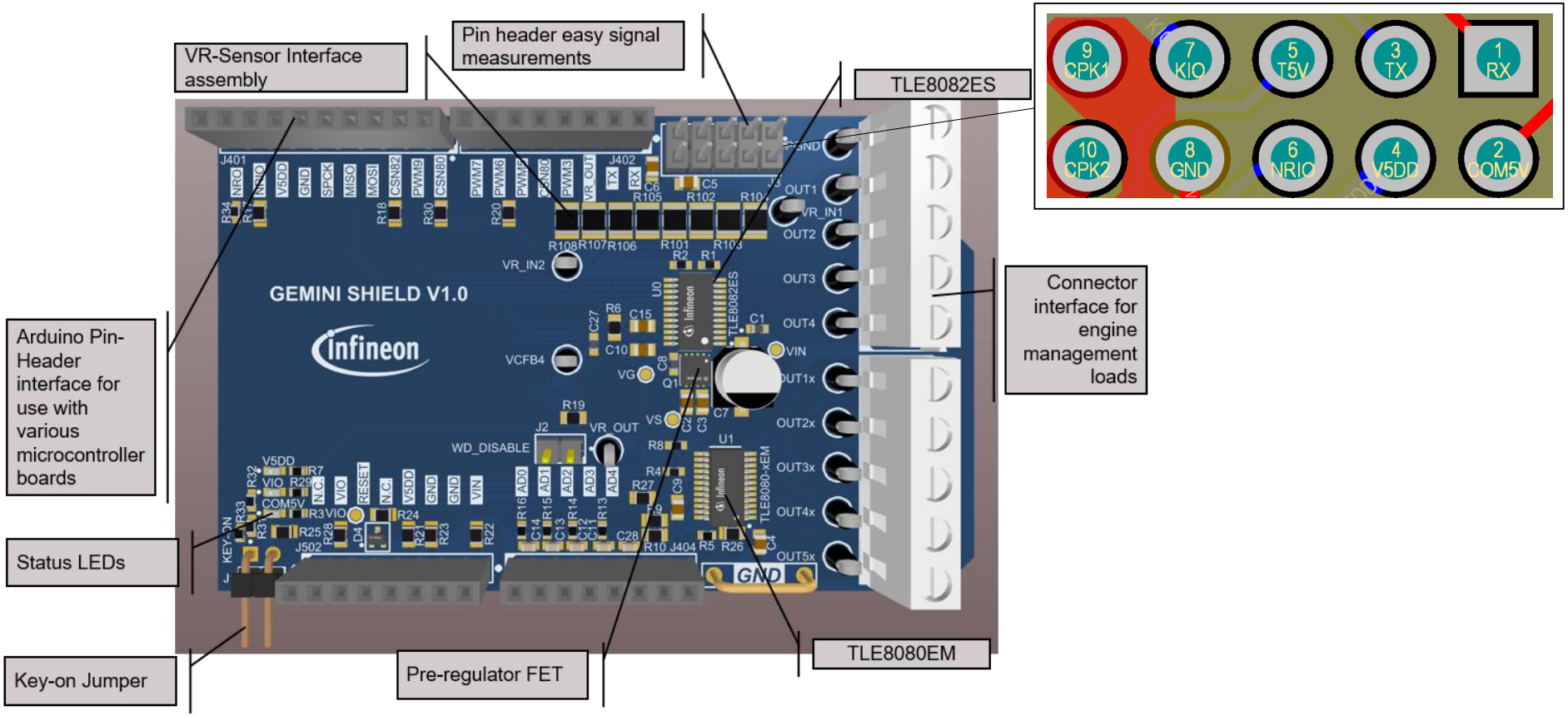
TLE8082ES + TLE8080EM
Evaluation board
Getting Started

