

FOTON – INSTRUMENTAL ENGINEERING

(NOT ONLY FOR HEP)



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27.9.2023

FOTON, s.r.o.

- ***founded 2000***
- ***Czech private company (LTD)***
- ***Development and manufacturing of special electronic devices***
- ***Industrial automation and control systems***

• Studénka 1
509 01 Nová Paka
Czech Republic

www.fotons.cz



„From system design to k delivery of final product ...”

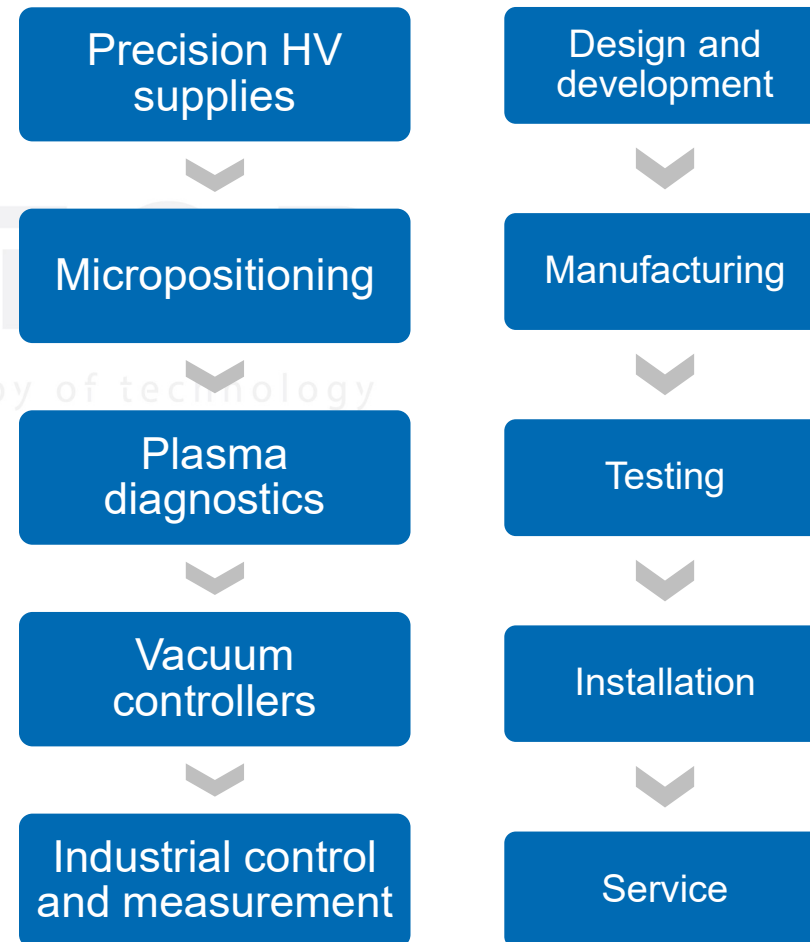
⊕ **Founded 2000**

⊕ **SME**

⊕ **PIC (FP7) : 968991880**

⊕ **Special innovative firm**

⊕ **R&D + manufacturing**



**Complex services for R&D
and high-tech firms**

Products overview

More than 200 prototypes during 20 years

