MecTronik

MK E6 ECU

Racing Data Power

INTRODUCTION

AIM has developed special applications for many of the most popular ECUs: by special applications we mean user-friendly systems which allow to easily connect your ECU to our high tech data loggers: user needs only to install harness between the **logger** and the ECU.

Once connected, the logger displays (and/or records, depending on the logger and on the ECU data stream and configuration) values like RPM, engine load, throttle position (TPS), air and water temperatures, battery voltage, speed, gear, lambda value (air/fuel ratio) analog channels…

All AIM loggers include – free of charge – **Race Studio 2** software, a powerful tool to configure the system and analyze recorded data on your PC.

Warning: once the ECU is connected to the logger, it is necessary to set it in the logger configuration in Race Studio 2 software.

REFER TO CHAPTER 3 TO KNOW THE ECU CONFIGURATION TO BE SET

Warning: it is always suggested to verify if the ECU needs any software/firmware setting or upgrade to export data to an external logger.

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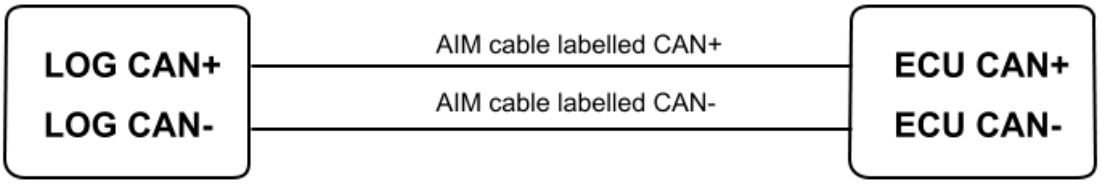
Chapter 1 – CAN communication Setup

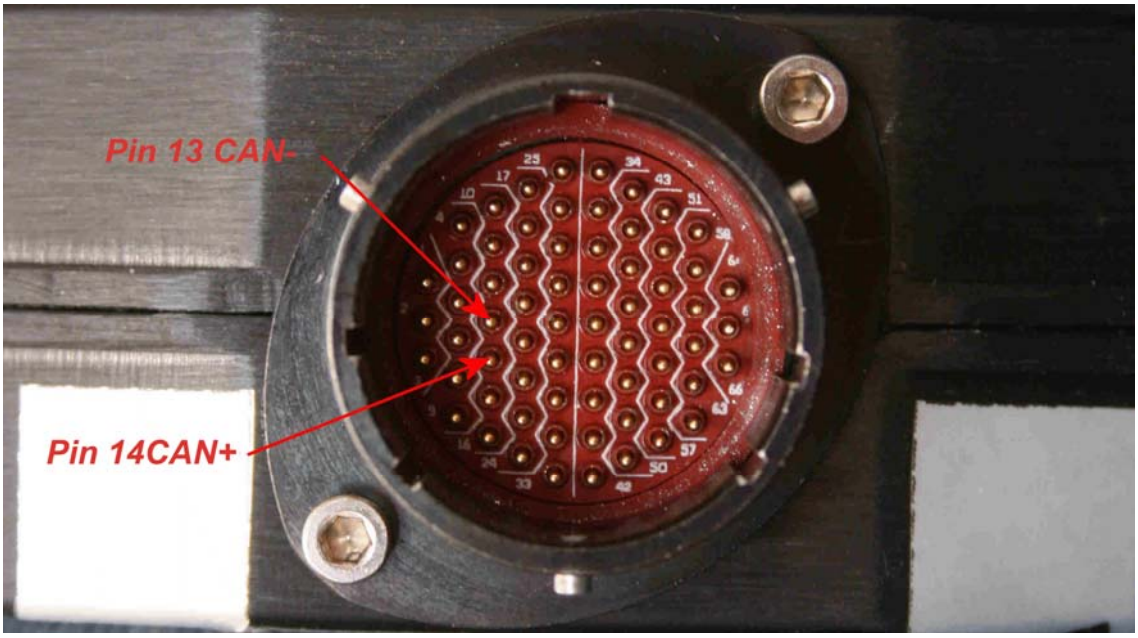
MK E6 ECU is equipped with a CAN communication protocol and its setup is shown here below.



