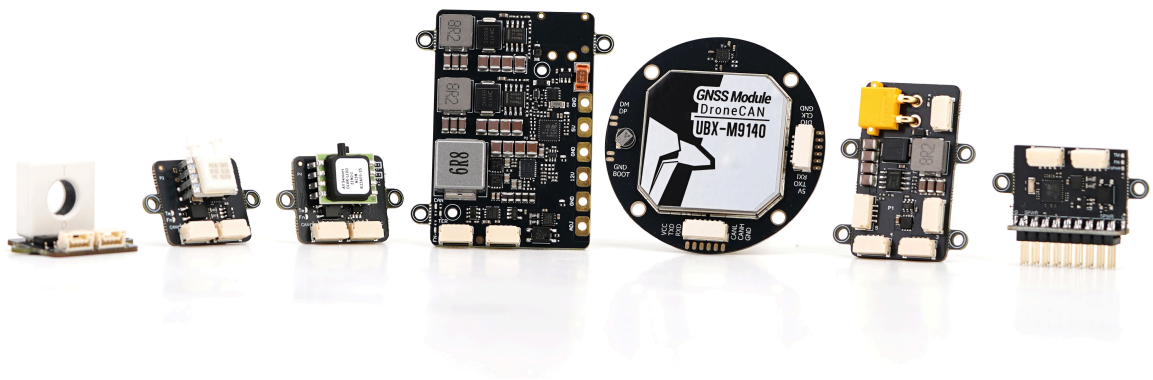

TBS LUCID DroneCAN

Drone CAN Devices series



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1. General

1.1. Support

If you got any question left after reading this manual, have a look at the [TBS FAQ](#).

For personal help [open a ticket](#) or [check the status of your ticket](#).

1.2. Updating and Setup - DroneCAN GUI Tool

Updating the sensors can be done by the [DroneCAN GUI Tool](#).

The sensor connection can be established via an FC⁽¹⁾ and its USB-port.

1.3. External Firmwares

1.3.1. ArduPilot

- [Website](#)
- [Github project page](#)
- [Configurator overview](#)

1.3.2. INAV

- [Github project page](#)
- [Configurator download](#)

(1) with Ardupilot firmware and a CAN-port



2. DroneCAN Splitter w. 4 A BEC

2.1. About

The TBS LUCID DroneCAN Splitter with 4 A BEC, a professional signal distribution and power supply for DroneCAN peripherals. Easy connectivity and streamlined wiring, without any hassles or worry.

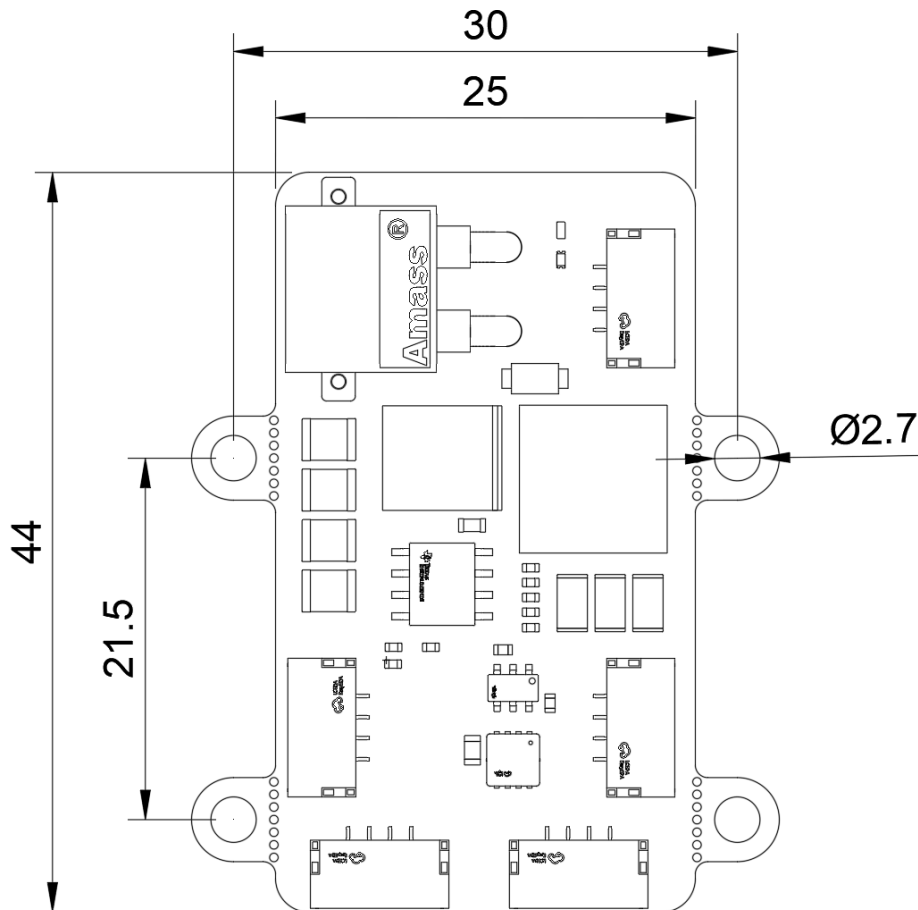
2.2. Specification

Connections:	CAN 5x
Connector Type:	JST-GH 4-pin, 1.25 mm XT30 Solder-Pads
Size	44 x 25 x 8 mm
Operation Temperature:	-20 - 80 °C
Weight	12 g
Input Voltage:	9 - 52 V3 - 12 S
BEC Voltage:	5 V: 4 A 1.5 A per Connector

2.3. Mounting - Dimensiones

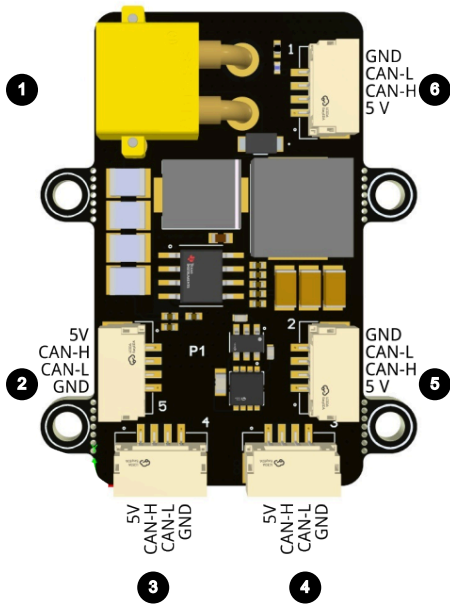


Note: All dimensions are given in millimeters (mm)



