



The SPN6M ST controller is an ECU (Electronic Control Unit) which can handle up to 32 inputs and up to 32 outputs.

The device has a redundant architecture composed of two units (identified as A and B) which are equipped with M7 high-performance microprocessors.

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.6M.439
POWER SUPPLY	9-30 VDC / CURRENT CONSUMPTION 120 mA @ 24 VDC (STAND BY MODE)
INPUT	<p>TOTAL No. 32 INPUTS, SOFTWARE CONFIGURABLE AS:</p> <ul style="list-style-type: none"> • UP TO 32 DIGITAL INPUTS (TOP SIDE) • UP TO 28 DIGITAL INPUTS (LOW SIDE) • UP TO 28 ANALOGUE INPUTS (0-40 V) • UP TO 8 ANALOGUE INPUTS (4-20 mA) • UP TO 4 FREQUENCY INPUTS (1-1000 Hz)
OUTPUT	<p>TOTAL No. 32 OUTPUTS, SOFTWARE CONFIGURABLE AS:</p> <ul style="list-style-type: none"> • UP TO 16 HIGH-SIDE PWM OUTPUTS (MAX 2 A EACH) • UP TO 8 LOW-SIDE DIGITAL OUTPUTS (MAX 0,5/0,3 A EACH) • UP TO 32 HIGH-SIDE OUTPUTS (MAX 2 A EACH) <p>MAX CURRENT SUPPLIED BY THE DEVICE: 10 A for each unit</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	PUR - UL94 - V0
PROTECTION	IP68
WORKING TEMPERATURE	-40°C +85°C





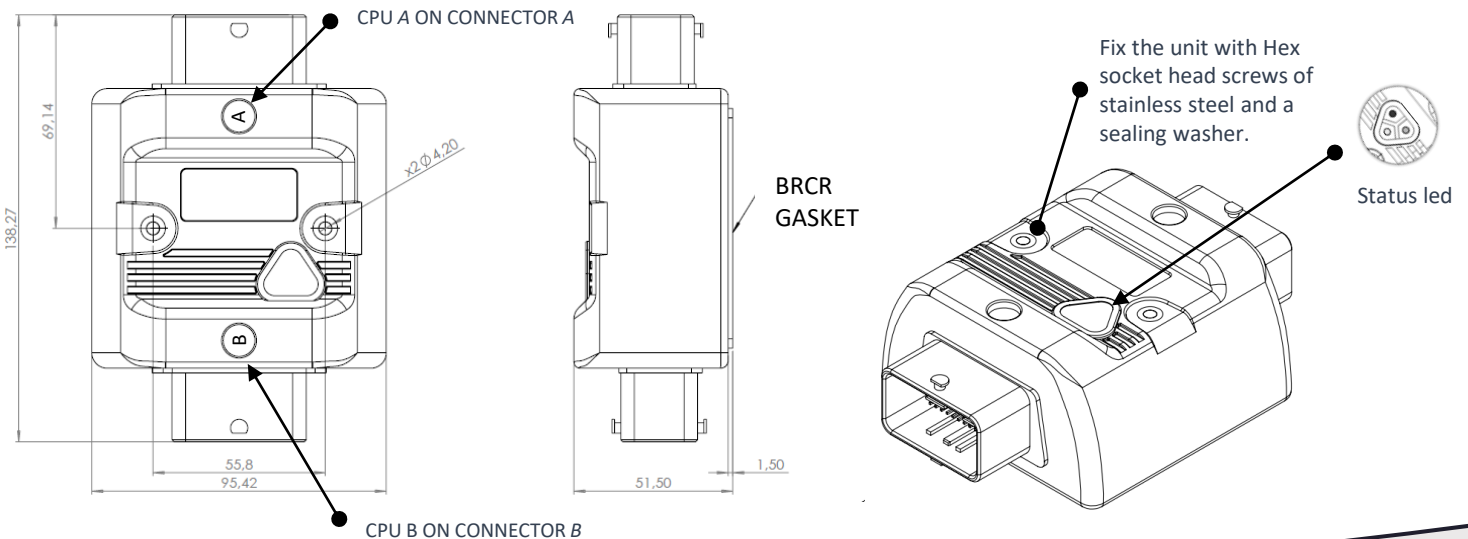
ELECTRONIC FEATURES

SLAVE USAGE On CPU B or A	EDS FILE
MASTER USAGE on CPU A	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	PLd – SIL2 (DUAL-CHANNEL INTERNAL SCHEME)