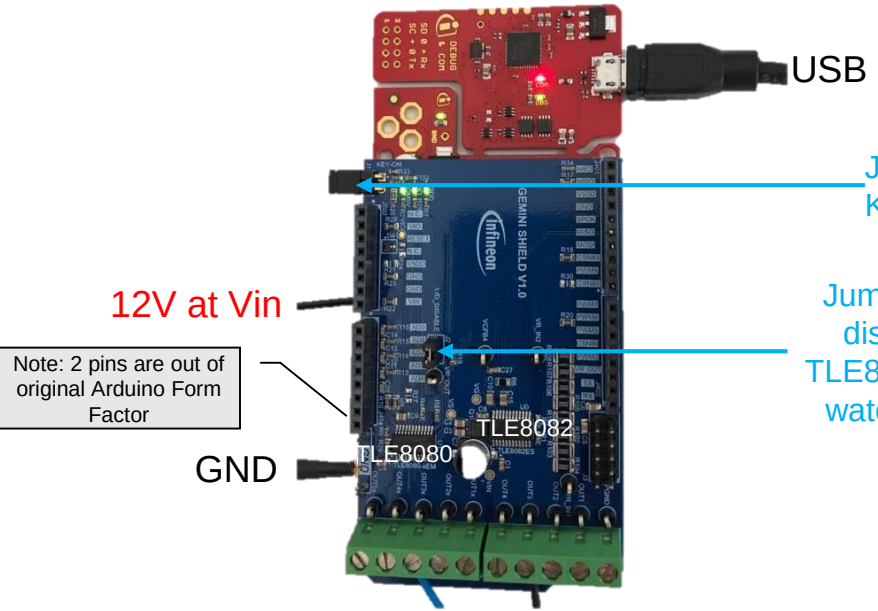
Evaluation board Overview



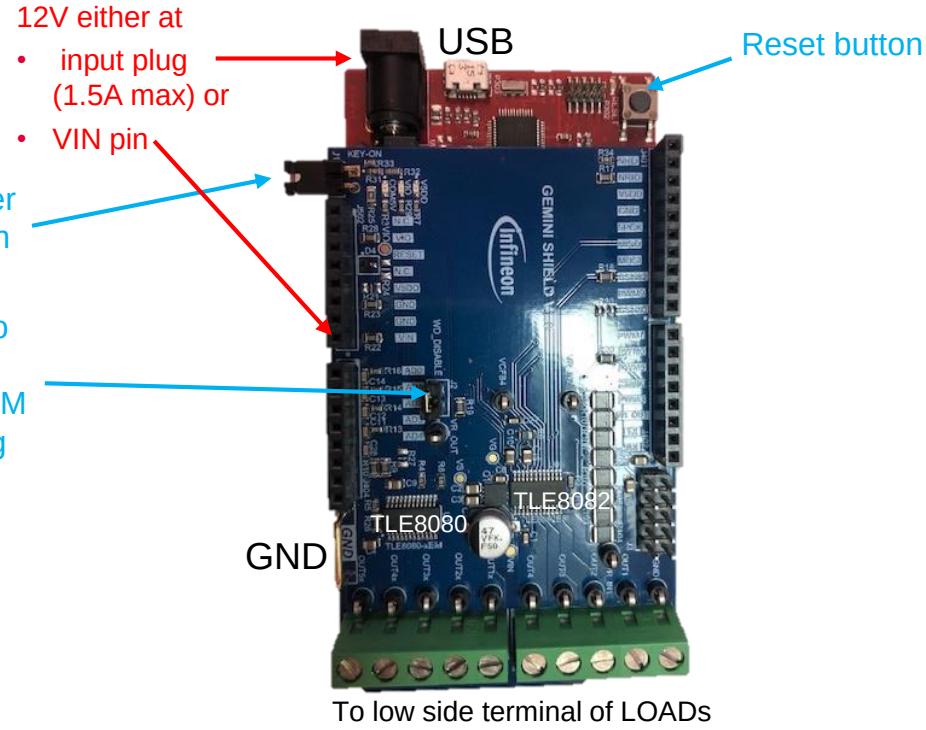
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An Arduino Sketch is available for two different setups

