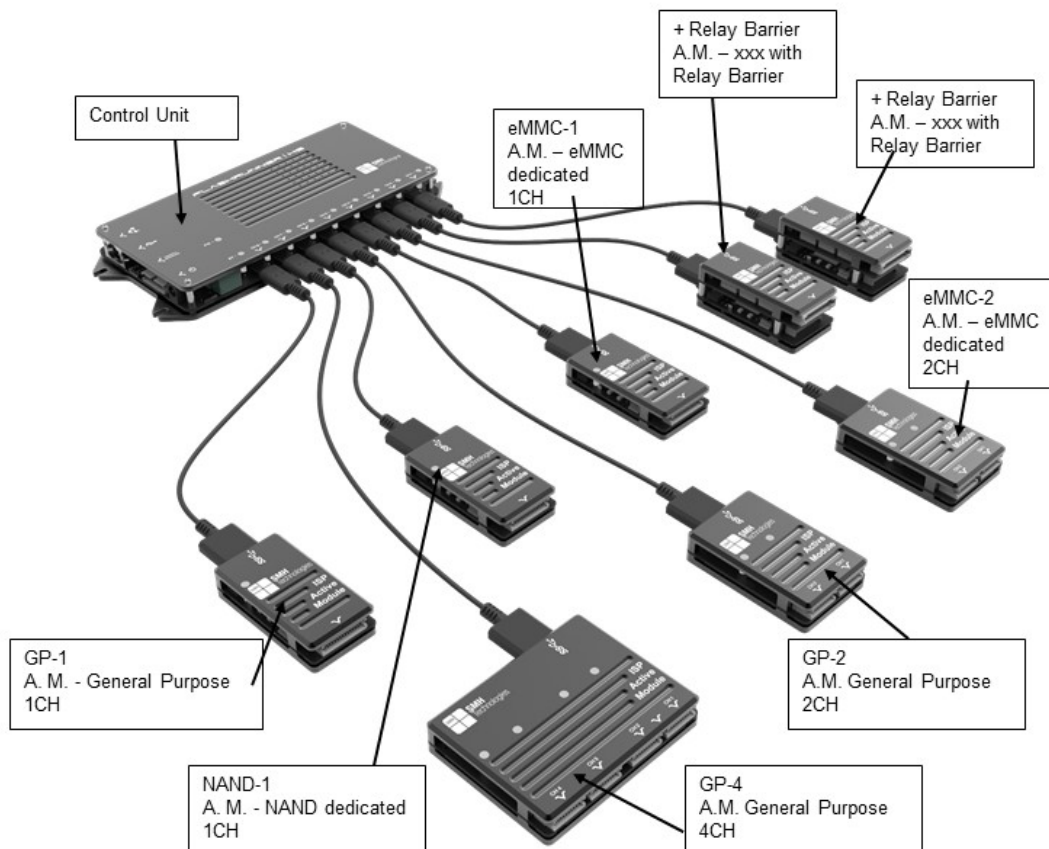


# FlashRunner HS In-System Programmer

## Highest Flexibility Than Ever



## Overview

FlashRunner 2.0 technology is the most popular and innovative of In-System Programming industry.

