



SPN5M ST

CONTROLLER



- ECU which can handle up to 16 inputs and up to 16 outputs
- M7 high-performance microprocessor
- Freely programmable using the LOGIClab development platform
- Implementable in a SERIAL line (RS232) or a CAN network as MASTER or SLAVE unit
- Compatible with installation on the ISOBUS network (For the prepared version)
- Polyurethane resin case

TECHNICAL FEATURES

MASTER CODE	SP.5M.439
POWER SUPPLY	9-30 VDC / CURRENT CONSUMPTION 60 mA @ 24 VDC (STAND BY MODE)
INPUT	<p>TOTAL No. 16 INPUTS, SOFTWARE CONFIGURABLE AS:</p> <ul style="list-style-type: none"> • UP TO 16 DIGITAL INPUTS (HIGH SIDE) • UP TO 14 DIGITAL INPUTS (LOW SIDE) • UP TO 14 ANALOGUE INPUTS (0-40 V) • UP TO 4 ANALOGUE INPUTS (4-20 mA) • UP TO 2 FREQUENCY INPUTS (1-1000 Hz)
OUTPUT	<p>TOTAL No. 16 OUTPUTS, SOFTWARE CONFIGURABLE AS:</p> <ul style="list-style-type: none"> • UP TO 8 HIGH-SIDE PWM OUTPUTS (MAX 2 A EACH) • UP TO 4 LOW-SIDE DIGITAL OUTPUTS (MAX 0,5/0,3 A EACH) • UP TO 16 HIGH-SIDE OUTPUTS (MAX 2 A EACH) <p>MAX CURRENT SUPPLIED BY THE DEVICE: 10 A</p>
CAN BUS	No. 2 PORTS: 2.0B COMPLIANT - (11, 29 BIT) - ISO 11898 - UP TO 1MBIT/S PROTOCOLS: CAN OPEN (DS401 DEVICE PROFILE FOR GENERIC I/O MODULE, WITH DS306 EDS FILE)
OPTIONAL CAN BUS ISOBUS	No. 2 PORTS: CAN BUS 2.0 A/B – 11/29 BIT - UP TO 1 MBIT/S - ISO 11783 compliant PROTOCOLS: ISO 11898-2 compliant
SERIAL	No. 1 PORT: RS232
OPTIONAL RTC	Internal buffer battery for real-time clock (time and date) keeping up to 10 year
CONNECTION <i>See «MATING CONNECTORS» table</i>	MOLEX 48 PIN
CASE	ENCAPSULATED IN PUR RESIN - SELF-EXTINGUISHING UL94 (V0)
PROTECTION	IP68
WORKING TEMPERATURE	-40°C +85°C



(20/02/2026) - 1



SPN5M ST

CONTROLLER

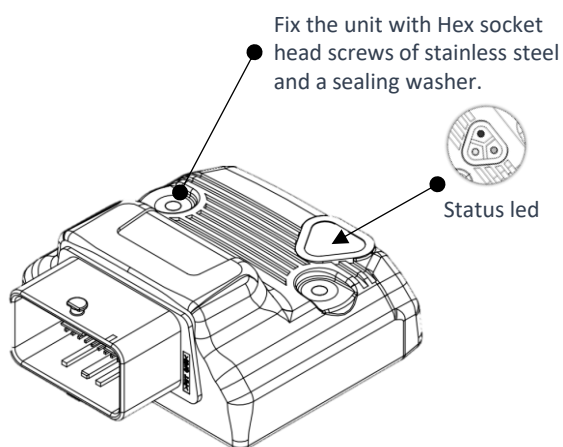
ELECTRONIC FEATURES

SLAVE USAGE	EDS FILE
MASTER USAGE	LOGIClab C PROGRAM OPEN-SOURCE SOFTWARE
PROGRAMMING	FIRMWARE UPLOAD BY CAN BUS WITH ALOADER SOFTWARE TOOL
CPU	Family: 32-bit Arm® Cortex®-M7 Frequency: 400 MHz
MEMORY	FLASH: 2 MB - RAM: 1 MB External EEPROM: 128 KB <i>OPTIONAL</i> : QSPI 64 MB/128 MB