XMC microcontroller board setup



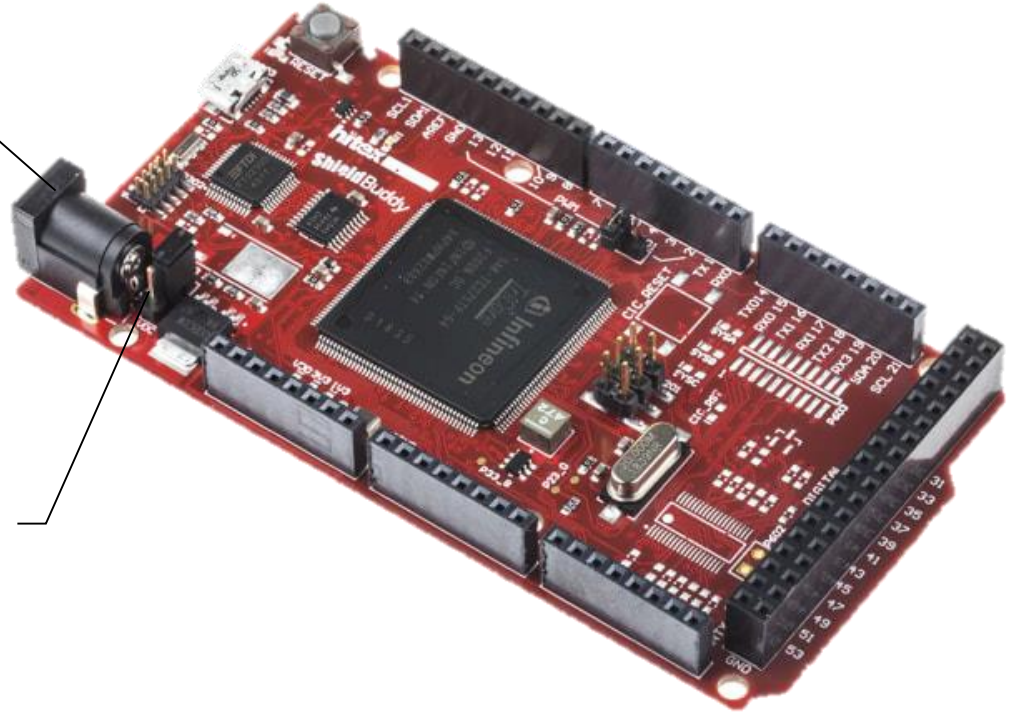
Aurix ShieldBuddy setup



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NOTE for ShieldBuddy setup

12V input plug



Set Jumper to VDC option to supply the Evaluation board and ShieldBuddy from 12V input plug (VIN voltage domain)

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XMC microcontroller Software environment

- Obtain the official Arduino IDE or any other Arduino IDE you prefer e.g. Visual Studio Code incl. PlatformIO
  - *Note: this guide and the UM refer to the Standard Arduino IDE*
- Integrate the XMC platforms to your Arduino IDE, see link

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Aurix ShieldBuddy Software Environment

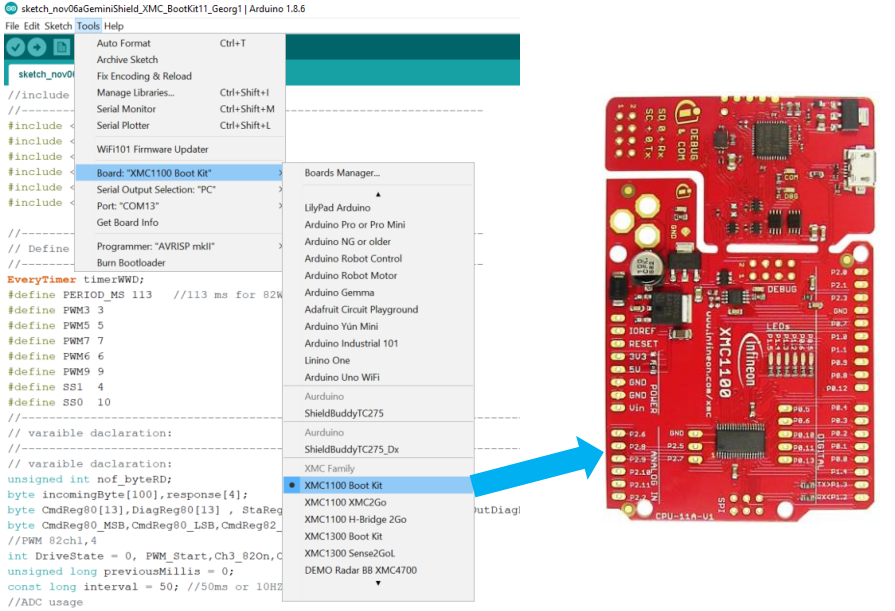
- Obtain the official Arduino IDE or any other Arduino IDE you prefer e.g. Visual Studio Code incl. PlatformIO
  - *Note: this guide and the UM refer to the Standard Arduino IDE*

