



Zynq Ultrascale+ MPSoC CANbus Configuration on the PS

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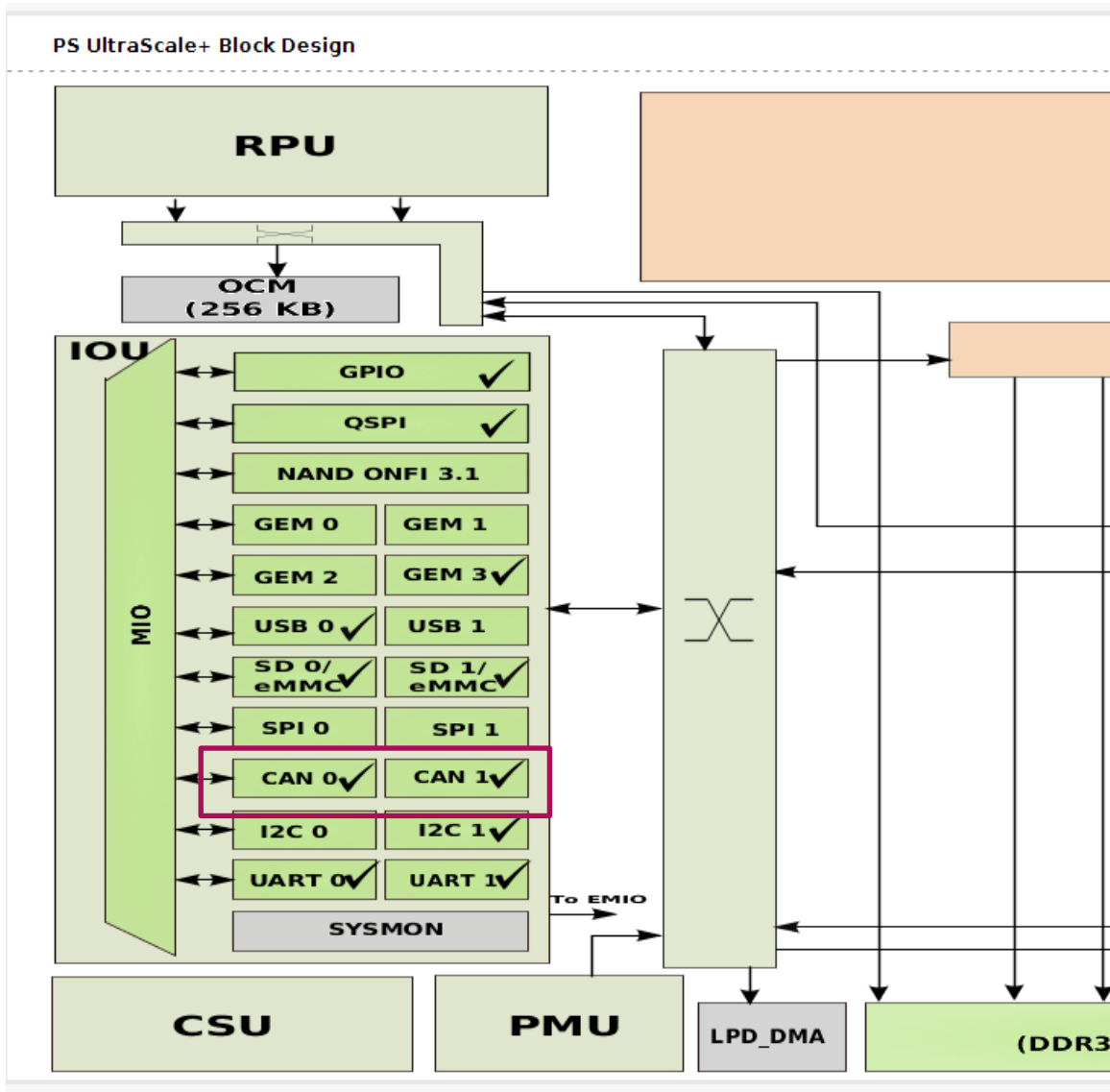
1. Reference Material

[https://xilinx-](https://xilinx-wiki.atlassian.net/wiki/spaces/A/pages/18842496/Linux+CAN+driver#LinuxCANDriver-TestProcedure)

[wiki.atlassian.net/wiki/spaces/A/pages/18842496/Linux+CAN+driver#LinuxCANDriver-TestProcedure](https://xilinx-wiki.atlassian.net/wiki/spaces/A/pages/18842496/Linux+CAN+driver#LinuxCANDriver-TestProcedure)

<https://reference.digilentinc.com/learn/programmable-logic/tutorials/pmod-ips/start>

<https://forums.xilinx.com/t5/Embedded-Linux/PetaLinux-CAN-driver/td-p/777388>



2. Configuration with User Space Commands

CAN0 / CAN1 Test

To run CAN, use the **can-utils** command line CAN tools.:

2.1 SET BIT-TIMING

CAN supports bitrates up to 1Mb/s. Xilinx CAN h/w and driver supports these bit rates

Note: Triple sampling is not supported by Xilinx CAN H/W.

```
$ /ip link set can0 type can bitrate 500000
```

or

```
$ ./canconfig can0 bitrate 500000
```

```
root@uz3eg-iocc-2018-2:/usr/bin# ip link set can0 type can bitrate 200000
[ 672.164233] xilinx_can ff060000.can can0: bitrate error 0.0%
root@uz3eg-iocc-2018-2:/usr/bin# canconfig can0 bitrate 200000
[ 812.243741] xilinx_can ff060000.can can0: bitrate error 0.0%
can0 bitrate: 199999, sample-point: 0.850
root@uz3eg-iocc-2018-2:/usr/bin#
```

2.2 BRING UP THE DEVICE

```
$ ip link set can0 up
```

or

```
$ canconfig can0 start
```

```
root@uz3eg-iocc-2018-2:/usr/bin# canconfig can0 start
can0 state: ERROR-ACTIVE
root@uz3eg-iocc-2018-2:/usr/bin#
```

Note: the CAN I/F always start with ERROR-ACTIVE state.