*nA-100s A uV-10s kV
uW-kW UV-IR*



**High voltage
supplies**



Micropositioning



Optoelectronics



**High temperature
plasma diagnostics**



Special systems



Vacuum controllers

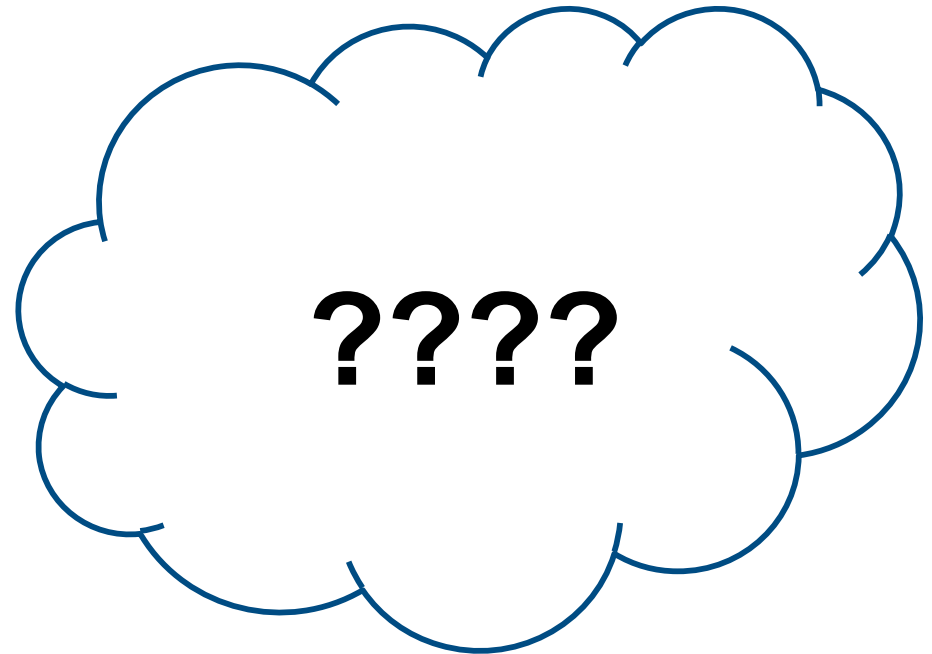


**Current and voltage
power supplies**

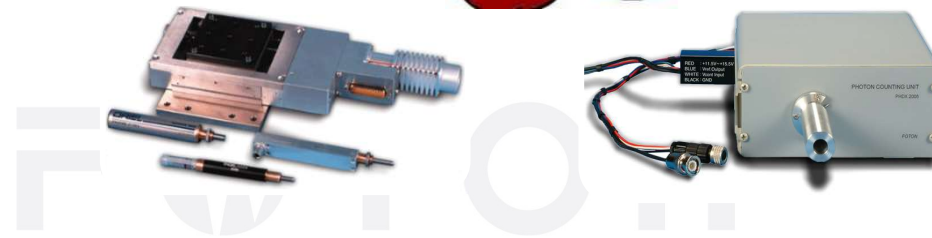


**Industrial control
systems**

How did it happen?



1st period : From ASTERIX to PALS



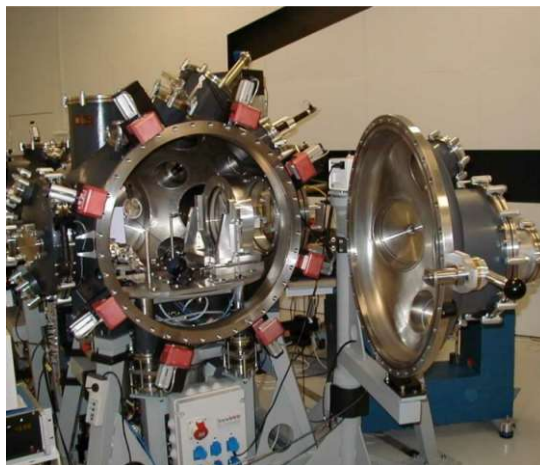
Micropositioning



Optoelectronics



High temperature plasma diagnostics



1kJ, 350ps, 1,3um, TW



Special systems



Vacuum controllers

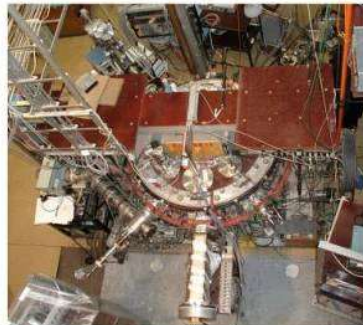
2nd period : From CASTOR to GOLEM and COMPASS (tokamaks and fusion research)