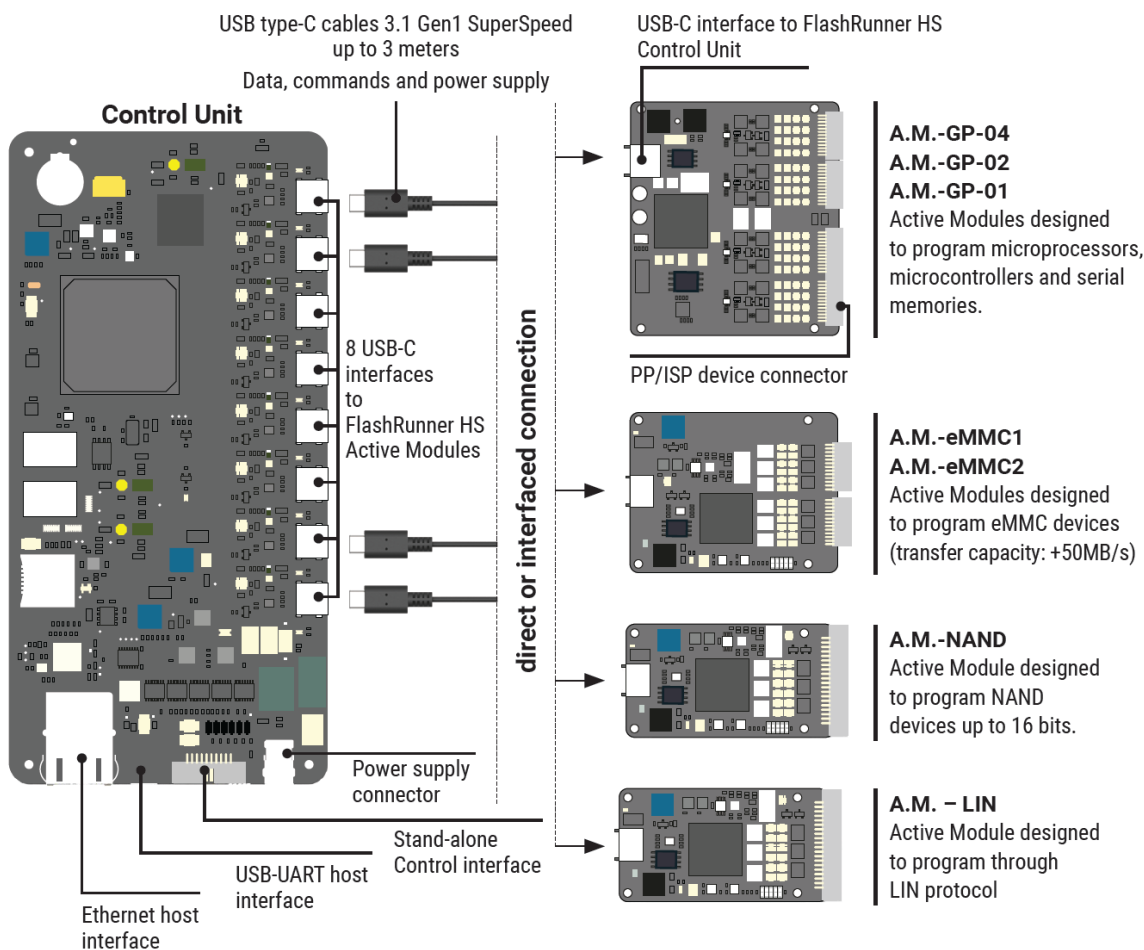
SMH Technologies, taking advantage of its decennial experience in this field, developed a brand-new programming system to face the challenge of an increasingly demanding sector.

## Why FlashRunner HS

FlashRunner HS combines very high programming performances and high modularity to obtain a distributed programming solution that perfectly fits the needs of Pre-Programming and In-System Programming.

This new member of the FlashRunner family is specifically designed to place the programmer header in the near proximity of the programmable devices without being affected by long distance and signal transmission decay. The new programmer implements cutting-edge technology that allows to manage really big amount of data maintaining the best possible programming performance.

This is particularly suited for Pre-Programming application since high-speed performance can be better exploited in case of good contact conditions with the programmable device



