



This manual only covers starting from HLS12-CAN FW Ver 2.50(0)



Manual: HLS12 CAN Servo Control Protocol CAN 2.0 A/B, DroneCAN

INDEX

1	HLS12-CAN	2
2	Operating range	2
3	Coordinate system	2
4	Power Rate	3
5	Changed Unit	3
6	Smoothness of deceleration	3
7	Calibration Data.....	4
8	Etc	4

1 HLS12-CAN

- The HLS12-CAN actuator incorporates the specific characteristics of the HLS12 model within CAN servo firmware version 2.3(0).
- For all other details, please refer to the protocol manual for firmware version 2.3(0).

2 Operating range

- For example, with a 100 mm product, the innermost point corresponds to the 0 mm position, and the outermost point corresponds to the 100 mm position.
- It operates corresponding to the -60° and +60° positions of POSITION_NEW.
- POSITION_NEW
 - inner = -60 deg = $8192 - 60 \times 16384 / 360 = 5462$
 - outer = +60 deg = $8192 + 60 \times 16384 / 360 = 10922$

3 Coordinate system

Name	Address	Description	R/W	Unit	Range
POSITION	12 (0x0C)	Current Location	R	16384 = 360 deg	inner = -60 deg outer = +60 deg
POSITION_NEW	30 (0x1E)	Target Location	R/W	16384 = 360 deg	inner = -60 deg outer = +60 deg
REAL POSITION	13 (0x0d)	POSITION in linear distance	R	1 = 0.01 mm	inner = 0 mm
REAL POSITION NEW	37 (0x25)	POSITION_NEW in linear distance	R	1 = 0.01 mm	inner = 0 mm
MOVING REAL POSITION NEW	35 (0x23)	POSITION_NEW with the Speed setting applied	R	1 = 0.01 mm	inner = 0 mm

4 Power Rate

- Adjusts the output level at a specified ratio without changing the power (wattage) setting.
- Reg 41 (0x29)
 - 4095 = 100%
- Activating
 - Reg 65 (0x41) activated and bit 13 = 1
 - Reg 65 (0x41) activate: Reg 160 (0xA0) bit 15 = 1
- DroneCAN: Param Service
 - "Power Rate (4095=100%)" = Reg 41
 - "SETUP_EX/ENABLE POWER RATE" = Reg 65 bit 13
 - "EABLE_SETUP_EX_Regs" = Reg 160 bit 15
 - **Note: If it is already active, do not deactivate it.**

5 Changed Unit

- Option/Velocity Max
 - 1 = 0.01 mm / sec
- Option/Deadband
 - 1 = 0.01 mm

6 Smoothness of deceleration

- Adjust the smoothness of deceleration using the Smart Sense setting value.
- Values of 0, 1, and 4095 result in no deceleration smoothing.
- The range is from 4095 down to 2; values closer to 2 provide smoother deceleration.
 - Note: If the value is sufficiently small, the acceleration may also decrease.
 - Note: If the value is very low, the time required to reach the target may become significantly longer.
- Recommended range: 500 – 3000

7 Calibration Data

- The physical operating limits are stored in POSITION MIN/MID/MAX.
- **DO NOT MODIFY THESE VALUES.**

8 Etc

- Origin setting: Not supported.
- Selectable CAN sample points: 50% and 87.5%
- HW_DEF_1 (Reg 165, 0xA5) = length (mm) = 30, 50, 100
- HW_DEF_2 (Reg 167, 0xA7) = gear ratio (1:x) = 50, 100, 210, 380

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