

AiM InfoTech

WSS 2024 NG
Connection kit

Release 1.00



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Models and years

This manual explains how to connect AiM devices to the WorldSuperSport bikes Engine Control Unit (ECU). Compatible models are:

- WSS bikes (with MecTronik – MKE7 ECU) with ECU FW update 2024 from 2024

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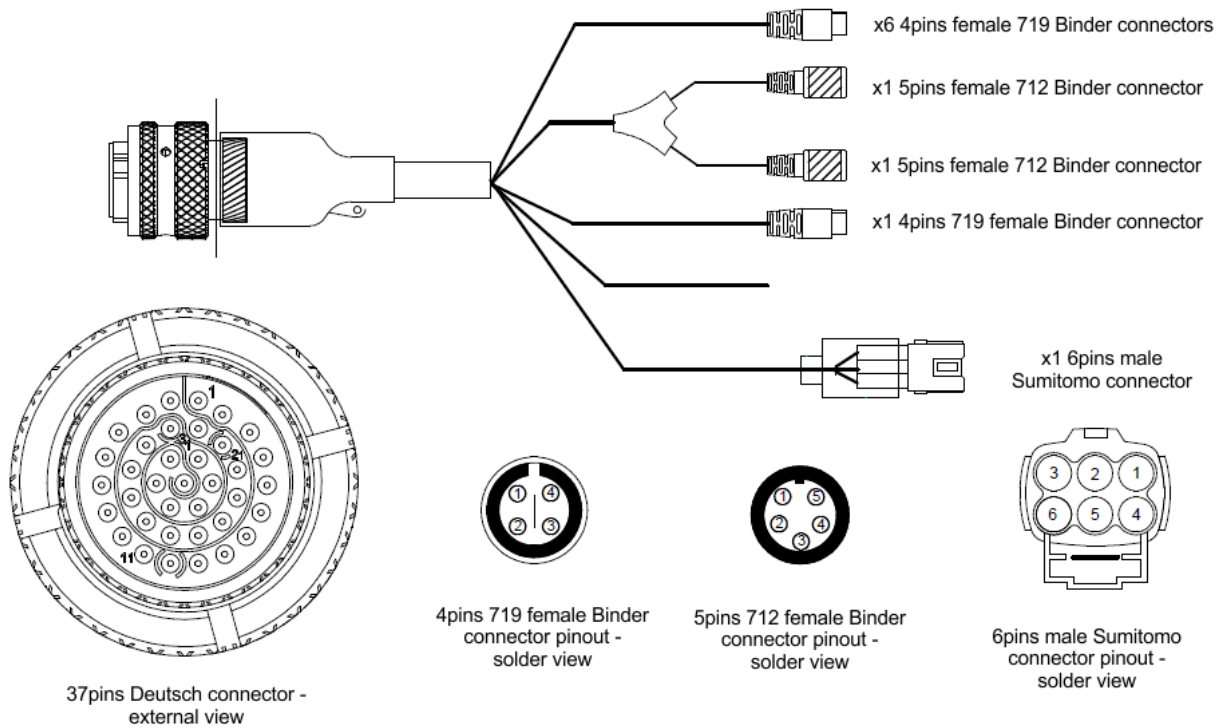
Kit content and part numbers

AiM designed a specific connection kit to the World SS bikes ECU. Provided harness into this kit allows to read transmitted data from the ECU via CAN and, at the same time, to power up the system.

The part number of the AiM connection harness for World SS bikes is: **V02573530**.

3 Connection

The specific 37pins harness for World SS bikes allows to connect to the vehicle battery and ECU directly, through the 6pins white Sumitomo female connector (labelled "Logger Dash").
Here below, the harness scheme is available.



