DDSPAxx - DRFAxx

VARIABLE FREQUENCY DRIVERS

TECHNICAL DATA SHEET 2014

AA OPTO-ELECTRONIC proposes two types of variable frequency drivers.

VCOs are analog devices and are suitable for general purpose applications (raster scan, or random access...). The VCO can be modulated (amplitude) from an analog external signal. The frequency is externally controlled by an analog signal. An external power amplifier will be required to generate the RF power levels required by the AO device.

DDS models offer high frequency accuracy and stability and extremely fast switching times less than 100ns. They will be preferred to VCOs when high stability and accuracy is necessary. They can be modulated (amplitude) from an analog or digital external signal. The frequency is externally controlled by a digital signal (15 to 31 bits). An external power amplifier will be required to generate the RF power levels required by the AO device.

DDS OEM version

DDS Laboratory version – 1X

DDSPAxx
Based on DDS (Direct Digital Synthesizers)

DDSPA - Product Overview

These Direct Digital Synthesizers are dedicated to high accuracy applications for which high resolution is the key factor.
A PC interface board will be used to control the frequency (15-31 bits) as well as the latch of the frequency (1 bit E/D). These drivers are used in combination with AA amplifiers. They are suitable for agile frequency shifters and deflectors.

DDS Laboratory version – 2X

DDSPA - Features

- Variable frequency [10..400MHz]
- AM control (Analog or TTL) – High stability
- FM control (Analog) – High Resolution
- Rack available with 2 outputs (XY deflection, Common REF)
- RoHS

VCO OEM version

DRFAxx
Based on VCO (Voltage Controlled Oscillators)

DRFA - Product Overview

These Voltage Controlled Oscillators are the simplest way to control a deflector or a variable frequency shifter, in random access or raster scan mode.
A voltage between 0 and 10V is applied on the frequency control input for sweeping between Fmin and Fmax and here the sweeping time can as low as 1µs. The typical stability of the VCO driver is 50 to 100 KHz/°C. For sharpest application, the DDS driver will be preferred. These drivers need to be associated with AA amplifiers (OEM version only).

VCO Laboratory version

DRFA - Features

- Variable frequency [10..400MHz]
- AM control (Analog)
- FM control (Analog)
- Rack available with 2 outputs (XY deflection)
- RoHS

Access to your operating manual

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Technical Specifications

Parameter	DDSPAxx	DRFAxx
Carrier frequency	10 to 400 MHz	Up to one octave (40-100, 60-150, 80-200, 140-300, 190-350) MHz Matched to AO device at factory
Frequency Stability	Nom +/- 1 ppm/°C	Nom +/- 50 to 100 kHz/°C
Frequency step / Accuracy	LR: 15.259 KHz (15 bits) – MR: 59.6 Hz (23 bits) HR: 0.23 Hz (31 bits)	Continuous / typ 50 ppm
Commutation/sweeping time	≤ 40 ns (LR) - ≤ 64 ns (MR) - ≤ 80 ns (HR)	≤ 1µs (from Fmin to Fmax or Fmax to Fmin)
Output RF Power (@1dB compression)	Nom – 30 to 0 dBm (to be associated with AA Amplifier)	Nom – 30 to 0 dBm (to be associated with AA Amplifier)
Power supply	24 VDC, nom 0.25A	24 VDC, nom 0.15A
Frequency Input Control	Digital 15 bits (LR), 23 bits (MR), 31 bits (HR) + 1 bit Enable/disable	Analog 0-10V/ 1k Ω (linearity Nom +/- 5 %)
Modulation Input Control Video In	Analog 0-5 V / 50 Ω	Analog 0-5 V / 50 Ω
Rise Time / Fall time (10-90%)	Nom 10 ns	Nom 10 ns
Harmonics	H2 > 30 dB, H3 > 20 dB	Nom >20 dBc
Input / Output impedance	50 Ω	50 Ω
VSWR	< 1.2/1	< 1.5/1
Extinction Ratio	Nom 45 dB (for F<250MHz)	nom 45 dB
Input / Output Connectors	HD44 / SMA	SMA / SMA
Size / Weight	**OEM**: 129 x 61 x 28 mm3 (OEM) / 275 g **Lab version**: 19", 2U nom 4 Kgs (Lab version)	**OEM**: 84 x 69 x 15.8 mm^3 / 150 g **Lab version**: 310 x 250 x 105 mm^3/ 3.8 Kg
Heat Exchange	Conduction through baseplate for OEM versions	Conduction through baseplate for OEM versions
Operating Temperature	10 to 40 (max Tcase 55°C)	10 to 40 (max Tcase 55°C)
Storage Temperature	-40 to +50 Non condensing	-40 to +50 Non condensing

