



BATTERY TECHNOLOGY SOURCE CO., LTD  
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## LABORATORY AND TESTING EQUIPMENT



# LABORATORY AND TESTING EQUIPMENT



BATTERY TECHNOLOGY SOURCE CO., LTD.

**HVT-100**

HIGH VOLTAGE BATTERY SHORT  
CIRCUIT TESTER



BATTERY TECHNOLOGY SOURCE CO., LTD.

**VS-600VH**

VIBRATION TESTING SYSTEM



**VS-300VH**

VIBRATION TESTING SYSTEM



BATTERY TECHNOLOGY SOURCE CO., LTD.

**VS-5060M**

REACTIVE TYPE VIBRATION TESTER



BATTERY TECHNOLOGY SOURCE CO., LTD.

**BTS-LT 403T**

LOW TEMPERATURE BOX



BATTERY TECHNOLOGY SOURCE CO., LTD.

**NTHDR20/200**

MULTI-FUNCTION DISCHARGE  
TESTER



**NT6CCDR20/50**

MULTI-FUNCTION CHARGER AND  
DISCHARGER



BATTERY TECHNOLOGY SOURCE CO., LTD.

**BHRD-1000A-AC**

AUTO. BATTERY HIGH RATE DIS-  
CHARGE INSPECTION MACHINE



BATTERY TECHNOLOGY SOURCE CO., LTD.

**BHRD-300RDS (AM)**

CAPACITY TESTING DEVICE



**NTCDR230/80BP-16CH-5C**

CAPACITY TESTING DEVICE



**NTCDR230-80-5C-16CH**

MULTI-FUNCTION TESTING MCHINE  
FOR SMALL BATTERIES



**NTCDR-150-80-150-10CH**

DICHARGE TEST MACHINE

# PLATE MANUFACTURING MACHINES



**PS-40 AM**

FULLY AUTO. LUG BRUSHER MA-  
CHINE



**PCS-20AH**

FULLY AUTO. MULTIFUNCTION LEAD  
PARTS CASTING MACHINE



**BGC-10**

FULLY AUTO. GRID CASTING MA-  
CHINE



**BSB-3S**

FULLY AUTO. CAR BATTERY PLATE  
BRUSHING & SLITTING MACHINE



**BIGO-10**

INTER GAS OVEN NEGATIVE PLATES  
DRY CHARGE OVEN



**BPP-10**

FULLY AUTO. PLATES PASTING MA-  
CHINE



**FDO-10**

BATTERY PLATES HORIZONTAL  
FLASH DRYING OVEN



**AHBF-10AM & BPD-10AM**

FULLY AUTO. HOLE PUNCHING &  
DUMPING MACHINE (WITH CON-  
TAINER FEEDING SYSTEM)



