HIL IPs

Friday, May 27, 2022 7:52 AM

HIL Ethernet Configuration

Netgear Switch: 192.168.1.10

dSPACE : 192.168.1.201

EME: 192.168.1.145

VX Box: 192.168.1.1

VN Box: 192.168.1.5

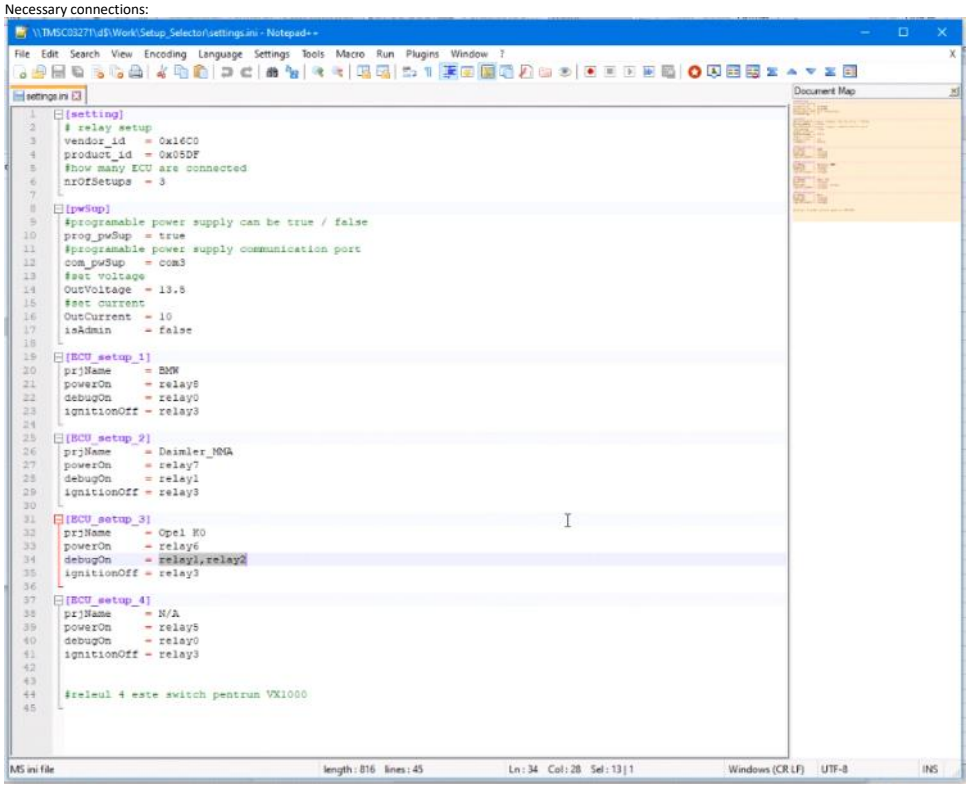
IBOB: 192.168.1.180

Power supply HIL : 192.168.1.100
Power supply Addon : 192.168.1.101

Multiple ECU SW BOX

Wednesday, November 24, 2021 7:52 AM

Necessary connections:



Power on (KL30) :
- Relay8 -> ECU1
- Relay7 -> ECU2
- Relay6 -> ECU3

Ignition on (KL15) :
- Relay3 ->KL15 on (for all ECUs)

Switch between VX and Lauterbach :
- Relay4 off-> VX conneted
- Relay4 on -> Lauterbach connected

Switch between ECUs :
- Relay1 off / Relay2 off -> ECU1 connected to VX/Lauterbach
- Relay1 on / Relay2 off -> ECU2 connected to VX/Lauterbach
- Relay1 on / Relay2 on -> ECU3 connected to VX/Lauterbach

Relay5 free

PS: Relay max current = 10 A

BLS EBB

Wednesday, November 24, 2021 8:07 AM

BLS -> Digital_In_Card

Obs: It is used open collector comparators -> pull-up resistor needed

ASCII Table

Friday, December 17, 2021 8:19 AM

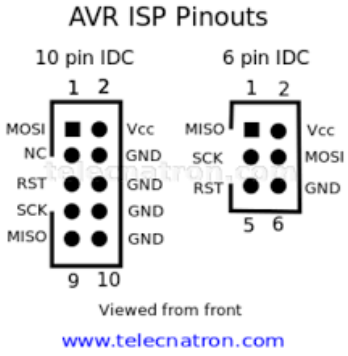
Dec	Char	Dec	Char	Dec	Char	Dec	Char
0	NUL (null)	32	SPACE	64	@	96	`
1	SOH (start of heading)	33	!	65	A	97	a
2	STX (start of text)	34	"	66	B	98	b
3	ETX (end of text)	35	#	67	C	99	c
4	EOT (end of transmission)	36	$	68	D	100	d
5	ENQ (enquiry)	37	%	69	E	101	e
6	ACK (acknowledge)	38	&	70	F	102	f
7	BEL (bell)	39	'	71	G	103	g
8	BS (backspace)	40	(	72	H	104	h
9	TAB (horizontal tab)	41	)	73	I	105	i
10	LF (NL line feed, new line)	42	*	74	J	106	j
11	VT (vertical tab)	43	+	75	K	107	k
12	FF (NP form feed, new page)	44	,	76	L	108	l
13	CR (carriage return)	45	-	77	M	109	m
14	SO (shift out)	46	.	78	N	110	n
15	SI (shift in)	47	/	79	O	111	o
16	DLE (data link escape)	48	0	80	P	112	p
17	DC1 (device control 1)	49	1	81	Q	113	q
18	DC2 (device control 2)	50	2	82	R	114	r
19	DC3 (device control 3)	51	3	83	S	115	s
20	DC4 (device control 4)	52	4	84	T	116	t
21	NAK (negative acknowledge)	53	5	85	U	117	u
22	SYN (synchronous idle)	54	6	86	V	118	v
23	ETB (end of trans. block)	55	7	87	W	119	w
24	CAN (cancel)	56	8	88	X	120	x
25	EM (end of medium)	57	9	89	Y	121	y
26	SUB (substitute)	58	:	90	Z	122	z
27	ESC (escape)	59	;	91	[	123	{
28	FS (file separator)	60	<	92	\	124	|
29	GS (group separator)	61	=	93	]	125	}
30	RS (record separator)	62	>	94	^	126	~
31	US (unit separator)	63	?	95	_	127	DEL

Odis Project

Wednesday, December 22, 2021 2:10 PM

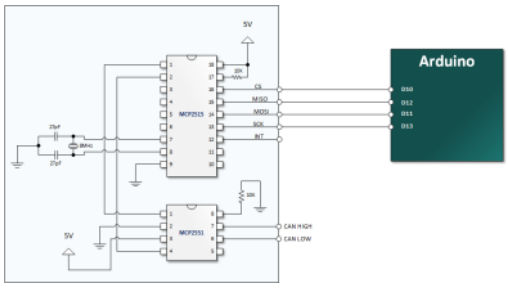
Project helpfull info:

1. If different serial input is using, should be use also different latch pins for each registers. SCK pin can be the same for all registers.
2. *The best option should be a daisychain with all necessary SIPO registers - research on internet is needed in order to learn how to use a daisychain
3. With MCP2221 data can be transmitted but cannot be received : two possible issue :1.MCP2221, 2.ArduinoSW
4. For ODIS project is using different serial input and latch pins for each register
5. Schematic should be updated. HINT point 4!
6. Python script can be improved! Maybe a serial setup using PID/HID should be implemented(research needed for that)
7. The GUI should not be opened again if it is already running - look to :https://stackoverflow.com/questions/162291/how-to-check-if-a-process-is-running-via-a-batch-script



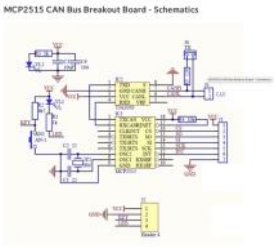
CAN Reader Arduino

Tuesday, January 11, 2022 8:33 AM



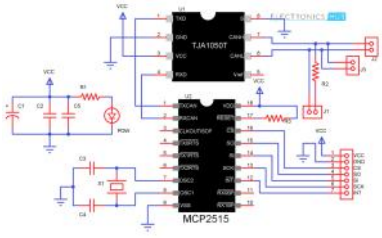
Features :

1. Sent/receive data via CAN bus
2. Able to be controlled from a GUI
3. Able to generate signals , for eg PWMs
4. Able to read signal and plot it into a GUI - https://www.youtube.com/watch?v=8exB6Ly3nx0
5. Able to communicate via serial



Ideas for CAN Reader:

1. !MCP2515 can't be used for CAN FD just CAN2.0 up to 1Mb/s
2. Must be develop[ed a GUI with option to read from CAN specific signals or to send on CAN bus DATA
3. Must be create for e.g. one EXCEL document to convert from DBC to DATA frame



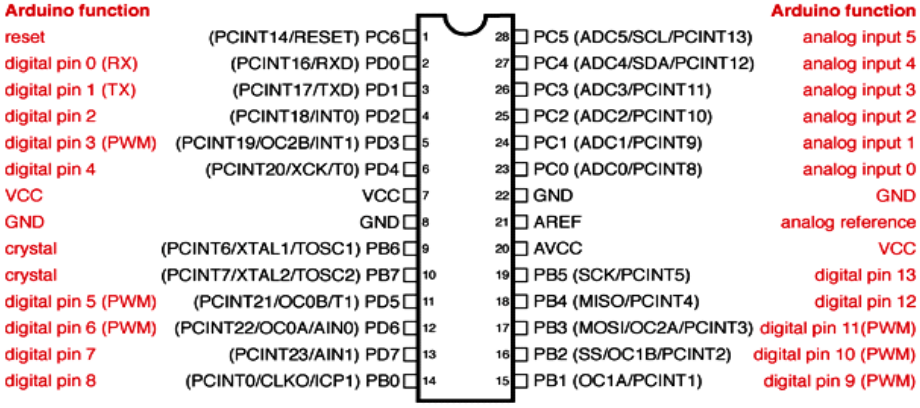
Ci

Friday, February 4, 2022 10:59 AM

ATmega168/328P-Arduino Pin Mapping

Note that this chart is for the DIP-package chip. The Arduino Mini is based upon a smaller physical IC package that includes two extra ADC pins, which are not available in the DIP-package Arduino implementations.

Atmega168 Pin Mapping



Digital Pins 11,12 & 13 are used by the ICSP header for MOSI, MISO, SCK connections (Atmega168 pins 17,18 & 19). Avoid low-impedance loads on these pins when using the ICSP header.

FIU Redesign

Wednesday, July 6, 2022 9:41 AM

Boards available:

1. FI Card - 9
2. FI MED Card - 2
3. FI Control Board - 1
4. Resistor Net Card - 1 (old layout available v1.2 instead v1.3)
5. High Current Relay Board - 1
6. FIU Backplane

Obs : Just PCB boards are available without components

Perform a list with all necessary components needed to populate :

1. FI_Card x 9
2. FI_Med_Card x 2
3. High_Relay_Card
4. Backplane

SW:

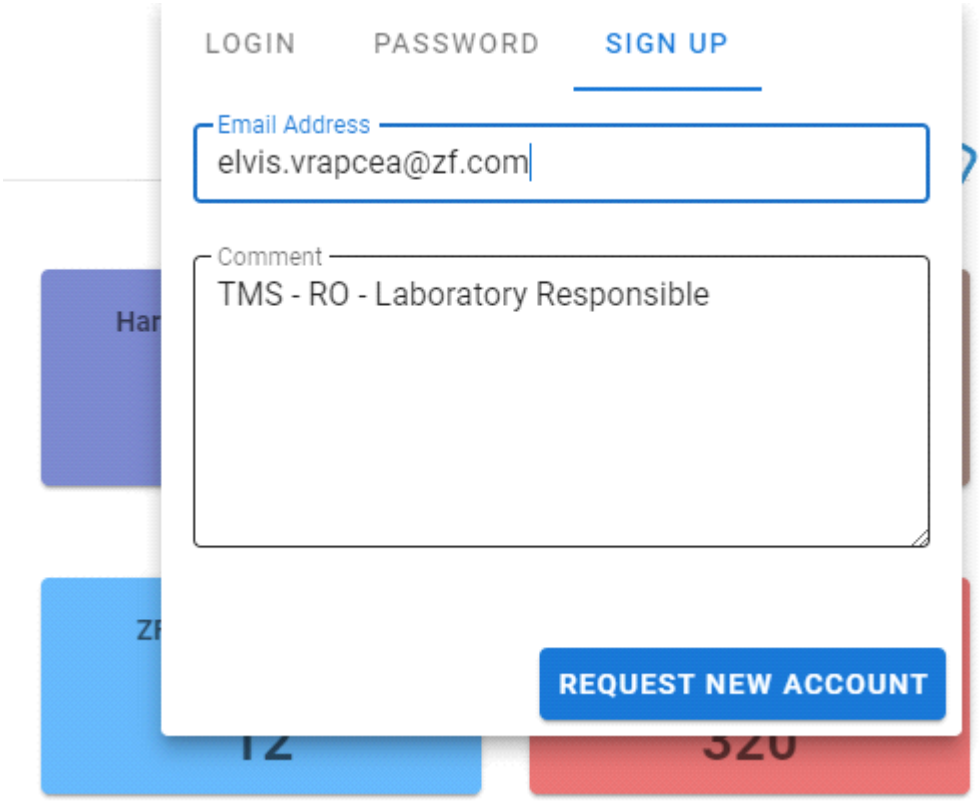
- Safety rule to avoid short to GND and short to Vbat at the same time for the same pin
- Conflict between digital control and CAN control

C:\Program Files (x86)\Atmel\Studio\7.0\toolchain\avr8\avr8-gnu-toolchain\avr\include\util

!!! Aici trebuie creat fisierul delay_16Mhz.h

LaMa

Tuesday, July 12, 2022 11:10 AM



Oscilloscope

Monday, August 29, 2022 4:12 PM

RTE 1054 :

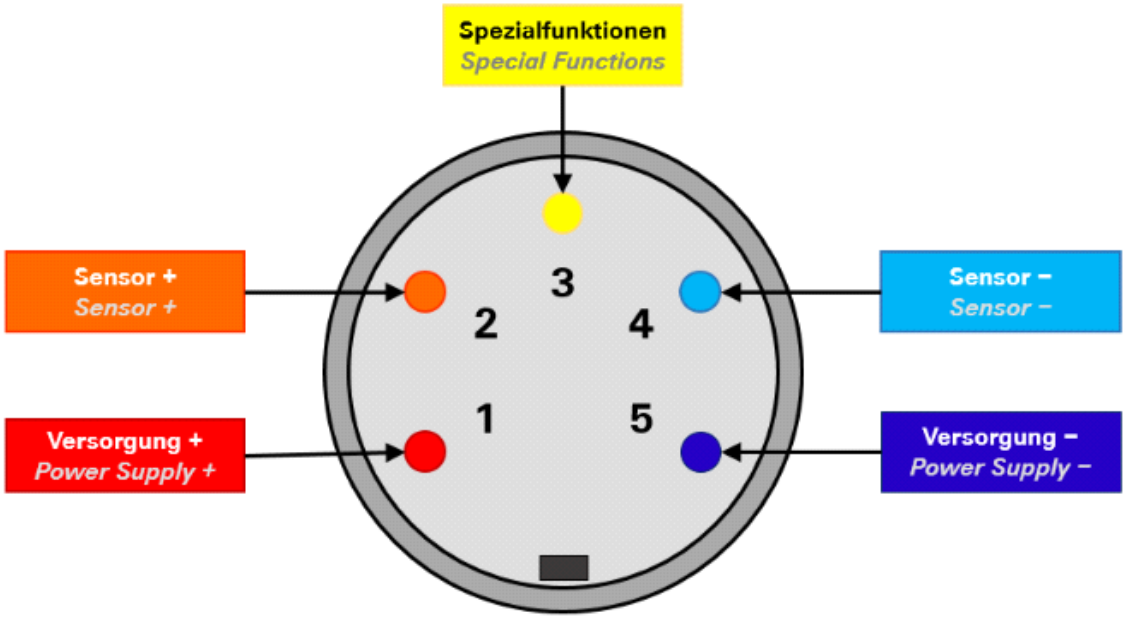
Password for Instrument user : 894129
Computer Name : TMSC46378

ClampForceSensor

Monday, March 20, 2023 9:03 AM

Sensor Plug Pinout

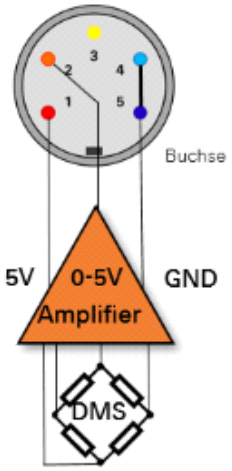
This is the standard ZF Koblenz pinout for connecting all kinds of sensors to any of the signal conditioning units provided by us:



