IWATSU

B-H analyzer

Soft magnetic materials' property tests

SY-8218 10Hz to 10MHz
SY-8219 10Hz to 1MHz

Wide temperature range scanner system SY-330

Scanner system SY-321A/320A

DC bias test system SY-960, 961, 962

Single sheet test system SY-956

Highly accurate automatic measurement at high frequency

Precise magnetic property measurement at high frequencies

Precise and accurate core loss mesurement

Iwatsu's B-H analyzers which hiring CROSS-POWER method (IEC62044-3) enable precise and highly accurate measurement embedded minimized phase error integration on frequency spectrum with current detecting resisters and compensation on detecting circuit with full compensation on amplitude and phase characteristics. Third generation models are available now to contribute leading-edge development on future power management.

SY-810 Remote control software

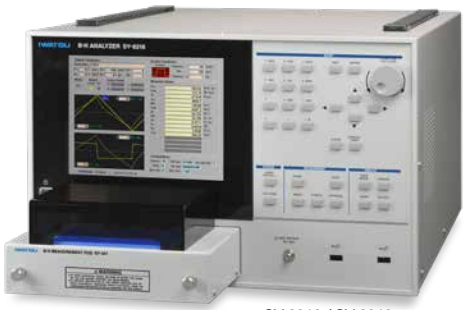
SY-5001 amplifier

SY-8218 B-H analyzer

SY-320A Temperature scanner system

- Wide band frequency range from 10Hz to 10MHz (SY-8218)
- 41pcs., max. specimen for temperature range of -30°C to 150°C automatic scanner system (SY-321A)
- Voltage : ±150V, max. / Current : ±6A, max. DC to 3MHz High power amplifier (SY-5001)
- 36mm(L),min. 35mm(W),max. single sheet test (SY-956)
- DC30A, max. DC-bias superposition test (SY-960, 961, 962)

B-H analyzer



SY-8218 / SY-8219

Wide temperature scanner

Autovehicle standard: AEC-QA200 Grade0

SY-330

Temp. scanner system

SY-320A / SY-321A

DC biasing system

AC blocker SY-962

DC bias source SY-961

DC bias tester SY-960

Single sheet tester

SY-956

Amplifier

SY-5002

HSA4101-IW

SY-5001

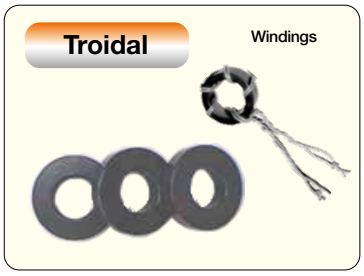
Various types of soft magnetic material property test

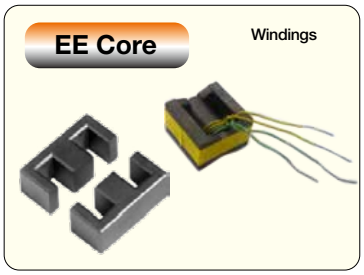
Soft Materials

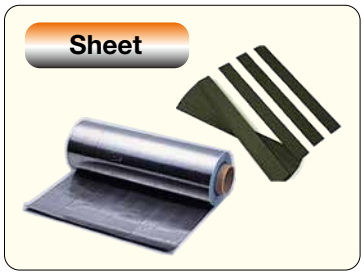
- Ferrite
- Permalloy
- Amorphous
- Si steel sheet
- Powder Core

