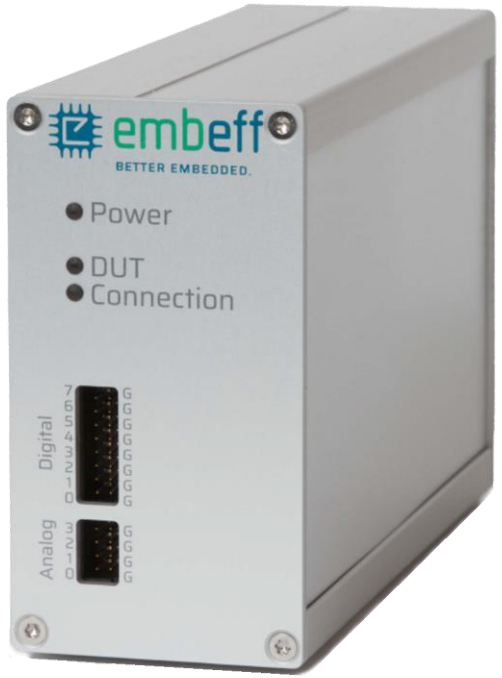
embeff

BETTER EMBEDDED.

ExecutionPlatform



- ✓ Easily test your drivers under all conditions.
- ✓ Productive work - from anywhere.
- ✓ No more self-made solutions that are impossible to maintain.
- ✓ Scales to your budget.

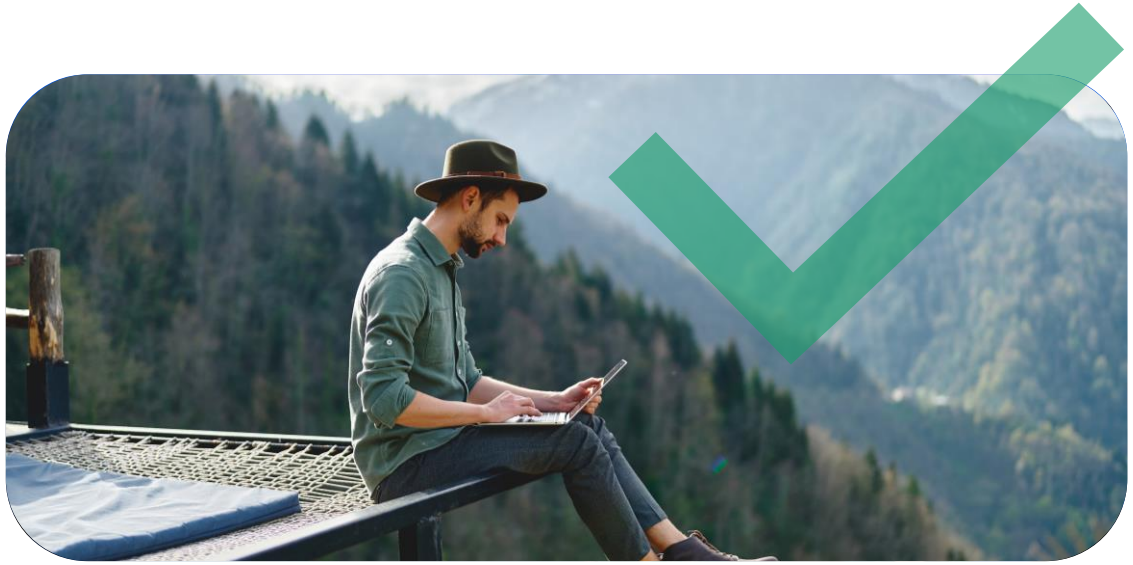
Impact for Developers

Stable Firmware

- ✓ Innovative Open Loop Tests that let you write robust drivers.
- ✓ Easy to check error scenarios that are otherwise hard-to-test.
- ✓ 100% automated. No cabling necessary.
- ✓ Support for all common periphery such as UART, SPI or CAN.

Productive work - from anywhere

- ✓ View any of your microcontroller pins to gain insights.
- ✓ Use it from anywhere. You only need a network connection.
- ✓ Debugger, Oscilloscope, Signal Generator and Microcontroller PCB combined into a single device.