Next to that, there are some special connectors used in some areas:

5pol. Binder Serie 680 M16
Bosch Drucksensor DS2

ZF



1 = U_S +5V
2 = Signal +
3 = nc
4 = Signal –
5 = GND

8pol. M12 Binder
Analog-In Signal Conditioning

ACT

Buchse

1 = Uv Sensor Supply +
2 = Signal +
3 = Special
4 = Signal –
5 = Sensor Supply GND
6 = nc
7 = nc
8 = nc

5pol. Binder Serie 712 M9
Bosch Drucksensor DS2

VW

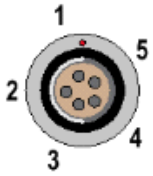
Buchse

1 = U_S +5V (Bosch DS2 Sensor)
2 = GND
3 = nc
4 = Signal +
5 = nc

Orig. VW Belegung
1 = V_{Supply} +
2 = V_{Supply} –
3 = Shield
4 = Signal +
5 = Signal –

5pol. ODU Mini Snap
Bosch Drucksensor DS2

Daimler



Buchse

1 = Shield
2 = Signal –
3 = U_S +5V (Bosch DS2 Sensor)
4 = GND
5 = Signal +

6pol. LEMO
FGA 0S 306 CLA

CSM ADMM 4/8

Buchse

1 = V_{IN} +
2 = V_{IN} –
3 = nc
4 = V_{OUT} + (Sensor Supply +)
5 = GND (Sensor Supply GND)
6 = V_{OUT} – (Sensor Supply –)

Channel Type	Board	Pinout of the 5-pin connector				
		Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
Temp. NiCrNi	5130	Not connected	+Input NiCrNi	+PT100	-Input NiCrNi	-PT100
Universal Amplifier	5185	5V / 10V / 13,5V [1,2]	+ Input	SGA mode = R-Cal. Volt mode = open	- Input	GND
ISO ±10V new	5208	5V / 10V / 13,5V [1,2]	+Input	Not connected	- Input	GND
Active sensor conditioning	5260	+15V	+ Input	Not connected	GND	GND
CANSiCo	5266	5V / 10V / 13,5V [1,2]	+ Input	SGA mode = R-Cal. Volt mode = open	- Input	GND

[1] Configurable with Jumper
[2] 13,5V not load stable (U_{out} = 10 – 14 V)

Matlab

Thursday, April 6, 2023 10:52 AM

C Compilers

To change the default C compiler, at the MATLAB command prompt, type:

```
mex -setup
```

`mex -setup` defaults to information about the C compiler. MATLAB also displays links to other C compilers on your system. To change the default, select one of these links.

Alternatively, type:

MathWorks License Manager (zf-world.com)

Current Measurement STM32

Wednesday, July 26, 2023 7:54 AM

ADC resolution = 16 BIT
ADC Vref = 3.3 V
ADC step = 50 uV

ADC clk = 44 MHz

ADC Sampling Time = 32.5
ADC Converion Time = 12.5
-> 588KS/S

ADC clk = 16 MHz

ADC Sampling Time = 64.5
ADC Converion Time = 12.5
-> 240KS/S

The total conversion time is calculated as follows:

Tconv = Sampling time + 12.5 cycles

Example:

With an ADCCLK = 14 MHz and a sampling time of 1.5 cycles:

Tconv = 1.5 + 12.5 = 14 cycles = 1 µs

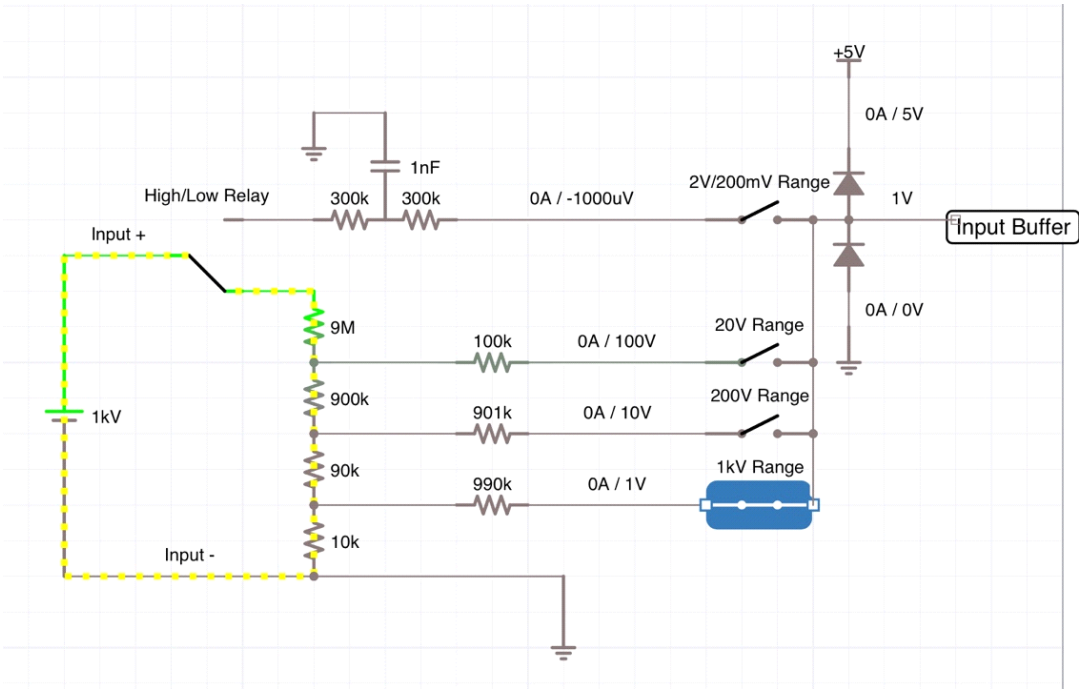
$$Tconv = \frac{\text{Sampling time + 12.5 cycles}}{\text{ADC CLOCK}}$$

To do :
Configureaza CAN DLC=4 // Nu e nevoie de mai mult
Scapa de "else-ul" din SOL B+ Feedback si ruleazal in main(() dupa ReadGpioState()

Putem masura si Vbat
Putem folosi SOL_B+ ca si trigger pt masurat
Putem folosi jumper pt a diferentia sursele / folosim o variabila cu doua valori(in functie de pozitia switchului) pt a calcu la curentul

Conffigurare RXCAN :

```
  FDCAN_FilterTypeDef canfilterconfig;

  canfilterconfig.FilterConfig = FDCAN_FILTER_TO_RXFIFO0;
  canfilterconfig.FilterID1 = 0x668;
  canfilterconfig.FilterID2 = 0x668; //can receive just 0x668 id
  canfilterconfig.FilterIndex = 0; //probabil poti avea mai multe filtre definite
  canfilterconfig.FilterType = FDCAN_FILTER_MASK; //Classic filter: FilterID1 =
filter, FilterID2 = mask
  canfilterconfig.IdType = FDCAN_STANDARD_ID;
  canfilterconfig.IsCalibrationMsg = 0; //this parameter is ignored because
FilterConfig is different then FDCAN_Filter_TO_RxBuffer
  canfilterconfig.RxBufferIndex = 0; // same comment as above

  HAL_FDCAN_ConfigFilter(&hfdcan1, &canfilterconfig); //
```



In order to improve the ADC accuracy the feedback will be splitted in 4 ranges.

SM 30 – 100:

- 16 bit resolution ADC with 3.3V Vref → step_size = 50 uV
  - WCC Error 8x step_size → ±0.15mA for range [0:0.05V] [0:1A]
  - WCC Error 8x step_size → ±1.5mA for range [0.05:0.5V] [1:10A]
  - WCC Error 8x step_size → ±6.1mA for range [0.5:2.5V] [10:50A]
  - WCC Error 8x step_size → ±15mA for range [2.5:5V] [50:100A]

SM 30 – 200:

- 16 bit resolution ADC with 3.3V Vref → step_size = 50 uV
  - WCC Error 8x step_size → ±0.3mA for range [0:0.05V] [0:2A]
  - WCC Error 8x step_size → ±3mA for range [0.05:0.5V] [2:20A]
  - WCC Error 8x step_size → ±13mA for range [0.5:2.5V] [20:100A]
  - WCC Error 8x step_size → ±30mA for range [2.5:5V] [100:200A]

The current value will be calculated by the microcontroller and send it via CAN, in order to know what power supply is connected to the labcar a slide switch will be used.

PS: Error values has been calculated, not tested, expected to be higher due to electrical noise!

From <https://trw1-my.sharepoint.com/personal/elvis_vrapcea_zf_com/Documents/Desktop/@Elvis/@Development/CurrentMeasurementBoard/Kicad/Integration%20of%20Current%20Measurement%20Module.docx>

Current Measurement Boards for HIL

Monday, October 2, 2023 9:10 AM

HIL Power supply current measurement Interface

- [x] Analyze a way of displaying the current consumed by the power supply
  - [x] Possible offset on the measurement caused by Arduino - Double check will be done with the DSPACE
  - [x] Check With 200A power supply.6
- [x] 2 types of HILs with power supplies
- [ ] How to implement in HIL
  - [ ] Pilot project - Daimler MMA + NCAR (Scalexio)
  - [ ] What modifications are required - Cable Power Remote Feedback
  - [x] Develop schematic
  - [ ] Learn how to use the development board
  - [ ] Test on HIL the gain feature using the development board

Work Packages:

- [ ] Reproduce Signal measurement board in KICAD
  - [ ] Install tool from J:\PetrusanG\Tools

Schematic:

- Sol B + feedback - connector to SOL B+ Supply monitor by using an optocoupler to monitor the SOL
- Enable - connector to uC

Code:

- Get feedback from auto-range feedback
  - Use the inputs to calculate the microcontroller the range and select the required mux output
  - Calculate A0_mux and A1_mux to control the MUX U11 and MUX U10
- HINTS:
  - Get information from the datasheet
  - Learn about interrupts

Inputs --> Outputs

inputs				Outpus	
range 1	range 2	range 3		A0	A1
0	0	0	>>>	0	0
1	0	0		1	0
1	1	0		0	1
1	1	1		1	1

- Calculate power supply feedback in the microcontroller to control the mux for the auto-ranging.
  - From auto-ranging to second mux as out to the uC_ADC
    - Calculate inside the uC the Current consumption.
      - Voltage divided by auto-ranging gain and multiplied with the power supply parameters
      - 5V - 100A (calculate based on Power supply select), uC_ADC - ?A
      - 5V- 200A (calculate based on Power supply select), uC_ADC - ?A
- Reset button functionality based on NRST from the microcontroller
- Monitor the ENABLE OF THE MUXES if there is not SOL B+
- Configure CAN communication - Simulation CAN database - create new signal inside the SIM CAN DBC

Known limitations:

SM30-100 - Power supply:

Range1: 0 to 0.05 mV (0 to 1A)

- +/- 30mA
- Can measure only above 30mA

Range2:

SM30-200 - Power supply:

Range1: 0 to 0.025 mV (0 to 1A)

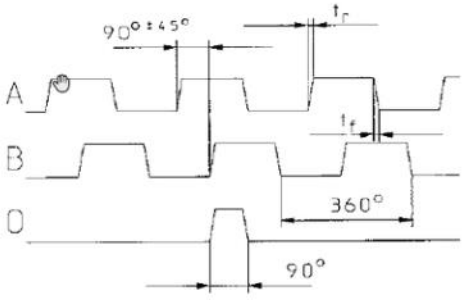
- **Future tests required**

VSD 2.0

Thursday, February 22, 2024 10:49 AM

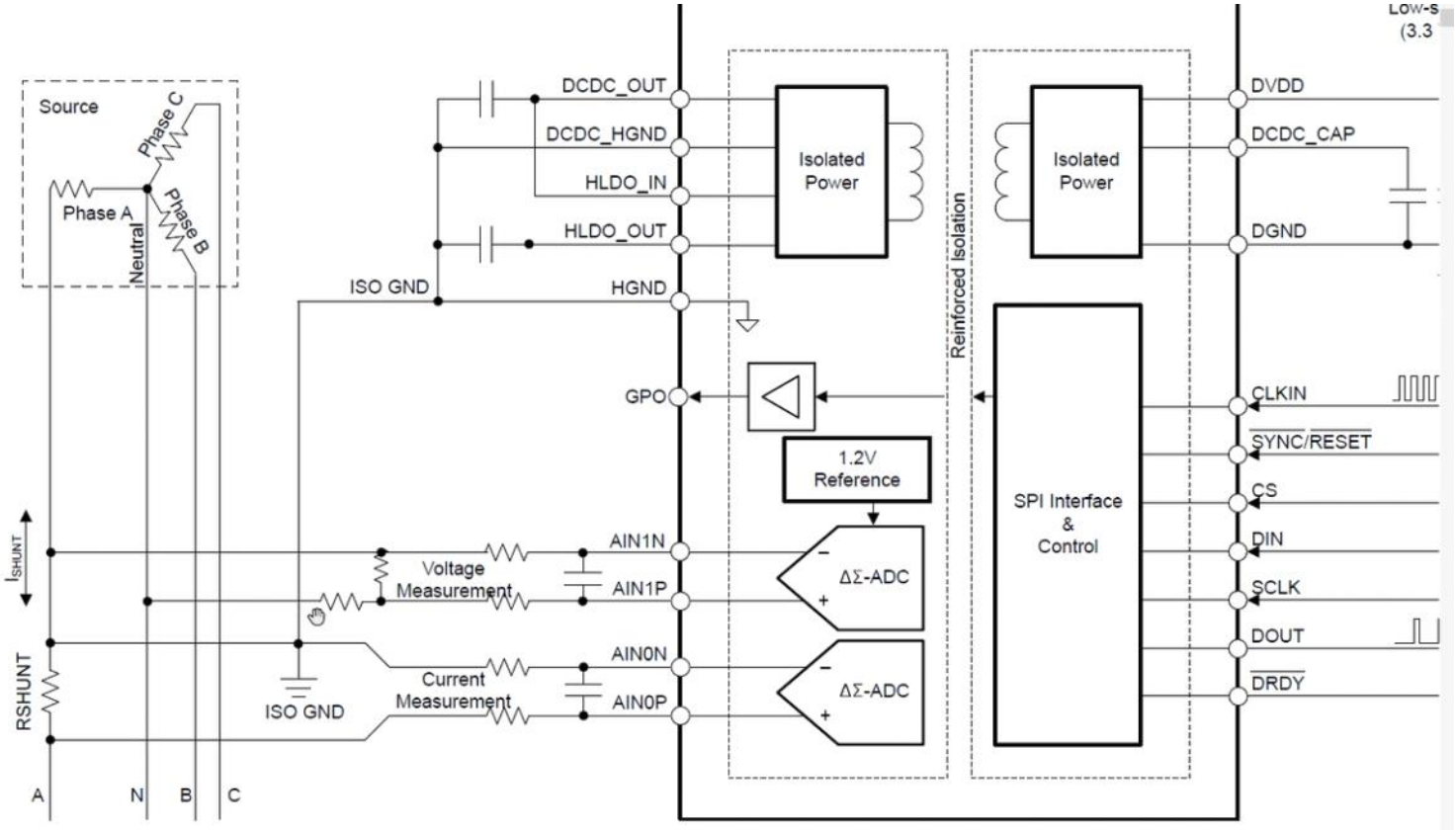
Dreikanalige Drehgeber

Zusätzlich zu den beiden Kanälen A und B ist ein Nullimpuls vorhanden, der einmal pro Umdrehung auftritt und in der Regel zur Referenzfahrt (Nullung) einer Maschine verwendet werden kann.



