

# PXA(e)723x ARBITRARY WAVEFORM GENER. FAMILY



## TECHNICAL DATA SHEET

PXI

VXI

LAN

cPCI

PXIe

GPIB

USB

RS232  
485

external  
PCIe

### Features

- Output voltages up to +30 V or  $\pm 15$  V
- 150 MS/s with 16 Bit resolution
- Fully isolated design with up to 2 independent channels
- Complex waveform sequencing
- Multiple instrument and channel synchronization possibilities
- High configurable trigger engine
- On the fly amplitude and offset changing
- Additional marker output
- Wide range of sample rates due to programmable internal PLL
- High bandwidth
- Based on VX Instruments FlexCPeP for easy custom design

## Product Information

### Flexible configurable PXI(e) Platform

This family of Arbitrary Function Generators is based on the "Flexible Configurable PXI(e) Platform" (FlexCPeP). This platform allows many variations of customer configured Arbitrary Function Generator (ArbGen) types.

### High speed, high resolution arbitrary waveform generator

The PXA(e)723x ArbGen family features up to two simultaneously working channels with 150 MS/s, 16 Bit resolution and an output voltage up to +30V or  $\pm 15V$ .

Every ArbGen channel has its own 2 MB memory. The whole amount of 1 million samples can be partitioned into one or more waveform segments.

Depending on the number of channels and the floating option, the Arbitrary Function Generators are built into a compact 3U PXI device for 1 or 2 slots.

### Built-in waveform functions

Predefined waveforms (DC, sine, square, triangle, sawtooth) can be configured via software driver. Furthermore it is possible to load an user created waveform.

### Fully independent channels

Each channel has its own Clock-PLL, memory and state machine for START, STOP, TRIGGER, SAMPLING and SEQUENCING. This guarantees the two channels to work completely independent. The great amount of trigger capabilities results in multiple sophisticated instrument and channel synchronisation possibilities.

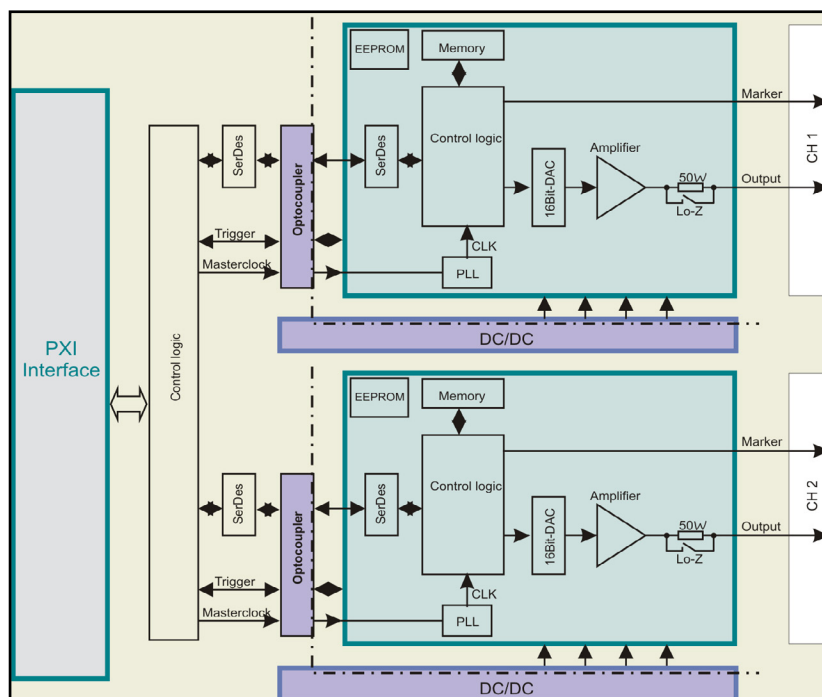
### Complex waveforms without memory reloading

Arbitrary waveforms can be loaded via data files into the onboard memories for waveform data (1 MS) and sequence data (512 sequences). The memory can be segmented and sequenced in any desired order.

Furthermore, amplitude and offset can be changed on the fly without writing new data into the memory.

### High output voltages allows easy stimulation

The standard output voltage is  $\pm 15V$  ( $30V_{pp}$ ). With an optional extension the output stage can be switched to achieve output voltages up to +30V into high impedance load. This allows high voltage waveform stimulation without additional signal conditioning.



Ordering Option	Comment
EXTVOLT	Extended output voltage range
TCXO	TCXO Oscillator

General	Specification	Comment
<b>Module size</b>	1 slot, 3U 2 slot, 3U	PXA(e)7231, PXA(e)7233 PXA(e)7232, PXA(e)7234
<b>Module weight</b>	<0.7 kg	
<b>Front connector type</b>	SMA	
<b>Operating temperature</b>	0 ... 40°C	
<b>Operating altitude</b>	Up to 2000 m	
<b>Humidity</b>	To 80% relative humidity below 30°C To 45% relative humidity up to 50°C	
<b>Storage temperature range</b>	-25 ... 70°C	
<b>Electrical safety</b>	According EN61010-1	
<b>Isolation output to PE</b>	60V CAT I, pollution degree 2	