Shape

- Troidal
- EE core
- EI conre
- Sheet
- Powder

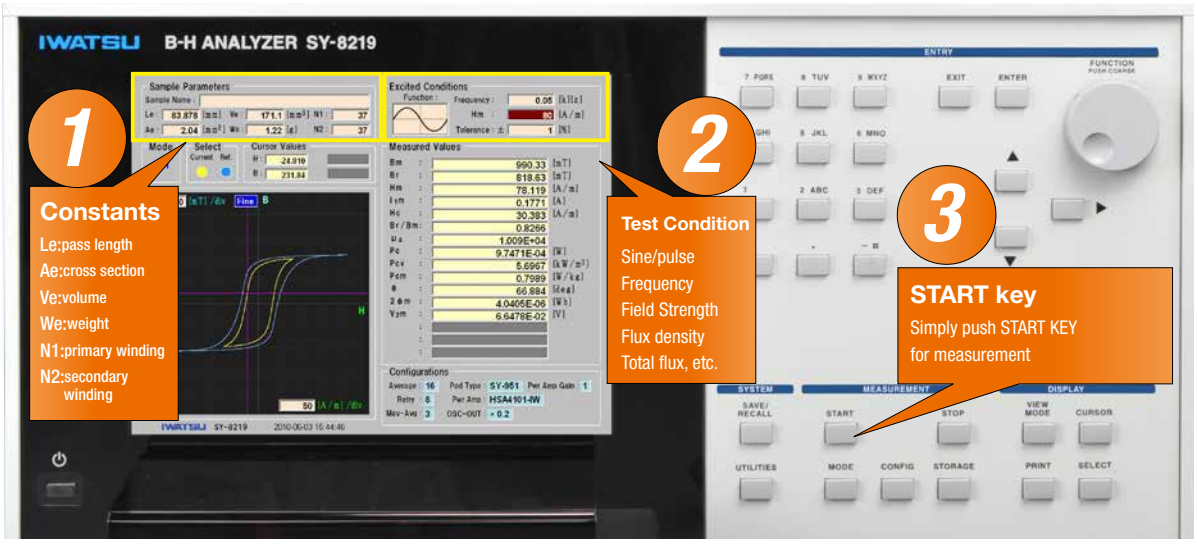






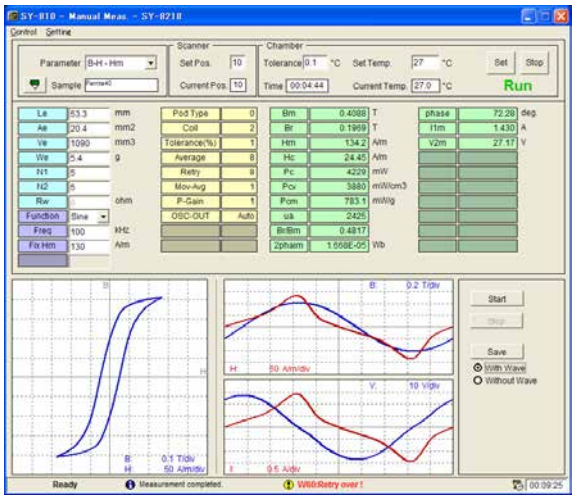
Fully automatic test

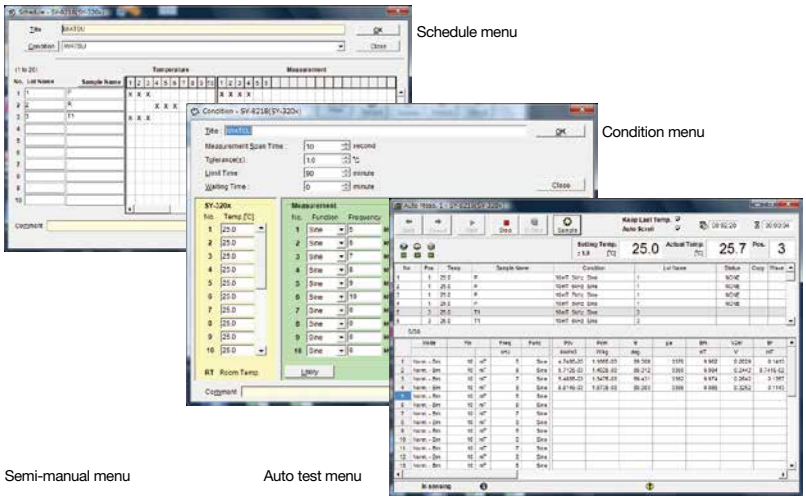
Sample parameters (Le: magnetic pass, Ae: cross section, N1 and N2, etc.) and test conditions(Frequency, Hm, Bm, V2m or I1m) inputs enable obtaining BH hysteresis curve and magnetic properties in value automatically.