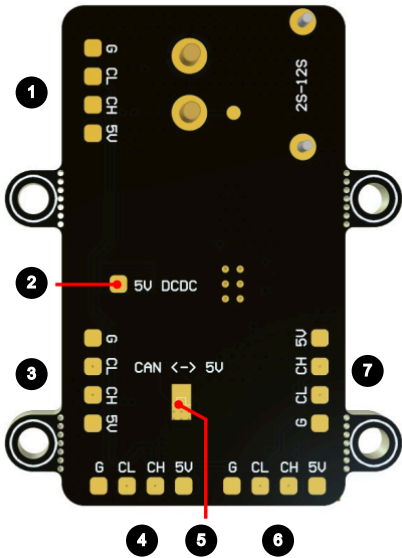
2.4. Pinout

Top View



1 - XT30 Input	2 - CAN-Connector	3 - CAN-Connector
4 - CAN-Connector	5 - CAN-Connector	6 - CAN-Connector

Bottom View



1 - CAN-Solder Pads	2 - 5 V Solder-Pad	3 - CAN-Solder Pads
4 - CAN-Solder Pads	5 - CAN Supply Jumper	6 - CAN-Solder Pads
7 - CAN-Solder Pads		



3. DroneCAN 20 A Power Supply

3.1. About

The TBS LUCID DroneCAN 20A Power Supply is a workhorse that will sit at the center of your drone to supply it with stable, filtered and reliable power. With up to 12S power input, it has plenty of support for large batteries. And 3 independent step-down voltage regulators, the module offers flexible output options with continuous current support up to 20A, while being one of the most lightweight power supplies around.

3.2. Specification

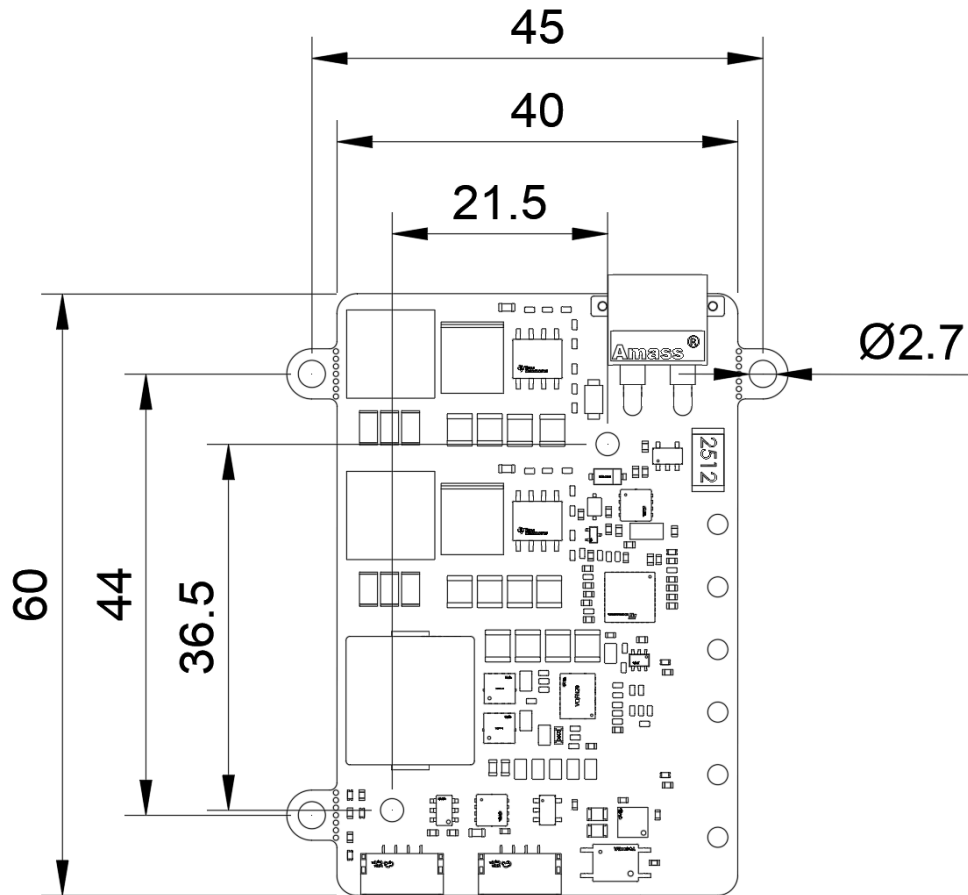
Connections:	CAN 2x Serial 1x SWD 1x
Connector Type:	JST-GH 4-pin, 1.25 mm XT30 Solder-Pads
Size	61 x 40 x 15 mm
Operation Temperature:	-20 - 80 °C
Weight	63 g
Input Voltage:	3 - 12 S
BEC Voltage:	5 V: 4 A, On/Off by Software 12 V: 4 A, On/Off by Software 9 - 16 V: 20 A, Adjustable by Software
Voltage Senors:	4
Current Senors:	1



3.3. Mounting - Dimensions



Note: All dimensions are given in millimeters (mm)

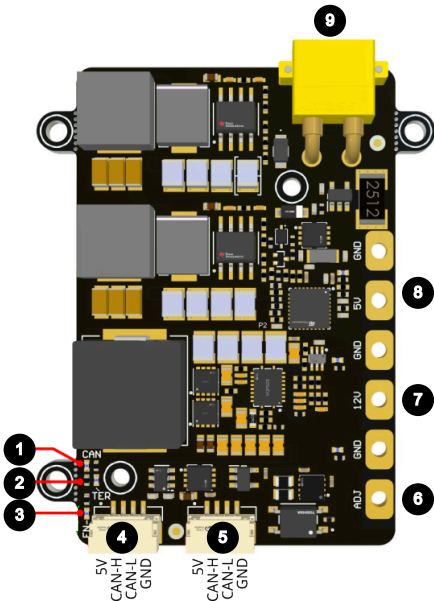


3.4. Firmware

Firmware	Target	Min. FW Ver- sion
ArduPilot	TBS-L431-BattMon	1.8.0

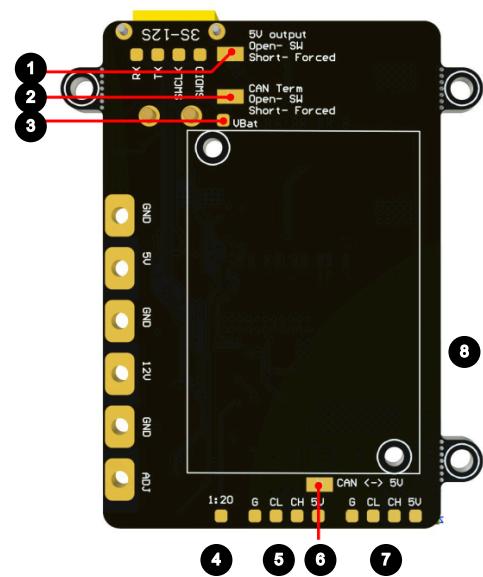
3.5. Pinout

Top View



1 - CAN Status LED	2 - CAN Terminator Status LED	3 - CAN FN Status LED
4 - CAN-Connector	5 - CAN-Connector	6 - Adjustable Output
7 - 12 V Output	8 - 5 V Output	9 - XT30 Input

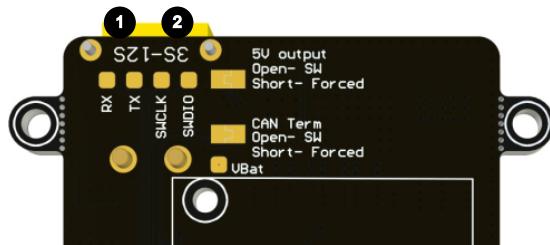
Bottom View



1 - 5 V Output Force Jumper	2 - CAN-Hardware Terminator ⁽²⁾	3 - VBAT Input Pad
4 - Analog Input Pad ⁽³⁾	5 - CAN-Solder Pads	6 - CAN Supply Jumper
7 - CAN-Solder Pads	8 - Heat Sink Area	

! **Attention:** When enabling the 5 V Supply, do not use any other 5 V supply for the CAN-Bus.

