GCU- H Pattern - Manual Transmission
WOT Shift Spark Cut/Throttle Blip Module

Summary of Operation:

Our newest Gearbox Control Unit brings the features of our sequential transmission module to any car with a manual transmission.

No-Lift Shifting at Wide Open Throttle (WOT) via spark cut allows for quick, smooth and consistent shifts. Under braking during downshifts a throttle blip provides seamless rev matching.

Programmable parameters:

- WOT pedal (%) - Min accelerator pedal % to be consider WOT
- Spark Cut (%) - Depth of spark cut
- Spark Cut Duration Timeout (ms)
- Spark Cut Torque Recovery (ms)
- Blip Target (%)
- Blip Duration (ms) - Duration of throttle blip after brake & clutch press
- Brake Pedal press % (if applicable C6 Corvette & 5th Gen Camaro, etc)
- Clutch Pedal press % (if applicable ex 08-13 Corvette & 5th Gen Camaro)

WOT Shift Spark Cut (Closed Loop)

The spark cut period is variable (closed loop) based on clutch press IN/OUT
After clutch out spark is ramped back from the cut % to full power linearly over the Torque Recovery period. This softens the reintroduction of power thru the drivetrain to minimize shock and improve traction. But it can also be set to zero to the quickest application of power.
Minimum Throttle Pedal % input must be met for Spark Cut to be active.
NOTE: If the clutch IN/OUT period exceeds the timeout period (example: 300ms) the spark energy is returned to the engine.

Downshift Throttle Blip

A throttle blip (to a programmable % and duration) will occur when the brake pedal is pressed followed by a clutch press. NOTE: If the clutch is pressed first and then the brake, no blip will occur.

What's Included:

- GCU - Gearbox Control Unit
- 2 Pin DT Ignition coil extension harness (5ft) (GCU to Engine)
- 20 Pin I/0 harness
- 4 Pin DTM I/O cable (12V, GND, Brake & Clutch Pedal signals)
- 2 Pin DT Male ignition coil bypass plug
- Remote cut active LED Green harness (4ft)
- Remote mountable arming switch to enable/disable system functions
- USB cable for programming w/PC Software USB Tuning/Logging
- (2 Pin DT) LSX Inline Coil harness for ignition interface (Spark Cut)
- Inline Accelerator Pedal Sensor harness (Blip)
- Inline Brake & Clutch Pedal Sensor harness (if applicable ex 08-13 Corvette)

Recommended Order of Installation:

- Determine the in-cabin mounting location of the GCU, near the glovebox area
- Prepare to run a 12V switched power and GND wire to that location
- Install the inline accelerator pedal harness, route to the GCU
- Complete the brake and clutch pedal connections, route to GCU
- Install engine ignition coil harness, route extension to GCU thru firewall.
- Connect the 12V switched Ignition to RED wire in the 4 pin DTM cable
- Connect the GND to BLACK in the 4 pin DTM cable
- Install the remote LED Spark Cut indicator so the driver can see it.
- Install the remote mountable "Arming switch' where the driver can reach while harnessed into their seat.

- Be sure all sub harnesses are connected to the GCU via 20 pin harness.

Accelerator Pedal Position I/O

This inline harness allows the GCU to tap into (and bypass) the throttle pedal signals during any downshift event that requires a throttle blip.

1. Unplug the female 6 pin connector from the accelerator pedal sensor, be sure to remove any locking clips BEFORE attempting to disconnect.
2. Plug the female 6 pin connector from the harness to the pedal sensor
3. Plug the male 6 pin connector from the harness to the OEM female 6 pin connector
4. Finally, connect the MX150 6 pin connector to the GCU via the 20 pin harness.

The pedal and throttle blip are now ready for testing.

NOTE: The box always acts as a pass thru for the APP signals, even if the Control box is NOT powered**.**
However, the 6 pin connector needs to remain connected to the GCU in order for the signals to pass thru from the pedal to the vehicles ECU.

Ignition Coil Harness

The 2 Pin DT ignition coil harness (and extension) pass 12V power from the Coil on Plug junction harness to the GCU and back to the ignition coils. The GCU will appropriately 'cut' the power to the coils during a spark cut event.

1. Locate the OEM harness that connects to the coil harnesses on each bank at the top of the valve covers.
2. Unplug the coil harnesses from the OEM harness,
3. Use the new harness to plug in and bridge between the OEM and coil harnesses.
4. Connect the DT 2 Pin Female to the Male Coil Extension harness
5. Route the extension harness thru the firewall grommet and connect it to the DT 2 pin Male plug on the GCU in the cabin.

NOTE: The 2 wire plug is shipped with a bypass connector installed. Remove before plugging into the Control Box. It can be used later to bypass the Control box without removing the Ignition harness.

Note: Be sure to always avoid heat sources and sharp objects routing any wires.