**HEP-10AC**

FULLY AUTO. PE SEPARATOR WRAP-  
PING MACHINE



**VGM-10M**

SEMIAUTO. AGM SEPARATOR WRAP-  
PING MACHINE



**PCS.20H**

SEMIAUTO. LEAD PARTS CASTING  
MACHINE



**BFB-10C**

SEMIAUTO. 3 SIDES FRAME BRUSH-  
ING MACHINE

# HIGH SPEED MOTORCYCLE BATTERY ASSEMBLY LINE



**HV-50AM (2X)**  
FULLY AUTO. SHORT CIRCUIT TEST, INTER-CELL WELD & WELD QUALITY CHECK MACHINE



**HV-60AM (E)**  
FULLY AUTO. POLARITY CHECK, INTER-CELL WELD, S/C & WELD QUALITY CHECK MACHINE



**HV-60AM (X)**  
FULLY AUTO. POLARITY CHECK, INTER-CELL WELD, S/C & WELD QUALITY CHECK MACHINE (WITH SERVO CONTROL)



**IRT-10AM (X)**  
FULLY AUTO. WELD CONDITION CHECKING MACHINE



**HM-10AM**  
FULLY AUTO. HEAT SEALING MACHINE



**HM-10AM (X)**  
FULLY AUTO. HEAT SEALING MACHINE (QUICK MOLD CHANGE)



**ATC-30AM (X)**  
FULLY AUTO. AIR LEAK TESTING & CODING MACHINE



**AHS-10AM**  
FULLY AUTO. ALUMINUM FOIL TOP SEAL MACHINE



**AHS-20AM (X)**  
FULLY AUTO. ALUMINUM FOIL TOP SEAL & SIDE SEAL MACHINE



**TIG-10AM**  
FULLY AUTO. TIG WELDING MACHINE



**BD-10AM**  
FULLY AUTO. BATTERY DUMPING MACHINE



**BSP-10AM**  
FULLY AUTO. SCREEN PRINTING & CONTAINER ROTATOR MACHINE

# HIGH SPEED CAR BATTERY ASSEMBLY LINE



**HPVT-40ACH**  
FULLY AUTO. ELECTRIC WELDING & SHORT TEST MACHINE



**IRV-20ACX**  
FULLY AUTO. S/C TEST & WELD CONDITION CHECKING MACHINE



**HM-20ACH**  
FULLY AUTO. HEAT SEALING MACHINE



**ATC-20ACH**  
FULLY AUTO. LEAK TESTING & CODING MACHINE



**TBP-20AC**  
FULLY AUTO. POST BURNING MACHINE



**AHB-10AC**  
FULLY AUTO. FOIL SEALING & POST BRUSHING MACHINE



**IRT-10AC**  
FULLY AUTO. WELD CONDITION CHECKING MACHINE



**AH-10AC**  
FULLY AUTO. ALUMINUM FOIL SEALING MACHINE



**AHB-10AC**  
FULLY AUTO. HEAT SEALING MACHINE (SERVO MOTOR CONTROL)



**HMT-10CX**  
SEMI-AUTO. TOP COVER HEAT SEALING MACHINE



**AH-10AC**  
SEMI-AUTO. AIR LEAK TESTING MACHINE



**HM-10ACX**  
SEMI-AUTO. HEAT SEALING MACHINE

## OTHER MACHINES AND MATERIAL PARTS



**BVS-300HV**  
ELECTRODYNAMIC VIBRATION  
TESTER



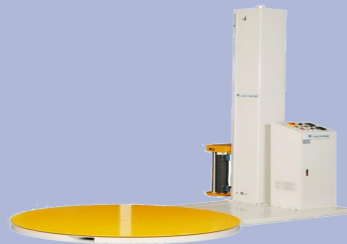
**BV-5060**  
MECHANICAL TYPE VIBRATION  
TESTER



**BOP-10AM**  
FULLY AUTO. OVEN TUNNEL MA-  
CHINE



**CONTAINER PRINTING ASS. LINE**  
FULLY AUTO. BATTERY CONTAINER  
HOLE PUNCHING & SCREEN PRINT-  
ING ASSEMBLY LINE



**WSV-1521 & 1821**  
VERTICAL WRAPPING MACHINES



**BLT-40C**  
LOW TEMPERATURE BOX FOR BAT-  
TERY QUALITY TEST LABORATORY



**GLASS FIBER SEPARATOR**



**BCF-16MCP**  
CHARGER MACHINE FOR PLATES  
FORMATION RECTIFIER



**BATTERY TERMINAL BOLT & NUT**



**SCISSOR PALLET TABLE**



**PLASTIC INJECTION MOLD**



**CAR & MOTORCYCLE BATTERY  
CONTAINER SET**

## ACID FINISHING LINE



**BCM-AF-20AC**  
FULLY AUTO. CAR BATTERY ACID FILLING MACHINE



**BCM-AFL-20AC**  
FULLY AUTO. CAR BATTERY ACID LEVEL ADJUSTING MACHINE



**HM-10CS**  
SEMI-AUTO. SECONDARY LID HEAT SEAL MACHINE



**BWD-10AC**  
FULLY AUTO. CAR BATTERY WASHING & DRYING MACHINE



**PB-20AC**  
FULLY AUTO. CAR BATTERY TERMINAL POST BRUSHING MACHINE



**BHRD-1000A-AC**  
FULLY AUTO. CAR BATTERY HRD INSPECTION MACHINE



**BHRD-1500 (2)AC**  
HIGH RATE DISCHARGE INSPECTION MACHINE



**BL-20AC**  
FULLY AUTO. CAR BATTERY LABELING MACHINE



**ABF-10MS (V)**  
SEMIAUTO. VACUUM TYPE ACID FILLING MACHINE



**BCF-8MC**  
BATTERY CASE FORMATION CHARGER MACHINE



**BHRD-300RDS (AM)**  
FULLY AUTO. 4 FUNCTION BATTERY DISCHARGE INSPECTION MACHINE



**ABF-10MS (X)**  
SEMIAUTO. ACID BOTTLE FILLING MACHINE



## HIGH VOLTAGE BATTERY SHORT CIRCUIT TESTER Model: HVT-100



### Features

- State-of-the-art digital display meter
- Easy and safe retracting probes for applying high voltages
- High precision quality testing equipment
- Auto high voltage shut off system when a product fails.
- Auto buzzer alarm when detecting unfit products.

