# **DC Bias Current Test System**

# 6210/6220/6240 + 66326223/6225/6243 + 6632

## Features

- Current and frequency graphic scanning analysis
   Temperature-rising scan function can solve the problems of overheating a DUT to burn
- DCR Measurement function
- Long-term consecutive maximum power output
- Interchangeable bi-direction current function
- Frequency response
   100Hz-10MHz (With DC Bias Current 6223/6243),
   100Hz-30MHz (With DC Bias Current 6225)
- DC Bias Current Max.320A (6243)
- Direct Handler interfaces control through LCR power meter





# Accessories / Fixtures

#### Standard

- Power Cord
- Ethernet cable
- Black/Red thermoplastic sleeve (6210)
- F6210 (DIP)
- Applications
- **Optional** - PC Link software
- F6220 (SMD) - 6210/6220/6240
- connect plate (short/long)
- BNC+BNC cable
- = F6220/F6240 (SMD)
- Components: High current power inductor, common mode choke, mini molding choke, high power components of EV charging connector

Electric Vehicles: Electric supercharger system

Output Current         10A         20A         20A         40A           Output Current $0.000A - 1.000A - 1\% + 5mA$	DC Bias Model Name	6210	6223/6220	6225	6243/6240		
Accuracy $0.000A - 1.000A 1\% + 5mA$ Accuracy $0.001A - 5.000A 2\%$ $5.001A - 20.000A 3\%$ $5.001A - 20.000A 3\%$ Power Consumption $6225/6223/6220/6210 (320W Max.)$ LCR Meter / Impedance Analyzer $6632$ Frequency (Hz) $10Hz - 1/3/5/10/20/30M/50MHz$ AC Drive Level $10mV - 2Vrms$ DC Drive Level $1V$ (Fixed)           Output Impedance $250, 100\Omega$ (switchable)           R, X $\pm 0.000m\Omega - 9999.99M\Omega$ NY $0.0000\mu S - 999.999kS$ G, B $\pm 0.0000\mu S - 999.999kS$ G, B $\pm 0.0000\mu S - 999.999kS$ ØRAD $\pm 0.0000\mu S - 999.999kS$ ØRAD $\pm 0.0000\mu S - 999.999kS$ G, B $\pm 0.0000\mu S - 999.999kS$ BD $0.0000\mu S - 999.999kS$ G, B $\pm 0.000\mu S - 999.999kB$ L, Lp $\pm 0.000\mu S - 999.998kB$ BD $0.0000\mu S - 9999.999kB$ Ca $\pm 0.000\mu S - 999.999kB$ Ca $\pm 0.000\mu S - 999.999kB$ Ca $\pm 0.000\mu S - 999.999kB$ Current Wark $Max/ 3MHz$ (621	Output Current	10A	20A	20A	40A		
Accuracy         1.001A-5.000A 2%           S.001A-20.000A 3%         6225/6223/6220/6210 (320W Max.)           Power Consumption         6632           LCR Meter / Impedance Analyzer         6632           Frequency (Hz)         10Hz-1/3/5/10/20/30M/50MHz           AC Drive Level         10mV-2Vrms           DC Drive Level         1V (Fixed)           Output Impedance         250, 1000 (switch=           R, X         ±0.00000µS-999.999MΩ           Import         0.00000µS-999.999MΩ           Q         0.00000µS-999.999MΩ           Import         0.00000µS-999.999MΩ           QRAD         ±0.0000µS-999.999MΩ           QRAD         ±0.0000°-180.000°           Cs, Cp         ±0.0000°-180.000°           Ls, Lp         ±0.0000°-1999.99           Q         0.000000°-999.99           Q         0.000000°-999.99           Q         0.00000°           Cs, Cp         ±0.0000           Ls, Lp         ±0.0000°           Q         0.000000           Q         0.0000	Accuracy	0.000A-1.000A 1%+5mA					
Number of the second		1 001A-5 000A 2%					
Power Consumption         6:00:011 E0:00:01 0:00           6:225/6223/6220/6210 (320W Max.)         6:632           Image: Colspan="2">6:632           Frequency (Hz)         10Hz-1/3/5/10/20/30M/50MHz           AC Drive Level         10mV-2Vrms           DC Drive Level         1V (Fixed)           Output Impedance         25Ω, 100Ω (switchable)           R, X         ±0.000mΩ-9999.99MΩ           [Y]         0.0000mΩ-9999.99MΩ           [Y]         0.0000mQ-9999.99MΩ           [Y]         0.0000mQ-9999.99MΩ           [Y]         0.0000mQ-9999.99MΩ           [R, X         ±0.0000mQ-9999.99MΩ           [R] AD         ±0.0000mQ-9999.99MΩ           [R] AD         ±0.0000mQ-9999.99PS           [A] AD         ±0.0000pF-9999.99PS           [A] A         ±0.0000-999.99P           [A] A         ±0.00000-999.99P           [A] A         ±0.00000-9999.99P           [A] A         ±0.0000-9999.99P           [A] A         ±0.00000           [m] m' m'         0.100000           [m] m' m' <th colspa<="" td=""><td colspan="5">5.0014-20.0004.3%</td></th>		<td colspan="5">5.0014-20.0004.3%</td>	5.0014-20.0004.3%				