DDSPAxx - Options / On request

HIGH EXTINCTION RATIO	☑ 60dB	
MOD IN	☑ 8 bits digital, 256 levels – Rise/fall time 25ns – DAC conversion time 100ns	
LABORATORY VERSION *complete turn key systems with minimum set up time.*	POWER SUPPLY SIZE WEIGHT HEAT EXCHANGE	☑ 110-230 VAC ☑ 340x235x90 mm ☑ 3.6kg-3.8kg ☑ standalone (fan integrated) ☑ Build in amplifier 1, 2, 4…W
PHASE LOCKED Versions	2 DDS outputs with common Reference for high stability frequency difference	

DRFAxx - Options / On request

HIGH EXTINCTION RATIO	☑ 60dB	
MOD IN	☑ 0-5 V/500 Ω	
LABORATORY VERSION *complete turn key systems with minimum set up time.*	POWER SUPPLY SIZE WEIGHT HEAT EXCHANGE	☑ 110-230 VAC ☑ 310x250x105 mm ☑ 3.6kg-3.8kg ☑ standalone (fan integrated) ☑ Build in amplifier 1, 2, 4…W

NB: For laboratory version, the frequency source + the convenient amplifiers are integrated in a box supplied with 110-230 VAC. A switch on the front panel allows the user to select both operating modes:

- **CW mode:** internal CW modulation of RF power with front panel cursor
- **EXT mode:** external amplitude modulation controlled through external modulation input

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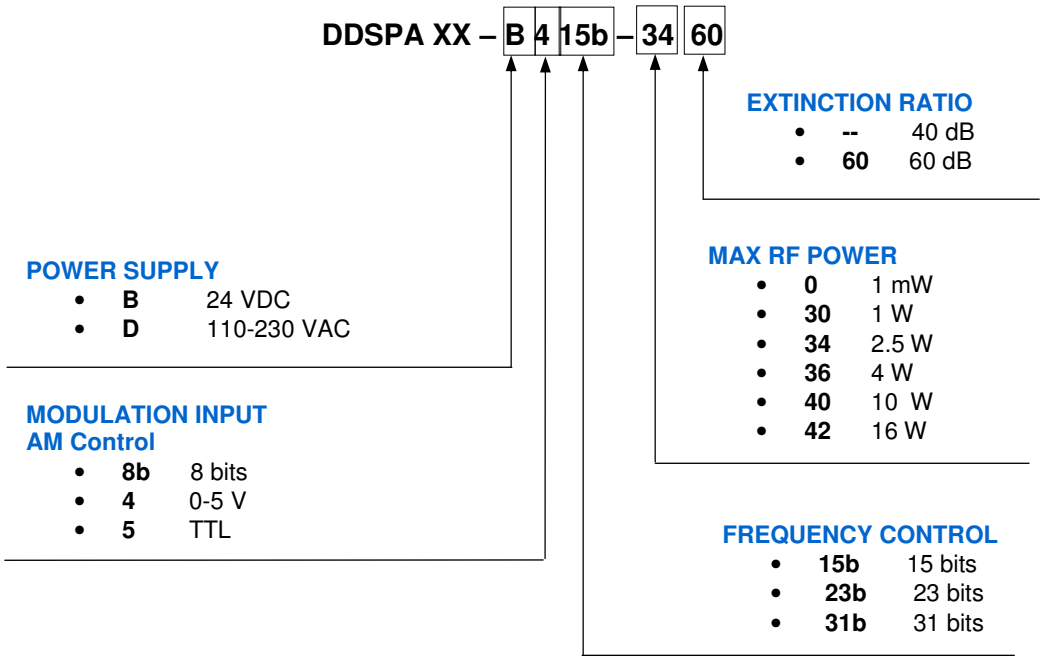
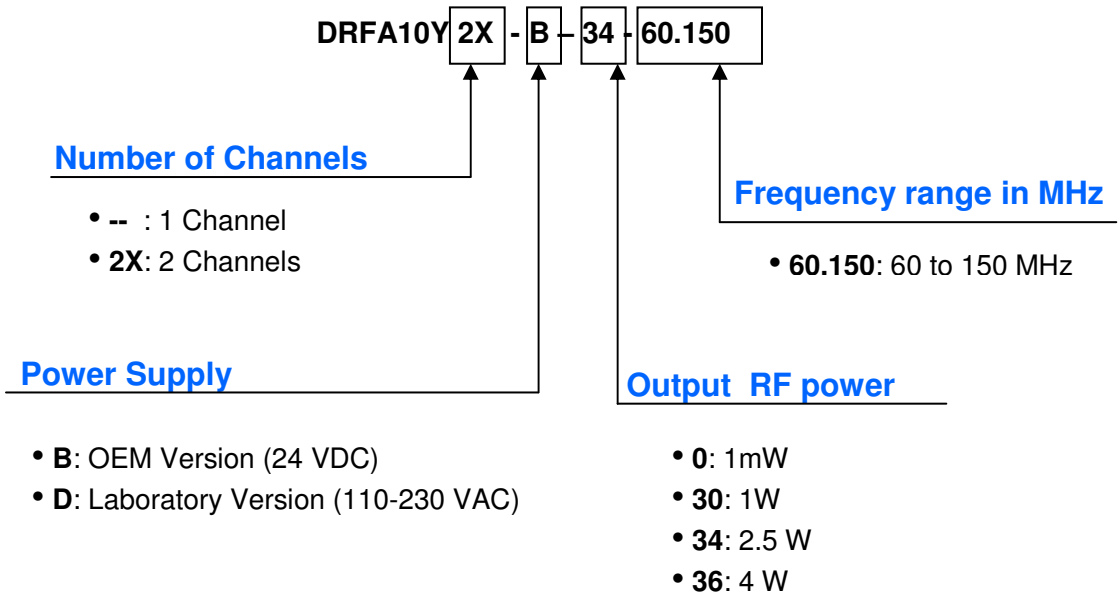
How to determine your DDS model