Chapter 2 – Connection with AIM loggers

MecTronik MK E6 ECU is equipped with a 66 pins Deutsch male connector to be connected to AIM logger as follows:

- connect AIM cable labelled CAN- with pin "**13**" of 66 pins ECU connector
- connect AIM cable labelled CAN+ with pin "**14**" of 66 pins ECU connector.



Chapter 3 – MecTronik MK_E6 communication protocol

Channels received by AIM loggers connected to MecTronik MK_E6 depends on the application and on the AIM protocol your ECU uses.

3.1 – MK_E6 1.0_2.0 protocol

This protocol is for ECUs that use AIM 1.0 or AIM 2.0 protocol on bike installations.

ID	CHANNEL NAME	FUNCTION
ECU_1	MK6_ENG_RPM720	RPM
ECU_2	MK6_CALC_TPS	Calculated Throttle position sensor
ECU_3	MK6_LOAD1	Engine Load 1
ECU_4	MK6_CALC_DRPM	RPM Derivative
ECU_5	MK6_VCL_WHSP_F	Front wheel speed sensor
ECU_6	MK6_VCL_WHSP_R	Rear wheel speed sensor
ECU_7	MK6_VCL_SPEED	Vehicle speed
ECU_8	MK6_VCL_SLIP	Vehicle Slip
ECU_9	MK6_WTS	Water temperature sensor
ECU_10	MK6_ATS	Intake air temperature sensor
ECU_11	MK6_OTS	Oil temperature sensor
ECU_12	MK6_FTS	Fuel Temperature sensor
ECU_13	MK6_MAP	Manifold air pressure
ECU_14	MK6_BAP	Barometric air pressure
ECU_15	MK6_OPS	Oil pressure sensor
ECU_16	MK6_FPS	Fuel pressure sensor
ECU_17	MK6_LAMBDA_1	Lambda sensor 1
ECU_18	MK6_LAMBDA_2	Lambda sensor 2
ECU_19	MK6_CUT_LEVEL	Engine Cut level
ECU_20	MK6_CUT_PATTERN	Engine cut pattern
ECU_21	MK6_GEAR_POS	Gear position sensor
ECU_22	MK6_WORK_MODE	Selected Map
ECU_23	MK6_TRACCTRL_SP	Traction Control Set Point
ECU_24	MK6_ECU_TIME_SEC	ECU Time
ECU_25	MK6_GEARCUT_ADC	Gear cut level (raw value)
ECU_26	MK6_V_POWER	Battery Voltage
ECU_27	MK6_V_REF	V Reference

ECU_28	MK6_ENG_REVSCTR	Revolutions counter
ECU_29	MK6_ENG_STATE	Engine status
ECU_30	MK6_ENG_SMOTC	SMOT Counter
ECU_31	MK6_ENG_ERROR	Engine Error
ECU_32	MK6_IN_TBOARD	ECU temperature
ECU_33	MK6_PID1_ERROR	VVT Right intake air error
ECU_34	MK6_PID2_ERROR	VVT Right output air error
ECU_35	MK6_PID3_ERROR	VVT Left intake air error
ECU_36	MK6_PID4_ERROR	VVT Left output air error
ECU_37	MK6_SPARE_S1	Custom channel
ECU_38	MK6_SPARE_S2	Custom channel
ECU_39	MK6_SPARE_S3	Custom channel
ECU_40	MK6_SPARE_S4	Custom channel
ECU_41	MK6_SPARE_S5	Custom channel
ECU_42	MK6_SPARE_S6	Custom channel
ECU_43	MK6_SPARE_S7	Custom channel
ECU_44	MK6_SPARE_S8	Custom channel
ECU_45	MK6_SPARE_U9	Custom channel
ECU_46	MK6_SPARE_U10	Custom channel
ECU_47	MK6_SPARE_U11	Custom channel
ECU_48	MK6_SPARE_U12	Custom channel
ECU_49	MK6_SPARE_U13	Custom channel
ECU_50	MK6_SPARE_U14	Custom channel
ECU_51	MK6_SPARE_U15	Custom channel
ECU_52	MK6_SPARE_U16	Custom channel

3.2 – MK_E6_2.1 protocol

This protocol is for ECUs that use AIM 2.1 protocol on bike installations.

