

Gooch & Housego



Q-Switch Driver A23-Series

200 Watt RF Drivers for
Acousto-Optic Q-Switches

The A23xxx RF driver series provides up to 200 Watt output power. Combined with a power splitter cable this driver is ideal for synchronously driving a pair or a quartet of Q-switches.

Standard frequencies are 24 or 27.12 MHz. Higher frequencies such as 40.68 or 68 MHz are available on request.

The device can be driven either by a digital or an analogue control signal as well as by a combination of both. An operation scheme below (page 7) illustrates the interaction of the two modulation signals in detail.

Both the analogue and digital modulation controls allow excellently short rise and fall times for high laser pulse energies.

The driver can be operated with modulation frequencies (analogue and digital) up to 1 MHz

Optimum EMC shielding and mechanical protection is achieved by an aluminium casing and a conductive surface passivation.

Key Features:

- RF output power 200 Watt
- Choice of air and water cooling
- Excellently short fall and rise times
- Constant output power design
- High SWR and Overheat safety shutdown
- Compact casing, fully shielded (EMC)
- Frequency range from 24 to 27.12 MHz, beyond on request

Applications:

- High reliability / industrial purpose acousto-optic Q-switched lasers, such as:
- Material processing machines
- Laser marking devices
- Medical systems



光技術をサポートする
株式会社オプトサイエンス
<http://www.optoscience.com>

東京本社 〒160-0014 東京都新宿区内藤町1番地 内藤町ビルディング
TEL:03(3356)1064 FAX:03(3356)3466 E-mail:info@optoscience.com
大阪支店 〒532-0011 大阪市淀川区西中島7-7-2 新大阪ビル西館
TEL:06(6305)2064 FAX:06(6305)1030 E-mail:osk@optoscience.com
名古屋営業所 〒450-0002 名古屋市中村区名駅2-37-21 東海ソフトビル
TEL:052(569)6064 FAX:052(569)8064 E-mail:ngo@optoscience.com

Technical Data

Supply voltage	+24 VDC		
Supply current	max. 15 A @ 200 W RF output power		
Maximum RF output power (adjustable) *	> 200 Watt		
Adjustment range	< 1 ... >200 Watt		
Output impedance	nom. 50 Ω		
Frequency accuracy	< ±30 ppm		
RF ON / OFF ratio	> 53 dB		
Analogue modulation			
Impedance	50 or 600 Ω **		
Voltage range @ 50 Ω	0 ... +1 V or 0 ... +5 V **		
Voltage range @ 600 Ω	0 ... +5 V or 0 ... +10 V **		
Digital modulation			
Impedance	4.7 kΩ (pull-up or pull-down) or 50 Ω (pull-down)**		
Level	High = ≥ 3V ... 5V Low = 0 ... < 2V		
Logic styles	Input signal: High Low not connected		
positive logic, pull-up	RF power: on off on		
positive logic, pull-down	on off off		
negative logic, pull-up	off on off		
negative logic, pull-down	off on on		
RF output frequency***	24	27.12	
[MHz]			
Harmonics distortion * [dBc]	< -21		< -21
Analogue modulation			
RF rise time / fall time (10 ... 90%) *	< 100 ns		< 100 ns
Digital modulation			
RF rise time / fall time (10 ... 90%) *	< 100 ns		< 100 ns
* into 50 Ω load ** other combinations on request *** other frequencies on request			

Connectors, Cooling, Dimensions, Weight

RF output connector	BNC female (standard) TNC female (on demand)	
Control connector	D-Sub 25-pole, female for pin assignment refer to section Control Connector, p. 7	
Power Supply Cords red (or yellow) black (or violet)	2x 750±50 mm H07V-K 1.5 mm ² + V _s (24 VDC) CGND (case ground)	
Cooling	Air	Water
	Aluminium heat sink with two fans 24 V DC, 110 mA each	tube material: Aluminium AlMgSi 0.5, stainless steel water connectors for hosepipe OD = 6 mm, ID = 4 mm
Dimensions [mm]		
Casing	226 x 125 x 102**	200 x 114 x 53**
Mounting flat	200 x 125	200 x 100
Weight	2710 grams	1530 grams
** length x width x height		

Environmental Conditions

Warm up time	10 minutes for optimum stability
Operating case temperature	< +50 °C, safety shutdown at ≈55 °C
Storage temperature	-20 °C ... +65 °C, non condensing

