

# Near Infrared Grain Tester AN-900

Ver.1.08



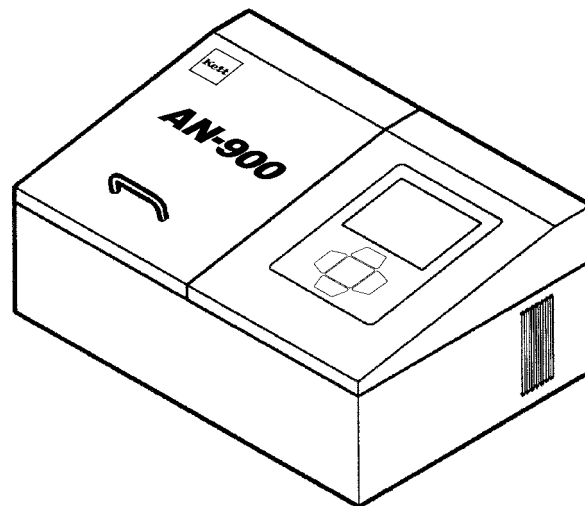
## Operating Manual



# Contents

1. Features .....	4
2. Main unit & Parts names .....	5
3. Specifications .....	7
4. Keypad (Explanation) .....	8
5. Preparation.....	9
5-1 . Power ON .....	9
5-2 . Calibration Selection.....	10
6. Measuring Procedure .....	11
6-1 . Measurement.....	11
6-2 . Average Display .....	14
6-3-1. Setup the Display Conditions .....	15
6-3-2. Setup the Indication Range .....	16
(1) Protein CM Display .....	17
6-4 . Bias Adjustment.....	17
(1) Manual adjustment mode .....	18
(2) Automatic adjustment mode.....	20
7. Time settings .....	23
8. Communication .....	24
9. Cleaning .....	25
<Appendix> Guidelines for using AN-900 with maximum accuracy .....	26

# 1. Features

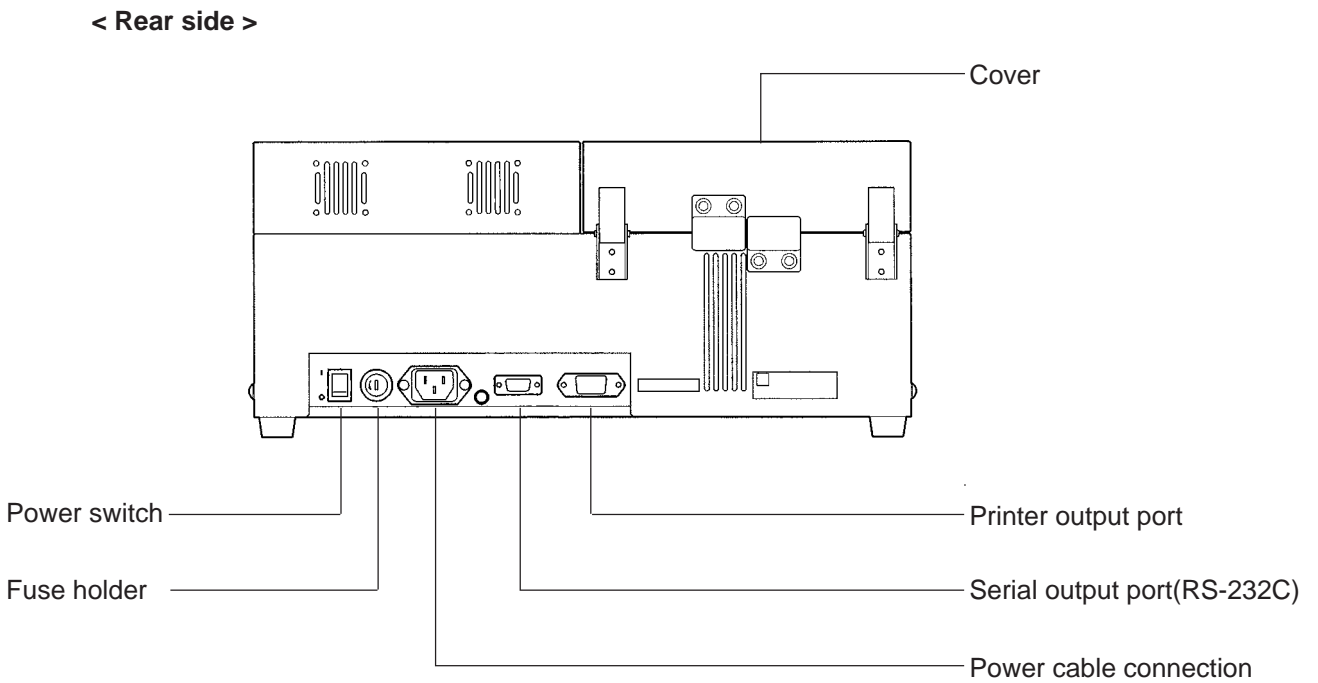
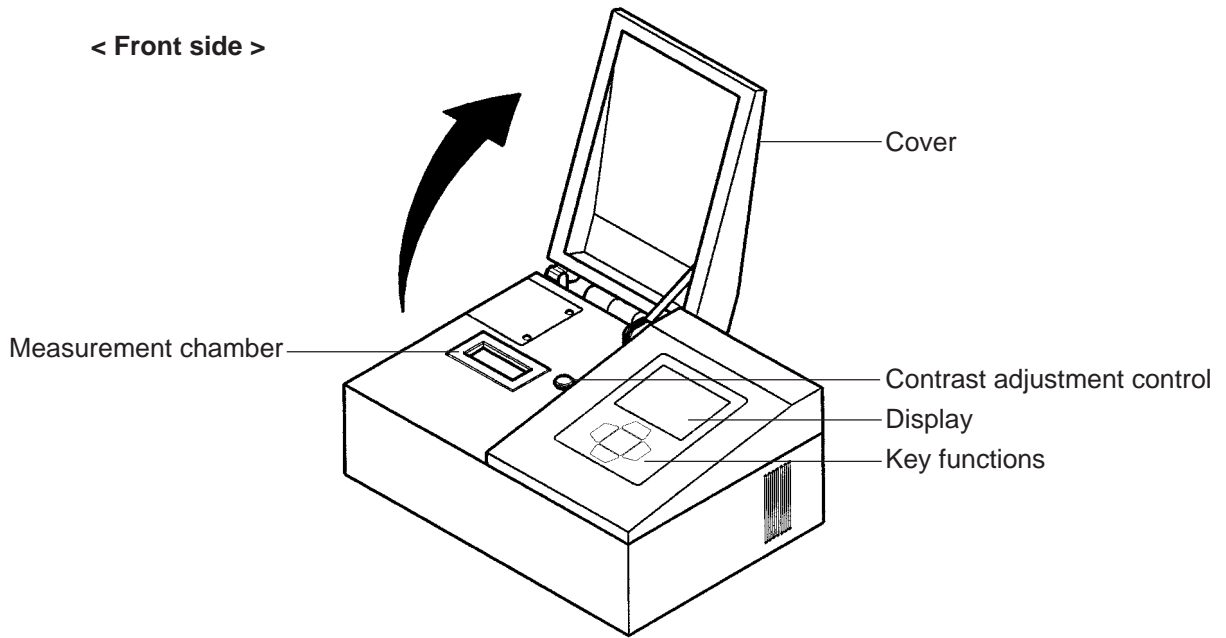