ID	CHANNEL NAME	FUNCTION
ECU_1	MK6_ENG_RPM720	RPM
ECU_2	MK6_CALC_TPS	Calculated Throttle position sensor
ECU_3	MK6_LOAD1	Engine Load
ECU_4	MK6_CALC_DRPM	RPM Derivative
ECU_5	MK6_VCL_WHSP_F	Front wheel speed
ECU_6	MK6_VCL_WHSP_R	Rear wheel speed
ECU_7	MK6_VCL_SPEED	Vehicle speed
ECU_8	MK6_VCL_SLIP	Vehicle Slip
ECU_9	MK6_WTS	Water temperature sensor
ECU_10	MK6_ATS	Intake air temperature sensor
ECU_11	MK6_OTS	Oil Temperature sensor
ECU_12	MK6_FTS	Fuel Temperature sensor
ECU_13	MK6_MAP	Manifold air pressure
ECU_14	MK6_BAP	Barometric pressure
ECU_15	MK6_OPS	Oil pressure sensor
ECU_16	MK6_FPS	Fuel pressure sensor
ECU_17	MK6_LAMBDA_1	Lambda sensor 1
ECU_18	MK6_LAMBDA_2	Lambda sensor 2
ECU_19	MK6_CUT_LEVEL	Engine Cut level
ECU_20	MK6_CUT_PATTERN	Engine cut pattern
ECU_21	MK6_GEAR_POS	Gear sensor
ECU_22	MK6_WORK_MODE	Selected Map
ECU_23	MK6_TRACCTRL_SP	Traction Control Set Point
ECU_24	MK6_ECU_TIME_SEC	ECU Time
ECU_25	MK6_GEARCUT_ADC	Gear cut level (raw value)
ECU_26	MK6_V_POWER	Battery voltage
ECU_27	MK6_V_REF	V reference
ECU_28	MK6_ENG_REVSCTR	Revolutions counter
ECU_29	MK6_ENG_STATE	Engine status
ECU_30	MK6_ENG_SMOTC	SMOT Counter
ECU_31	MK6_ENG_ERROR	Engine error

ECU_32	MK6_IN_TBOARD	ECU temperature
ECU_33	MK6_PID1_ERROR	VVT Right intake air error
ECU_34	MK6_PID2_ERROR	VVT Right output air error
ECU_35	MK6_PID3_ERROR	VVT Left intake air error
ECU_36	MK6_PID4_ERROR	VVT Left output air error
ECU_37	MK6_SPARE_S1	Custom channel
ECU_38	MK6_SPARE_S2	Custom channel
ECU_39	MK6_SPARE_S3	Custom channel
ECU_40	MK6_SPARE_S4	Custom channel
ECU_41	MK6_SPARE_S5	Custom channel
ECU_42	MK6_SPARE_S6	Custom channel
ECU_43	MK6_SPARE_S7	Custom channel
ECU_44	MK6_SPARE_S8	Custom channel
ECU_45	MK6_SPARE_U9	Custom channel
ECU_46	MK6_SPARE_U10	Custom channel
ECU_47	MK6_SPARE_U11	Custom channel
ECU_48	MK6_SPARE_U12	Custom channel
ECU_49	MK6_SPARE_U13	Custom channel
ECU_50	MK6_SPARE_U14	Custom channel
ECU_51	MK6_SPARE_U15	Custom channel
ECU_52	MK6_SPARE_U16	Custom channel

3.3 – MK_E6_3.0_1Mbit protocol

This protocol is for car/bike applications and can be used on CAN network whose rate is 1Mbit.