Additional Pins



1 - Serial Connection	2 - SWD
-----------------------	---------

3.6. ArduPilot Setup

General Settings

Setting	Value
DEBUG	0
FLASH_BOOTLOADER	0
FORMAT_VERSION	2
OPTIONS	0
BRD_SERIAL_NUM	0
CAN_BAUDRATE	1000000
CAN_NODE	0
CAN_TERMINATE	0
CAN_P1_DRIVER	1
CAN_D1_PROTOCOL	1

(2) If set, Software Termination setting will be ignored

(3) 3.3 V, 1 KΩ: 25 KΩ

Battery Voltage Monitoring

Setting	Value	Source
BATT_AMP_OFFSET	0	Input Voltage
BATT_AMP_PERVLT	37.5	Input Voltage
BATT_CAPACITY	0	Input Voltage
BATT_CURR_PIN	8	Input Voltage
BATT_HIDE_MASK	0	Input Voltage
BATT_MONITOR	4	Input Voltage
BATT_SERIAL_NUM	0	Input Voltage
BATT_VLT_OFFSET	0	Input Voltage
BATT_VOLT_MULT	21	Input Voltage
BATT_VOLT_PIN	9	Input Voltage
BATT2_AMP_OFFSET	0	5 V
BATT2_AMP_PERVLT	25	5 V
BATT2_CAPACITY	0	5 V
BATT2_CURR_PIN	8	5 V
BATT2_MONITOR	3	5 V
BATT2_SERIAL_NUM	1	5 V
BATT2_VLT_OFFSET	0	5 V
BATT2_VOLT_MULT	2	5 V
BATT2_VOLT_PIN	5	5 V
BATT3_AMP_OFFSET	0	12 V
BATT3_AMP_PERVLT	25	12 V
BATT3_CAPACITY	0	12 V
BATT3_CURR_PIN	8	12 V
BATT3_MONITOR	3	12 V
BATT3_SERIAL_NUM	2	12 V
BATT3_VLT_OFFSET	0	12 V
BATT3_VOLT_MULT	4.9	12 V
BATT3_VOLT_PIN	6	12 V
BATT4_AMP_OFFSET	0	Adjustable Voltage
BATT4_AMP_PERVLT	25	Adjustable Voltage
BATT4_CAPACITY	0	Adjustable Voltage
BATT4_CURR_PIN	8	Adjustable Voltage

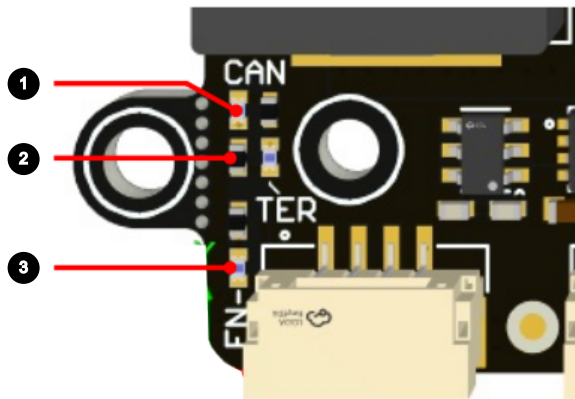
Setting	Value	Source
BATT4_MONITOR	3	Adjustable Voltage
BATT4_SERIAL_NUM	3	Adjustable Voltage
BATT4_VLT_OFFSET	0	Adjustable Voltage
BATT4_VOLT_MULT	7.98	Adjustable Voltage
BATT4_VOLT_PIN	7	Adjustable Voltage
DAC1_ADDR	46	Adjustable Voltage
DAC1_BUS	0	Adjustable Voltage
DAC1_TYPE	2	Adjustable Voltage
DAC1_VOLTS	12.8 ⁽⁴⁾	Adjustable Voltage
DAC1_VREF	10	Adjustable Voltage

Voltage Switch

Setting	Value	Target
RELAY1_DEFAULT	1	5 V
RELAY1_FUNCTION	10	5 V
RELAY1_INVERTED	0	5 V
RELAY1_PIN	50	5 V
RELAY2_DEFAULT	1	12 V
RELAY2_FUNCTION	11	12 V
RELAY2_INVERTED	0	12 V
RELAY2_PIN	51	12 V
RELAY3_DEFAULT	1	Adjustable Voltage
RELAY3_FUNCTION	12	Adjustable Voltage
RELAY3_INVERTED	0	Adjustable Voltage
RELAY3_PIN	52	Adjustable Voltage

⁽⁴⁾ User Adjustable

3.7. Status LEDs



LED	Pattern	Meaning
CAN (1)	Solid	5 V CAN power
TER (2)	Solid	Termination active
	Off	Termination inactive
FN (3)	Slow Blinking	No communication between CAN node and Flight Controllers
	Fast Blinking	Communicating between CAN node and Flight Controllers

4. DroneCAN 150A Hall Sensor

4.1. About

The TBS LUCID DroneCAN 150A Hall Sensor, when high current measurements are required without the worry of burning shunt resistors on the FC.

4.2. Specification

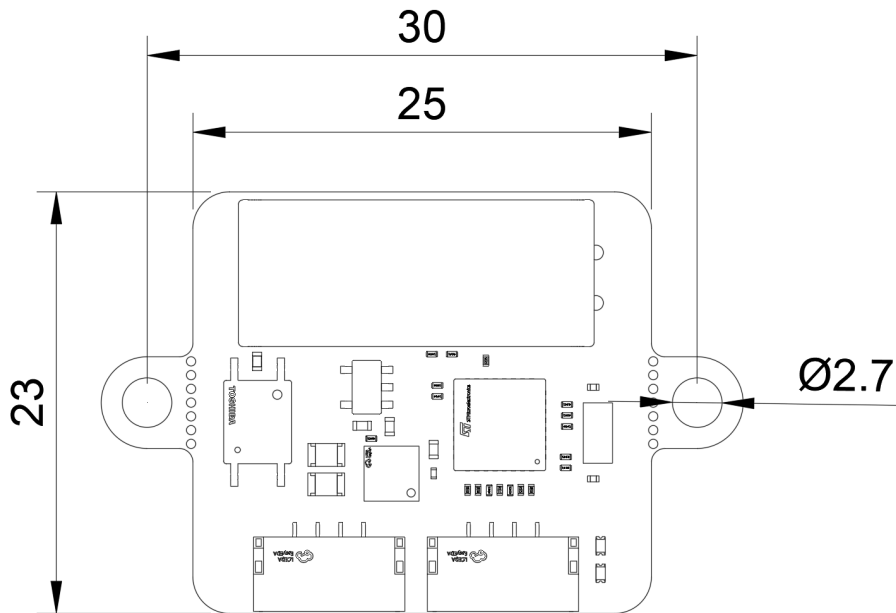
Connections:	CAN 2x Serial 1x SWD 1x
Connector Type:	JST-GH 4-pin, 1.25 mm Solder-Pads
Size	35 x 22 x 22 mm
Operation Temperature:	-20 - 80 °C
Weight	7 g
Input Voltage:	4.5 - 5.5 V
Power Consumption:	17 mA
Sensor Type:	Hall-Sensor
Current Range:	0 - 150 A DC
Sensitivity:	12 mV/A



