MOTION CONTROLLER ESPRIT V11

Installation guide

AUSTRAL ELECTRONICS SARL – RCS LORIENT 889 551 032 – TVA FR69889551032
4 Rue Parc Vras – 56260 Larmor-Plage – France – Tel : 06 04 15 28 80 – contact@austral-eng.com

HARDWARE SPECIFICATIONS :

		Options
CPU Core		
CPU	ARM Cortex-M4, DSP and FPU, 180Mhz	
Memory		
RAM	196 Kbytes	
FLASH	1 Mbyte	
F-RAM	2 Kbytes	
Network		
CANbus	1x Isolated CANbus 1Mbps	
Wireless	-	1x Bluetooth 5.0, BLE (50m range)
I/O		
Motor Driver	3x H-bridges with voltage and current measures, faults protections, compatible with DC or BLDC motors, MOSFET 200A peak @ 100°C, < 100Khz switch	
Brake/Clutch Driver	1x Low-Side MOSFET PWM, 3A internal SMT Fuse, 54V over voltage protection	
Position feedback	1x 14 bits Analog Input (0-5V, 0-10V, +/-10V) 1x 5V/1A Reference Supply (Protected)	Up to 18 bits converter Up to 3 x additional 12 bits Analog Input 3x Hall Effect sensors Input
Speed feedback	-	2x Quadrature input sensor
Serial	-	1x Isolated Multifunction RS232/485 port (Up to 20Mbps in RS485 and 1Mbps in RS232 / 2-wire, software selectable terminators)
PWM	-	2x PWM outputs
GNSS-INS	-	1x integrated GNSS-INS 1x SMA for the external antenna - GNSS : BeiDou, Galileo, GLONASS, GPS / QZSS, 3 Concurrent GNSS - INS : 6 or 9 DOF Mems sensors (with or without magnetic compass) - 30Hz Position, Attitude, Velocities, Accelerations, Gyrations, Magnetometers
Digital Input	-	2x inputs with protections (Buttons compatible)
System		
Jtag	Yes	
Bootload	Via CANbus	
Safety		
Protections	Reverse voltage 20/30A Fuse	
Continuous Built In Test	Watchdog, Continuous Main Power and CANbus voltages, Main power and H Bridge over currents, over mean power, CPU and MOSFET temperatures, shorts circuits detections.	
Driven by the load protection	Safe Brake Control (SBC) Brake output	
Backup power	Redundant isolated power supply using CANbus	
Chaining I/O	-	1x Isolated Input (Use Clutch Output)
Fail Operational / Autonomous steering	-	Partial automated steering possible drinving a 6 Wires BLDC Motor Control using 2

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		Redundant Esprit Motion Controllers (ISO26262 ASIL-D compliant)
Electrical Specifications		
Main Supply Voltage	8 to 54V	60V
CANbus Supply Voltage	9 to 18V	
Power Consumption	<1W (no load, no options)	
Motor Consumption	DC : 20A RMS, 1KW @ 60°C BLDC : 30A RMS, 1.5KW @ 60°C	Cooled : DC 40A RMS, BLDC 60A RMS
Mechanical Specifications		
Dimensions	118 x 120 x 38 mm	OEM board : 90 x 86 x 22 mm
Protection	IP67	
Enclosure Material	Black Thermoplastic	
Cooling	Passive cooling, fanless design	
Weight	250 gram	
Over-normative features		
Filtering	Passive LC Power Supply Filter	Active Power Supply Filter
Underwater Acoustic Compatibility	-	Parametrable PWM Frequency TDMA Active Power supply Filter
Compliance		
Regulatory	CE (*)	FCC (*)
Radio	FCC, ISED, CE, KCC, NCC and SRRC	
EMC	EN 55032/5, EN 61000-6-2, EN 61000-6-3 (*)	
Safety	EN/UL/IEC 62368-1 (*)	
Inflamability	UL 94 V-0	
ROHS	Directive 2015/863/EU	
Reliability and Environmental		
MTTF	Maintenance-free >50 000 hours	
Warranty	2 Years	5 Years
Operation Temperature	-20°C to +60°C Up to + 85°C with low or short burst motor load	Cooled : -20°C to +60°C up to 60A RMS
Storage Temperature	-25°C to 85°C	
Relative Humidity	10% to 90% (operation) 5% to 95% (storage)	