### Air/power consumption

- Input voltage: 220 V; 1 phase; 50-60 Hz
- Output voltage: rating = 400-3000 V

### Machine outlook

- Dimension: 375 (L) × 445 (W) × 170 (H) mm
- Weight: approx. 18 kg



## VIBRATION TESTING SYSTEM Model: VS-600VH

### Machine details

- System configuration (1 SET): shaker (600 kfg, vertical + horizontal); power amplifier and system protection unit; vibration controller (SINE and RANDOM-USB, with IPC interface); accelerometer; service (installation, testing, training and after sales)
- Electrodynamic shaker VS-600 VH (1 SET):
  - Frequency range: 3-3000 Hz.
  - Rated sine force: 6000 N (600kgf)
  - Rated random force: 6000 Nrms (600 kgf rms)
  - Max. acceleration:100 g (PEAK, NO LOADING)
  - Max. displacement: 25 mm (PEAK – PEAK)
  - Max. payload:200 kg
  - Armature weight: 5.5 kg
  - Lateral motion: smaller than  $\pm 5\%$
  - Low stray magnetic design: 10 cm above table  $<0.01$  gauss
  - Dimension:1500 (L)  $\times$  850 (D)  $\times$  750 (H) mm
  - Weight:1400 kg
  - Isolation airbag design
  - The natural frequency of the body is about 5Hz.
  - A TR% smaller than 5% will not affect the structure.
- DA-6 power amplifier (1 SET):
  - Frequency range: 3-3000Hz
  - Control signal: 0-2V (RMS)
  - Output power: 6.0 KVA
  - Max. output voltage:100 V
  - Max. output current: 60 A





- Interlocks: over-current, over-voltage, over-temp, noise protection
  - Compact voltage, high efficiency, high output power
  - Harmonic distortion: <5%
  - Field power supplier:
    - Output power: 6000W
    - Ripple percentage: <5%
- (With a combined 19" rack for the system and controls)
- System accelerometer (1 SET):
    - Model: PCB 353B34 (equivalent to B&K)
    - Sensitivity: 100 mv/g
    - Frequency response: 0.7-7K Hz
    - Environment: -53°C-121°C
    - Weight: 27 g
    - Coaxial connector with replaceable cable
  - Vibration control system (1 SET):
    - DACTRON (COMET shaker control system)
    - The controller performs the sweep sine in the electrodynamic and hydraulic vibration system, which includes: user-friendly, Windows compatible control software; double DSP chip set for data processing; low noise circuit design technology; 24 bit DA converter
    - Input: 2 input synchronism channels, each of which can be preset or disabled:
      - Control voltage:  $\pm 0.1$  V,  $\pm 1$  V,  $\pm 10$  V
      - Input impedance: 220 k $\Omega$
      - Dynamic range: 24 bit
      - Build-in ICP control current power, voltage
    - Output: one analog output channel
      - 24 bit DAC
      - Measure range: 10 V



- Dynamic range: >90 dB
- Signal display: single or multi signal; color, line cursor, foreground can be preset; single, double, four window setting; real time display for control, target, break off line, drive and input time domain; allows to calculate the signal maximum, minimum and peak effective value; single and double cursor; allows to read the values of X1, Y1, X2, Y2; auto peak and valley value.
- Sweep sine control software:
  - Frequency range: 1-2400 Hz
  - Dynamic range: 95 dB
  - Close loop time: 10 ms
  - Wave form distortion: <0.9%
  - Signal to noise: >100 dB
  - Frequency resolution: 0.01 Hz
  - Operation mode: auto/manual
  - Resolution duration: >10 ms
  - Compression rate: 1-120 dB
  - Linear sweep rate: 0-6000 Hz/min
  - Log sweep rate: 0-100 oct/min
- Horizontal tables (1 SET, option):
  - Size: 600 x 600 mm
  - Material: aluminum + magnesium
  - Mass: 30kg
  - Assemble coupler: magnesium, 8 kg
  - Oil film system: static liquid pressure type + granite a pedestal
  - Resonance frequency: >1000 Hz
  - Screw holes distribution:  $\varnothing$  M8
- Vertical table (1 SET)
  - Size: 600 x 600 mm
  - Material: aluminum + magnesium.