CASTOR tokamak

Major radius 40 cm
 Minor radius 8,5 cm
 Toroidal magnetic field < 1,5 T
 Plasma current 5 - 20 kA
 Pulse length < 50 ms

Features:
 Small tokamak
 Small ripple (24 TF coils)
 Routine operation (100 shots/day)
 Flexible (a good plasma already
 1 day after opening)



High voltage
supplies



Optoelectronics



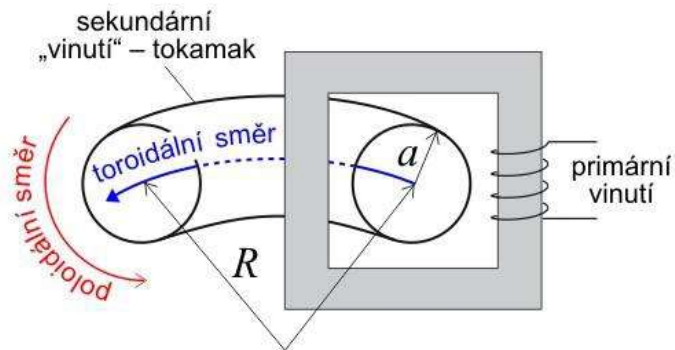
High temperature
plasma
diagnostics



Special systems

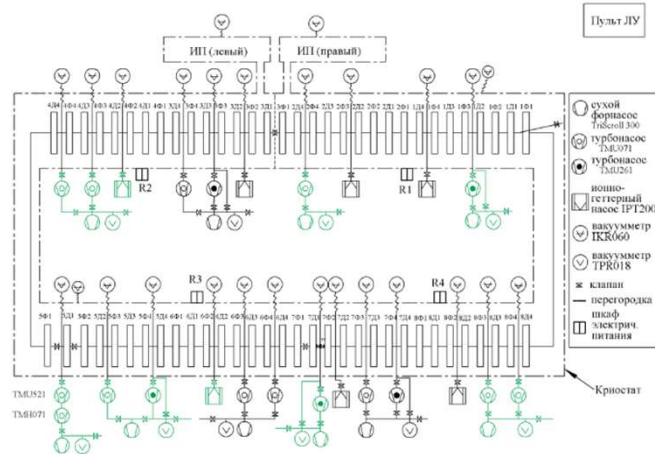


Current and
voltage power
supplies



3rd period : Particle accelerators

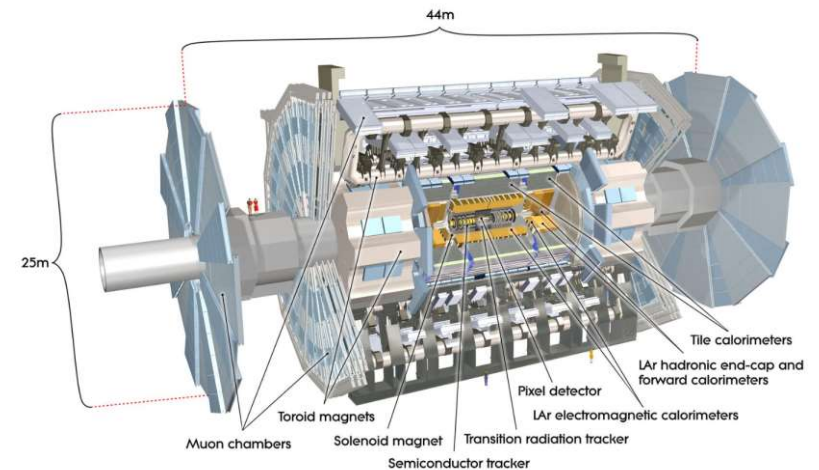
- JINR – nuclotron VCS upgrade - **electric design & mfg & SW**
- LA3NET and AVA projects
- CERN - HVPS



High voltage supplies



Vacuum controllers



4th period : ELI Beamlines



The ELI Beamlines Facility is a leading laser research centre and part of [Extreme Light Infrastructure](#) ERIC pan-European Research Infrastructure hosting the world's most intense lasers.