- Welle im Uhrzeigersinn drehend, mit Blick auf die Welle
- Invertierte Signale sind verfügbar
- Der 0-Impuls ist mit den Kanälen A und B UND verknüpft

tr = Flankenanstiegszeit
tf = Flankenabfallzeit



Typical Application of the AMC130M02 in Energy Meteri

ESSI

Tuesday, February 27, 2024 11:47 AM

Relay Control : 74AHC574PW PN: 2445011 -> Valve Cards

Relay Control : GPIO or I/O extender -> uC Control Board

INFO!!!! TA DVEcosystem TECAgent

Tuesday, November 8, 2022 10:39 AM

PC: TMSC60888
User: Z0060431

New users:

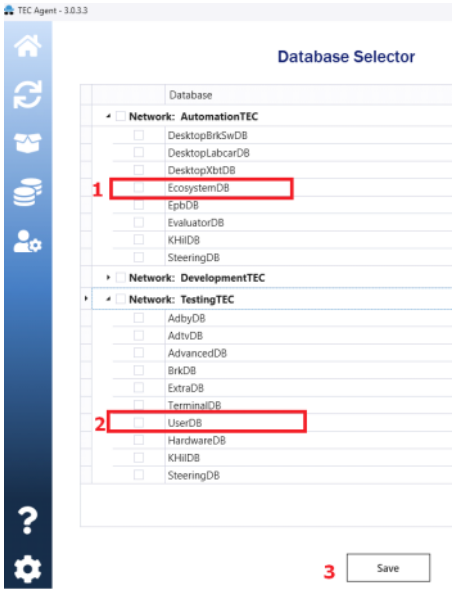
- [ ] Generic USER for TM: ZF-World\Z0215081 pw: Adty_labcar1
- [ ] Generic USER for KO: ZF-World\Z0211749 pw: Adty_ciathil1

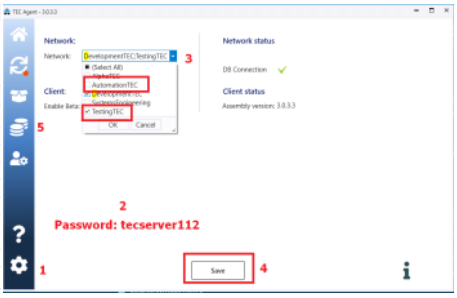
Pcname.adt.trw.com

TecAgent settings
Password: tecserver112

TestAutomation password:
Labcar
Ciathil4

Server : https://TMSC60733.emea.zf-world.com/svn/TEC





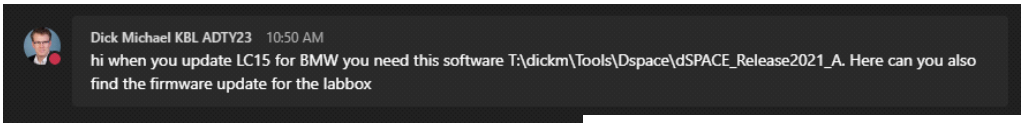
Checklist for dSPACE 2020B Change

- Close all Tools (dSPACE, DVecosystem)
- Start dSPACE Installation Manager with Admin rights
  - Press Activate Release Button
  - Change the Release to dSPACE 2020B
- Update the TA to minimum version 4.1.001 (Opel) - https://TMSC60733.emea.zf-world.com/svn/TEC (svn user:Labcar pw:Ciathil4)
- Start DVEcosystem
  - Check the matlab version (new TA need minimum 2019b)
  - When not install minimum 2019b
- Check the installation from the Python packages - T:\dickm\Testautomation\site-packages
- Open the new model (check MAPort in TA)
- Start a test for check

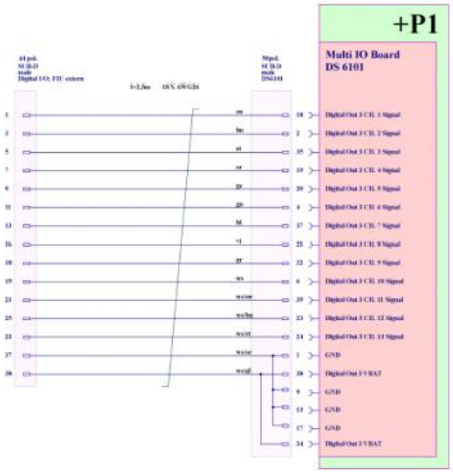
Reconfigurare HIL

Wednesday, November 8, 2023 2:28 PM

1. Pentru IBC si NCAR "SCALEXIO" trebuie facute modficari in toate boxurile
2. Instalare drivere Vector plsu confiugurare VX / VN / Vector Hardware Configuration
3. VN -ul se configureaza pe ethernet in Vector Platform Manager
4. CANape -ul se copiaza de pe un alt HIL configurat pt acelasi proiect
5. Trebuie schimbata ip urile la EME / Scalexio / VN / VX / HUB
6. Pentru dSPACE se instaleaza ultima versiune de Firmware , versiunea de dSPACE (ex 2020 B sau alta) si patch daca e cazul
7. Instalare ZENZEFI si CANoe pentru IBC



8. Pt FIU adauga 5V la pin 38 si GND la pin 37 (aici ar trebui unit cu GND ul de la dSPACE)
9. Daca nu merge verifica conectorul



HILs restart

Thursday, March 16, 2023 9:34 AM

Restart Steps.txt

```
1. Set Autorun off - asteptati sa se termine testul

2. Verificati daca sunt update-uri de windows din Software center \ updates si executati tot

3. Salvati last model sau va uitati in MAPort file din TestAutomation folder

4. Restart PC, Dspace, EME, VSD box dupa caz.

5. Dupa repornire porniti modelul si recalibrati EME si VSD Box
    o Pentru EME se  face STOP Simulation si Start Simulation
    o Pentru VSD Box - se cauta semnalul de BUS MSC_01_Config_01_CMD in stanga la bus navigator si se da click dreapta - generate TX layout si se apasa pe KICKOUT
6. Verificati semnalele in CANape daca se poate face trace, verificati in CANOon fault-urile

7. Inainte sa dati autorun - verificati partea de registry si USB
    o Pentru Registry dati search in bara Registry Editor: si mergeti la path-ul Computer\HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Windows\USERPostMessageLimit ---> change it to 1 000 000 (0x000F 4240)
Pentru USB deschideti Device Manager si jos la Universal Serial Bus Controllers dati click dreapta\properties pe fiecare linie existenta si la Power Management debifati tot.
```

HIL IPs

Friday, May 27, 2022 7:52 AM

HIL Ethernet Configuration

Netgear Switch: 192.168.1.10

dSPACE : 192.168.1.201

EME: 192.168.1.145

VX Box: 192.168.1.1

VN Box: 192.168.1.5

IBOB: 192.168.1.180

Power supply HIL : 192.168.1.100
Power supply Addon : 192.168.1.101

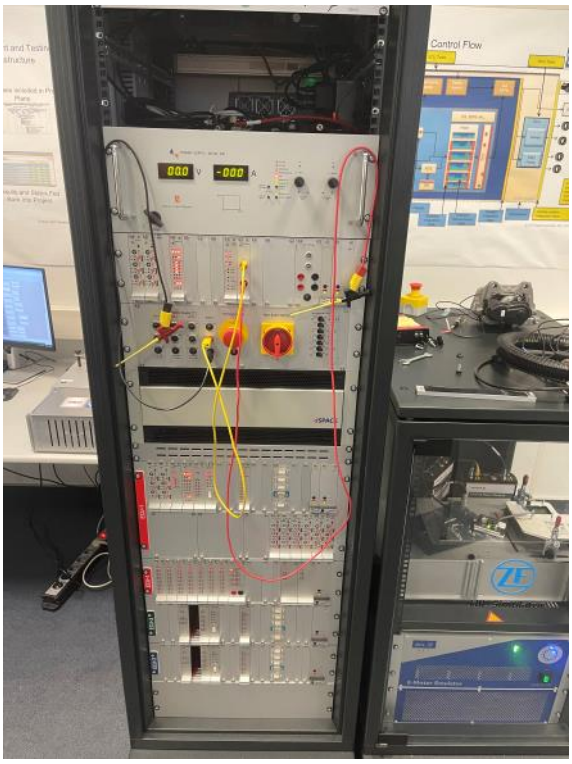
BrakingHil Scalexio

Thursday, February 23, 2023 1:11 PM

VSD Box calibration

Friday, May 5, 2023 2:20 PM

Use unicat_gen4_factorycalibration_CIAT model and the housing send by Michael



Unscrew the second plate of VSD box and there you can find 2xboards with 2x potentiometers(left offset / right gain) for each valve.
Step 1 is to connect the probes on the valves and set the offset to 0, afterwards switch "Calib switch"(from model) to "on" (should be 1.6A) and set the gain to 5.5
Repeat the procedure for all valves twice!

VSD SW Location:
L:\Intern\CIAT_HIL_HW_Doku\Software_setups\B5287

Power manager socket

Monday, December 19, 2022 2:08 PM

Addon: 192.168.1.101
HiL: 192.168.1.100

Default: 192.168.0.254

HIL Ethernet Configuration

Netgear Switch: 192.168.1.10

dSPACE : 192.168.1.201

EME: 192.168.1.145

VX Box: 192.168.1.1

VN Box: 192.168.1.5

IBOB: 192.168.1.180

Power supply HIL : 192.168.1.100
Power supply Addon : 192.168.1.101

Default IP and MAC Addresses for dSPACE Hardware

Question

What are the default IP addresses and subnet masks of the dSPACE hardware for the host communication? Where do I find the MAC address of the dSPACE hardware?

Solution

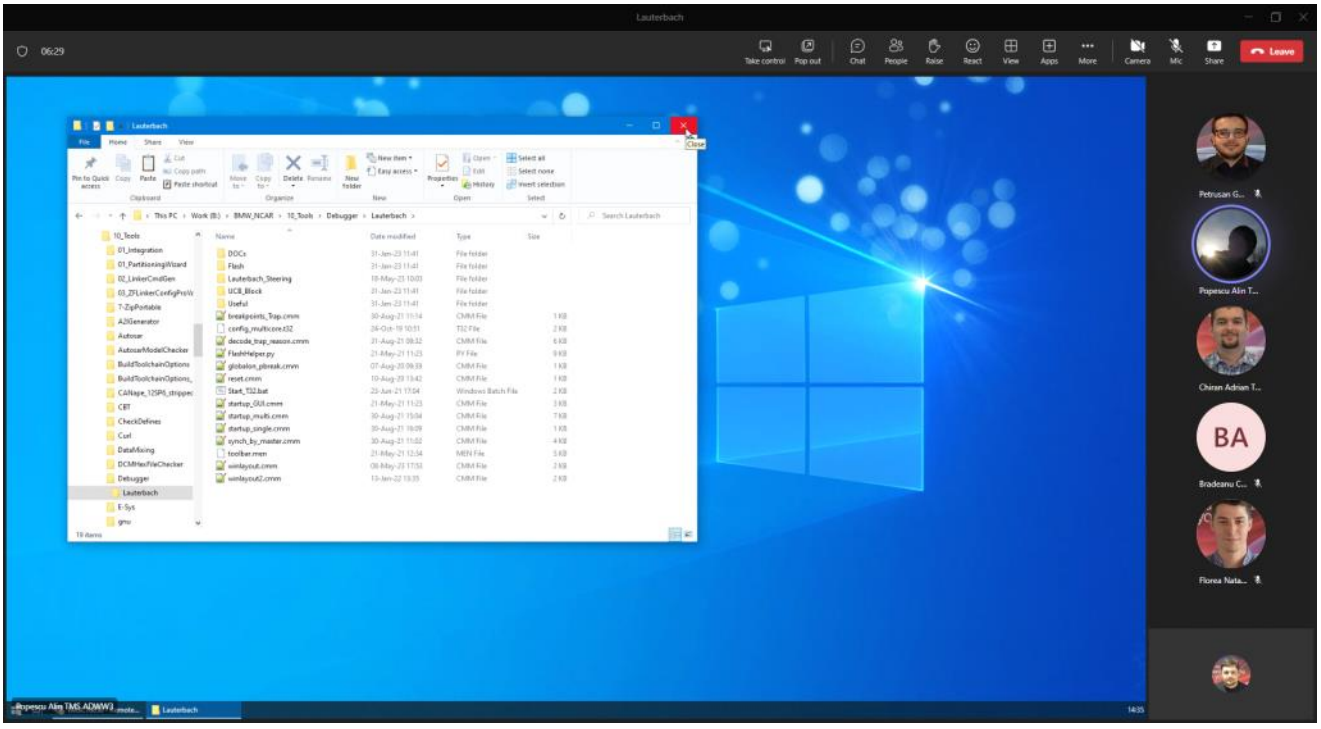
The following table shows the default IP addresses of the dSPACE hardware and where to find the MAC addresses.

dSPACE hardware	default IP address	MAC address – where to find?
DS1007 PPC Processor Board	192.168.140.7	label on the board
DS6001 (for SCALEXIO LabBox)	192.168.140.10	label on the board
DCI-GSI2	192.168.140.2	label on the enclosure
MicroAutoBox II	192.168.140.1	bottom side of the enclosure
MicroAutoBox III	192.168.140.10	bottom side of the enclosure
MicroLabBox	192.168.140.7	bottom side of the enclosure
SCALEXIO Real-Time PC	192.168.140.10	label behind the PC's front flap
Slot CPU	192.100.100.98	label on the board

Lauterbach

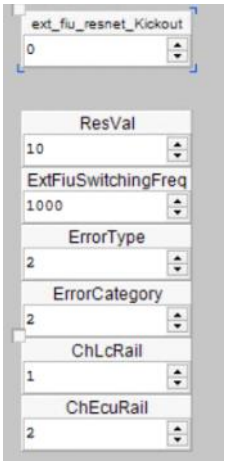
Tuesday, June 20, 2023 2:36 PM

Se poate deschide direct din SW Tools -Debugger -Lauterbach



FIU ASAM Manipulation

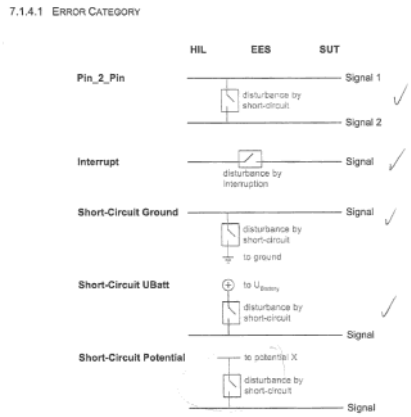
Wednesday, June 21, 2023 3:23 PM

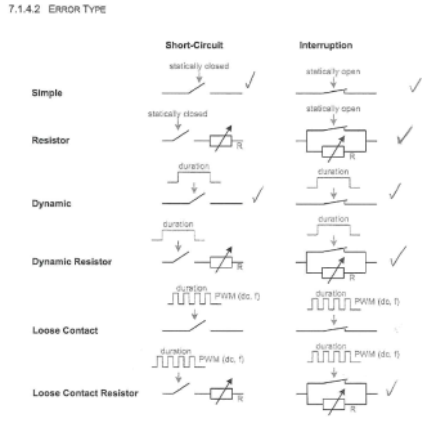


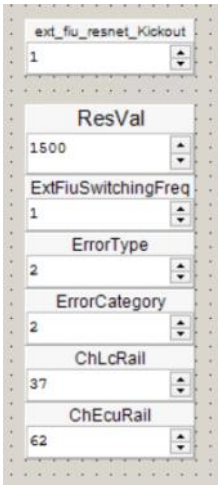
ResVal = rezistenta dorita intre pini

Ext Fiu Swith = frecventa ?