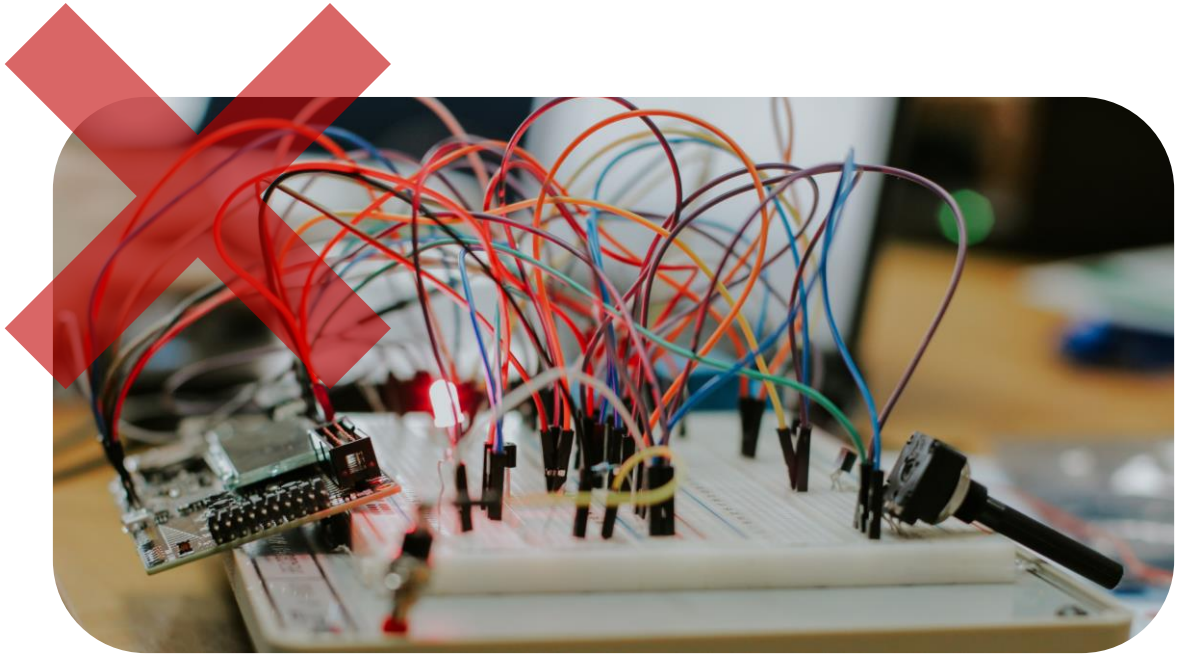


embeff
BETTER EMBEDDED.

Impact for Companies

Focus on your core business

- ✓ No more self-made solutions that are impossible to maintain.
- ✓ Solid documentation usable by everyone.
- ✓ Fast onboarding. For everyone.



Scales to your budget

- ✓ 10x cost reduction compared to a typical HiL system.
- ✓ Flexible monthly licensing. Only pay for what you need.

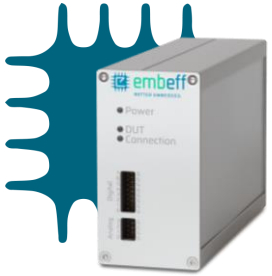
embeff
BETTER EMBEDDED.

The embeff ExecutionPlatform

1 We integrate your microcontroller

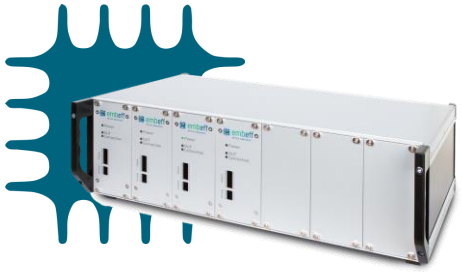
- ✓ Use up to 140 Digital I/O.
- ✓ Use up to 24 Analog Outputs.

2 You choose hardware for your needs.



Standalone

- ✓ 1 microcontroller.
- ✓ Use it on your desk.



Rack

- ✓ Different microcontrollers.
- ✓ Multiple parallel users.
- ✓ Mountable in your 19” rack.