High voltage power supplies

Low – middle – high power, voltage up to 20kV (60kV)



HVS 04



HV 2 - 10



HVG 2000



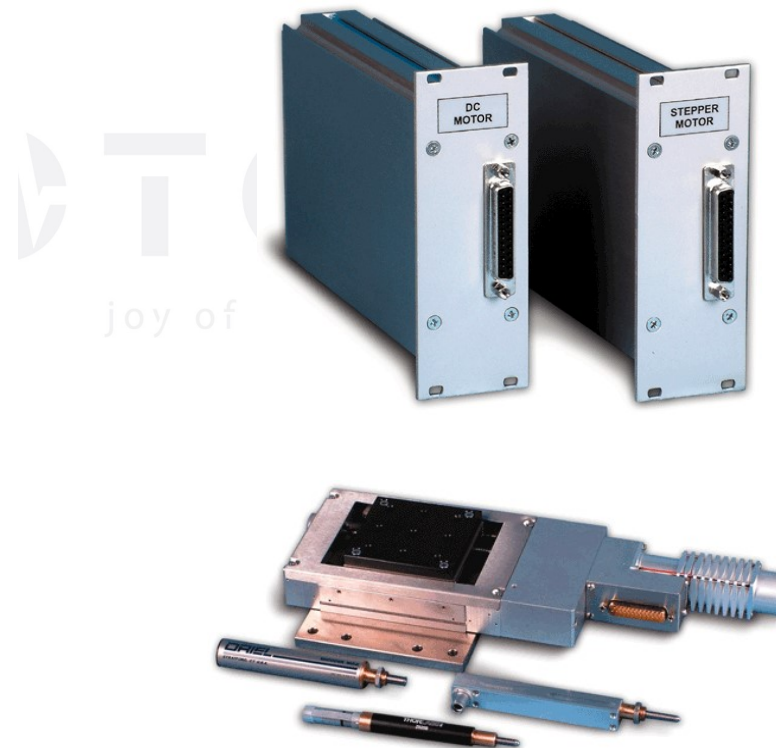
HV1K1A

Micropositioning

System Multidrive 16+



Multidrive 16+



High temperature plasma diagnostics

Signal processing, generators and controllers for experiments