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Race Studio 3 configuration

Before connecting the ECU to AiM device set this up using AiM Race Studio 3 software. The parameters to select in the device configuration are:

- ECU manufacturer: **MecTronik**
- ECU Model: **WSS 2024 NG** (RS3 only)

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"MecTronik – WSS 2024 NG" protocol

Received channels by AiM device configured with "MecTronik – WSS 2024 NG" protocol are:

CHANNEL NAME	FUNCTION
RPM	RPM
VIRTUAL RPM	Virtual RPM
GAS	Handgrip throttle position
GAS SMOOTH	Handgrip throttle position filtered
DEMAND	Throttle demand
DRUMPOS VOLT	Gear barrel voltage
GEAR POS	Active gear
LOADCELL	Load cell force
GEARSHIFT UP SM	Gearshift up state machine
GEARSHIFT DN SM	Gearshift down state machine
CUT LEVEL	Cut level
CUT FUNCTION	Contains the following <i>encoded</i> messages:
= 1	EN GK: ENGINEKILL
= 4	GSFU: GEARSHIFTUP
= 5	GSKU: GEARSHAKEUP



= 6	RPML: RPMLIMIT
= 7	GSFD: GEARSHIFTDN
= 8	GSKD: GEARSHAKEDN
= 11	SPDL: SPEEDLIMIT
= 12	EBRK: ENGINEBRAKE
= 13	AJER: ANTIJERK
SUSP REAR	Rear suspension position
SUSP FRONT	Front suspension position
WTS	Water temperature
ATS	Air temperature
OTS	Oil temperature
OPS	Oil pressure
MAP	Manifold air pressure
BAP	Barometric air pressure
FPS	Fuel pressure
FUEL QT	Fuel used
BRAKE FRONT	Front brake pressure
BRAKE REAR	Rear brake pressure
TRIMMER ENG BRK	Engine brake trimmer
TPS LIMIT	TPS limit
TPS REQUEST A	Throttle request bank A
TPS REQUEST B	Throttle request bank B
TPS A	Throttle position bank A
TPS B	Throttle position bank B
dTPS A	Throttle rate bank A
dTPS B	Throttle rate bank B
TRUMPET OUT A	Trumpet bank A output duty cycle
TRUMPET OUT B	Trumpet bank B output duty cycle
TORQUE ENGINE	Engine torque
TORQUE REAR	Rear wheel torque
SPEED FRONT	Front wheel speed



SPEED REAR	Rear wheel speed
SPEED VIRTUAL	Virtual speed for engine brake
SPEED VEHICLE	Vehicle speed
SPEED FRONT RAW	Front speed raw max radius
SPEED FRONT HZ	Front speed frequency
SPEED REAR RAW	Rear speed raw max radius
SPEED REAR HZ	Rear speed frequency
TRANS RATIO	Transmission ratio
CLUTCH SLIP	Clutch slip
ACC X	Longitudinal acceleration
ACC Y	Lateral acceleration
ACC Z	Vertical acceleration
BIKE LEAN ANGLE	Lean angle
FORCE REAR	Force on rear wheel
GYRO X	Longitudinal gyroscope
GYRO Y	Lateral gyroscope
GYRO Z	Vertical gyroscope
INJ CORR CYL 1	Injection correction cylinder 1
INJ CORR CYL 2	Injection correction cylinder 2
INJ CORR CYL 3	Injection correction cylinder 3
INJ CORR CYL 4	Injection correction cylinder 4
IGN CORR CYL 1	Ignition correction cylinder 1
IGN CORR CYL 2	Ignition correction cylinder 2
IGN CORR CYL 3	Ignition correction cylinder 3
IGN CORR CYL 4	Ignition correction cylinder 4
INJ CORR LAM1	Injection correction lambda 1
INJ CORR LAM2	Injection correction lambda 2
INJ CORR LAM3	Injection correction lambda 3
INJ CORR LAM4	Injection correction lambda 4
LAMBDA CYL1	Lambda cylinder 1
LAMBDA CYL2	Lambda cylinder 2