How to determine your VCO model



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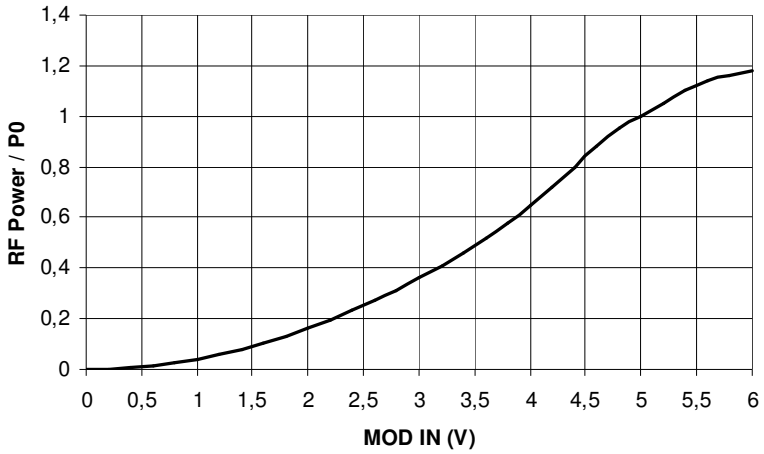
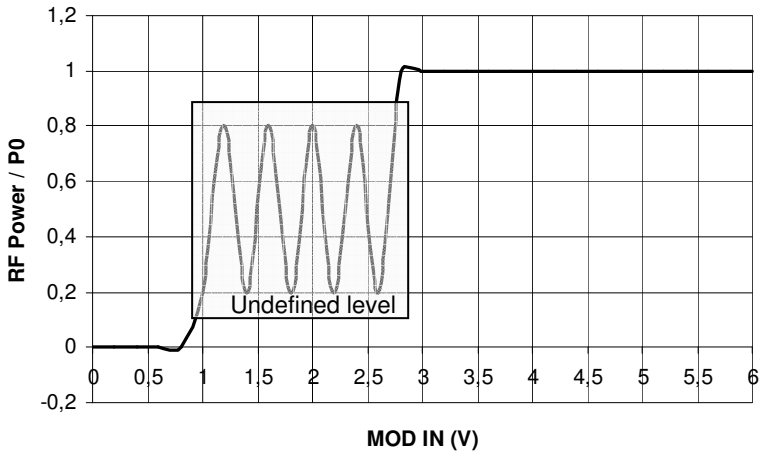
Typ Relative Output RF power vs ANALOG MOD IN (0-5V)