The Model AN-900 composition analyzer is a compact-size grain tester (Transmittance type) that utilizes applied near-infrared rice analysis technology.

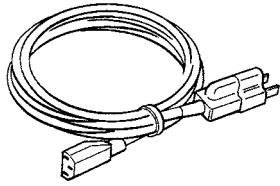
It employs total-grain measurement formulas for measuring without crushing the sample grain to pieces, so it makes it possible to analyze grain quickly and easily.

By utilizing halogen lamp, grating system and NMOS photo-diode array detector, and the result is that we are able to achieve high stability.

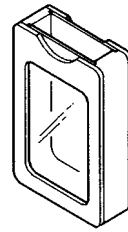
## 2. Main unit & Parts names



# [ Accessories ]



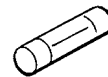
Power cable



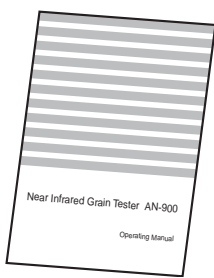
Sample case



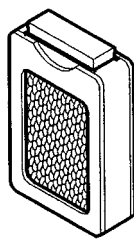
Sampling cup



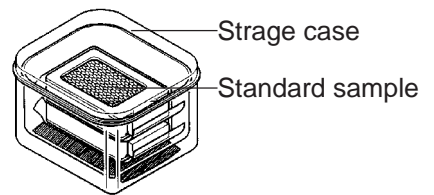
Fuse



Operating manual



Standard samples



Storage case for standard sample

### 3. Specifications

Measurement Method	:	Near Infrared Transmittance
Light Source	:	Halogen Lamp (lamp life 2000hrs)
Applications	:	Wheat
Constituents	:	Protein, Moisture
Sample Volume	:	Approx. 60mL
Calibration Memory	:	4 constituents × 8 channels
Measurement Time	:	Approx. 40 sec
Operating Environment	:	10~35°C (Non-condensation)
Display Format	:	320 × 240 dot-matrix large-size LCD
Displays Content	:	Calibration settings / names, Protein, Moisture
Power Source	:	AC100V~240V (50/60Hz)
Dimensions	:	435(W) × 315(D) × 195(H)mm
Weight	:	11.5kg
Accessories	:	Power cable 1pc Sample case 1pc Sampling cup 1pc Fuse 1pc Operation manual 1pc Standard samples Storage case for standard sample 1pc
Option	:	Printer model VZ-330 (100V/220V)

**Note :** AN-900 should be used below 35°C in environment condition. If the environment temperature is over 50°C, the precision spectroscope would be damaged. And The AN-900 should be also stored below 50°C environment condition.