ErrorType =







IPT's

Monday, August 7, 2023 8:32 AM

<table>
<tr><td>vesto/Tunable Parameters/SensorSim2_IPT_x_Ch_Mode</td><td>0= Off;
1 = Analog;
2=SENT;
3=PWM</td></tr>
<tr><td>vesto/Tunable Parameters/SensorSim2_IPT_x_Ch_SENT_ErrorCode</td><td>0 = No Error;
1= set Bit0 Status Nibble;
2=set Bit1 Status Nibble;
3= set Bit 0+1 Status Nibble
4= Fast Channel CRC Error
8= Slow Channel CRC Error
16=Slow Channel loss
32= Tick Time deviation</td></tr>
<tr><td>vesto/Tunable Parameters/SensorSim2_IPT_x_Ch_SENT_SensorTyp</td><td><table><tr><th>SignalTyp</th><th>Value (Phys)</th><th>Value (Raw)</th></tr><tr><td>no Sensor</td><td>0</td><td>0x0</td></tr><tr><td>Vacuum Typ 1 (Daimler_BR213)</td><td>1</td><td>0x1</td></tr><tr><td>Vacuum Typ 2 (VW_MQBA1_370CN)</td><td>2</td><td>0x2</td></tr><tr><td>Pressure Typ 1 (OLD! VW_MEB)</td><td>3</td><td>0x3</td></tr><tr><td>Pedal Travel Typ 1(GM_EPBi_Bosch</td><td>4</td><td>0x4</td></tr><tr><td>Pressure Typ 2 (GM_EPBi_Bosch)</td><td>5</td><td>0x5</td></tr><tr><td>Pressure Typ 3 (IPT3.4 VW_MEB)</td><td>6</td><td>0x6</td></tr><tr><td>Pressure Typ 4 (IPTGEN6 BMW35up)</td><td>7</td><td>0x7</td></tr><tr><td>Brake Fluid Level Typ 1 (Geely)</td><td>8</td><td>0x8</td></tr></table></td></tr>
<tr><td>vesto/Tunable Parameters/SensorSim2_IPT_x_Ch_SENT_Value_1</td><td>Direct manipulation of the SENT Value 1</td></tr>
<tr><td>vesto/Tunable Parameters/SensorSim2_IPT_x_Ch_SENT_Value_2</td><td>Direct manipulation of the SENT Value 2</td></tr>
<tr><td>vesto/Tunable Parameters/SensorSim2_IPT_x_Ch_TickTime_Deviation</td><td>1= Slow channel manipulation active
0= Slow channel manipulation inactive</td></tr>
<tr><td>vesto/Tunable Parameters/SensorSim2_IPT_x_SlowChannel_Modify_Keep_Data</td><td>Tick Time deviation in %</td></tr>
<tr><td>vesto/Tunable Parameters/SensorSim2_IPT_Config_SlowChannel_Modification_Select</td><td>1= Slow channel data modification
2= Slow channel ID modification</td></tr>
<tr><td>vesto/Tunable Parameters/SensorSim2_IPT_Config_SlowChannel_M</td><td>Desired channel for modification</td></tr>
</table>

odify_Channel	
vesto/Tunable Parameters/SensorSim2 _IPT_Config_SlowChannel_M odify_Data	New data of SENT slow channel with the specified ID
vesto/Tunable Parameters/SensorSim2 _IPT_Config_SlowChannel_M odify_ID	ID of SENT slow channel which should get modified
vesto/Tunable Parameters/SensorSim2 _IPT_Config_SlowChannel_M odify_ID_from_now	new/changed ID of SENT slow channel to which it should be changed and is used from now

PIP

Monday, January 16, 2023 10:40 AM

curl https://bootstrap.pypa.io/get-pip.py -o get-pip.py

python get-pip.py

```
C:\Users\suraj>curl https://bootstrap.pypa.io/get-pip.py -o get-pip.py
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
100 2617k  100 2617k    0     0  5523k      0 --:--:-- --:--:-- --:--:-- 5545k

C:\Users\suraj>python get-pip.py
Collecting pip
  Downloading pip-22.1.2-py3-none-any.whl (2.1 MB)
     ---------------------------------------- 2.1/2.1 MB 4.3 MB/s eta 0:00:00
Collecting wheel
  Using cached wheel-0.37.1-py2.py3-none-any.whl (35 kB)
Installing collected packages: wheel, pip
  Attempting uninstall: pip
    Found existing installation: pip 22.0.4
    Uninstalling pip-22.0.4:
      Successfully uninstalled pip-22.0.4
Successfully installed pip-22.1.2 wheel-0.37.1

C:\Users\suraj>
```

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.2006]
(c) Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>cd C:\Program Files\Python36

C:\Program Files\Python36>python.exe -m pip install requests
Collecting requests
  Downloading requests-2.27.1-py2.py3-none-any.whl (63 kB)
     |████████████████████████████████| 63 kB 451 kB/s
Collecting idna<4,>=2.5; python_version >= "3"
  Downloading idna-3.4-py3-none-any.whl (61 kB)
     |████████████████████████████████| 61 kB 4.8 MB/s
Collecting certifi>=2017.4.17
  Downloading certifi-2022.12.7-py3-none-any.whl (155 kB)
     |████████████████████████████████| 155 kB 6.4 MB/s
Collecting charset-normalizer~=2.0.0; python_version >= "3"
  Downloading charset_normalizer-2.0.12-py3-none-any.whl (39 kB)
Collecting urllib3<1.27,>=1.21.1
  Downloading urllib3-1.26.14-py2.py3-none-any.whl (140 kB)
     |████████████████████████████████| 140 kB ...
Installing collected packages: idna, certifi, charset-normalizer, urllib3, requests
Successfully installed certifi-2022.12.7 charset-normalizer-2.0.12 idna-3.4 requests-2.27.1 urllib3-1.26.14
WARNING: You are using pip version 20.1.1; however, version 21.3.1 is available.
You should consider upgrading via the 'C:\Program Files\Python36\python.exe -m pip install --upgrade pip' command.

C:\Program Files\Python36>python.exe -m pip install base64
ERROR: Could not find a version that satisfies the requirement base64 (from versions: none)
ERROR: No matching distribution found for base64
WARNING: You are using pip version 20.1.1; however, version 21.3.1 is available.
You should consider upgrading via the 'C:\Program Files\Python36\python.exe -m pip install --upgrade pip' command.
```

Rec ModifiableV pythonw.exe 12/24/2018 12:19 AM Application 97 KB

Install multiple packages

Monday, January 16, 2023 10:40 AM

Pip install -r req.txt -> in req.txt add all packages that you want ex: package == 1.2.3.4

Pip freeze -> return a list with all packages that are installed

```
$ pip freeze > requirements.txt
```

Above line is creating a list with all libs installed

```
$ pip install -r requirements.txt
```

Using above line you can install all the libs from requirements.txt

Python - notes

Tuesday, January 4, 2022 4:45 PM

CMD : Pyinstaller -F -w -i= ?.ico python.py

Package installation :

1. Pip
2. Tkinter
3. Pil
4. Pyinstaller Eg: pyinstaller --onefile --windowed myscript.py
5. Pyserial
6. Pygame
7. Numpy
8. Matplotlib
9. Pywinauto
10. PySimpleGUI
11. Re - regular expresion / good to take text from a document
12. Os - open cmd and write command inside
13. Psutil - good to find process and kill
14. Ctypes / locale /

From AlexPeia:

- import os
- from bs4 import BeautifulSoup
- from urllib import request
- import codecs
- import xlsxwriter
- import xlrd
- from difflib import SequenceMatcher
- from operator import itemgetter

Do not forget!

```
root.eval('tk::PlaceWindow . center') - use it to open the GUI in the middle of the main screen

root.iconbitmap(default='test.ico')  - the .ico file appear just in the root title

root.bind("<Escape>", lambda e: e.widget.quit()) - use it to quit the GUI with ESC button

root.overrideredirect(True) - use it to "get rid" of root title

FOR PyQt5 use :  self.setWindowIcon(QtGui.QIcon('QRev.ico')) to apper icon in the taskbar

FOR Tkinter : import ctypes

              myappid = 'mycompany.myproduct.subproduct.version' # arbitrary string
              ctypes.windll.shell32.SetCurrentProcessExplicitAppUserModelID(myappid)


Import os  // os.getlogin()  // os.environ.get('USERNAME')  - read username
```

```
>>> import locale
>>> locale.getdefaultlocale()
('es_ES', 'cp1252')          # <----------
Bad! I'm on english OS
.>>> import ctypes
>>> windll = ctypes.windll.kernel32
>>> windll.GetUserDefaultUILanguage()
1033>>>
locale.windows_locale[ windll.GetUser
DefaultUILanguage() ]
'en_US'# <---------- Good work
```

From <https://stackoverflow.com/questions/3425294/how-to-detect-the-os-default-language-in-python>

Import os or
import getpass
read username

https://linuxize.com/post/python-get-change-current-working-directory/

```
cwd = os.getcwd()
file.open(cwd + "\"+ "database.txt")
```

version 1.0.0.3

```
file = "\2091\sample.txt"
path = os.getcwd()+file
fp = open(path, 'r+');
```

Or use: os.path.join(path, 'x.txt')

Packages-m

Friday, January 14, 2022 3:36 PM

Upgrade python with following packages :

Python Packages

```
pythonPath/python.exe -m pip install -packageName
```

Packagename:

Requests

Base64

Codecs

pywin32

requests-pkcs12

pyOpenSSl

zeep

urllib3

```
pythonPath/python.exe -m pip install --upgrade
```

Notes

- Update python packages for the HILs mentioned below (all, except Opel HILs)

For update:
- log in with your user and update using the file attacked - use SCSSDLC1 user as admin.

Do it on :

Checklist 0 / 12

- ◯ LC3
- ◯ LC8
- ◯ LC12
- ◯ LC14
- ◯ LC15
- ◯ LC24
- ◯ LC25
- ◯ LC26
- ◯ LC27
- ◯ LC28
- ◯ LC29
- ◯ Braking HIL

Update MQB48w HILs with Dspace 2020B:

- ☐ LC26
- ☐ LC27
- ☐ LC24

Serial

Tuesday, May 30, 2023 4:11 PM

```
import serial
import time
try:
    arduino = serial.Serial(port,speed)
    time.sleep(2)
    print("Connection to " + port + " established succesfully!\n")
except Exception as e:
    print(e)

#Note: for characters such as 'a' I set data = b'a' to convert the data in bytes
#However the same thing does not work with numbers...
data = 0
data = arduino.write(valueToWrite)
time.sleep(2)
arduino.close()
```

```
3>> import struct
3>> print(struct.pack('>B', 0))
b'\x00'
3>> print(struct.pack('>B', 255))
b'\xff'
3>> print(struct.pack('>2B', 255, 0))
b'\xff\x00'
3>> print(struct.pack('>H', 9000))
b'#('
```

```
data = arduino.write(struct.pack('>B', valueToWrite))
```

Schedule

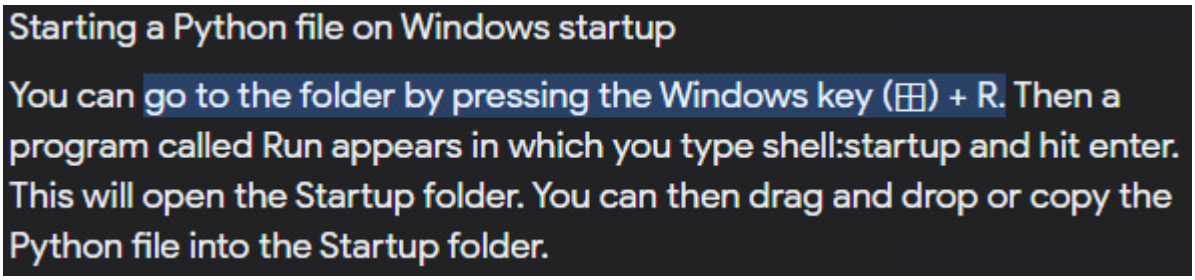
Wednesday, June 28, 2023 2:53 PM

```
$ pip install schedule
```

```
import schedule
import time

def job():
    print("I'm working...")

schedule.every(10).seconds.do(job)
schedule.every(10).minutes.do(job)
schedule.every().hour.do(job)
schedule.every().day.at("10:30").do(job)
schedule.every(5).to(10).minutes.do(job)
schedule.every().monday.do(job)
schedule.every().wednesday.at("13:15").do(job)
schedule.every().day.at("12:42", "Europe/Amsterdam").do(job)
schedule.every().minute.at(":17").do(job)

def job_with_argument(name):
    print(f"I am {name}")

schedule.every(10).seconds.do(job_with_argument, name="Peter")

while True:
    schedule.run_pending()
    time.sleep(1)
```

Starting a Python file on Windows startup

Wednesday, June 28, 2023 2:55 PM



Virtual Env

Friday, December 15, 2023 3:49 PM

1. Use venv lib because it's already installed and it's working with python3 and grater
2. Step 2 create the environment for your project using "python -m venv folder"
3. Activate it using "folder/scripts/activate.bat"
4. To use it in Vscode use "folder & code ."
5. To deactivate use "folder/scripts/deactivate.bat"
6. To delete , just delete folder

https://www.dataquest.io/blog/a-complete-guide-to-python-virtual-environments/#:~:text=As%20a%20piece%20of%20advice,it%20%E2%80%94%20never%20install%20packages%20globally.

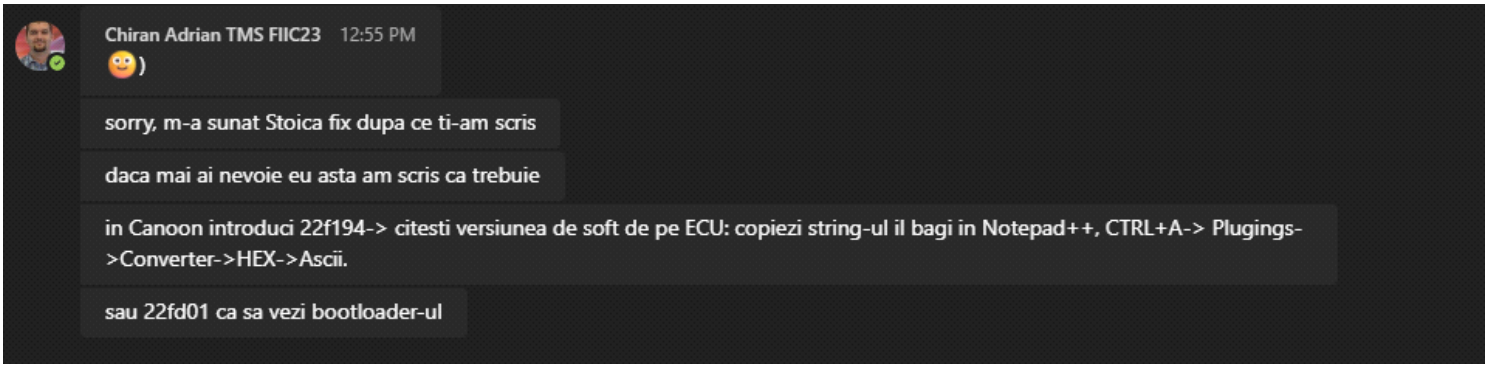
```
1  import tkinter as tk
2  from tkinter import *
3  from tkinter.ttk import *
4  import time
5  from pywinauto import Desktop
6  from pywinauto.application import Application
7  from usedFunctions import *
8  import ctypes
9  import locale
10 import getpass as gt
11 import os
12 import platform
13 from PIL import Image, ImageTk
14 import pytz
15 import datetime
16 import urllib.request, json
17 import pymssql
18 import win32gui
19
20 global user, hide_options
21 connection_attempt=0
22 path = os.getenv('APPDATA')+'\TEC\RemoteDesktopConnect
```

SW

Thursday, February 16, 2023 12:53 PM

How to find SW

