



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

Easy to program, using the ALMEClab development platform, it can be implemented in a serial line (RS232) or in a CAN network, as MASTER or SLAVE.

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



## TECHNICAL FEATURES

MASTER CODE		SPN6M
POWER SUPPLY		9-36 VDC / CURRENT CONSUMPTION 100 mA AT 24 VDC (STAND BY MODE)
INPUT	TOTAL 32*	32 DIGITAL INPUTS (HIGH SIDE) 28 ANALOGIC INPUTS (FULL RANGE 0..40V) 8 ANALOGIC INPUTS (4...20mA) 4 FREQUENCY INPUTS (HIGH SIDE UP TO 100Hz)
OUTPUT	TOTAL 32*	16 PWM HIGH SIDE OUTPUTS (MAX 2A SINGLE OUTPUT)** 32 HIGH SIDE OUTPUTS (MAX 2A SINGLE OUTPUT)** 8 LOW SIDE OUTPUTS – SHARED PIN WITH INPUTS (MAX CURRENT 500mA)
CAN BUS	3 PORTS	2.0B COMPLIANT - (11, 29 BIT) - ISO 11898 - UP TO 1MBit/S
CAN BUS PROTOCOLS		CAN OPEN (CIA DS401 DEVICE PROFILE FOR GENERIC I/O MODULE, WITH DS306 EDS FILE) ON REQUEST: SAE J1939 - ISO 11783 (ISO BUS) - FMS
SERIAL PORT	2 PORTS	RS232
RTC		NO (SEE THE SPN6M RTC VERSION)
CONNECTIONS PORTS	2	MOLEX 48 PIN
CASE		PUR
WEIGHT		426 g
WORKING TEMPERATURE		-40°C +80°C



\* See the pinout table for the pin sharing. The pin function can be configured by software.

\*\* Max total high side outputs current 8 A



## ELECTRONIC FEATURES

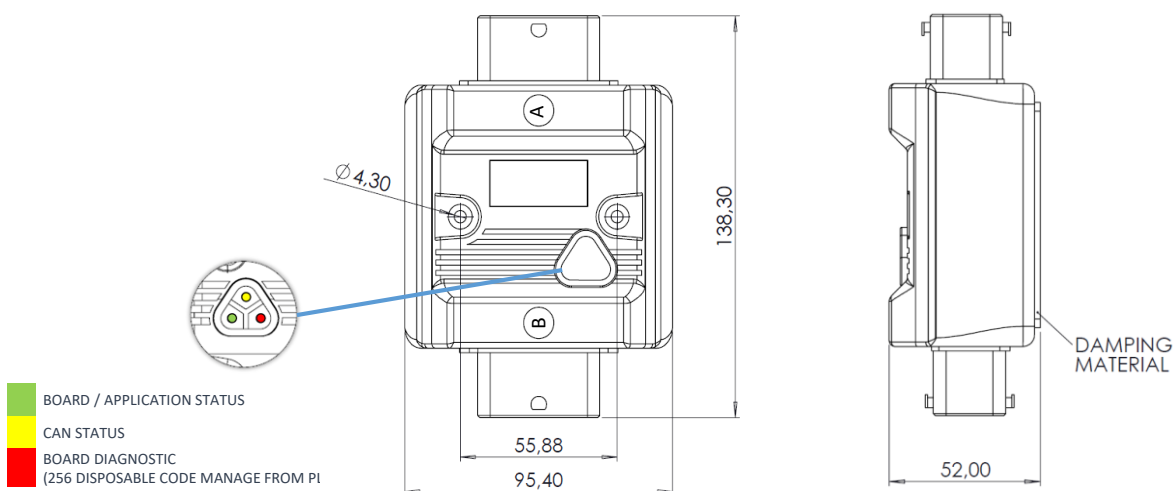
SLAVE USAGE	EDS FILE
MASTER USAGE	ALMEClab
	STANDARD C PROGRAM LANGUAGE
PROGRAMMING	FIRMWARE UPLOAD BY CAN BUS WITH ALOADER SOFTWARE TOOL
CYCLE TIME	10 ms
CPU	FAMILY: ARM CORTEX M4, 32BIT CORE
MEMORY	FLASH (PROGRAM MEMORY): 1MB RAM MEMORY: 256KB EEPROM: 128KB