2.3 BRING DOWN THE DEVICE

```
$ ./ip link set can0 down
```

or

```
$ ./canconfig can0 stop
```

```
root@uz3eg-iocc-2018-2:/usr/bin# canconfig can0 down
root@uz3eg-iocc-2018-2:/usr/bin#
```

2.4 TRANSMIT AND RECEIVE PACKETS WITH STANDARD ID NUMBER

Usage: **cansend** <device> <can_frame>.

```
$ /cansend can0 -i 0x14 <bytes>
```

```
cansend can0 -i 0x14 0x33 0x88
```

2.5 PACKETS TRANSMISSION VERIFICATION

Usage: **cansend** <device> <can_frame>.

```
$ /cansend can0 -i 0x14 <bytes>
```

```
cansend can0 -i 0x14 0x33 0x88
```

```
root@uz3eg-iocc-2018-2:/usr/bin# cansend can0 -i 0x14 0x33 0x88
interface = can0, family = 29, type = 3, proto = 1
root@uz3eg-iocc-2018-2:/usr/bin# cat /proc/net/can/stats

    1 transmitted frames (TXF)
   22 received frames (RXF)
    0 matched frames (RXMF)

    0 % total match ratio (RXMR)
    0 frames/s total tx rate (TXR)
    0 frames/s total rx rate (RXR)

    0 % current match ratio (CRXMR)
    0 frames/s current tx rate (CTXR)
    0 frames/s current rx rate (CRXR)

    0 % max match ratio (MRXMR)
    1 frames/s max tx rate (MTXR)
   22 frames/s max rx rate (MRXR)

    0 current receive list entries (CRCV)
    1 maximum receive list entries (MRCV)

root@uz3eg-iocc-2018-2:/usr/bin#
```

2.6 LINKS VERIFICATION:

2.6.1 ifconfig can_zero

```
root@uz3eg-iocc-2018-2:/usr/bin# ifconfig can0
can0:  Link encap:UNSPEC HWaddr 00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00
        UP NOARP MTU:16 Metric:1
        RX packets:22 errors:0 dropped:0 overruns:0 frame:0
        TX packets:0 errors:21 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:10
        RX bytes:176 (176.0 B) TX bytes:2 (2.0 B)
        Interrupt:11

root@uz3eg-iocc-2018-2:/usr/bin#
```

2.6.2 ip -d -s link show can_zero

```
root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0
2: can0: <NO-CARRIER,NOARP,UP,ECHO> mtu 16 qdisc pfifo_fast state DOWN mode DEFAULT group default qlen 10
    link/can promiscuity 0
    can state BUS-OFF (berr-counter tx 0 rx 0) restart-ms 0
    bitrate 199999 sample-point 0.850
    tq 250 prop-seg 8 phase-seg1 8 phase-seg2 3 sjw 1
    xllink can: tseg1 1..16 tseg2 1..8 sjw 1..4 brp 1..256 brp-inc 1
    clock 99999999
    re-started bus-errors arbit-lost error-warn error-pass bus-off
    0 22 0 2 16 1 numtxqueues 1 numrxqueues 1 gso_max_size 65536
    gso_max_segs 65535
    RX: bytes packets errors dropped overrun mcast
    176 22 0 0 0 0
    TX: bytes packets errors dropped carrier collsns
    2 0 21 0 0 0

root@uz3eg-iocc-2018-2:/usr/bin#
```

3 Communication Tests with User Space Commands

3.1 LOOPBACK MODE (USING A DIFFERENT CHANNEL, CAN₁)

3.1.1 canconfig cano ctrlmode loopback on bitrate 500000

```
root@uz3eg-iocc-2018-2:/usr/bin# canconfig can1 ctrlmode loopback on
can1 ctrlmode: loopback[ON], listen-only[OFF], tripple-sampling[OFF], one-shot[OFF], berr-reporting[OFF]
root@uz3eg-iocc-2018-2:/usr/bin# canconfig can1 bitrate 500000
[ 4217.791684] xilinx_can ff070000.can can1: bitrate error 0.0%
can1 bitrate: 499999, sample-point: 0.875
root@uz3eg-iocc-2018-2:/usr/bin# canconfig can1 start
can1 state: ERROR-ACTIVE
```

Packet (1) sent on Loopback configuration:

3.1.2 No bus errors identified

```
root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can1
3: can1: <NOARP,UP,LOWER_UP,ECHO> mtu 16 qdisc pfifo_fast state UNKNOWN mode DEFAULT group default qlen 10
    link/can promiscuity 0
    can <LOOPBACK> state ERROR-ACTIVE (berr-counter tx 0 rx 0) restart-ms 0
        bitrate 499999 sample-point 0.875
        tq 250 prop-seg 3 phase-seg1 3 phase-seg2 1 sjw 1
        xilinx_can: tseg1 1..16 tseg2 1..8 sjw 1..4 brp 1..256 brp-inc 1
        clock 99999999
        re-started bus-errors arbit-lost error-warn error-pass bus-off
        0 0 0 0 0 0 numtxqueues 1 numrxqueues 1 gso_max_
size 65536 gso_max_segs 65535
RX: bytes packets errors dropped overrun mcast
7 1 0 0 0 0
TX: bytes packets errors dropped carrier collsns
7 1 0 0 0 0
root@uz3eg-iocc-2018-2:/usr/bin#
```