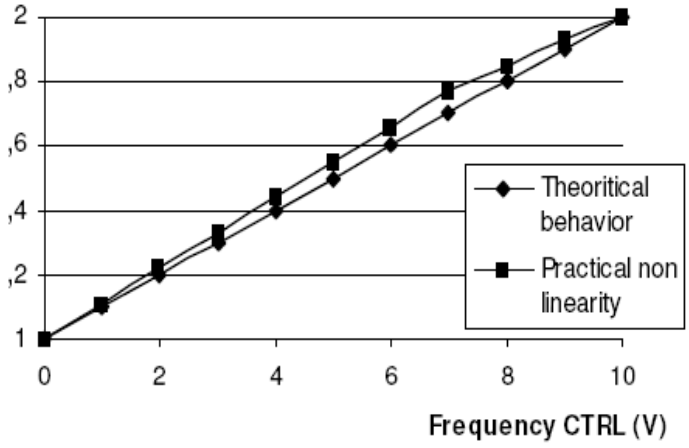


Relative Output RF power vs DIGITAL MOD IN (TTL)



Frequency versus Input voltage control

for a VCO



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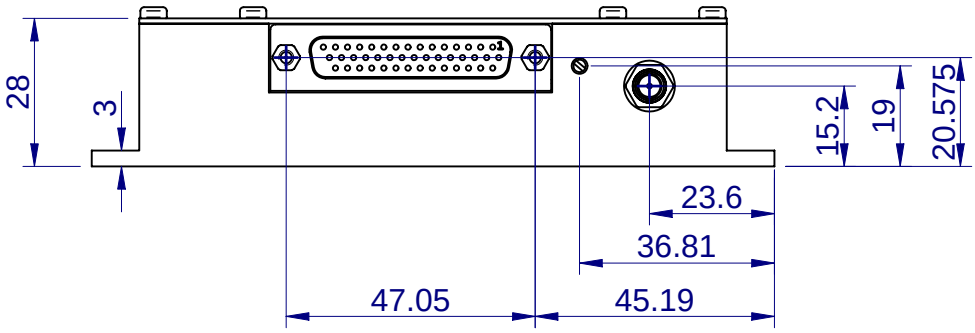