- If not done already, please install
  - the FreeEntryToolchain to use Aurix microcontrollers
  - the ShieldBuddy platform to integrate the ShieldBuddy to your Arduino IDE
  - *Note: Further details can be found in the ShieldBuddy getting started guide*

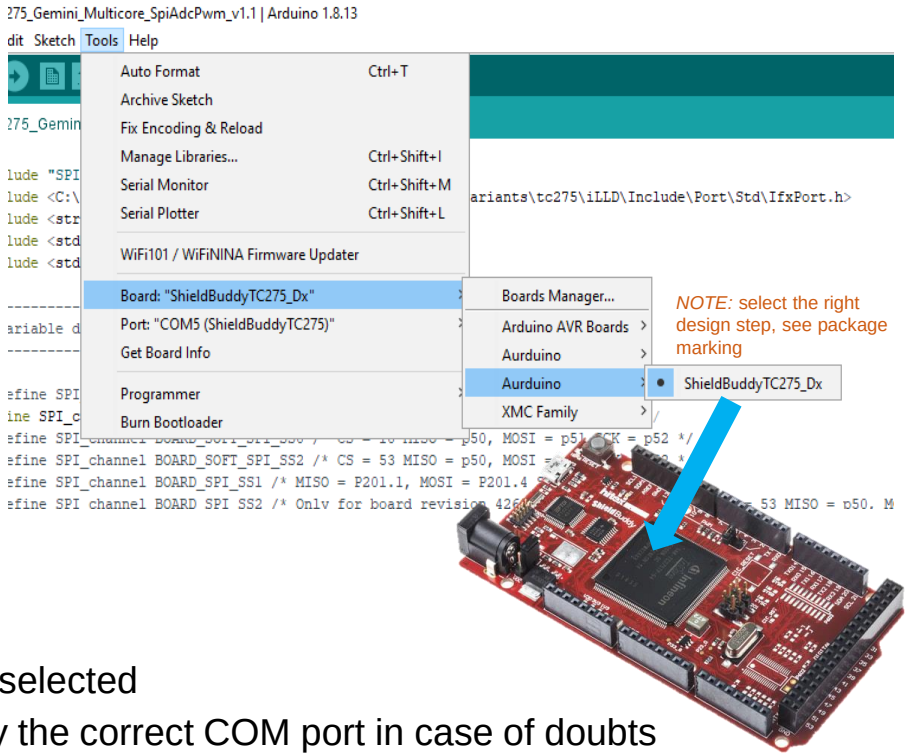
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Select the right target board setup