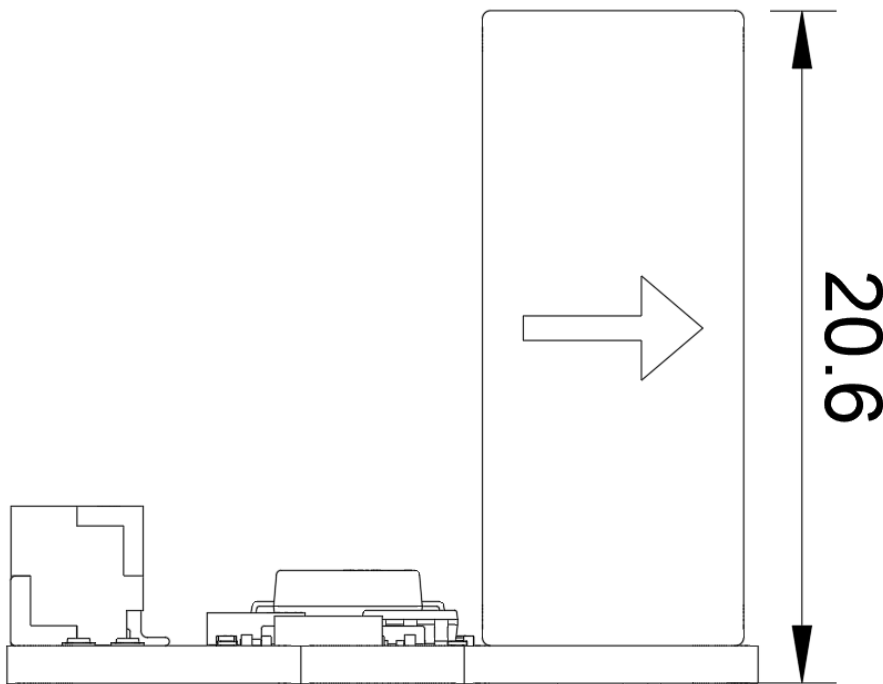
4.3. Mounting - Dimensions



Note: All dimensions are given in millimeters (mm)



Height

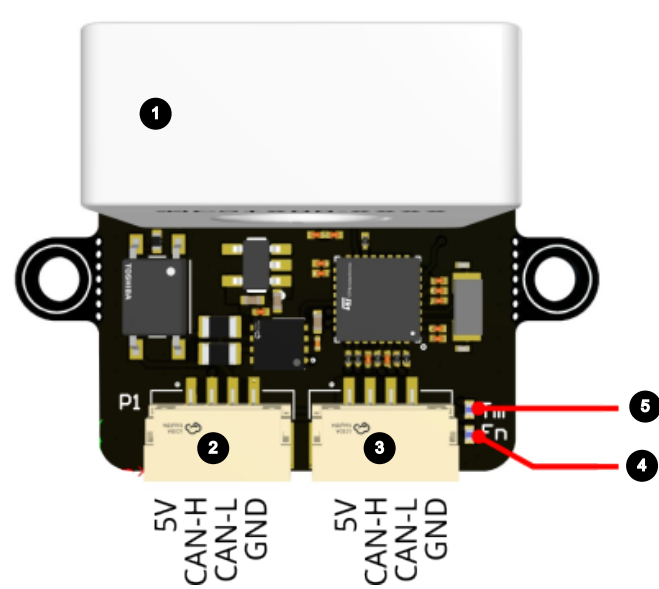


4.4. Firmware

Firmware	Target	Min. FW Ver- sion
ArduPilot	TBS-L431-CurrMon	1.8.0

4.5. Pinout

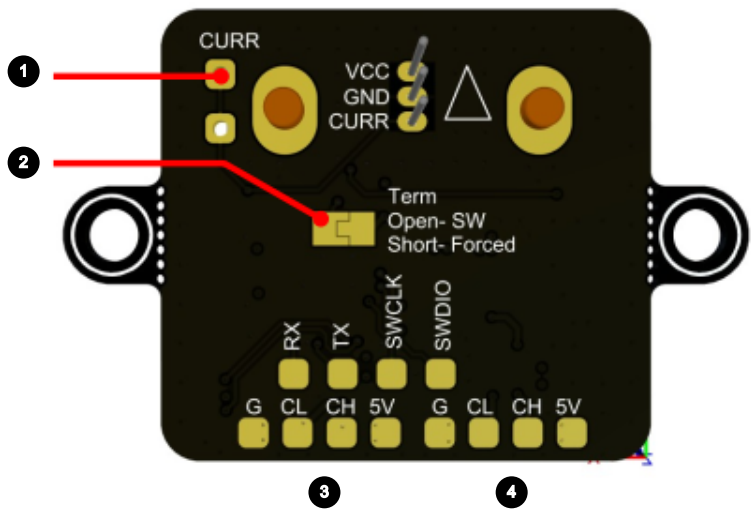
Top View



1 - Sensor	2 - CAN-Connector	3 - CAN-Connector
4 - CAN FN Status LED #todo	5 - CAN Terminator Status LED	

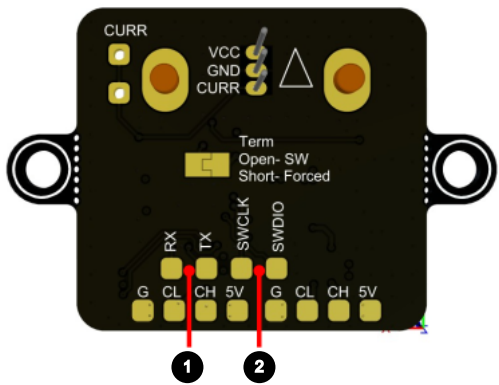


Bottom View



1 - Analog Out ⁽⁵⁾	2 - CAN-Hardware Terminator
3 - CAN-Connector	4 - CAN-Solder Pads

Additional Pins

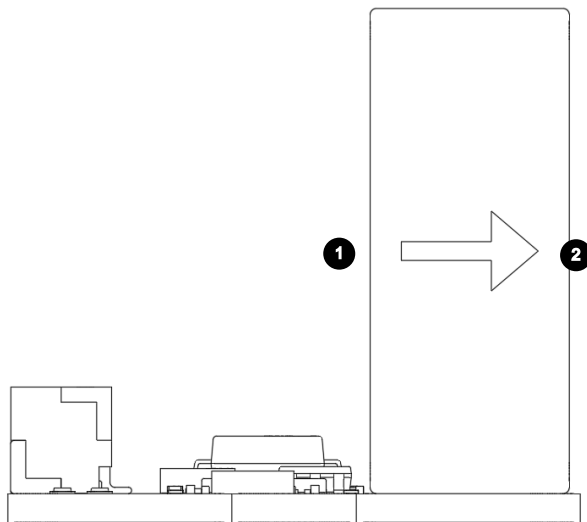


1 - Serial	2 - SWD
------------	---------

⁽⁵⁾ If set, Software Termination setting will be ignored



Current Flow Direction



1 - From Battery

2 - To ESC, FC...