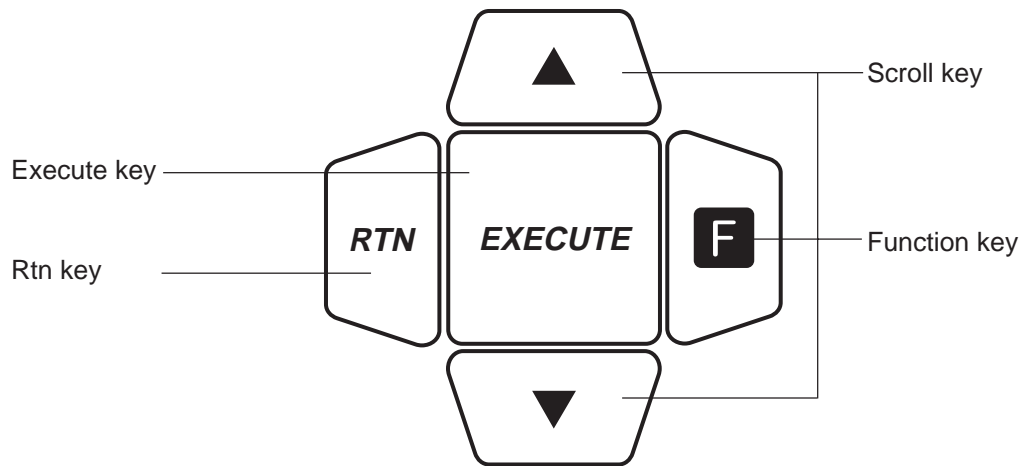
**Note :** Pre-calibration with recommended conditions are as below.

Display range	Protein	:	7	~	15%
	Moisture	:	7	~	18%

Recommended conditions : 15~30°C (Non-condensation)

**Note :** A backup battery has been built to this unit so that even if the electricity is cut-off, the calibration in memory will not be lost. Please contact the service desk of our company regarding an replace of backup battery.

## 4. Keypad Explanation

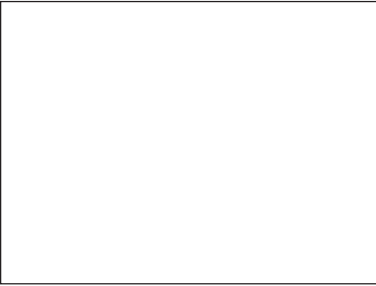
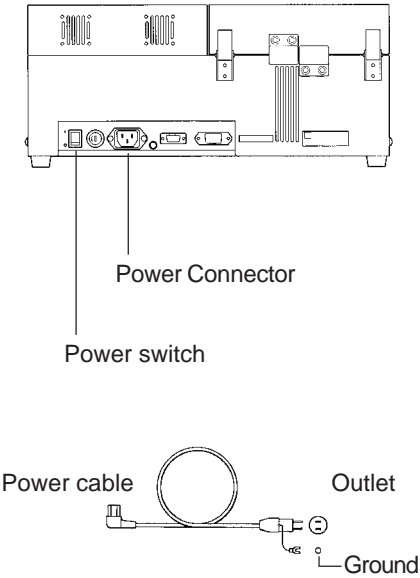

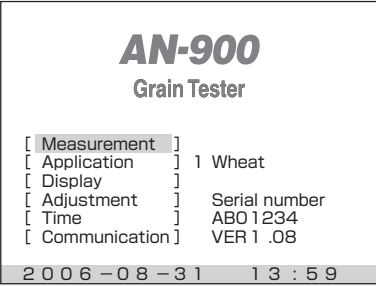




- Execute key : Press this key when you begin measuring or you want to execute or confirm a selected item.
- Rtn key : Press this key when you want to return to a previous screen or when you want to invalidate a selected item.
- Scroll key : Press this key when you are selecting an item at the top of the screen or when you want to increase or decrease a numerical value.
- Function key : Press this key when you will use a function that was specially set-up at the top of the screen.



# 5. Preparation



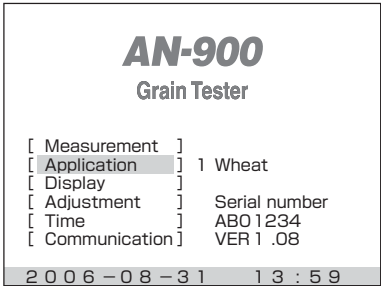


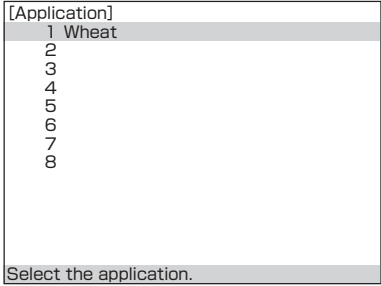


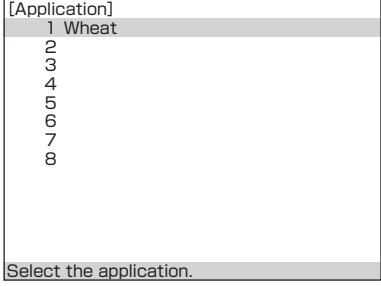


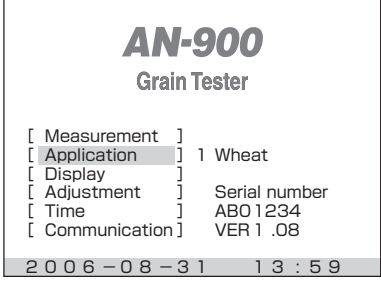
## 5-1. Power On

Operation	Display	Explanation
<p>1. Plug the power cable into this unit and connect it to outlet.</p>		 <p>Power Connector</p> <p>Power switch</p> <p>Power cable</p> <p>Outlet</p> <p>Ground</p>
<p>2. Turn the power switch "ON", which is located rear side.</p> <p> Initial screen will be displayed.</p>	 <p><b>AN-900</b> Grain Tester</p> <p>[ Measurement ] [ Application ] 1 Wheat [ Display ] [ Adjustment ] Serial number [ Time ] ABO 1234 [ Communication ] VER 1.08</p> <p>2006-08-31 13:59</p>	 <p>ON</p> <p>[   ] means, turn [ON]</p>  <p>OFF</p> <p>[ O ] means, turn [OFF]</p> <p>In case that the screen isn't showing or is hard too see, adjust the "Contrast set dial" on the bottom of unit by turning it until thr screen is easy to see.</p>