XMC microcontroller board setup



Aurix ShieldBuddy setup

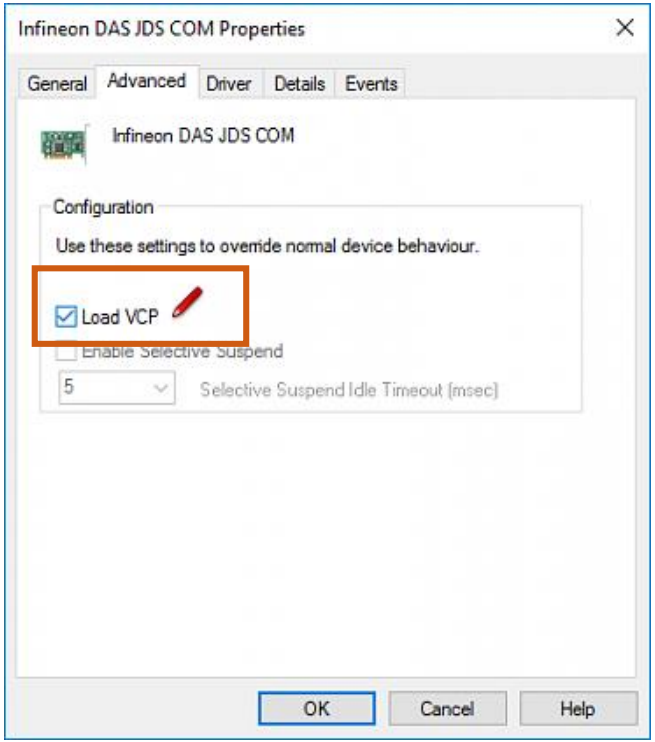


- Please take care that the correct COM port has been selected
- NOTE: check the Windows device manager to identify the correct COM port in case of doubts

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Info note for ShieldBuddy

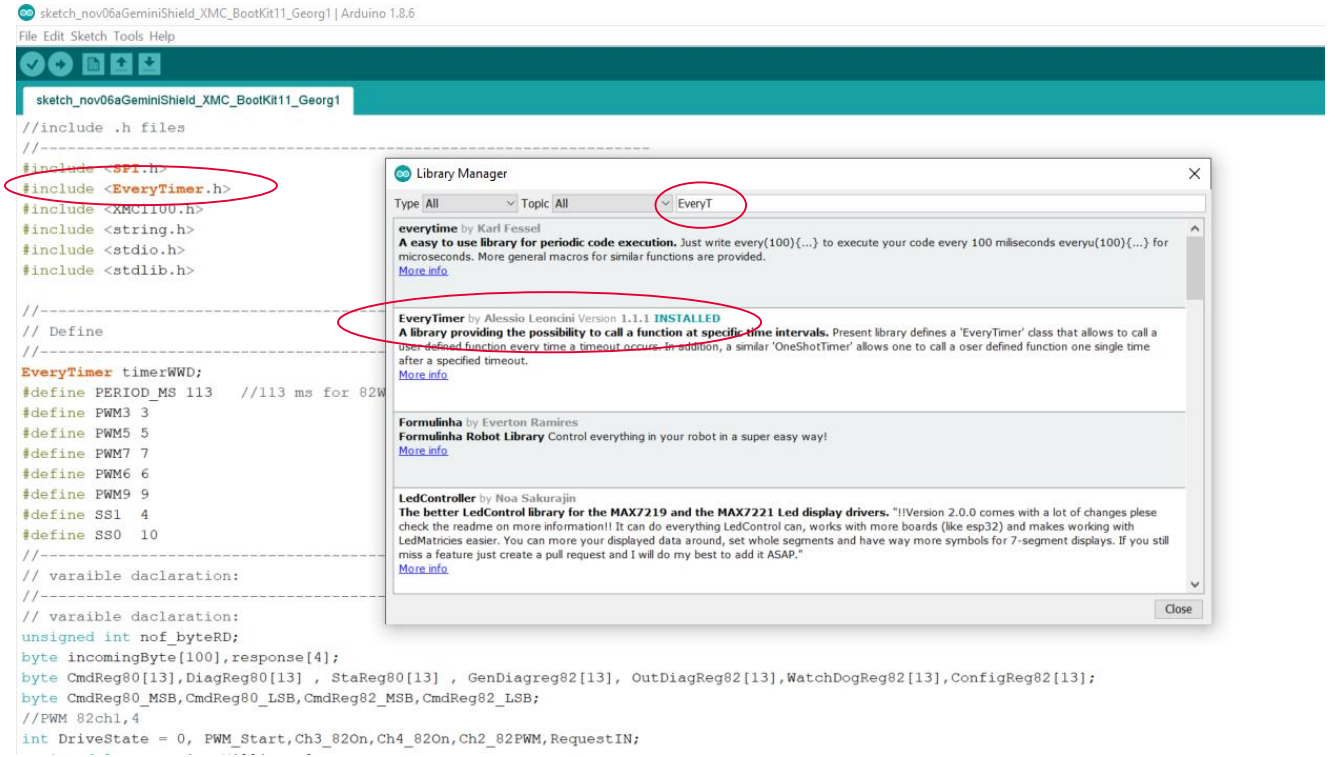
If your PC does not detect the ShieldBuddy as COM port, select following option in your Windows device manager