- Mass: 30 kg
- Resonance frequency: >500 Hz
- Screw hole distribution:  $\varnothing$  M8
- Control system (1 SET)
  - Industrial computer for 19" RACK: 8 × ISA; 2 × ATX PICMG; 4 × industrial PCI slot; 478 PC chassis socket; Pentium 4 CPU with DDR/Ethernet/VGA/USB2.0; Pentium 4-2.0 GHz socket 478 with CPU fan; DDRAM: 512MB; 16x DVD-CDRW; 80 GB Maxtor HDD (7200RPM); 1.44 MB 3.5"FDD; Power: 300 W, 100-240 V; mouse; 15" TFT-LCD; 19" rack keyboard (88 key, Windows XP Home Version)
- Digital display: output current indicator, output voltage indicator
- Protection indicator
- Cooling blower motor: air blower and pipe

## Power consumption

- Power: 200/380 V, 3 phase, 4 wire, 11 KVA



## VIBRATION TESTING SYSTEM Model: VS-300VH

### Machine details

- System configuration (1 SET): shaker (300 kfg, vertical); power amplifier and system protection unit; servo vibration controller (SINE and RANDOM vibration software included); auxiliary (vertical) vibration table; accelerometer.
- Electrodynamic shaker VS-300 V (1 SET):
  - Frequency range: 1-3000 Hz
  - Rated sine force: 3000 N (300kgf)
  - Rated random force: 3000 Nrms (300 kgf rms)
  - Max. velocity: 1.6 m/s (PEAK)
  - Max. acceleration: 100 g (PEAK, NO LOADING)
  - Max. displacement: 25 mm (PEAK - PEAK)
  - Max. load capacity: 120 kgw
  - Armature weight: 3.0 kg
  - Uneven surface movement and lateral motion:  $< \pm 5\%$
  - Magnetic field leakage: 10 cm above table  $< 0.01$  gauss
  - Isolation air spring: isolation rate above 98%
  - Dimension: 78 (L)  $\times$  52 (D)  $\times$  74 (H) mm
  - Weight: 720 kg
- Power amplifier (1 SET):
  - Frequency range: 3-3000Hz
  - Distortion:  $\pm 5\%$
  - Compact voltage, high efficiency, high output power
  - Field power supplier:
    - Output power: 3000W
    - Ripple percentage:  $< 10\%$
  - In accordance with ISO 5344 standards





- Dimensions: 560 × 760 × 1700
- Container weight: 125 kgw
- System accelerometer (1 SET):
  - Model: PCB 352C34 (equivalent to B&K)
  - NASA standard
  - Sensitivity: 100 mv/g
  - Resolution: 0.0005 g
  - Frequency range: 0.7-7K Hz
  - Displacement range: ±5%50 g (PEAK)
  - Environment: -53°C-121°C
  - Weight: 7 g
  - Coaxial connector with replaceable cable
  - 6 m long, wear-resistant Teflon coating
- Servo vibration control system, incl. SINE and RANDOM vibration software modules (1 SET):
  - Frequency range: up to 4800 Hz
  - Resolution: 1600 lines
  - Dynamic range:
    - RANDOM: 85 dB
    - SINE: 95 dB
  - Compression ratio: fixed (0.3-3000 dB/s)
  - Input channels: dual channel
  - Sweep mode: linear or logarithmic
  - Sweep rate:
    - Logarithmic: 100 Oct/min
    - Linear: 6000 Hz/min
  - Loop time:
    - RANDOM: 100 ms





- SINE: 10 ms
- Precision control:  $\leq \pm 1$  dB
- Control: single channel control using RMS, peak or average control
- Turning points for curve control: unlimited
- Other functions:
  - Parameter memory
  - Colored display
  - Test report printing
  - Full screen operation
  - Auto. inspection of vibration testing parameters
- Vertical vibration tables (1 SET):
  - Vibration frequency:
    - RANDOM: < 2000 Hz
    - SINE: < 500 Hz
  - Size: 300 x 300 mm
  - Weight: 15 kg
- Blower (1 SET)
  - Model: BV-1900
  - 380 V, 3 phases, 1 HP
  - Dimensions: 350 × 250 × 500
  - Weight: 20 kgw