Power Consumption         Gel 3/6240 (640W Max.)           LCR Meter / Impedance Analyzer         6632           Frequency (Hz)         10Hz-1/3/5/10/20/30M/ 50MHz           AC Drive Level         10Hz-1/3/5/10/20/30M/ 50MHz           DC Drive Level         10W - 2Vrms           DC Drive Level         1V (Fixed)           Output Impedance         25Q, 100Q (switchable)           R, X $\pm 0.000m\Omega-9999.99M\Omega$ IY         0.00000µS-999.999NS           G, B $\pm 0.00000\muS-999.999NS$ G, B $\pm 0.0000\muS-999.999NS$ ØRAD $\pm 0.0000\muS-999.999NS$ Ls, Lp $\pm 0.0000\muS-999.999NS$ Ls, Lp $\pm 0.0000\muS-999.999NS$ Rdc $0.000m\Omega-999.999NS$ Rdc $0.000m\Omega-999.999NS$ Rdc $0.000m\Omega-999.999NS$ Rdc <th c<="" td=""><td></td><td colspan="5">6225/6223/6220/6210 (320W Max )</td></th>	<td></td> <td colspan="5">6225/6223/6220/6210 (320W Max )</td>		6225/6223/6220/6210 (320W Max )				
LCR Meter / Impedance Analyzer         6632           Frequency (Hz)         10Hz-1/3/5/10/20/30M/50MHz           AC Drive Level         10mV-2Vrms           DC Drive Level         1V (Fixed)           Output Impedance         250, 1000 (switchable)           R, X $\pm 0.000m\Omega-9999.99M\Omega$ N $\pm 0.0000\mu$ S-999.999MΩ           N $\pm 0.0000\mu$ S-999.999MΩ           R, X $\pm 0.0000\mu$ S-999.999MΩ           G, B $\pm 0.0000\mu$ S-999.999MΩ           G, B $\pm 0.0000\mu$ S-999.999MΩ           G, B $\pm 0.0000\mu$ S-999.999KS           ORAD $\pm 0.0000\mu$ S-999.999KS           ORAD $\pm 0.0000\mu$ S-999.999KS           ORAD $\pm 0.0000\mu$ F-9999.999KS           ORAD $\pm 0.0000\mu$ F-9999.999KB           Ls, Lp $\pm 0.0000\mu$ F-9999.999KB           D $0.00000\mu$ F-9999.999KB           Rdc $0.00000\mu$ F-9999.999MΩ           xr (gr m) $0.100000$ µr µr'' $0.100000$ µr µr'' $0.100000$ <td>Power Consumption</td> <td colspan="4">6243/6240 (640W Max.)</td>	Power Consumption	6243/6240 (640W Max.)					
Frequency (Hz)         10Hz-1/3/5/10/20/30M/50MHz           AC Drive Level         10mV-2Vrms           DC Drive Level         1V (Fixed)           Output Impedance         25Ω, 100Ω (swit+b           R, X         ±0.000mΩ-9999.99MΩ            Y          0.0000µS-999.999hS           G, B         ±0.0000µS-999.999hS           ØRAD         ±0.0000°           ØDEG         ±0.000°           Cs, Cp         ±0.0000PF-9999.99F           Ls, Lp         ±0.000PF-9999.99F           Ls, Lp         ±0.000PF-9999.99F           Ls, Lp         ±0.00%-9999.99F           QQ         0.00-9999.99           Q         0.0000_999.99           Q         0.0000_999.99           A         ±0.00%-9999.99MΩ           er' er''         0-100000           QU = 0.00MA2-99.999MΩ         er' er''           Max/ 3MHz (6210+6632)         120A Max/3MHz (6220+6632)           120A Max/3MHz (6220+6632)         120A Max/3MHz (6220+6632)           120A Max/3MHz (6220+6632)         320A Max/3MHz (6240+6632)           120A Max/3MHz (6240+6632)         320A Max/3MHz (6240+6632)           120A Max/3MHz (6240+6632)         320A Max/3MHz (6240+6632)           120A Max/3MHz (6240+6632)         320A Max	LCR Meter / Impedance Analyzer	6632					
