E-CLUTCH ACTUATOR SSMD CP4400

Type No.   212-021-011

Description / features

The E-Clutch Actuator SSMD is an electro-hydraulic actuator that replaces the conventional, foot pedal driven clutch actuation system ("clutch-by-wire").
The unit is driven by an electric motor and is equipped with an integrated battery pack.
It offers several different modes of operation:
- Manual mode (i.e. control via analog clutch paddle, e.g. mounted on steering wheel)
- Launch control mode (i.e. assisted clutch engagement powered by the integrated control unit)
- External position mode (i.e. target master cylinder position being sent from external control unit via CAN)
The E-Clutch features automatic anti-stall function and its state of the art controller allows to also keep the clutch constantly open over time at a very limited current consumption.
The "SSMD" in its name stands for "self-sufficient marshal disconnect", meaning that the unit is featuring the functionality to comply with the FIA safety requirement of being able to externally disconnect the drive train in case of a stranded car with stalled engine & car master switch OFF.
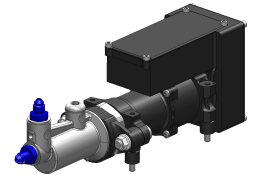
Technical specifcations

Electronic data:

Operating voltage	9.0..18.0V
Standby current	< 0.5 A
Peak current	max. 30A
Circuit breaker	not integrated
Recommended external circuit breaker	ETA, 452 K34 FN2 50A
Powerbox channel requirememts:	35A for 100 ms

Mechanical data:

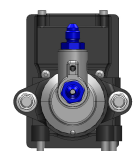|	
Dimensions with master cylinder L x W x H	approx. 255 x 77 x 90 mm
Dimensions without master cylinder L x W x H	approx. 144 x 77 x 90 mm
Weight (incl. master cylinder)	approx. 1100 g
Master cylinder	modified AP Racing "CP4400" cylinder
Max. working travel of actuator	19.0 mm

Hydraulic data:

Max. hydraulic clutch pressure	70 bar
Approved fluids	Glycol-ether-/ silicon-based brake fluids (DOT3, DOT4, DOT5.0, DOT5.1) - No hydraulic oil

Connector:

Deutch 22 pin	AS212-35PN
Deutch 22 socket, loom side	AS612-35SN

Temperature range:

Ambient	-25 °C ... +65 °C

Hazardous goods classification:

CAUTION!
Lithium-metal Batteries in equipment
DO NOT LOAD OR TRANSPORT PACKAGE IF DAMAGED
For more information, call ....

UN 3481

Standard shipping as well as air freighting possible.

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Ordering information:

The E-Clutch Actuator SSMD version 212-021-011 can be equipped with a master cylinder from AP Racing's CP4400 product line in order to be able to adapt the actuator to your specific clutch setup in an easy and efficient way (Attention: AP standard cylinder has to be modified for usage!)

Order- / part no.'s:

Master cylinder diameter	Order no.	Article no.
0.7" / 17.8mm (blue)	15547	212-021-011
0.75" / 19.05mm (green)	16148	212-021-011_0.75

All further available master cylinder diameters on request.

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Pin assignment

Pin	Function	Dia [AWG]	Type
1	+ 13.5V supply	22	pwr
2	GND supply	22	pwr
3	GND supply	22	pwr
4	SSMD Battery PWR+ loop IN (short connection direct to pin 5)	22	pwr
5	SSMD Battery PWR+ loop OUT (short connection direct to pin 5)	22	pwr
6	AUX supply OUT	22	pwr
7	Clutch paddle #1 (0...5V)	24	analog in
8	Clutch paddle #2 (0...5V)	24	analog in
9	Clutch Sensor external analog (0...5V)	24	analog in
10	CAN low	24	data
11	AGND	24	pwr
12	Flash	26	digital in
13	AUX Supply Command In (switch to GND)	24	digital in
14	+ 13.5V supply	22	pwr
15	GND supply	22	pwr
16	SSMD Battery PWR+ loop IN (short connection direct to pin 17)	22	pwr
17	SSMD Battery PWR+ loop OUT (short connection direct to pin 17)	22	pwr
18	Marshalling Command OFF - in (switch to GND)	26	digital in
19	CAN high	24	data
20	+5V external sensor supply (max. 50 mA)	24	pwr
21	+13.5V	22	pwr
22	Marshalling Command ON - in (switch to GND)	26	digital in

CAN communication:

Baud rate:	1 MBaud (varying Baud rates on request)
Termination resistor:	not integrated

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Drawings

Bottom View

Side View

Rear View

Date: 2023-02-09
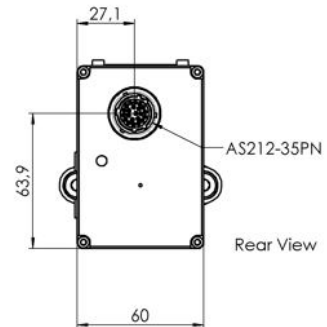
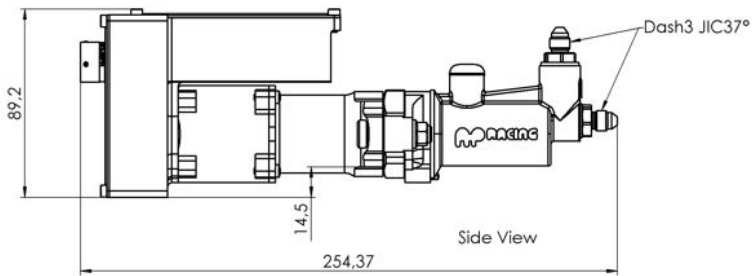# E-CLUTCH ACTUATOR SSMD CP4400
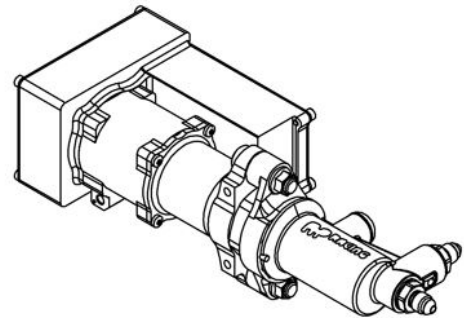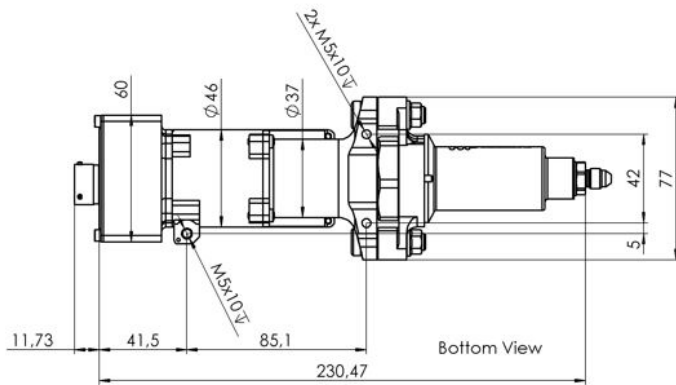
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Operation diagram

Standard mode

+12V_IN (from car to e-clutch)

+12V_SSMD (e-clutch internal)

Internal battery active

Voltage drop event   Optional supply extension

Marshal Neutral Input

Marshal Neutral Output

Marshal Mode

+12V_IN (from car to e-clutch)

+12V_SSMD (e-clutch internal)

SSMD supply active

Marshal Neutral Input

pull external to GND == active

Marshal Neutral Output

Date: 2023-02-09