Hosted

Coming soon.

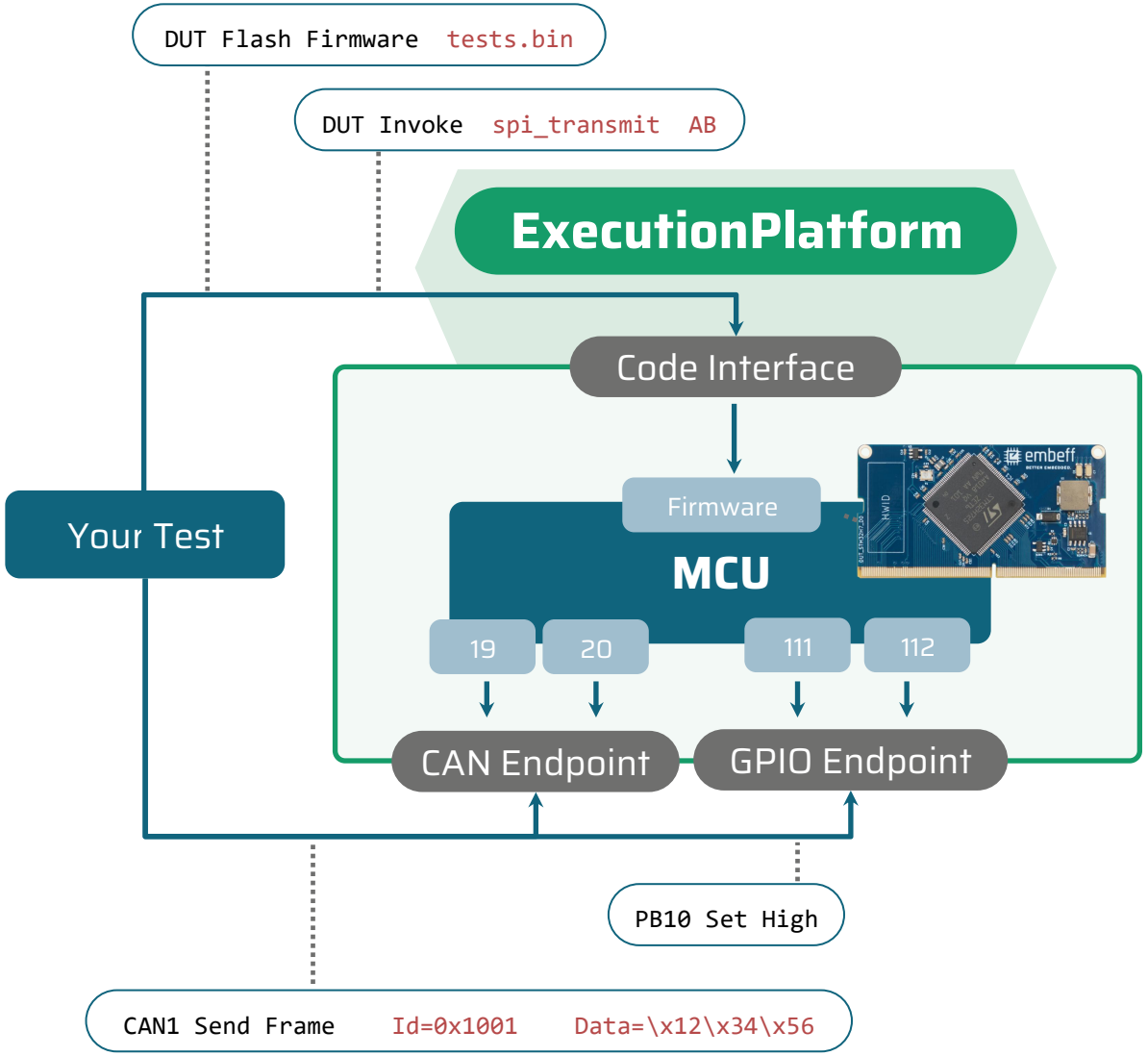
- ✓ We host the hardware.
- ✓ Scales to your needs.
- ✓ Secure access from anywhere.

embeff
BETTER EMBEDDED.