AC Drive Level         10mV-2Vrms           DC Drive Level         1V (Fixed)           Output Impedance         25Ω, 100Ω (switch-Vermanne Stream)           R, X         ±0.000mΩ-9999.99MΩ           [Y]         0.0000µS-999.999hS           G, B         ±0.0000µS-999.999hS           ØRAD         ±0.0000°           ØDEG         ±0.0000°           Cs, Cp         ±0.0000°           Ls, Lp         ±0.0000°           Ls, Lp         ±0.000°           Q         0.00009P999.99           Q         0.00009P999.99           Q         0.000000           Is, Lp         ±0.00%-9999.99           Q         0.00000           Q         0.00000 </td <td>Frequency (Hz)</td> <td colspan="4">10Hz-1/3/5/10/20/30M/50MHz</td>	Frequency (Hz)	10Hz-1/3/5/10/20/30M/50MHz					
DC Drive Level         IV (Fixed)           Output Impedance         25Ω, 100Ω (switcH=1)           R, X         ±0.000mΩ-9999.99MΩ           [Y]         0.0000µS-999.999kS           [G, B         ±0.0000µS-999.999kS           [AAD         ±0.0000°           PBEG         ±0.0000°           [K, Lp         ±0.0000°           [K, Lp         ±0.0000°           [K, Lp         ±0.0000°           [K, Lp         ±0.0000°           [K]         0.00000°           [K]         ±0.0000°           [K]         ±0.0000°           [K]         ±0.000°           [K]         ±0.0000°           [K]         ±0.000°	AC Drive Level	10mV-2Vrms					
Output Impedance         25Ω, 100Ω (switchable)           R, X         ±0.000mΩ-9999.99MΩ           [Y]         0.0000µS-999.999kS           G, B         ±0.0000µS-999.999kS           @RAD         ±0.00000-3.14159           @DEG         ±0.0000PF-9999.99F           Ls, Lp         ±0.000PF-9999.99F           Ls, Lp         ±0.000PF-9999.99F           Ls, Lp         ±0.000PF-9999.99F           Ls, Lp         ±0.000PF-9999.99F           Ls, Lp         ±0.000PF-9999.99P           Q         0.000PF-9999.99P           A         ±0.00%-9999.99P           A         ±0.00%-9999.99P           Start         ±0.00%-9999.99P           A         ±0.00%-9999.99P           Quety tCurrent (Max.)/         60A Max./ 3MHz (6210+6632)           120A Max./ 30HZ (6220+6632)         120A Max./ 30HZ (6220+6632)           20A Max./ 30HZ (6240+6632)	DC Drive Level	1V (Fixed)					
R, X         ±0.000mΩ-9999.99MΩ           [Y]         0.00000µS-999.999kS           G, B         ±0.00000µS-999.999kS           θRAD         ±0.00000µS-999.999kS           θRAD         ±0.00000°           ©Constant Power Output         C23+6632)           Constant Power Output         0           Current Switch         Θ           D         Current Graphic Scanning	Output Impedance	25Ω, 100Ω (switchable)					
Y          0.0000μS-999.999kS           G, B         ±0.0000μS-999.999kS           ØRAD         ±0.0000-3.14159           ØDEG         ±0.0000°           Cs, Cp         ±0.0000pF-9999.99F           Ls, Lp         ±0.0001-9999.99F           Ls, Lp         ±0.0000-9999.99           Q         0.000-9999.99           Q         0.000-9999.99           A         ±0.0000           rd' cr"         0-10000           rd' cr"         0-10000           µr' µr"         0-10000           0utput Current (Max.)/         60A Max./ 3MHz (6210+6632)           120A Max./ 30MHz (6225+6632)         120A Max./ 30MHz (6225+6632)           20A Max./ 30MHz (6224)+6632)         320A Max./ 30MHz (6240)+6632)           20A Max./ 30MHz (6240)+6632)         320A Max./ 30MHz (6240)+6632)           20A Max./ 10MHz (6243)+6632)         320A Max./ 30MHz (6240)+6632)           20A Max./ 10MHz (6243)+6632)         320A Max./ 10MHz (6243)+6632)           Constant Power Output         €           Current Switch         €           DC Resistance         €           Current Graphic Scanning         €		R, X	±0.000mΩ·	-9999.99MΩ			
