REGAMOTION™

Regamotion is a part of Regal Components | Regal

ACS Gen7

Motor controllers

Regal Components is proud to be the only distributor today that can offer unique knowhow and years of application experience of working with the ACS family.

In combination with the wide range of motors, gearboxes, pumps and complete drivelines, Regal supplies complete world-class solutions for most battery powered applications under our trademark Regamotion.

The 7th generation of ACS motor controllers with a very high power density has been designed with traction, hydraulic pump and generator applications in mind.

FLEXIBLE STANDARD PLATFORM

- Power levels 4-80 kVA and nominal voltages 24-96 V
- Supports AC induction, AC synchronous and brushless DC motors
- Standard firmware with extensive configurability ensures optimal system functionality
- Application software can be configured by you or by Inmotion
- ARM processor capable of parallel execution of motor control and customized vehicle control tasks
- Auto tuning functionality for pairing the controller with a motor already installed in a vehicle
- Support for traction, pump or generator applications including functions such as hill-hold, programmable braking/acceleration characteristics and dual traction
- Multi-axle option (ACS M), which reduces size, shares components and simplifies cabling and mounting
- CAN communication, J1939 and/or CANopen (slave or master) with support for diagnostics and software download

MONITORING FOR OPTIMAL PERFORMANCE

- I/O version allows vehicle control to reside in the ACS, directly interfacing vehicle sensors and actuators.
- State of the art vector control with optimal efficiency throughout the full speed range

SAFETY AND PROTECTION

- Dual CPUs and dual feedback channels for redundant cross monitoring and supervision allows ISO13849-1, category 3 implementation of safety functions to achieve PL = c/d
- Limitation of the output as a function of motor speed, motor and controller temperature, battery voltage, DC power, DC current and/or motor torque to protect powertrain components.

MINIMIZE SERVICE TIME

- Software quality is assured through development and review processes in compliance with Automotive SPICE© and ISO 13849-1
- Extensive and powerful event handling and data logging simplify troubleshooting and minimize vehicle down time
- Best in class quality and reliability, achieved through superior design, world class manufacturing processes and field experience
- Rugged design protected against ingress of dust and water according to IP65

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SPECIFICATION

Motor types	Induction AC, Synchronous AC, Brushless DC
Communication	CAN (CANopen, J1939)
Switching frequency	4, 8, 12, 16 kHz
Operating stator frequency	0-599 Hz
Control mode	Speed (rpm), Torque (Nm), Current (ARMS) or Voltage (VDC)
Connector	AMP SEAL 23-pin or AMP SEAL 35-pin
Operating temperature	- 40 °C to + 55 °C
Storage temperature	- 40 °C to + 85 °C
Storage ambient humidity	< 85 %
Protection class	IP65
Governing standards	UL 583 and EC declaration of incorporation of partly completed machinery according to directive 2006/42/EC and 2014/30/EU i.e. C-standard EN 1175-1 and EN 12895

I/O SUMMARY

The 23 pin interface (23P) is optimized for slave units in a CAN network, with limited I/O capacity. The 35 pin interface (35P) features a larger number of I/O to be used by the application software for standalone operation, vehicle control, or as distributed I/O in a vehicle network. The dual inverter I/O (35P-D) requires more motor interface pins and is thus slightly different.

	ACS 23 pin basic	ACS 35 pin premium	ACS Dual 35 pin
Dedicated HW ID	2	-	-
Multifunction I/O[1]	3	5	5
Digital inputs	-	9	5
Analog inputs	-	2	-
High side in/out	1	1	1
Sensor supply	1	2	2
Current control output	2	2	4
PWM control output	-	2	-
On/off output	-	2	-
CAN[2]	2	1	2
Motor temp	1	1	2

[1] Multifunction I/O can be used as motor feedback, analog in, or digital in. Motor feedback supported is encoder, UVW (6-step), analog sin/cos
[2] CAN interface consists of CAN_HIGH, CAN_LOW and CAN_GND. The 23P and 35P-D versions have two of each pin to facilitate daisy-chaining in a network. Additionally all inverters have a CAN_120 pin that serves to terminate the CAN bus if a jumper is placed in the wiring harness

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OPTIONS

ACS Model	Power terminals	Multi-axle control
W	Threads	-
S	Threads	-
M	Studs or threads	-
MD	Studs or threads	Two three-phase motors
L	Studs or threads	-