How to Test Firmware Code

Functions on the microcontroller are called at test time via the **code interface**.

Endpoints are the interface between a test and a specific peripheral. Each endpoint provides specific functionality.



Endpoint configuration can be changed for each test.

```
GPIO:
  PB10:
    Pin: 111
    Pull: None
  PB11:
    Pin: 112
    Pull: None

CAN:
  CAN1:
    TX: 20
    RX: 19
```

embeff
BETTER EMBEDDED.

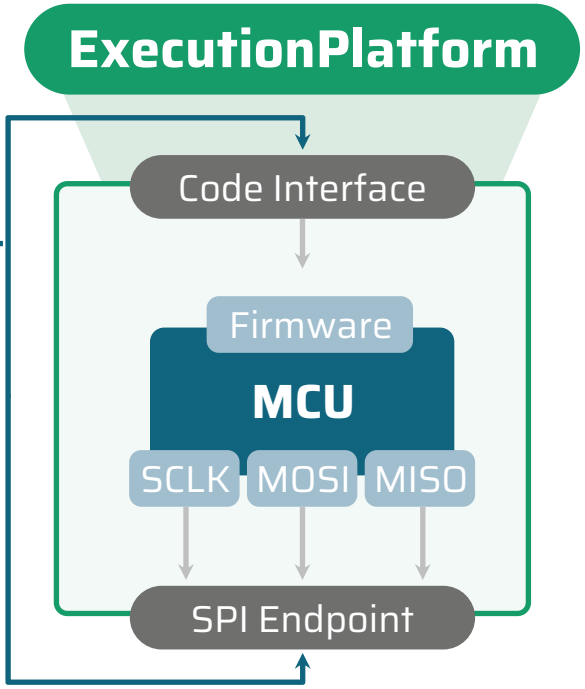
Example: Test a SPI Driver

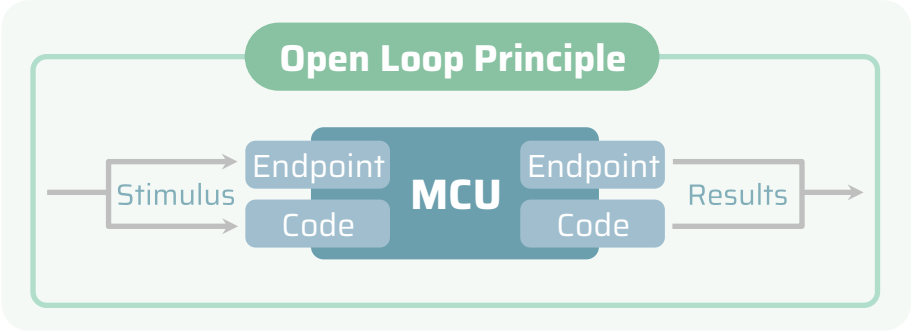
example_spi_crc.bin

```c
#include <ep/core.h>

int32_t read_temperature_mC(uint8_t const*, int){
    uint8_t rxBuffer[2]{0};
    HAL_SPI_Receive(&hspi1, rxBuffer, 2, HAL_MAX_DELAY);

    // The CRCE flag in the SPI_SR register is set if the value received
    // in the shift register does not match the receiver SPI_RXCRC value,
    // after the last data is received.
    if ((hspi1.ErrorCode & HAL_SPI_ERROR_CRC) != 0) { return -1; }
    return (rxBuffer[1] << 0) | (rxBuffer[0] << 8);
}

int ep_app_main() {
    ep_register("read_temperature_mC", &read_temperature_mC);
    return ep_process_loop();
}
```