(*) In progress

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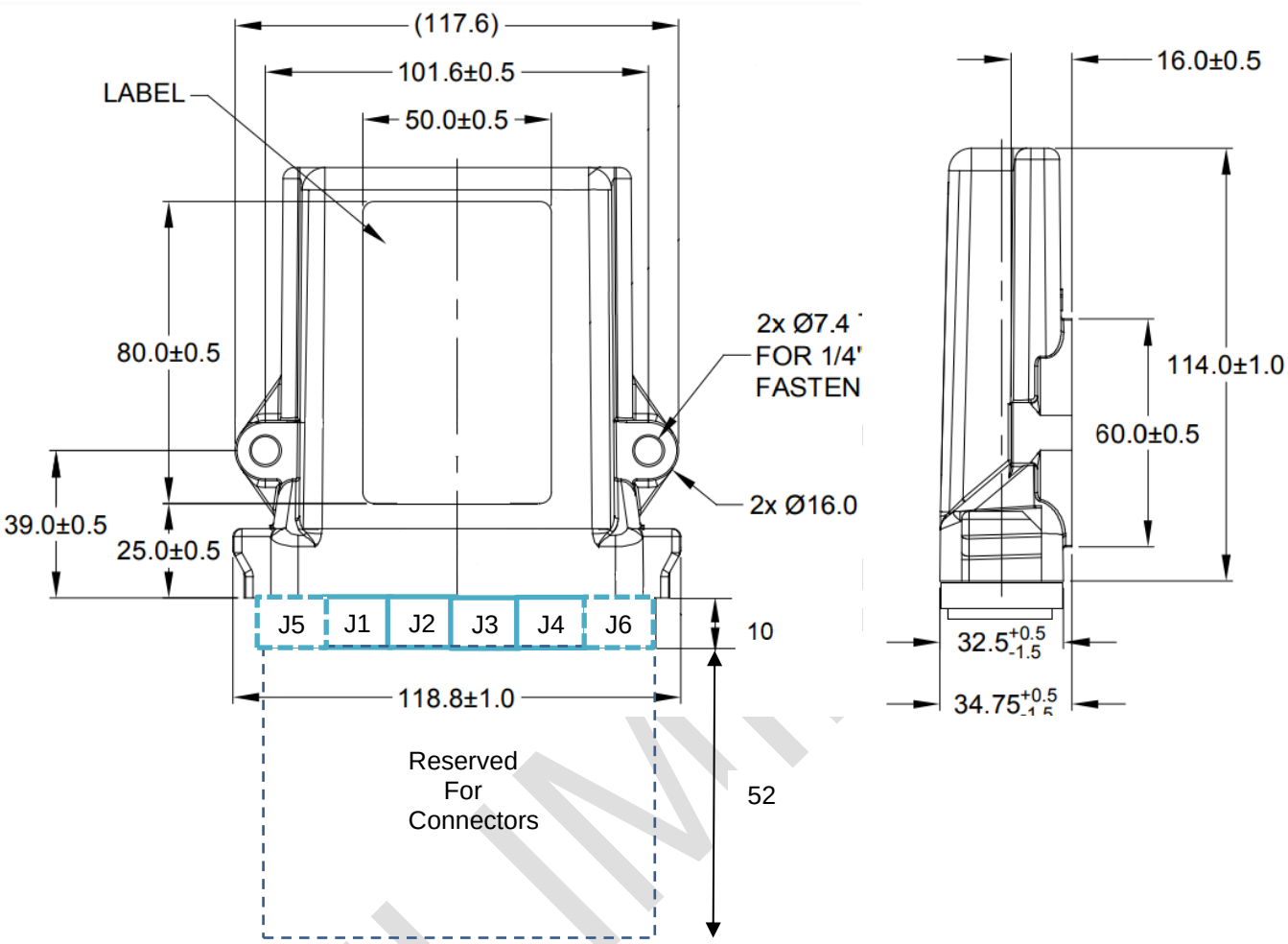
MECHANICAL INSTALLATION :