G, B         ±0.0000μS-999.999kS           θRAD         ±0.0000-3.14159           θDEG         ±0.0000°-180.000°           Cs, Cp         ±0.0000PF-9999.99F           Ls, Lp         ±0.0000-9999.99           Ls, Lp         ±0.0000-9999.99           Q         0.0000-9999.99           Q         0.0000-9999.99           A         ±0.00%-9999.99%           Rdc         0.00mΩ-999999MΩ           er' er''         0-100000           µr' µr''         0-100000           QA Max./ 3MHz (6210+6632)         120A Max./ 3MHz (6220+6632)           120A Max./ 3MHz (6220+6632)         20A Max./ 30MHz (6225+6632)           20A Max./ 30MHz (6223+6632)         320A Max./ 30MHz (6240+6632)           320A Max./ 30MHz (6240+6632)         320A Max./ 30MHz (6240+6632)           320A Max./ 30MHz (6240+6632)         320A Max./ 30MHz (6240+6632)           320A Max./ 10MHz (6243+6632)         320A Max./ 10MHz (6243+6632)           320A Max./ 10MHZ (6243+6632)		Y	0.00000µS	-999.999kS			
θRAD         ±0.0000-3.14159           θDEG         ±0.000°-180.000°           Cs, Cp         ±0.0000F-9999.99F           Ls, Lp         ±0.001H-9999.99KH           D         0.00000-9999.99           Q         0.00-9999.99           Q         0.00-9999.99           A         ±0.00m2-9999.99MQ           cr' cr''         0-100000           μr' μr''         0-100000           120A Max./ 3MHz (6220+6632)         120A Max./ 30Hz (6225+6632)           20A Max./ 30Hz (6224)+6632)         320A Max./ 30Hz (6240+6632)           320A Max./ 30Hz (6240+6632)         320A Max./ 30Hz (6240+6632)           320A Max./ 10MHz (6243+6632)         320A Max./ 30Hz (6243+6632)           320A Max./ 10MHz (6243+6632)         320A Max./ 30Hz (6243+6632) <td rowspan="2"></td> <td>G, B</td> <td>±0.00000µ</td> <td colspan="3">±0.00000µS-999.999kS</td>		G, B	±0.00000µ	±0.00000µS-999.999kS			
Measurement Parametersand Ranges         ØDEG         ±0.000°-180.000°           Cs, Cp         ±0.0001F-9999.99F           Ls, Lp         ±0.0001-9999.99KH           D         0.00000-9999.99           Q         0.00-9999.99           A         ±0.00%-9999.99           A         ±0.00%-9999.99           Rdc         0.00mΩ-999.99MΩ           ref "r"         0-10000           µr µr"         0-100000           0utput Current (Max.)/         60A Max./ 3MHz (6210+6632)           120A Max./ 3MHz (6220+6632)         120A Max./ 30HHz (6223+6632)           20A Max./ 30HHz (6240+6632)         320A Max./ 30HHz (6240+6632)           320A Max./ 10MHz (6240+6632)         320A Max./ 30HHz (6240+6632)           320A Max./ 10MHz (6243+6632)         320A Max./ 10MHz (6243+6632)           Current Switch         =           DC Resistance         =           Current Graphic Scanning         =		θRAD	±0.00000-3	±0.00000-3.14159			
Measurement Parametersand Ranges         Cs, Cp         ±0.0000pF-9999.99F           Ls, Lp         ±0.00nH-9999.99kH           D         0.00000-9999.99           Q         0.00-9999.99           Δ         ±0.00m2-9999.99%           Rdc         0.00m2-999.999MΩ           er' er"         0-100000           µr' µr"         0-100000           0utput Current (Max.)/         60A Max./ 3MHz (6210+6632)           120A Max./ 3MHz (6220+6632)         120A Max./ 3MHz (6220+6632)           20A Max./ 30HHz (6220+6632)         20A Max./ 30HHz (6240+6632)           20A Max./ 30HHz (6240+6632)         320A Max./ 30HHz (6240+6632)           20A Max./ 10MHz (6243+6632)         320A Max./ 10MHz (6243+6632)           Constant Power Output            Current Switch            DC Resistance            Current Graphic Scanning		θDEG	±0.000°-18	±0.000°-180.000°			
Maasurement Parametersand Ranges         Ls, Lp         ±0.00nH-9999.99kH           D         0.00000-9999.99           Q         0.00-9999.99           Δ         ±0.00%-9999.99%           A         ±0.00%-9999.99%           Rdc         0.00mΩ-99.999MΩ           er' er"         0-100000           µr' µr"         0-100000           0utput Current (Max.)/         60A Max./ 3MHz (6210+6632)           120A Max./ 3MHz (6220+6632)         120A Max./ 10MHz (6225+6632)           20A Max./ 30Hz (6225+6632)         320A Max./ 30Hz (6240+6632)           20A Max./ 30Hz (6240+6632)         320A Max./ 10MHz (6243+6632)           Constant Power Output         ●           Current Switch         ●           DC Resistance         ●           Current Graphic Scanning         ■	Maaaaa A Damaa ahaa ah	Cs, Cp	±0.00000pF-9999.99F				
