

## ACS GEN6

# The 6th generation ACS motor controllers

Inmotion is the premier global supplier of AC-drives and related products to the vehicle industry. With the 6th generation low voltage motor controllers, Inmotion sets a new benchmark for quality and reliability, ease of adaptation, and cost of ownership.

AC Superdrive (ACS) is a family of drives with power levels from 5 to 50kVA for system voltages between 24V and 80V. The ACS is designed with traction, hydraulic pump and generator applications in mind which makes it an ideal choice for most battery-powered electric vehicles.

In addition to CAN bus communication, all ACS models are available with optional vehicle control I/O to facilitate distribution of vehicle control functionality in a larger control system, or for stand-alone operation.



## PRODUCT FEATURES

- **Best in class quality and reliability**, achieved through superior design and world class manufacturing processes
- **Rugged design** suitable for the demanding environment of electric vehicles. Protected against ingress of dust and water
- **Powerful ARM processor** and operating system allows parallel execution of customized vehicle control tasks and motor control tasks
- **I/O version** allows vehicle control to reside in the ACS, directly interfacing vehicle sensors and actuators
- Software Quality is assured through development and review processes designed for compliance with **Automotive SPICE®**
- Industry standard **CANopen** and **J1939** protocols for reliable communication in the vehicle
- Extensive and powerful event handling and data logging simplifies troubleshooting and **minimizes vehicle down time**
- Supports **AC induction, AC synchronous, brushless DC motors**. Selected models have optional DC motor output
- Standard firmware with built-in support for **traction, pump or generator applications**, including functions such as hill-hold, programmable braking/acceleration characteristics, dual-traction, and best performance curve
- **Peer to peer** communication allows master-less communication between nodes on CAN bus
- **Auto tuning** functionality for pairing the controller with a motor already installed in a vehicle
- Limitation of the output as a function of **motor speed, motor and controller temperature, battery voltage, DC power** and/or **motor torque** to protect powertrain components
- State of the art vector control with **optimal efficiency** throughout the full speed range

## GENERAL

Motor type	Induction AC, Synchronous AC, Brushless DC
Communication	CAN
Switching frequency	4, 8, 12, 16 kHz
Operating stator frequency	0-250 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 (-40°F to +131°F)
Storage temperature	-40°C to +70°C (-40°F to +158°F), ambient humidity of 95%
Protection class	IP65
Standards	UL 583 and EC declaration of incorporation of partly completed machinery according to EN1175-1.

## CURRENT AND OUTPUT RATINGS

AC SuperDrive Model	Nominal DC supply voltage U <sub>dc</sub>	Rated current (S2, 2min) ARMS**	Rated current (S2, 1h) ARMS***	Rated power (S2, 2min) kVA**	Rated power (S2, 1h) kVA***	Figure
ACS24XS*	24	350	150	10.3	4.4	1
ACS24S	24	500	215	14.7	6.3	2a, 2b
ACS36XS*	36	300	125	13.2	5.5	1
ACS36S	36	450	200	19.8	8.8	2a, 2b
ACS36S+	36	500	215	22.0	9.5	2a, 2b
ACS36M	36	675	300	29.8	13.2	3a, 3b
ACS36L	36	900	400	39.7	17.6	3a, 3b
ACS48XS*	48	250	100	14.7	5.9	1
ACS48S	48	350	150	20.6	8.8	2a, 2b
ACS48S+	48	450	200	26.5	11.8	2a, 2b
ACS48M	48	525	225	30.9	13.2	3a, 3b
ACS48L	48	700	300	41.2	17.6	3a, 3b
ACS48XL	48	875	375	51.4	22.0	3a, 3b
ACS80S	80	220	100	21.6	9.8	2a, 2b
ACS80M	80	330	150	32.3	14.7	3a, 3b
ACS80L	80	440	200	43.1	19.6	3a, 3b
ACS80XL	80	550	250	53.9	24.5	3a, 3b

\* Available with optional 1-quadrant DC motor output (S3 15% rating same as 2min rating). Not available with 23-pin connector

\*\* 2 minute rating at 8 kHz switching frequency and 25°C ambient temperature

\*\*\* 1h rating at 8 kHz switching frequency, 40°C ambient temperature, and 6m/s air flow through finned heat sink

## DIMENSIONS [MM]