- Industrial computer and peripherals (1 SET)
  - Industrial computer for 19" RACK: 8 × ISA; 2 × ATX PICMG; 2 × industrial PCI slot; Pentium 4 CPU with DDR/Ethernet/VGA/USB2.0; Pentium 4-2.0 GHz;



NUPRO-760LV PCB; DDRAM: 512MB; 16x DVD-CDRW; 1000 GB Seagate HDD (7200RPM); 1.44 MB 3.5"FDD; power: 300 W, 100-240 V; 3 × USB 2.0

- Optical mouse and 19" rack keyboard (88 key, Windows XP Home Version)
- 17" TFT-LCD screen
- OS: Windows 7

## Features

- Light armature allows to achieve higher stiffness
- Vibration resonance frequency above 3000 Hz
- Excellent anti-EMI environment
- Integrated computer controller and power, allowing to save space
- The tester can achieve sufficient Newton force without compromising safety
- High efficiency, with low power loss and overall consumption (6.5 KVA)
- Excellent magnetic isolation and low field leakage
- Dynamic analysis to ensure maximum reliability
- Protection circuit with 16 fault indications
- User friendly operation

## Power consumption

- Power: 380 V, 3 phase, 4 wire, 6.5 KVA



## REACTIVE TYPE VIBRATION TESTER Model: VS-5060M



### Vibration tester

- Frequency range: 5-100 Hz, 1 Hz/step
- Frequency accuracy:  $\pm 0.1$  Hz
- Amplitude range: 0-2.8 mm (p-p)
- Acceleration range: 0-11 G (peak)
- Maximum loading: 50 kg
- Optimal, uniform vibrating table motion, according to IEC-60068-2-6
- Table size: 500 × 600 mm (standard size)
- Sweep type: fixed displacement amplitude sweep

Requirement	1	2	3
Min. battery cover/ case width, X	15 mm	33 mm	33 mm
Vibration time, T	2 h	2 h	20 h
Max. acceleration, Z	30 m/s <sup>2</sup>	60 m/s <sup>2</sup>	60 m/s <sup>2</sup>
Frequency	30-35 Hz	30-35 Hz	30-35 Hz
Displacement	1.45 mm	2.85 mm	2.85 mm



Acceleration range	25.75-35.06	50.63-68.91	50.63-68.91
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## PC controller

- Windows control program, with test curve display
- Test curve: shows frequency-time, acceleration-time, displacement-time, acceleration-frequency, displacement-frequency... (every curve)
- English and Chinese 15" display
- Easy adjustment of the vibration amplitude easily
- Amplitude prediction function
- Close loop control, high accuracy
- Mode: fixed freq. (manual/auto), sweep (logarithmic/linear/double), multi-random

## Functions

- 15" monitor display screen, easy to operate
- Shows vibration displacement, acceleration, frequency and testing time immediately.
- Low horizontal motion and operating noise
- Suiting human engineering when users adjust vibrating amplitude
- With fixed frequency, sweep frequency and multi-random test function
- High capacity programming memory
- Operating manual and calibration report

## Standard equipment

- PC controlled (LCD type monitor)
- CPU: P4, 1.7 G; 128MB RAM, 40GB HDD, VGA, ARD, AGP, TNT2, 16MB, 15" LCD monitor, USB socket, keyboard, mouse, Windows XP (English language edition)

## Remarks

- Includes control software and interface card, calibration report.

**This equipment is in accordance with EIA J575, JIS-D1601 TABLE-II**



## **-40°C LOW TEMPERATURE BOX**

### **Model: BTS-LT 403T**

#### **Features**

- Application: battery test in a low temperature environment
- Working supply source: AC 1Ø 220 V, 60/50 Hz
- Ambient temperature: 10°C-35°C
- Temperature control range: -10°C-40°C
- Circulation controlled by air puff, freezeless
- Materials: SUS-316 (inner tank), SUS-304 (outer tank)

#### **Machine outlook**

- Inside dimensions: 800 (W) × 650 (D) × 650 (H) mm
- Machine size: about 1700 (L) × 870 (W) × 950 (H) mm



**BATTERY TECHNOLOGY SOURCE CO., LTD.**



## MULTI-FUNCTION DISCHARGE TESTER

### Model: NTHDR20/2000



BATTERY TECHNOLOGY SOURCE CO., LTD.