```
429.326   6AD   22 F1 94
429.345   68D   62 F1 94 4F 50 30 34 5F 50 30 32 5F 4D 31 30 5F 53 30 32 5F 56 54 34 5F 33 35 30 5F 31 37 30 5F 30 30 30 5F 58 30 30 31 5F 4E 20 44 42 47
```



BMW NCAR - Brake bleed

Tuesday, September 26, 2023 9:38 AM

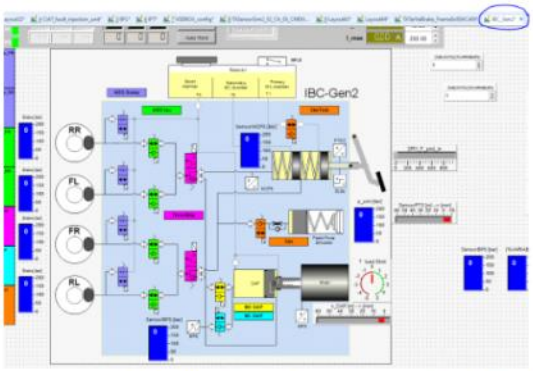
BMW NCAR Posts Files Tasks - BMW NCAR Test+Environment+C...

File Home Insert Draw View Help Tell me what you want to do

Calibri 11

How to fix Brake Bleed fault:

First, go to IBC_Gen2 tab in the model (you can visually check if the routine works). If the valves do not



move after you enter the first command, you can Stop/Start Simulation from model.

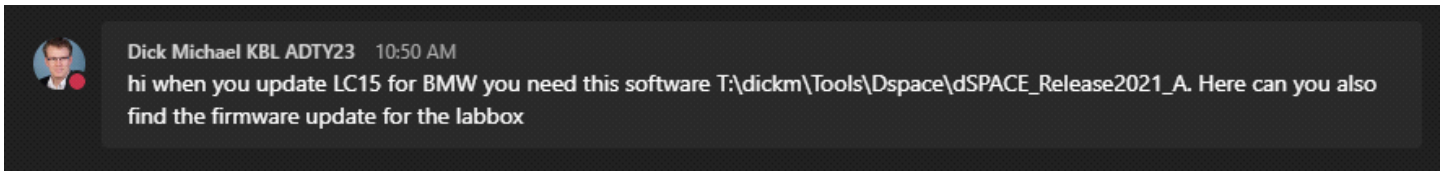
In Canoon, input the next commands

1 Start routine: **31 01 a0 6d 1e 01**

Request Results: 31 03 a06d (wait around 30s) (optional)
2 Start routine: **31 01 a06d 1e 02**
Request results: 31 03 a06d (optional)
3 Start routine: **31 01 a06d 03 03**
Request results: 31 03 a06d (optional)

BMW NCAR

Friday, October 7, 2022 10:57 AM



Model Valves

Friday, March 31, 2023 9:18 AM

	FIU INTERN fault injection
Signal	Solenoid Motor to test
1	ECU_SUP_Signal
2	FL_ISO
3	FL_DUMP
4	FR_ISO
5	FR_DUMP
6	RL_ISO
7	RL_DUMP
8	RR_ISO
9	RR_DUMP
10	TC_ISO_1
11	TC_ISO_2
12	TC_SUPPLY_1
13	TC_SUPPLY_2
14	MOTOR
Signal	Requested Test
1	ECU_SUPPLY B+ / NORMAL
2	COIL_SC_SHORTED/ LOCKED_PUMP
3	COIL_OUT_SC_V+ / GROUND_SHIFT
4	FAILSAFE_RELAY_SHORTED
5	DRIVER_SHORTED
6	COIL_IN_SC_GND/SWITCH_MOTOR_SIMULATION_ON
7	COIL_IN_OPEN / OPEN_PUMP
8	ECU_SUPPLY_GND

PG

FPGA

Wednesday, May 3, 2023 10:56 AM

TOP development boards for beginners:

1. Basys 3 Artix -7 FPGA Digilent -> 2456786 Farnell
    a. 16 LEDs
    b. 8 user switches
    c. 8 user push buttons
    d. 950 RON
2. Arty A7 - 100T FPGA Digilent -> 3050772 Farnell
    a. 8 LEDs
    b. 4 user switches
    c. 4 user push buttons
    d. 1400 RON
3. AVNET Arty S7 Spartan - 7 FPGA -> 3498884 Farnell
    a. 6 LEDs
    b. 4 user switches
    c. 4 user push buttons
    d. 750 RON

Ground plane error - thermal relief connection to zone incomplete

From <https://forum.kicad.info/t/ground-plane-error-thermal-relief-connection-to-zone-incomplete/41191/1>

Tara_Pattenden

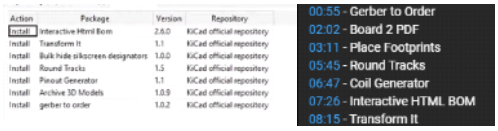
I've just worked out what was up. This may be useful if anyone has a similar issue

In my board setup > constraints
in the Zone fill strategy section...
I changed the Min thermal relief spoke count: to 1 (it was at 2)

The error is now gone 🙂

g

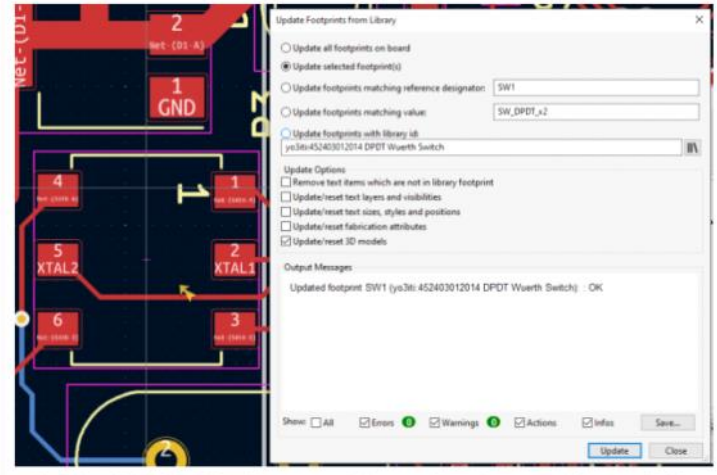
1	E	Show symbol properties (Edit item).
2	Ctrl-E	Edit symbol (this loads up the symbol in the symbol editor).
3	M	Move schematic item.
4	C	Duplicate symbol or label.
5	G	Grab the end of a wire and shorten/lengthen it.
6	A	Place symbol (Add component).
7	P	Place power net.
8	R	Rotate item.
9	Del	Delete item.



KiCad 7.0 – Footprint does not match copy in library

From <https://www.alauda.ro/2023/03/kicad-7-0-footprint-does-not-match-copy-in-library/>

This seems to be related whenever the 3D file is updated and is not according to the one specified in the library. Removing warning can be done via the Tools → Update footprints from Library:



Use Tools → Update footprints from Library menu entry to remove this warning message. YOU can apply this to multiple components at once.

I/O explained AVR Port

Thursday, May 4, 2023 12:29 PM

Each port consists of three registers:

- **DDRx** – Data Direction Register
- **PORTx** – Pin Output Register
- **PINx** – Pin Input Register

Examples

All PORTA pins set as inputs with pull-ups enabled and then read data from PORTA:

```
DDRA = 0x00;      //make PORTA all inputs
PORTA = 0xFF;    //enable all pull-ups
data = PINA;        //read PORTA pins into variable data
```

PORTB set to tri-state inputs:

```
DDRB  = 0x00;        //make PORTB all inputs
PORTB = 0x00;        //disable pull-ups and make all pins tri-state
```

PORTA lower nybble set as outputs, higher nybble as inputs with pull-ups enabled:

```
DDRA  = 0x0F;        //lower pins output, higher pins input
PORTA = 0xF0;        //output pins set to 0, input pins enable pull-ups
```

```c
#define F_CPU 1000000UL

#include <avr/io.h>
#include <util/delay.h>

int main(void)
{
    // Configure PORT D bit 0 to an output and bit 1 to an input
    DDRD = 0b00000001;

    // Main program loop
    while (1)
    {
        // Wait until the switch found on PIND1 (bit 1)
        if(PIND & (1 << PIND1))
        {
            // Toggle the LED found on PIND0
            PORTD = PORTD ^ (1 << PIND0);

            // Force a delay to prevent de-bounce!
            _delay_ms(100);

