

ACH65/35

High Voltage Motor Controllers for Hybrid and Electric Vehicles

Inmotion Technologies is a premier global supplier of AC drives and related products to the vehicle industry. With experience from a large installed base of high voltage inverters for hybrid vehicles currently in operation around the world, Inmotion now launches its second generation high power motor controllers.

ACH high voltage motor controllers are designed for use in large hybrid or fully electric vehicles. The ACH is designed for voltage levels from 100 V to 750 V, with continuous power levels of up to 300 kVA. With a rugged design and an expected life time of over 60 000 hours, the ACH is the ideal choice for both on-highway and off-highway applications.



PRODUCT FEATURES

- **Best in class quality and reliability**, achieved through superior design and world class manufacturing processes, backed up by field experience
- **Rugged IP6K9K design** suitable for the demanding environment of electric vehicles
- 4-quadrant, synchronous or asynchronous AC motor control, with **speed, torque and DC-voltage control modes**
- **Field proven control SW platform** used for on-highway and off- highway vehicles
- Software quality is assured through development and review processes designed for compliance with **Automotive SPICE®**
- CAN communication, **J1939** and/or **CANopen** with support for diagnostics and software download
- With **continuous power levels up to 300 kVA**, the ACH is ideally suited for hybrid as well as fully electric vehicle applications
- Nominal voltage 350 and 650 V. **Fully operational from 100 to 750 V** bus voltage
- Liquid (WEG) cooled
- **Automatic protection** against overheating and over-voltage
- Redundant Discharge of DC-capacitors
- **Internal EMI filtering** of the dc-bus eliminates interference with other electronic equipment and allows **parallel operation** of several ACH controllers
- Powerful standard firmware features as well as **extensive software configurability** ensures optimal system functionality
- Designed for a working life in excess of 60 000 hours
- Extensive and powerful event handling and data logging simplifies troubleshooting and **minimizes vehicle down time**
- **Interlock** for personal safety

GENERAL

Compatible motor types	Induction machines, PMAC, Sync. reluctance
Motor feedback types	Resolver or incremental encoder/analog (sin-cos)
Operating modes	Torque, speed or dc voltage control
Communication	CAN (J1939, CANopen, UDS)
Switching frequency	1, 2, 4 and 6 kHz, (6 and 8 kHz with de-rating)
Fundamental frequency	0 - 599 Hz
Efficiency ¹	>98 %
Nominal WEG coolant temp/flow	60 °C (140 °F) @ 20l/min
Pressure drop (ACH35M30 & ACH65M30)	< 30 kPa @ 20 l/min (WEG 50 %/50 % @ 60 °C (140 °F))
Ambient operating temperature	-40 °C to 85 °C (-40 °F to 185 °F)
Storage temperature	-40 °C to 85 °C (-40 °F to 185 °F)
Protection class	IP6K9K (cleaning and liquid agent resistant)
EMC	According to ECE R10
High voltage safety	ECE R100
Logic supply voltage	12 or 24 V
Logic connector	TYCO MCP family
Power connectors	M8 cable lugs

¹ At nominal DC voltage, running at rated continuous current

RATINGS

	ACH35	ACH65
Nominal DC voltage	350 V	650 V
Shutdown voltage	490 V	880 V
Full current available at	100 – 450 V	100 – 750 V
Current de-rating	< 100 V/450 – 470 V	< 100 V/750 – 800 V

Model	Peak current ² [ARMS]	Cont. current ³ [ARMS]	Nominal voltage [V DC]	Peak power ⁴ [kVA]	Cont. power ⁴ [kVA]
ACH65M30	320	225	350	137	96
			650	255	179
ACH65L50	500	375	350	214	161
			650	398	299

² 60 sec rating

³ At coolant temp 60 °C (140 °F), Ambient temp 85 °C (185 °F) and Switching frequency 4 kHz

⁴ At nominal DC bus voltage

WEIGHT AND DIMENSIONS

ACH size M: 21 kg
ACH size L: 25 kg

