

ME360 ECU & MX5 NB/NBFL Harness

Install Guide v1.1



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1 INTRODUCTION

Thank you for purchasing a MX5 NB/NBFL harness for your ME360 ECU! A full manual for the ECU and the relevant MEITE software is available under support on our website at **www.motorsport-electronics.co.uk/support**. You can also get in touch by phone (Mon-Fri 9am-5pm GMT) on **+44 (0) 1373 710 610**.

This install guide should help you with the physical installation of the MX5 NB/NBFL harness which is compatible with 1.8 litre engines from the MX5 Mk2 / NB (1999-2000) and MX5 Mk2.5 / NBFL (2001-2005) models.

It is also recommended that you provide this document to the calibrator prior to the ECU being optimised on a dyno/rolling road.

The following sections provide information and reference tables describing the functions of certain connections.

A basemap is generally pre-loaded for your convenience.

2 BASIC CONNECTIONS

Your wiring harness comes fully labelled. Yellow, heatshrink labels on each arm of the harness describe where they should be connected and are pre-terminated for convenience. The power and ground connections have white tags and must be connected as below;

WIRE LABEL	COLOUR	CONNECT TO
IGN +	RED	SWITCHED 12V (KEY BARREL OR SWITCH)
BATT+	RED	BATTERY POSITIVE (PERMANENT 12V LIVE)
GND	7 x BLACK WIRES	CHASSIS GROUND

2.1 GROUNDS

The ECU has multiple ground pins (PINS 10, 61 and 90).

The black wires can be put together and connected directly to a clean ground on the chassis. These allow current from the injectors, coils and low-side switches (for example) to flow back to ground.

2.2 IGNITION 12v

The switched ignition live ignition (IGN+) wire that activates the main relay should be connected to a 12V (Ignition Live) i.e. It should become powered when the ignition key or switch is activated. Typically, this would be fused at around 10A or 20A (depending on the amount/type of coils, outputs used etc). No ECU settings will be lost during ECU power off/storage.

This wire should remain powered during cranking (check ignition barrel wiring carefully if using one).

2.3 WIDEBAND LAMBDA

The connector labelled 'WB' is for a wideband lambda sensor. The ECU is designed to work only with a genuine Bosch LSU4.9 sensor, fitted upstream of the catalytic converter in the exhaust pipe.

This is not essential for getting started on the base map but they are available on our website. A wideband lambda sensor can be useful for the monitoring of the air to fuel ratio and, during/after professional calibration, can be utilised for closed-loop fuelling control under certain conditions. This would replace the need for the narrowband lambda sensor which is the minimum input requirement to reliably pass emissions tests.

2.4 IGNITION COILS

The connectors that are labelled 'Coil 1' and 'Coil 2' for connection to the standard MX5 NB/NBFL coil packs.

A 4-pin connector for each of the two coils is the most common type. A 3-pin connector can be found on each of the coils for the NBFL VVT engine. If the coil connectors fitted to the harness do not match your coil connectors, please get in touch.

2.5 COMMUNICATIONS TO A LAPTOP

The nine pin RS232 serial connector near the ECU connector is used for communication with a Windows 7 or above laptop, using our free software (MEITE). You will need a FTDI USB to RS232 serial adapter to connect the ECU to a USB port on the laptop. It is also generally convenient to use a RS232 extension lead between the adapter and the serial connector. Further details on the process to connect to ECU is provided in the online manual on the website www.motorsport-electronics.co.uk/support

2.5 COMMON HARNESS LABELS

LABEL	DEFINITION
BOOST	Boost control solenoid connector (Boost control solenoid sold separately)
CAM	CAM Sensor connector
CLT	Coolant Temperature sensor (note that the plastic keyway of the sensor will need to be filed off for this connector to fit because the connector with the keyway used by Mazda is no longer generally available).
CRANK	Crank sensor connector
IAT	Intake Air Temperature sensor (for Bosch style sensor - sold separately)
IDLE	Idle Valve near throttle body
INJ (1-4)	Injectors (Injector 1 towards front of engine, injector 4 at rear.)
KNOCK	For connection to the stock knock sensor. This is not essential but the signal can be utilised by a professional calibrator for additional engine safety.
MAP	Manifold absolute pressure (for external 3 bar map sensor sold separately)

TPS	Throttle position sensor
VICS	Variable intake control system (MX5 NB/NBFL) if used/retained.
VVT	Variable valve timing solenoid (if using a VVT enabled MX5 NB/NBFL engine).

3 RELAY CONNECTIONS

Your wiring harness comes with one main relay preinstalled. This is a block style relay that can have extra relays added to it for outputs such as a cooling fan or fuel pump.

Two low side inputs wires are pre-installed up the leg of the main relay allowing you to add up to two further ECU controlled relays. If you wish to use these, connect either of them to the ground pin (86) of the relay and assign the low side correctly in MEITE. Wire the rest of the relay as per the manufacturer's instructions.