3.1.3 Additional packet (1) sent – note packets increased from 1 to 2

```
root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can1
3: can1: <NOARP,UP,LOWER_UP,ECHO> mtu 16 qdisc pfifo_fast state UNKNOWN mode DEFAULT group default qlen 10
    link/can promiscuity 0
    can <LOOPBACK> state ERROR-ACTIVE (berr-counter tx 0 rx 0) restart-ms 0
        bitrate 499999 sample-point 0.875
        tq 250 prop-seg 3 phase-seg1 3 phase-seg2 1 sjw 1
        xilinx_can: tseg1 1..16 tseg2 1..8 sjw 1..4 brp 1..256 brp-inc 1
        clock 99999999
        re-started bus-errors arbit-lost error-warn error-pass bus-off
        0 0 0 0 0 0 numtxqueues 1 numrxqueues 1 gso_max_
size 65536 gso_max_segs 65535
RX: bytes packets errors dropped overrun mcast
15 2 0 0 0 0
TX: bytes packets errors dropped carrier collsns
15 2 0 0 0 0
root@uz3eg-iocc-2018-2:/usr/bin#
```

3.1.4 10 packets sent

note loop 10 qualifier.... packets increased from 2 to 12 (no errors)

```
root@uz3eg-iocc-2018-2:/usr/bin# cansend can1 -i 0x88 0x33 0x88 0x33 0x88 0x33 0x88 0x33 0x88 --loop=10
root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can1
3: can1: <NOARP,UP,LOWER_UP,ECHO> mtu 16 qdisc pfifo_fast state UNKNOWN mode DEFAULT group default qlen 10
    link/can promiscuity 0
    can <LOOPBACK> state ERROR-ACTIVE (berr-counter tx 0 rx 0) restart-ms 0
        bitrate 499999 sample-point 0.875
        tq 250 prop-seg 3 phase-seg1 3 phase-seg2 1 sjw 1
        xilinx_can: tseg1 1..16 tseg2 1..8 sjw 1..4 brp 1..256 brp-inc 1
        clock 99999999
        re-started bus-errors arbit-lost error-warn error-pass bus-off
        0 0 0 0 0 0 numtxqueues 1 numrxqueues 1 gso_max_
size 65536 gso_max_segs 65535
RX: bytes packets errors dropped overrun mcast
95 12 0 0 0 0
TX: bytes packets errors dropped carrier collsns
95 12 0 0 0 0
root@uz3eg-iocc-2018-2:/usr/bin#
```

3.2 NORMAL MODE - CONNECTED TO ARDUINO

canconfig can0 ctrlmode bitrate 500000; canconfig can0 start; ip -d -s link show can0

canconfig can0 start

verify status 1st time: no communication

ip -d -s link show can0

```
root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0
2: can0: <NOARP,UP,LOWER_UP,ECHO> mtu 16 qdisc pfifo_fast state UNKNOWN mode DEFAULT group default qlen 10
    link/can promiscuity 0
    can state ERROR-ACTIVE (berr-counter tx 0 rx 0) restart-ms 0
        bitrate 500000 sample-point 0.800
        tq 400 prop-seg 1 phase-seg1 2 phase-seg2 1 sjw 1
        xllink-can: tseg1 1..16 tseg2 1..8 sjw 1..4 brp 1..256 brp-inc 1
        clock 25000000
        re-started bus-errors arbit-lost error-warn error-pass bus-off
        0 0 0 0 0 0 numtxqueues 1 numrxqueues 1 gso_max_size 655
36 gso_max_segs 65535
    RX: bytes packets errors dropped overrun mcast
        0 0 0 0 0 0
    TX: bytes packets errors dropped carrier collsns
        0 0 0 0 0 0
root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0
```

3.2.1 connected Arduino Uno with CANbus Shield – running send data code

Communication established with success!!!

ip -d -s link show can0

```
root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0
2: can0: <NOARP,UP,LOWER_UP,ECHO> mtu 16 qdisc pfifo_fast state UNKNOWN mode DEFAULT group default qlen 10
    link/can promiscuity 0
    can state ERROR-ACTIVE (berr-counter tx 0 rx 0) restart-ms 0
        bitrate 500000 sample-point 0.800
        tq 400 prop-seg 1 phase-seg1 2 phase-seg2 1 sjw 1
        xllink-can: tseg1 1..16 tseg2 1..8 sjw 1..4 brp 1..256 brp-inc 1
        clock 25000000
        re-started bus-errors arbit-lost error-warn error-pass bus-off
        0 0 0 0 0 0 numtxqueues 1 numrxqueues 1 gso_max_size 655
36 gso_max_segs 65535
    RX: bytes packets errors dropped overrun mcast
        32 4 0 0 0 0
    TX: bytes packets errors dropped carrier collsns
        0 0 0 0 0 0
root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0
```

3.2.2 Running for over 1 hour

Communication stable!!!