**Note :** Approximately one hour before operation, turn the power "On", and begin warming up the device.

## 5-2. Calibration Selection



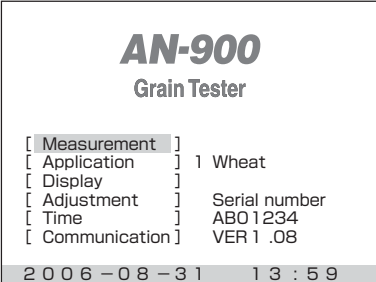

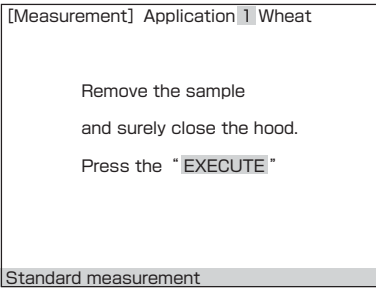

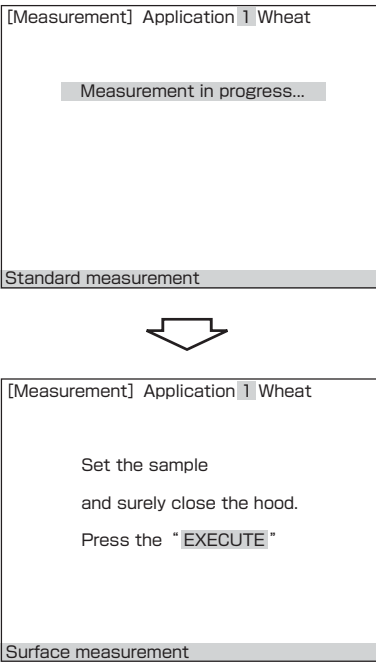
With near-infrared composition analyzers similar to this unit, you prepare each pre-calibration and then analysis compositions. AN-900 has an eight channel capacities and pre-calibrations is done by our company. Before starting analysis, please select a proper calibration according to the grain you want to measure.


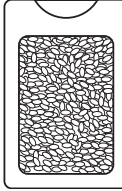
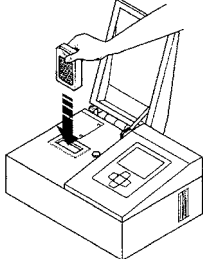

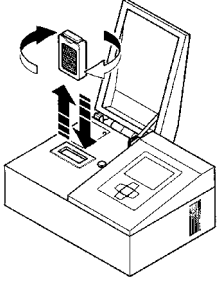


Operation	Display	Explanation
<p>1. By using   keys, select the "Calibration" setting.</p>	 <p>The display shows the AN-900 Grain Tester main menu with the following options: [ Measurement ], [ Application ] 1 Wheat, [ Display ], [ Adjustment ] Serial number, [ Time ] ABO 1234, [ Communication ] VER 1 .08. At the bottom, the date and time are shown as 2006-08-31 13:59.</p>	
<p>2. Press the  key.   The list of pre-calibration is displayed.</p>	 <p>The display shows a list of applications under the heading [Application]. The list includes: 1 Wheat, 2, 3, 4, 5, 6, 7, 8. At the bottom, it says 'Select the application.'</p>	<p>The existing, selected Calibration is displayed.</p>
<p>3. Select a calibration by using   keys.</p>	 <p>The display shows the same application selection list as in step 2, with '1 Wheat' highlighted.</p>	
<p>4. Press the  key.   Calibration will be selected and back to initial screen.</p>	 <p>The display returns to the AN-900 Grain Tester main menu, identical to the first step, with '1 Wheat' selected under the [ Application ] option.</p>	

**Note :** A backup battery has been built to this unit so that even if the electricity is cut-off, the calibration in memory will not be lost. Please contact the service desk of our company regarding an replace of backup battery.

# 6. Measuring Procedure

## 6-1. Measuring

Operation	Display	Explanation
1. By using   keys, select the "Measurement" setting.	 <p style="text-align: center;"><b>AN-900</b> Grain Tester</p> <pre> [ Measurement ] [ Application ] 1 Wheat [ Display      ] [ Adjustment  ] Serial number [ Time        ] ABO1234 [ Communication] VER 1 .08           </pre> <p style="text-align: center;">2 0 0 6 - 0 8 - 3 1    1 3 : 5 9</p>	
2. Press the  key.	 <pre> [Measurement] Application 1 Wheat           </pre> <p style="text-align: center;">Remove the sample and surely close the hood. Press the "EXECUTE"</p> <p style="text-align: center;">Standard measurement</p>	
3. After making sure that cover is closed completely, and press the  key.	 <pre> [Measurement] Application 1 Wheat           </pre> <p style="text-align: center;">Measurement in progress...</p> <p style="text-align: center;">Standard measurement</p> <p style="text-align: center;">↓</p> <pre> [Measurement] Application 1 Wheat           </pre> <p style="text-align: center;">Set the sample and surely close the hood. Press the "EXECUTE"</p> <p style="text-align: center;">Surface measurement</p>	Never open the cover during Measurement.