ID	CHANNEL NAME	FUNCTION
ECU_1	E_RPM720	RPM
ECU_2	E_LOAD	Engine Load
ECU_3	E_CUTLEV	Engine Cut level
ECU_4	E_CUTPAT	Engine cut pattern
ECU_5	E_LAM1	Lambda sensor 1
ECU_6	E_LAM2	Lambda sensor 2
ECU_7	E_LAM1_K	Correction Lambda 1
ECU_8	E_LAM2_K	Correction Lambda 2
ECU_9	E_GAS	Throttle position
ECU_10	E_TSP_SP	Throttle set point
ECU_11	E_TPS_1	Throttle position sensor 1
ECU_12	E_TPS_2	Throttle position sensor 2
ECU_13	E_MAP	Manifold Air pressure
ECU_14	E_BAP	Barometric air pressure
ECU_15	E_OPS	Oil pressure sensor
ECU_16	E_FPS	Fuel pressure sensor
ECU_17	E_WTS	Engine coolant temperature sensor
ECU_18	E_ATS	Intake air temperature sensor
ECU_19	E_OTS	Oil temperature sensor
ECU_20	E_FTS	Fuel temperature sensor
ECU_21	E_GEARPOS	Gear position sensor
ECU_22	D_REVS	Engine revolution at start up
ECU_23	D_STR_ON	Active strategy
ECU_24	D_STR_REC	Recovery strategy
ECU_25	V_SPD_FRONT	Front vehicle speed
ECU_26	V_SPD_REAR	Rear vehicle speed
ECU_27	V_SLIP	Vehicle slip
ECU_28	V_SLIP_SP	Target slip
ECU_29	V_ACCEL_X	Horizontal accelerometer
ECU_30	V_ACCEL_Y	Vertical Accelerometer

ECU_31	V_YAW_RATE	Yaw rate
ECU_32	V_ROLL_ANGLE	Rolling angle
ECU_33	V_BRK_FRONT	Front break pressure
ECU_34	V_BRK_REAR	Rear break pressure
ECU_35	V_AUX1	Auxiliary 1
ECU_36	V_AUX2	Auxiliary 2
ECU_37	R_MODE	Selected mode
ECU_38	R_TCSET	TC setup
ECU_39	R_TCSET_K	Slip increment from TC set
ECU_40	R_ANGLE_K	Slip increment from bike angle
ECU_41	D_SMOT_CTR	SMOT Counter
ECU_42	D_ENG_ERR	Engine error
ECU_43	D_ENG_STATE	Engine status
ECU_44	D_DBW_ERR	Drive by wire error
ECU_45	D_AN_GEARPOS	Gear position tension
ECU_46	D_AN_LOADCELL	Gear cut level (raw value)
ECU_47	D_SPD_FRONT	Front speed
ECU_48	D_SPD_REAR	Rear speed
ECU_49	D_VPOWER	Battery voltage
ECU_50	D_VREF	V reference
ECU_51	D_AN_AUX1	Auxiliary sensor 1 tension
ECU_52	D_AN_TILT	Tilt sensor tension
ECU_53	D_ECUTIME	ECU Time
ECU_54	D_ECUTEMP	ECU Temperature
ECU_55	D_ECU_INT1	ECU internal diagnostic 1
ECU_56	D_ECU_INT2	ECU internal diagnostic 2
ECU_57	P_CP_1	Proportional comp. 1
ECU_58	P_CI_1	Integral comp. 1
ECU_59	P_CD_1	Derivative comp. 1
ECU_60	P_CFF_1	Feed Forward comp. 1
ECU_61	P_CP_2	Proportional comp. 2
ECU_62	P_CI_2	Integrative comp. 2
ECU_63	P_CD_2	Derivative comp. 2
ECU_64	P_CFF_2	Feed Forward comp. 2

3.4 – MK_E6_3.0_500k

This protocol is for car/bike applications and can be used on CAN network whose rate is 500k.