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Library needed to be included before compile/download

Install the EveryTimer Library (Tools → Manage Libraries) to use the XMC sketch



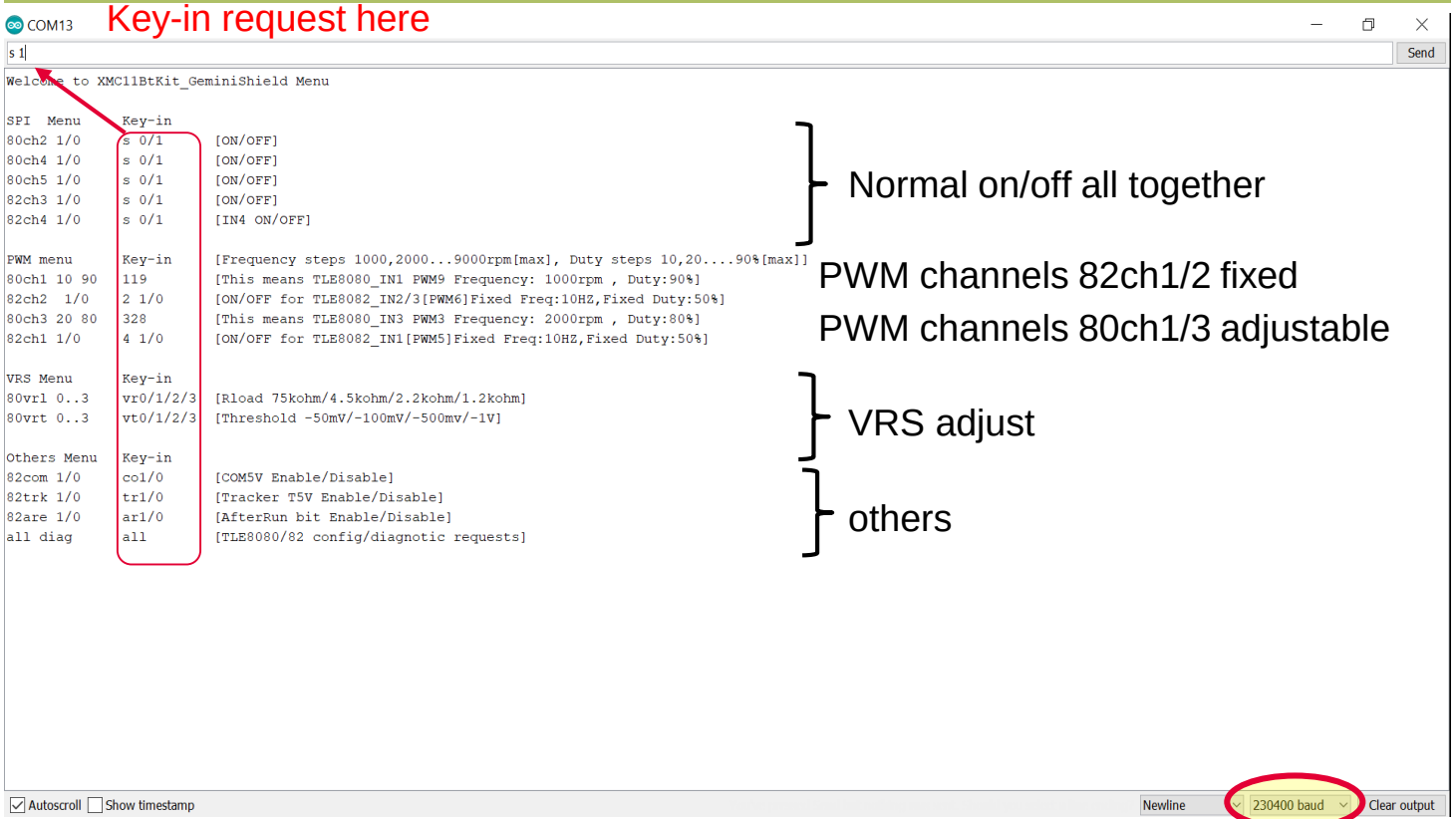
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Main Menu of XMC Script
Open serial monitor and upload Arduino script