Operation	Display	Explanation												
<p>4. Set the sample case and close the cover, and press the  key. The screen display will show "Surface Meaasurement" but it doesn't matter which side you measure first.</p>	<div style="border: 1px solid black; padding: 5px;"> <p>[Measurement] Application 1   Wheat</p> <p style="text-align: center;">Measurement in progress...</p> <p style="text-align: right;">Surface measurement</p> </div> <p style="text-align: center;">↓</p> <div style="border: 1px solid black; padding: 5px;"> <p>[Measurement] Application 1   Wheat</p> <p style="text-align: center;">Turn over the sample and surely close the hood. Press the "EXECUTE"</p> <p style="text-align: right;">The reverse measurement</p> </div>	<div style="border: 1px solid black; padding: 5px;">  </div> <p>Pouring the sample into the sample case. Strongly tap the bottom of the sample case approx. 10 times in order to make the sample settle firmly. Add additional sample, if there is empty space at the top.</p> <div style="border: 1px solid black; padding: 5px;">  </div> <p>Never open the cover during Measurement.</p>												
<p>5. Take the sample case and turn over it. And set the sample case and close the cover, and press the  key again.</p>	<div style="border: 1px solid black; padding: 5px;"> <p>[Measurement] Application 1   Wheat</p> <p style="text-align: center;">Measurement in progress...</p> <p style="text-align: right;">The reverse measurement</p> </div> <p style="text-align: center;">↓</p> <div style="border: 1px solid black; padding: 5px;"> <p>[Measurement] Application 1   Wheat</p> <p style="text-align: center;">Number of measurement times = 1</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>Protein</td> <td></td> <td style="text-align: right;">6 . 0 %</td> </tr> <tr> <td>Protein CM @ 15.0</td> <td></td> <td style="text-align: right;">5 . 9 %</td> </tr> <tr> <td>Protein DM</td> <td></td> <td style="text-align: right;">7 . 0 %</td> </tr> <tr> <td>Moisture</td> <td style="text-align: right;">1 4 . 0</td> <td style="text-align: right;">%</td> </tr> </table> <p style="text-align: right;">Display the average.</p> </div>	Protein		6 . 0 %	Protein CM @ 15.0		5 . 9 %	Protein DM		7 . 0 %	Moisture	1 4 . 0	%	<div style="border: 1px solid black; padding: 5px;">  </div> <p>Never open the cover during Measurement.</p> <p>Remove the sample case after measuring compositions.</p> <p>Press the  key, if you want to measure next sample continuously.</p> <p>If press the  key, initial screen will be displayed.</p>
Protein		6 . 0 %												
Protein CM @ 15.0		5 . 9 %												
Protein DM		7 . 0 %												
Moisture	1 4 . 0	%												

**Note :** During and /or measurement, there are times when the following messages will be displayed. In whichever case except Error 09, press  key, and redo the measurement from the very beginning.

Error 01 :  
Start over the measurement  
again.

This message appears when a prescribed operation hasn't occurred within 20 seconds after the operation function has come up at the top of the screen. (When you don't perform a function for 10 seconds, a buzzer will sound. In addition, not doing anything for 10 seconds will cause this message to be displayed and the measurement will be halted.)

Error 02 :  
Filter wheel wrong.

This message appears when light is leaking from the chamber during measurement.

Error 03 :  
(04)  
Sample too bright.  
(dark)

This message appears when the penetration rate of light from the sample is either greater or less than the permissible range.

Error 05 :  
(06)  
Instrument temp. too high.  
(low)

This message appears when the temperature of the operating environment is either higher or lower than the permissible range.

Error 07 :  
(08)  
Sample temp. too high.  
(low)

This message appears when the temperature of the sample is either higher or lower than the permissible range.

Error 09 :  
Instrument temp. too high.  
Cool the instrument down  
to ambient temp.

This message appears when the temperature in Spectrophotometer is over 45°C and the power is forcibly turned off. In this case, the instrument should be cooled down by leaving it under airy place until it reached to the ambient temperature. The power should be on after confirming that the instrument temperature is cooled down to the ambient temperature.

[Measurement] Application 1   Wheat			
Number of measurement times = 1			
Protein		++ . +	%
Protein CM @ 15.0		** . *	%
Protein DM		* * . *	%
Moisture		1 1 . 9	%
F   Display the average.			

++ . + : Over the upper limited of Display range.

-- . - : Under the lower limited of Display range.






\*\* : When the calculation is not available.

**Note :** AN-900 utilizes a transmittance measurement method, empty space in the sample cases will lead to measurement errors. It is important into the sample case firmly in such a way that there are no empty spaces.



