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Laboratory Pulser & OEM Pulser Units ▶

- Ready for use
- No external components required
- All pulsers optimized for system integration
- Laboratory instruments with CE marking

Laboratory Pulser

Model [sorted by housing dimensions]	Description / Comment ● Preferred stock type ○ Stock may be limited X Not for new development	Dimensions [mm ³]	Voltage [kV]	Pk. Current [A]	HV Pulse Width [ns]
GHTS-Series:	Very compact push-pull switching units for general purpose. Polarity reversal by grounding plug .				
GHTS 60	●	170 x 110 x 45	2 x 6	2 x 15	100...∞
GHTS 30	●	170 x 110 x 45	2 x 3	2 x 30	100...∞
GHTS 30 A	●	170 x 110 x 45	2 x 3	2 x 60	100...∞
GHTS 100	●	210 x 110 x 45	2 x 10	2 x 15	100...∞
GHTS 60 A	●	210 x 110 x 45	2 x 6	2 x 30	100...∞
GHTS 100 A	●	210 x 110 x 45	2 x 10	2 x 30	100...∞
GHTS 60 B	●	210 x 110 x 45	2 x 6	2 x 60	100...∞
FHPP-Series:	Precision push-pull pulsers with remotely controllable polarity reversal. Fast settling time, low ringing and low ripple. Ideal for mass spectrometry etc. Two outputs with high and low impedance (200 / 50 Ω)				
FHPP 60	Available from I/2002	184 x 105 x 92	2 x 6	2 x 80	60...∞
FHPP 80	Available from I/2002	184 x 105 x 92	2 x 8	2 x 60	60...∞
FHPP 100	Available from I/2002	184 x 105 x 92	2 x 10	2 x 50	60...∞
FHPP 120	Available from I/2002	184 x 105 x 92	2 x 12	2 x 30	60...∞

Option ① Description

- Option 01** **Protective Series Resistor 200 Ohm.** Only for model series GHTS.
Option 02 **Built-in Miniature Fan.** Only for model series GHTS.
Option GCF **Grounded Cooling Flange:** Cooling by a grounded base plate made of nickel plated copper. Only for model series FHPP.

OEM Pulser Units

Model [sorted by housing dimensions]	Description / Comment ● Preferred stock type ○ Stock may be limited X Not for new development	Dimensions [mm ³]	Voltage [kV]	Pk. Current [A]	HV Pulse Width
FQD-Series:	Fast Solid-State On-Q-Switch Driver. Very compact design for placement directly at the pockels cell. Available with cooling options CF, GCF, GCF-W and DLC for high frequency / high power dissipation.				Depends on R x C
FQD-40-06-ON	● Based on HTS 40-06, with 200 mm long pigtailed for direct pockels cell connection	78 x 38 x 25	4	60	100 ns...1 ms
FQD-50-05-ON	● Based on HTS 50-05, with 200 mm long pigtailed for direct pockels cell connection	78 x 38 x 25	5	50	100 ns...1 ms
FQD-60-04-ON	● Based on HTS 60-04, with 200 mm long pigtailed for direct pockels cell connection	78 x 38 x 25	6	40	100 ns...1 ms
FQD-80-03-ON	● Based on HTS 80-03, with 200 mm long pigtailed for direct pockels cell connection	78 x 38 x 25	8	30	100 ns...1 ms
FQD-30-08-UF-ON	● Based on HTS 30-08-UF, with 200 mm long pigtailed for direct pockels cell connection, ultra fast	78 x 38 x 25	3	80	100 ns...1 ms
FQD-30-06-UF-ON	● Based on HTS 30-06-UF, with 200 mm long pigtailed for direct pockels cell connection, ultra fast	78 x 38 x 25	3.6	60	100 ns...1 ms
DSM-Series:	Universal pockels cell pulser with ~3 ns transition time and variable pulse width from 10 ns–100 μs. Very compact design for placement directly at the pockels cell. Available with cooling options CF, GCF, GCF-W and DLC for high frequency / high power dissipation..				
DSM 31-12	- Under development		3		10 ns–100 μs
DSM 61-12	- Under development		6		10 ns–100 μs
DSM 91-12	- Under development		9		10 ns–100 μs

