User Manual Addendum



No. 1

Bluetooth® Option



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Introduction 1

Thank you for choosing a product of our CANgine product family. The CANgine family is based on high performance 8 bit microcontrollers with integrated full CAN interface and flash memory. With these products you are able to build extremely small but powerful CAN units.

With the option BT of CANgine-No.1 communication with the host uses the bluetooth SSP (serial port profile) instead of a RS232 serial link. As any standard CANgine CANgineBT is powered via the CAN connector according to the recommendations of CiA (CAN in Automation).

In it's standard case, CANgineBT-No.1 only measures 85 x 36 x 20 mm3 (3.32 x 1.4 x 0.79 inch³). If this does not fit for some applications CANgineBT-No.1 can be delivered in other cases or without case in customer specific variants. Due to the modular concept of the CANgine products in hardware and software this is possible even at lower production volumes. Email or call our sales department if you have special requirements.

This manual only describes specific functions of the bluetooth option. For the normal behaviour of CANgine-No.1 please refer to the CANgine-No.1 manual.

2 Installation

The picture shows how to connect CANgine to a CAN network. Power supply is connected via pin 9 (+) and pin 3 (GND) of the CAN connector as proposed by CiA. The maximum supply voltage is 30 V. Applying higher voltages will lead to damages. Pay attention to the terminating resistors (120 Ohm) at both ends of the CAN bus.

After applying power CANgineBT-No.1 is ready fopr operation and waits for a connection request from a Bluetooth device. If the Bluetooth area is scanned the modul reports "CANgineBT-No.1" with SPP service. Also the Bluetooth address is reported. With the help of this address a connection is possible without previous scan.

When waiting for a Bluetooth connection CANgineBT-No. 1's error LED flashes five times to signal "no Bluetooth connection". When a connection is established successfully the red LED switches off.

Establishing Communication 3

Establishing a Bluetooth connection is exemplified in the next chapters using a standard USB Bluetooth adapter. After scanning the CANgineBT-No.1 is reported as shown in the screenshot.





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Ny Bluetooth Places\Entire Bluetooth Neighborhood _□× Datei Bearbeiten Ansicht Bluetooth Eavoriten Extras ? _□ + Zurück + → + ⊡ Q Suchen G Ordner > K ≅ E III + Adregse					
Ordner × Image: Desktop Eigene Dateien Image: Desktop Arbeitsplatz Image: Desktop Papierkorb Image: Desktop Papierkorb Image: Desktop Internet Explorer Image: Desk	Entire Bluetooth Neighborhood This folder displays the Bluetooth devices in the neighborhood. To find other devices in the area or to refresh the list of devices, click here. To cancel the search for devices, press ESC.	CANgineBT-No1	Nokia Bluetooth		
Searching for nearby Bluetooth devices					

Clicking with the right mouse button on the CANgine symbol and selecting properties shows the Bluetooth address of the CANgineBT-No.1.

CANgineBT-No1 Properties	<u>?</u> ×
General Authorization	
CANgineBT-No1	_
Type Unknown: Major(31), Minor(0)	
Device Address 00:80:25:01:03:38	
OK Abbrechen Über	hehmen

Double clicking on the CANgine symbol in the neighbourhood screen shows the services offered by the CANgineBT. This is only the SPP (serial port profile) service.



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My Bluetooth Places\Find Bluetooth Devices\CANgineBT-No1 Datei Bearbeiten Ansicht Bluetooth Eavoriten Extras ? ← Zurück → ⊡ △ Ordner △ Alegse Adregse					
Ordner × Image: Desktop Eigene Dateien Image: Desktop Eigene Dateien Image: Desktop Arbeitsplatz Image: Desktop Papierkorb Image: Desktop Internet Explorer Image: Desktop My Bluetooth Places Image: Desktop Internet Explorer Image: Desktop Image: Desktop Image: Desktop Image: Desktop </td <td>Device : CANgineBT- No1 SerialPort on CANgineBT-No1 This folder displays the Bluetooth services offered by the remote device listed above. For a brief description of each service, select the service name. For a context sensitive menu, right-click a service name. For a context sensitive menu, right-click a service name.</td> <td></td>	Device : CANgineBT- No1 SerialPort on CANgineBT-No1 This folder displays the Bluetooth services offered by the remote device listed above. For a brief description of each service, select the service name. For a context sensitive menu, right-click a service name. For a context sensitive menu, right-click a service name.				
Device : CANgineBT-No1					

Double clicking the Serial port icon in the device screen establishes a connection between a virtual serial port on the PC and the CANgineBT-No.1. If the software asks for a PIN enter 0000. In the software used in this example the connected device is marked in green to signal the successful connection. If you don't know the COM port number (in this example it is shown by an own window) try to explore the propertie of the connected device (right mouse click).