Fully automatic test with options

SY-810 Remote control software is Temperature scanner system, Single sheet test system and DC biasing system.





Schedule menu

Condition menu

Semi-manual menu

Auto test menu

B-H Analyzer SY-8218 / SY-8219

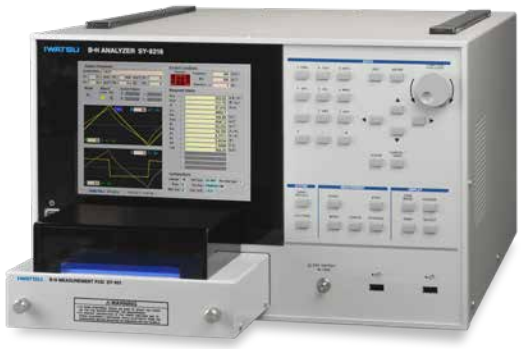
Precise test in higher frequency

B-H Analyzers

SY-8218 10Hz ～ 10MHz

SY-8219 10Hz ～ 1MHz

■Test Freq. 10Hz to 10MHz(SY-8218),10Hz to 1MHz(SY-8219)
■Signal waveform SINE or PULSE(10Hz to 1MHz)
■Max. Input current ±6A
■Max. Input voltage ±200V
■Excitation method Automatic excitation (Target : Hm, Bm, I1m or V2m)
Automatically degaussing after excitation to avoid magnetization



SY-8218

[Test example]
Measurement POD
(without POD cover)

Measurement method		CROSS-POWER method (Compatible to IEC62044-3 standard)
Measurement item (Symbol)		Max. Magnetic flux density(Bm), Residual magnetic flux density(Br), Max.Magnetic field strength(Hm), Coersive force(Hc), Rectangular ratio(Br/Bm), Relative amplitude permeability(μa), Core loss(Pc,Pcv,Pcm), Primary excitation current(I1m), Secondary induced voltage(V2m), Phase(θ), Total magnetic flux linkage(2 ϕ m), Apparent power(VA), Impedance permeability(μz), Complex permeability(μ',μ"), Loss coefficient(tan δ), Inductance(L), Resistance(R), Impedance(|Z|), Quality factor(Q), Total harmonic distortion(THD)
Waveform display		B-H curve, Primary current, Secondary voltage, Magnetic field, Flux density
Test Frequency	SINE	10Hz～10MHz(SY-8218),10Hz～1MHz(SY-8219)
	PULSE	10Hz～1MHz(Duty50% fixed)
Magnetic field detection		Voltage detection on non-inductive shunt, max. current at ±6A
Fulx density detection		Voltage at detection coil, max voltage at ±200V
Disitizer		Resolution : 16bits (8192points/cycle)
Coil method		Two winding method or single winding method selectable
Display		8.4 inch TFT-LCD SVGA 800 x 600pixcel
Weight, Dimensions		Approx. 12.5kg, Approx. 420W x 266H x 480D(mm)
External output		USB(storage)
Accessories		POD cover, SY-504 : AC coupler, Power amplifier cable (BNC-BNC), OSC Cable(BNC-SMA), Power cable, Users guide, Instruction manual(CD-ROM)

Hi-Speed Bipolar Power Supply (Power Amplifier)

Wide frequency bandwidth Hi-power Bipolar Power Supply

Bipolar power amplifier for B-H analyzers

	Frequency Bandwidth	Max. output current	Max. output voltage
SY-5001	3MHz	±6Apeak	±150Vpeak
SY-5002	3MHz	±6Apeak	±75Vpeak
HSA4101-IW	10MHz	±1Apeak	±71Vpeak

SY-5001 (PMK GmbH)

SY-5002 (PMK GmbH)

HSA4101-IW

Model		SY-5001
Frequency		DC - 3MHz
Gain		1、5、10、30、60±2% (±100ppm/℃)
Output Voltage	HIGH mode	±150Vpeak (f<750kHz)
	LOW mode	±75Vpeak (f<1.4MHz)
Output Current	HIGH mode	±5Apeak (f>10Hz)
	LOW mode	±6Apeak (f>10Hz)
Output Impedance		30mΩ+0.33μH
Size (mm)/Weight		Approx. 449Wx178Hx435.5D/19kg