Absolute Maximum Ratings

Supply voltage max.	+26 VDC
Analogue modulation	
Voltage range @ 0 ... +1 V	-0.5 V ... +1.1 V
Voltage range @ 0 ... +5 V	-0.5 V ... +5.5 V
Voltage range @ 0 ... +10 V	-0.5 V ... +11.0 V
Digital modulation	
Level	-0.5 V ... +5.5 V
Maximum operating temperature	+55°C heat sink / base plate temperature

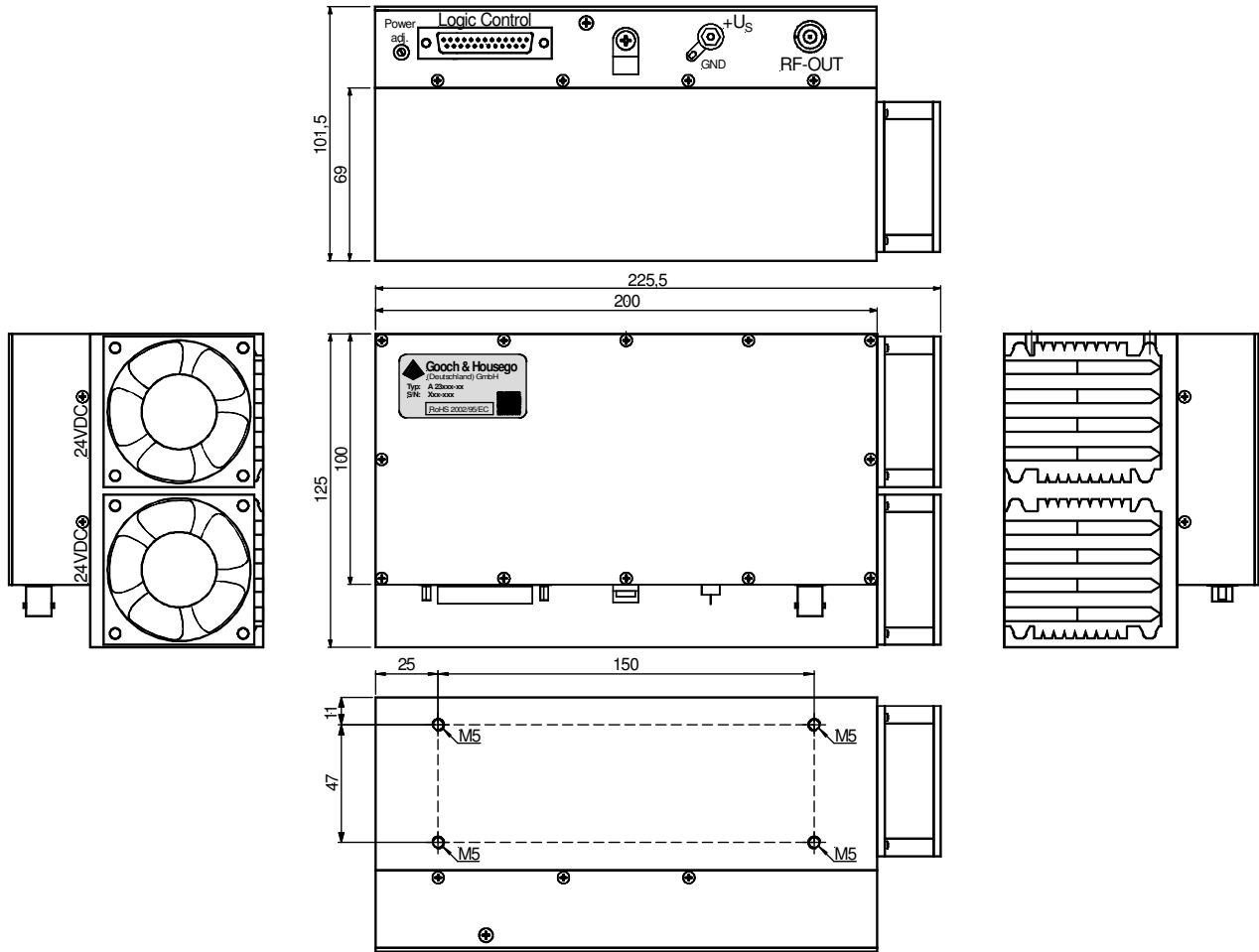
Quality Standards

EU 2002/95/EC (RoHS)	compliant
EMC standards	VDE 0871-B FCC Rules Part 15-B
Thermal test	2h @ 60°C passive
Burn-in test	30 minutes @ maximum RF power output

