

"can_it_spy_echo_example"

CAN Software Spy & Echo Example (Interrupt Handling)

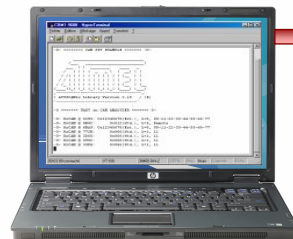
AT90CAN32/64/128



Demo. program

Spy:

All frames of the CAN bus (echo frames included) are sent on the RS232 serial links of the DVK90CAN1 board (UART_0 & UART_1). «HyperTerminal» Windows can display them.



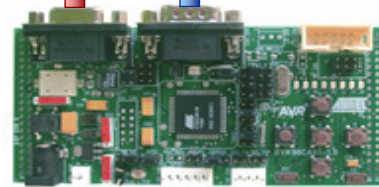
Terminal



"Spy"

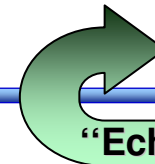


Other node(s)



DVK90CAN1

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"Echo"

CAN bus

Echo:

Each frame of the CAN bus (echo frames excepted) is re-sent with the following protocol:

- $ID_{echo} = ID_{received} + 1$
- 8-byte data frame
- 2 last bytes = CAN-STAMP register



**CAN node
simulation**



Demo. environment

■ IDE:

AVR Studio 4.13.528 (or higher)

AVRGCC plug-in

CAN plug-in

■ C Compiler:

WinAVR-20070525

■ Default target:

DVK90CAN1 Atmel development board

■ Configuration:

■ Software:

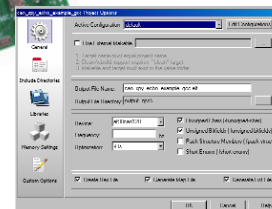
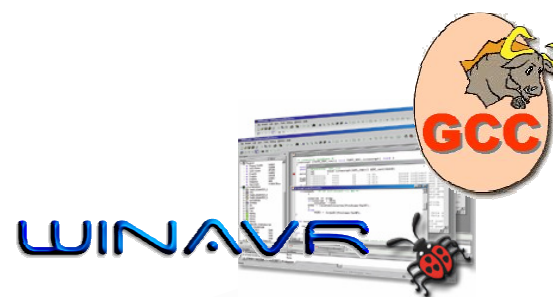
Described in «*config.h*» in main root

■ Hardware:

Described in «*..\libraries\lib_board\dvk90can_board.h*» (called by «*config.h*»)

■ Default setting:

- Microcontroller: **AT90CAN128** at **8 MHz** (external crystal - no internal RC)
- Both **UART_0** & **_1** available - baudrate: **38400** bds (8-bit, no parity, 1 stop-bit)
- CAN bitrate: **automatic detection** (both CAN 2.0A & 2.0B)
- Both Spy & Echo modes available



“CAN Rx & Tx” screen shot example

- ❑ If **no** key is pushed during RESET → **Spy & Echo** mode
- ❑ If **some** key is pushed during RESET → **Spy-only** mode
- ❑ CAN ID = 0 simulates a CAN Error

The screenshot displays the MiniMon V3 by IXXAT software interface. The main window shows a list of CAN messages with columns for Time / mSec, State, Mode, Identifier, and Data. A green arrow points to the top section of the message list, labeled "Spy & Echo mode". A blue arrow points to a smaller, inset window showing a subset of the message list, labeled "Spy-only mode". The inset window shows messages with IDs 123456, 12, 66, 700, and 2006. The bottom section of the interface shows a table with columns Tx, ID, EXT, RTR, and Data, containing the same five messages. The status bar at the bottom indicates "Result of transmission: Opération réussie. [0x0]" and "Messages: 10".