Model		SY-5002
Frequency		DC - 3MHz
Gain		30±1% (±100ppm/℃)
Output Voltage	HIGH mode	±75Vpeak (f<900kHz)
	LOW mode	±37.5Vpeak (f<1.8MHz)
Output Current	HIGH mode	±5Apeak (f>10Hz)
	LOW mode	±6Apeak (f>10Hz)
Output Impedance		50mΩ+0.30μH
Size (mm)/Weight		Approx. 449Wx133Hx435.5D/14kg

Model		HSA4101-IW
Frequency		DC～10MHz
Output current		±71Vpeak
Output voltage		±1Apeak
Output power		50VA
Power supply	Frequency	50/60Hz
	Voltage range	AC100/115/200/230V selectable
	Power consumption	700VA (400W)
Size (mm)/Weight		Approx. 220Wx177Hx440D/7.8kg

Wide temp. range scanner SY-330, Scanner system SY-320A / 321A

Temp. range from -55ºC to +180ºC
Large size samples : max. 4pcs.

Wide temperature scanner

SY-330 4pcs.

Autovehicle std. AEC-Q200 Grade0 compatible

		SY-330
Chamber	Power supply	AC200V 3φ 3W 50/60Hz
	Max. current	14A, max.
	Temp. range	-55ºC～+180ºC
Scanner Unit	Power supply	AC 100V to AC240V 50/60Hz
	Max. power	21VA, max.
	Frequency range	10Hz～3MHz(SY-8218) 10Hz～1MHz(SY-8219)
	Sample	4pcs., max.
	Max. current	±6A
	Max. voltage	±200V
Size(mm), Weight		1,023W x 607L x 1,200H, Approx. 190kg
Accessories		Chamber cable(SY-912), RS232C cable, Pushing jig(SY-512), Power cable, Manual

Options

GPIB I/F

Model
NI GPIB-USB-HS+

※ NATIONAL INSTRUMENTS Corp.

Serial I/F

Model
NI USB-232

※ NATIONAL INSTRUMENTS Corp.

Temp. range from -30ºC to +150ºC
Automatc test for max. 41pcs. samples

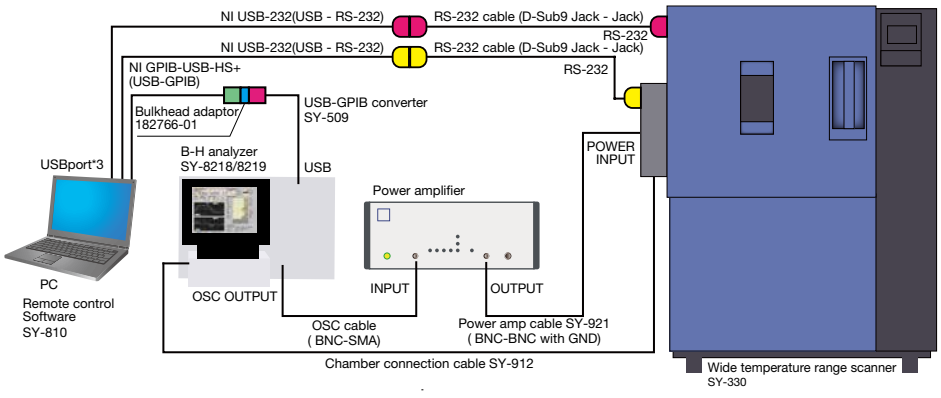
Temperature scanner system

SY-320A 20pcs. / **SY-321A** 41pcs.