ip -d -s link show can0

```
root@uz3eg-iocc-2018-2:/usr/bin# date
Fri Aug 9 08:47:50 UTC 2019
root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0
2: can0: <NOARP,UP,LOWER_UP,ECHO> mtu 16 qdisc pfifo_fast state UNKNOWN mode DEFAULT group default qlen 10
    link/can promiscuity 0
    can state ERROR-ACTIVE (berr-counter tx 0 rx 0) restart-ms 0
        bitrate 500000 sample-point 0.800
        tq 400 prop-seg 1 phase-seg1 2 phase-seg2 1 sjw 1
        xllink-can: tseg1 1..16 tseg2 1..8 sjw 1..4 brp 1..256 brp-inc 1
        clock 25000000
        re-started bus-errors arbit-lost error-warn error-pass bus-off
        0 0 0 0 0 0 numtxqueues 1 numrxqueues 1 gso_max_size 655
36 gso_max_segs 65535
    RX: bytes packets errors dropped overrun mcast
        44332 55415 0 0 0 0
    TX: bytes packets errors dropped carrier collsns
        0 0 0 0 0 0
root@uz3eg-iocc-2018-2:/usr/bin#
```

```
root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0
2: can0: <NOARP,UP,LOWER_UP,ECHO> mtu 16 qdisc pfifo_fast state UNKNOWN mode DEFAULT group default qlen 10
    link/can promiscuity 0
    can state ERROR-ACTIVE (berr-counter tx 0 rx 0) restart-ms 0
        bitrate 500000 sample-point 0.800
        tq 400 prop-seg 1 phase-seg1 2 phase-seg2 1 sjw 1
        xllink-can: tseg1 1..16 tseg2 1..8 sjw 1..4 brp 1..256 brp-inc 1
        clock 25000000
        re-started bus-errors arbit-lost error-warn error-pass bus-off
        0 0 0 0 0 0 numtxqueues 1 numrxqueues 1 gso_max_size 655
36 gso_max_segs 65535
    RX: bytes packets errors dropped overrun mcast
        525288 65661 0 0 0 0
    TX: bytes packets errors dropped carrier collsns
        0 0 0 0 0 0
root@uz3eg-iocc-2018-2:/usr/bin#
```



```
root@uz3eg-iocc-2018-2: /usr/bin# candump can0
interface = can0, family = 29, type = 3, proto = 1
<0x000> [8] 00 00 00 00 00 00 00 1f 2e
<0x000> [8] 00 00 00 00 00 00 00 1f 2f
<0x000> [8] 00 00 00 00 00 00 00 1f 30
<0x000> [8] 00 00 00 00 00 00 00 1f 31
<0x000> [8] 00 00 00 00 00 00 00 1f 32
<0x000> [8] 00 00 00 00 00 00 00 1f 33
<0x000> [8] 00 00 00 00 00 00 00 1f 34
<0x000> [8] 00 00 00 00 00 00 00 1f 35
<0x000> [8] 00 00 00 00 00 00 00 1f 36
<0x000> [8] 00 00 00 00 00 00 00 1f 37
<0x000> [8] 00 00 00 00 00 00 00 1f 38
<0x000> [8] 00 00 00 00 00 00 00 1f 39
<0x000> [8] 00 00 00 00 00 00 00 1f 3a
<0x000> [8] 00 00 00 00 00 00 00 1f 3b
<0x000> [8] 00 00 00 00 00 00 00 1f 3c
<0x000> [8] 00 00 00 00 00 00 00 1f 3d
<0x000> [8] 00 00 00 00 00 00 00 1f 3e
<0x000> [8] 00 00 00 00 00 00 00 1f 3f
<0x000> [8] 00 00 00 00 00 00 00 1f 40
<0x000> [8] 00 00 00 00 00 00 00 1f 41
<0x000> [8] 00 00 00 00 00 00 00 1f 42
<0x000> [8] 00 00 00 00 00 00 00 1f 43
<0x000> [8] 00 00 00 00 00 00 00 1f 44
<0x000> [8] 00 00 00 00 00 00 00 1f 45
<0x000> [8] 00 00 00 00 00 00 00 1f 46
<0x000> [8] 00 00 00 00 00 00 00 1f 47
<0x000> [8] 00 00 00 00 00 00 00 1f 48
<0x000> [8] 00 00 00 00 00 00 00 1f 49
^C
root@uz3eg-iocc-2018-2: /usr/bin#
```

```

root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0
2: can0: <NOARP> UP, LOWER_UP, ECHO# mtu 16 qdisc pfifo_fast state UNKNOWN mode DEFAULT group default qlen 10
    link/can promiscuity 0
    can state ERROR-ACTIVE (berr-counter tx 0 rx 0) restart-ms 0
        bitrate 500000 sample-point 0.800
        tq 400 prop-seg 1 phase-seg1 2 phase-seg2 1 sjw 1
        xllinx 0 phase-seg1 1.16 tseg2 1.8 sjw 1.4 brp 1.256 brp-inc 1
        clock 2500000
        re-started bus-errors 0 arbit-lost 0 error-warn 0 error-pass 0 bus-off 0
    numtxqueues 1 numrxqueues 1 gso_max_size 65535
    RX: bytes  packets  errors  dropped  overrun  mcast
        0          0          0          0          0          0
    TX: bytes  packets  errors  dropped  carrier  collns
        0          0          0          0          0          0
root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0

```


3.3.1 connected 2 off Arduino Uno with CANbus Shield

running send data code

Communication established with success!!!

ip -d -s link show can0

```
root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0
2: can0: <NOARP,UP,LOWER_UP,ECHO> mtu 16 qdisc pfifo_fast state UNKNOWN mode DEFAULT group default qlen 10
    link/can promiscuity 0
    can state ERROR-ACTIVE (berr-counter tx 0 rx 0) restart-ms 0
    bitrate 500000 sample-point 0.800
    tq 400 prop-seg 1 phase-seg1 2 phase-seg2 1 sjw 1
    xilinx_can: tseg1 1..16 tseg2 1..8 sjw 1..4 brp 1..256 brp-inc 1
    clock 25000000
    re-started bus-errors arbit-lost error-warn error-pass bus-off 0
    numtxqueues 1 numrxqueues 1 gso_max_size 65535
    RX: bytes packets errors dropped overrun mcast
        35712 4464 0 0 0 0
    TX: bytes packets errors dropped carrier collsns
        0 0 0 0 0 0
root@uz3eg-iocc-2018-2:/usr/bin# date
Fri Aug 9 07:10:38 UTC 2019
root@uz3eg-iocc-2018-2:/usr/bin#
```

3.3.2 candump can_zero

Since there are two devices, I assigned 2 different IDs so I can recognize data coming through.