            // Wait until the button is released
            while(PIND & (1 << PIND1));
        }
    }
}
```

IGBT vs MOSFET

Wednesday, June 7, 2023 11:29 AM

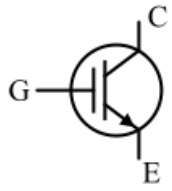
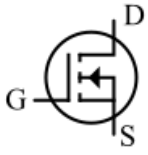
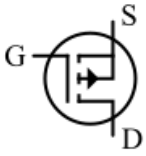


Figure 1 - IGBT



N-Channel



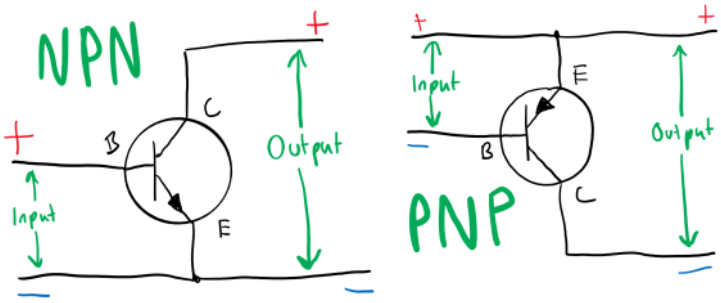
P-Channel

Figure 2 - MOSFET

Parameter	IGBT	MOSFET
Full Form	IGBT stands for Insulated Gate Bipolar Transistor.	MOSFET stands for Metal Oxide Semiconductor Field Effect Transistor
Definition	IGBT is a three terminal semiconductor switching device used in the electronic circuits for switching and amplification of signals.	MOSFET is a four terminal semiconductor switching device which is also used as switching and amplification.
Terminals	IGBT has three terminals, which are: emitter (E), gate (G) and collector (C).	MOSFET has four terminals which are: source (S), gate (G), drain (D) and body (or substrate). Sometimes, the body terminal is merged with the source, making it a three terminal device.
PN junction	IGBT has PN junctions in its construction.	MOSFET does not have any PN junction in its construction.
Suitability	IGBT is suitable for medium to high current conduction and controlling.	MOSFET is suitable for low to medium current conduction and controlling.
Voltage and power handling capacity	IGBT has ability to handle very high voltage and high power.	MOSFET is capable of handling only low to medium voltage and power.
Operating frequency	IGBT can only be used for relatively low frequencies, up to a few kHz.	MOSFET can be used for very high frequency (of the order of MHz) applications.
Forward voltage drop	When IGBT is conducting current, it produces comparatively low forward voltage drop.	MOSFET produces higher forward voltage drop than IGBT.
Turn OFF time	For IGBT, the turn-off time is larger than MOSFET.	The turn-off time of a MOSFET is smaller than IGBT.
Switching speed	The switching speed of IGBT is relatively low.	The switching speed of MOSFET is very high.
Transient voltage & current handling ability	IGBT has ability to handle any transient voltage and current.	MOSFET cannot handle transient voltage and current. Thus, the operation of a MOSFET gets disturbed when the transient occurs.
Saturation voltage	For IGBT, the saturation voltage is low.	MOSFET has high saturation voltage.
Cost	IGBT is costlier than MOSFET.	The cost of a MOSFET is relatively low.
Applications	IGBTs are extensively used in high power AC applications such as in inverter circuits.	MOSFETs are used in low power DC applications like in power supplies.

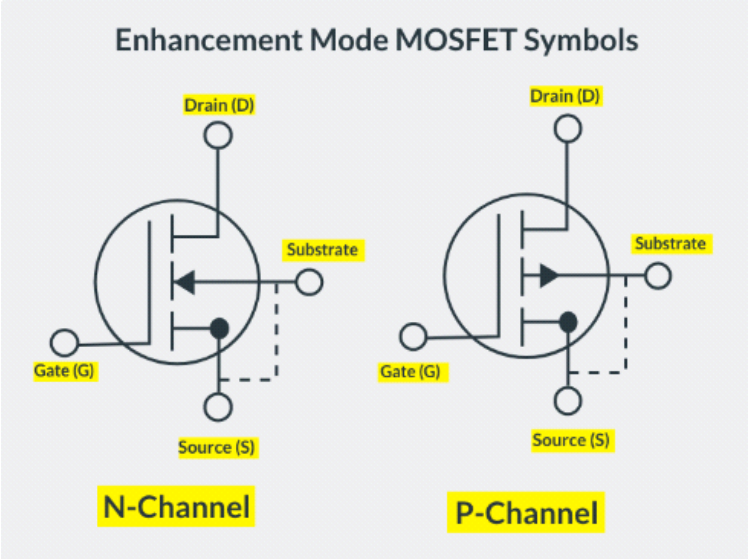
NPN v PNP

Wednesday, June 7, 2023 11:32 AM



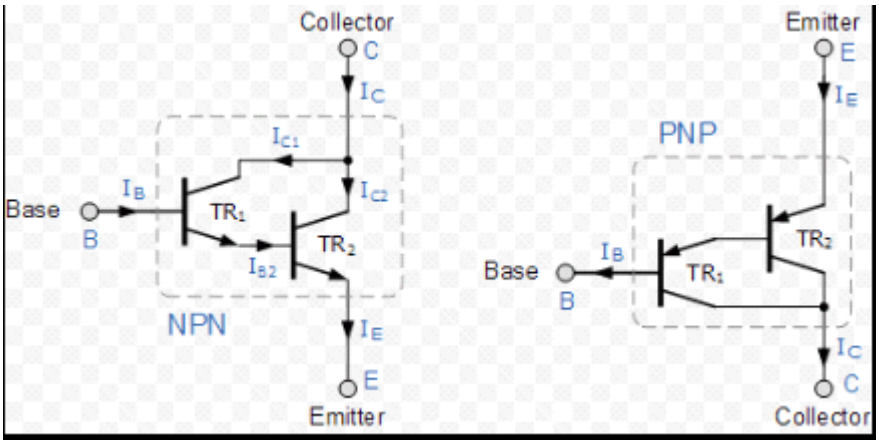
https://www.electronics-tutorials.ws/transistor/tran_7.html

https://electronicsbbeliever.com/mosfet-and-bjt-comparison/



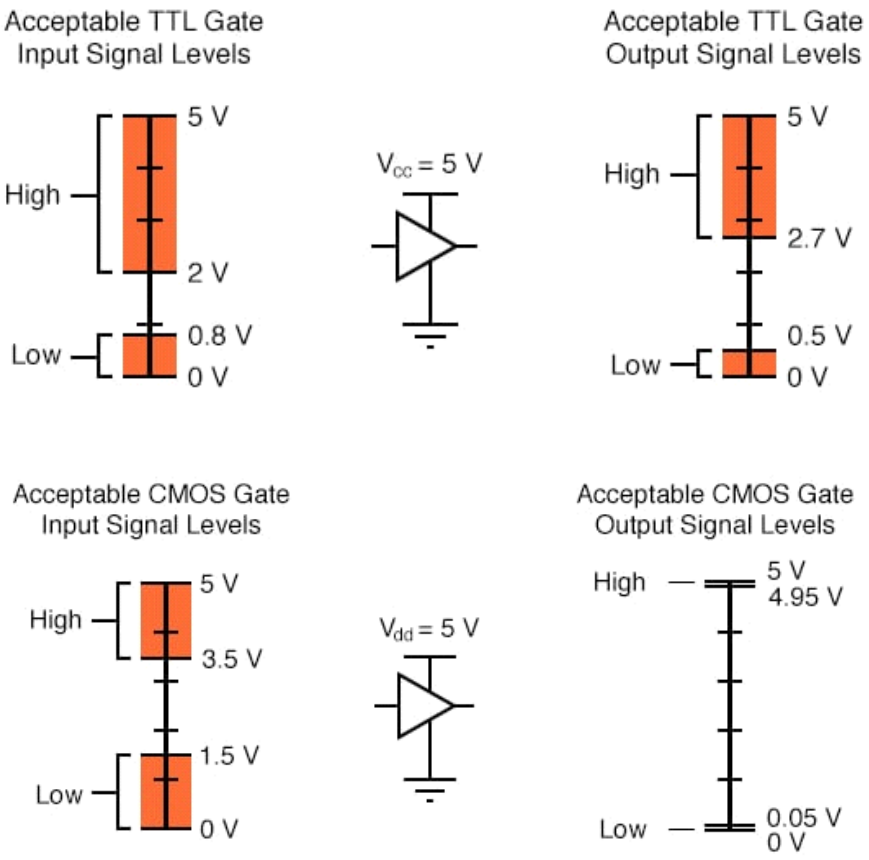
Darlington Transistor

Wednesday, June 7, 2023 11:37 AM



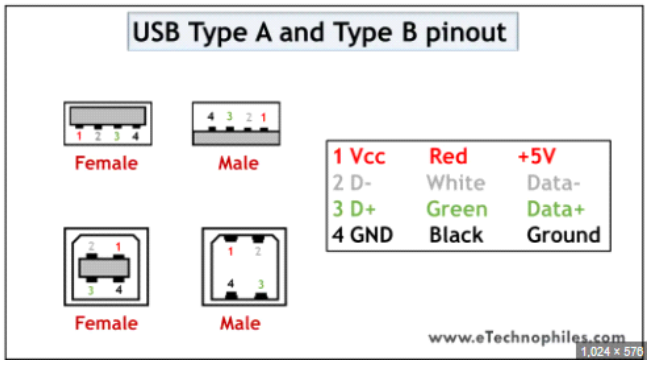
TTL vs CMOS

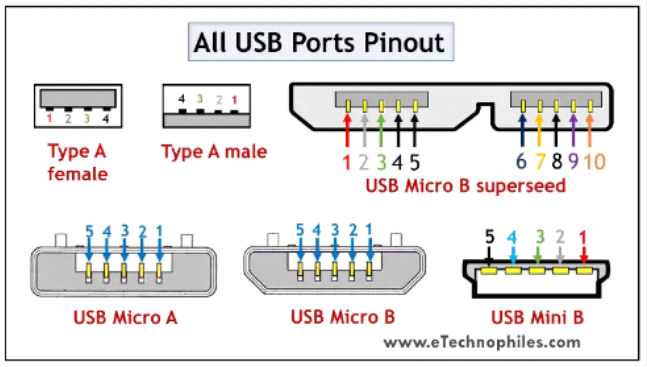
Tuesday, February 15, 2022 10:42 AM



USB pinout

Wednesday, March 1, 2023 9:19 AM



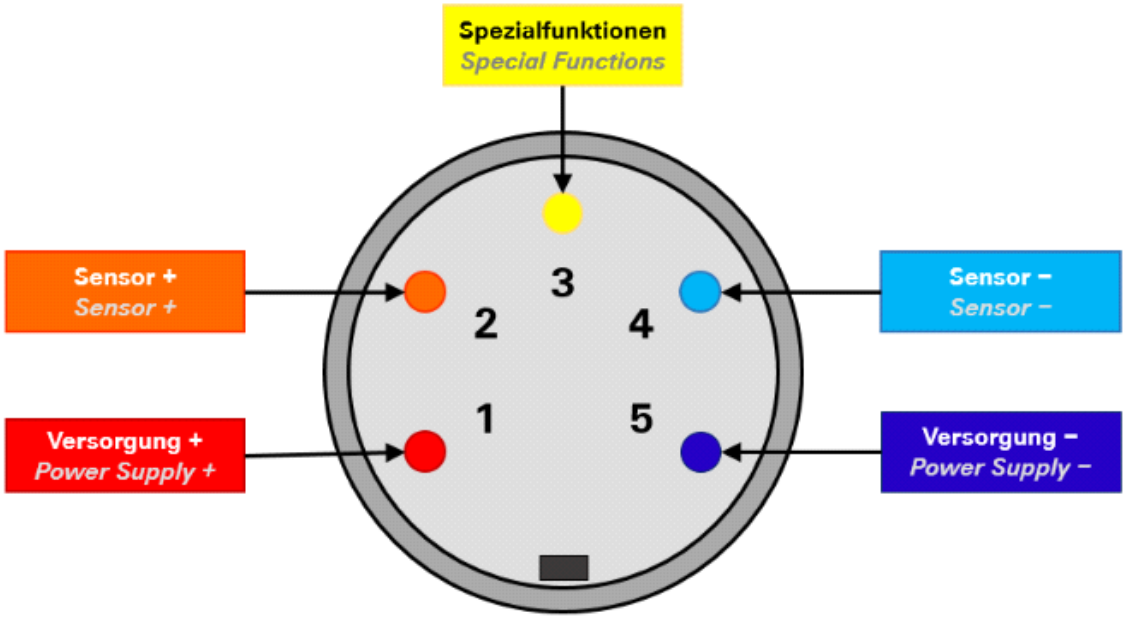


ClampForceSensor

Monday, March 20, 2023 9:03 AM

Sensor Plug Pinout

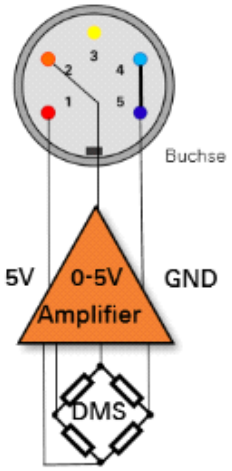
This is the standard ZF Koblenz pinout for connecting all kinds of sensors to any of the signal conditioning units provided by us:



Next to that, there are some special connectors used in some areas:

5pol. Binder Serie 680 M16
Bosch Drucksensor DS2

ZF



1 = U_S +5V
2 = Signal +
3 = nc
4 = Signal –
5 = GND

8pol. M12 Binder
Analog-In Signal Conditioning

ACT

Buchse

1 = Uv Sensor Supply +
2 = Signal +
3 = Special
4 = Signal –
5 = Sensor Supply GND
6 = nc
7 = nc
8 = nc

5pol. Binder Serie 712 M9
Bosch Drucksensor DS2

VW

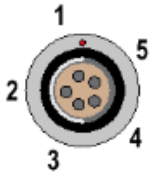
Buchse

1 = U_S +5V (Bosch DS2 Sensor)
2 = GND
3 = nc
4 = Signal +
5 = nc

Orig. VW Belegung
1 = V_{Supply} +
2 = V_{Supply} –
3 = Shield
4 = Signal +
5 = Signal –

5pol. ODU Mini Snap
Bosch Drucksensor DS2

Daimler



Buchse

1 = Shield
2 = Signal –
3 = U_S +5V (Bosch DS2 Sensor)
4 = GND
5 = Signal +

6pol. LEMO
FGA 0S 306 CLA

CSM ADMM 4/8

Buchse

1 = V_{IN} +
2 = V_{IN} –
3 = nc
4 = V_{OUT} + (Sensor Supply +)
5 = GND (Sensor Supply GND)
6 = V_{OUT} – (Sensor Supply –)

Channel Type	Board	Pinout of the 5-pin connector				
		Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
Temp. NiCrNi	5130	Not connected	+Input NiCrNi	+PT100	-Input NiCrNi	-PT100
Universal Amplifier	5185	5V / 10V / 13,5V [1,2]	+ Input	SGA mode = R-Cal. Volt mode = open	- Input	GND
ISO ±10V new	5208	5V / 10V / 13,5V [1,2]	+Input	Not connected	- Input	GND
Active sensor conditioning	5260	+15V	+ Input	Not connected	GND	GND
CANSiCo	5266	5V / 10V / 13,5V [1,2]	+ Input	SGA mode = R-Cal. Volt mode = open	- Input	GND

[1] Configurable with Jumper
[2] 13,5V not load stable (U_{out} = 10 – 14 V)

MPLAB Snap

Tuesday, January 3, 2023 10:16 AM

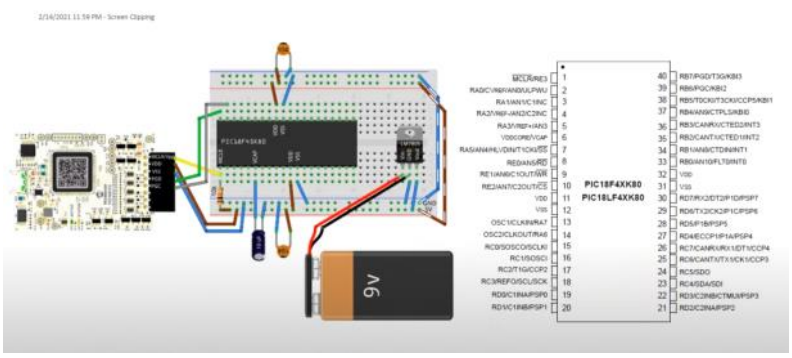


Table 10-4. Pinouts for Debug Interfaces

MPLAB Snap			DEBUG								
Connector	Pin #	Pin Name	ICSP (MCHP)	MIPS EJTAG	CORTEX® SWD	AVR® JTAG	AVR ISP(&DW)	UPDI	PDI	debugWIRE	TPI
	1	TVPP	MCLR	MCLR	MCLR						
	2	TVDD	VDD	VIO_REF	VTG	VTG	VTG	VTG	VTG	VTG	VTG
	3	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND
	4	PGD	DAT	TDO	SWO	TDO	MISO	DAT	DAT		DAT
	5	PGC	CLK	TCK	SWCLK	TCK	SCK				CLK
	6	TAUX	AUX			RESET	RESET		CLK	dW	RST
	7	TTDI		TDI		TDI	MOSI				
	8	TTMS		TMS	SWDIO	TMS					

MPLAB® SNAP AVR UPDI/PDI/TPI Interface Modification

Symptom: Programming and debugging fails with AVR microcontroller devices that use the UPDI/PDI/TPI interfaces. MPLAB SNAP, Assembly #02-10381-R1 requires an external pull-up resistor for AVR microcontroller devices that use these interfaces.

Problem: AVR microcontroller devices that use the UPDI/PDI/TPI interfaces require the idle state of inactivity to be at a logic high level. Internally, the AVR devices have a weak (50-100K) pull-up resistor that attempts to keep the line high. An external and stronger pull-up resistor may be enough to mitigate this issue and bring voltages to acceptable VDD levels. In some cases, this may not be enough and the pull-down resistor that is part of the ICSP protocol can be removed for these AVR microcontroller applications.

Solution: If most of the applications are AVR-centric, consider removing the R48 resistor as shown below. This completely isolates any loading on the programming data line. Additionally, a pull-up resistor to VDD in the range of 1K to 10K should be used for robustness. Pin 4 of J4 is the TPGD data line used for ICSP interfaces and it also doubles as the DAT signal for UPDI/PDI and TPI interfaces. The pull-up resistor can be mounted directly from TVDD (J4-2) to TPGD/DAT (J4-4). Alternatively, the resistor can be mounted on the application side of the circuit for convenience.

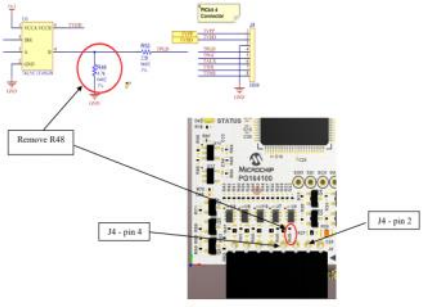


Figure 1

Rate This Article : ☆☆☆☆☆

ISP connection problems on AT90CAN32/64/128

AT90CAN32 SPI pins are remapped to different pins in ISP mode only.

Mar 4, 2017 · Knowledge

Title
ISP connection problems on AT90CAN32/64/128

Article URL
https://microchipsupport.force.com/s/article/ISP-connection-problems-on-AT90CAN32-64-128

Question
Why is there no ISP connection (to program flash memory) to AT90CAN32 when I use SPI MOSI signal on PB2 and MISO on PB3?

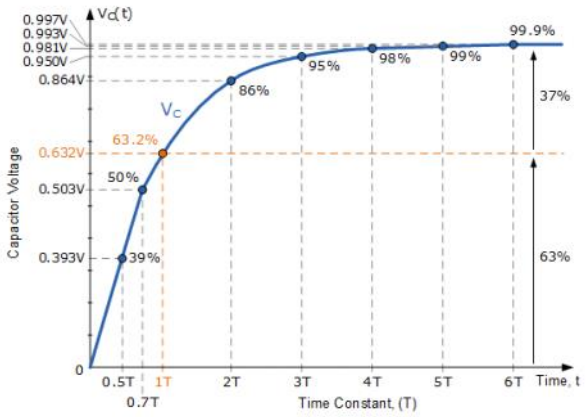
Answer
AT90CAN32/64/128 devices map ISP pins for serial programming to PE0 for PDI and PE1 for PDO and not PB2 (MOSI) and PB1 (MISO). SCK signal remains mapped to PB1 port.

URL Name
ISP-connection-problems-on-AT90CAN32-64-128

Capacitor

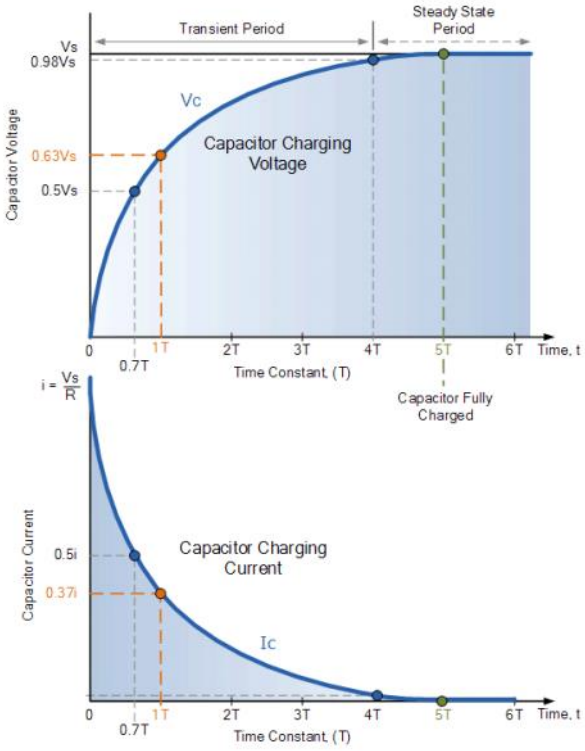
Wednesday, November 24, 2021 7:48 AM

Exponential Voltage Growth Over Time



$$V = V_0 \, e^{-\frac{t}{RC}}$$

RC Charging Circuit Curves



Capacitor Value

0.010 µF

Initial Charge Voltage

13.5 V

Safety Threshold Voltage

3.5 V

Solve for Time | Solve for Resistance

Resistance Value

27 Ω

Safe Voltage Achieved by

= 3.6e-7 s

Initial Power Across the Resistor

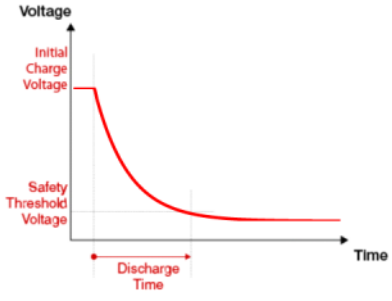
= 6.75 W

Time Constant

= 2.7e-7 s

Energy Discharged to Zero Volts

= 9.1e-7 J



LTspice

Wednesday, November 24, 2021 7:51 AM

Shortcut keys :

Schematic Editor - ***Action*** Hot Keys (control key)

ctrl-F1	ctrl-F2	ctrl-F3	ctrl-F4 Close File	ctrl-F5	ctrl-F6	ctrl-F7	ctrl-F8	ctrl-F9
ctrl-Q	ctrl-W move	ctrl-E mirror	ctrl-R Rotate	ctrl-T pin Toggle	ctrl-Y redo		0) reset sim t=0	ctrl-P Print file
ctrl-A Anchor toggle	ctrl-S Save file	ctrl-D Drag	ctrl-F Find text	ctrl-G Grid toggle	ctrl-H Halt sim			
ctrl-Z undo	ctrl-X delete	ctrl-C Copy	ctrl-V paste	ctrl-B Begin sim				

Schematic Editor - ***Drawing/Zoom*** Hot Keys (shift key)

shft-F1	shft-F2	shft-F3	shft-F4	shft-F5	shft-F6	shft-F7	shft-F8	shft-F9 ~~redo~~
shft-Q	shft-W draw line	shft-E	shft-R draw Rectngl	shft-T	shft-Y			
shft-A draw Arc	shft-S	shft-D	shft-F	shft-G	shft-H			
shft-Z Zoom area	shft-X	shft-C draw Circle	shft-V	shft-B zoom Back				

Space Bar zoom to fit

EAGLE

Wednesday, November 24, 2021 8:06 AM

Eagle Libraries :

https://www.ultralibrarian.com/cad-vendors/eagle/
http://eagle.autodesk.com/eagle/libraries

Capacitance multiplayer

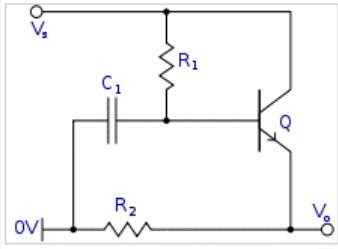
Friday, July 14, 2023 3:10 PM

Transistor-based [edit]

Here the capacitance of capacitor C1 is multiplied by approximately the transistor's current gain (β).

Without Q, R2 would be the load on the capacitor. With Q in place, the loading imposed upon C1 is simply the load current reduced by a factor of (β + 1). Consequently, C1 appears multiplied by a factor of (β + 1) when viewed by the load.

Another way is to look at this circuit as an emitter follower with capacitor C1 holding voltage at base constant with load of input impedance of Q1: R2 multiplied by (1 + β), so the output current is stabilized much more against power line voltage noise.



A basic transistor capacitance multiplier.

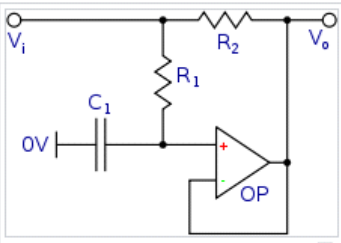
Operational amplifier based [edit]

Here, the capacitance of capacitor C1 is multiplied by the ratio of resistances: C = C1 * R1 / R2 at the Vi node.[1]

The synthesized capacitance also brings a series resistance approximately equal to R2, and a leakage current appears across the capacitance because of the input offsets of OP. These problems can be avoided by a circuit with two op amps. In this circuit the input to OP1 can be a.c.-coupled if necessary, and the capacitance can be made variable by making the ratio of R1 to R2 variable. C = C1 * (1 + (R2 / R1)).[1]

In the circuits described above the capacitance is grounded, but floating capacitance multipliers are possible.

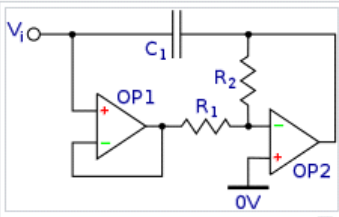
A negative capacitance multiplier can be created with a negative impedance converter.[1]



A basic op amp capacitance multiplier.

Autotransformer based [edit]

These permit the synthesis of accurate values of large capacitance (e.g., 1 F) by multiplying the capacitance of a high-precision lower value capacitor by the use of two[*clarification needed*] transformers. Its function acts as a reference standard, not as a general-purpose circuit element. The resulting device is a four-terminal element and cannot be used at dc.



More advanced capacitance multiplier

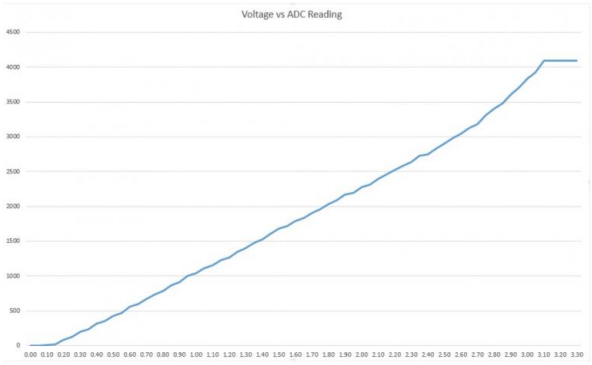
References [edit]

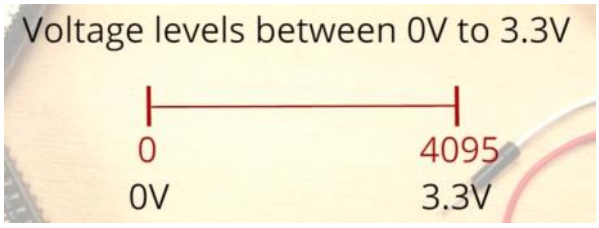
1. ^ [a] [b] [c] Op Amp Circuit Collection, National Semiconductor Application Note AN-31, reproduced in National Semiconductor Applications Handbook, 1994, p. 86.

- IET Labs 1417 FOUR-TERMINAL CAPACITANCE STANDARD

ESP32 ADC

Monday, July 17, 2023 4:46 PM





3.3/4095 = 0.0008 = 0.8 mV

REF: https://randomnerdtutorials.com/esp32-adc-analog-read-arduino-ide/

This behavior means that your ESP32 is not able to distinguish 3.3 V from 3.2 V. You'll get the same value for both voltages: 4095.

The same happens for very low voltage values: for 0 V and 0.1 V you'll get the same value: 0. You need to keep this in mind when using the ESP32 ADC pins.

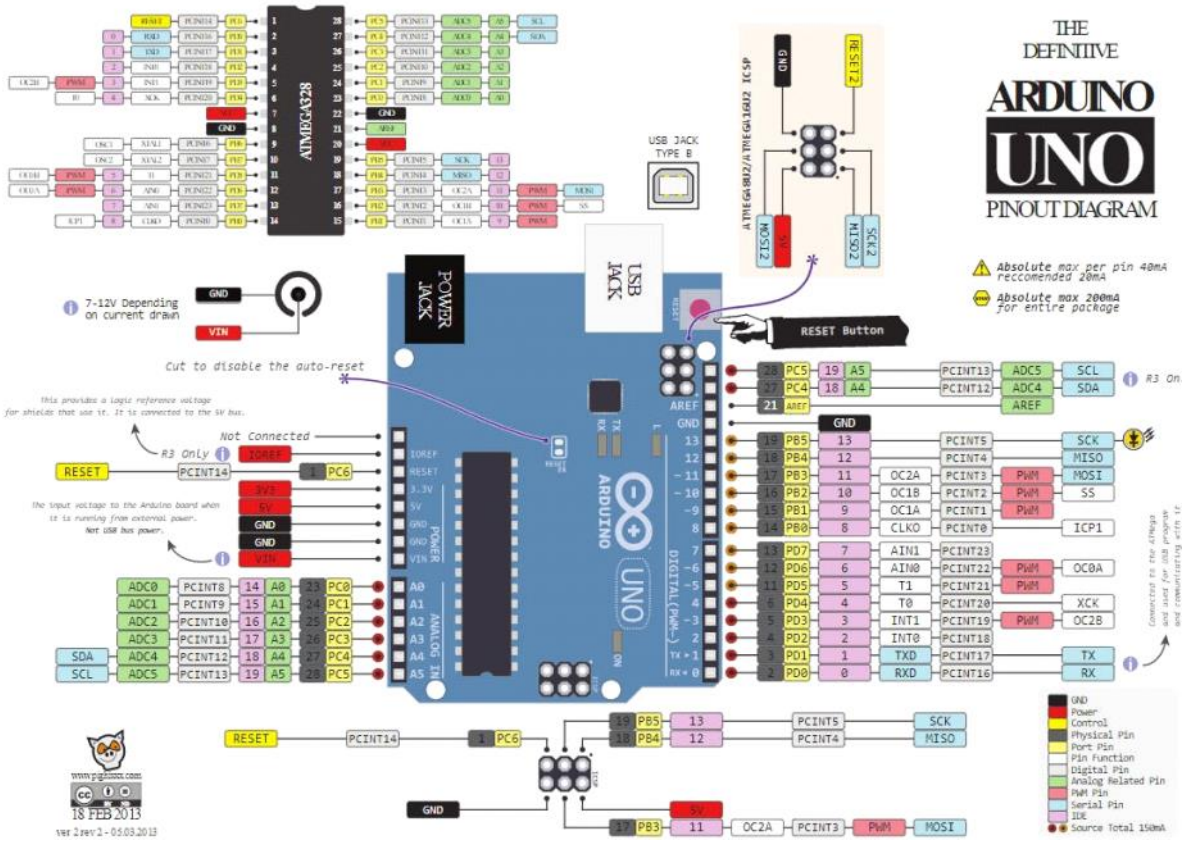
ESP32 CAN Bus

Thursday, July 20, 2023 2:58 PM

https://www.circuitstate.com/tutorials/what-is-can-bus-how-to-use-can-interface-with-esp32-and-arduino/

ArduinoUno

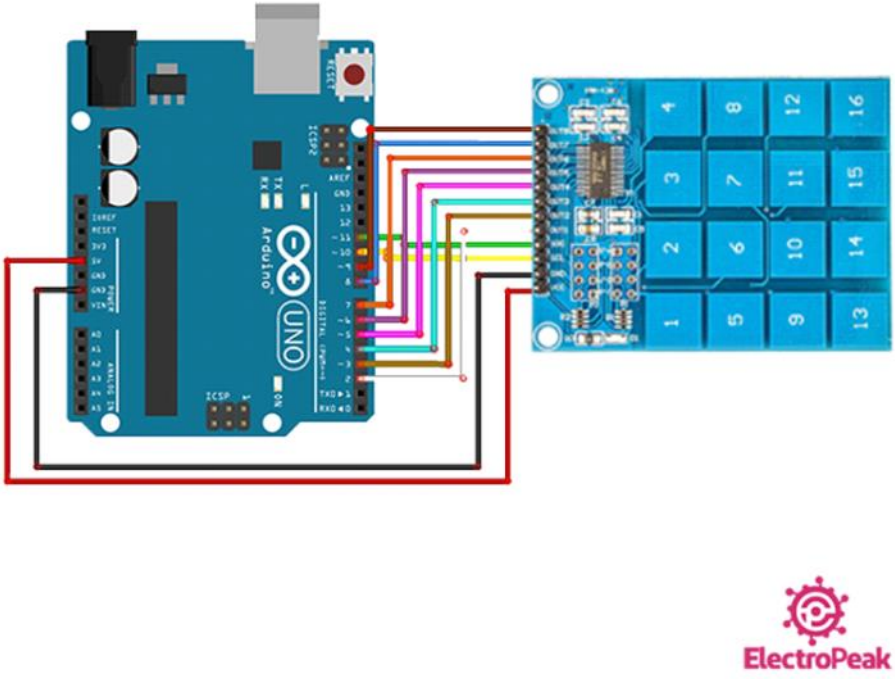
Thursday, July 20, 2023 2:58 PM



ArduinoUNO TTP229

Friday, July 21, 2023 7:44 AM

https://electropeak.com/learn/interfacing-16-channel-ttp229-capacitive-touch-16-key-keypad-with-arduino/



Arduino

Friday, July 21, 2023 11:04 AM

1. STM32H7 - STM32CubeIDE - favorit
2. TMS320 (C2000 real-time uC - TI)
3. TMS570 (ARM Cortex uC - TI)

Arduino® UNO R4 Minima

Board	Name	Arduino® UNO R4 Minima
	SKU	ABX00080
Microcontroller	Renesas RA4M1 (Arm® Cortex®-M4)	
USB	USB-C®	Programming Port
Pins	Digital I/O Pins	14
Pins	Analog input pins	6
	DAC	1
	PWM pins	6
Communication	UART	Yes, 1x
	I2C	Yes, 1x
	SPI	Yes, 1x
	CAN	Yes 1 CAN Bus
Power	Circuit operating voltage	5 V
	Input voltage (VIN)	6-24 V
	DC Current per I/O Pin	8 mA
Clock speed	Main core	48 MHz
Memory	RA4M1	256 kB Flash, 32 kB RAM
Dimensions	Width	68.85 mm
	Length	53.34 mm

https://www.renesas.com/us/en/document/dst/renesas-ra4m1-group-datasheet?r=1054146

Arduino® UNO R4 WiFi

Board	Name	Arduino® UNO R4 WiFi
	SKU	ABX00087
Microcontroller	Renesas RA4M1 (Arm® Cortex®-M4)	
USB	USB-C®	Programming Port
Pins	Digital I/O Pins	14
Pins	Analog input pins	6
	DAC	1
	PWM pins	6
Communication	UART	Yes, 1x
	I2C	Yes, 1x
	SPI	Yes, 1x
	CAN	Yes 1 CAN Bus
Power	Circuit operating voltage	5 V (ESP32-S3 is 3.3 V)
	Input voltage (VIN)	6-24 V
	DC Current per I/O Pin	8 mA
Clock speed	Main core	48 MHz
	ESP32-S3	up to 240 MHz
Memory	RA4M1	256 kB Flash, 32 kB RAM
	ESP32-S3	384 kB ROM, 512 kB SRAM
Dimensions	Width	68.85 mm
	Length	53.34 mm

STM32

Monday, July 24, 2023 10:20 AM

https://controllerstech.com/can-protocol-in-stm32/ -> CAN Bus

https://www.digikey.com/en/maker/projects/getting-started-with-stm32-timers-and-timer-interrupts/d08e6493cefa486fb1e79c43c0b08cc6 -> time intrerupt

https://ro.farnell.com/stmicroelectronics/nucleo-h7a3zi-q/nucleo-144-board-cortex-m4-cortex/dp/3297729?st=stm32%20nucleo -> placa dezvoltare

https://www.st.com/en/microcontrollers-microprocessors/stm32h7a3zi.html -> uC

https://ro.farnell.com/stmicroelectronics/stlink-v3set/in-circuit-debugger-programmer/dp/2980978 -> programmer

https://deepbluembedded.com/stm32-adc-tutorial-complete-guide-with-examples/ -> ADC
https://controllerstech.com/adc-conversion-time-frequency-calculation-in-stm32/ -> ADC

https://embeddedthere.com/stm32-adc-tutorial-using-dma-with-hal-code-example/

From stm32f4-discovery.net

> **NVIC_IRQChannelPreemptionPriority**
> With this parameter you set interrupt priority, number from 0x00 to 0x0F. Let's say we have to use USART receive interrupt and ADC conversion finished interrupt. USART is more important than ADC, so USART will have lower number than ADC.
>
> **NVIC_IRQChannelSubPriority**
> With this parameter you set interrupt priority, number from 0x00 to 0x0F. Let's say you have 2 USARTs enabled, but USART1 is more important than USART2. So USART1 will have lower number than USART2.

or STM32 Interrupt Service Routine Priority

> **NVIC_IRQChannelPreemptionPriority** is used to determine if an interrupt that occurs

> **NVIC_IRQChannelPreemptionPriority** is used to determine if an interrupt that occurs after can overtake previous interrupt that is being serviced.
>
> **NVIC_IRQChannelSubPriority** is used to determine priority if two interrupts occur at the same time. (If NVIC_IRQChannelSubPriority is not determined, the position in the NVIC table is used to determine the priority.)

PYQT5

Wednesday, August 9, 2023 2:16 PM

Pip install pyqt5
Pip install pyqt5-tools
Pyqt5-tools designer

Command to convert .ui in .py :

- Pyuic5 -x app.ui -o app.py

https://www.iconarchive.com/category/funny-icons.4.html