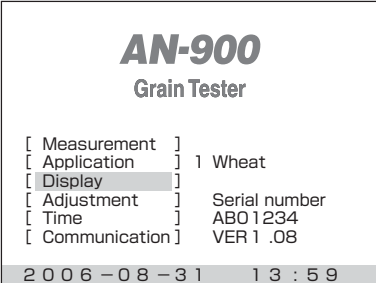



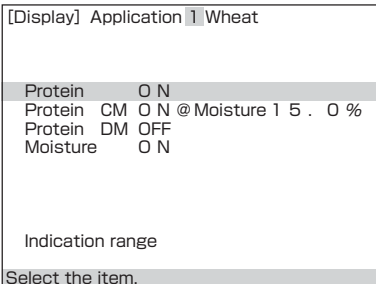



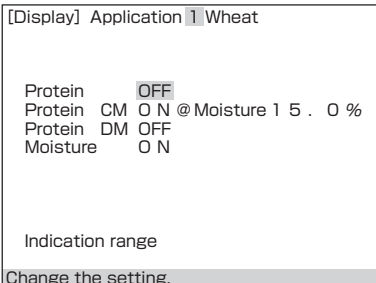

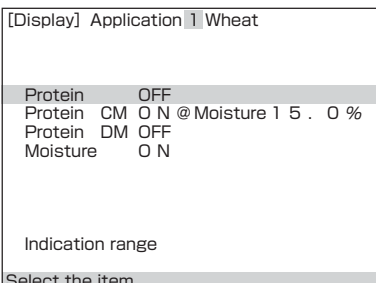





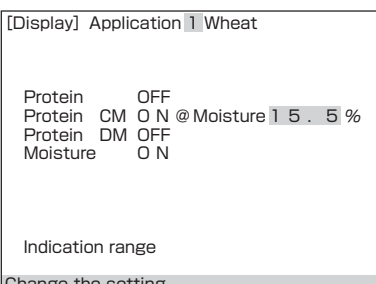



**Note :** A temperature sensing element is inserted into an opening in the bottom of the sample case in order to measure the temperature of the sample and perform temperature compensation. However, in order to obtain the most precise measurement results, it is best if different temperature between the sample and the environment in which the unit is installed are kept to a minimum.

**Note :** AN-900 should be used below 35°C in environment condition in order to equip precision spectroscopy which would be damaged in high environment condition.











## 6-2. Average Display

Operation	Display	Explanation																												
1. When performing repeated measurements the number of times measured increase. (1~9)	<table border="1"> <tr> <td colspan="4">[Measurement] Application 1   Wheat</td> </tr> <tr> <td colspan="4">Number of measurement times = 1</td> </tr> <tr> <td>Protein</td> <td></td> <td>6 . 3</td> <td>%</td> </tr> <tr> <td>Protein CM @ 15.0</td> <td></td> <td>6 . 3</td> <td>%</td> </tr> <tr> <td>Protein DM</td> <td></td> <td>7 . 3</td> <td>%</td> </tr> <tr> <td>Moisture</td> <td></td> <td>1 4 . 2</td> <td>%</td> </tr> <tr> <td colspan="4">F   Display the average.</td> </tr> </table>	[Measurement] Application 1   Wheat				Number of measurement times = 1				Protein		6 . 3	%	Protein CM @ 15.0		6 . 3	%	Protein DM		7 . 3	%	Moisture		1 4 . 2	%	F   Display the average.				Following the 9th measurement, the counter will automatically reset and start over at 1. In addition, at the times when you press the  key or  keys, the next measurement will become the first.
[Measurement] Application 1   Wheat																														
Number of measurement times = 1																														
Protein		6 . 3	%																											
Protein CM @ 15.0		6 . 3	%																											
Protein DM		7 . 3	%																											
Moisture		1 4 . 2	%																											
F   Display the average.																														
2. Press the  key, the average value based on those repeated measurements will be displayed.	<table border="1"> <tr> <td colspan="4">[Measurement] Application 1   Wheat</td> </tr> <tr> <td colspan="4">Average   Number of measurement times = 1</td> </tr> <tr> <td>Protein</td> <td></td> <td>6 . 2</td> <td>%</td> </tr> <tr> <td>Protein CM @ 15.0</td> <td></td> <td>6 . 1</td> <td>%</td> </tr> <tr> <td>Protein DM</td> <td></td> <td>7 . 2</td> <td>%</td> </tr> <tr> <td>Moisture</td> <td></td> <td>1 4 . 1</td> <td>%</td> </tr> <tr> <td colspan="4">Displaying the average.</td> </tr> </table>	[Measurement] Application 1   Wheat				Average   Number of measurement times = 1				Protein		6 . 2	%	Protein CM @ 15.0		6 . 1	%	Protein DM		7 . 2	%	Moisture		1 4 . 1	%	Displaying the average.				On this screen, if the  key is pressed, a new measurement can be performed. When the average value is displayed, the counter resets and the next measurement becomes the first one. If the  key is pressed, the initial screen will be displayed.
[Measurement] Application 1   Wheat																														
Average   Number of measurement times = 1																														
Protein		6 . 2	%																											
Protein CM @ 15.0		6 . 1	%																											
Protein DM		7 . 2	%																											
Moisture		1 4 . 1	%																											
Displaying the average.																														