I have also changed the profile of the bytes been sent by 0x01 to make it easy to identify.

```
root@uz3eg-iocc-2018-2:/usr/bin# candump can0
interface = can0 family = 28, type = 3, proto = 1
<0x000> [8] 00 00 00 00 00 00 00 1b 62
<0x001> [8] 00 00 00 00 00 00 00 1f 09
<0x000> [8] 00 00 00 00 00 00 00 1b 63
<0x001> [8] 00 00 00 00 00 00 00 1f 0a
<0x000> [8] 00 00 00 00 00 00 00 1c 00
<0x001> [8] 00 00 00 00 00 00 00 1f 0b
<0x000> [8] 00 00 00 00 00 00 00 1c 01
<0x001> [8] 00 00 00 00 00 00 00 1f 0c
<0x000> [8] 00 00 00 00 00 00 00 1c 02
<0x001> [8] 00 00 00 00 00 00 00 1f 0d
<0x000> [8] 00 00 00 00 00 00 00 1c 03
<0x001> [8] 00 00 00 00 00 00 00 1f 0e
<0x000> [8] 00 00 00 00 00 00 00 1c 04
<0x001> [8] 00 00 00 00 00 00 00 1f 0f
<0x000> [8] 00 00 00 00 00 00 00 1c 05
<0x001> [8] 00 00 00 00 00 00 00 1f 10
<0x000> [8] 00 00 00 00 00 00 00 1c 06
<0x001> [8] 00 00 00 00 00 00 00 1f 11
<0x000> [8] 00 00 00 00 00 00 00 1c 07
<0x001> [8] 00 00 00 00 00 00 00 1f 12
<0x000> [8] 00 00 00 00 00 00 00 1c 08
<0x001> [8] 00 00 00 00 00 00 00 1f 13
<0x000> [8] 00 00 00 00 00 00 00 1c 09
<0x001> [8] 00 00 00 00 00 00 00 1f 14
<0x000> [8] 00 00 00 00 00 00 00 1c 0a
<0x001> [8] 00 00 00 00 00 00 00 1f 15
<0x000> [8] 00 00 00 00 00 00 00 1c 0b
<0x001> [8] 00 00 00 00 00 00 00 1f 16
<0x000> [8] 00 00 00 00 00 00 00 1c 0c
<0x001> [8] 00 00 00 00 00 00 00 1f 17
^C
root@uz3eg-iocc-2018-2:/usr/bin#
```

Note: create app called can-send based on cansend.c

Usage: can-send can0 123#1122334455667788

create app called can-gen based on cansend.c

Usage: can-gen can0 -g 1000 -I 0x02 -L 8 -D i

4 Hardware Configuration

I/O Peripherals									
CAN									
<input checked="" type="checkbox"/> CAN 0	MIO 42 .. 43								
<input type="checkbox"/> MIOCLK									
CAN 0	MIO42	phy_rx	cmos	12	slow	pullup	in		
CAN 0	MIO43	phy_tx	schmitt	12	slow	pullup	out		
<input checked="" type="checkbox"/> CAN 1	MIO 36 .. 37								
<input type="checkbox"/> MIOCLK									
CAN 1	MIO36	phy_tx	schmitt	12	slow	pullup	out		
CAN 1	MIO37	phy_rx	cmos	12	slow	pullup	in		

Clock Configuration

Input Clocks

Output Clocks

☐ Enable Manual Mode

> PLL Options

←

🔍

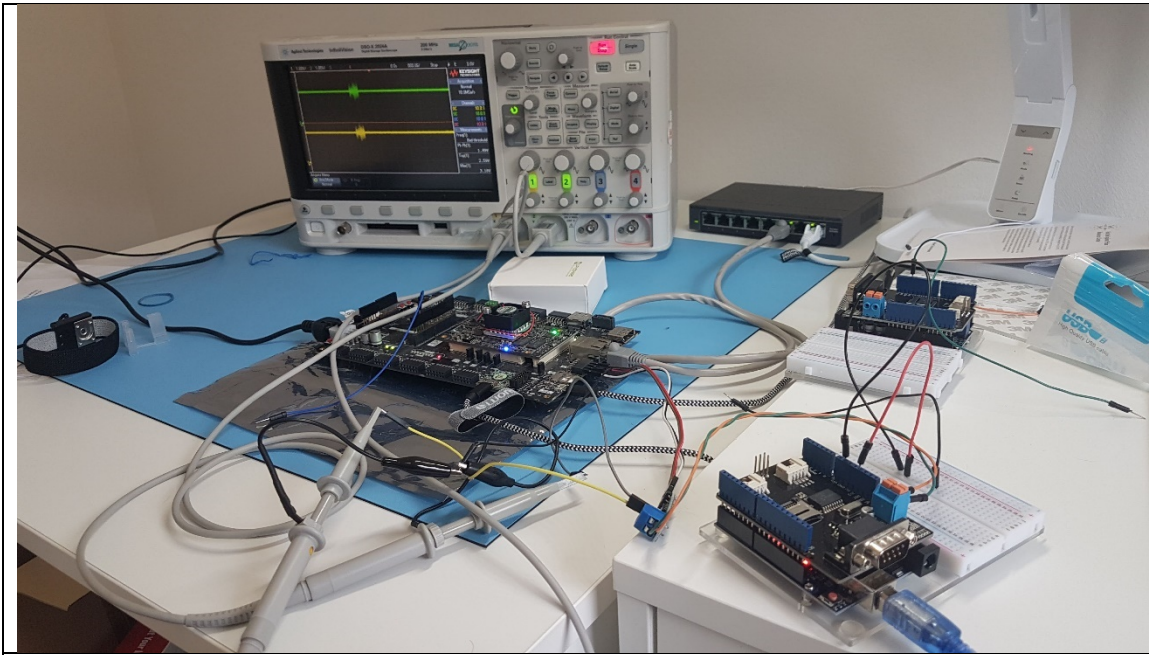
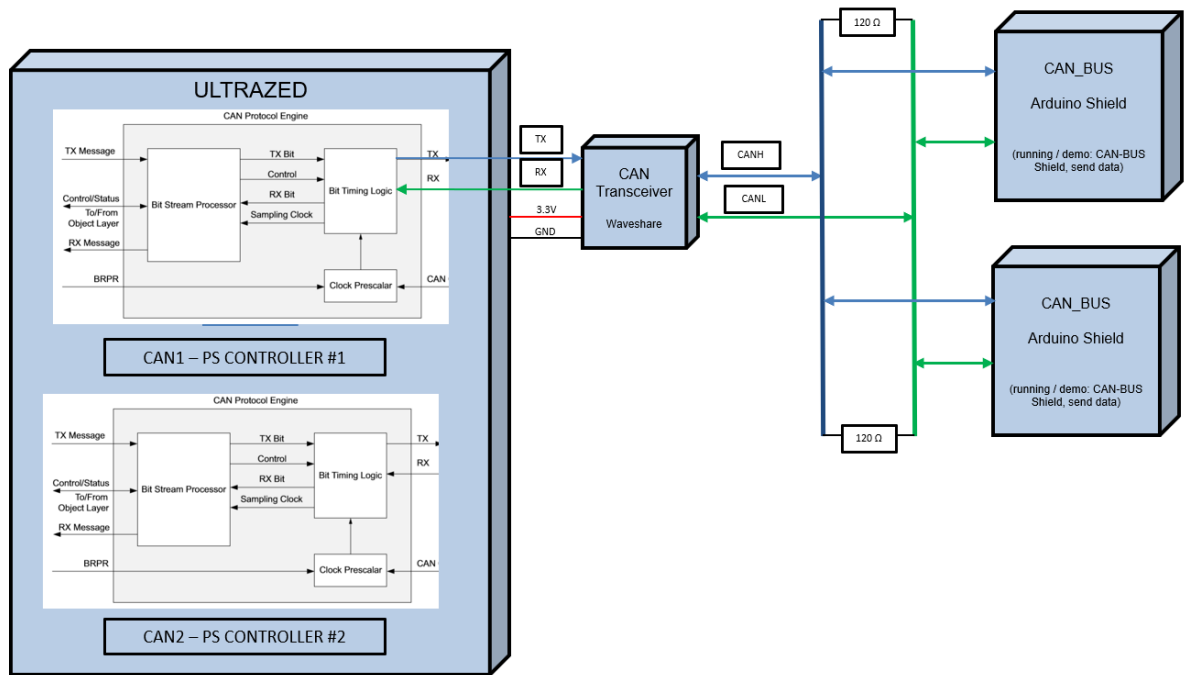
⌵