## Hardware Features

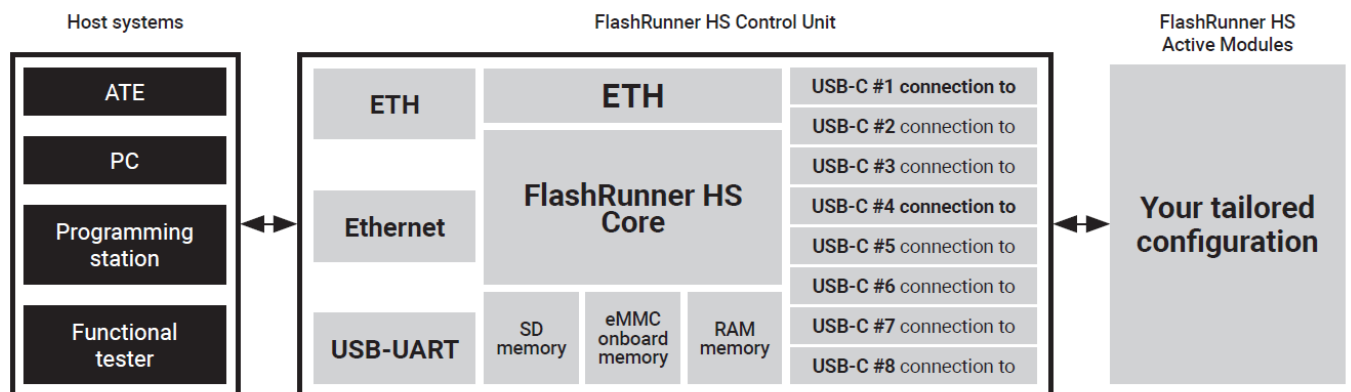
### FlashRunner HS Control Unit

- LAN Communication Interface;
- Digitally Optoisolated USB-UART communication interface;
- Digitally Optoisolated ATE parallel interface for standalone operations;
- 8 USB type-C ports to connect up to 8 HS Active Modules;
- Intel SOC FPGA with 800MHz dual-core ARM Cortex-A9 hard processor system (HPS) with support for symmetric and asymmetric multi processing;
- 1 GB on-board RAM DDR3 memory;
- Micro SD Card reader (up to 256 GB);
- 256 GB on-board eMMC memory;
- On-board timekeeper and calendar for time-stamped log file.

### FlashRunner HS Active Module

- Very small form factor to be placed in near proximity with the device to be programmed;
- USB type-C port to be connected with HS Control Unit; → ISP/PP device connectors to communicate
- with the devices to be programmed;
- Supports most ISP/PP protocols (eMMC, parallel-NAND, BDM, JTAG, DAP, CSI, SPI, QUAD-SPI, I2C, UART, MC2W, ISSP, SWD, ICSP, EICSP, MDI, PPM, PDI, SWIM, and many others);
- Cutting-edge digital line driver to improve performance; → Communication frequency towards device up to 50MHz;
- Power conversion section to supply the board and to provide programmable voltages to the output;
- External relay power line and command line;
- Output power lines voltage and continuous current monitoring.

