



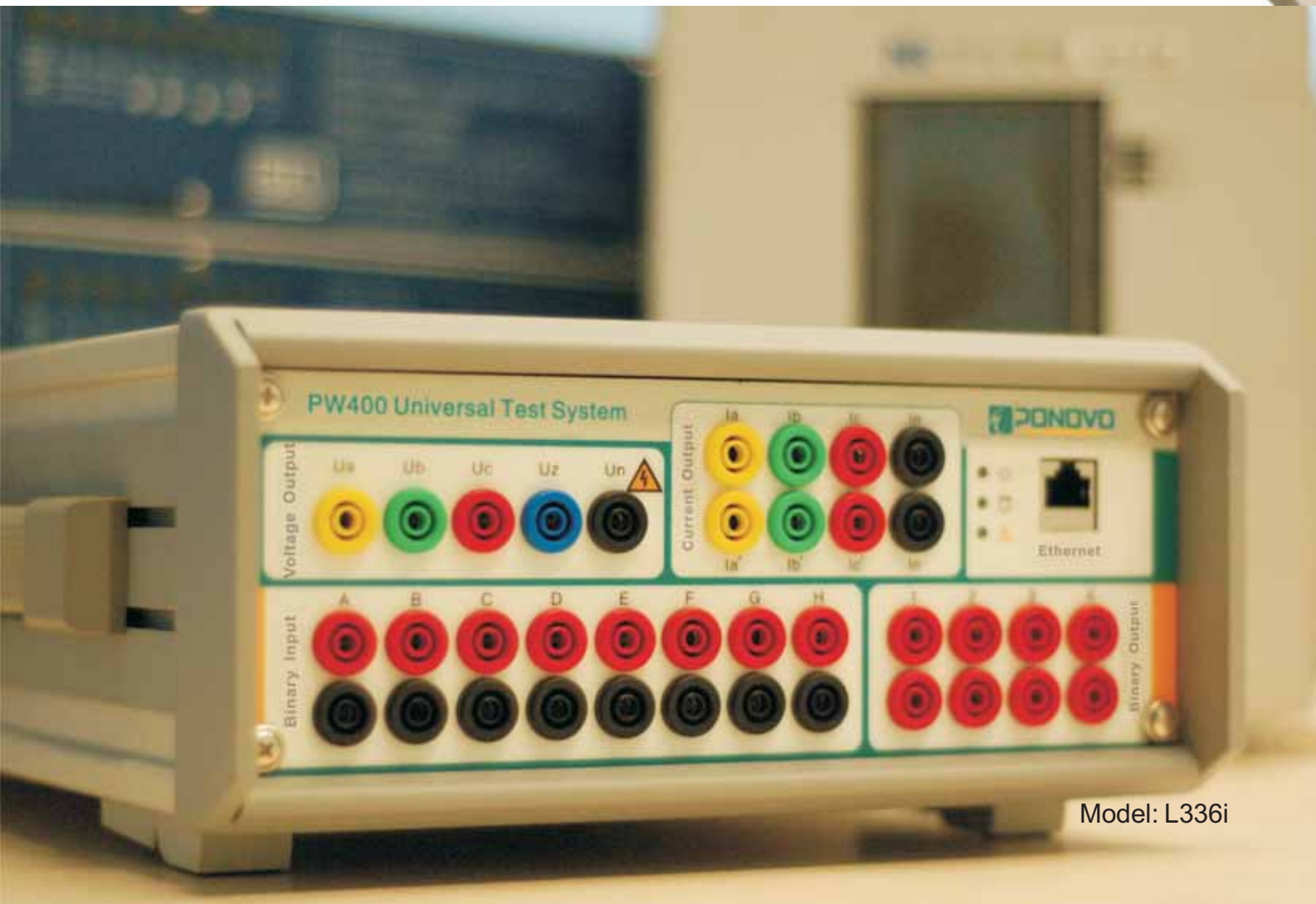
Pw400 Universal Test System

Model: L336i-2



Professional solutions provider for relay testing

www.ponovo.com.cn



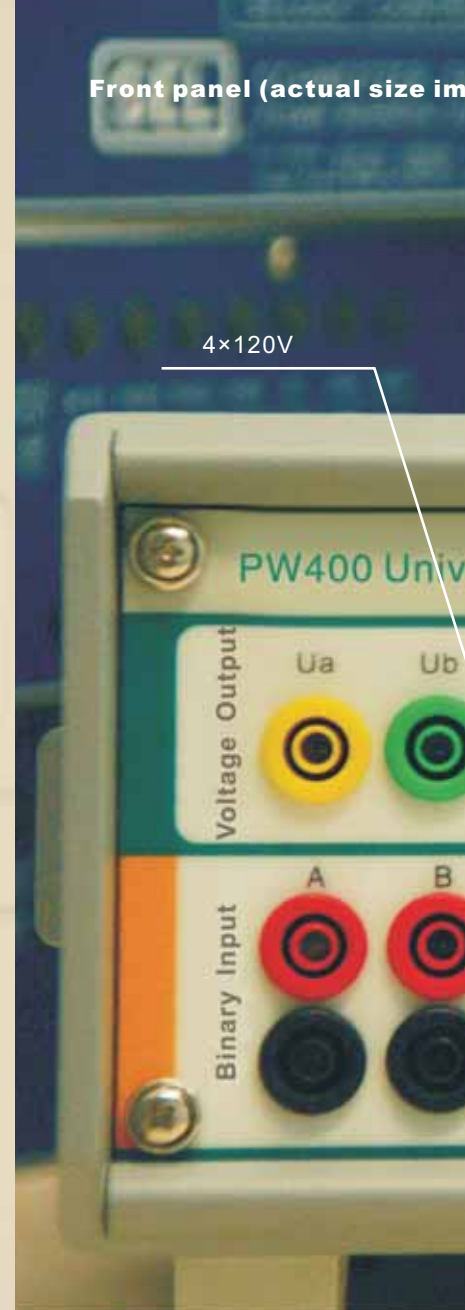
Model: L336i

New light weight relay testing equipment

We are proud to announce the new L336i relay testing system which is the lightest in weight and the smallest in size in the word so far.

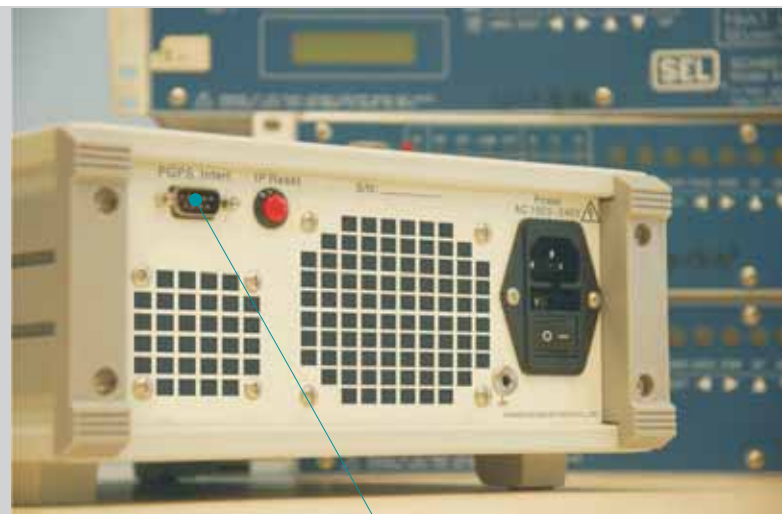
Features

- Light weight with only 8.8kg, half of the weight of traditional testing system
- Tracing the signal generation with digital technology
- Stable signal output with high accuracy
- Binary inputs with adjustable threshold
- Use LAN port for connecting to external PC
- Internal digital recorder for monitoring and recording test process
- Use powerful PowerTest software with ready test modules, realizing the maximum control flexibility over test process
- Can be upgraded to support the test of IEC61850 compatible relay