⌶

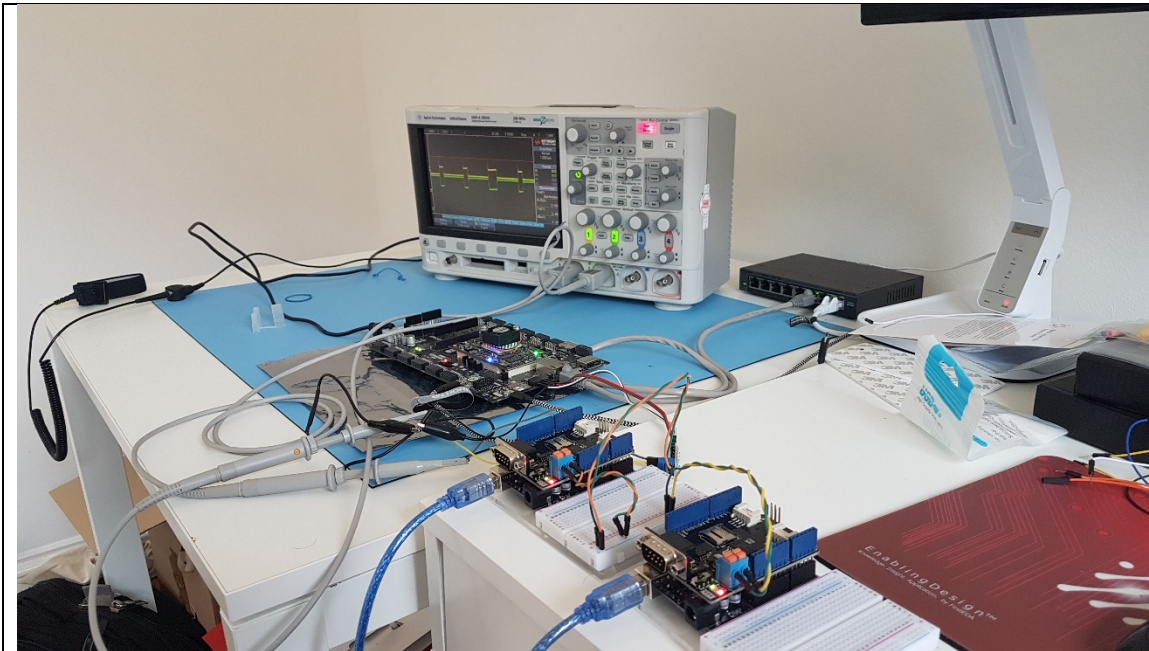
Search:

Name	Source	FracEn	Requested Freq (MHz)	Divisor 1	Divisor 2	Actual Frequency (MHz)	Range
⌵ Peripherals/I/O Clocks							
QSPI	<div>IOPLL</div>		<div>125</div>	<div>12</div>	<div>1</div>	124.998750	0.000000 : 300.000000
SDIO0	<div>RPLL</div>		<div>200</div>	<div>7</div>	<div>1</div>	199.998000	
SDIO1	<div>RPLL</div>		<div>200</div>	<div>7</div>	<div>1</div>	199.998000	
SD DLL	<div>IOPLL</div>		1500			1499.985000	
UART0	<div>IOPLL</div>		<div>100</div>	<div>15</div>	<div>1</div>	99.999000	0.000000 : 100.000000
UART1	<div>IOPLL</div>		<div>100</div>	<div>15</div>	<div>1</div>	99.999000	0.000000 : 100.000000
I2C1	<div>IOPLL</div>		<div>100</div>	<div>15</div>	<div>1</div>	99.999000	0.000000 : 100.000000
CAN0	<div>DPLL</div>		<div>25</div>	<div>21</div>	<div>1</div>	24.999750	0.000000 : 100.000000
CAN1	<div>DPLL</div>		<div>25</div>	<div>21</div>	<div>1</div>	24.999750	0.000000 : 100.000000