```
self.comboBoxEnv.addItem("HiL", [ "Labcar 1","Labcar 2","Labcar 3","Labcar 7","Labcar 8","Labcar 9","Labcar
10","Labcar 12","Labcar 13","Labcar 14","Labcar 15","Labcar 16","Labcar 17","Labcar 18","Labcar 19","Labcar
20","Labcar 21","Labcar 22","Labcar 23","Labcar 24","Labcar 25","Labcar 26","Labcar 27","Labcar 28","Labcar
29","Labcar 30","BrakingHil 1","BrakingHil 2"])
self.comboBoxEnv.addItem("XBT", [ "BRK_TestStand_1","BRK_TestStand_2","BRK_TestStand_3","BRK_TestStand_
4","BRK_TestStand_5","BRK_TestStand_6","BRK_TestStand_7","BRK_TestStand_8","BRK_TestStand_
9","BRK_TestStand_10","BRK_TestStand_11","BRK_TestStand_12"])
self.comboBoxEnv.addItem("TBAD", [ "TBAD","Daimler","ODIS TEC","ODIS KBL"])
self.comboBoxEnv.addItem("OSC", [ "RTE 1054"])
```

```
def clicker(self, index):
    self.comboBoxSelComp.clear()
    elf.comboBoxSelComp.addItems(self.comboBoxEnv.itemData(index))
```

