Feature

- High efficiency and smooth motor control with FOC.
- Pedal speed only or pedal with torque mode for E-bikes.
- Start-up assistance mode (up to 6km/hr).
- Parameter programming through CAN or UART/BT.

General specifications

Model	K04SC-L015	K04SC-N015	K04C-N030
Supply voltage	30 ~ 42 VDC	41 ~ 55 VDC	41 ~ 55 VDC
Overvoltage	45 VDC	56 VDC	56 VDC
Undervoltage	18 VDC	18 VDC	18 VDC
Rated output power	350W	350W	750W
Rated output current	15Arms	15Arms	30Arms
Cooling	Natural convection	Natural convection	Natural convection
Operating temperature	-20 ~ 50 degC	-20 ~ 50 degC	-20 ~ 50 degC
Thermal cutback	Controller linearly reduces maximum current limit with an internal heat-sink temperature from 75 degC to 90 degC, complete cutoff occurs above 90 degC.		
Storage temperature	-40 ~ 70 degC	-40 ~ 70 degC	-40 ~ 70 degC
Dimension	(91.3) * 29.0 * 42		106.0 * 37.5 * 57.0
Motor control scheme	SVPWM FOC		
Motor supported	PMAC and BLDC		
Operation mode	Pedal/Torque assist, start-up assist, walk assist, throttle mode. Automatic start-up/climbing enhanced function.		

IO specifications

Lamp Output	6V 4W
DISPLAY/HMI (Communication)	CANBUS or UART communication. Protocols can be customized. Lock signal to control logic power on/off for sleep mode.
Hall sensor inputs	5V, 3pts, VLmax=0.5V, VHmin=4V
Digital inputs (pedal, wheel speed)	5V, 3pts, VLmax=0.5V, VHmin=4V
Brake inputs	2pts, internal pull-up, VLmax=0.5V
Analog inputs (torque, throttle)	0~5V, 2pts