Applications

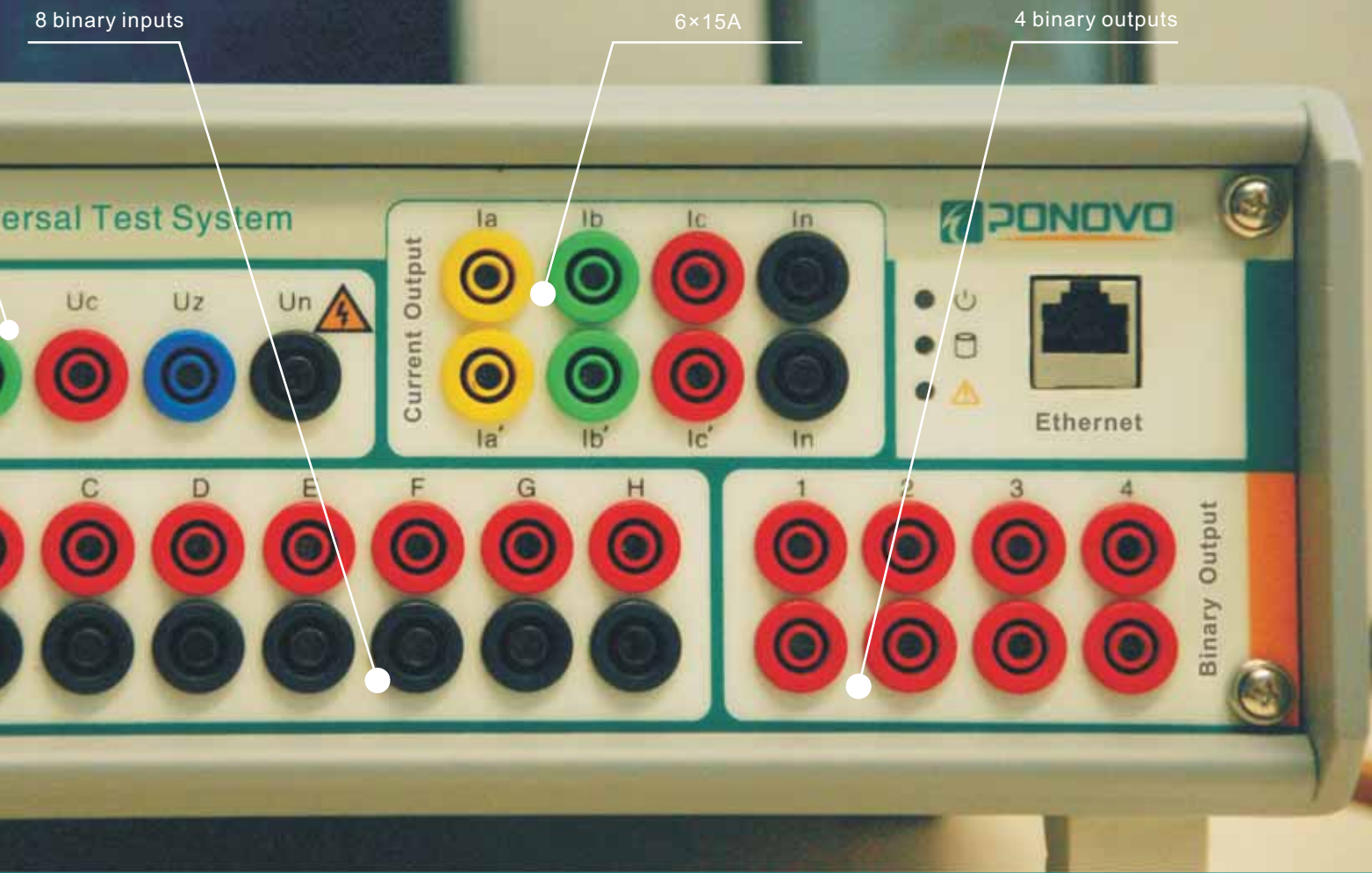
- **Relay test:** line protection, differential protection, generator protection, line differential, directional relay Time-inversed current relay, auto-reclosing, etc
- **Measuring and control device:** synchronizer , df/dt, etc
- **System simulation:** playback of COMTRADE format file
- **Calibration:** 0.5 Class energy meter, disturbance recorder, indicating meters, etc



Rear side

Connecting GPS or IRIG-B







Test modules example

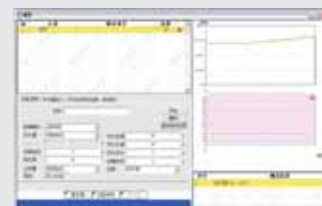
Quick Test

Manual or auto control over all voltage and current sources. All test parameters, such as amplitude, phase, frequency, etc can be set separately.



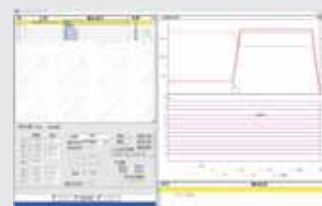
Ramp

Linear or pulse ramp can be used for different test applications, such as directional relay, current relay, voltage relay, frequency, etc.



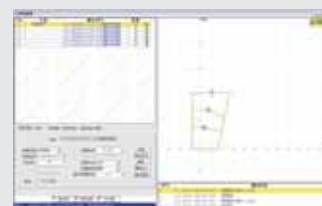
State sequence

Here we can a sequence of states for special test application. A fault calculation tool is provided to set fault settings easily for each sequence.



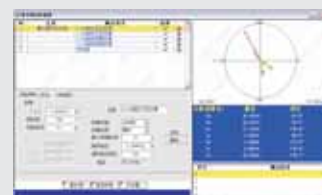
Distance

The impedance characteristic can be uploaded on to the Z-plane and any points on Z-plane can be checked. Z-T diagram can also be got after test is over.



