



The SPN5M ST is an ECU (Electronic Control Unit) which can handle up to 16 inputs, and up to 16 outputs with an M7 high-performance microprocessor.

It is freely programmable using the ALMEClab development platform and implemented in a serial line (RS232) or a CAN network as MASTER or SLAVE unit.

For the prepared version, the device is compatible with installation on the ISOBUS network.

The polyurethane resin case makes the controllers suitable for use on machines that operate in harsh work environments.



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 (TOP 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	<p>No. 2 PORTS: 2.0B COMPLIANT - (11, 29 BIT) - ISO 11898 - UP TO 1MBIT/S</p> <p>PROTOCOLS: CAN OPEN (DS401 DEVICE PROFILE FOR GENERIC I/O MODULE, WITH DS306 EDS FILE)</p>
OPTIONAL CAN BUS ISOBUS	<p>No. 2 PORTS: CAN BUS 2.0 A/B – 11/29 BIT - UP TO 1 MBIT/S - ISO 11783 compliant</p> <p>PROTOCOLS: ISO 11898-2 compliant</p>
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





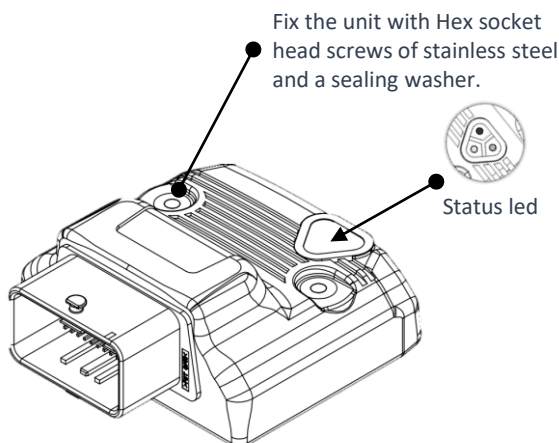
ELECTRONIC FEATURES

SLAVE USAGE	EDS FILE
MASTER USAGE	ALMEClab 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: 1024 KB <i>OPTIONAL</i> : QSPI 64 MB/128 MB

STANDARDS

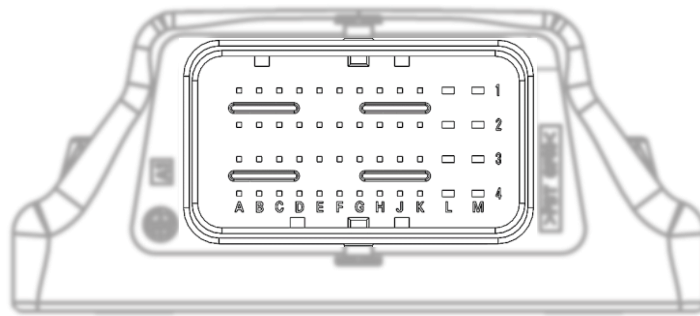
DIRECTIVE	2014/30/EU (EMC)
ELECTROMAGNETIC COMPATIBILITY	EN 50498
ELECTROMAGNETIC EMISSIONS	EN 61000-6-4
ELECTROMAGNETIC IMMUNITY	EN 61000-6-2
ROAD VEHICLES ELECTRICAL DISTURBANCES FROM CONDUCTION AND COUPLING — PART 2	ISO 7637-2: 2011
ROAD VEHICLES COMPONENT TEST METHODS FOR ELECTRICAL DISTURBANCES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

FEATURES



COMUNICATION 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)



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
			DIGITAL LS OUTPUT 8 500 mA	DIGITAL LS OUTPUT 7 500 mA	DIGITAL LS OUTPUT 6 30 mA	DIGITAL LS OUTPUT 5 30 mA	DIGITAL LS OUTPUT 4 30 mA	DIGITAL LS OUTPUT 3 30 mA	DIGITAL LS OUTPUT 2 500 mA	DIGITAL 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

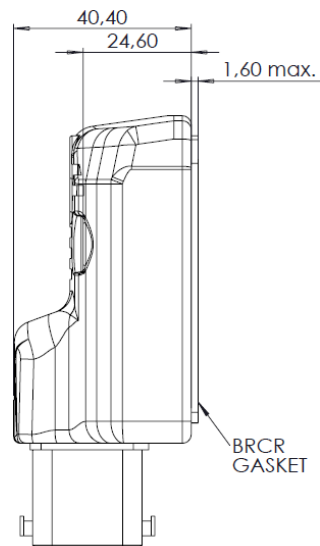
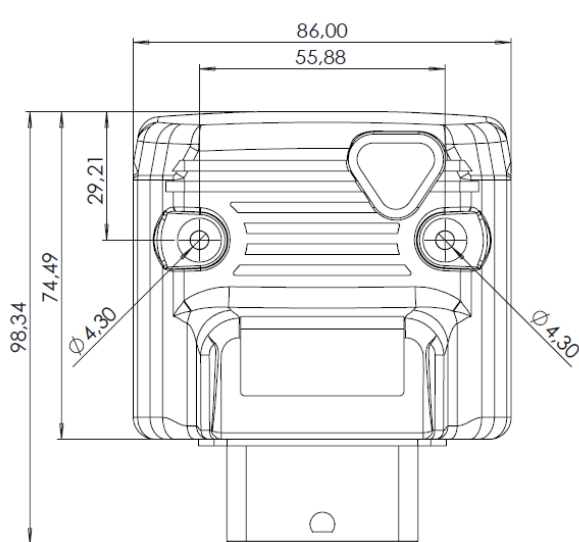
MATING CONNECTORS – MOLEX CODES

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)





SIZE (mm)



RTC VERSION SIZE (mm)

