



# **User Manual for CAN-Switchbox from Serial No. 000500**

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## **CAUTION FOR ALL U.S. CUSTOMERS**

**THIS PRODUCT IS NOT D.O.T. APPROVED AND INTENDED FOR  
SHOW USE ONLY!**

**CAUTION: IF YOU ARE NOT A CERTIFIED MOTORCYCLE  
TECHNICIAN PLEASE STOP HERE AND ASK YOUR LOCAL  
MOTORCYCLE SHOP FOR PROFESSIONAL INSTALLATION!**

Thank you for choosing the TLT-Moto CAN-Switchbox, which is assembled in Germany. This product is continually tested and developed by engineers and technicians who also drive motorcycle.

Please read and follow these instructions when mounting and connection the CAN-Switchbox.

## 1. Funktion Of The CAN-Switchbox

The CAN-Switchbox is able to simulate the original Right / Left- Hand-Controll-Module and also the speedometer of actual Dyna® and Softail®. Now you are able to use switches and push-button delivered from different supplier. After the replacement the functions are the same as before. Also the hazard warning flasher and the dom light, which is required in north america, are included. On custom bikes they often try to get an *clean* condition. This can be reached with our small box, which is only 74x54x20mm (3x2x1inch). You can put the small box on every position on the bike e. g. near the steering stem. This is not far away from the plugs of the Hand-Controll-Modules.

## 2. Connection

The connection of our box is not difficult, but it should be done by an expert. One side of all push-button and switches has to be connected to ground and the other side has to be connected to the CAN-Switchbox, please take a look at the schematic. Please supply the CAN-Switchbox with switched PLUS (+ 12 V). So the CAN-Switchbox would not empty the battery after a few weeks.

The outputs for the Indicator-Light-LED (R7 – R12) are switching ground. Please have a look at the schematic.

For the correct function, a good connection to the motorcycle mass is very important. Therefore, one of the two hexagonal stud should be connected to the ground (motorcycle mass).

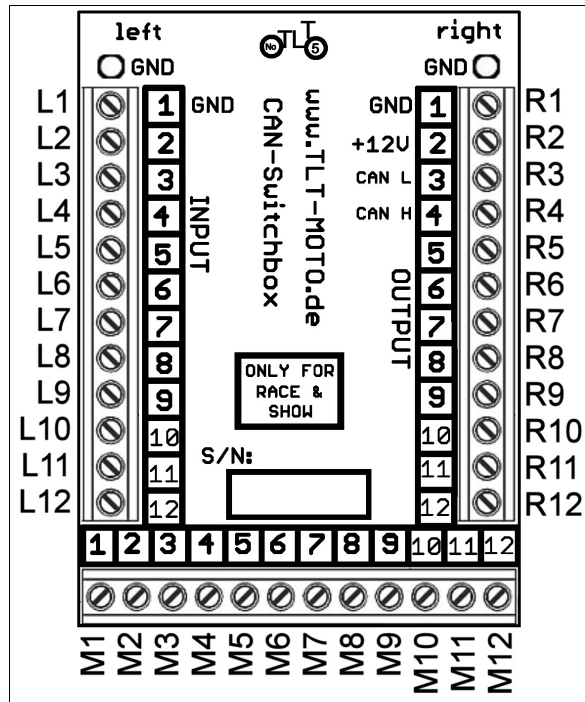
### 2.1 Pin Assignment

The correct pin assignment of the CAN-Switchbox is shown in illustration 2.1 and the following tables.

Plug In Panel Left (Input)			
	Pin-Assignment	Funktion	Connection
	L1 - GND	ground (GND)	Ground eg. for push button
Taster Input	L2 - Turn Left	flasher left on / off	push button turn left
	L3 - Turn Right	flasher right on / off	push button turn right
	L4 - Start	start engine	push button start
	L5 - Off / Kill	engine stop (Kill)	push button kill
	L6 - Clutch	clutch	clutch switch
	L7 - Break	break	button break
	L8 - High Beam	high beam on / off	push button high beam
	L9 - Horn	horn	push button horn
	L10 - Trip	trip	push button trip
	L11 - Flash	flasher	push button flasher
	L12 - EMC	hazard warning on / off	push button emergency