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Measurement Parametersand Ranges	Ls, Lp ±0.00nH-9999.99kH					
Q         0.00-9999.99           Δ         ±0.00%-9999.99%           Rdc         0.00mΩ-99.999MΩ           εr' εr"         0-100000           µr' µr"         0-100000           Output Current (Max.)/         60A Max./ 3MHz (6210+6632)           120A Max./ 3MHz (6220+6632)         120A Max./ 3MHz (6220+6632)           120A Max./ 10MHz (6223+6632)         20A Max./ 30HHz (6240+6632)           20A Max./ 30HHz (6240+6632)         320A Max./ 30HHz (6240+6632)           320A Max./ 10MHz (6243+6632)         320A Max./ 10MHz (6243+6632)           Constant Power Output         ●           Current Switch         ●           DC Resistance         ●           Current Graphic Scanning		D	0.00000-99	0.00000-9999.99			
$ \frac{\Delta \pm 0.00\% - 9999.99\%}{Rdc 0.00m\Omega - 99.999M\Omega} \\ \hline Rdc 0.00m\Omega - 99.9999M\Omega \\ \hline er' er'' 0-100000 \\ \hline \mu r' \mu r'' 0-100000 \\ \hline \mu r' \mu r'' 0-100000 \\ \hline 0.0000 \\ \hline 0.0$		Q 0.00-9999.99					
$ \begin{array}{ c c c c c } Rdc & 0.00m\Omega - 99.9999M\Omega \\ \hline $r' \ $r'' & 0-100000 \\ \hline $\mu r' \ $\mu r'' & 0-100000 \\ \hline $\mu r' \ $\mu r'' & 0-100000 \\ \hline $\mu r' \ $\mu r'' & 0-100000 \\ \hline $\mu r' \ $\mu r'' & 0-100000 \\ \hline $\mu r' \ $\mu r'' & 0-100000 \\ \hline $0.10000 & 0.10000 \\ \hline $120A \ Max./ \ $3MHz \ (6210+6632) \\ 120A \ Max./ \ $3MHz \ (6223+6632) \\ 120A \ Max./ \ $120A \ Max./ $		Δ	±0.00%-99	±0.00%-9999.99%			
er' er"         0-100000           µr' µr"         0-100000           Output Current (Max.)/         60A Max./ 3MHz (6210+6632)           120A Max./ 3MHz (6220+6632)         120A Max./ 10MHz (6223+6632)           20A Max./ 10MHz (6223+6632)         20A Max./ 30MHz (6225+6632)           320A Max./ 3MHz (6240+6632)         320A Max./ 30HHz (6243+6632)           Constant Power Output         •           Current Switch         •           DC Resistance         •           Current Graphic Scanning         •		Rdc	0.00mΩ-99	0.00mΩ-99.9999MΩ			
μr' μr''         0-100000           Output Current (Max.)/         60A Max./ 3MHz (6210+6632) 120A Max./ 3MHz (6220+6632) 120A Max./ 10MHz (6223+6632) 20A Max./ 30MHz (6225+6632) 320A Max./ 3MHz (6240+6632) 320A Max./ 10MHz (6243+6632)           Constant Power Output         •           Current Switch         •           DC Resistance         •           Current Graphic Scanning         •		er' er"	0-100000	0-100000			
60A Max./ 3MHz (6210+6632)           120A Max./ 3MHz (6220+6632)           120A Max./ 10MHz (6223+6632)           120A Max./ 10MHz (6223+6632)           20A Max./ 30MHz (6225+6632)           320A Max./ 30HHz (6240+6632)           320A Max./ 10MHz (6243+6632)           Constant Power Output           •           DC Resistance           Current Graphic Scanning		μr' μr'' 0-100000					
Constant Power Output     •       Current Switch     •       DC Resistance     •       Current Graphic Scanning     •	Output Current (Max.)/ Frequency Response	60A Max./ 3MHz (6210+6632) 120A Max./ 3MHz (6220+6632) 120A Max./ 10MHz (6223+6632) 20A Max./ 30MHz (6225+6632) 320A Max./ 3MHz (6240+6632) 320A Max./ 10MHz (6243+6632)					
Current Switch     •       DC Resistance     •       Current Graphic Scanning     •	Constant Power Output	•					
DC Resistance   Current Graphic Scanning	Current Switch	•					
Current Graphic Scanning	DC Resistance	•					
Analysis	Current Graphic Scanning Analysis	•					
Frequency Graphic Scanning Analysis	Frequency Graphic Scanning Analysis	•					
Temperature Rise	Temperature Rise	•					