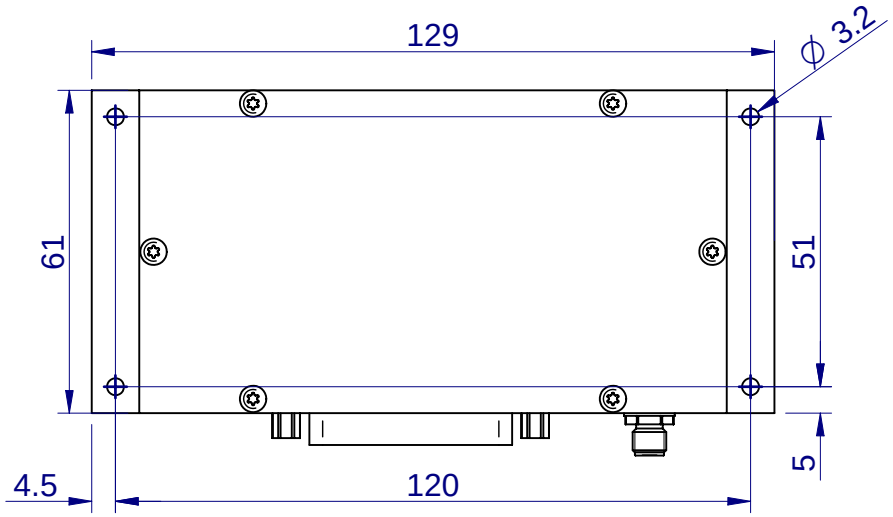

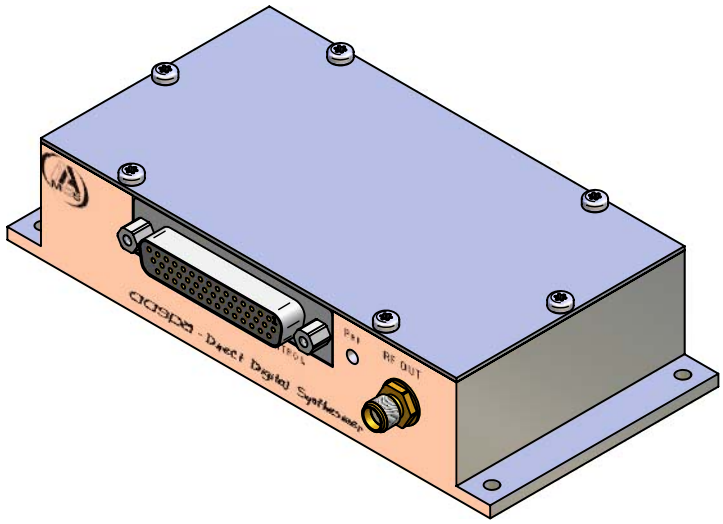

				Vérif. Nom: Date:	Cotes après traitement sauf contre indications	Tolérances: ±0.1mm ±1° 3.2µm
				Dess. Nom: THEVOT N. Date: 03/10/2007		
				Matière:		
				Traitement /Finition:		
				Titre: **DDSPA (24VDC version)**		
0	Création	03/10/07	T.N	N° Plan 1SYNDI07005.0055 Vue d'ensemble	Ech:	
Ind.	**Description**	**Date**	**Visa**		Page 1/1	

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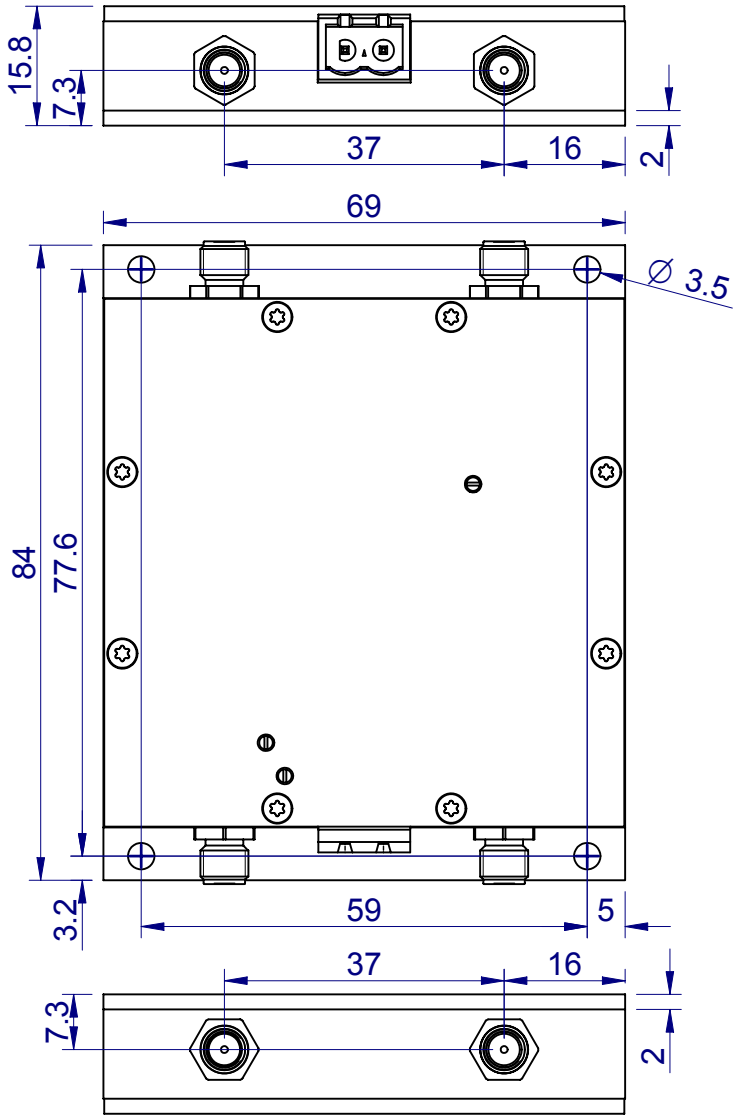