4.6. ArduPilot Setup

General Settings

Setting	Value
DEBUG	0
FLASH_BOOTLOADER	0
FORMAT_VERSION	2
OPTIONS	0
BRD_SERIAL_NUM	0
CAN_BAUDRATE	1000000
CAN_NODE	0
CAN_TERMINATE	0
CAN_P1_DRIVER	1
CAN_D1_PROTOCOL	1

Current Monitoring

Setting	Value
BATTx_MONITOR	8
BATTx_OPTIONS	1
BATT_AMP_PERVLT	91

4.7. INAV/ BETAFLIGHT Settings

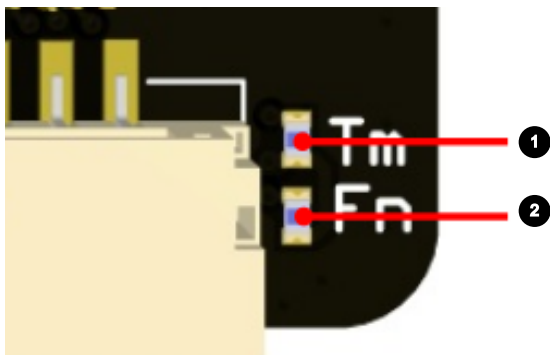
BETAFLIGHT

Setting	Value
Scale:	120
Offset:	0

INAV

Setting	Value
Scale:	120
Offset:	0

4.8. Status LEDs



LED	Pattern	Meaning
TM (1)	Solid	Termination active
	Off	Termination inactive
FN (2)	Slow Blinking	No communication between CAN node and Flight Controllers
	Fast Blinking	Communicating between CAN node and Flight Controllers

5. DroneCAN Airspeed Sensor

5.1. About

The TBS LUCID DroneCAN Airspeed Sensor features CAN JST-GH connector, DroneCAN Protocol and direct I2C support. It comes with a stainless steel pitot tube and silicone tubing, ready to be installed in your project.



5.2. Specification

Connections:	CAN 2x Serial 1x SWD 1x I2C 1x
Connector Type:	JST-GH 4-pin, 1.25 mm Solder-Pads
Size	35 x 22 x 11 mm
Operation Temperature:	-20 - 80 °C
Weight	4 g ⁽⁶⁾
Input Voltage:	4.5 - 5.5 V
Power Consumption:	60 mA
BEC Voltage:	5 V: 4 A 12 V: 4 A 9 - 16 V: 20 A
Sensor:	Standard: MS4525DO Pro: DLVR-L10D
Airspeed range:	Standard: 100 m/s; 360 km/h; 223 mp/h Pro: ± 70 m/s; 250 km/h; 155 mp/h
Pressure Range:	Standard: 300 psi / 2068 kPa Pro: 362 psi / 2500 kPa
Accuracy:	Standard: ± 2.0 % Pro: ± 0.30 %

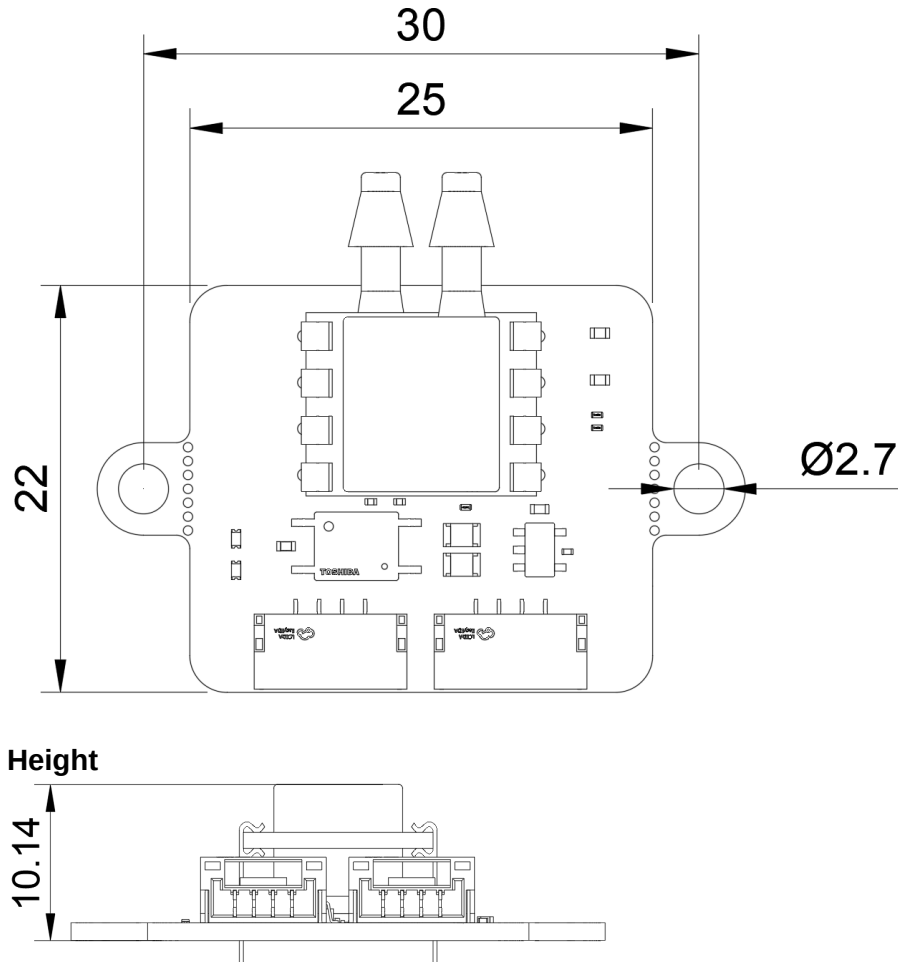
(6) excl. Pitot tube and tubing



5.3. Mounting - Dimensions



Note: All dimensions are given in millimeters (mm)