LAMBDA CYL3	Lambda cylinder 3
LAMBDA CYL4	Lambda cylinder 4
LAMBDA	Internal lambda
LAMBDA STATE 1	Contains the following <i>bitfield status</i> messages:
= 1	LAMBDA ENABLED
= 2	OPEN LOOP
= 5	CLOSED LOOP 1
= 6	FREEZE 1
= 7	ADAPTIVE 1
= 8	CLOSED LOOP 2
LAMBDA STATE 2	Contains the following <i>bitfield status</i> messages:
= 1	FREEZE 2
= 2	ADAPTIVE 2
= 3	CLOSED LOOP 3
= 4	FREEZE 3
= 5	ADAPTIVE 3
= 6	CLOSED LOOP 4
= 7	FREEZE 4
= 8	ADAPTIVE 4
LAMBDA DIAG 1	Contains the following <i>bitfield status</i> messages:
= 1	HARDWARE
= 2	LOW TEMP
= 3	LOW POWER
= 4	VM SCGN
= 5	VM SCBAT
= 6	VM OPEN
= 7	UM SCGND
= 8	UM SCBAT
LAMBDA DIAG 2	Contains the following <i>bitfield status</i> messages:
= 1	UM OPEN
= 2	IAP SCGND



= 3	IAP SCBAT
= 4	IAP OPEN
= 5	HEATER SCGND
= 6	HEATER SCBAT
= 7	HEATER OPEN
LAMBDA TEMP	Internal lambda temperature
CRASH TILT	Tilt sensor voltage
CRASH STATE 1	Contains the following <i>bitfield status</i> messages:
= 1	ENABLED
= 2	ACTIVE
= 3	ENGINE OFF
= 4	LATCH OFF
= 5	IMU CHECK Z
= 6	IMU EVENT Z
= 7	IMU CHECK Y
= 8	IMU EVENT Y
CRASH STATE 2	Contains the following <i>bitfield status</i> messages:
= 1	TILT CHECK
= 2	TILT EVENT
= 8	CRASH WARNING
CRASH ACC Y	Lateral acceleration crash detection
CRASH ACC Z	Vertical acceleration crash detection
SAFEOFF STATE	Contains the following <i>encoded</i> messages:
= 1	ENAB: ENABLED
= 2	ACTI: ACTIVE
= 4	ENGO: ENGINE OFF
= 8	LTCO: LATCH OFF
BOARD TEMP	ECU temperature
BOARD TIME	ECU run time
VBAT	Battery voltage
VREF 1	Reference voltage 1 (5V)



VREF 2	Reference voltage 2 (5V)
ENG REVS	Engine revolutions
ENG STATE 1	Contains the following <i>bitfield status</i> messages:
= 1	STALL
= 2	MOVING
= 4	SYNC
= 8	PHASED
ENG STATE 2	Contains the following <i>bitfield status</i> messages:
= 1	STARTED
= 2	SEQUENTIAL
RBW STATE 1	Contains the following <i>bitfield status</i> messages:
= 1	ENABLED
= 2	BANK A
= 3	BANK B
= 4	CHECKING
= 5	RECOVERY
= 6	DISABLE A
= 7	DISABLE B
= 8	ERR GAS
RBW STATE 2	Contains the following <i>bitfield status</i> messages:
= 1	ERR TPS A
= 2	ERR PID A
= 3	ERR HBR A
= 5	ERR TPS B
= 6	ERR PID B
= 7	ERR HBR B
USER INPUT 1	Contains the following <i>bitfield status</i> messages:
= 1	BUTTON 1
= 2	BUTTON 2
= 3	BUTTON 3
= 4	BUTTON 4