SIZE (mm)





48 PINS CONNECTOR

A

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	CAN2(H) / RS232 1 RX *	CAN2(L) / RS232 1 TX *	GND POWER SUPPLY	DIGITAL OUTPUT 2
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 OUTPUT 1

48 PINS CONNECTOR

B

PIN	A	B	C	D	E	F	G	H	J	K	L	M
1	DIGITAL / PWM OUTPUT 29	SUPPLY OUTPUTS 25...32	DIGITAL / PWM OUTPUT 28	DIGITAL / PWM OUTPUT 27	DIGITAL / PWM OUTPUT 26	DIGITAL / PWM OUTPUT 25	GND POWER SUPPLY	DIGITAL OUTPUT 24	DIGITAL OUTPUT 23	DIGITAL OUTPUT 22	SUPPLY OUTPUTS 17...24	DIGITAL OUTPUT 20
2	DIGITAL / PWM OUTPUT 30	INPUT 25 0...40Vdc / DIGITAL	INPUT 24 0...40Vdc / DIGITAL	INPUT 23 0...40Vdc / DIGITAL	INPUT 22 4...20mA / 0...40Vdc / DIGITAL	INPUT 21 4...20mA / 0...40Vdc / DIGITAL	INPUT 20 4...20mA / 0...40Vdc / DIGITAL	INPUT 19 4...20mA / 0...40Vdc / DIGITAL	INPUT 18 0...40Vdc / DIGITAL	INPUT 17 0...40Vdc / DIGITAL	DIGITAL OUTPUT 21	DIGITAL OUTPUT 19
			DIGITAL LS OUTPUT 24 500 mA	DIGITAL LS OUTPUT 23 500 mA	DIGITAL LS OUTPUT 22 30 mA	DIGITAL LS OUTPUT 21 30 mA	DIGITAL LS OUTPUT 20 30 mA	DIGITAL LS OUTPUT 19 30 mA	DIGITAL LS OUTPUT 18 500 mA	DIGITAL LS OUTPUT 17 500 mA		
3	DIGITAL / PWM OUTPUT 31	INPUT 26 0...40Vdc / DIGITAL	FREQ. / DIGITAL INPUT 27	FREQ. / DIGITAL INPUT 28	INPUT 29 0...40Vdc / DIGITAL	INPUT 30 0...40Vdc / DIGITAL	INPUT 31 0...40Vdc / DIGITAL	INPUT 32 0...40Vdc / DIGITAL	CAN3(H) / RS232 2 RX *	CAN3(L) / RS232 2 TX *	GND POWER SUPPLY	DIGITAL OUTPUT 18
4	DIGITAL / PWM OUTPUT 32	SENSOR POWER SUPPLY	SENSOR POWER SUPPLY	SENSOR POWER SUPPLY	GND	GND	GND	CANH	CANL	MODULE POWER SUPPLY	GND	DIGITAL OUTPUT 17

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

COMMUNICATION PORTS CONFIGURATION

S01	Nr. 3 CAN PORTS (2nd/3rd on pins: J3 – K3)
S02	Nr. 2 CAN PORT (2nd on pins: J3 – K3) Nr. 1 RS232 PORT (on pins: J3 – K3)
S03	Nr. 1 CAN PORT Nr. 2 RS232 PORT (2nd on pins: J3 – K3)
S04	3 CAN PORT ISOBUS compliant (2nd/3rd on pins: J3 – K3)

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)



64320-3311



64323-1029



64322-1029



64320-1301





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MECHATRONICS

NOTE