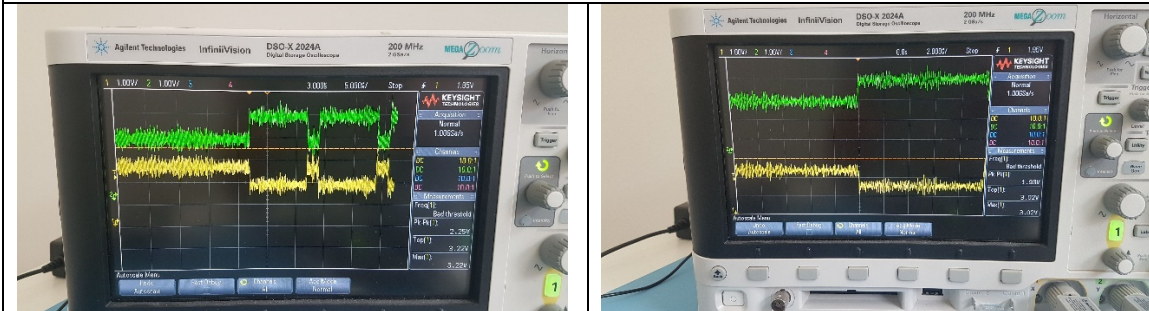
4.1 TEST SETUP



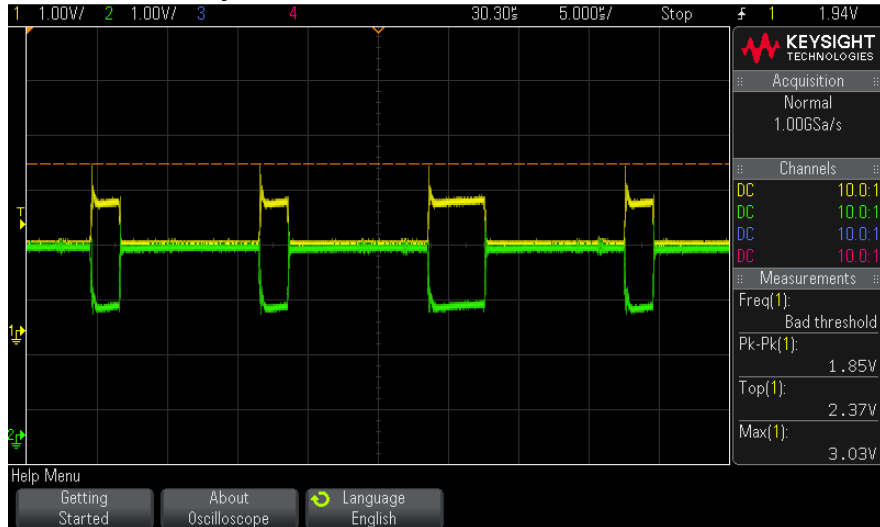
Normal Mode Connected to 1 Arduino CAN_BUS Shield



Normal Mode Connected to 2 Arduino CAN_BUS Shields



DSO-X 2024A, MY54020838 Sat Aug 10 02:06:31 2019



5 Useful Commands

```
canconfig can0 ctrlmode loopback on
```

```
ip link set can0 type can bitrate 500000
```

```
ip link set can0 up
```

```
ip -d -s link show can0
```

```
cansend can0 -i 0x77 0x33 0x88 0x33 0x88 0x33 0x88 0x33
```

```
cansend can0 -i 0x88 0x33 0x88 0x33 0x88 0x33 0x88 0x33 0x88 --loop=10
```

6 List of Commands Performed

```
root@uz3eg-iocc-2018-2:/usr/bin# ip link set can0 type can bitrate 500000
```

```
[ 994.063912] xilinx_can ff060000.can can0: bitrate error 0.0%
```

```
root@uz3eg-iocc-2018-2:/usr/bin# ip link set can0 up
```

```
root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0
```

```
2: can0: <NOARP,UP,LOWER_UP,ECHO> mtu 16 qdisc pfifo_fast state UNKNOWN mode  
DEFAULT group default qlen 10
```

```
link/can promiscuity 0
```

```
can state ERROR-ACTIVE (berr-counter tx 0 rx 0) restart-ms 0
```

```
bitrate 499999 sample-point 0.875
```

```
tq 250 prop-seg 3 phase-seg1 3 phase-seg2 1 sjw 1
```

```
xilinx_can: tseg1 1..16 tseg2 1..8 sjw 1..4 brp 1..256 brp-inc 1
```

```
clock 999999999
```

```
re-started bus-errors arbit-lost error-warn error-pass bus-off
```

```
0 0 0 0 0 0 numtxqueues 1 numrxqueues 1  
gso_max_size 65536 gso_max_segs 65535
```

```

RX: bytes  packets  errors  dropped  overrun  mcast
0         0         0         0         0         0

TX: bytes  packets  errors  dropped  carrier  collsns
0         0         0         0         0         0

root@uz3eg-iocc-2018-2:/usr/bin# candump can0

interface = can0, family = 29, type = 3, proto = 1

^C

root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0

2: can0: <NOARP,UP,LOWER_UP,ECHO> mtu 16 qdisc pfifo_fast state UNKNOWN mode
DEFAULT group default qlen 10

    link/can  promiscuity 0

    can state ERROR-ACTIVE (berr-counter tx 0 rx 0) restart-ms 0

        bitrate 499999 sample-point 0.875

        tq 250 prop-seg 3 phase-seg1 3 phase-seg2 1 sjw 1

        xilinx_can: tseg1 1..16 tseg2 1..8 sjw 1.4 brp 1..256 brp-inc 1

        clock 999999999

        re-started bus-errors arbit-lost error-warn error-pass bus-off

            0         0         0         0         0         0         numtxqueues 1 numrxqueues 1
gso_max_size 65536 gso_max_segs 65535

    RX: bytes  packets  errors  dropped  overrun  mcast
    0         0         0         0         0         0

    TX: bytes  packets  errors  dropped  carrier  collsns
    0         0         0         0         0         0

root@uz3eg-iocc-2018-2:/usr/bin# candump can0

interface = can0, family = 29, type = 3, proto = 1