Option ① Description

- HFB** **High Frequency Burst:** Improved burst capability of driver by means of external buffer capacitors. Recommended if more than 10 pulses with less than 10 μs spacing are generated.
HFS **High Frequency Switching:** External supply of auxiliary driver voltage (50-350 VDC according to type). Necessary if the specified "Maximum Operating Frequency" shall be exceeded. ②
LP **Low Pass:** Low pass filter at the control input. Propagation delay time will be increased by ~50 ns. Jitter + 500 ps. Improved noise immunity and less critical wiring in high speed applications. ③
I-PC **Integrated Part Components:** Integration of small part components according to customer's specifications (e.g. buffer capacitors, snubbers, damping resistors, diodes, opto couplers). ②
SPT-C **Shielded Pigtail for Control Connection:** Cable (l=300mm, Z=100Ω) with LEMO plug+socket and 100Ω termination. Improved noise immunity in case of long distance to driver circuits. ③
PT-C **Pigtail for Control Connection:** Flexible leads (l=75 mm) with PCB connector. This option is only relevant for switching modules with pins. Recommended for modules with options CF & GCF.
PIN-C **Pins for Control Connection:** Gold plated pins for printed circuit board designs (special sockets available). This option is only relevant for switching modules which have pigtailed as standard.
PT-HV **Pigtails for HV Connection:** Flexible leads with cable lugs. For increased creepage. PT-HV is standard for all types with >25 kV switching voltage. Not recommended in extremely fast circuits.
ST-HV **Screw Terminals for HV Connection:** Threaded inserts at the bottom of module (if not standard). For PCB design. Operation above 25 kV requires liquid insulation (Galden®/Oil) or potting.
UL94 **Flame Retardant Casting Resin:** Casting resin according to UL-94-VO. Minimum order quantity required. ②
FC **Fiat Case:** Height of standard plastic housings reduced to 19 mm or less. Not in combination with cooling options CF, GCF, DLC and HPMC.
CF **Non-Isolated Cooling Fins:** Standard sizes in categories I to VII according to model. Nickel plated copper 0.5 mm, fin height 35 mm. For air and liquid cooling (e.g. Galden® or oil).
CF-1 **Non-Isolated Cooling Fins d=1mm:** Nickel plated copper 1.0 mm instead of 0.5 mm. The Max. Power Dissipation will be increased by ~80 %. For air and liquid cooling (e.g. Galden® or oil).
CF-X2 **Non-Isolated Cooling Fins enlarged by x2:** Fin area enlarged by factor 2. Not relevant in connection with liquid cooling.
CF-X3 **Non-Isolated Cooling Fins enlarged by x3:** Fin area enlarged by factor 3. Not relevant in connection with liquid cooling and forced air convection.
CF-CS **Non-Isolated Cooling Fins with customized shape:** Individual shape to meet specific OEM requirements. ②
CF-LC **Non-isolated Cooling Fins optimized for liquid cooling:** Double fins, nickel plated copper, 0.5 mm thickness., height 20 mm.
CF-DR **Cooling Fin for Driver:** Small extra cooling fin for the control electronics. On ground potential. Can be necessary in combination with HFS. ②
GCF **Grounded Cooling Flange:** Nickel-plated copper flange for High Power applications. Max. isolation voltage 40kV. Increased coupling capacitance C_c. In combination with option SPT-C only.
GCF-X2 **Grounded Cooling Flange, Max. Continuous Power Dissipation increased by x2:** Thermal resistance "Switch to Flange" reduced for twice the power capability. ②
GCF-W **Water Cooler for Grounded Cooling Flange:** Flat water cooling plate attached to the grounded cooling flange GCF. With water inlet and outlet.
DLC **Direct Liquid Cooling:** Internal liquid channel in direct contact with the power semiconductors. Very compact cooling solution for medium power. Galden® and non-conductive liquids only. ②
HPMC **High Power Metal Case:** Potential free & hermetically sealed metal housing filled with Galden®. Available both with heat sink flange or with secondary water coolant circulation. From I/2002. ②
HI-REL **High Reliability / MIL Versions:** Available on request. ②

① New option code: Data sheets may differ from this coding system (especially older ones) and do not indicate all possible options as per above table. ② Please consult factory for detailed information.
 ③ These options are EMC-relevant and are recommended for industrial power applications, difficult noise ambients, prototype experiments with flying leads and for users without special EMC design experience.