### Applications

- Individual cell (12 V) discharge test

### Output

- Constant current: DC 200-2000 A (2000 A can be attained over DC 5 V), continuously adjustable
- Constant power:
  - Output power: 2.0-20.00 KW (10 V × 2000 A), continuously adjustable
  - Output current: DC 200-2000 A, continuously adjustable
  - Output voltage: DC 5.00-20.00 V, continuously adjustable

### Features

- 7 inch, full color touchscreen control panel
- 20 automatic operational functions (steps), each one with voltage, current, time, AH and temperature control functions, incl.: CC (constant current), CP (discharge power), FV (final voltage), V/T (dual voltage/time control), HOLD (stationary settle down), REPEAT (repeat test)
- Control accuracy:  $\pm 1\%$
- Life cycle measurements in each loop: 99999 times max.
- Time, voltage, current and current values can be shown on the touchscreen display.
- Ethernet network connection available



## Specifications

- Max. DC 20.000 V
- Charging/discharging current: 0.5-50.00 A,
- Constant power rate: max. 500 W
- Output voltage: MAX DC 20.000V, can be continuously set up.
- Charge/discharge output current: according to the specification table, can be continuously set up.

## Data processing

- Sampling: by force (at the beginning and at the end of each segment); periodically (at configurable intervals, between 1 s and 99 h 59 min 59 s).
- Built-in testing data storage function: after the test, data can be accessed by PC and saved in a text file; analytic charts and tables can be generated using Microsoft Excel and other similar programs.

## Control mode

- Directly set up, controlled and graded from the machine itself.
- From an external computer, using the network functions.

## Spare parts

- Fuses of every type used in this machine (×100%)

## Power source

- AC 3Ø 220V 60 Hz (a different power source can be used at the customer's request)



# MULTI-FUNCTION CHARGER AND DISCHARGER

## Model: NT6CCDR20/50

### Applications

- Individual cell (6 or 12 V) charge/discharge/life cycle/capacity test

### Features

- 10 inch, full color touchscreen control panel
- The touchscreen HMI that can be activated simultaneously or individually to control 5 charge and discharge units.
- Each unit's charge, discharge and hold functions, as well as its voltage and current value and working time (0-99 h 59 min) can be configured; several variables of the different automatic processes can be continuously set up and modified.
- Each unit is equipped with 3 control functions: voltage, current and time.
- Following charging functions can be set up: CC (constant current), FV (final voltage), LV (limited/constant voltage), HOLD (stationary settle down), V/T (dual time/voltage control), CP (discharge power control: voltage needs to be maintained at 10.5 V to attain a 500 W output), REPEAT (repeat test).
- This machine can store 56 groups of programs, each of them containing 20 segments (STEPS) that can be freely set up and executed in each cycle.
- Equipped with a monitoring function that detects anomalies in each circuit's DC output current; its upper and lower limits can be set up (0-5 A).
- Power outage memory function.
- Time, voltage, current and AH values can be shown on the touchscreen display.
- Control accuracy:  $\pm 1\%$
- Life cycle measurements in each loop: 99999 times max.
- Ethernet network connection

### Specifications

- Max. DC 20.000 V
- Charging/discharging currentt: 0.5-50.00 A,
- Constant power rate: max. 500 W



- Output voltage: MAX DC 20.000V, can be continuously set up.
- Charge/discharge output current: according to the specification table, can be continuously set up.

## Data processing

- Sampling: by force (at the beginning and at the end of each segment); periodically (at configurable intervals, between 1 s and 99 h 59 min 59 s).
- Built-in testing data storage function: after the test, data can be accessed by PC and saved in a text file; analytic charts and tables can be generated using Microsoft Excel and other similar programs.

## Control mode

- Directly set up, controlled and graded from the machine itself.
- From an external computer, using the network functions.