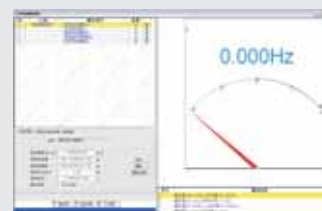
Auto-recloser

This module makes the check of autoreclosure very easy. The tripping after the second fault can also be checked.



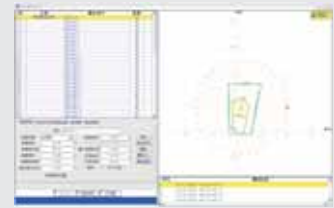
Underfrequency

Different tests can be done for df/dt relay, including pick up , trip time, df/dt setting, under-voltage or under-current blocking.



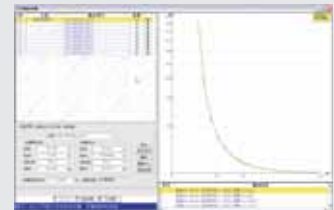
R/X characteristic sweep

This module is used to map out the characteristic boundary of impedance relay and compare it with the principle characteristic.



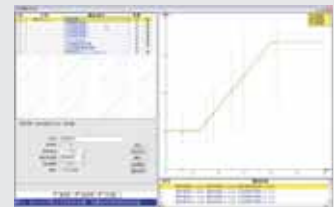
Inverse time overcurrent

Test can be done based on actual over current characteristic. Assessment will be done automatically after test is over.



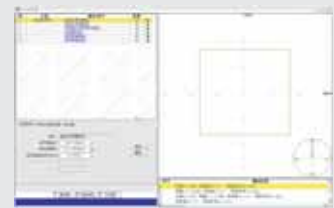
Differential

This module allows user to test differential relay with 6 currents. Ir/I_d curve can be defined easily based on relay setting. Harmonic restraint can also be checked.



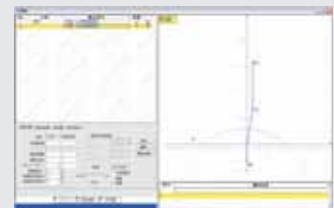
Synchronizer

This module is used to check the synchronizer relay, including voltage and frequency difference check, leading time and leading angle check, auto-adjusting function, etc.



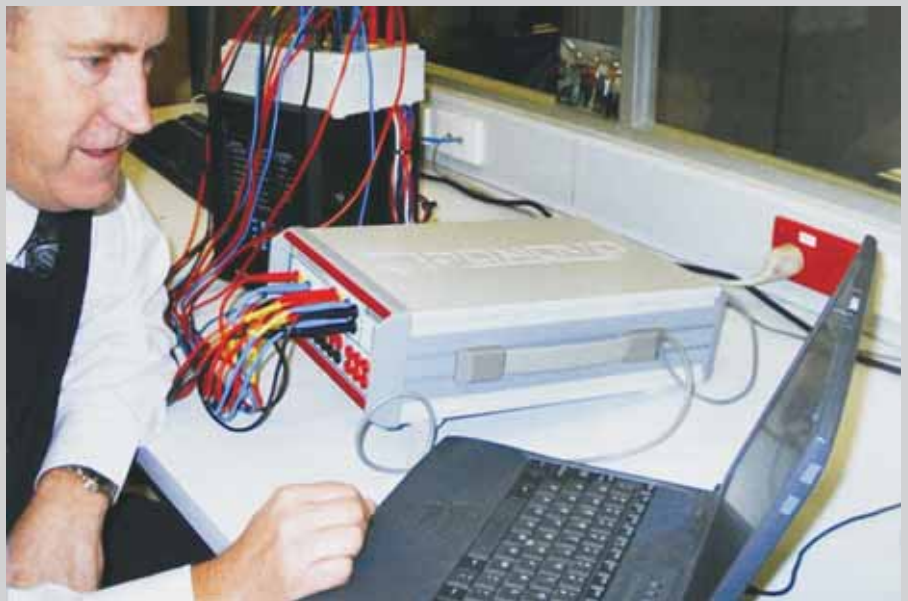
Power swing

This module provides the tool to observe the relay behavior during dynamic power swing process. Power swing with fault can also be simulated.



Test of IEC61850 compatible relay (optional)

Relay test equipment supplies analog voltage/current signal to relay and the GOOSE message from relay is received and interpreted by relay test equipment.

