Hadou-CAN Datasheet

Summary

Hadou-CAN is a high speed USB to CAN FD adapter with robust electrical isolation and time synchronization features.

See the full user guide at:
https://suburbanmarine.io/public/hadoucan/doc/Hadou-CAN_User_Guide.pdf

Features

- Selectable CAN 2.0A, 2.0B, FD mode
- Supports CANopen, SAE J1939, and most other high level CAN protocols
- CAN FD with up to 12Mbps data phase
- USB 2.0 HS 480Mbps
- USB CDC class device
- Electrical isolation between host USB/SMA and CAN
- External time synchronization pin
- User time quanta configuration
- Field update-able firmware

Connectors

Hadou-CAN Connectors

The following part numbers are currently used on the Hadou-CAN and provided as an aid to integration. Parts may be substituted in future builds without notice.

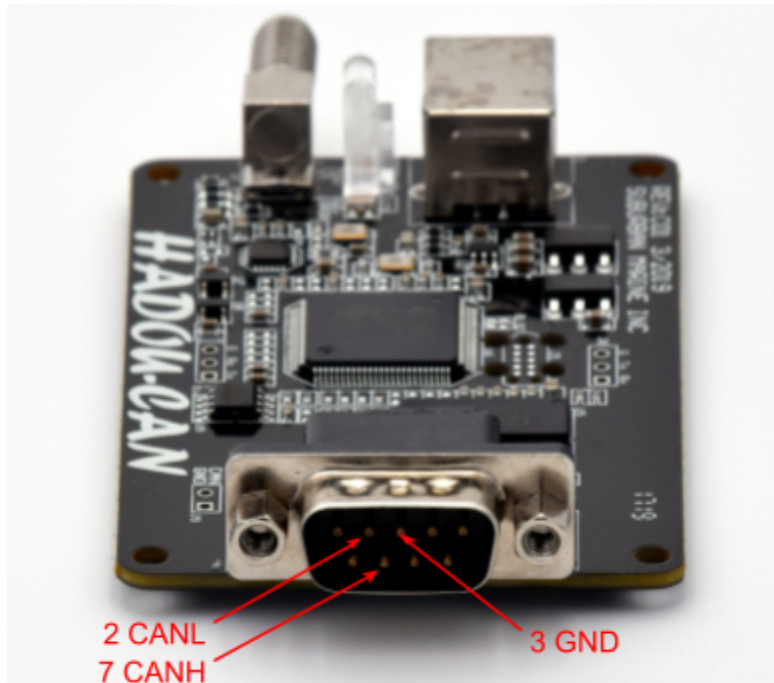| Connector	MF	MPN
USB type B	Molex Cheng Feng electronics	670688000 usb bf90
Timesync SMA	TE Connectivity AMP Connectors	619540-1
CAN DE9 Male	Assmann WSW Components	A-DS 09 A/KG-T2S

Hadou-CAN Pinout

USB

Pin	Function
Shield	USB shield, connected to device ground through an inductor
1	USB VBus
2	USB D-
3	USB D+
4	USB Ground, connected to device ground through an inductor

SMA

Pin	Function
Shield	Ground, hard connected to device ground
Pin	Timesync, 3.3V 50 ohm OUT/IN

CAN

2 CANL
7 CANH
3 GND

Pin	Function
2	CAN Low
3	CAN Ground, not connected to USB/SMA ground. May be omitted on short CAN runs if common mode voltage requirements are met.
7	CAN High

All other pins on the DE-9 connector are not connected internally and should be left open.

Suggested Mating Connectors and Cable Assembly

The following parts have been tested to work, however are for reference only as they may not meet your exact requirements. Generally, any commodity DE-9 or USB cable should work. Suburban Embedded will stock some accessories including parts shown below.

	MF	MPN	Notes
USB cable assembly, A male to B male, 2 meter	CNC Tech	102-1030-BL-00200	
CAN cable assembly, DE-9 F to DE-9 F, 120 ohm internal termination, 2 meter	Grid Connect	GC-CAN-CAB-2MT-GC	Recommended for high speed 500kbps+ operation. Impedance controlled & shielded.
CAN terminator, 120 ohm, inline DE-9	Grid Connect	GC-CAN-TERM-GC	Useful to avoid opening the case to attach the internal termination.
DE-9 plug, male, solder cup	Assmann WSW Components	A-DF 09 LL/Z	Uncontrolled hook-up wire may be used for short / low speed runs. Easy to hand solder.
DE-9 backshell	Assmann WSW Components	A-FT 09	Strongly recommended for custom DE-9 cables.

Platform Requirements

Windows

- USB 2.0 HS
- Windows 7, 10

Linux

- USB 2.0 HS
- Any recent distribution should work with no additional driver

Native CDC drivers are used. Device will usually show up as /dev/ttyACMx.

Electrical Specifications

Param	Min	Typical	Max	Unit
Input Voltage	4.4	5.0	5.25	V
Current		125	500	mA
Timesync high	2.0	3.3	3.6	V
Timesync low	0.0		0.8	V
Timesync impedance		50		ohm
Timesync current			+/-24	mA
Timesync rise/fall time		10		ns
Timesync delay, connector to TIM3 reset				ns
CAN Termination		120		ohm
CAN Input Resistance CANH/CANL	6		25	kOhm
CAN Input Resistance, differential	20		100	kOhm

Mechanical Specifications

Param	Min	Typical	Max	Unit
Length		98		mm
Width		58		mm
Height		28		mm
Mass		98		g
Operating Temperature	0	20	50	°C
Storage Temperature	-20		60	°C

References

User Guide
https://suburbanmarine.io/public/hadoucan/doc/Hadou-CAN_User_Guide.pdf

Datasheet
https://suburbanmarine.io/public/hadoucan/doc/Hadou-CAN_Datasheet.pdf

Quickstart Guide
https://suburbanmarine.io/public/hadoucan/doc/Hadou-CAN_Quickstart_Guide.pdf

Revision History

Date	Revision	Comments
20200416	A	Public release