= 5	BUTTON 5
= 6	BUTTON 6
USER OUTPUT 1	Contains the following <i>bitfield status</i> messages:
= 1	BACK LIGHT
USER OUTPUT 2	Contains the following <i>bitfield status</i> messages:
= 1	DORNA AUX
= 2	DORNA WARNING
= 3	DORNA DANGER
DEMAND PROFILE	Index of demand profile in use
SHIFT LIGHT	Shift light percent
ACTUATORS DIAG 1	Contains the following <i>bitfield status</i> messages:
= 1	COIL 1
= 2	COIL 2
= 3	COIL 3
= 4	COIL 4
= 5	INJECTOR 1
= 6	INJECTOR 2
= 7	INJECTOR 3
= 8	INJECTOR 4
ACTUATORS DIAG 2	Contains the following <i>bitfield status</i> messages:
= 1	INJECTOR 5
= 2	INJECTOR 6
= 3	INJECTOR 7
= 4	INJECTOR 8
= 5	HBRIDGE 1
= 6	HBRIDGE 2
= 7	PWM 1
= 8	PWM 2
ACTUATORS DIAG 3	Contains the following <i>bitfield status</i> messages:
= 1	PWM 3
= 2	PWM 4



= 3	PWM 5
= 4	PWM 6
= 5	PWM 7
= 6	PWM 8
= 7	PWM 9
= 8	PWM 10

ACTUATORS DIAG 4

Contains the following *bitfield status* messages:

= 1	PWM 11
= 2	PWM 12
= 3	MFO 1
= 4	MFO 2
= 5	MFO 3
= 6	MFO 4
= 7	MFO 5

SENSORS DIAG 1

Contains the following *bitfield status* messages:

= 1	PICKUP
= 2	PHASE
= 3	CAM
= 4	GAS
= 5	TPS A
= 6	TPS B
= 7	MAP
= 8	BAP

SENSORS DIAG 2

Contains the following *bitfield status* messages:

= 1	OPS
= 2	FPS
= 3	WTS
= 4	ATS
= 5	OTS
= 6	LAMBDA
= 7	GEARPOS



= 8	LOADCELL
SENSORS DIAG 3	Contains the following <i>bitfield status</i> messages:
= 1	SPEED FRONT
= 2	SPEED REAR
SENSORS DIAG 4	Contains the following <i>bitfield status</i> messages:
= 6	VREF 1
= 7	VREF 2
= 8	VBATTERY
ENGINE FUNC 1	Contains the following <i>bitfield status</i> messages:
= 1	SWITCH OFF
= 2	CRASH OFF
= 3	SAFETY OFF
= 4	RPM LIMIT
= 5	IDLE CTRL
= 6	LAMBDA CTRL
ENGINE FUNC 2	Contains the following <i>bitfield status</i> messages:
= 1	MAINT ENTRY
= 2	MAINT ACTIVE
STR FUNCTION 1	Contains the following <i>bitfield status</i> messages:
= 2	SPEED LIMIT
= 3	GEAR SHIFTUP
= 4	GEAR SHIFTDN
= 5	ENGINEBRAKE
= 6	ANTIJERK
WORKMODE	Active work mode ID
WORKMODE MASK 1	Contains the following <i>bitfield status</i> messages:
= 2	RAIN LIGHT
= 3	CRASH DETECT
= 4	SAFE OFF
= 5	TYRE DRY
= 6	TYRE RAIN



= 8	AUX SPROKETS
ENG BRAKE	Contains the following <i>encoded</i> messages:
= 1	A : ENG BRAKE A
= 2	B : ENG BRAKE B
DEM WMODE	Contains the following <i>encoded</i> messages:
= 1	A : DEM WMODE A
= 2	B : DEM WMODA B
WORKMODE MASK 3	Contains the following <i>bitfield status</i> messages:
= 5	ANTIJERK
= 6	GEARSHIFT UP
= 7	GEARSHIFT DOWN
WORKMODE MASK 4	Contains the following <i>bitfield status</i> messages:
= 1	LAMBDA CL
= 5	CORR INJ
= 6	CORR INJ SPEED
= 7	CORR IGN
CALIBRATION INFO	Contains the following <i>encoded</i> messages:
= 1	ERAM : ENGINE RAM
= 2	EFLS : ENGINE FLASH
= 3	SRAM : STRATEGY RAM
= 4	SFLS : STRATEGY FLASH
= 16384	WARN : WARNING
= 32768	ERR : ERROR
TEAM CRC	Strategies calibration CRC
MANUFACTURER CRC	Engine calibration CRC
X2 Link Info	Contains the following <i>bitfield status</i> messages:
= 1	StartDelay
= 2	StrtDel Rain
= 3	StrtDel EngOFF
= 4	StrtDelQS EngOFF
= 5	30 sec board