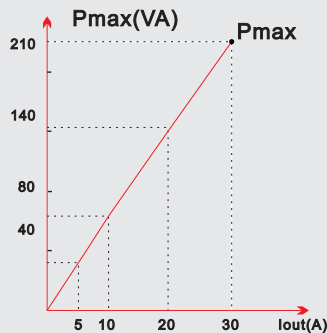


Technical specifications

AC Current outputs

Control	Independent control of amplitude, frequency and phase angle
Range	6×15A or 3×30A
Accuracy	± 1mA (<0.5A), ±0.1% (0.5A~20A) ± 0.2% (20A~30A)
Resolution	1mA (0.1A~10A), 10mA (10A~30A)
Output power	≥ 210VA (at 30A, LN) ≥ 105VA (at 15A, LN)

Output characteristic

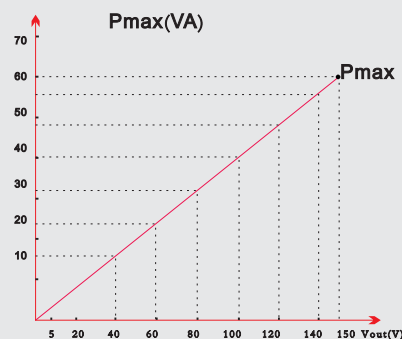


Output response time	<100μs
Distortion (THD%)	≤ 0.5% (0.5A~Imax)
Frequency range	10Hz ~1kHz
Frequency- Amplitude characteristic	≤ ± 0.1%~± 0.5% (10Hz~1kHz)
Output time	continuous (<10A/channel) >70s (<10~20A/channel) >15s (<20~30A/channel)
Operation indication	Overload, distortion, open circuit, over heat

AC Voltage outputs

Control	Independent control of amplitude, frequency and phase angle
Fourth voltage (Uz)	Can be set as zero sequence voltage, line voltage, or any value
Range	4×150V
Accuracy	± 2mV(0.2V~2.5V), ± 0.1%(2.5V ~150V)
Resolution	1mV(0.2V~10V), 10mV(10V~150V)
Output power	≥ 60VA (at 150V)

Output characteristic



Output response time	<100μs
Distortion (THD%)	≤ 0.5% (2V~150V)
Frequency range	10Hz ~1kHz
Frequency- Amplitude characteristic	≤ ± 0.1%~± 0.5% (10Hz~1kHz)
Output time	Continuous at rated output condition
Operation indication	Overload, distortion, short circuit, over heat

Frequency

Sine signal	10Hz~1000Hz
Accuracy	<1mHz (20 Hz ~65Hz) <10mHz (65 Hz ~450Hz) <20mHz (450 Hz ~1000Hz)
Resolution	0.001Hz
Output characteristic	Can simulate 2 nd -20 th harmonic or DC

Phase angle

Range	-360°~+360°
Accuracy	± 0.1°
Resolution	0.001°

DC current outputs

Range	3×0A~10A
Accuracy	± 5mA (0.2A~1A) ± 0.5% (1A~10A)
Resolution	1mA (0.2A~10A)
Output power	300W (30A 10V)
Operation indication	Overload, distortion, open circuit, over heat

Synchronization time between current and voltage outputs ≤ 10 μs

Binary inputs

Number	8
Characteristic	0-250Vdc threshold or potential free
Sample rate	10 kHz
Time resolution	100 μs
Max. measuring time	1.5×10 ⁵ s
Time measuring error	± 1.0 ms (0.001s~1.0 s) ± 0.1%(1.0 s ~1.5×10 ⁵ s)
Debounce/Deglitch time	0~25ms
GaValnic isolation	Independent isolation for 8 binary inputs
Threshold impedance(potential free mode)	3 kΩ~5 kΩ

Binary output

Number	4
Characteristic	Potential free relay contact (auto detection)
Break capacity ac	Vmax : 250V(AC)/Imax : 0.5A
Break capacity dc	Vmax : 250V(DC)/Imax : 0.5A

Communication port

Type	LAN, 10/100Base-TX (10/100Mbit)
LAN cable	category 5 twisted-pair
GPS port	Can be connected to optional PGPS02 GPS synchronizatio device or PIRIG-B01 device

Power Supply

Input	110-240Vac
Frequency	40-60Hz
Max. current	10A

Others

Casing	Anti EMC/EMI aluminum casing
Dimension(WXHXD)	256 mm×110 mm×395mm(W×H×D)
Weight	8.8 kg



➤ Sales network



PONOVO POWER CO., LTD.

2F,4Cell, Tower C, In.Do Mansion,
No.48A Zhichun Road, Haidian District
Beijing, PR China (100098)
Tel. +86 (10) 8275 5151 (reception)
Tel. +86 (10) 8275 5151ext.8887
Fax. +86 (10) 8275 5151-8103
info@ponovo.com.cn
www.ponovo.com.cn