Waveform	Specification	Comment
<b>Output voltage resolution</b>	16 Bit	
<b>Output impedance</b>	50 Ω or Lo-Z ( $\approx 10 \Omega$ )	$R_{out}$ ; Software selectable
<b>Output voltage ranges</b>		Software selectable
Range 1	$\pm 2,5V$	
Range 2	$\pm 5,0V$	
Range 3	$\pm 10V$	
Range 4	$\pm 15V$	
Range 5	0 ... 10V	Additionally with option EXTVOLT
Range 6	0 ... 20V	Additionally with option EXTVOLT
Range 7	0 ... 30V	Additionally with option EXTVOLT
<b>Max. output current</b>		
Range 1 ... 3	100 mA <sub>p</sub>	
All other ranges	30 mA <sub>p</sub>	
<b>AC bandwidth<sup>1</sup></b>		
Range 1+2	40 MHz (3 dB)	$R_{load} = 50 \Omega$ ; $R_{out} = 50 \Omega$ or Lo-Z
All other ranges	10 MHz (3 dB)	$R_{load} = 1 k\Omega$
<b>Slew rate</b>	>200 V/ $\mu$ s	For all ranges; into Hi-Z
<b>DC accuracy</b>		For all ranges; into Hi-Z
DC Offset	<0,2% of full scale	
DC Gain	<0,2% of value	
<b>Waveform memory</b>	2 MB, 1 MS	

Time Base	Specification	Comment
<b>Accuracy</b>	50 ppm, 1 ppm with option TCXO	In operating temperature range
<b>Aging per year</b>	5 ppm, 1 ppm with option TCXO	
<b>Sampling frequency</b>	0,10 S/s ... 150 MS/s	
<b>Output frequency resolution</b>	100 ppm	Of programmed value (frequency)

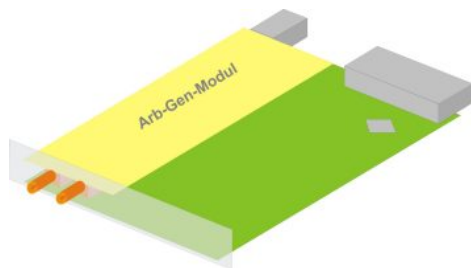
<sup>1</sup> At 50% amplitude of chosen range.

**Notes:** All product data are specified for 1 year at an ambient temperature of 23°C  $\pm$  5°C (after 1 hour warm-up time).  
Product specification and description in this document are subject to change without notice.

Trigger System	Specification	Comment
<b>Input from</b>		
Internal function module	One function module can trigger the other channel	E.g. trigger on marker-bit
Software PXI Trigger	Via software command Trigger 0...7 and star-trigger	From the PXI backplane
<b>Output to</b>		
Internal function module PXI trigger	Output to the other channel Output of each channel trigger source to the trigger lines of the PXI backplane	E.g. marker-bit
<b>System delay</b>	1 sample clock + 120ns	Trigger to waveform output

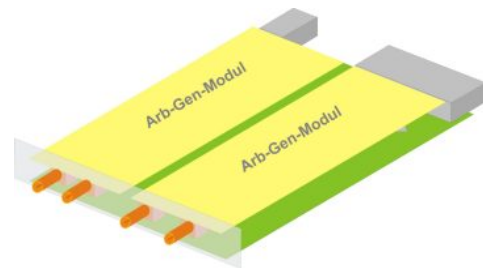
Marker Output	Specification	Comment
<b>Output voltage</b>	TTL	TTL output via SMA front connector
<b>Output current</b> (low state)	25 mA	
<b>Output current</b> (high state)	25 mA	

PXI Capabilities	Specification	Comment
<b>PXI 10 MHz usage</b>	Supported	Then time base accuracy depends on PXI rack
<b>PXI TTL/trigger usage</b>	Supported	PXI trigger 0...7; input and output
<b>PXI star-trigger usage</b>	Supported	Input only



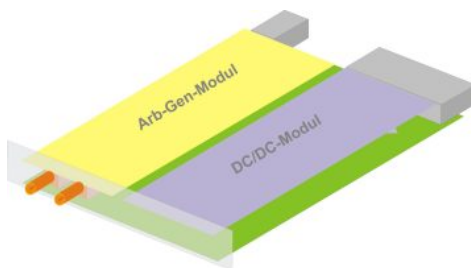
### PXA(e)7231

1 channel non floating ArbGen in 1 slot



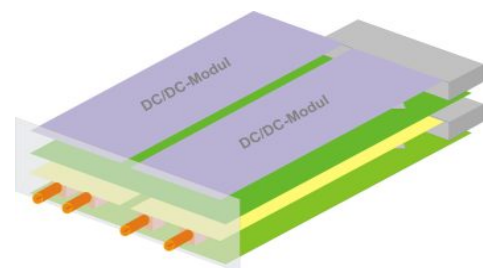
### PXA(e)7232

2 channel non floating ArbGen in 1 slot



### PXA(e)7233

1 channel floating ArbGen in 1 slot



### PXA(e)7234

2 channel floating ArbGen in 2 slots