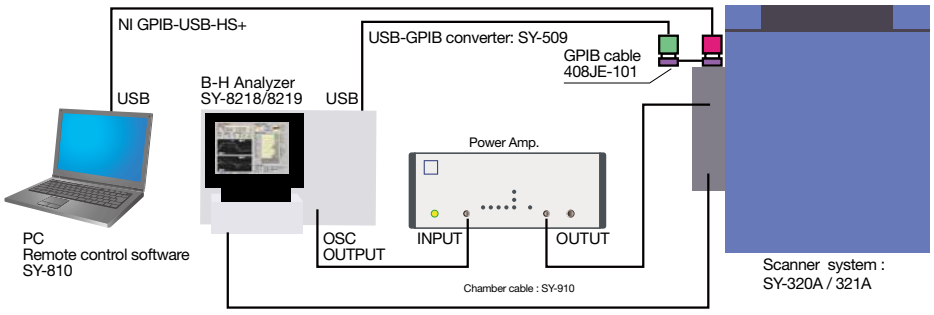
		SY-320A	SY-321A
Chamber	Power supply	AC100V 50/60Hz	
	Max. current	12.5A, max.	21.0A, max.
	Temp. range	-30ºC～+150ºC	
Scanner Unit	Power supply	AC 100V to AC120V 50/60Hz	
	Max. power	28VA, max.	
	Frequency range	10Hz～5MHz(SY-8218) 10Hz～1MHz(SY-8219)	
	Sample	20pcs., max.	41pcs., max.
	Max. current	±6A	
	Max. voltage	±200V	
Size(mm), Weight		543W x 695L x 620H Approx. 85kg	640W x 920L x 660H Approx. 135kg
Accessories		Chamber cable(SY-910), GPIB cable(1m), Power cable, Instruction manual, Turntable SY-510 (for SY-320A) or Turntable SY-511 (for SY-321A)	

Remote control system configuration

■Remote control system with Wide temp. range scanner : SY-330

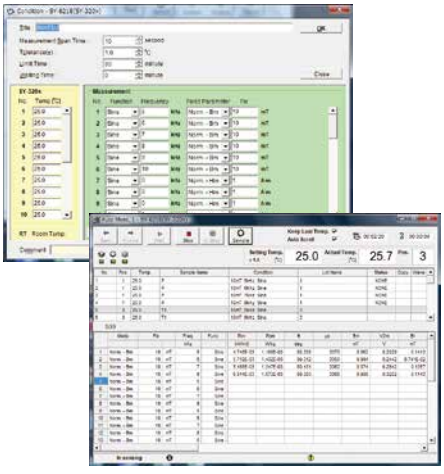


■Remote control system with scanner system : SY-320A / SY-321A



Remote control software : SY-810

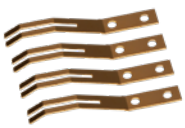
※ See page8 for details



Optional consumable parts (for SY-320A/321A)

Spare turntable(for setting samples)
SY-510(for SY-320A)
SY-511(for SY-321A)

Spare contact pin set
SY-512(for SY-320A/321A)



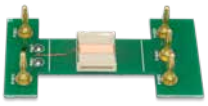
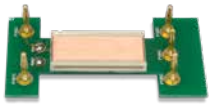
AC BH analysis on single sheet / ribbon

Single sheet test system SY-956

- Test freqency : 10Hz to 20kHz
- Max. Magnetic field strength : 10,000A/m
- Sample size : 36mm(L) or longer, 35mm(W)max., 3mm(Thickness)max.
- Vertical single yoke test method
- Core loss in yoke cancelling compensation
  (Patent pending : No. 5885646)
- Controlable pressing pressure on specimen for test reproductivity

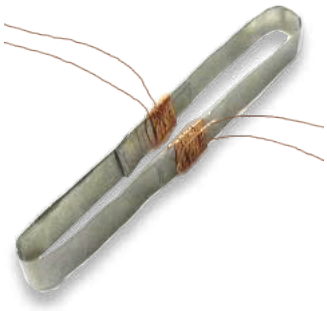
Test method	Vertical single yoke single sheet magnetic property test method (IEC 60404-3 compatible)(with yoke core loss compensation)
Max. Magnetic field	Approx. 10,000A/m(with excitation current at 5A)
Test frequency	SINE : 10Hz to 20kHz
Available sample size	36mm(L) or longer, 35mm(W)max., 3mm(Thickness) max.
Max. excitation current	±6A
Max. voltage	±200V
Power supply	AC100V to AC240V, 50Hz/60Hz, 27VA max.
Temp. range	+18°C to +28°C for test specification gurantee
Size(mm), Weight	Approx. 330W x 200H x 320D, Approx. 8.5kg
Accessories	Connection cable(SY-957), B coil(2types), Terminal screws, Pincer, Blowing brush, Accessory case, Power cable, Instruction manual