STANDARDS

DIRECTIVE	2014/30/EU (EMC)
ELECTROMAGNETIC COMPATIBILITY	EN 50498
ELECTROMAGNETIC EMISSIONS	EN 61000-6-4
ELECTROMAGNETIC IMMUNITY	EN 61000-6-2
ROAD VEHICLES ELECTRICAL DISTURBANCES FROM CONDUCTION AND COUPLING — PART 2	ISO 7637-2: 2011
ROAD VEHICLES COMPONENT TEST METHODS FOR ELECTRICAL DISTURBANCES FROM NARROWBAND RADIATED ELECTROMAGNETIC ENERGY — PART 1	ISO 11452-1: 2005
PERFORMANCE AND SAFETY INTEGRITY LEVEL	PLc – SIL1 (SINGLE-CHANNEL INTERNAL SCHEME)

FEATURES



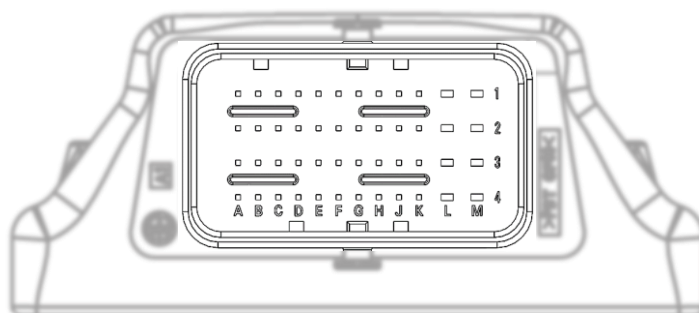
COMMUNICATION PORTS CONFIGURATION

S01	Nr. 2 CAN PORTS (2nd PORT on pins: J3 – K3)
S02	Nr. 1 CAN PORT Nr. 1 RS232 PORT (on pins: J3 – K3)
S03	Nr. 2 CAN PORT (2nd PORT on pins: M3 – M4) Nr. 1 RS232 PORT (on pins: J3 – K3)
S04	2 CAN PORT ISOBUS compliant (2nd PORT on pins: J3 – K3)
S05	Nr. 2 CAN PORT (2nd PORT on pins: M3 – M4) ISOBUS compliant Nr. 1 RS232 PORT (on pins: J3 – K3)



SPN5M ST

CONTROLLER



48 PINS CONNECTOR PINOUT TABLE

PIN	A	B	C	D	E	F	G	H	J	K	L	M
1	DIGITAL / PWM OUTPUT 13	SUPPLY OUTPUTS 9...16	DIGITAL / PWM OUTPUT 12	DIGITAL / PWM OUTPUT 11	DIGITAL / PWM OUTPUT 10	DIGITAL / PWM OUTPUT 9	GND POWER SUPPLY	DIGITAL OUTPUT 8	DIGITAL OUTPUT 7	DIGITAL OUTPUT 6	SUPPLY OUTPUTS 1...8	DIGITAL OUTPUT 4
2	DIGITAL / PWM OUTPUT 14	INPUT 9 0...40Vdc/ DIGITAL	INPUT 8 0...40Vdc/ DIGITAL	INPUT 7 0...40Vdc/ DIGITAL	INPUT 6 4...20mA / 0...40Vdc/ DIGITAL	INPUT 5 4...20mA / 0...40Vdc/ DIGITAL	INPUT 4 4...20mA / 0...40Vdc/ DIGITAL	INPUT 3 4...20mA / 0...40Vdc/ DIGITAL	INPUT 2 0...40Vdc/ DIGITAL	INPUT 1 0...40Vdc/ DIGITAL	DIGITAL OUTPUT 5	DIGITAL OUTPUT 3
		LS OUTPUT 8 500 mA	LS OUTPUT 7 500 mA	LS OUTPUT 6 30 mA	LS OUTPUT 5 30 mA	LS OUTPUT 4 30 mA	LS OUTPUT 3 30 mA	LS OUTPUT 2 500 mA	LS OUTPUT 1 500 mA			
3	DIGITAL / PWM OUTPUT 15	INPUT 10 0...40Vdc/ DIGITAL	FREQ / DIGITAL INPUT 11	FREQ / DIGITAL INPUT 12	INPUT 13 0...40Vdc/ DIGITAL	INPUT 14 0...40Vdc/ DIGITAL	INPUT 15 0...40Vdc/ DIGITAL	INPUT 16 0...40Vdc/ DIGITAL	RS232 RX / CAN2 H *	RS232 TX / CAN2 L *	GND POWER SUPPLY	DIGITAL OUTPUT2 / CAN2 L *
4	DIGITAL / PWM OUTPUT 16	SENSOR POWER SUPPLY	SENSOR POWER SUPPLY	SENSOR POWER SUPPLY	GND	GND	GND	CAN H	CAN L	MODULE POWER SUPPLY	GND	DIGITAL OUTPUT1 / CAN2 H *