## 6-3-1. Setup the Display Conditions

Operation	Display	Explanation
<p>1. By using   keys, select the "Display" setting.</p>		
<p>2. Press the  key. And select a item you want to change by using   keys.</p>		<p>In case "Display" is ON.</p>
<p>3. Press the  key, and select either the "Display" or "Don't Display" choice for each item by using   keys.</p>		<p>In case "Display" is OFF.</p>
<p>4. Press the  key.</p>		<p>If you want to set another choices, repeat operation procedure 2~4. If you press the  key, the initial screen will be displayed.</p>
<p>In addition to the protein CM ON, pressing  key will allow you to set the "@ moisture %" for calculating the protein CM by using   key. And press the  key.</p>		<p>"@ Moisture %" is changeable. While you press the  key, you can increase and decrease the values quickly with   keys.</p>

## 6-3-2. Setup the Indication Range

Operation	Display	Explanation
<p>1. By using   keys, select the "Indication range" setting.</p>	<pre>[Display] Application 1 Wheat Protein      O N Protein CM  O N @ Moisture 1 5 . 0 % Protein DM  OFF Moisture     O N  Indication range Select the item.</pre>	
<p>2. Press the  key.</p>	<pre>[Indication range] Application 1 Wheat Protein      Upper limit 1 2 . 0 %               Lower limit 0 4 . 0 %  Moisture     Upper limit 2 0 . 0 %               Lower limit 1 0 . 0 %  Select the item.</pre>	
<p>3. By using   keys, and choose items, and press the  key.</p>	<pre>[Indication range] Application 1 Wheat Protein      Upper limit 1 2 . 0 %               Lower limit 0 4 . 0 %  Moisture     Upper limit 2 0 . 0 %               Lower limit 1 0 . 0 %  Select the item.</pre>	<p>In case "Protein Upper" is selected.</p>
<p>4. Change the value by using   keys until the fixed and press the  key.</p>	<pre>[Indication range] Application 1 Wheat Protein      Upper limit 1 2 . 0 %               Lower limit 0 4 . 0 %  Moisture     Upper limit 2 0 . 0 %               Lower limit 1 0 . 0 %  Change the setting.</pre>	<p>If you want to set another choices, repeat operation procedure 2~4. If you press the  key, the initial screen will be displayed.</p>



## (1) Protein CM Display (CM : Constant Moisture basis)

AN-900 's protein content shows the percentage contain in terms of whole grain, including moisture. This alternative is convenient at times, when you are, for example, calculating the weight of protein inside grain that was measured. But when you compare proteins among many different moisture is contained, there are times when it is convenient to assume the fixed moisture content. This consideration is "CM Protein" which is displayed as protein conversion by assuming the fixed moisture content (with AN-900, this is the same as the "@ Moisture %" is specified). When the fixed moisture content is assumed to be "0%", this is referred to as a "dry conversion" (DM : Dry Moisture Basis)

The conversion formula is as follows, so if Protein, Moisture, and / or "@ Moisture %" are set incorrectly, The "CM Protein" conversion value will not be displayed correctly.

$$\text{Protein CM} = \frac{\text{Protein}}{(100 - \text{Moisture}) + @ \text{ Moisture } \%} \times 100 [\%]$$

## 6-4. BIAS Adjustment

With a rice-analysis device that applies Near-Infrared method like this unit, there are times when the extended use of light-emitting parts, sensors, etc. experiences minor changes that happen over time that can cause the measurement value to change. The difference between AN-900 's measurement value and composition values of standard samples (The known sample from the previous correct composition value) is referred to as the bias. Refer to P26 concerning the possibility of accuracy checking this according to the standard samples.

To adjust bias of the unit, there are two models manual or automatic.

To set unit manually, prepare several standard samples which should be different values per each composition, performing measurement as usually several times. And then calculate requested bias per composition by manual.

To set unit automatically, prepare one standard sample, and as you measure according to display, the automatic bias adjustment should run smoothly.

**Note : With the automatic adjustment, you need only one standard sample, so it is often convenience to do, but you need to be careful of doing the adjustment incorrectly when making mistakes with standard sample or doing other things to throw off the results.**

## (1) Manual adjustment mode

With manual setting, prepare 3 or 5 samples and calculate the difference between average value of AN-900 and average value of standard samples for each composition. Because this alternative uses multiple samples to perform the bias adjustment, it is able to perform more accurate bias adjustment than automatic adjustment.

### Example of calculating Protein value and Performing Manual setting

#### In case of 3 type of sample (as Standard Samples)

- Measure samples to be tested 3 times each by AN-900 and calculation

Protein Values	A	B	C
1th time	6.3	5.4	7.0
2th time	6.4	5.3	7.0
3th time	6.2	5.3	7.1
Average	6.3	5.3	7.0

Average of 3 sample' s average  $(6.3+5.3+7.0)/3=$  **6.2**

- Calculate average of standard sample' s values (as standard samples)

	A	B	C
Protein of standard sample	6.8	5.6	7.4

Average of satandard sample' s  $(6.8+5.6+7.4)/3=$  **6.6**

- Calculate BIAS value

BIAS value = AV. standard samples - AV. measurements

$$\mathbf{0.4} = \mathbf{6.6} - \mathbf{6.2}$$

**0.4** is decided as BAIS value

BIAS procedure is shown on the next page

#### When you can not prepare more than one standard sample

In order to perform accuracy and successful bias adjustment, we recommend the alternative where you need 3 or 5 samples as standard samples, as is mentioned above. However, in case that you only have one standard sample, as s simple alternative, you measure it three time, and calculate average, and decide BIAS value.