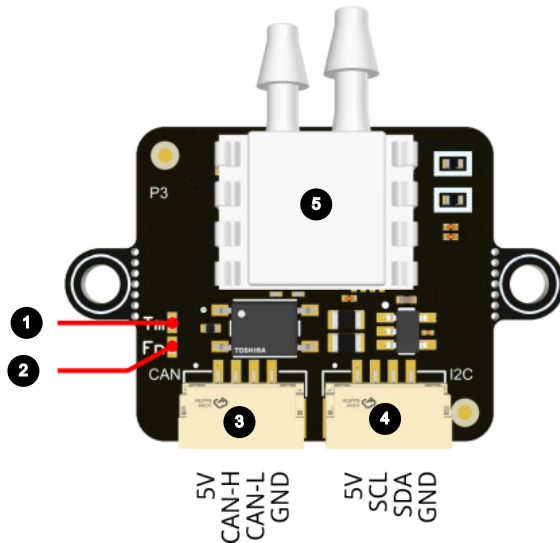


5.4. Firmware

Firmware	Target	Min. FW Version
ArduPilot	TBS-L431-airspeed	1.8.0

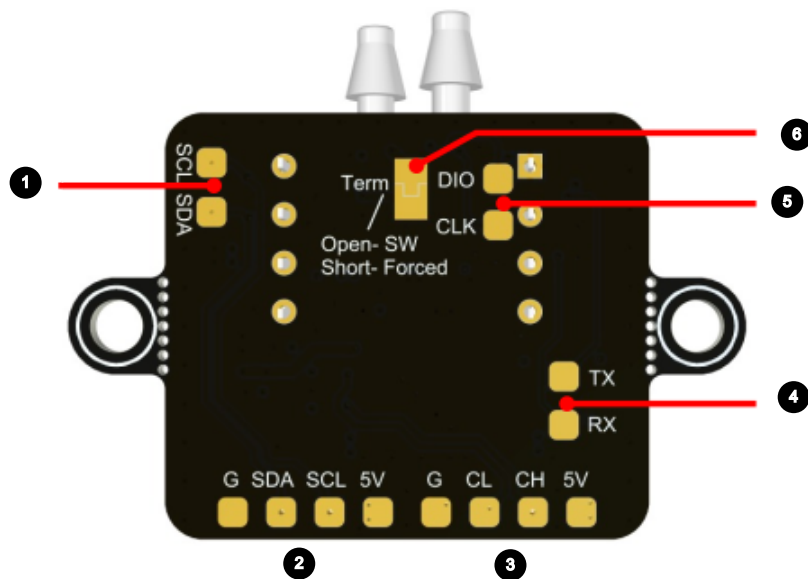
5.5. Pinout

Top View



1 - CAN Terminator Status LED	2 - CAN FN Status LED	3 - CAN-Connector
4 - I2C Connector	5 - Sensor	

Bottom View



1 - I2C-Solder Pads	2 - CAN-Solder Pads	3 - CAN-Solder Pads
4 - Serial	5 - SWD	5 - CAN-Hardware Terminator

5.6. ArduPilot Setup

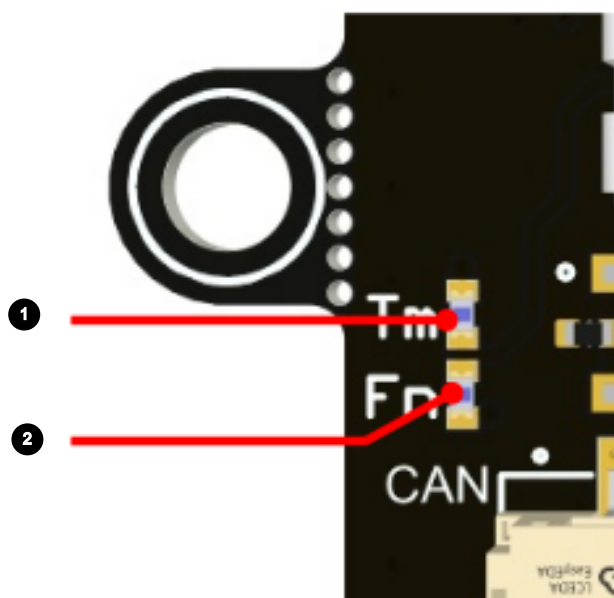
General Settings

Setting	Value
DEBUG	0
FLASH_BOOTLOADER	0
FORMAT_VERSION	2
OPTIONS	0
BRD_SERIAL_NUM	0
CAN_BAUDRATE	1000000
CAN_NODE	0
CAN_TERMINATE	0
CAN_P1_DRIVER	1
CAN_D1_PROTOCOL	1

Sensor Settings

Setting	Value
ARSPD_TYPE	8
ARSPD_USE	0

5.7. Status LEDs

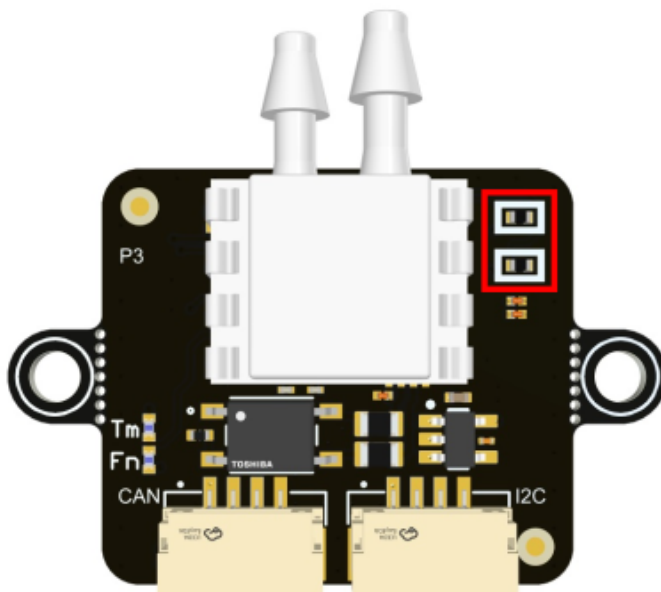


LED	Pattern	Meaning
TM (1)	Solid	Termination active
	Off	Termination inactive
FN (2)	Slow Blinking	No communication between CAN node and Flight Controllers
	Fast Blinking	Communicating between CAN node and Flight Controllers

5.8. I2C Mode

 **Note:** The two resistors must be removed to set the sensor in I2C mode

Remove Resistors



 **Note:** Sensor I2C address = **0x28**

ArduPilot Settings I2C Mode

Setting	Value
ARSPD_TYPE	9
ARSPD_USE	1

6. DroneCAN PWM Board

6.1. About

The TBS LUCID DroneCAN PWM Adapter is based on ArudPilot AP_Periph to break out your PWM and D-Shot devices into full-blown DroneCAN devices, while simplifying the wiring.

