



The SPN5M controller is an ECU (Electronic Control Unit) which can handle up to 16 inputs and up to 16 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

<b>MASTER CODE</b>		SPN5M
<b>POWER SUPPLY</b>		9-36 VDC / CURRENT CONSUMPTION 100 mA AT 24 VDC (STAND BY MODE)
<b>INPUT</b>	<b>TOTAL 16*</b>	MAX 16 DIGITAL INPUTS (HIGH SIDE) MAX 14 ANALOGIC INPUTS (FULL RANGE 0..40V) MAX 4 ANALOGIC INPUTS (4...20mA) MAX 2 FREQUENCY INPUTS (HIGH SIDE UP TO 100Hz)
<b>OUTPUT</b>	<b>TOTAL 16*</b>	MAX 8 PWM HIGH SIDE OUTPUTS (MAX 2A SINGLE OUTPUT)** MAX 16 HIGH SIDE OUTPUTS (MAX 2A SINGLE OUTPUT)** MAX 4 LOW SIDE OUTPUTS – SHARED PIN WITH INPUTS (MAX CURRENT 500mA)
<b>CAN BUS</b>	<b>2 PORT</b>	2.0B COMPLIANT - (11, 29 BIT) - ISO 11898 - UP TO 1MBit/S
<b>CAN BUS PROTOCOLS</b>		CAN OPEN (CIA DS401 DEVICE PROFILE FOR GENERIC I/O MODULE, WITH DS306 EDS FILE) ON REQUEST: SAE J1939 - ISO 11783 (ISO BUS) - FMS
<b>SERIAL PORT</b>	<b>1 PORT</b>	RS232
<b>RTC</b>		NO (SEE THE SPN5M RTC VERSION)
<b>CONNECTION PORT</b>	<b>1</b>	MOLEX 48 PIN
<b>CASE</b>		PUR
<b>WEIGHT</b>		275 g
<b>WORKING TEMPERATURE</b>		-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

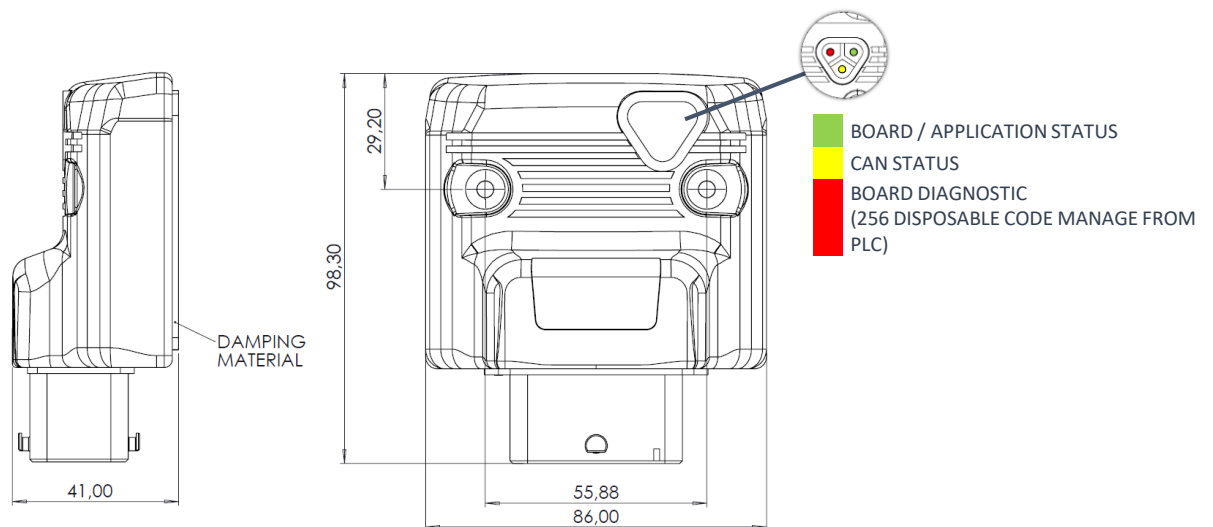
SLAVE USAGE	EDS FILE
MASTER USAGE	ALMEClab
	STANDARD C PROGRAM LANGUAGE
PROGRAMMING	FIRMWARE UPLOAD BY CAN BUS WITH ALOADER SOFTWARE TOOL
CYCLE TIME	10 ms
CPU	FAMILY: ARM CORTEX M4, 32BIT CORE
MEMORY	FLASH (PROGRAM MEMORY): 1MB RAM MEMORY: 256KB EEPROM: 128KB

## 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	PLc – SIL1 (SINGLE-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. 2 CAN OPEN PORTS
<b>S02</b>	Nr. 1 CAN OPEN PORT Nr. 1 RS232 PORT
<b>S03</b>	Nr. 2 CAN OPEN PORT Nr. 1 RS232 PORT

**OTHER CUSTOMIZATIONS ARE AVIABLE ON REQUEST**

**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



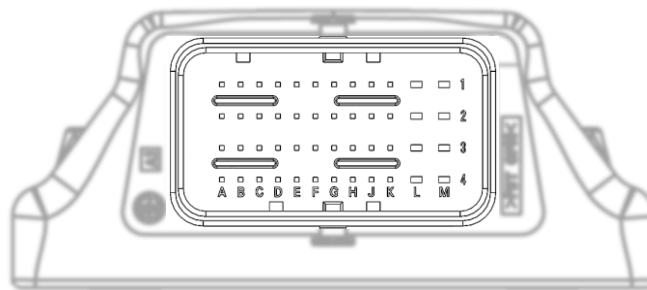
64323-1029



64322-1029



64320-1301



**48 PINS CONNECTOR PINOUT TABLE**

PIN	A	B	C	D	E	F	G	H	J	K	L	M
<b>1</b>	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
<b>2</b>	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 LOW SIDE OUTPUT 4	DIGITAL LOW SIDE OUTPUT 3					DIGITAL LOW SIDE OUTPUT 2	DIGITAL LOW SIDE OUTPUT 1		
<b>3</b>	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 ****
<b>4</b>	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 ****

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

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

NOTE 1 : FOR DIGITAL LOW SIDE OUTPUTS : **DO NOT USE A LOW SIDE OUTPUT IF THE RELATIVE INPUT IS USED**

NOTE 2 : «FREQ» MEANS «FREQUENCY»

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



**ALMEC**  
MECHATRONICS

NOTE