Advanced Power Steering (APS)

Description

The APS – Advanced Power Steering system consists of a permanent magnet AC motor with integrated gear box and an AC Drive with an I/O interface. The APS connects directly to the steering sensors and may operate as a stand-alone system or as part of a CAN network. The product range covers a wide variety of vehicle applications including Class 1, 2, and 3 lift trucks. The APS is a good choice for replacing existing electric and hydraulic steering systems.

Features

- 4 different power ranges with three gear ratios.
- Reliable, low maintenance brushless system.
- Safe operation ensured with extensive supervision.
- CANopen interface for communication.
- Stand-alone mode allows direct connection of most steering encoders.
- Customizable software – through application programming or an extensive parameter set.
- I/O interface allows direct connection of most steering sensors.
- Quiet.
- Danaher Motion Truck Service Tool compatible.

Application

The APS provides a cost effective electric steering solution that eliminates the need for hydraulic components and/or the steering column, thereby giving increased design flexibility. The sealed construction and brushless motor design makes the APS virtually maintenance free. The APS has a range of safety capabilities that facilitate reliable EN 954-1 operation. In the unlikely event of a failure, a safety supervision system integrated into the APS can directly activate the emergency brake or bring the truck to a controlled stop via the CAN bus. In addition to this, the APS continuously reports its status to the vehicle controller. The software also allows for a variety of features such as automatic centering, steering proportional to speed, and an adjustable steering sensitivity ratio. The APS system provides excellent vehicle maneuverability and extensive diagnostic support.

CANopen

As part of the Danaher Motion vehicle system, the APS communicates via the industry standard CANopen protocol. This allows for easy integration and for different components (i.e. traction drives, truck controllers, etc.) to seamlessly function together. The system is compatible with the Danaher Motion Truck Service Tool, allowing on-location remote diagnostics and service planning.

For Immediate assistance
E-mail: sales.sth@danahermotion.com
Tel. Europe: +46 (0)8 682 6400
Tel. North America: +1 412 749-0710
Tel. Asia: +82 6222-1051
www.danahermotion.com

1P111120 Rev. 1 Ver. 5 Date Released: 2008-maj-14

DANAHER MOTION

*Helping you build a better machine, **faster.***

APS Motor Gear Performance Data

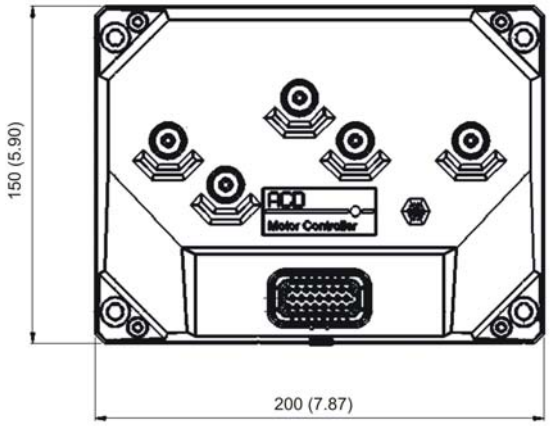
	Model		PSM-A30xx-A			PSM-B30xx-B			PSM-C50xx-D		PSM-C50xx-C	
	Battery	Vdc	24	36	48	24	36	48	24[1)]	36[1)]	48	80[1)]
		Gear Ratio										
S2 60 Min	Max speed RPM	35:1	58	58	58	58	58	58	58	58	58	58
		43:1	47	47	47	47	47	47	47	47	47	47
		51:1	40	40	40	40	40	40	40	40	40	40
	MaxTourqe Nm (lbft)	35:1	33 (25)	33 (25)	33 (25)	33 (25)	33 (25)	33 (25)	33 (25)	33 (25)	33 (25)	33 (25)
		43:1	41 (30)	41 (30)	41 (30)	41 (30)	41 (30)	41 (30)	41 (30)	41 (30)	41 (30)	41 (30)
		51:1	49 (36)	49 (36)	49 (36)	49 (36)	49 (36)	49 (36)	49 (36)	49 (36)	49 (36)	49 (36)
	Power W (Hp)		203 (0.27)	203 (0.27)	203 (0.27)	276 (0.37)	276 (0.37)	276 (0.37)	350 (0.47)	350 (0.47)	350 (0.47)	350 (0.47)
S2 1 min	Max speed RPM	35:1	63	100	100	37	74	100	74	100	74	100
		43:1	51	81	81	30	60	81	60	81	60	81
		51:1	43	69	69	25	51	69	51	69	51	69
	MaxTourqe Nm (lbft)	35:1	69 (51)	69 (51)	69 (51)	93 (69)	93 (69)	93 (69)	133 (98)	133 (98)	133 (98)	133 (98)
		43:1	85 (63)	85 (63)	85 (63)	114 (84)	114 (84)	114 (84)	163 (121)	163 (121)	163 (121)	163 (121)
		51:1	101 (74)	101 (74)	101 (74)	136 (100)	136 (100)	136 (100)	194 (143)	194 (143)	194 (143)	194 (143)
	Power W (Hp)		456 (0.61)	725 (0.97)	725 (0.97)	362 (0.49)	725 (0.97)	976 (1.31)	1036 (1.39)	1394 (1.87)	1036 (1.39)	1394 (1.87)
	Max Radial Load[3] N (lb)	35:1	2230 (501)	2110 (474)	2110 (474)	2230 (501)	2110 (474)	2110 (474)	2920 (656)	2920 (656)	2920 (656)	2920 (656)
		43:1	2390 (537)	2270 (510)	2270 (510)	2390 (537)	2270 (510)	2270 (510)	3110 (699)	3110 (699)	3110 (699)	3110 (699)
		51:1	2530 (569)	2390 (537)	2390 (537)	2530 (569)	2390 (537)	2390 (537)	3280 (737)	3280 (737)	3280 (737)	3280 (737)

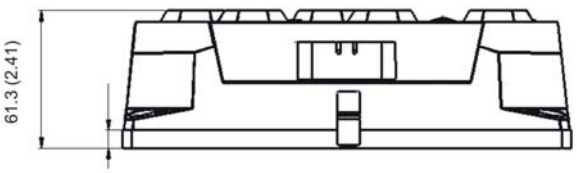
Notes: 1. 24, 36 & 80 volt performance data is estimated based from 48 volt. Actual performance may vary.
2. Performance data and product offerings are subject to change without notice.
3. Max Radial Load is positioned at center of key. Load positions extended further away from bearing must be scaled accordingly.

Power stage / Technical Data

Battery Voltage, nominal	24-48, 80 VDC
Steer interface Stepper	Danaher Motion TFD, SKF steer encoder (AHE-5600 A), LORD Tactile Feedback Device (RD-2089-01)
I/O Outputs	3 Open drain outputs
I/O Inputs	4 Digital and 2 Analog inputs
Protection Class	IP65
Communications interface	CAN (CANopen)
Connector	AMP-SEAL 23 pin (power stage)

Dimensions





mm(inch)