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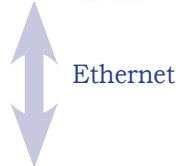
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F A S I E

CALIBRATOR OF 61850-9-2LE DATA STREAMS

# MarsGen-61850

Control terminal with  
Energofirma-61850  
software



Frequency inputs for  
connection of external  
synchronization sources

External PTP  
synchronization

Ethernet port for connection  
to a PC which synthesizes  
digital streams and  
controls the whole  
instrument

Universal port for  
connecting digital  
stream sources  
(via SFP adapters  
as well)

## Purpose

Synthesis of IEC 61850-9-2 data streams in compliance with all timing, continuity and UTC synchronization requirements for packet data transmission

## Specifications

Parameter	Value
Synchronization: 1PPS (1 Hz) PTP	Error of setting: $\pm 2 \cdot 10^{-6}$ Hz, <1 $\mu$ s IEEE 1588
Sampling frequency on the IEC 61850-9-2 output, samples per second	4000, 12800, 32000 (standard) 1000, 2000, 16000, 64000 (optional)
Digital data streams generated	IEC 61850-9-2LE SV80/SV256/SV640, IEC 61850-9-2 4 × I, 4 × U
Reference channels available	$U_a, U_b, U_c, U_n, I_a, I_b, I_c, I_n$

## Setting accuracy of digital signals

Parameter	Unit	Range	Increments	Intrinsic error
<b>Fundamental harmonic</b>				
Harmonic order		1		
Fundamental frequency	Hz	10 to 1000	0.00001	$\pm 0.0003$ %
Voltage amplitude	V	0 to 1000	10 $\mu$ V	$\pm 0.01$ %
Current amplitude	A	0 to 200	1 $\mu$ A	$\pm 0.01$ %
Phase with respect to the start of generation	Degrees	-180 ... +180	0.0001	$\pm 0.01$ %
	Radians	$-\pi$ ... $+\pi$	0.000001	
Phase with respect to the reference channel	Degrees	-180 ... +180	0.0001	$\pm 0.01$ %
	Radians	$-\pi$ ... $+\pi$	0.000001	
Waveforms	Sine, triangle, meander, ramp, subharmonics, even harmonics, phase control, signals according to IEE C37.118.1 and C37.118.1A, packet loss			
<b>Other harmonics</b>				
Harmonic order		0.1–0.9 ... 1.1–100.5	0.1	
Amplitude of voltage or current harmonic	% of fundamental	0 to 1000	0.001	$\pm 0.01$ %