Plug In Panel Right			
	Pin-Assianment	Funktion	Connection
	R1 - GND	ground (GND)	[22B-1] 2 Schwarz Ground
	R2 - +12V	+12 Volt switched Plus powersupply	[22B-1] 1 red/orange +12V better blue switched +12V
	R3 - CAN L	CAN_L	[22B-1] 4 white/black CAN Low
	R4 - CAN H	CAN_H	[22B-1] 3 White/red CAN High
	R5 - Speed Out	speedometer output	input of external speedometer
	R6 - RPM Out	RPM output	input of external RPM
LED Indicator	R7 - Turn Left LED	indicator turn left	only for LED (switched GND)
	R8 - Turn Right LED	indicator turn right	only for LED (switched GND)
	R9 - ABS LED	indicator ABS	only for LED (switched GND)
	R10 - Neutral LED	indicator Neutral (N)	only for LED (switched GND)
	R11 - HIGH BEAM LED	indicator high beam	only for LED (switched GND)
	R12 - OIL LED	indicator oil	only for LED (switched GND)

Plug In Panel Middle			
	Pin-Assianment	Funktion	Connection
	M1 - GND	ground (GND)	ground eg. for externals
Power Ausgänge	M2 - Turn Left Power	+12V Power Output 36Watt	left Turn Signal
	M3 - Turn Right Power	+12V Power Output 36Watt	right Turn Signal
	M4 - ABS Power-Output	+12V Power Output 36Watt	ABS Indicator
	M5 - Neutral Power	+12V Power Output 36Watt	neutral indicator
	M6 - High Beam Power	+12V Power Output 36Watt	High Beam indicator
	M7 - Oil Power-Output	+12V Power Output 36Watt	oil indicator
	M8 - reserved		
	M9 - reserved		
	M10 - +12 Volt Power	+12V input for M2 - M9	+12 V (ignition)
M11 - Trip SwitchOut	Trip	original trip switch Output	
M12 - RUN	RUN	[22B-2] Energie Stop	



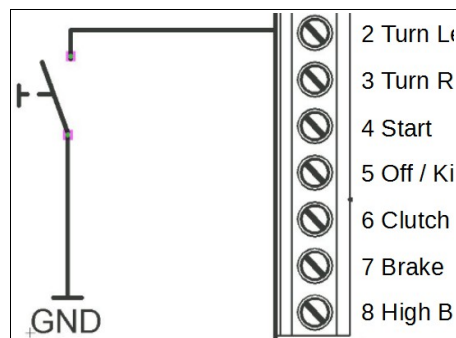
**Illustration 2.1 Pin assignment**

## 2.2 CAN-Switchbox Connection

The CAN-Switchbox has to be connected to the motorcycle with the contacts M12 (RUN), R1 (GND), R2 (+12 V), R3 (CAN Low) and R4 (CAN High). You can find this signals on the plugs of the original Right / Left- Hand-Controll-Module. A cable-set to connect the CAN-Switchbox to the vehicle is available by TLT-Moto. You also can supply the CAN-Switchbox with switched PLUS. So the CAN-Switchbox would not empty the battery after a few weeks. The CAN-Switchbox only needs 10 mA in standby.

## 2.3 Push-Button Connection

On pole of the push-button is connected to the input of the CAN-Switchbox, the other pole of the push-button is connected to the ground (GND) of the vehicle. On the polarity of the buttons must not be taken.



**Illustration 2.2 push-button connection**

## 2.4 Indicator Light LED Connection

The minus pole (mass, GND) of the indicator-LED is connected to the output (R7 – R12) of the CAN-Switchbox, the other pole of the indicator is connected to the plus pole (+12 V) of the vehicle. A load resistor is not necessary if you are using 12 Volt LED-Indicator. Otherwise you have to connect the resistor like illustration 2.3.

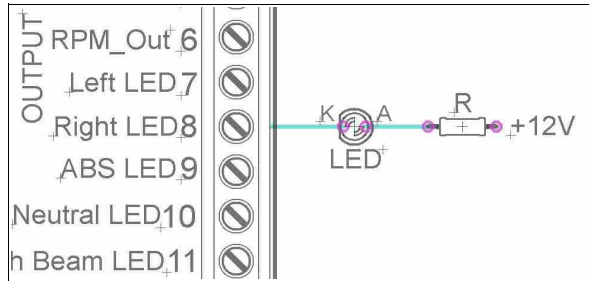


Illustration 2.3 : Connection of a Indicator - LED

## 2.5 Turn Indicator Connection

The plus pole of the turn indicator is connected to the output of the CAN-Switchbox, the other pole of the indicator is connected to the ground (GND) of the vehicle. It is set 12 volts by the CAN switchbox to the turn indicator light. A load resistor is not necessary.