B coil for voltage detection

Model	B coil 01	B coil 02
Outer look		
Sample size	Max. 1mm(Thickness), Max. 10mm(W), 35turns	Max. 1mm(Thickness), Max. 30mm(W), 100turns

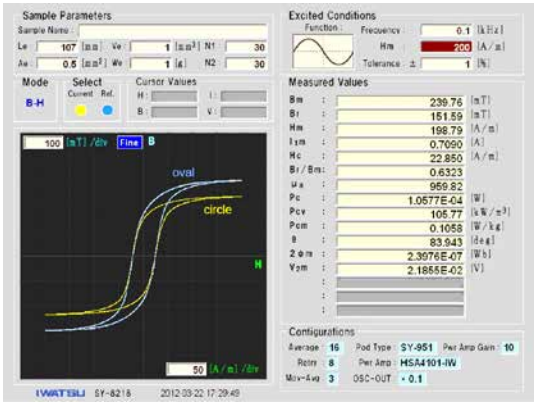
※ B coil can be wound for preferable turns.

Magnetic sheet can be varied of it's magnetic characteristics according to it's shape and before/after shaping process.



Example of Permalloy

Hc	Circle = Oval
Br	Circle < Oval
Bs	Circle < Oval
Core loss	Circle < Oval



LF AC coupler SY-514

Best to eliminate offset voltage of power amplifier

SY-514 enables measurement with cut-off frequency at 300Hz while SY-504 (std. accessory) offers cut-off frequency at 10kHz.

BNC cable(0.6m)

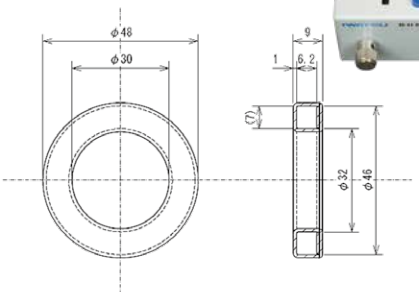
Cut-off freq. : Approx. 300Hz, Max. input voltage : ±200V
Max. input current : ±6A, BNC cable (0.6m/std. accessory)

10kHz AC coupler SY-504

※ Standard accessory for BH analyzer

Troid shape case SY-513

Best for sheet troids and/or powder material measurment



AC BH Analysis with DC biasing

DC bias tester
SY-960,961,962

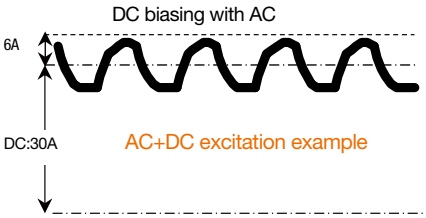
- Max. DC biasing 30A
- Max. AC ripple ±6A
- Test freq.(SINE) 10kHz～3MHz
  (Lowest frequency can be 10kHz or higher according to inductance value of specimen)
- Test freq. (PULSE) 10kHz～1MHz (Duty10%-90%)

AC blocker : SY-962

DC bias source : SY-961

DC test fixture : SY-960

BH Analyzer and DC+AC test system configuration



PULSE signal excitation (triangle signal current on specimen) or SINE+DC biasing excitation is available.

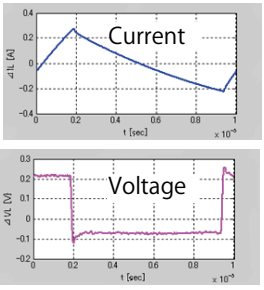
Sample type

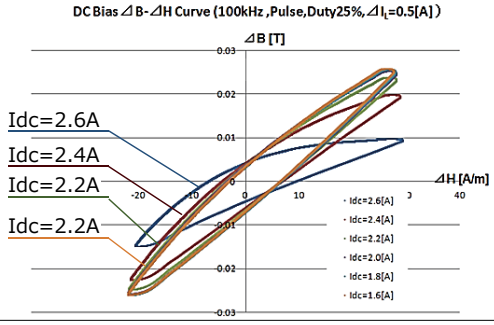
Power troids inductor

Power chip inductor(SMA)