SerialPo	rt <u>? ×</u>
Ţ	The Bluetooth serial port COM8 is now configured to connect to the device CANgineBT-No1.
	The Application that will use this connection must be configured to use COM8.
	The application may be started at any time.
	🗖 Do not display this message again

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Image: Construction of a constructi	Datei Bearbeiten Ansicht Bluetooth Eavoriten Extras 2 ← Zurück ← Tomoson © Ordner © Ordner				
Connected to CANgineB1-No1 using virtual COM port 8	Connected to CANgineBT-No1 using Virtual COI	service, select the service name. For a context sensitive menu, right-click a service name. 1 port 8			

To communicate with CANgineBT-No.1 start a terminal program like Hyperterminal and set the parameters to 115.200 bps, 8 data bits, no parity, 1 stop bit and no flow control.

Eigenschaften von COM8	<u>?</u> ×			
Anschlusseinstellungen				
	II			
Bits pro Sekunde: 115200				
Datenbits: 8				
<u>P</u> arität: Keine ▼				
Stoppbits: 1				
Elusssteuerung: Kein				
<u>S</u> tandard wiederherstellen				
OK Abbrechen Überr	nehmen			

Due to better performance CANgineBT-No.1 like CANgine-No.1 sends no echo characters. For your convenience while testing set the communication parameters in your terminal program to local echo on sending and adding a linefeed character on receiving.



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ASCII-Konfiguration				
Einstellungen für den ASCII-Versand				
<u>G</u> esendete Zeilen enden mit Zeilenvorschub				
Eingegebene Zeichen lokal ausgeben (lokales Echo)				
Zeilenverzögerung: 0 Millisekunden				
Zeichenverzögerung: 0 Millisekunden				
Einstellungen für den ASCII-Empfang Beim Empfang Zeilenvorschub am Zeilenende anhängen Eingangsdaten im 7-Bit- <u>A</u> SCII-Format empfangen Überlange Zeilen im Terminalfenster umbrechen				
OK Abbrechen				

If you change the communication parameters of hyperterminal you have to disconnect the COM8 device. This may also disconnect the Bluetooth connection (the red LED on CANgineBT flashes 5 times). If you reconnect in hyperterminal your Bluetooth software should also re-connect the Bluetooth connection (the red LED on CANgineBT switches off).

After having established the connection with the right communication parameters enter the following commands:

Command	Meaning	Answer from CANgine
[CR]	Initialize communication with CANgine	[CR]
V[CR]	Ask for version number	V4031[CR]
F[CR]	Ask for error information	F00[CR]
S6[CR]	Set CAN Baudrate to 500 kbit/s	[CR]
O[CR]	Open CAN channel	[CR]
t[CR]	Send a standard CAN Frame	[CR]; Your CAN monitor should show a received message. If no CAN is connected the CANgine enters CAN error mode.
C[CR]	Close CAN channel	[CR]

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CANgineBT_COM8 - HyperTer Datei Bearbeiten Ansicht Anrufi	minal en Üb <u>e</u> rtragung <u>?</u>					
<u> 16 93 00</u> 8						
V4031 F00 S6 0 t1238112233445560 C	57788					A
Image: A constraint of the second	ANSIW	115200 8-N-1	RF GROSS	NF Aufzeichnen	Druckerecho	
🔐 PCAN Explorer - TCU.sym	,	,	, ,			

SE PCAN Explorer - TCU.sym	
<u>Eile CAN Edit Iransmit View Macro Trace Tools Window H</u> elp	
🗅 😅 • 🖬 🥌 🔸 🕶 🏹 🗊 🥔 🔋 🖪 🗛 🛛	
✔ 🏝 🖡 🕼 🗙 ! ♀ ♀ 桷 🚊 🕋 🚳 ! 틧	
Y Receive / Transmit	
Symbol / ID 🛛 🔺 Multiplexer / DLC 🛛 Data	Tim Period Count
123h 8 11 22 33 44 55 66 77 88	3 1
<u>8</u>	
2	
Symbol / ID 🛆 Multiplexer / DLC Data	Period Count Trigger
Empty	
	•
Connected to: USB_5UU (SUU KBit/sec) 🥰 (QXmtFull: 0	Hex + Symbols



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4 Pinning of CAN Connector

Pin	Signal	Pin	Signal
1	nc	6	GND
2	CANL	7	CANH
3	GND	8	nc
4	nc	9	+Vcc
5	nc		

5 Technical Data

Power supply	730	VDC
Supply current	100 (typ.)	mA
Internal micro controller	Clock: 40	MHz
	Full CAN 2.0B Interface	
CAN Transceiver	82C251	
CAN connector	Sub-D 9 pin male	
CAN baud rate	10 1.000	kBit
Display	RUN and ERROR LEDs	
Size	84 x 35.6 x 20.2	mm ³
Weight	43	g
Temperature range	0 +55	S

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