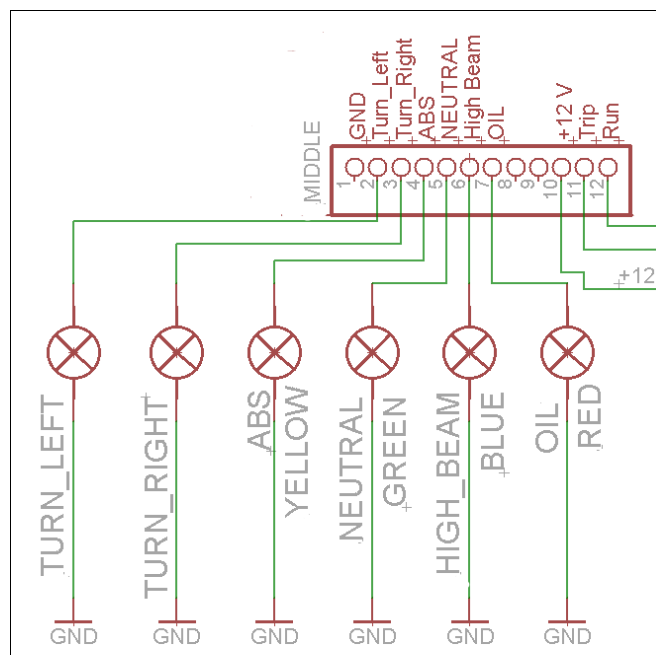


Illustration 2.4 Indicator Connection

## 2.6 Connection Of a Speedometer e.g. From Motogadget®

If the original speedometer unit is removed, the CAN-Switchbox sends signals, which simulated the speedometer, to the CAN-board electronics of the bike. In this case, there are no error messages and you can use the bike with a foreign speedometer. The CAN-Switchbox also supplies the speedometer and also the **RPM-meter** with speed-pulses (GND-pulse). By a pull-up resistor, the pulse output (OPEN COLLECTOR) can be adjusted to any voltage. Simply connect SpeedOut or RPM\_Out with a 4 kilohm resistor (4KΩ) to the operating voltage (e.g. 12V).

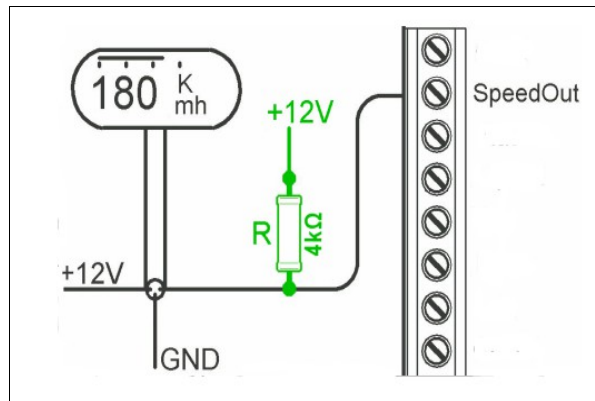


Illustration 2.5: Connection without resistor or with a 4 kΩ Pull-Up

## 2.7 Replacement Of The Original Speedometer

If you only want to remove the original speedometer, you can connect the CAN-Switchbox instead of the speedometer like illustration 2.6.

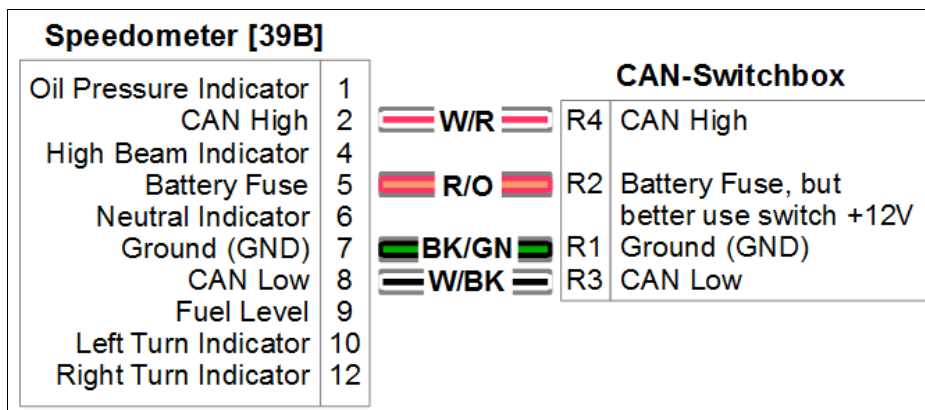


Illustration 2.6: Connecting the CAN-Switchbox to Dyna® Speedometerplug[39B]

In this case, the CAN-Switchbox is simulating the speedometer and there are no error messages and you can use the bike with a foreign speedometer.