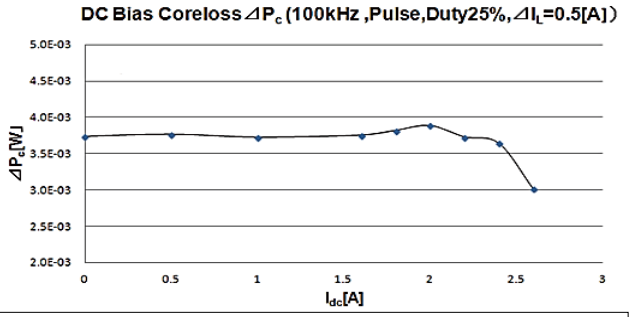
Example of chip inductor test (Chopper excitation)

Magnetic characteristics by incerasing DC bias at fixed ⊿H

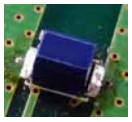




DC bias vs ⊿Pc



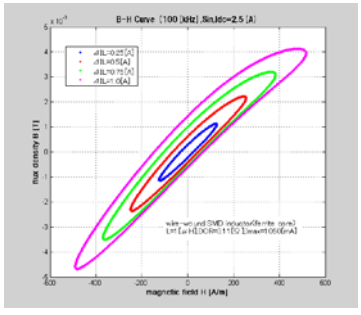
Examples of hysteresis curves of DC baising. AC+DC excitation shows changes of hysteresis curve following DC bias level.