Test Sequence

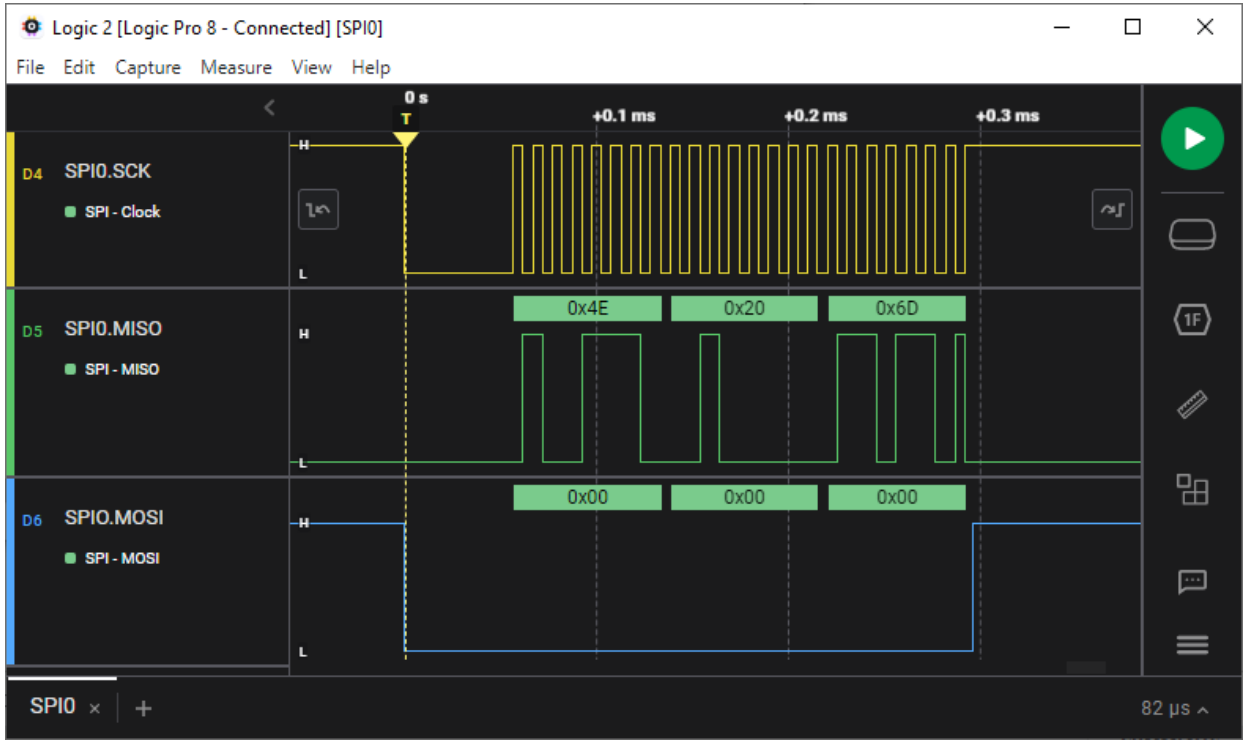
```
*** Settings ***
Library           EP.py    ${ep_address}    spi.ep-config
Suite Setup       DUT Flash Firmware    example_spi_crc.bin

*** Test Cases ***
Value 20.000 With Correct CRC
    SPI1 Set Response Bytes    \x4E\x20\x6D
    ${temperature_mC} =    Dut Invoke    read_temperature_mC
    Should Be Equal As Integers    ${temperature_mC}    20000


Value 20.000 With CORRUPT CRC
    SPI1 Set Response Bytes    \x4E\x20\xEE
    ${temperature_mC} =    Dut Invoke    read_temperature_mC
    Should Be Equal As Integers    ${temperature_mC}    -1
```