= 6	X min board
= 7	Slow riding
= 8	SC In this lap
X2 Link Position	X2 rider position
X2 Link Time	X2 time
X2 Corner Number	X2 corner number
X2 Link Forewarn	Contains the following <i>bitfield status</i> messages:
= 2	Yellow Red Strip
= 3	White Red Cross
= 6	Yellow
= 7	Yellow waved
X2 Link Penalty	Contains the following <i>bitfield status</i> messages:
= 1	Ride Through
= 2	Drop Position
= 3	Exc Track Limit
= 4	Time Penalty
= 5	Long Lap Penalty
= 6	Double Long Lap
= 7	Go to Position
= 8	Enter PitLane
X2 Link Flags 1	Contains the following <i>bitfield status</i> messages:
= 1	Green
= 2	Yellow Red Strip
= 3	White Red Cross
= 4	White
= 5	Red
= 6	Yellow
= 7	Yellow Double
= 8	Safety Car
X2 Link Flags 2	Contains the following <i>bitfield status</i> messages:
= 1	Black



= 2	Black Orangedisk
= 4	Chequered
= 8	Rain Light
FR ID	Front wheel identification
FR TEMP	Front wheel temperature
FR PRESS	Front wheel pressure
RR ID	Rear wheel identification
RR TEMP	Rear wheel temperature
RR PRESS	Rear wheel pressure

Technical note: not all data channels outlined in the ECU template are validated for each manufacturer model or variant; some of the outlined channels are model and year specific, and therefore may not be applicable.

ENCODED messages show a string of 4 characters that can be shown on a display field or in Live Measure. Instead RaceStudio 3 Analysis will show the corresponding numeric value as reported in the tables above.

For example the channel CUT FUNCTION will show on the display and on Live Measure the short message SPDL, corresponding to the cut generated by the speed limiter. RaceStudio 3 Analysis will report the value 11

CUT FUNCTION	Contains the following <i>encoded</i> messages:
= 1	ENGK: ENGINEKILL
= 4	GSFU: GEARSHIFTUP
= 5	GSKU: GEARSHAKEUP
= 6	RPML: RPMLIMIT
= 7	GSFD: GEARSHIFTDN
= 8	GSKD: GEARSHAKEDN
= 11	SPDL: SPEEDLIMIT
= 12	EBRK: ENGINEBRAKE
= 13	AJER: ANTIJERK



BITFIELD STATUS messages show on the display and on Live Measure a value composed by the active bits. For example if there are the 4 lambdas all in closed loop, active values will be those corresponding to these 4 status, thus 5 and 8 for Lambda State 1, 3 and 6 for Lambda State 2

Lambda State 1: 58 (5 and 8)

Lambda State 2: 36 (3 and 6)

LAMBDA STATE 1	Contains the following messages:
= 1	LAMBDA ENABLED
= 2	OPEN LOOP
= 5	CLOSED LOOP 1
= 6	FREEZE 1
= 7	ADAPTIVE 1
= 8	CLOSED LOOP 2
LAMBDA STATE 2	Contains the following messages:
= 1	FREEZE 2
= 2	ADAPTIVE 2
= 3	CLOSED LOOP 3
= 4	FREEZE 3
= 5	ADAPTIVE 3
= 6	CLOSED LOOP 4
= 7	FREEZE 4
= 8	ADAPTIVE 4

In the data logger configuration, the bitfield channels allow to handle every single bit independently, to switch on a warning LED, show a message, activate an action.