Open software
Open hardware
Open standard platform for scientific instrumentation

Achieve ultra-high performance...

...easily

Easy φ is a new platform aiming at physicists. It was originally developed for the needs of quantum optics, but is also perfectly adapted for other applications in physics or biology. It is an open standard platform based on open hardware and open software. Unlike for commercial systems, you can fully control and adapt the platform.

The system consists of a rack and its different modules. Your computer or tablet PC is used to adjust all the parameters.
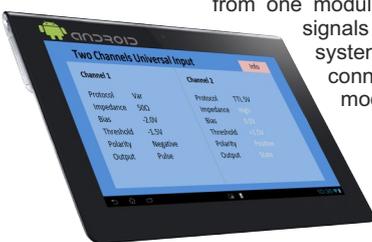
The rack conforms to the 19" standard and has a 3U height. The width can be 28F, 63F or 84F. It is possible to chain multiple racks together. For special needs, it can even have 4U heigth to place an efficient ventilation system.

The back-plane connector provides the following signals for each module: a 5V power supply, a 12V managed power supply, a 10 MHz clock, four synchronisation signals and a high speed USB 2.0 connexion. All modules are hot plug and play.

The embedded controller in the rack enumerates all the modules via its USB controller. If the enumeration is correct and the power is sufficient, then the module is fully functional.

The modules follow the Eurocard standard with their 100x160mm size and 5E width (~ 25mm). Each module contains USB2.0 microcontroller (compatible with the **Arduino DUE** IDE), a power management system, an EEPROM for storing non-volatile parameters, a micro-SD card (1GB or more). This card is used for storing the host software, user software, documentation, datasheet and any other useful information. Therefore, it is possible to take a module in a powered rack, place it in another rack for the first time and use it without having to install any software.

The interconnecting cables (QMA) allow fast signals (~1 GHz) to travel from one module to another. There are no fast signals on the back plane. Fast aquisition systems will transfer data via a specific connector at the front panel of the module.

The control software normally runs on any type of PC, even tablet PC which is very useful in a laboratory as users can remotely control and see the results of their experiments. For automated applications, it is possible to control modules with **Python**, **LabVIEW**© or any other software.

Specific modules

High speed dual input modules

Dual High-Speed Universal Input
50Ω input, 100 ps minimum input pulse width, adjustable threshold, offset, polarity, hysteresis, AC or DC coupling. Compatible with many standard such TTL, CMOS, ECL, LVPECL, NIM, CML or RF. Dual output Easy φ pulse or state selectable.

Dual High-Speed Universal Output
High speed output up to 1 GHz. Compatible with many standards such as TTL, CMOS, ECL, LVPECL, NIM, etc. Output pulse width same as input or adjustable pulse width.

Dual High-Speed Delay Line
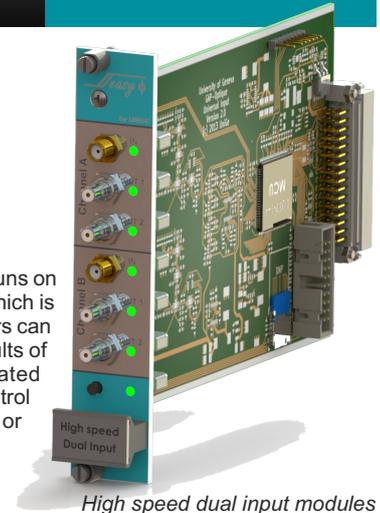High precision 5ns adjustable delay with 5 ps step size.

High speed coincidence
High precision coincidence signal between two inputs. Adjustable delay with 5 ps step size. Adjustable coincidence windows width with 5 ps step size.

High-Speed FPGA
Quad input and quad output with more than 2.5 GHz sampling rate, Dual 2.5 GHz SFP for data transfer. Dual reference clock input. Many different FPGA configurations available: high-speed counters, arbitrary signal generator, quantum cryptography engine, etc.

And many more on www.easy-phi.ch

A tablet to control your system

Rack 4U 63F with 12 modules

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