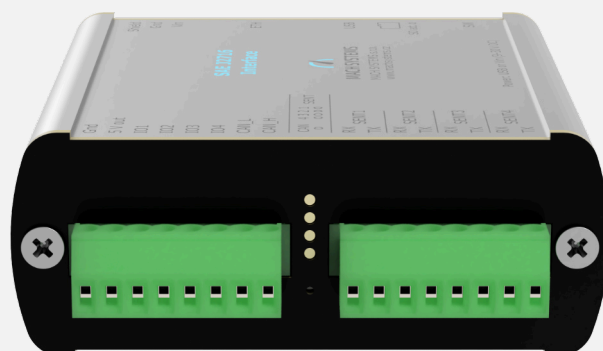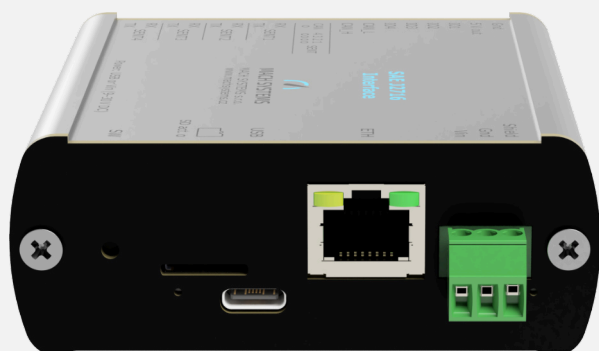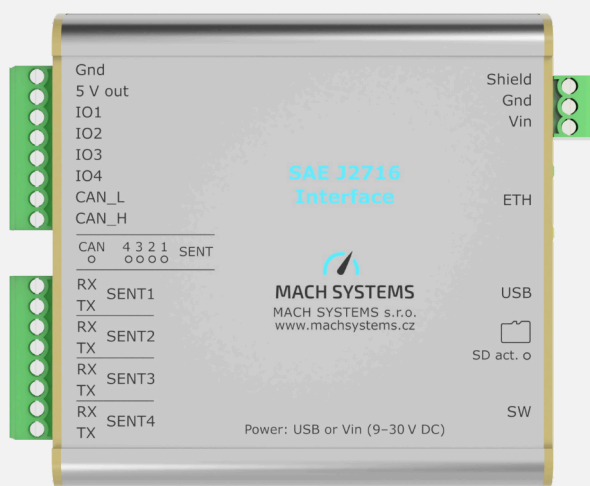
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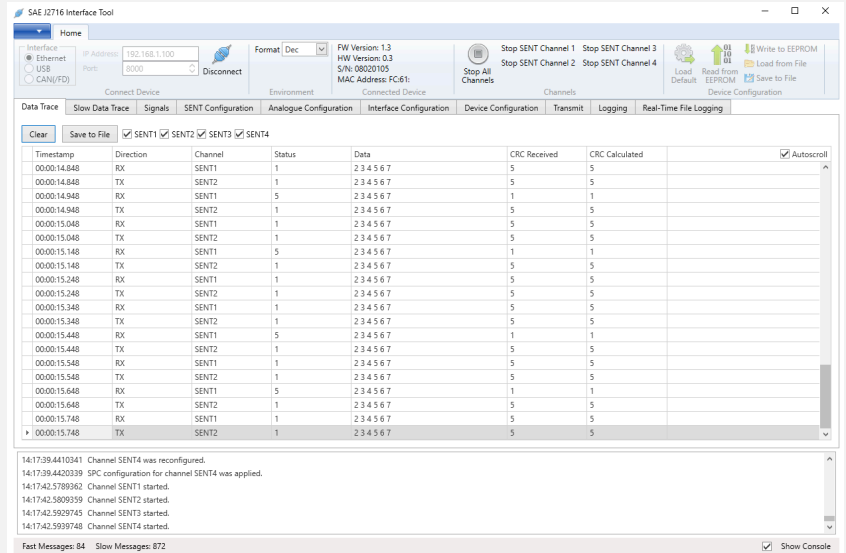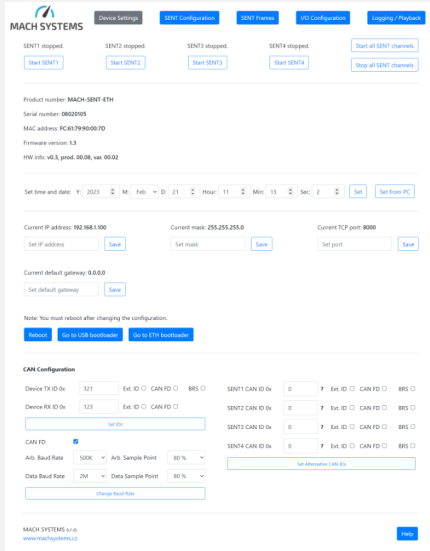
ORDERING INFORMATION

Name	Product Number	Description
SAE J2716 Interface	MACH-SENT-ETH	SAE J2716 (SENT) interface
SAE J2716 Interface .NET SDK	MACH-SENT-ETH-NET-SDK	.NET SDK API (DLL) to access the device over Ethernet, USB (VCP), or CAN/FD
Universal DIN Rail Bracket	DIN-BRACKET-UNI	Universal DIN rail mounting bracket