6.2. Specification

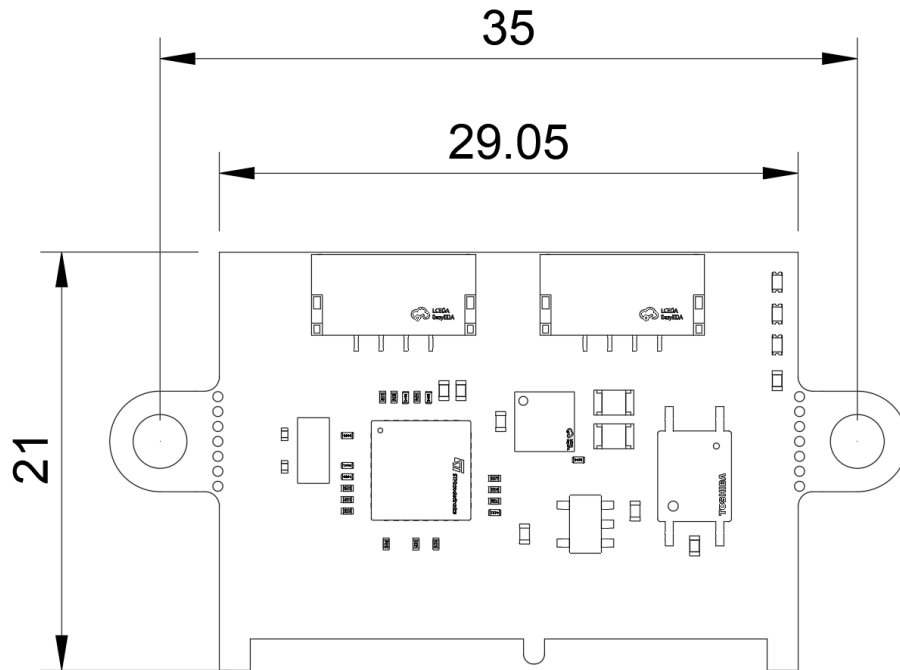
Connections:	CAN 2x Serial 1x SWD 1x I2C 1x
Connector Type:	JST-GH 4-pin, 1.25 mm Solder-Pads
Size	40 x 22 x 6 mm
Operation Temperature:	-20 - 80 °C
Weight	3.5 g
Input Voltage:	4.5 - 5.5 V Servo Power by Pin Header
Power Consumption:	30 mA
BEC Voltage:	5 V: 4 A 12 V: 4 A 9 - 16 V: 20 A
Servo Outputs:	8 (8x DShot)
DShot UART:	1



6.3. Mounting - Dimensions



Note: All dimensions are given in millimeters (mm)



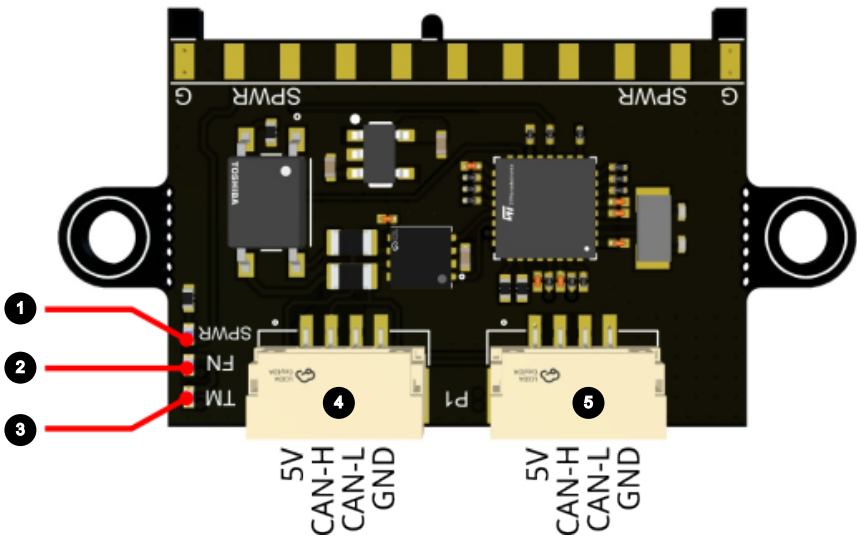
6.4. Firmware

Firmware	Target	Min. FW Version
ArduPilot	TBS-L431-PWM	1.8.0



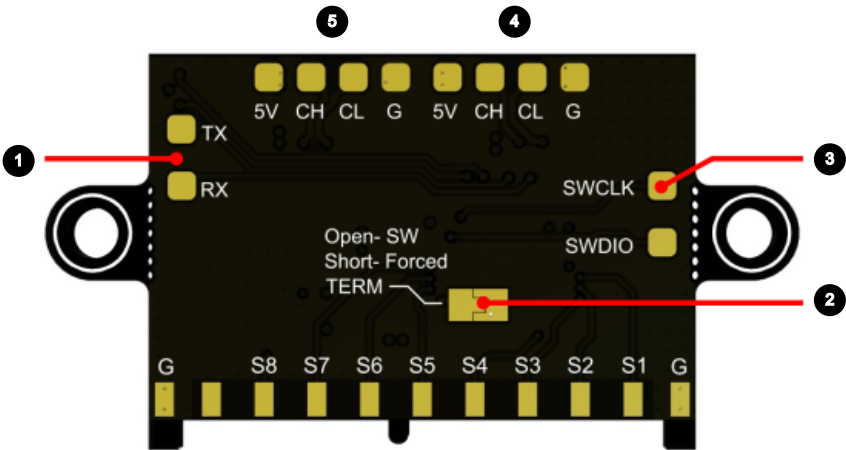
6.5. Pinout

Top View



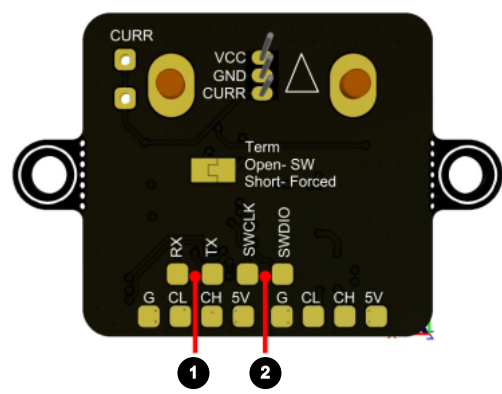
1 - SPWR LED	2 - CAN FN Status LED	3 - CAN FN Status LED
4 - CAN-Connector	5 - CAN-Connector	

Bottom View



1 - Serial (1x DShot	2 - CAN-Hardware Termi- nator	3 - CAN FN Status LED
4 - CAN-Solder Pads	5 - CAN-Solder Pads	

Servo Header #todo



1 - Serial	2 - SWD
------------	---------

6.6. ArduPilot Setup

General Settings

Setting	Value
DEBUG	0
FLASH_BOOTLOADER	0
FORMAT_VERSION	2
OPTIONS	0
BRD_SERIAL_NUM	0
CAN_BAUDRATE	1000000
CAN_NODE	0
CAN_TERMINATE	0
CAN_P1_DRIVER	1
CAN_D1_PROTOCOL	1
NTF_BUZZ_ON_LVL	1
NTF_BUZZ_PIN	-1
NTF_BUZZ_TYPES	1
NTF_BUZZ_VOLUME	100
NTF_DISPLAY_TYPE	0
NTF_LED_BRIGHT	3
NTF_LED_LEN	1
NTF_LED_OVERRIDE	1