DLS 08



HPD 4.1



Vacuum control systems

High reliability control systems (HW, SW) for vacuum pumping



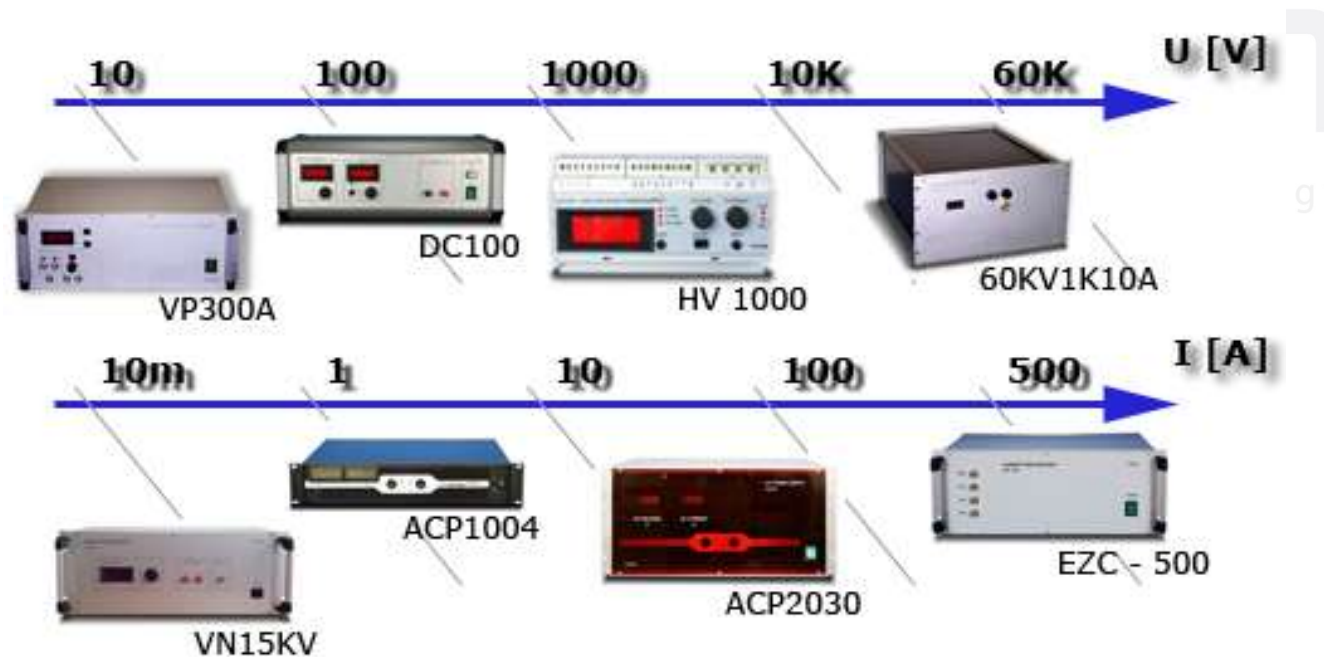
VCU 2000



ASU 2009

Voltage and current power supplies

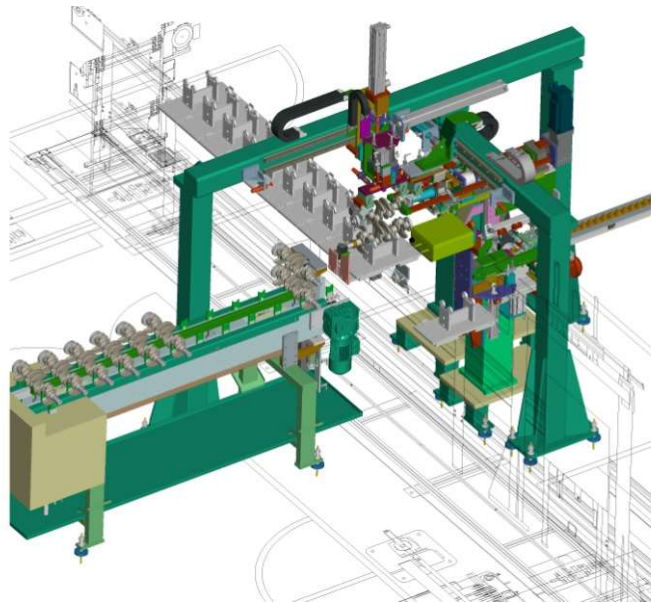
DC – AC – waveform – programmable, up to 750 A, peak power 40 kW