## Spare parts

- Fuses of every type used in this machine (×100%)

## Power source

- AC 3Ø 220V 60HZ





# MULTI-FUNCTION CHARGER AND DISCHARGER

## Model: NT5CCDR20/50

### Applications

- Individual cell (6 or 12 V) charge/discharge/life cycle/capacity test

### Features

- Equipped with 10 color touchscreen control panels (in Chinese) and buttons.
- Equipped with a touchscreen HMI that can be activated simultaneously or individually to control 5 charge and discharge units.
- Each unit's charge, discharge and hold function, as well as its voltage and current value and working time (0-99 h 59 min) can be configured; several variables of the different automatic processes can be continuously set up and modified.
- Each unit is equipped with 3 control functions: voltage, current and time.
- Note: following charging functions can be set up: CC (constant current), FV (final voltage), LV (limited/constant voltage), HOLD (stationary settle down), V/T (dual time/voltage control), CP (discharge power control: voltage needs to be maintained at 10.5 V to attain a 500 W output), REPEAT (repeat test).
- Equipped with a monitoring function that detects anomalies in each circuit's DC output current; it's upper and lower limits can be set up (0-5 A).
- Power outage memory function.
- Time, voltage, current and AH values can be shown on the touchscreen display.
- Control accuracy:  $\pm 1\%$
- Life cycle measurements in each loop: 99999 times max.
- Ethernet network connection

### Specifications

- Max. DC 20.000 V
- Charging/discharging current: 0.5-50.00 A,
- Constant power rate: max. 500 W
- Output voltage: MAX DC 20.000V, can be continuously set up.



- Charge/discharge output current: according to the specification table, can be continuously set up.

## Data processing

- Sampling: by force (at the beginning and at the end of each segment); periodically (at configurable intervals, between 1 s and 99 h 59 min 59 s).
- Built-in testing data storage function: after the test, data can be accessed by PC and saved in a text file; analytic charts and tables can be generated using Microsoft Excel and other similar programs.

## Control mode

- Directly set up, controlled and graded from the machine itself.
- From an external computer, using the network functions.

## Spare parts

- Fuses of every type used in this machine (×100%)

## Power source

- AC 3Ø 220V 60HZ





# AUTOMATIC BATTERY HIGH RATE INSPECTION MACHINE WITH MICROCOMPUTER CONTROL

Model: BHRD-1000A-AC

## Function

- Automatic transmission, positioning and testing
- Automatic rejection of inferior products
- Printing of hard copies, including OV, CV<sub>1</sub>, CV<sub>2</sub>, ΔV, CV<sub>3</sub>, statistical analysis data

## Inspection items

- Reverse polarity: open voltage test (OV)
- Discharge test (ΔV, CV<sub>2</sub>)
- Voltage recovery is tested with a large discharge current (CV<sub>3</sub>)

## Features

- Microcomputer control: SYE-CBC (F) 1000A
- Suitable for 24-200 AH (12 V automotive battery)
- Test speed: approx. 210-250 pcs/h (according to testing time for each test)

## Air/power consumption

- Compressed air: 5 kg/cm<sup>3</sup> (air pressure supplied by the customer)
- Power source: AC 3 Ø, 380 V, 50 Hz

## Machine outlook

- Machine dimensions: approx. 2500 (W) × 1250 (D) × 1650 (H) mm
- Machine weight: 1300 kg
- Discharge panel size: approx. 800 (L) × 800 (W × 1800 (H) mm
- Discharge panel weight: 600kg





## CAPACITY TESTING DEVICE

Model: NTCDR230/80BP-16CH-5C



### Applications

- Sampling for the purpose of quality assurance.
- Comprehensive inspection of the finished products.
- UPS battery grading.
- Price setting after testing.

### Features

- 10" touchscreen control panel.
- Ethernet network connection.
- Can be accessed from a computer for data processing.
- Mitsubishi NFB, MC, and PLC are used in this machine.

### Test mode

- Up to 16 6 V or 12 V batteries during a single discharge test.
- After the test, each battery receives an individual rating (in a 5-grade scale), and a light indicator flashes; the results are saved automatically.
- Computer control; data processing.
- Output voltage: max. DC 230 V



- Output current: discharge current DC 0.8-80.0 A, continuously adjustable.
- Single battery voltage accuracy:  $12\text{ V} \pm 0.2\%$ ,  $\leq \pm .02\text{ VDC}$ , up to two decimals.
- Current accuracy:  $\pm 1\%$ , up to two decimals.
- Capacitance measuring settings (time or voltage): 5 ratings (A, B, C, D, NG), freely adjustable.
  - Voltage measurement:
    - A:  $\geq \text{XX.XXV}$
    - B:  $\text{XX.XXV} \sim \text{XX.XXV}$
    - C:  $\text{XX.XXV} \sim \text{XX.XXV}$
    - D:  $\text{XX.XXV} \sim \text{XX.XXV}$
    - NG:  $\leq \text{XX.XXV}$
  - Time measurement:
    - A:  $\geq \text{XXH XXM XXS}$
    - B:  $\text{XXH XXM XXS} \sim \text{XXH XXM XXS}$
    - C:  $\text{XXH XXM XXS} \sim \text{XXH XXM XXS}$
    - D:  $\text{XXH XXM XXS} \sim \text{XXH XXM XXS}$
    - NG:  $< \text{XXH XXM XXS}$