The illustration 2.6 shows the connector [39B] of a original speedometer and how to connect the CAN-Switchbox.

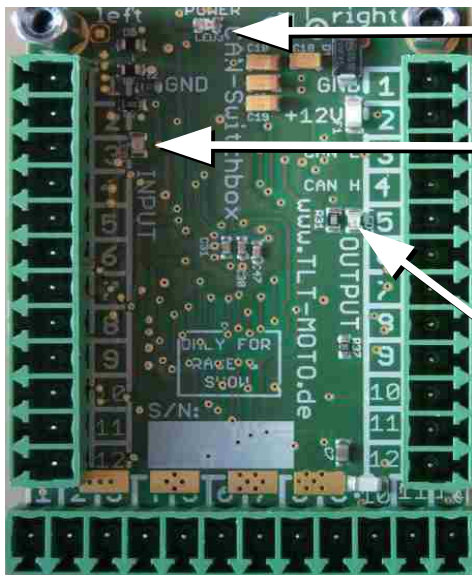
## 2.8 What The LEDs Of The CAN-Switchbox Mean

There are three LEDs on the CAN-Switchbox. The LED on the top of the board is the POWER-LED. This LED is shining if the CAN-Switchbox is connected to 12 V.

The LED on the left side is shining if one of the inputs are connected to the ground and the CAN-Switchbox is connected correct to the BCM.

The LED on the right side is shining like the turn-left or turn-right signal.

Please have a look on Illustration 2.8.



**POWER LED** is shining if the CAN-Switchbox is connected to +12 Volt.

**Input-LED** is shining if one of the inputs is connected to ground and the HD-LAN works correct.

**Output-LED** is shining like the turn signals.

Illustration 2.8 LEDs on the CAN-Switchbox

## 3 Optional Accessories

To facilitate the connection to the existing motorcycle electronics, we have a cable connection kit. This kit is optional and must be ordered separately. The following illustration 3.1 show how the CAN-Switchbox is connected with the appropriate adapter cable directly to existing connectors.

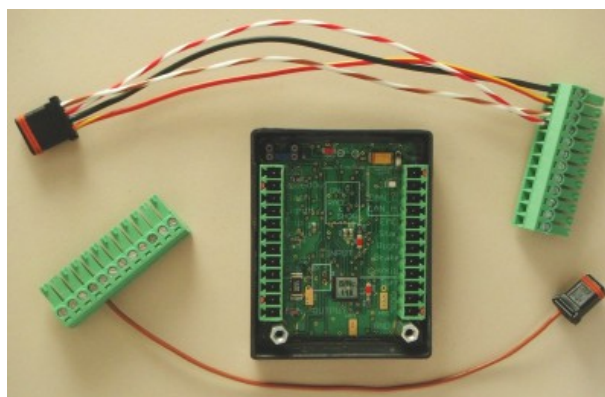


Illustration 3.1 Handlebar-Cable-Kit for [22B]

#### **4 Technical Data**

length / width / height:	74 mm / 54 mm / 20 mm (3 inch / 2 inch / 1 inch)
weight:	35 g
mounting holes:	2 x M3, 10 mm deep
operating voltage:	7–18 V
standby current :	10 mA
operating temperature:	-20°... + 80°C

#### **5 Disclaimer**

THE CAN SWITCHBOX SHOULD NEVER BE OPENED OR CHANGED, IN THIS EVENT WILL VOID ANY WARRANTY . TLT-MOTO SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND ARISING OUT OF THE USE, INSTALLATION OR CONNECTION OF CAN SWITCHBOX OR DELIVERED EQUIPMENT. INCLUDING, BUT ALL DAMAGE TO PERSONS AND PROPERTY DAMAGE OF. THE USE IN THE FIELD OF PUBLIC TRAFFIC IS AT YOUR OWN RISK.

#### **Finally**

If you have a motorcycle equipped with the CAN switchbox, then we look forward to a photo of your machine in order to publish it in our gallery.

Please mail photos to [TLT-Moto@gmx.de](mailto:TLT-Moto@gmx.de) .