## General

Power Supply	Voltage 88-264Vac		
	Frequency 47-63Hz		
Interface	RS-232, Handler		
Trigger Test	Auto, Manual, RS-232, GPIB, Handler		
Environment	Temperature: 10-40°⊂, Humidity: 20-90%RH		
Dimension (W*H*D)	356×147×497mm (6225) 337×145×525mm (6223/6220/6210) 435×145×525mm (6240) 435×145×644mm (6243)		
Weight	15Kg (6225/6223/6220/6210), 20Kg (6243/6240)		

### **Key Features**



Isat (Magnetic saturation current curve)



The value of the inductance is 2.06983uH.

Using a DC Bias current source to apply a 10A bias current to the inductor, the inductance decreased from 2.06983uH to 1.02845uH.



Irms (Rated current curve)



Inductor copper foil cracked due tohigh temperature

Magnetic saturation current is called I sat, and the temperature rise current is called I rms. When the transformer and the inductor pass a large current in the actual circuit operation, the magnetic field of the magnetic core will produce magnetic saturation, which will cause the inductance characteristic to decline. Therefore, the R&D engineer will set the current value of the inductance reduction allowable range.

# **GMGA MEASURING**



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#### В



Standard fixture F6210 for measuring inductance, optionalfixture F6220 for measuring SMD inductance.



Reserve space for expanding current, support computerconnection software, and save measurement data.