Setting	Value
NTF_LED_TYPES	123079

PWM Mode (Example)

Setting	Value
CAN_D1_UC_SRV_BM	Set bits for channels the PWM Board should output
CAN_D1_UC_SRV_RT	Set PWM frequency according to used servos ⁽⁷⁾
OUT_BLH_3DMASK	0
OUT_BLH_BDMASK	0
OUT_BLH_DEBUG	0
OUT_BLH_MASK	0
OUT_BLH_OTYPE	0
OUT_BLH_POLES	14
OUT_BLH_PORT	0
OUT_BLH_RVMASK	0
OUT_BLH_TEST	0
OUT_BLH_TMOUT	0
OUT_BLH_TRATE	10
OUT_DSHOT_ESC	0
OUT_DSHOT_RATE	0
OUT_GPIO_MASK	0
OUT_RC_FS_MSK	0
OUT1_FUNCTION	51
OUT1_MAX	1900
OUT1_MIN	1100
OUT1_REVERSED	0
OUT1_TRIM	1500
OUT2_FUNCTION	52
OUT2_MAX	1900
OUT2_MIN	1100
OUT2_REVERSED	0
OUT2_TRIM	1500

(7) Default: 50 Hz, suites most servos used.



Setting	Value
OUT3_FUNCTION	53
OUT3_MAX	1900
OUT3_MIN	1100
OUT3_REVERSED	0
OUT3_TRIM	1500
OUT4_FUNCTION	54
OUT4_MAX	1900
OUT4_MIN	1100
OUT4_REVERSED	0
OUT4_TRIM	1500
OUT5_FUNCTION	55
OUT5_MAX	1900
OUT5_MIN	1100
OUT5_REVERSED	0
OUT5_TRIM	1500
OUT6_FUNCTION	56
OUT6_MAX	1900
OUT6_MIN	1100
OUT6_REVERSED	0
OUT6_TRIM	1500
OUT7_FUNCTION	57
OUT7_MAX	1900
OUT7_MIN	1100
OUT7_REVERSED	0
OUT7_TRIM	1500
OUT8_FUNCTION	58
OUT8_MAX	1900
OUT8_MIN	1100
OUT8_REVERSED	0
OUT8_TRIM	1500
RELAY1_FUNCTION	0
RELAY2_FUNCTION	0

Setting	Value
RELAY3_FUNCTION	0
RELAY4_FUNCTION	0
RELAY5_FUNCTION	0
RELAY6_FUNCTION	0

DShot Mode (Example)

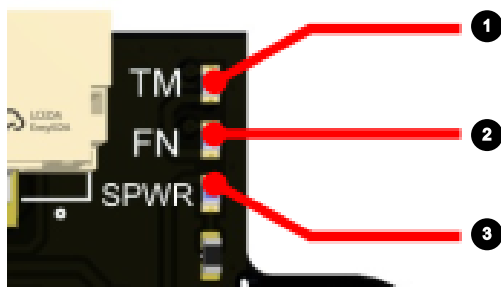
Setting	Value
ESC_CMD_TIMO	200
ESC_PWM_TYPE	7
ESC_RATE	400
ESC_TELEM_PORT	-1
ESC_TELEM_RATE	50
OUT_BLH_3DMASK	0
OUT_BLH_BDMASK	0
OUT_BLH_DEBUG	0
OUT_BLH_MASK	0
OUT_BLH_OTYPE	0
OUT_BLH_POLES	14
OUT_BLH_PORT	0
OUT_BLH_RVMASK	0
OUT_BLH_TEST	0
OUT_BLH_TMOUT	0
OUT_BLH_TRATE	10
OUT_DSHOT_ESC	1
OUT_DSHOT_RATE	1
OUT_GPIO_MASK	0
OUT_RATE	50
OUT_RC_FS_MSK	0
OUT1_FUNCTION	33
OUT1_MAX	2000
OUT1_MIN	1000
OUT1_REVERSED	0
OUT1_TRIM	1000



Setting	Value
OUT2_FUNCTION	34
OUT2_MAX	2000
OUT2_MIN	1000
OUT2_REVERSED	0
OUT2_TRIM	1000
OUT3_FUNCTION	35
OUT3_MAX	2000
OUT3_MIN	1000
OUT3_REVERSED	0
OUT3_TRIM	1000
OUT4_FUNCTION	36
OUT4_MAX	2000
OUT4_MIN	1000
OUT4_REVERSED	0
OUT4_TRIM	1000
OUT5_FUNCTION	37
OUT5_MAX	2000
OUT5_MIN	1000
OUT5_REVERSED	0
OUT5_TRIM	1000
OUT6_FUNCTION	38
OUT6_MAX	2000
OUT6_MIN	1000
OUT6_REVERSED	0
OUT6_TRIM	1000
OUT7_FUNCTION	39
OUT7_MAX	2000
OUT7_MIN	1000
OUT7_REVERSED	0
OUT7_TRIM	1000
OUT8_FUNCTION	40
OUT8_MAX	2000

Setting	Value
OUT8_MIN	1000
OUT8_REVERSED	0
OUT8_TRIM	1000
RELAY1_FUNCTION	0
RELAY2_FUNCTION	0
RELAY3_FUNCTION	0
RELAY4_FUNCTION	0
RELAY5_FUNCTION	0
RELAY6_FUNCTION	0

6.7. Status LEDs



LED	Pattern	Meaning
SPWR (1)	Solid	Servo Voltage Supply active
TM (2)	Solid	Termination active
	Off	Termination inactive
FN (3)	Slow Blinking	No communication between CAN node and Flight Controllers
	Fast Blinking	Communicating between CAN node and Flight Controllers

7. DroneCAN GPS Module

7.1. About

The TBS LUCID DroneCAN compatible GPS module, plug and play with any DroneCAN compatible flight controller.

7.2. Specification

Connections:	CAN 2x Serial 1x SWD 1x I2C 1x
Connector Type:	JST-GH 6-pin, 1.25 mm Solder-Pads
Size:	
Operation Temperature:	-20 - 80 °C
Weight:	
Input Voltage:	4.5 - 5.5 V
Receiver:	UBX-M9140
Receiver Type:	GPS GLONASS BDS GALILEO
Compass:	QMC5883
Frequency:	1561 - 1602 MHz
Sensitivity:	Track: -167 dBm Recapture: -160 dBm Cold start: -148 dBm Hot start: -159 dBm
1PPS time:	RMS: 30 ns



	99 %: 60 ns
Accuracy:	Horizontal: 1.5m CEP Speed: 0.05m/s
Output protocol:	NMEA UBLOX
Update frequency:	0.25 - 25 Hz Default 1Hz
Auxiliary system:	SBAS QZSS
Channels:	92
Baud rate (bps):	4800 - 921600 bps Default 9600 bps

Changelog

Revision	Date	Changes
1.00	2025-11-12	Initial release