Guide

1. Select the correct COM port under “Tools”
2. Open “Serial monitor” under “Tools”
3. Select correct Baud rate (see lower right corner)
   - XMC: 230400 Baud
4. Upload Sketch under Sketch upload
5. Overview as shown on the right pops up
6. Send “s 1” to the terminal to switch on according output stages of TLE8080/2

Main Menu XMC



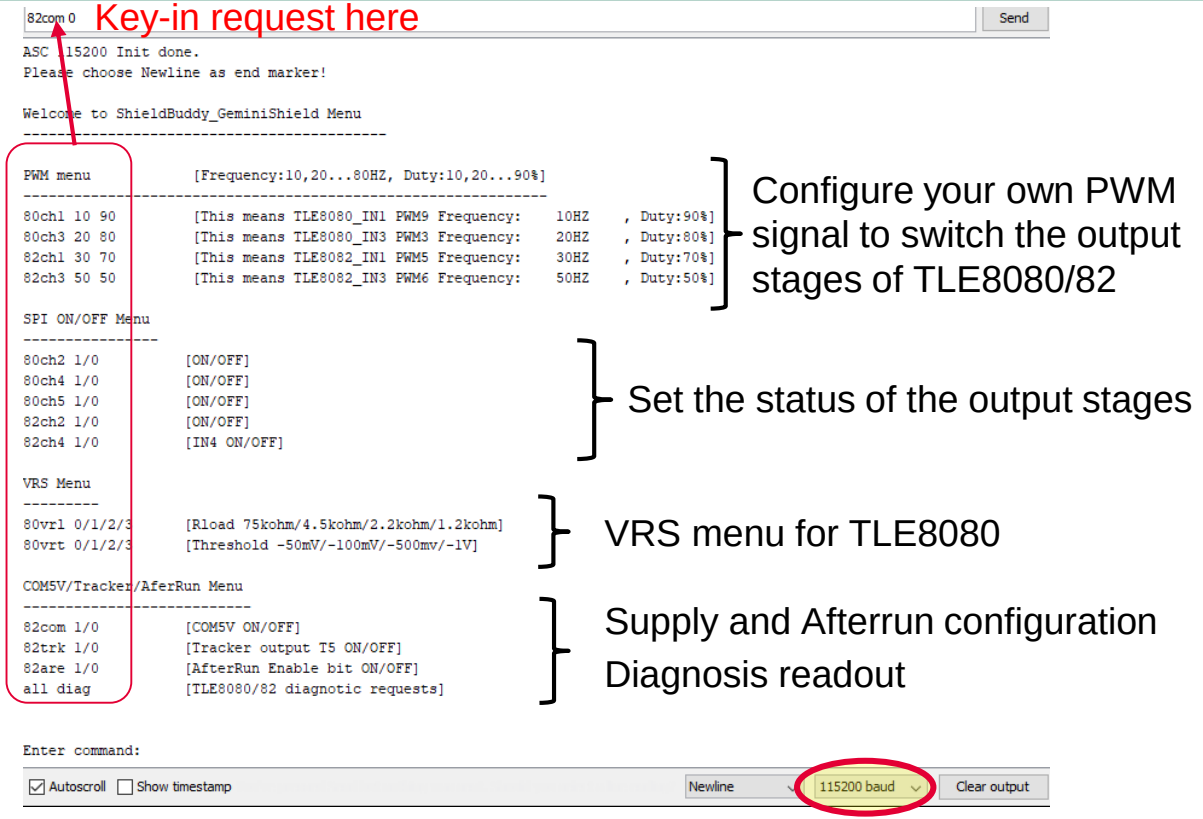
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Main Menu of ShieldBuddy Script
Open serial monitor and upload Arduino script

Guide

1. Select the correct COM port under “Tools”
2. Open “Serial monitor” under “Tools”
3. Select correct Baud rate (see lower right corner)
   - ShieldBuddy: 115200 Baud
4. Upload Sketch under Sketch → Upload
5. Reset the ShieldBuddy (Reset button)
6. Overview as shown on the right pops up
7. Example: Send “82com 0” to deactivate the communication supply domain of TLE8082

