

**NEW**

**BEL**  
BEL JAPAN, INC.

**Water amount analyzer to Solid electrolyte membrane  
for fuel cell evaluation**

***MSB-AD-V-FC***

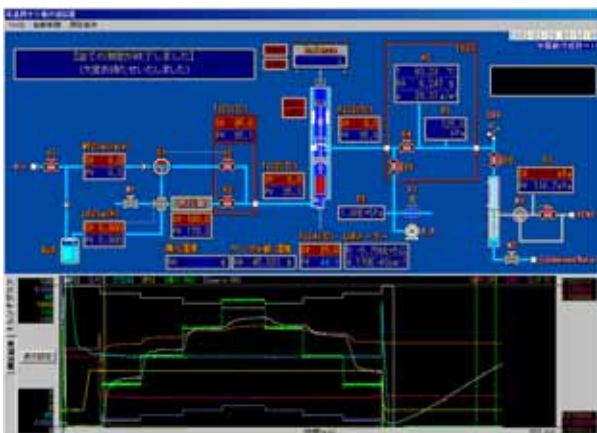


**Simultaneous measurement of  
water adsorption and impedance!**

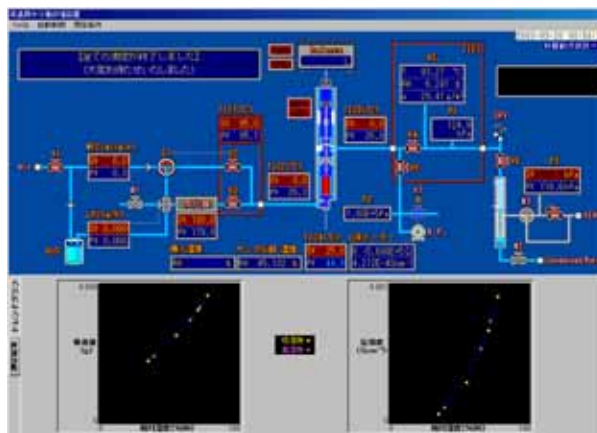
- **Water adsorption amount on high functional membrane can be investigated in a wide range of conditions.**
  - **Pressure setting range: 1 bar ~ 10 bar**
  - Temperature setting range: 80 ~ 200°C**
  - Humidity variability: 5% ~ 95%RH**
  - (These ranges may not apply depending on measurement condition)
  
- **Impedance and conductivity of high functional membrane can be measured.**
  - **Alternating current frequency can be step-changed from 1 mHz to 100 kHz.**
  - (This range varies depending on alternating current impedance measuring instrument)

## ■ Software screen ■

### ◇ Trend graph ◇



### ◇ Measurement result ◇



## ■ Specification ■

### ■ Water amount analyzer to Solid electrolyte membrane for fuel cell evaluation

Adsorption measuring method	Gravimetric method
Impedance measurement method	Alternating current impedance measurement (4 terminal method)
Measurement temp. range	80 ~ 200 °C
Air-circulation bath temp. range	80 ~ 180 °C
Measurement pressure range	Atmospheric pressure ~ 10 bar
Measurement humidity range	5 ~ 95%RH (only in range of 80 ~ 180 °C)
Pretreatment method	Vacuum pretreatment or flow pretreatment
Gas contacting part material	SUS, Teflon, Vespel, gold, brass, Viton, polyimide
Gas	Dry air, N <sub>2</sub>
Control system	Personal computer (Windows 98), 17" display
Measurement program	Adsorption measurement software, Impedance measurement software

### ■ Water adsorption measurement

Magnetic suspension balance	2-Position MSB (Rubotherm GmbH)
No. of sample	1
Sample amount	Max. 15 g (incl. sample holder)
Gravimetry resolution	10 μg
Gravimetry reproducibility	+/- 20 μg (STD) *1)

### ■ Impedance measurement

Alternating current impedance measuring instrument	Solatron instrument (1mHz ~ 20kHz) or Agilent Technology instrument (100Hz ~ 100kHz) are used.
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### ■ Utility

CPU with display	
Oil circulation bath (Julabo HD-4)	
Water circulation bath (Julabo FE-500)	

### ■ Power

Main unit	Single phase AC200V / 30A *2)
Oil circulation bath	Single phase AC100V / 10A
Water circulation bath	Single phase AC200V / 2.5A *2)

### ■ Gas and other utility

Dry air	Max. pressure: 12bar, Joint 1/4"SWL
Pneumatic valve driving air	Pressure: 5~6bar, Joint 1/4" SWL
VENT	Joint 1/4" SWL
Balance cooling water	200 ml/min and above Cooling tube (Joint 6 mm SWL)

### ■ System structure and dimension [space required : approx. 2.5 m<sup>2</sup>]

Main unit	W800 x H1440 x D700
Balance stand	W500 x H1400 x D500
Vacuum pump	W170 x H488 x D250

\*1) reproducibility indicated is of the balance only, and This does not include error caused by environmental vibration, buoyancy fluctuation and fluid convection.

\*2) It is recommended to use ground voltage 100V for single phase AC200V.



## BEL Japan, Inc.

Head Office 1-9-1, Haradanaka, Toyonaka-shi,  
Osaka 561-0807 JAPAN  
TEL +81-(0)6-6889-3611  
FAX +81-(0)6-6889-3613  
E-mail international@nippon-bel.co.jp  
URL <http://www.nippon-bel.co.jp>