```
    def MoveWindow(self, event):
        self.move(self.pos() + event.globalPos() - self.clickPosition)
        self.clickPosition = event.globalPos()
        event.accept()
        pass
    def mousePressEvent(self, event):
        self.clickPositio = event.globalPos()
        pass
```

PySide6

Thursday, August 10, 2023 4:12 PM

https://www.youtube.com/watch?v=Z1N9JzNax2k - training

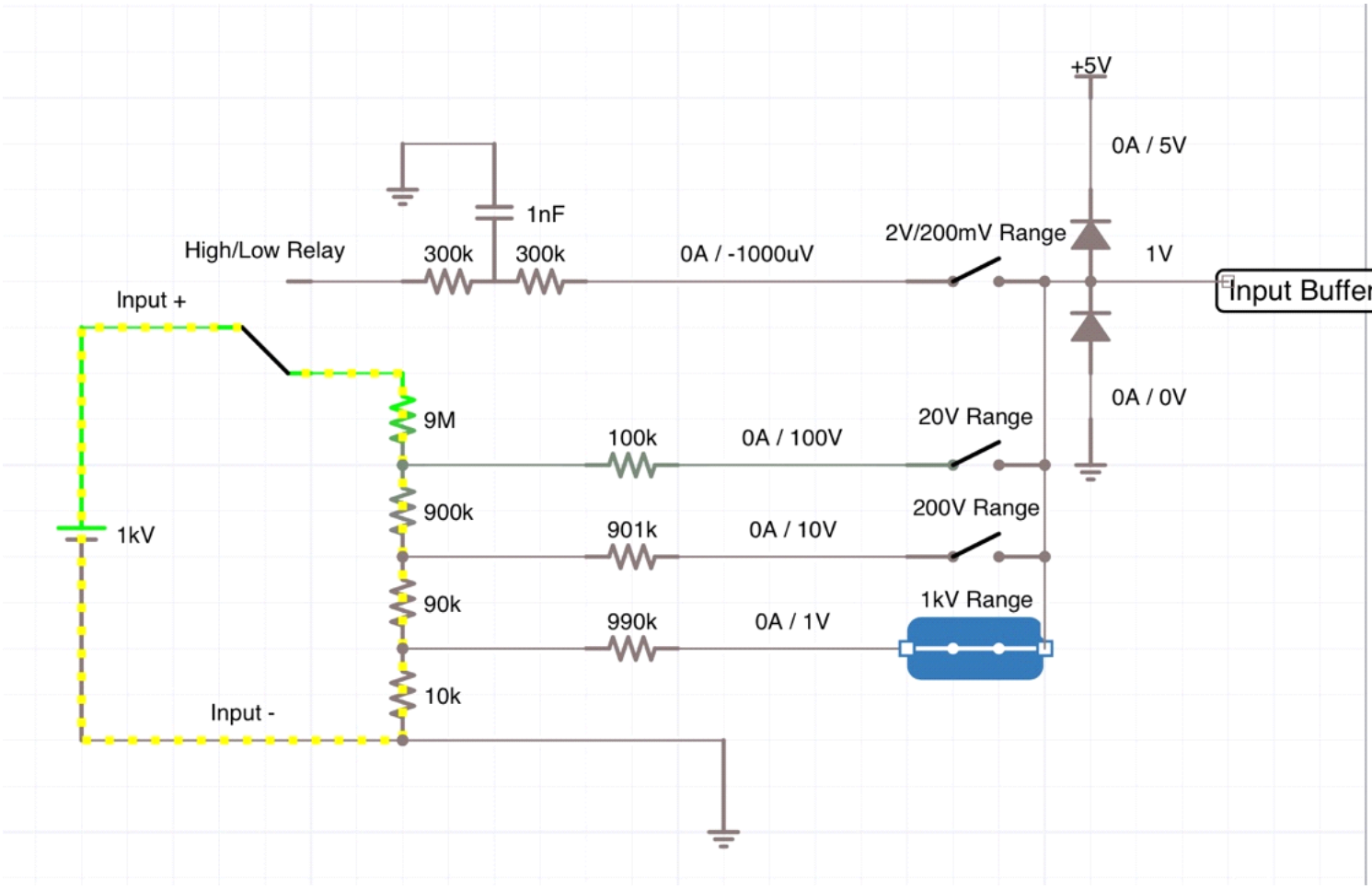
CMD

Friday, August 18, 2023 10:09 AM

https://www.digitalcitizen.life/command-prompt-how-use-basic-commands/ - basic commands

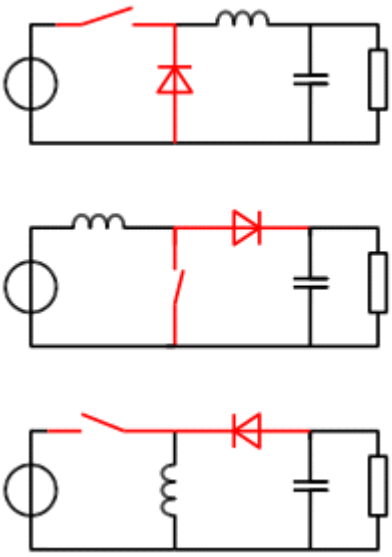
Auto ranging

Wednesday, September 27, 2023 1:39 PM



Converters DC DC

Thursday, November 9, 2023 9:45 AM



STM32CubeIDE

Wednesday, January 10, 2024 7:51 AM

Keyboard shortcut cheat sheet 1/2

KEYBOARD SHORCUT OVERVIEW

• CTRL+SHIFT+L	List keyboard shortcuts	List all defined keyboard shortcuts

NAVIGATING FILES AND C SYMBOLS

• CTRL+SHIFT+R	Open resource	Find files from any perspective
• CTRL+H	Search for keyword	Search for keyword in defined scope. Possible to use reg.exp.
• ALT+ENTER	View properties	Views the properties for the selected resource.
• CTRL+PGUP/DN	Switch editor	Switches to an open editor to the left/right
• CTRL+E	Select editor	Move to open editor by filtering text or selecting in menu
• CTRL+SHIF+T	Search for elements	Search for elements (functions, symbols, ...) in Workspace resources

NAVIGATING INFORMATION IN FILES

• CTRL+O	Quick Outline	Navigate big files from perspectives lacking outline view
• CTRL+L	Go to Line	Go to line in editor
• CTRL+F	Search inside context	Search within the file currently active in editor
• CTRL+ALT+I	Open Include Browser	Open include browser for the current resource
• CTRL+ALT+H	Open Call hierarchy	See how function calls made to and from selected function
• CTRL+SPACE	Code completion Parameter hints	Code completion/parameter hints depending on context

Keyboard shortcut cheat sheet 2/2

CODE FORMATTING AND REFACTORING

• SHIFT+ALT+A	Toggle block select	Edit one column across multiple rows
• CTRL+I	Indent Line	Indent source code line according to defined format rules
• CTRL+SHIFT+F	Format selected code	Format source code according to defined format rules
• SHIFT+ALT+R	Quick renaming	Renames any C symbol across all files in all open projects

VERSION CONTROL

• CTRL+ALT+C	Commit resources	Commits modified files within active context

DEBUGGING

• F11	Debug project	Starts a debug session of project currently active

GOOD TO KNOW

• Window → Preferences → General → Keys		allows you to define your own keyboard shortcuts, also allows you to choose other keyboard shortcut schemes: Emacs, Microsoft VisualStudio, etc...

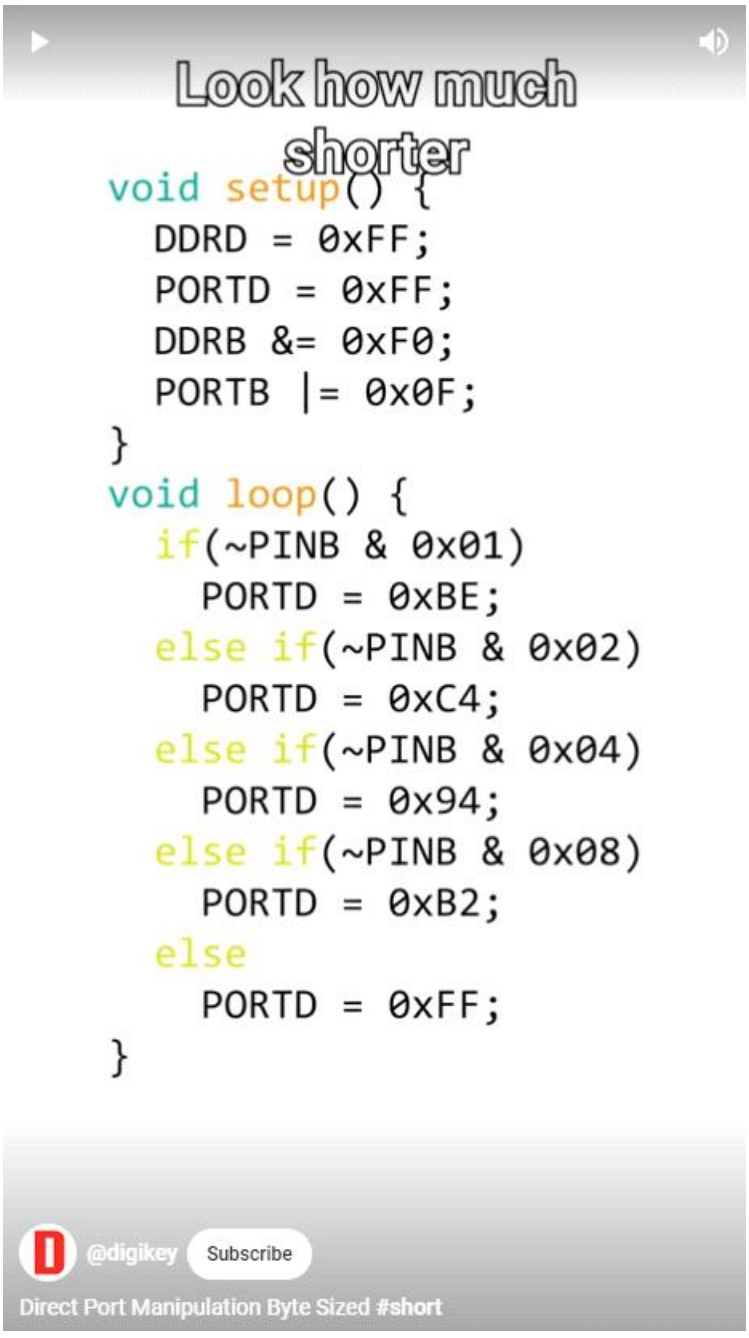
CAN Bus

Thursday, January 11, 2024 9:00 AM

Features	CAN 2.0	CAN-FD
Compatibility	Does not support CAN-FD	Supports CAN 2.0 A/B
Maximum bit rate (Mbit/s)	Frame bitrate: up to 1	Arbitration bitrate: up to 1s Data bitrate: up to 8
DLC field (4 bits) code	Coded in 0 to 8	Coded in 0 to 64
Maximum data bytes in one message	8 bytes of data	64 bytes of data
BRS support	No	Yes
EDL support	No	Yes
ASI support	No	Yes
CRC bits check codes	Bits not included in CRC calculation	Bits included in CRC calculation
Remote frame support	Yes	No

Arduino GPIO

Monday, January 29, 2024 4:00 PM

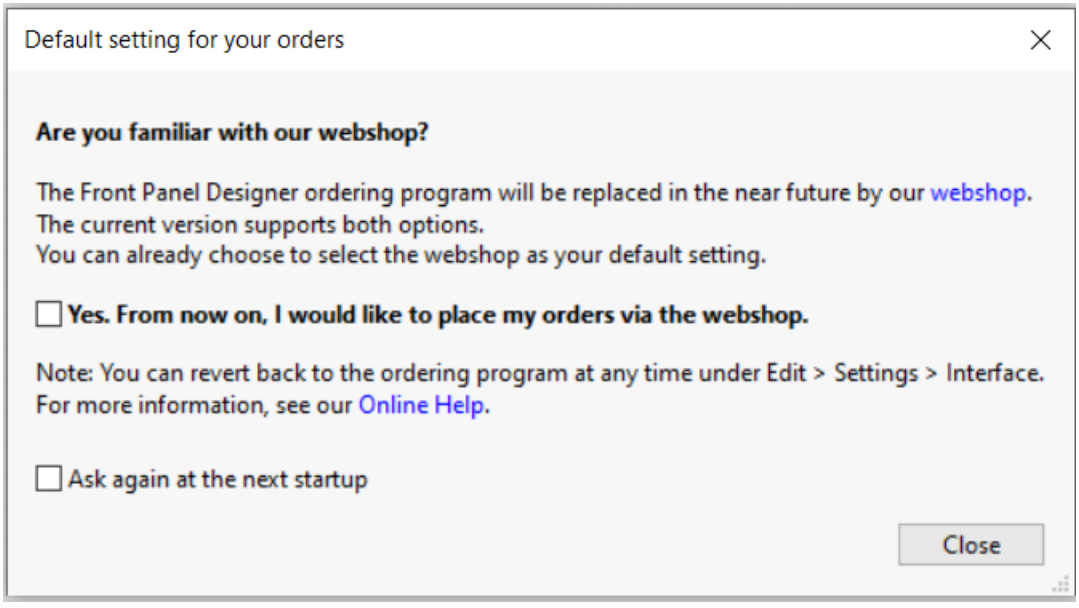


git

Monday, February 5, 2024 10:48 AM

Front Panel Designer

Monday, February 5, 2024 10:54 AM



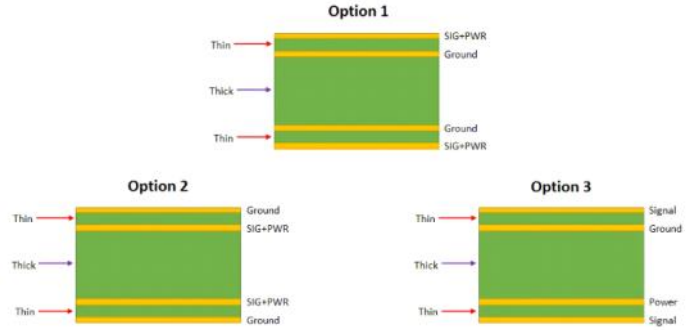
Layout stack-up

Friday, March 15, 2024 7:13 AM

Low Layer Count Stackups

Simpler high-speed PCBs will start as 4-layer boards. My firm view is that 2-layer boards should not be used for designs that will support impedance-controlled high-speed digital interfaces because they cannot guarantee signal integrity or noise control. Any design professional will confirm this point.

The three main types of 4-layer PCB stackups that can support high-speed signals are shown below. Among these stackups, Option 1 is arguably the best choice as provides the most flexibility in routing, and it can be used as a double-sided board. Option 2 can also be used for double-sided placement, but it limits where signals can be routed because there can be crosstalk in the internal layer. Option 3 is good if you have high power requirements, but you can only route high-speed signals on one layer; passives or mechanicals could still be placed on the back layer.



4-layer PCB stackup examples that can support high-speed routing.

What is the most common 4 layer stackup?

The most common stackup is signal-ground-power-signal. This provides a good balance of shielding, signal routing, and power distribution for many mixed signal PCB designs.

What is the best material for a 4 layer PCB?

FR-4 glass epoxy is the most common and cost effective material for 4 layer PCBs. For boards with very high speeds (> 5Gbps), RF signals, or special thermal/mechanical needs, materials like polyimide, ceramic filled epoxy, or Rogers laminates may be preferable.

Responsible people

Tuesday, February 21, 2023 4:28 PM

Salutare,

Deoarece recent am intalnit cateva sincope in comunicare, vreau sa consolidam informatiile asupra liniilor de colaborare intre entitatile din TEC care actioneaza asupra unui HIL intrucat sa ne putem organiza mai bine iar impactul pe care il are o arie asupra celailalte sa fie pozitiv.

Asadar din partea de TEC Digital Solutions, avem urmatoarele linii de colaborare directa:

- Pentru tot ce inseamna **ATT Toolchain (Ecosystem, Desktop & Web)** @Rosu Vlad TMS ADWE1 este persoana de contact
- Pentru tot ce inseamna **Test Automation, Test Environment Automation si Deep Dive Debug & Support** ii avem pe @Ursan Sebastian TMS ADWW3 si @Vlad Bogdan TMS ADWE1 ca persoane de contact
- Pentru tot ce inseamna **Hardware, Test Environment si HIL Expertise** il avem pe @Petrusan Gabriel TMS ADWE ca persoana de contact (Back-up: @Vrapcea Elvis TMS ADWE)

Am rugamintea catre echipa de Testing Leadership (@Marițescu-Lungocea Cosmin TMS ADTY612, @Stoica Alexandru TMS ADTY613, @Marcu Daniel TMS ADTY611) sa distribuiti informatia catre toate partile interesate si aditional sa ne ajutati cu o matrice pentru liniile de **TCO/Point of Contact–Proiect-Labcar ID** din TEC (si KO acolo unde ii cazul)

Odata ce avem informatiile cunoscute de ambele parti, ne putem asigura ca activitatile de dezvoltare/automatizare/actualizare pe HIL-uri sa fie desfasurate in directa consultare cu punctele de contact pe HIL cat sa existe o instiintare bidirectionala si disponibilitatea de suport in cazul efectelor adverse.

Andrei

Salut Andrei,

Mai jos am intocmai matricea pentru liniile de TCO/proiect/Labcar din responsabilitatea **ADTY2**:

Proiect DAI MMA IBC / TCO: Cristian Baroiu/ Labcar : 8 TEC , Labcar : 17 KO , Labcar: Braking HIL1

Proiect MQB ESC / TCO : Alexandru Tanase / Labcar : 26, 27 TEC, Labcar 19 : KO (main contact Kabel)

Proiect UNECE ESC/TCO : Sirmon Adrian / Labcar : 25, 29 TEC , Labcar : 20 or 22 KO (Kabel main cobntact)

Proiect UNECE EBB / TCO : Opre Razvan/ Labcar: 12, 14 TEC , Labcar : 16 (main contact Andrej Hartwitch)

Proiect BMWSP2018/ TCO : Sorin Mariscas / Labcar :1 TEC

Proiect FIAT DUCATO /TCO :Sorin Marisac/ Labcar : 9 KO (Wet HIL – Thomas Funk)

Proiect FIAT BSUV/Fiat Compass /TCO : Sorin Marisac/ Labcar : 2 TEC

P.S. : Ar trebui sa adresezi acest mail si in ADW la Razvan Poenar deoarece au si ei cateva labcaruri de iBoB si nu numai care sunt in responsabilitatea ADW

Mersi!

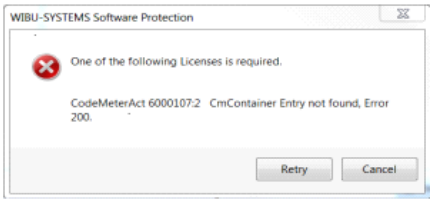
++

Proiect MQB EBB / TCO: Alexandru Stoica / Labcar: 3 TEC

CodeMeterAct 6000107:2

Wednesday, October 11, 2023 1:41 PM

https://www.dspace.com/shared/support/faqpdf/faq089.pdf

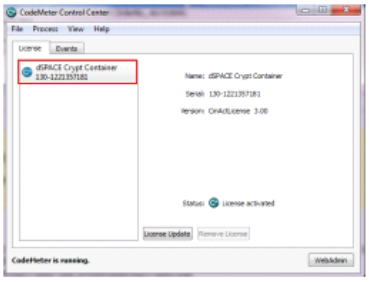


Solution

The error message indicates that the dSPACE Crypt Container, an internally used license container is missing. Check whether the following file exists:

C:\Program Files\Common Files\dSPACE\ProtectionOnlyUtility\bin\ProtectionOnlyUtility.exe

In this case, execute this utility. It should install the missing component and fix the problem.
The dSPACE Crypt Container is then displayed in the CodeMeter Control Center
(Windows START > All Programs > CodeMeter). Refer to the following screenshot:



If the ProtectionOnlyUtility is not available, execute the corresponding setup from the dSPACE DVD. Right-click the MSI file under the following path and select Install on the context menu.

<DVD_ROOT>\Products\Common\ProtectionOnlyUtility\POUSetup.msi