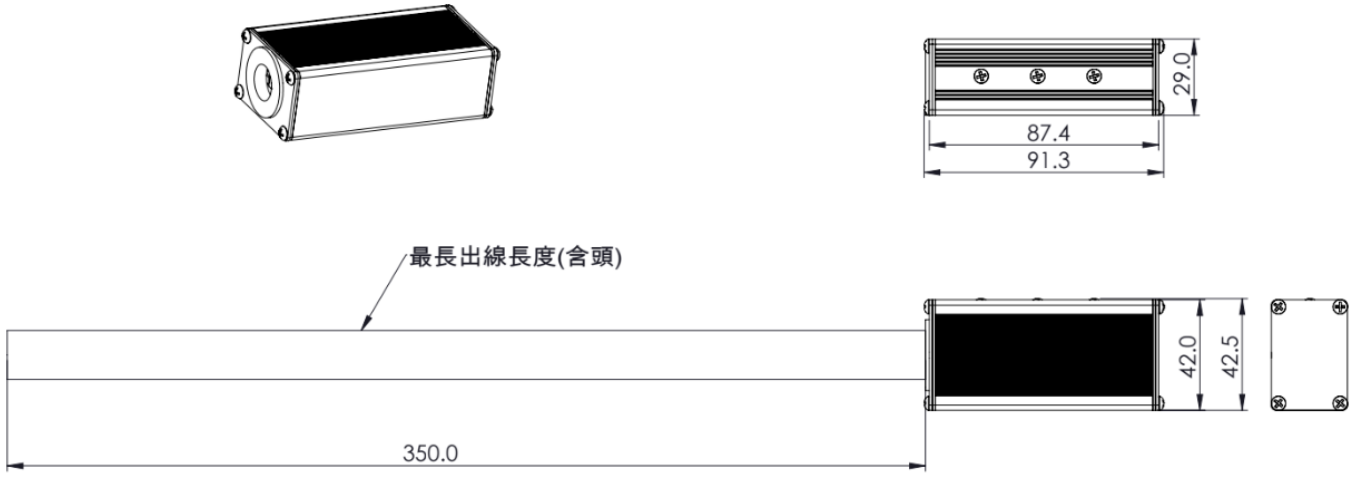
IO Pin Functions

CONN	Pin#	Color	Function	Specifications
LAMP	NA	Red	LAMP_POWER	6V 4W
	NA	Black	LAMP_GND	6V 4W
BRAKE (2 sets)	1	White	BRAKE_IN	5V (pulled up), VLmax = 0.5V
	2	Black	BRAKE_GND	
BATTERY	NA	Red	Main power input	KSS F1.25-B Male
	NA	Black	Main power ground	KSS F1.25-A Female
CAN	1	Black	CAN_H	120 Ohm termination resistor inside.
	2	White	CAN_L	
MOTOR	1	Blue	MOTOR_U	-
	2	Green	MOTOR_V	-
	3	Yellow	MOTOR_W	-
	4	Red	HALL_5V	5V 20mAmax
	5	Black	HALL_GND	
	6	Blue	HALL_A	VLmax=0.5V, VHmin=4V
	7	Green	HALL_B	
	8	Yellow	HALL_C	
	9	White	WHEEL_SPEED	
PEDAL	1	NC	NC	NC
	2	Black	PEDAL_B	VLmax=0.5V, VHmin=4V
	3	Blue	PEDAL_A	
	4	Green	SENSOR_GND	5V, 50mAmax
	5	Brown	SENSOR_5V	
	6	Orange	PEDAL_TORQUE	0 ~ 5V
DISPLAY/HMI	1	Purple	DISPLAY_POWER	From battery power
	2	Pink	LOCK	Vmax=battery voltage. Vmin=12V
	3	Yellow	CAN_H	-
	4	Gray	CAN_L	-
	5	Orange	DISPLAY GND	-
PROGRAM/UART	1	Purple	UART RX	5V level

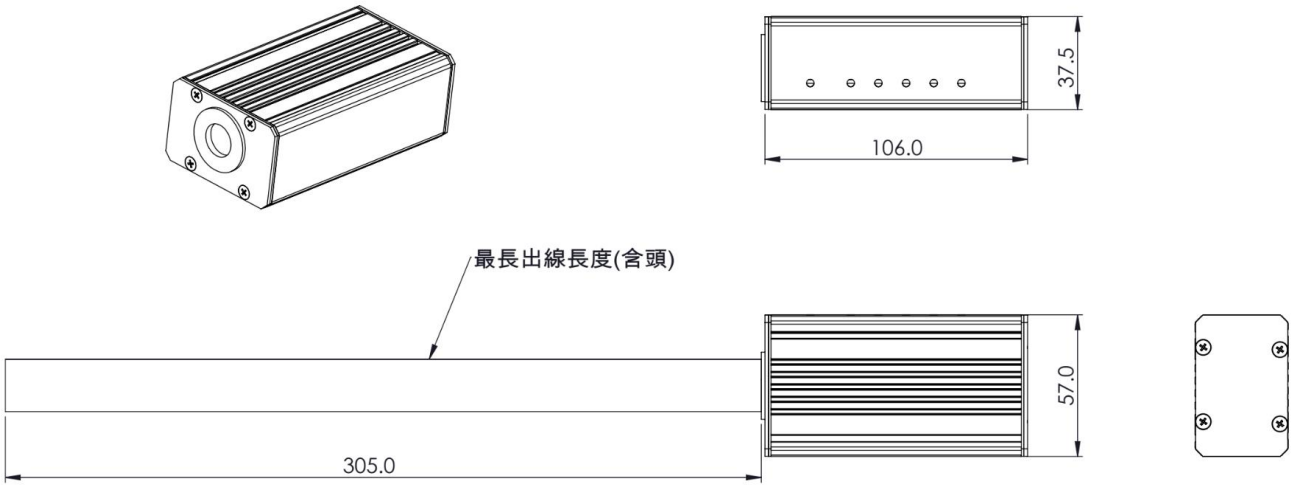
	2	Pink	UART TX	5V level
	3	Yellow	GND	-
	4	Gray	NC	Do not use.
	5	Orange	5V	5V 20mAmax