## Typical Application

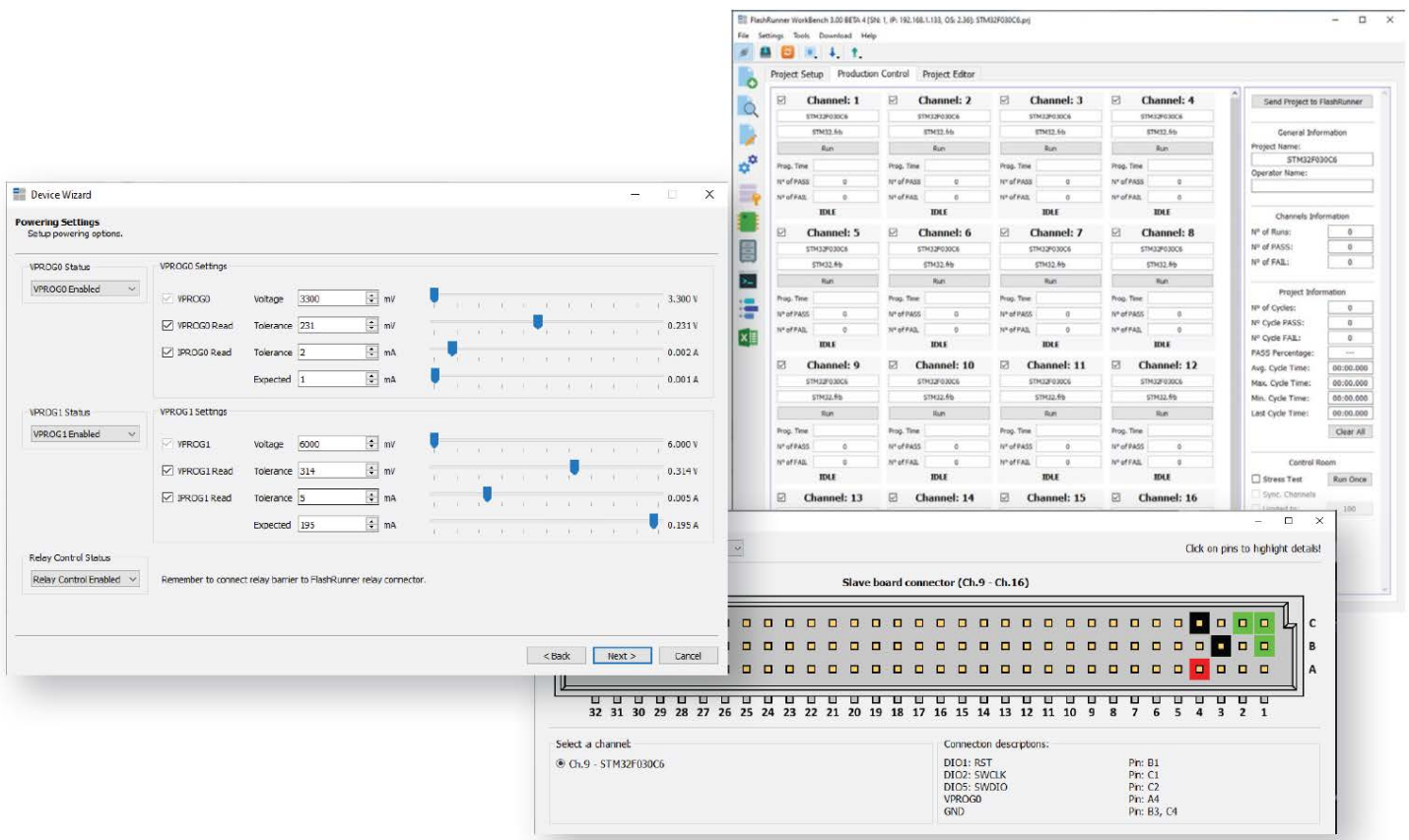


Programming sites	FR HS Control Unit connected to 8 distributed FR HS Active Modules (each one with a programming connector to a programmable device)
Protocols	eMMC, NAND, BDM, JTAG, QSPI, I2C, UART, MON, ICC, SCI and many others
Communication frequency	Up to 50MHz
Digital Lines	12 or 24 Digital communication lines per programming connector according to FR HS Active Module in use
Host Interface	Ethernet LAN, 1Gbps, micro-USB, Control Interface
Dimensions	Control Unit: 170 x 83 x 19 mm Active Module: 60 x 32 x 10 mm
Power Supply	Control Unit: 15V DC power jack Active Module: provided by FR HS Control Unit through USB-C cable

Power Supplying features	eMMC Active Module VPROG0: 1.2V – 3.6V @ 300mA VPROG1: 1.2V – 5.5V @ 300mA
ISP connector	eMMC Active Module: 40-position, 2-row, 1.27mm pitch, vertical or right-angle male connector
Dynamic Memory	1 GB RAM DDR3 memory
Static Memory	Up to 256 GB microSD-CARD memory 256 GB on-board eMMC memory
Relay Barrier	Power supply and command line provided through programming connector to an external board
Voltage and current monitor	Yes, continuous monitoring
Logging	Via on-board timekeeper and calendar for time-stamped log files
LEDs	Status LED and Operation LED for each programming channel

## Software Features

- Device Test: UART/JTAG transceiver able to test device functions;
- Watchdog feeder: square wave generator, frequency trimmable, feeding on-board watchdog;
- Cybersecurity: firmware encryption and secure data transfer;
- DLL (C,C++,C#), easy integration with Teststand/Labvieww/CVI;
- Voltage Monitor: overvoltages and undervoltages detection during flashing process;
- Serial Numbering: dynamic data flashing, runtime defined;
- Digital lines shuffling: dynamic pinout management;
- Conditional erase: decrease cycle time by adding this option to erase only if device is not blank;
- Online driver knowledgebase: complete online Wiki, daily updated, online video lectures, troubleshooting articles.



### CONTROL

- Production control panel
- Programming times and statistics
- Complete connections pinout
- FlashRunner 2.0 DLL
- Libraries are compatible with:
  - C (Visual Studio)
  - C++ (Visual Studio)
  - C# (Visual Studio)
  - Visual Basic
  - LabView
  - TestStand



### COMMAND

- Project wizard
- File transfer manager
- Firmware and Software updates
- Windows, Linux and Mac compatible GUI Interface



### SECURITY

- Encrypted FRB files
- to avoid binary hacking
- Dump and compare features of all channels
- Log file and Production
- Report file
- User Permission
- Management
- Tracking of programming cycles number
- Errors w/language descriptions