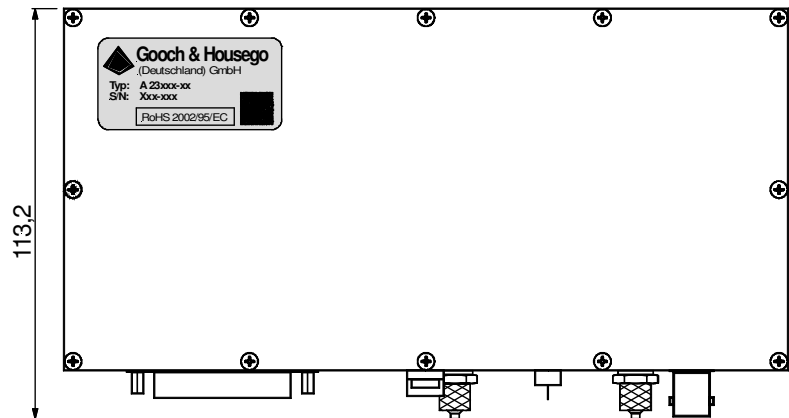
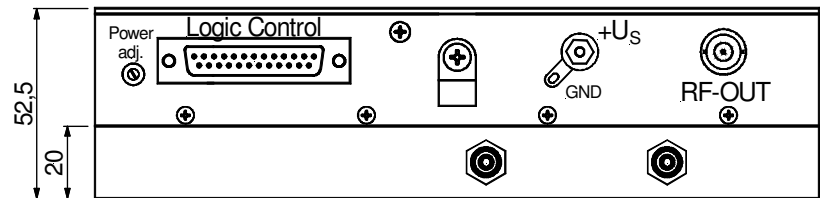
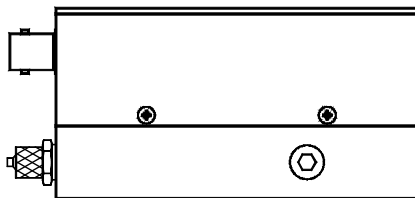
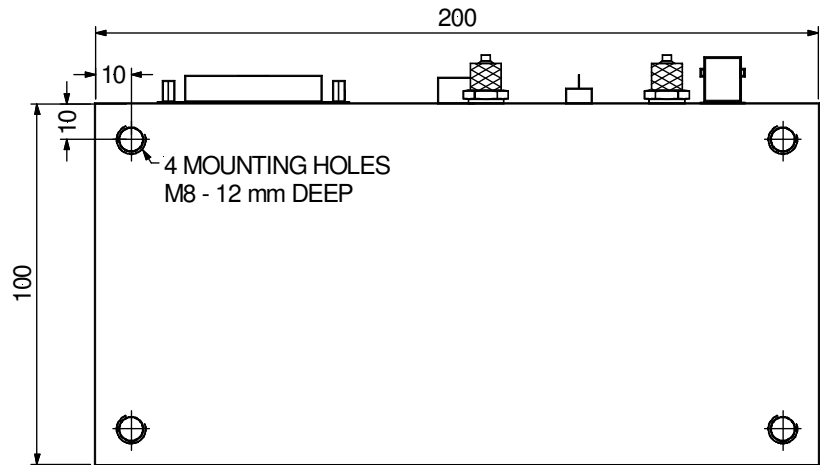
Outline Drawings

Dimensions in mm

Air Cooling



Water Cooling

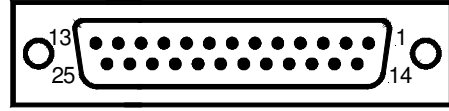


Control Connector

D-Sub 25-pole, female

Pin assignment

Any signals refer to chassis ground (CGND) unless denoted differently.