Product outline dimensions

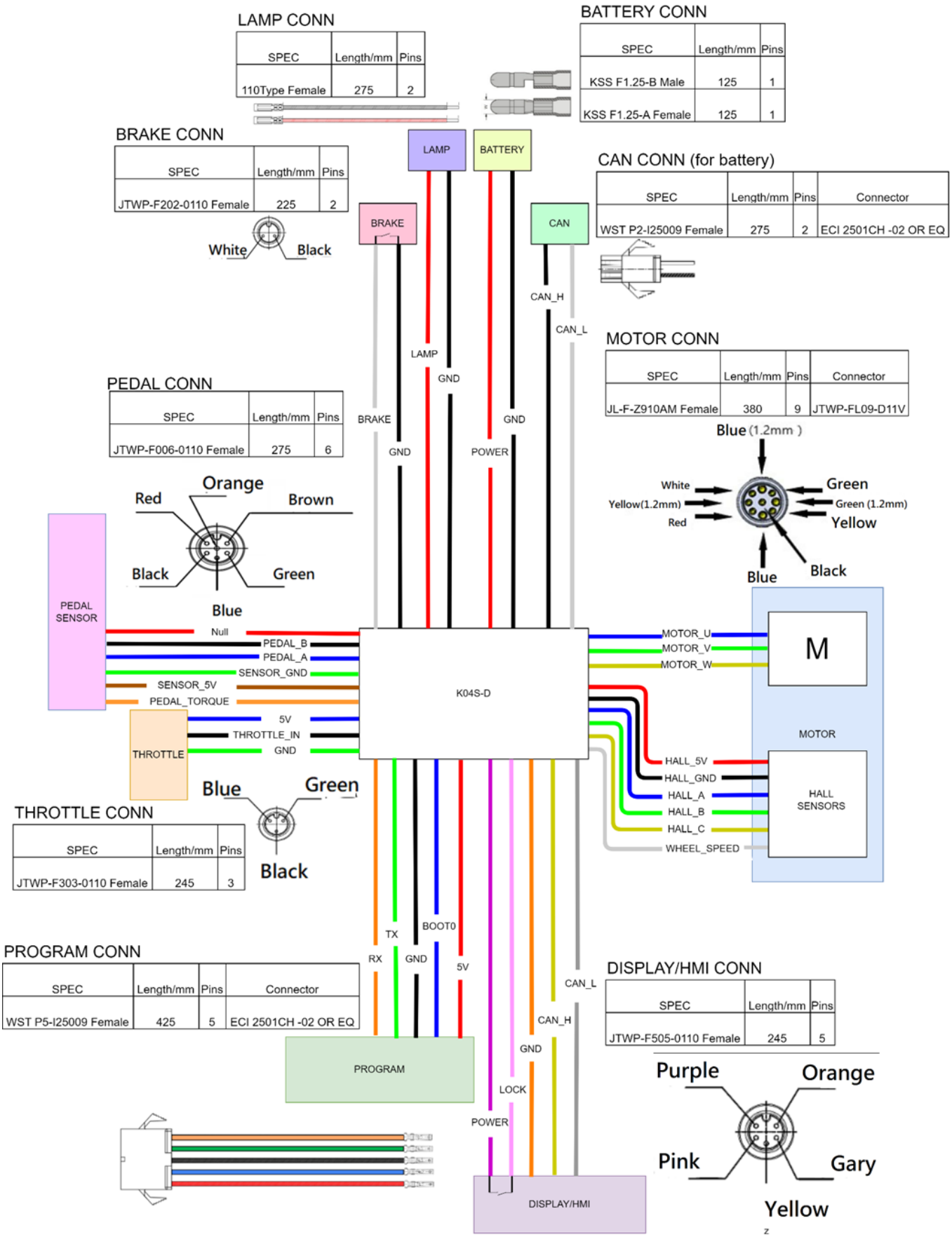
K04SC-L015 / K04SC-N015



K04C-N030



Connection of electrical system



Operation

Parameter tuning

The K04 controller can be configured using a PC with DEXMART tuning software A_HMI (a convert cable required to connect K04 to PC).

Selecting command input options

The K04 series controllers offer several control command inputs.

Parameter ID	Description	Setting
02-09	Throttle command options	0: No throttle function 1: Throttle available for all assist levels 2: Throttle only available for assist level 0 3: Throttle only available for assist level 1 and above
02-17	Pedal command options	0: Torque + Pedal speed 1: Pedal speed only
02-20	Pedal speed sensor pulse per revolution	Number of pulses per complete pedal revolution.
02-21	Pedal pulse threshold	Number of pulses counts the controller must receive before the pedals are deemed to be rotating.
02-22	Pedal pulse timeout	Allowed time in msec for the duration between each pedal pulse count before recounting.
02-26	Torque sensor offset	Pedal assist torque sensor offset voltage.
02-27	Torque sensor gain	Equate the sensor output voltage to a torque measurement.
02-28	Torque sensor threshold	The torque value to start the assist output.

Configuring assist level

Parameter ID	Description	Setting
03-09	Walk assistant mode max assist torque	Maximum output torque % for each assist level (unit in 0.1%).
03-10	Assist level 1 max assist torque %	
03-11	Assist level 2 max assist torque %	
03-12	Assist level 3 max assist torque %	
03-13	Assist level 4 max assist torque %	
03-14	Assist level 5 max assist torque %	
03-15	Assist level 6 max assist torque %	
03-16	Assist level 7 max assist torque %	

Revision History

REV	Date	Remark
1.0	20230313	1st Release.
2.0	20230411	Connection and operation details updated.