NOTES:

- «FREQ» means «frequency» - «LS» MEANS «LOW SIDE»
- For digital low side outputs : **low side can't be used if the relative input is used**
- (*) : pin shared with different functions, see the pin configuration based on hardware configuration table
- Sensor power pins have the reference power supply voltage, MAX 200mA
- GND pins are connected together

TERMINAL WIRE SIZE: follow the manufacturer's mating connector specification

- from A1 to J4: 0.75 mm²
- from L1 to M4: 2.0 mm²

MATING CONNECTORS – MOLEX CODES

CONNECTOR	64320-3311
TERMINALS	64323-1029 (x8) 64322-1029 (x40)
WIRE CAP	64320-1301
ALMEC PRE-WIRED CONNECTOR	CNN.ML.48P.D.VD.CB (yellow cable) CNN.ML.48P.B.VD.CB (blue cable)

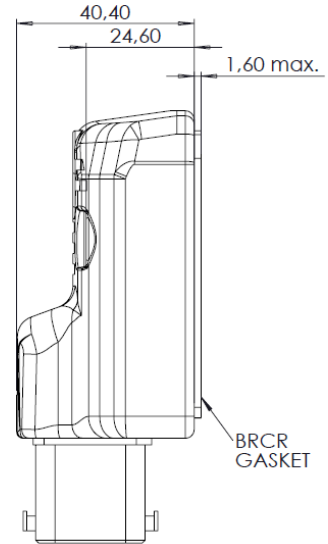
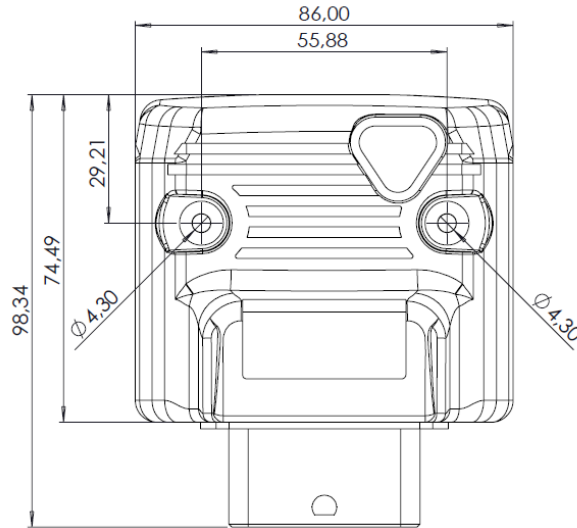




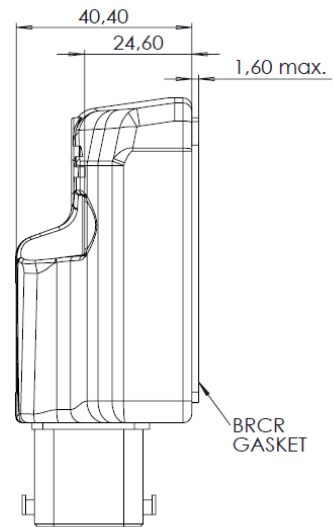
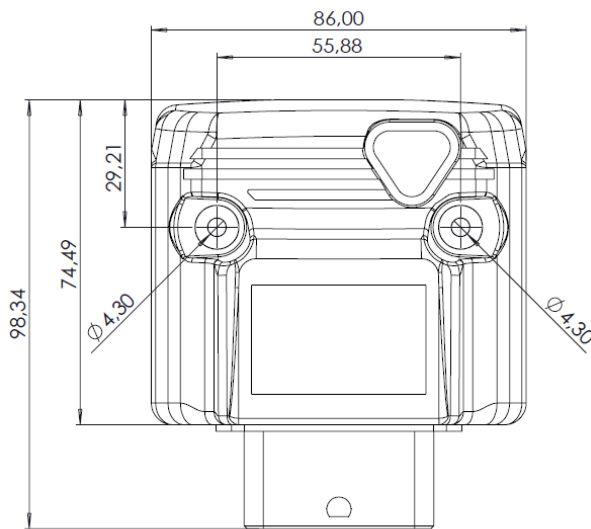
SPN5M ST

CONTROLLER

SIZE (mm)



RTC VERSION SIZE (mm)





NOTE