Pin 1	RF ON status (out)
Pin 2	SWR fault indication (out)
Pin 3	Driver temperature fault indication (out)
Pin 4	Reset SWR fault / Init (in)
Pin 5	Interlock 2 fault indication (out)
Pin 6	Interlock 2 (in)
Pin 7	Interlock 1 (in)
Pin 8	Interlock 1 fault indication (out)
Pin 9	Driver temperature monitor (out)
Pin 10	Digital Ground (DGND)
Pin 11	} refer to versions p, n, s
Pin 12	
Pin 13	
Pins 14 ... 22	Chassis ground (CGND)
Pins 23 ... 24	Digital ground (DGND)
Pin 25	Auxiliary interface power supply +5VDC / 60mA (output, ref. DGND)

Version *p*

Digital Modulation, Positive Logic

Pin 11	Analogue modulation (ref. DGND)
Pin 12	n.c.
Pin 13	Digital modulation (ref. DGND)

Version *n*

Digital Modulation, Negative Logic

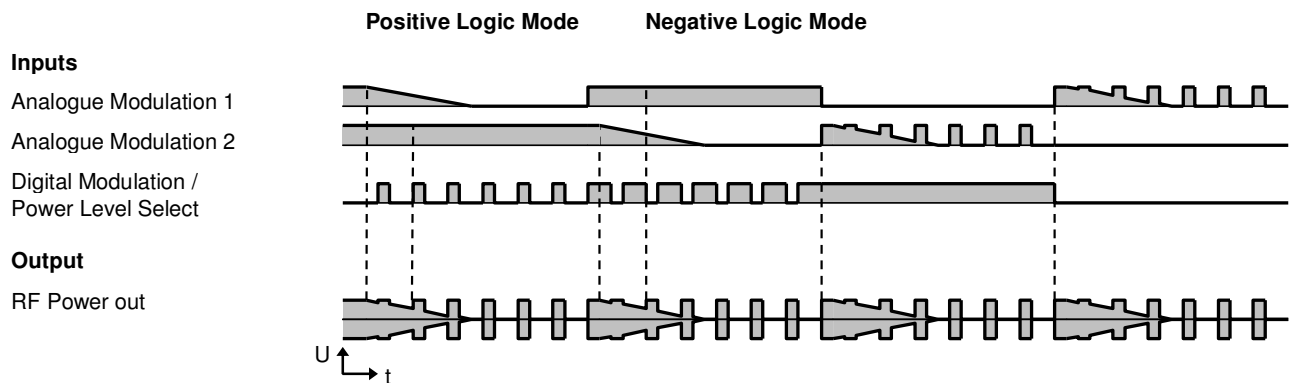
Pin 11	n.c.
Pin 12	Analogue modulation (ref. DGND)
Pin 13	Digital modulation (ref. DGND)

Version *s*

Digital Modulation, Power Level Select

Pin 11	Analogue modulation 2 (ref. DGND)
Pin 12	Analogue modulation 1 (ref. DGND)
Pin 13	Power Level Select (ref. DGND) LOW → select Analogue Mod. 1 HIGH → select Analogue Mod. 2

Operation Scheme of Analogue and Digital Modulation



Variants List / Ordering Codes

A23 - - -

	Frequency [MHz]	Cooling		Analogue Modulation Input) ¹) ³		Digital Modulation Input) ²) ³		
				Voltage Range	Impedance	Logic	Impedance	
024	24	A	Air	1/50	0..1V	50Ω	p4k7u	positive 4.7kΩ pull-up
					0..5V		p4k7d	positive 4.7kΩ pull-down
				5/50	0..5V	p50d	positive 50Ω pull-down	
					0..5V	n4k7u	negative 4.7kΩ pull-up	
027	27.12	W	Water	5/600	0..5V	600Ω	n4k7d	negative 4.7kΩ pull-down
					0..5V		n50d	negative 50Ω pull-down
				10/600	0...10V	600Ω	s4k7u	Power Level Select 4.7kΩ pull-up
					0...10V		s4k7d	Power Level Select 4.7kΩ pull-down
							s50d	Power Level Select 50Ω pull-down

Remarks

-)¹ The voltage range corresponds to 0 to 100% of the potentiometer pre-adjusted maximum RF output power.
-)² A pull-up resistor provides HIGH level, a pull-down resistor LOW level in case of not connected input.
-)³ Further configurations on request.

Various extras are available on demand, e.g.:

- clock output signal
- non-standard frequencies
- TNC connector for RF output
- Pre-Pulse Kill (PPK) or First Pulse Suppression (FPK) function

Accessories

Coax Transformer Cable C61x/C62x Series
3 dB Power Splitter

refer to data sheet for details