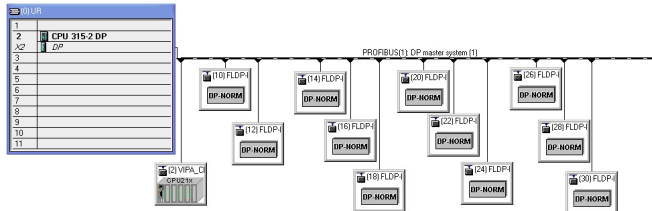
Galva 2001

Automation and industrial process control

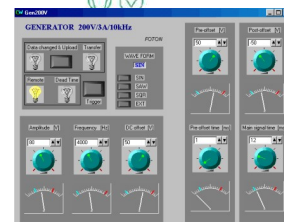
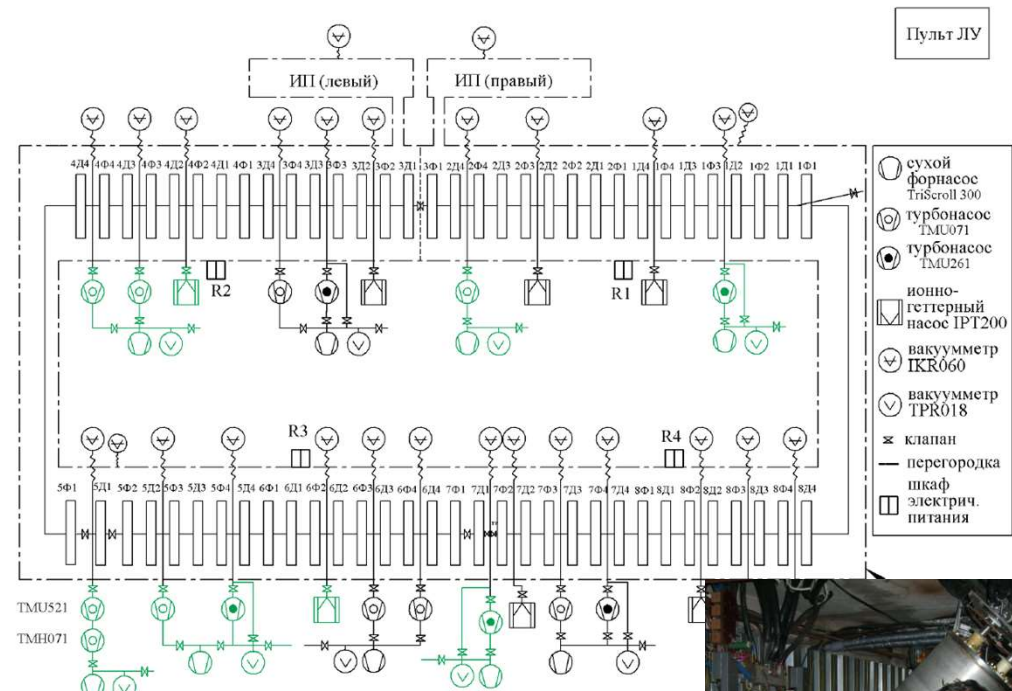
Industrial projects:



Automatic pressure station



Large experiments:



Particle accelerator



HVS 900N

Precise stable high voltage power supply

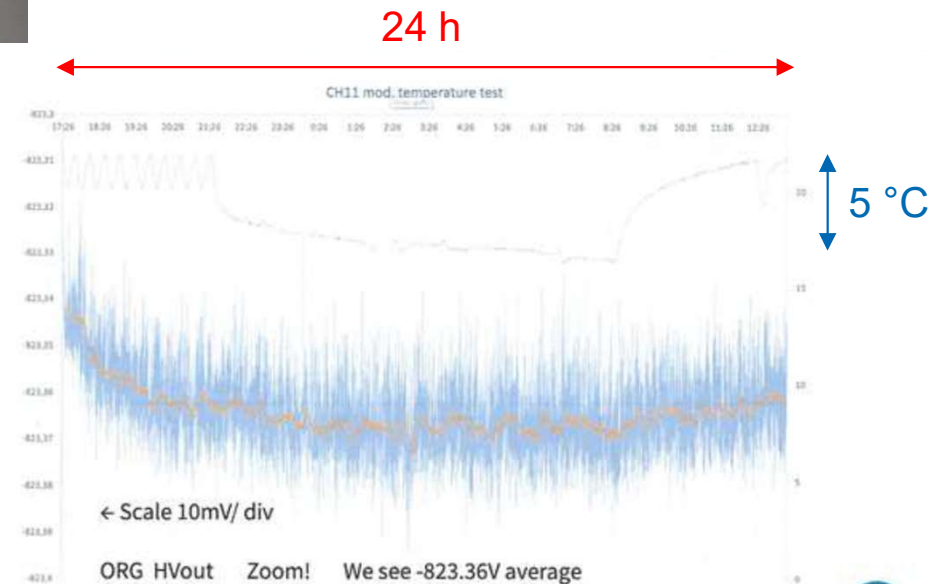


Main parameters:

- 16 output channels
- 2 output voltage levels (-830V / -950V)
- output current up to 20 mA / channel
- output voltage stability $\pm 0,01\%$
- TC 25 ppm

Application:
TILECAL hadronic calorimeter of the ATLAS detector

10 mV \updownarrow



Recent products

WBA23 – WIDEBAND RF AMPLIFIER

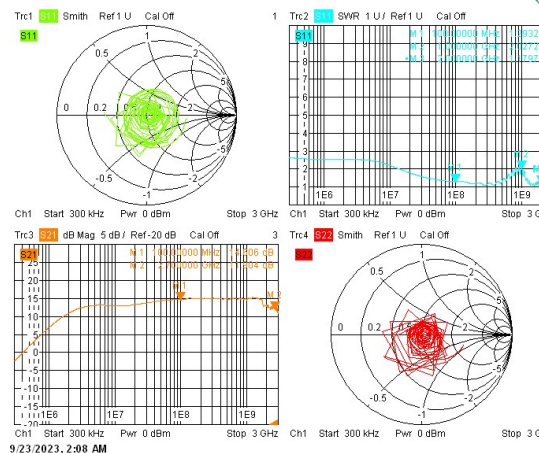
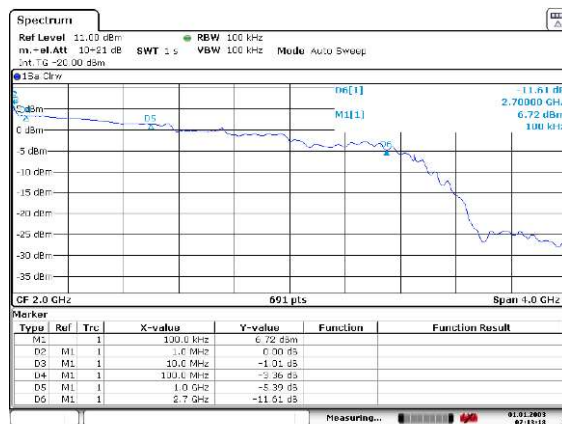


Main parameters:

- 2 channels
- Frequency range: 0,1 ÷ 2 GHz
- Nominal gain: 24 dB
- Max output power: 17 dBm
- Power: 12 VDC (200mA)
- Input / Output: 50 Ω / 50 Ω

ADAPOWER 4100

ADAPTIVE POWER SUPPLY FOR Si-PMs

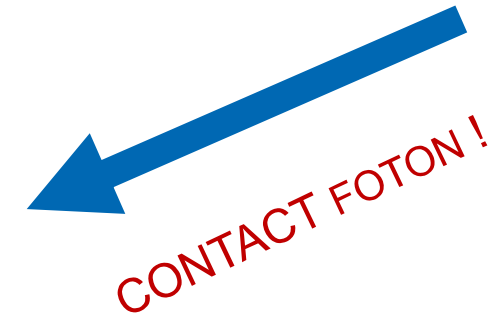


Main parameters (preliminary):

- 4 channels
- Output voltage: 0 ÷ 100 V
- Stabilized gain
- Temperature sensor inputs (common / individual)
- Analog / digital compensation
- Local / Remote operation

Have you **troubles** ?
Do you need a **solution** ?

You know **WHAT**
But you don't know **HOW** ?



You know **WHAT**, you know **HOW**
But you have **not capacity** enough

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