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ELECTRICAL INTERFACES

Sockets :

Ref	Option	Function	Type
J1	-	Main Power Input	AMASS XT30PW-M – 2 pins
J2	-	Isolated CANBus and Fail-Safe Power Input	M12, 5 pins male A-coded shielded – (NMEA2000 connector)
J3	-	Motor outputs	AMASS MR30PW-M – 3 pins
J4	-	Auxilary 1 : Brake/Clutch solenoid and position feedback	Amphenol M8 - 6 pins male + shield
J5	Yes	GNSS-INS Antenna	SMA
J6	Yes	Auxilary 2 : Speed feedback, Chaining, Serial, Additional Inputs…	Binder 720 series – 8 pins female

Pinouts :

Pin	J1 PWR-IN	J2 CANbus	J7 MOTOR	J4 AUX1	J6 AUX2
8					TBD
7					TBD
6				5V-ANA-OUT / Pink	TBD
5		CAN-Low / Blue		SOLENOID+ / Grey	TBD
4		CAN-High / White		SOLENOID - / Black	TBD
3		GND-CAN / Black (1)	H3	PWR-OUT (2) / Blue	TBD
2	PWR-IN	FS-PWR-IN / Red	H2	ANALOG1 / White	TBD
1	GND	Shield	H1	GND-ANA (3) / Brown	TBD

(1) Isolated port
(2) Repeat PWR-IN Voltage after protections and high side switch
A regulated 12V +/-2V is also possible (hardware option)
(3) Filtered ground connected to GND in low frequency

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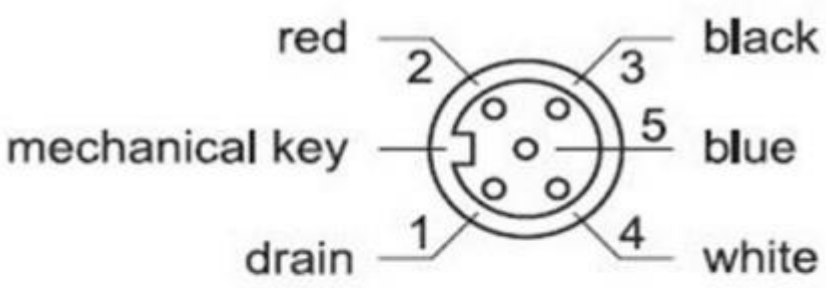
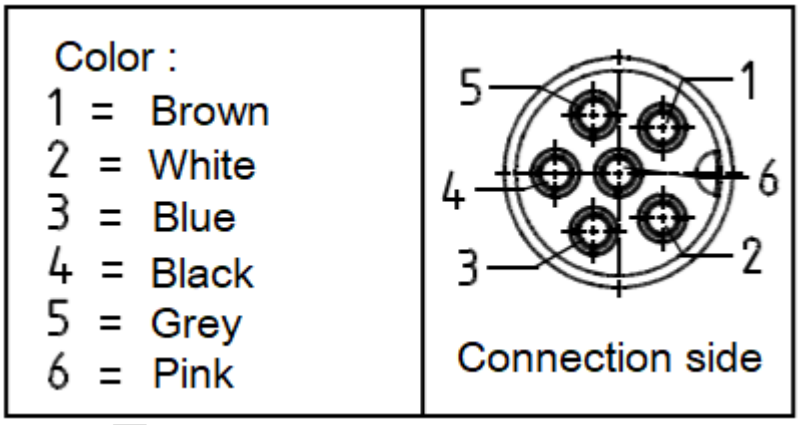
J2 : NMEA2000 color



Female connector
Backside view

Pin	NMEA Color	Function
1	Shield	Shield
2	Red	12V
3	Black	0V
4	White	CAN-H
5	Blue	CAN-L

J4 : color of the M8 cable *Binder 79-3465-52-06 (Radiospare 707-2967)*



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