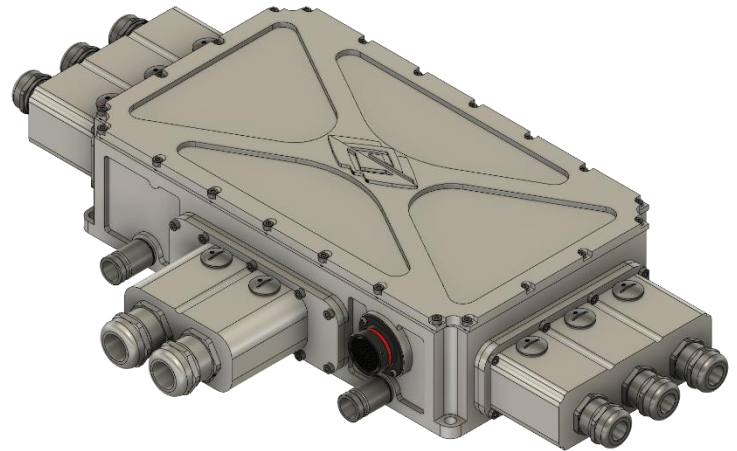




Twin motor controller for torque vectoring applications

# INV2181-503A400V



- 2x180kW @ 400VDC motor controller
- Torque Vectoring application in 4WD & 2WD vehicles
- Motor and traction control DSP processor for each motor
- Redundant voting DSP processors across each inverter
- SIMULINK traction control algorithm dev. environment
- Redundant 2x CANBUS communication:
  - CAN2 for vehicle control body unit & BMS
  - CAN3 for safe communication between axles
- Resolver, encoder & temperature input sensors
- Prepared for ASIL-D safety certification on target vehicle
- ECUMASTER PMU/ADU/GPS/IMU ready integration

### Electrical data:

Nominal VDC	400	V
Maximum VDC	500	V
Minimum VDC	-	V
S1 RMS phase current	503	A
S2 RMS phase current (peak)	670	A
Efficiency (@S1 Power & 10kHz)	98.5	%
Max Motor Power	180	kW
Switching frequency	10 - 20	kHz
Maximum output frequency	1000	Hz
Resolver interface	10kHz, 7VAC, Tr:0.286, 120Ohm	--
Gearbox temperature sensors	BOSCH 0 280 130 026	--
Motor temperature sensors	B57045K 103K	--

### Cooling:

Coolant quantity in device	0.3	l
Coolant flow rate for each inverter	10	l/min
Input coolant temp. range	-40 to +90	°C
Maximum power module temperature	+175	°C

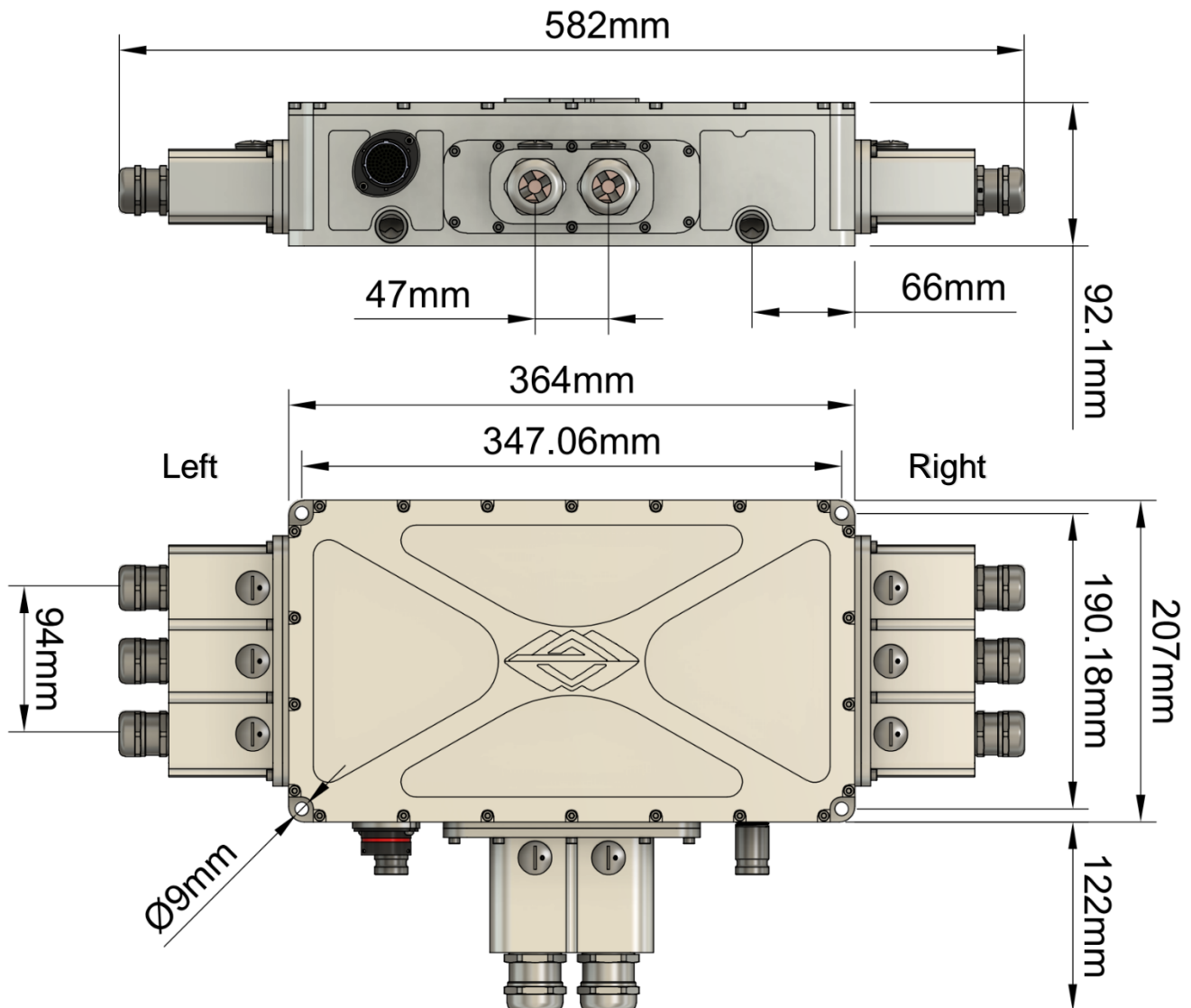
Coolant inlet max fluid temperature for S1 & S2 power rating	+90	°C
Coolant type	Water + Glycol 50%/50%	--