Time / mSec	State	Mode	Identifier	Data
00:06:53.842	Self	29	1234..	00 11 22 33 44 55 66 77
00:06:53.869		29	1234..	00 11 22 33 44 55 02 84
00:06:57.325	Rtr Self	11	12	Remote request DLC = 5
00:06:57.349		11	13	00 11 22 33 44 00 2E 55
00:06:59.930	Self	11	66	DE AD BE EF
00:06:59.954		11	67	DE AD BE EF 00 00 C5 41
00:07:01.102	Rtr Self	29	700	Remote request DLC = 0
00:07:01.125		29	701	00 00 00 00 00 00 E2 29
00:07:02.177	Self	29	2006	28 03 20 06 18 33
00:07:02.202		29	2007	28 03 20 06 18 33 7E 19

Time / mSec	State	Mode	Identifier	Data
00:08:53.909	Self	29	1234..	00 11 22 33 44 55 66 77
00:08:55.746	Rtr Self	11	12	Remote request DLC = 5
00:08:56.932	Self	11	66	DE AD BE EF
00:08:58.454	Rtr Self	29	700	Remote request DLC = 0
00:08:59.716	Self	29	2006	28 03 20 06 18 33

Tx	ID	EXT	RTR	Data
<input checked="" type="checkbox"/>	123456	<input checked="" type="checkbox"/>	<input type="checkbox"/>	00 11 22 33 44 55 66 77
<input checked="" type="checkbox"/>	12	<input type="checkbox"/>	<input checked="" type="checkbox"/>	DLC = 5
<input checked="" type="checkbox"/>	66	<input type="checkbox"/>	<input type="checkbox"/>	DE AD BE EF
<input checked="" type="checkbox"/>	700	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	DLC = 0
<input checked="" type="checkbox"/>	2006	<input checked="" type="checkbox"/>	<input type="checkbox"/>	28 03 20 06 18 33

"can_it_spy_echo_example"

"Spy" screen shot example



Spy & Echo mode

```
-O- ===== CAN SPY ECHO EXAMPLE ===== -O-

[AT90CANxx Library Version 3.30 (R)]

-O- ===== Echo + UART in CAN ANALYZER ===== O-

-O- RxCAN @ 0284: 0x12345678 (Ext.), L=8, 00-11-22-33-44-55-66-77
-O- TxCAN @ 2678: 0x12345679 (Ext.), L=8, 00-11-22-33-44-55-02-84
-O- RxCAN @ 2E55: 0x012 (Std.), L=5, Remote
-O- TxCAN @ 4DAA: 0x013 (Std.), L=8, 00-11-22-33-44-00-2E-55
-O- RxCAN @ C541: 0x066 (Std.), L=4, DE-AD-BE-EF
-O- TxCAN @ E50B: 0x067 (Std.), L=8, DE-AD-BE-EF-00-00-C5-41
-O- RxCAN @ E229: 0x00000700 (Ext.), L=0, Remote
-O- TxCAN @ 00F4: 0x00000701 (Ext.), L=8, 00-00-00-00-00-00-E2-29
-O- RxCAN @ 7E19: 0x00002006 (Ext.), L=6, 28-03-20-06-18-33
-O- TxCAN @ A00D: 0x00002007 (Ext.), L=8, 28-03-20-06-18-33-7E-19
```

```
-O- ===== CAN SPY ECHO EXAMPLE ===== -O-

[AT90CANxx Library Version 3.30 (R)]

-O- ===== UART in CAN ANALYZER ===== O-

-O- RxCAN @ 0285: 0x12345678 (Ext.), L=8, 00-11-22-33-44-55-66-77
-O- RxCAN @ 97D7: 0x012 (Std.), L=5, Remote
-O- RxCAN @ C88F: 0x066 (Std.), L=4, DE-AD-BE-EF
-O- RxCAN @ B922: 0x00000700 (Ext.), L=0, Remote
-O- RxCAN @ 4E95: 0x00002006 (Ext.), L=6, 28-03-20-06-18-33
```

Spy-only mode

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