```


^C

```
root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0
```

```
2: can0: <NOARP,UP,LOWER_UP,ECHO> mtu 16 qdisc pfifo_fast state UNKNOWN mode
DEFAULT group default qlen 10
```

```
link/can promiscuity 0
```

```
can state ERROR-ACTIVE (berr-counter tx 0 rx 0) restart-ms 0
```

```
    bitrate 499999 sample-point 0.875
```

```
    tq 250 prop-seg 3 phase-seg1 3 phase-seg2 1 sjw 1
```

```
    xilinx_can: tseg1 1..16 tseg2 1..8 sjw 1..4 brp 1..256 brp-inc 1
```

```
    clock 99999999
```

```
    re-started bus-errors arbit-lost error-warn error-pass bus-off
```

```
    0      0      0      0      0      0      numtxqueues 1 numrxqueues 1
```

```
gso_max_size 65536 gso_max_segs 65535
```

```
    RX: bytes  packets  errors  dropped overrun mcast
```

```
    0      0      0      0      0      0
```

```
    TX: bytes  packets  errors  dropped carrier collsns
```

```
    0      0      0      0      0      0
```

```
root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0
```

```
2: can0: <NOARP,UP,LOWER_UP,ECHO> mtu 16 qdisc pfifo_fast state UNKNOWN mode
DEFAULT group default qlen 10
```

```
link/can promiscuity 0
```

```
can state ERROR-PASSIVE (berr-counter tx 0 rx 130) restart-ms 0
```

```
    bitrate 499999 sample-point 0.875
```

```
    tq 250 prop-seg 3 phase-seg1 3 phase-seg2 1 sjw 1
```

```
    xilinx_can: tseg1 1..16 tseg2 1..8 sjw 1..4 brp 1..256 brp-inc 1
```



```

clock 99999999

re-started bus-errors arbit-lost error-warn error-pass bus-off

0          22      0      0          21      0

numtxqueues 1 numrxqueues 1 gso_max_size 65536 gso_max_segs 65535

RX: bytes  packets  errors  dropped overrun mcast
176      22      23      0      0      0

TX: bytes  packets  errors  dropped carrier collsns
0         0         2         0         0         0

root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0

2: can0: <NOARP,UP,LOWER_UP,ECHO> mtu 16 qdisc pfifo_fast state UNKNOWN mode
DEFAULT group default qlen 10

link/can  promiscuity 0

can state ERROR-PASSIVE (berr-counter tx 0 rx 130) restart-ms 0

bitrate 499999 sample-point 0.875

tq 250 prop-seg 3 phase-seg1 3 phase-seg2 1 sjw 1

xilinx_can: tseg1 1..16 tseg2 1..8 sjw 1..4 brp 1..256 brp-inc 1

clock 99999999

re-started bus-errors arbit-lost error-warn error-pass bus-off

0      22      0      0      21      0      numtxqueues 1 numrxqueues 1
gso_max_size 65536 gso_max_segs 65535

RX: bytes  packets  errors  dropped overrun mcast
176      22      23      0      0      0

TX: bytes  packets  errors  dropped carrier collsns
0         0         2         0         0         0

root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0

```

2: can0: <NOARP,UP,LOWER_UP,ECHO> mtu 16 qdisc pfifo_fast state UNKNOWN mode
DEFAULT group default qlen 10

link/can promiscuity 0

can state ERROR-PASSIVE (berr-counter tx 0 rx 130) restart-ms 0

bitrate 499999 sample-point 0.875

tq 250 prop-seg 3 phase-seg1 3 phase-seg2 1 sjw 1

xilinx_can: tseg1 1..16 tseg2 1..8 sjw 1..4 brp 1..256 brp-inc 1

clock 999999999

re-started bus-errors arbit-lost error-warn error-pass bus-off

0 22 0 0 21 0 numtxqueues 1 numrxqueues 1
gso_max_size 65536 gso_max_segs 65535

RX: bytes packets errors dropped overrun mcast

176 22 23 0 0 0

TX: bytes packets errors dropped carrier collsns

0 0 2 0 0 0

root@uz3eg-iocc-2018-2:/usr/bin# candump can0

interface = can0, family = 29, type = 3, proto = 1

^C

root@uz3eg-iocc-2018-2:/usr/bin# ip -d -s link show can0

2: can0: <NOARP,UP,LOWER_UP,ECHO> mtu 16 qdisc pfifo_fast state UNKNOWN mode
DEFAULT group default qlen 10

link/can promiscuity 0

can state ERROR-PASSIVE (berr-counter tx 0 rx 130) restart-ms 0

bitrate 499999 sample-point 0.875

```

tq 250 prop-seg 3 phase-seg1 3 phase-seg2 1 sjw 1
xilinx_can: tseg1 1..16 tseg2 1..8 sjw 1..4 brp 1..256 brp-inc 1
clock 99999999
re-started bus-errors arbit-lost error-warn error-pass bus-off
0      22      0      0      21      0      numtxqueues 1 numrxqueues 1
gso_max_size 65536 gso_max_segs 65535
RX: bytes  packets  errors  dropped  overrun  mcast
176      22      23      0      0      0
TX: bytes  packets  errors  dropped  carrier  collsns
0         0         2         0         0         0
root@uz3eg-iocc-2018-2:/usr/bin#

```