ID	CHANNEL NAME	FUNCTION
ECU_1	E_RPM720	RPM
ECU_2	E_LOAD	Engine load
ECU_3	E_CUTLEV	Engine Cut level
ECU_4	E_CUTPAT	Engine cut pattern
ECU_5	E_LAM1	Lambda sensor 1
ECU_6	E_LAM2	Lambda sensor 2
ECU_7	E_LAM1_K	Correction Lambda 1
ECU_8	E_LAM2_K	Correction Lambda 2
ECU_9	E_GAS	Throttle position
ECU_10	E_TSP_SP	Throttle set point
ECU_11	E_TPS_1	Throttle position sensor 1
ECU_12	E_TPS_2	Throttle position sensor 2
ECU_13	E_MAP	Manifold air pressure
ECU_14	E_BAP	Barometric pressure
ECU_15	E_OPS	Oil pressure sensor
ECU_16	E_FPS	Fuel pressure sensor
ECU_17	E_WTS	Water temperature sensor
ECU_18	E_ATS	Intake air temperature sensor
ECU_19	E_OTS	Oil temperature sensor
ECU_20	E_FTS	Fuel temperature sensor
ECU_21	E_GEARPOS	Gear position
ECU_22	D_REVS	Engine revolution at start up
ECU_23	D_STR_ON	Active strategy
ECU_24	D_STR_REC	Recovery strategy
ECU_25	V_SPD_FRONT	Front vehicle speed
ECU_26	V_SPD_REAR	Rear vehicle speed
ECU_27	V_SLIP	Vehicle slip
ECU_28	V_SLIP_SP	Target slip
ECU_29	V_ACCEL_X	Horizontal accelerometer
ECU_30	V_ACCEL_Y	Vertical Accelerometer

ECU_31	V_YAW_RATE	Yaw rate
ECU_32	V_ROLL_ANGLE	Rolling angle
ECU_33	V_BRK_FRONT	Front break pressure
ECU_34	V_BRK_REAR	Rear break pressure
ECU_35	V_AUX1	Auxiliary 1
ECU_36	V_AUX2	Auxiliary 2
ECU_37	R_MODE	Selected mode
ECU_38	R_TCSET	TC setup
ECU_39	R_TCSET_K	Slip increment from TC set
ECU_40	R_ANGLE_K	Slip increment from bike angle
ECU_41	D_SMOT_CTR	SMOT Counter
ECU_42	D_ENG_ERR	Engine error
ECU_43	D_ENG_STATE	Engine status
ECU_44	D_DBW_ERR	Drive by wire error
ECU_45	D_AN_GEARPOS	Gear position tension
ECU_46	D_AN_LOADCELL	Gear cut level (raw value)
ECU_47	D_SPD_FRONT	Front speed
ECU_48	D_SPD_REAR	Rear speed
ECU_49	D_VPOWER	Battery voltage
ECU_50	D_VREF	V reference
ECU_51	D_AN_AUX1	Auxiliary sensor 1 tension
ECU_52	D_AN_TILT	Tilt sensor tension
ECU_53	D_ECUTIME	ECU Time
ECU_54	D_ECUTEMP	ECU Temperature
ECU_55	D_ECU_INT1	Internal ECU diagnostic 1
ECU_56	D_ECU_INT2	Internal ECU diagnostic 2
ECU_57	P_CP_1	Proportional comp. 1
ECU_58	P_CI_1	Integral comp. 1
ECU_59	P_CD_1	Derivative comp. 1
ECU_60	P_CFF_1	Feed Forward comp. 1
ECU_61	P_CP_2	Proportional comp. 2
ECU_62	P_CI_2	Integrative comp. 2
ECU_63	P_CD_2	Derivative comp. 2
ECU_64	P_CFF_2	Feed Forward comp. 2