**Mechanical data:**

Weight without coolant	14	kg
IP protection	IP67	--
Low voltage connector	SOURIAU 8STA02041SN mating with: SOURIAU 8STA62041PN / DEUTSCH AS620-41PN	
High voltage connector	M8 bolt connector at DC input	M6 bolt connector at phases

**Motorsport applications:** all rated parameters given for 90°C cooling fluid input temperature with 10l/min flow through each inverter.

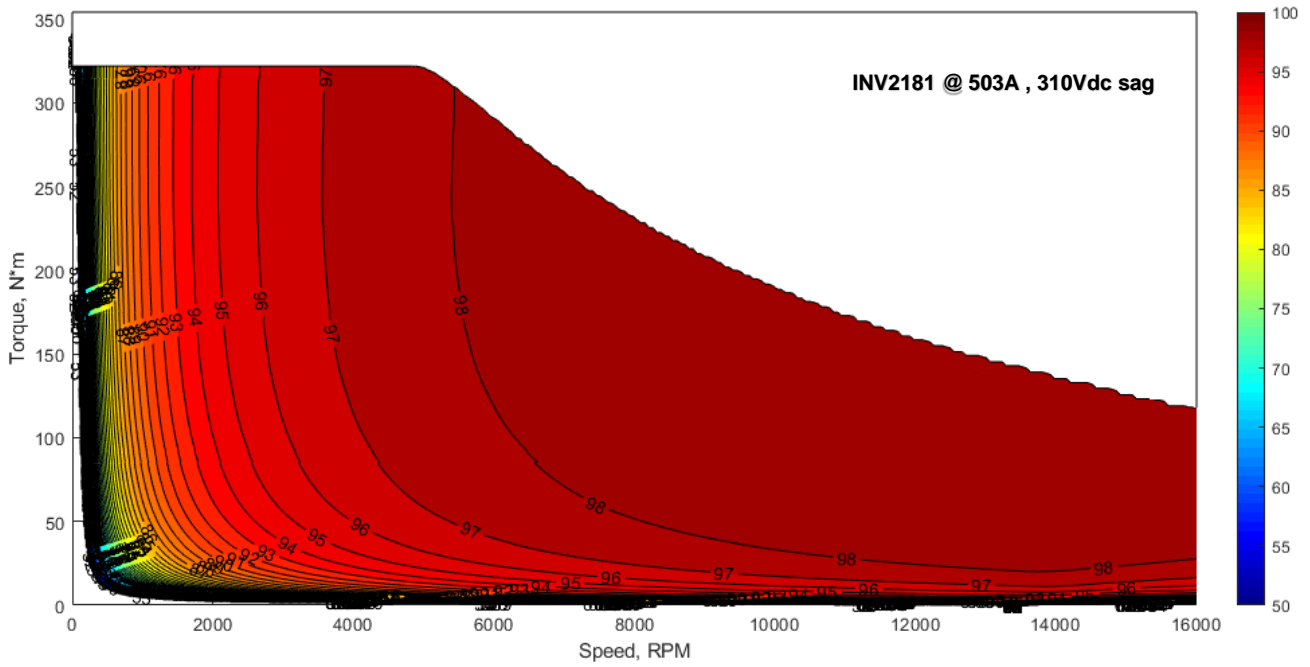
**Basic dimensions\* :**



\* Refer to INV2181\_drawing & INV2181\_3D.step for detailed mechanical documentation

**Characteristics:**

**Inverter Efficiency, %**



**Low voltage connector:**

SOURIAU 8STA02041SN									
1 A	2 B	3 C	4 D	5 E	6 F	7 G	8 H	9 J	10 K
POW+	POW+	POW-	POW-	CAN2-H IN	CAN2-L IN	CAN2-H O	CAN2-L O	CAN3-H IN	CAN3-L IN
12V input power				CAN2 INPUT		CAN2 OUTPUT		CAN3 INPUT	
11 L	12 M	13 N	14 P	15 R	16 S	17 T	18 U	19 V	20 W
CAN3-H O	CAN3-L O	HVIL-IN	HVIL-OUT	ACC1_+5V	ACC1_SIG	ACC1_0V	ACC2_+5V	ACC2_SIG	ACC2_0V
CAN3 OUTPUT		HVIL		Accel. pedal signal 1 ( non- inverting )			Accel. pedal signal 2 ( inverting )		
21 X	22 Y	23 Z	24 a	25 b	26 c	27 d	28 e	29 f	30 g
EXC+	EXC-	SIN+	SIN-	COS+	COS-	TS+	TS-	TS+	TS-
Resolver interface for inverter L						Temp. sensor motor L		Temp. sensor gearbox L	
31 h	32 i	33 j	34 k	35 m	36 n	37 p	38 q	39 r	40 s
EXC+	EXC-	SIN+	SIN-	COS+	COS-	TS+	TS-	TS+	TS-
Resolver interface for inverter R						Temp. sensor motor R		Temp. sensor gearbox R	