GCU 20 Pin Connector:

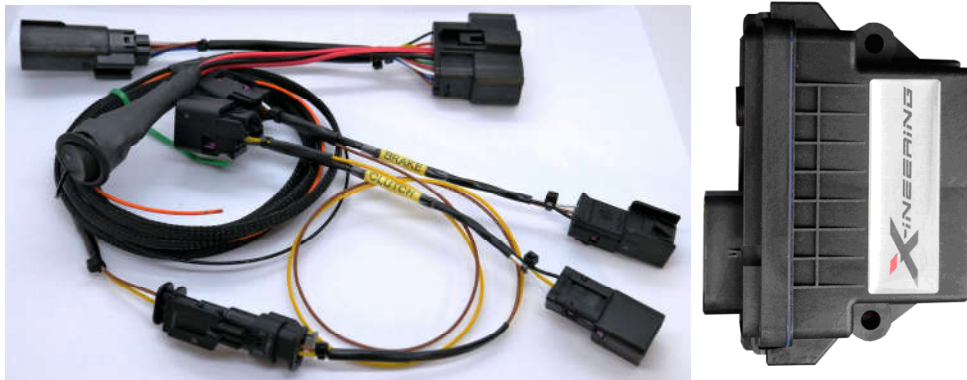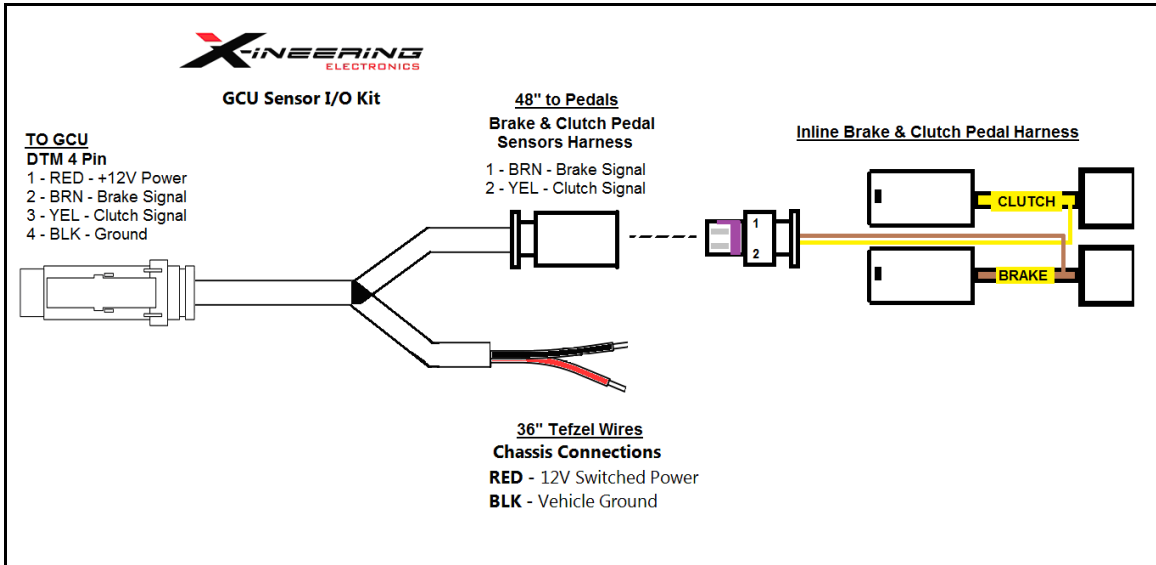| Pin #	Function/Description	Wire AWG	Color	I/O	I/O Pin#
1	GND System	22	BLK	DTM 4M	4
2					
3	12V Brake IN				
4	12 V Clutch IN				
5	Cut LED OUTPUT	24	RED	MCON to LED	
6	Switch +5V REF OUT	22	RED	Switch Spade	
7					
8	APP GND IN	22	GRN	MX150 - 6	1
9	APP1 IN	22	ORG	MX150 - 6	2
10	APP2 IN	22	WHT	MX150 - 6	3
11	12V Power IN (P7)	22	RED	DTM 4PM	1
12					
13	Brake Sensor Analog IN	22	BRN	DTM 4M	2
14	Clutch Sensor Analog IN	22	YEL	DTM 4M	3
15					
16	Arming Switch Signal IN	22	RED	Switch Spade	
17	GND (Arm Switch LED)	22	BLK	Switch Spade	
18	APP GND OUT	22	BLK	MX150 - 6	4
19	APP1 OUT	22	BRN	MX150 - 6	5
20	APP2 OUT	22	BLU	MX150 - 6	6

These connections are already terminated into their appropriate connectors and labeled on our universal GCU harness.

DTM 4 Pin Male Connector:

Pin #	Function/Description	Wire AWG	Color	I/O	I/O Pin#
1	+12V Switched Power	22	RED	WIRE	
2	Brake Pedal Pos. Signal	22	BRN	MCON 2 Pin	1
3	Clutch Pedal Pos. Signal	22	YEL	MCON 2 Pin	2
4	GND System/Vehicle	22	BLK	WIRE	

DT 2 Pin Female Connector (GCU Front Panel)

Pin #	Function/Description	Wire AWG	Color	I/O
1	+12V COIL POWER IN	18	WHT	From Engine
2	+12V COIL POWER OUT	18	WHT/BLU	To Engine

GCU Sensor I/O Kit

TO GCU
DTM 4 Pin
1 - RED - +12V Power
2 - BRN - Brake Signal
3 - YEL - Clutch Signal
4 - BLK - Ground

48" to Pedals
Brake & Clutch Pedal
Sensors Harness
1 - BRN - Brake Signal
2 - YEL - Clutch Signal

Inline Brake & Clutch Pedal Harness

CLUTCH
BRAKE

36" Tefzel Wires
Chassis Connections
RED - 12V Switched Power
BLK - Vehicle Ground

GCU Module and 20 pin main harness