CURRENT AND OUTPUT RATINGS

ACS Model	Nominal DC supply voltage [V DC]	Rated current S2, 2 min [ARMS][1]	Rated current S2, 1 h [ARMS][2]	Rated power S2, 2 min [kVA][1]	Rated power S2, 1 h [kVA][2]
ACS W[3]					
ACS24W24	24	240	120	7	4
ACS48W18	36-48	180	90	11	5
ACS S[3]					
ACS24S35	24	350	150	10	4
ACS48S28	36-48	280	120	17	7
ACS M and ACS MD[3]					
ACS24M55	24	550	275	16	8
ACS48M35	36-48	350	175	21	10
ACS48M45	36-48	450	225	27	13
ACS48M55	36-48	550	275	32	16
ACS80M23	80	230	115	23	11
ACS80M35	80	350	175	34	17
ACS80M40	80	400	200	39	20
ACS96M23	96	230	115	27	14
ACS96M35	96	350	175	41	21
ACS96M40	96	400	180	47	21
ACS L					
ACS48L70	36-48	700	350	41	21
ACS48L90	36-48	900	450	53	27
ACS80L50	80	500	250	49	25
ACS80L60	80	600	300	59	29
ACS80L70	80	700	350	69	34
ACS96L50	96	500	250	59	29
ACS96L60	96	600	300	71	35
ACS96L70	96	700[4]	350	82	41

[1] 2 minute rating at 8 kHz switching frequency and 25 °C ambient temperature
[2] 1 hour rating at 8 kHz switching frequency. 40 °C ambient temperature. and 6 m/s air flow through finned heat sink
[3] Available with 35-pins I/O connector only
[4] Current rating limited to S2 90 seconds

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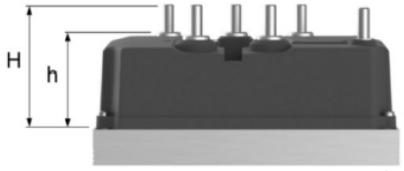
DIMENSIONS

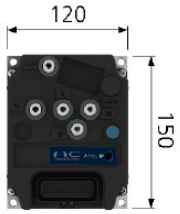
ACS GEN7 HEIGHT WITHOUT HEAT SINK



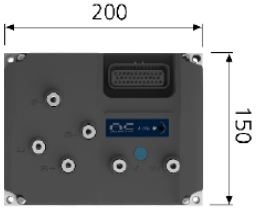
[1] With optional studs
[2] Without optional studs

ACS model	H[1] [mm]	h[2] [mm]
W	-	47.0
S	-	50.4
M	72.3	52.3
MD	72.3	52.3
L	79.7	59.7

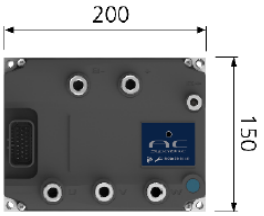
ACS FOOTPRINTS [mm]



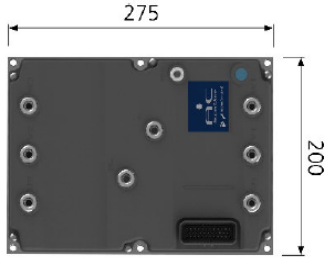
ACS W



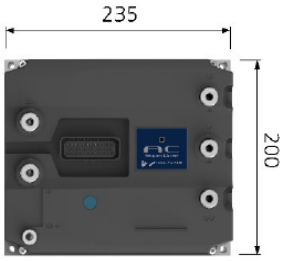
ACS S



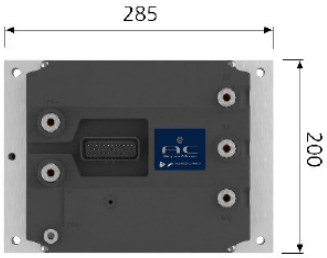
ACS M



ACS MD

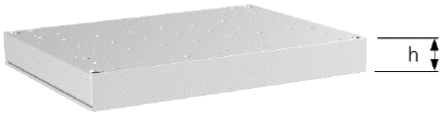
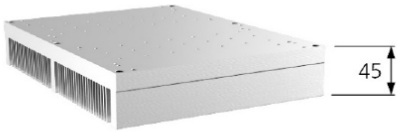
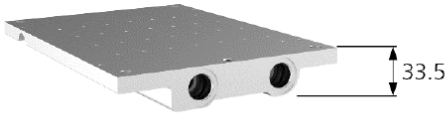
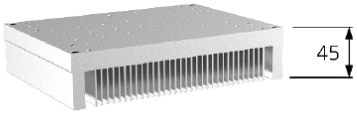


ACS L



ACS L with heat sink type W

HEAT SINKS

Heat sink type	Height [mm]	ACS compatibility	
C (flat)		W (h = 11)	M (h = 23)
		S (h = 23)	L (h = 23)
		MD (h = 23)	
Q (finned)		MD	
T (finned)		S M	
W (liquid-cooled)		L	
Y (finned)		S M MD L	

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