## Data processing

- There are 5 independent light indicators showing each battery's rating.
- Before starting the discharge process, each battery should undergo an open-circuit voltage check (voltage is adjustable); if anomalies are detected, the light indicator will flash. During the test, the battery's voltage will be measured every 4 seconds; when the time is up, the machine will stop. 16 light indicators show each battery's grade, and the results will be stored in the PC.
- Data display and report:
  - Each battery's OV value, log, final CV value and grade.
  - Text files can be provided for further processing.



## Test table

- 2 levels, each of which can fit up to 16 12 V/12 Ah batteries; each battery has its own charging clip.
- Each of the levels can be selected independently for testing.
- Once the test has been completed, the light indicators will still show each battery's rating, and can be reset pressing the push-button switch in order to continue the test at the next level.

## Control mode

- Directly set up, controlled and graded from the machine itself.
- From an external computer, using the network functions.

## Spare parts

- Fuses of every type used in this machine (×100%)

## Power source

- AC 3Ø 220V/380V 50HZ (a different source can be used if requested)



## MICROCOMPUTER CONTROLLED BATTERY PRODUCT INSPECTION MACHINE

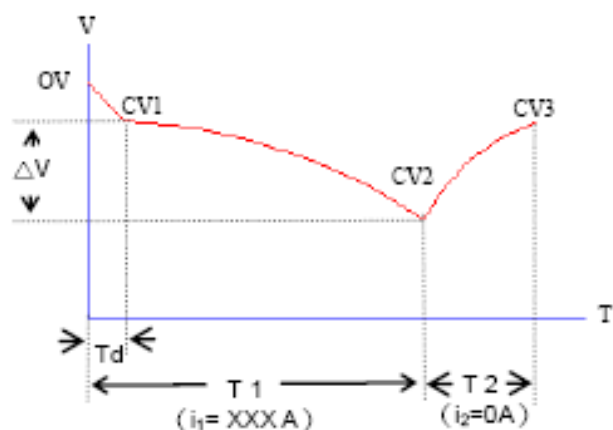
Model: BHRD-300RDS (AM)

### Functions

- Manual feeding; automatic transmission; positioning; testing.
- Automatic rejection of inferior products.
- Statistical data control (provides detailed information for quality control at each processing station, allowing to improve the overall quality).
- Printing of hard copies, including OV, CV<sub>1</sub>, CV<sub>2</sub>, ΔV, and CV<sub>3</sub>, statistical analysis data.
- The test values of OV, CV<sub>1</sub>, CV<sub>2</sub>, ΔV and CV<sub>3</sub> can be provided in a Microsoft EXCEL compatible format (15 m cable for RS232/PC is attached).
- The test values can be printed directly or saved in a PC to print them later.
- The internal resistance test data can be saved.
- The internal resistance and discharge test data is and saved for each battery separately, along with the OV, CV<sub>1</sub>, CV<sub>2</sub>, ΔV, CV<sub>3</sub> and CV3 values.
- Qualified product will be automatically encoded.

### Inspection items

- Order: introduction→ internal resistance test→ discharge test→ encoding (OK)→ delivery
- Internal resistance test, high level/low level MΩ value setting
- Reverse polarity: open voltage test (OV)
- Discharge test (ΔV, CV<sub>2</sub>)
- Voltage recovery is tested with a large discharge current



Discharge Curve

### Accessories

- One set of testing tools (12 V, 7 Ah or custom) together with the machine



- Type fonts:
  - Numbers: 0-9 × 5 sets
  - English alphabet: A-Z × 2 sets
  - Space: 8 pieces
- Spare electrical heaters × 2 pieces

### Test speed

- Test speed: approx. 260-300 pcs/h (according to testing time for each test)

### Air/power consumption

- Machine specification: 4-42 Ah (6 V/8 V/12 V/24 V sealed lead-acid batteries)
- Power source: AC 3 Ø, 220 V, 50/60 Hz
- Air pressure: 5 kgf/cm<sup>3</sup> (for machine bench, supplied by customer)