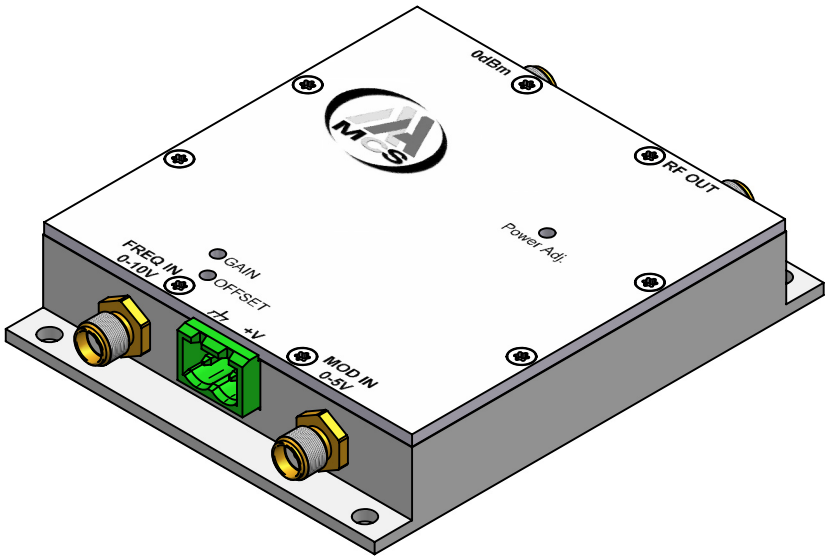

				Vérif. Nom: Date:	Cotes après traitement sauf contre indications	Tolérances: ±0.1mm ±1° 3.2µm
				Dess. Nom: Saint-Jean T. Date: 16/05/2006		
				Matière:		
				Traitement /Finition:		
				Titre: **DRFA (24VDC version)**		
0	Création	16/05/06	T.S	N° Plan 1DRF006002.0055 Plan d'ensemble	Ech: 1/1	
Ind.	**Description**	**Date**	**Visa**		Page 1/1	

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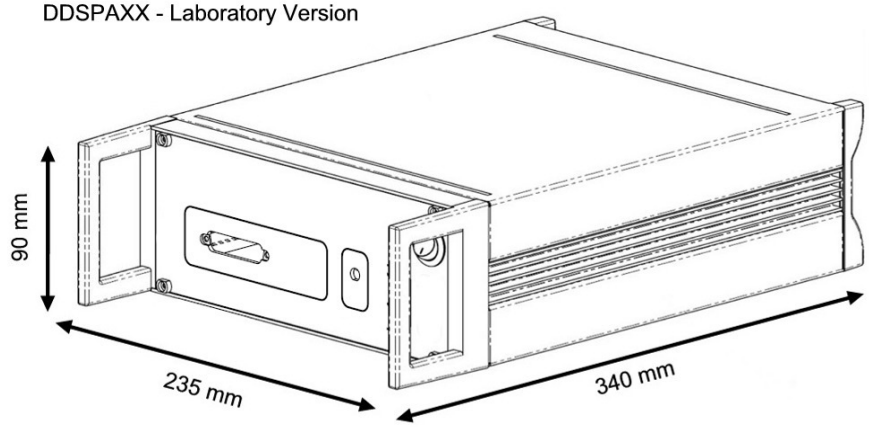
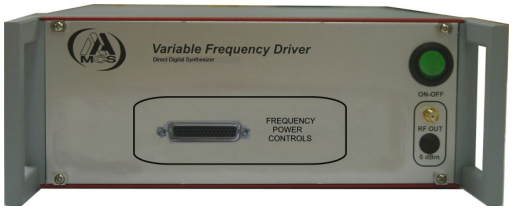
DDSPAXX - Laboratory Version

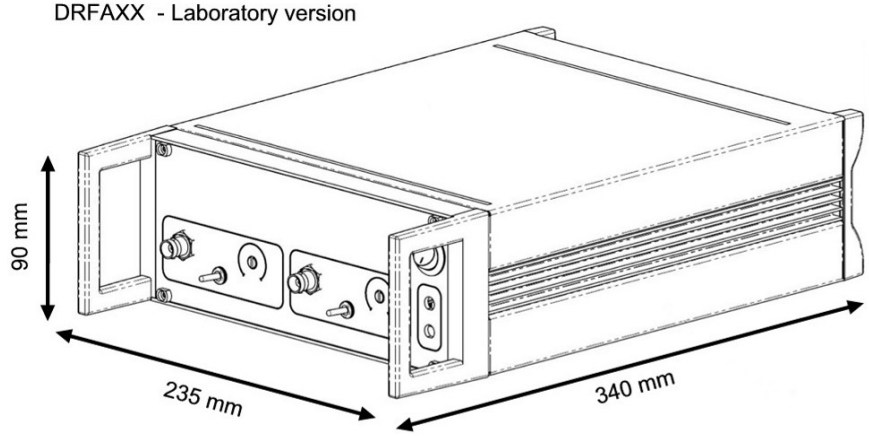


*Handles available on request



Version 1x Output
RF power amplifier integrated inside Rack

DRFAXX - Laboratory version



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Version 1x Output
RF power amplifier integrated inside Rack

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