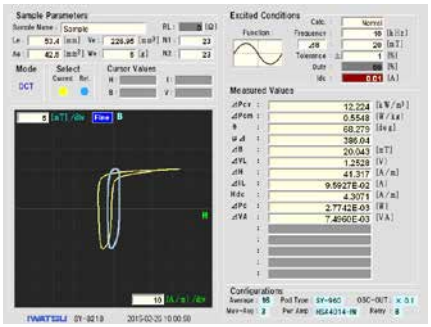


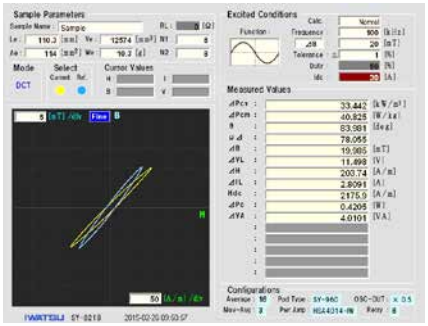
Ferrite
L=1.0μH

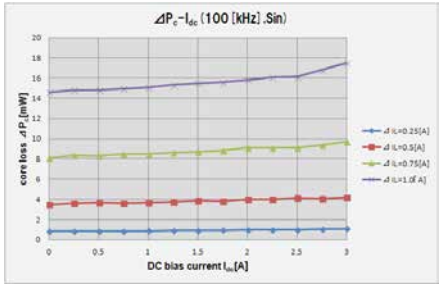
Amorphous
L=311μH

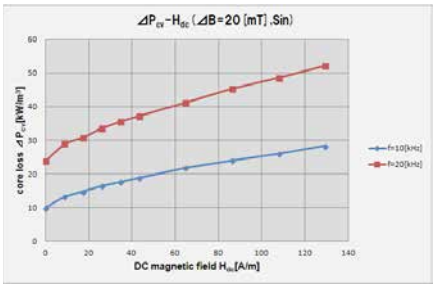
Iron Powder
L=8.4μH

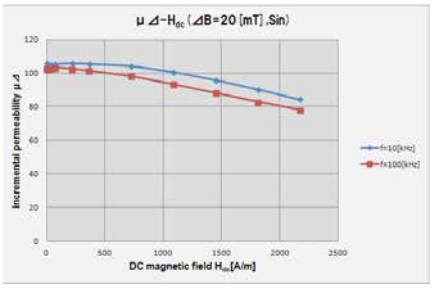












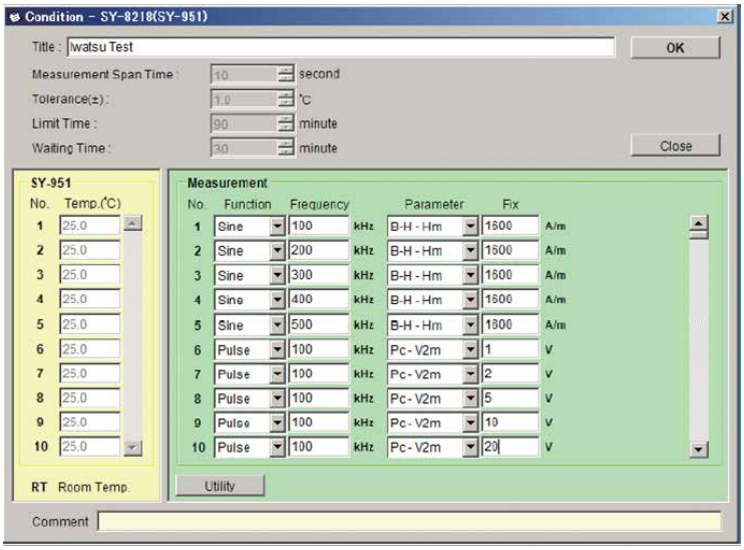
Application software for BH Analyzer

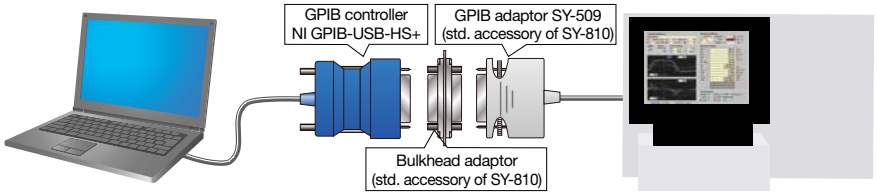
Automation with various test conditions

BH Analyzer remote control software for PC

SY-810

- Temperutre : 20kinds, Excitation : 40kinds of conditions can be set.
- Max. 800kinds of test conditions are available for each sample.
- Test data (waveform at CSV basis) and display hardcopy (JPEG, PNG) are avaialble.
- SY-810 can control wide temp. range scanner(SY-330), scanner system(SY-320A/SY-321A), DC bias tester and single sheet test system for automatic tests.





SY-810 contains CD (software & operation manual at PDF), GP-IB converter SY-509, Bulkhead adaptor 182766-01 and software license agreement
OS: Windows Vista SP2, Windows7 32bit/64bit, Windows8 32bit/64bit, Windows10 32bit/64bit
.NET Framework(packed), CPU Pentium133M or above, Memory at 64Mbyte or more, Display resolution at 1024x768 or above, USB port x3
※ Contact our sales for the most recommended system configurations.
※ NI GPIB-USB-HS+ (NATIONAL INSTRUMENTS) is required for PC interface with SY-8218/SY-8219. PC is not included with this system and supplied by customer.

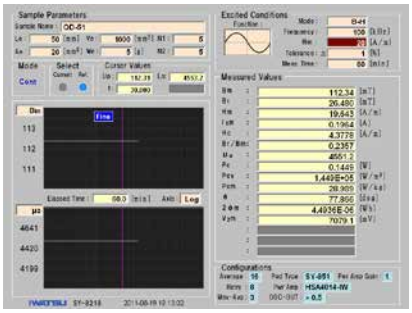
Built-in software function for BH Analyzer (Optional)

Continuous test function SY-811

Time-tendency property test can be performed at continuous excitation.

- Test timeframe at 99,999minutes(Approx. 70days), max. 60second/test
- 2 kinds of properties can be monitored on display and extracted to memory.
- Measurement item can be changed during test.
- Comparison between Reference and test result on the same display.
- Test data at CSV and display hardcopy at JPG/PNG are available.

※Built-in option for BH analyzer
※mplementation of SY-811 on BH analyzers(SY-8218/SY-8219) at the customer end will be returned to our factory for installation and inspection.



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8511-3111-3