Main Menu XMC



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Read registers of TLE8080/82

COM13

```
all
SPI  Menu       Key-in
80ch2 1/0       s 0/1       [ON/OFF]
80ch4 1/0       s 0/1       [ON/OFF]
80ch5 1/0       s 0/1       [ON/OFF]
82ch3 1/0       s 0/1       [ON/OFF]
82ch4 1/0       s 0/1       [IN4 ON/OFF]

PWM menu        Key-in      [Frequency steps 1000,2000...9000rpm[max], Duty steps 10
80ch1 10 90     119         [This means TLE8080_IN1 PWM9 Frequency: 1000rpm , Duty:9
82ch2  1/0      2 1/0       [ON/OFF for TLE8082_IN2/3[PWM6]Fixed Freq:10HZ,Fixed Dut
80ch3 20 80     328         [This means TLE8080_IN3 PWM3 Frequency: 2000rpm , Duty:8
82ch1 1/0       4 1/0       [ON/OFF for TLE8082_IN1[PWM5]Fixed Freq:10HZ,Fixed Duty:

VRS Menu        Key-in
80vrl 0..3      vr0/1/2/3   [Rload 75kohm/4.5kohm/2.2kohm/1.2kohm]
```

```
80 Command Register
|  VR_T1 |  VR_T0 |  VR_L1 | VR_L0 |        |        |        |        |        | CTR5  |  CTR4  |  CTR2  |
    0        0        0        0        0        0        0        0        0        0        0        0

80 Diagnostic Register
| CH45OT | CH5_OC | CH5_OL | CH4_OC| CH4_OL | CH3_OT | CH3_OC | CH3_OL | CH2_OT | CH2_OC | CH1_OT | CH1_OC | CH1_OL |
    0        0        1        0        1        0        0        0        0        0        0        0        1

80 Status Register
| WD_DIS |  WD_TO |        |        |        |        |        |        |  ST5  |  ST4  |  ST3  |  ST2  |  ST1  |
    1        0        0        0        0        0        0        0        0        0        0        0        0

82 Configuration Register
|        |        |        |        |        |        | COM5VEN |  T5VEN |   AE   |  DRV4  | SEL23 |  DRV23 |  DRV1 |
    1        0        0        0        0        0        1        1        0        0        0        0        0

82 General Diagnosis Register
|        |   KEY  | O3STAT |NRIORES| WDRES  | V5VIOV |  V5VIUV |COM5VOT |COM5VOV |COM5VUV | T5VOT | T5VOV  |  T5VUV |
    0        1        0        0        1        0        0        0        0        0        0        0        0

82 OutputStage Diagnosis Register
|        |  04OT  |      O4DIA      |  O3OT  |      O3DIA      |  O2OT  |      O2DIA      |  O1OT  |      O1DIA      |
    1        0        1        0        0        0        0        0        1        0        0        1        0

82 WatchDog Register
|        |   EC   |   EC   |   EC   |  WDTO  |  WDCE  |  WDERR |  WDOW  |        | WDPeriod Config|  WD Check Comd  |
    0        0        0        0        0        0        0        0        0        1        1        0        0
[ AD0] The COM5V ADC value is 1023 | 4.99 Volts
[ AD1] The T5V ADC value is 1023 | 4.99 Volts
[ AD2] The V5DD ADC value is 1023 | 4.99 Volts
[ AD3] The CF4 ADC value is 1023 | 4.99 Volts
[ AD4] The KEYON ADC value is 1023 | 4.99 Volts
```

The EC bitfield should read as 000b for successful servicing

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SW package basic

- TLE8080EM watchdog (WD) has been disabled on HW (with jumper)
- TLE8082ES window watchdog (WWD) is being serviced continuously via SPI (mandatory for its channel(s) activation and to put device into AfterRun state successfully)
- XMC setup: TLE8082ES Channel 1/2 default operation parameters are
  - duty cycle: 50%
  - Frequency: 10Hz
  - The user can directly change the parameter in the Arduino code, if needed (see variable declaration)

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