COLOUR	ECU PIN	ECU ASSIGNMENT	ECU FUNCTION
GREEN/WHITE	37	LOW SIDE RELAY 11	Fan relay trigger
GREEN/YELLOW	73	LOW SIDE 1	Fuel pump relay trigger

4 AUXILIARY CONNECTIONS

Your wiring harness comes with auxiliary/spare wires, which are labelled as 'AUX' on the harness. These spare wires are used for various functions. See examples below:

FUNCTION	EXAMPLE USAGE
CAN	Used to send data to a digital display
Digital inputs	Used for a clutch switch / map switching
Low sides	Used for relays and solenoids
Tacho	Used as the signal wire for 12v tachometers (rev counters)

For more details and diagrams on how to wire these optional, please refer to our main online manual at www.motorsport-electronics.co.uk/support

A full pinout of all the wires in the 'AUX' bundle can be found below;

COLOUR	ECU PIN	ECU FUNCTION	**EXAMPLE ASSIGNMENT IN SOFTWARE**
GREEN/PURPLE	44	LOW SIDE 4	Eg SHIFT LIGHT
GREY/GREEN	6	DIG IN 1	Eg CLUTCH SWITCH
YELLOW/GREEN	51	CAN 1 LOW	CAN LOW Eg for sending data to after-market dashboards
YELLOW/WHITE	21	CAN 1 HIGH	CAN LOW Eg for sending data to after-market dashboards
BLACK/WHITE	52	SENSOR GND	NA
BROWN	79	TACHO	TACHO / Rev counter signal output
BLUE	53	KNOCK SIGNAL	KNOCK SIGNAL
GREY/RED	60	ECU Coil 6 output	Can be used for alternator control wire on MX5 NB/NBFL if retaining the MX5 NB/NBFL alternator.

Where auxiliary wires are not used, ensure that the wires are tucked away with their ends covered with insulation tape or similar. the wires are coveran be used

5 FULL HARNESS PINOUT

A full ECU pinout is provided below, which also documents the colours of populated pins. This information is then beneficial when configuring the inputs and outputs in the ECU software (MEITE).

COLOUR	ECU PIN	ECU FUNCTION	ECU ASSIGNMENT
WHITE/ORANGE	1	COIL 4	COIL 4
WHITE/RED	2	COIL 3	COIL 3
PINK/ORANGE	3	INJECTOR 4	INJECTOR 4
PINK/BROWN	4	INJECTOR 2	INJECTOR 2
GREY/GREEN	6	DIG IN 1	SPARE DIG 1 (AUX)
BLACK	10	CHASSIS GROUND	CHASSIS GROUND
GREEN/ORANGE	12	LOW SIDE 2	VICS
GREY	14	LSU +12V	LSU +12V
RED	15	IGN +12V	IGN +12V
WHITE	16	LSU HEATER -VE	LSU HEATER -VE
ORANGE/RED	17	ANA VOLT 3	THROTTLE POSITION SENSOR
BLACK	19	LSU UN	LSU UN
YELLOW	20	LSU VM	LSU VM
YELLOW/WHITE	21	CAN 1 HIGH	CAN 1 HIGH
RED IN SCREENED BLACK WIRE	22	CAM +	CAM +

BLUE IN SCREENED BLACK WIRE	23	CAM -	CAM -
BLACK	24	SERIAL 1 GROUND	SERIAL 1 GROUND
YELLOW	25	SERIAL 1 TX	SERIAL 1 TX
ORANGE/BROWN	26	ANA VOLT 1	MAP SENSOR
WHITE/BROWN	31	COIL 2	COIL 2
WHITE/BLACK	32	COIL 1	COIL 1
PINK/RED	33	INJECTOR 3	INJECTOR 3
GREEN/WHITE	37	LOW SIDE RELAY 11	FAN
GREEN/BLUE	39	LOW SIDE 6	BOOST CONTROL
GREEN/PURPLE	44	LOW SIDE 4	SPARE LOW 2 (AUX)
PURPLE	45	5V	5V
PURPLE	46	5V	5V
GREEN	49	LSU IA	LSU IA
RED	50	LSU IP	LSU IP
YELLOW/GREEN	51	CAN 1 LOW	CAN 1 LOW
BLACK/WHITE	52	SENSOR GROUND	NA
BLUE	53	KNOCK	KNOCK
BLUE	55	SERIAL 1 RX	SERIAL 1 RX
ORANGE/GREEN	57	ANA TEMP 2	INTAKE AIR TEMP
GREY/RED	60	COIL 6	ALTERNATOR CONTROL
BLACK 1.0MM	61	CHASSIS GROUND	CHASSIS GROUND
PINK/BLACK	63	INJECTOR 1	INJECTOR 1
GREEN/PINK	69	LOW SIDE 5	VVT SOLENOID
GREEN/YELLOW	73	LOW SIDE 1	FUEL PUMP
GREEN/RED	74	LOW SIDE 3	IDLE VALVE

BROWN	79	TACHO	TACHO
BLUE IN SCREENED BLACK WIRE	80	CRANK VR -	CRANK -
RED IN SCREENED BLACK WIRE	81	CRANK VR +	CRANK +
ORANGE/BLACK	86	ANA TEMP 1	COOLANT
BLACK	90	CHASSIS GROUND	CHASSIS GROUND