## STANDARDS

ELECTROMAGNETIC EMISSIONS	EN 61000-6-4// EN 55011 (RF RADIATE)
ELECTROMAGNETIC IMMUNITY	EN 61000-6-2// EN 61000-4-2/3/4/6
IP	BOX: IP68; CONNECTORS: IP67
MTTFd	MOSFET OUTPUT: 151,35 YEARS INPUT ONLY: 162,33 YEARS CALCULATED ACCORDING TO THE IEC61709 (SIEMENS SN29500), WITH ENVIRONMENTAL FACTORS 3K7 (IEC60721)
PERFORMANCE AND SAFETY INTEGRITY LEVEL	PLd – SIL2 (DUAL-CHANNEL INTERNAL SCHEME)

IN ACCORDANCE WITH THE EN50498 THE DEVICE MEETS THE TECHNICAL SPECIFIC REQUIREMENTS OF 2004-104 DIRECTIVE (AUTOMOTIVE). THE DEVICE IS EMC 2004/108 COMPLIANT.

## SIZE (mm)





### VERSION PORT AVAILABLE

<b>S01</b>	Nr. 3 CAN PORT
<b>S02</b>	Nr. 2 CAN PORT Nr. 1 SERIAL PORT
<b>S03</b>	Nr. 1 CAN PORT Nr. 2 SERIAL PORT
<b>S04</b>	Nr. 3 CAN PORT Nr. 2 SERIAL PORT
<b>OTHER CUSTOMIZATIONS ARE AVIABLE ON REQUEST</b>	

### COUPLING CONNECTORS - 48 PIN (MOLEX CODES)

<b>CONNECTOR</b>	64320-3311
<b>TERMINALS</b>	64323-1029 (x8)
	64322-1029 (x40)
<b>WIRE CAP</b>	64320-1301



64320-3311



64323-1029



64322-1029



64320-1301

### 48 PINS CONNECTOR



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 / LOW SIDE OUTPUT 4	INPUT 7 0...40Vdc / DIGITAL / LOW SIDE OUTPUT 3	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 / LOW SIDE OUTPUT 2	INPUT 1 0...40Vdc / DIGITAL / LOW SIDE OUTPUT 1	DIGITAL OUTPUT 5	DIGITAL OUTPUT 3
3	DIGITAL / PWM OUTPUT 15	INPUT 10 0...40Vdc / DIGITAL	FREQUENCY / DIGITAL INPUT 11	FREQUENCY / 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 / 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 OUTPUT 1 / CAN2(H) ****

NOTE 1: Max total high side outputs current 8A for each connector

NOTE 2 : DIGITAL LOW SIDE OUTPUT- **ATTENTION! DO NOT USE A LOW SIDE OUTPUT IF THE RELATIVE INPUT IS USED**

NOTE 3 : INPUTS 3 – 4 – 5 – 6 COULD BE CONFIGURED AS DIGITAL LOW SIDE OUTPUT 30 mA ON REQUEST

\*\*\* FOR S01: CAN PORT 2 // FOR S02: SERIAL PORT 1 // FOR S03: SERIAL PORT 1 // FOR S04: SERIAL PORT 1

\*\*\*\* FOR S01: DIGITAL OUTPUT // FOR S02: DIGITAL OUTPUT // FOR S03: DIGITAL OUTPUT // FOR S04: CAN PORT 2

### 48 PINS CONNECTOR



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 / LOW SIDE OUTPUT 20	INPUT 23 0...40Vdc / DIGITAL / LOW SIDE OUTPUT 19	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 / LOW SIDE OUTPUT 18	INPUT 17 0...40Vdc / DIGITAL / LOW SIDE OUTPUT 17	DIGITAL OUTPUT 21	DIGITAL OUTPUT 19
3	DIGITAL / PWM OUTPUT 31	INPUT 26 0...40Vdc / DIGITAL	FREQUENCY / DIGITAL INPUT 27	FREQUENCY / 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 / CAN3(L) ****
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 / CAN3(H) ****

NOTE 1: Max total high side outputs current 8A for each connector

NOTE 2 : DIGITAL LOW SIDE OUTPUT- **ATTENTION! DO NOT USE A LOW SIDE OUTPUT IF THE RELATIVE INPUT IS USED**

NOTE 3 : INPUTS 19 – 20 – 21 – 22 COULD BE CONFIGURED AS DIGITAL LOW SIDE OUTPUT 30 mA ON REQUEST

\*\*\* FOR S01: CAN PORT 3 // FOR S02: CAN PORT 2 // FOR S03: SERIAL PORT 2 // FOR S04: SERIAL PORT 2

\*\*\*\* FOR S01: DIGITAL OUTPUT // FOR S02: DIGITAL OUTPUT // FOR S03: DIGITAL OUTPUT // FOR S04: CAN PORT 3





**ALMEC**  
MECHATRONICS

NOTE