

Digital Lock in Amplifier

LI5660 Series

Faster response, broader bandwidth, and higher stability



Max measurement
Frequency 11MHz

Dual Frequency
Simultaneous
Measurement

Fractional Harmonic
Measurement

DIGITAL LOCK-IN AMPLIFIER

LI5660/ LI5655/ LI5650/ LI56450

- Frequency range
0.5Hz~11MHz (LI5660)
0.5Hz~3MHz (LI5655)
1mHz~250kHz (LI5650/LI5645)
- Voltage measurement
10nV~10V F.S. (LI5660)
10nV~1V F.S. (LI5655/LI5650/LI5645)
- Current measurement
10fA~1μA F.S. (LI5660/LI5655/LI5650)
- Minimum time constant
1μs (LI5660/LI5655)
5μs (LI5650/LI5645)
- Analog output update rate
Appx.1.5 M sample/sec (LI5660/LI5655)
Appx.80k sample/sec (LI5650/LI5645)

- Dual Frequency Simultaneous Measurement (LI5660/LI5655/LI5650)
Two sets of dual phase sensitive detectors enable two frequency components included in a single input signal to be measured simultaneously.
- Fractional Harmonic measurement
Measurements at submultiples frequencies of the fundamental wave (1 to 63) / (1 to 63)
- External 10 MHz synchronous input
Can be synchronized with the reference frequency of other devices by using an external reference frequency.
- Measurement parameters, Y, R, θ , DC, NOISE
- Interfaces USB, GPIB, RS-232, LAN

Applications:

- SPM (Scan Microscope) Signal Processing
- Hall Coefficient Measurement (Difference Frequency Measurement)

- Light Transmission Measurements (Suppression of Illuminant Fluctuation), etc

Related product CA5350 Programmable current amplifier

A preamplifier for LI series, supports a variety of small current measurement

- High Gain 10^4 V/A~ 10^{10} V/A (7 ranges, $\times 10$ steps), 10^{11} V/A maximum
- Broad bandwidth DC~500kHz (10^6 V/A), DC~70kHz (10^9 V/A)
- Fast Response 0.7μs (10^6 V/A)
- Low noise $2.5fA/\sqrt{Hz}$ (10^{10} V/A, at 55Hz)



Line up

	LI5660	LI5655	LI5650	LI5645
Frequency	0.5Hz~11MHz	0.5Hz~3MHz	1mHz~250kHz	1mHz~250kHz
Input type	Voltage (A, A-B, C, HF) , Current	Voltage(A, A-B) , Current		Voltage(A, A-B)
10V input	(C input terminal,0.5Hz~3MHz)	-		
High frequency input	o (HF input terminal,10kHz~11MHz)	-		
Sensitivity	A, A-B:10nV~1V F.S (0.5Hz~3MHz) C:1mV~10V F.S (0.5Hz~3MHz) HF: 1mV~1V F.S(10kHz~11MHz) I :10fA~1 μA F.S.	10nV~1V F.S (0.5Hz~3MHz) 10fA~1μA F.S.	10nV~1V F.S(1mHz~250kHz) 10fA~1 μA F.S.	10nV~1V F.S(1mHz~250kHz) -
Input referred noise	4.5nV/√Hz (supplementary value)			
PSD	2 Phases ,2 Frequencies			2 Phases ,1Frequency
Dynamic reserve	100dB			
Time constant	1μs~50ks		5μs~50ks	
Maximum output rate	appx.1.5M sample /sec		appx.780k sample /sec	
Fractional Harmonic measurement	at sub multiple frequencies of the fundamental wave (1 to 63) / (1 to 63)			
Dual Frequency Simultaneous measurement	Yes			-
External 10 MHz synchronous	Yes			
Measurement Parameter	X, Y, R, θ, DC, NOISE			
Remote control interface	USB, GPIB, RS-232, LAN			

0.5Hz ~ 11MHz

LI5660



2 Phases

2 Frequencies

HF input

10V input

0.5Hz ~ 3MHz

LI5655



2 Phases

2 Frequencies

0.5Hz ~ 250kHz

LI5650



2 Phases

2 Frequencies

0.5Hz ~ 250kHz

LI5645



2 Phases

1 Frequency

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