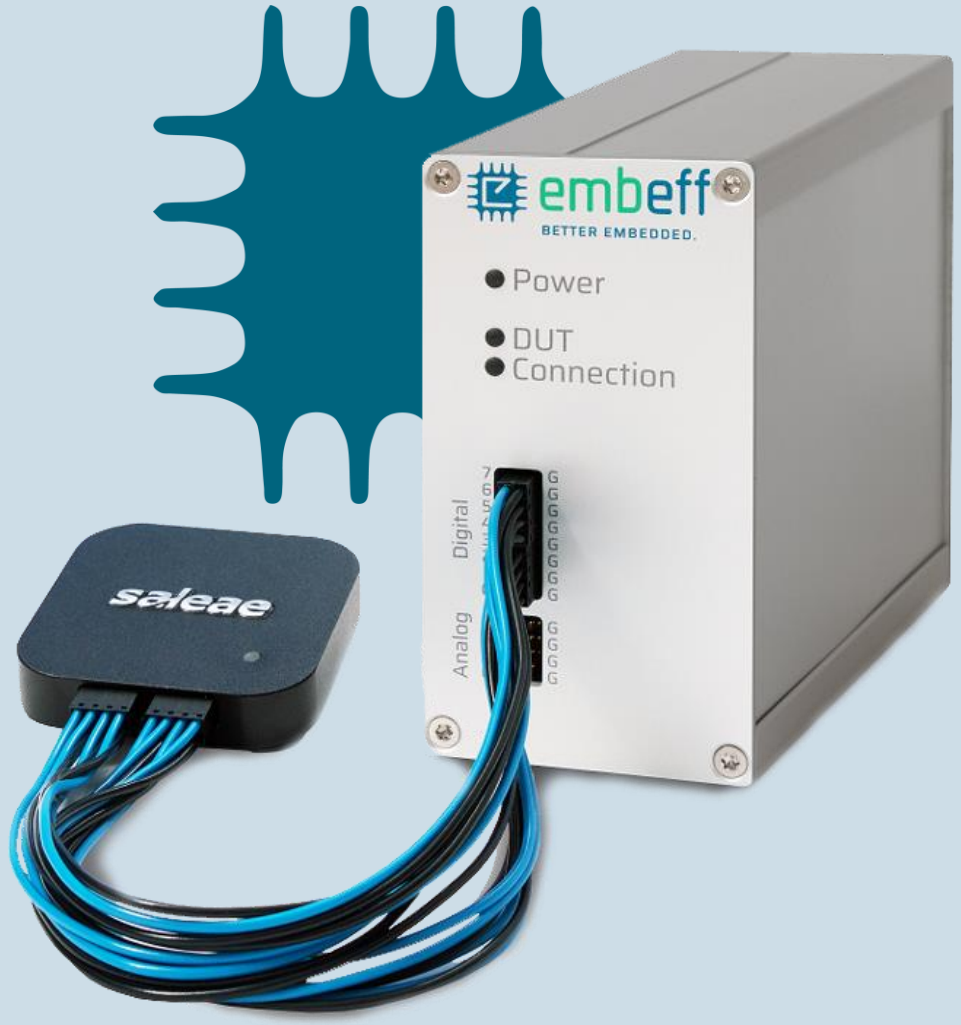




embeff
BETTER EMBEDDED.

Understand What is Happening on the Microcontroller





View any of your MCU pins by connecting a Logic Analyzer. You choose which signals you are interested in at runtime. These are automatically shown, no re-wiring necessary.

We Build on the Best Technology Available

To bring you fast onboarding & a great user experience.

Robot Framework

- ✓ World-leading generic testing framework.
- ✓ Excellent documentation.
- ✓ Huge community.

Visual Studio Code

- ✓ World-leading IDE.
- ✓ Runs on all platforms.
- ✓ Runs in browser.
- ✓ Plugin for Robot Framework.

ExecutionPlatform

Ready-to-run examples.

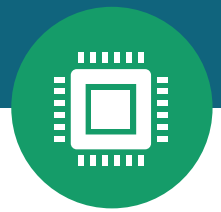
Clear set of keywords for each peripheral.

Straight-forward visualization.

Up and running in less than a day.

embeff
BETTER EMBEDDED.

How to Get Your ExecutionPlatform



- ✓ Tell us which MCU you need.
- ✓ Tell us which package suits your requirements.

- ✓ We provide a quote.
- ✓ You order.

- ✓ You decide which pins to use.
- ✓ Review.

- ✓ Production.
- ✓ Shipment (ETA: 4 weeks after review).

- ✓ Connect to your network.
- ✓ Use with ready-to-run examples.

Packages

Core	Basic	Full
✓ Free hardware upgrades & replacements. ✓ Regular software updates. ✓ Great Email-Support.	✓ Everything in Core. ✓ **Endpoints:** GPIO, UART, SPI	✓ Everything in Basic. ✓ **Endpoints:** Analog-Out, CAN, PWM, I2C

Email us sales@embeff.com

Call us +49-451-16088690

Learn more

Start demo

embeff
BETTER EMBEDDED.