- Measure samples to be tested 3 times each by AN-900 and calculation

Protein average of measured values by AN-900 **6.3**



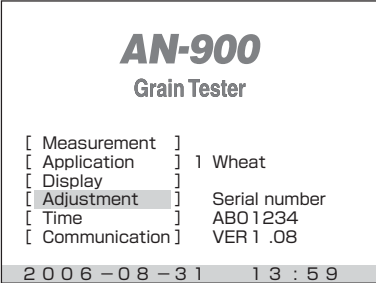



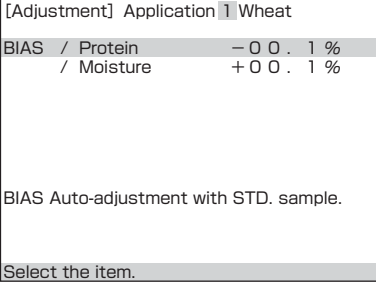



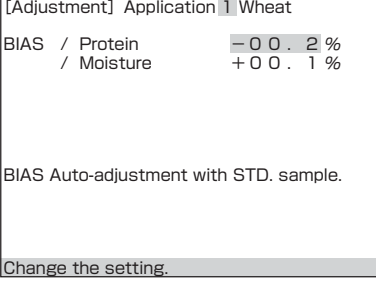




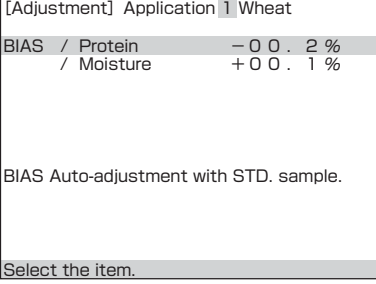

- Refer to standard sample protein value **6.8**

- Calculation bias value

BIAS value = Standard value of sample - AV. measurements

$$\mathbf{0.5} = \mathbf{6.8} - \mathbf{6.3}$$

**0.5** is decided as BAIS value

Operation	Display	Explanation
1. By using   keys, select the "Adjustment" setting.	 <p style="text-align: center;"><b>AN-900</b> Grain Tester</p> <pre> [ Measurement ] [ Application ] 1 Wheat [ Display      ] [ Adjustment  ] Serial number [ Time        ] ABO1234 [ Communication] VER1 .08 2006-08-31 13:59           </pre>	
2. Press the  key. And select item by using   key.	 <pre> [Adjustment] Application 1 Wheat BIAS / Protein  -00.1%       / Moisture +00.1%  BIAS Auto-adjustment with STD. sample.  Select the item.           </pre>	
3. Press the  key. And change bias value by using   keys.	 <pre> [Adjustment] Application 1 Wheat BIAS / Protein  -00.2%       / Moisture +00.1%  BIAS Auto-adjustment with STD. sample.  Change the setting.           </pre>	While you press the  key, you can increase and decrease the values quickly with   keys.
4. Press the  key.	 <pre> [Adjustment] Application 1 Wheat BIAS / Protein  -00.2%       / Moisture +00.1%  BIAS Auto-adjustment with STD. sample.  Select the item.           </pre>	If you want to set another choices, repeat operation procedure 2~4. If you press the  key, the initial screen will be displayed.



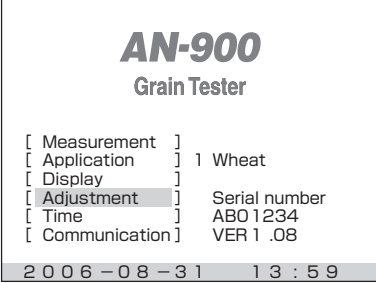



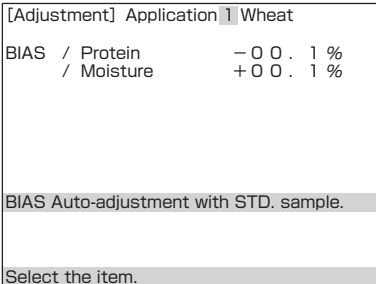

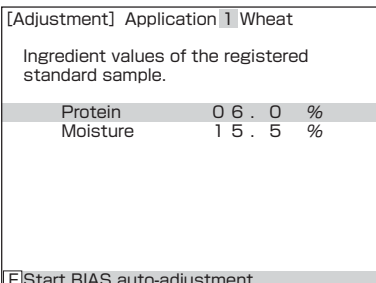






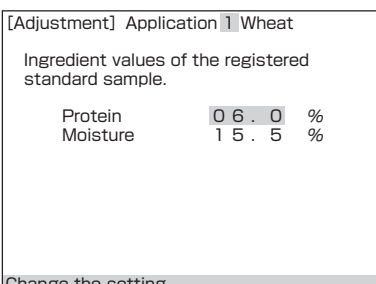



**Note :** Sometimes, BIAS adjustment doesn't run correctly - For example when the windows on sample case is dirty or when the sample becomes rather damaged. If it get dirty, measure after wiping the dirt off of it. In case that the sample is damaged, you would be replaced new standard sample.




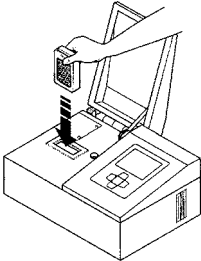
**Note :** BIAS value is also acceptable with minus, instead of plus.



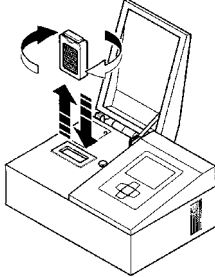

$$\begin{aligned} \text{BIAS} &= \text{AV. Standard} - \text{AV. Measurements} \\ -0.5 &= 6.1 - 6.6 \end{aligned}$$

In case of BIAS value is mius -0.5

## (2) Automatic adjustment mode



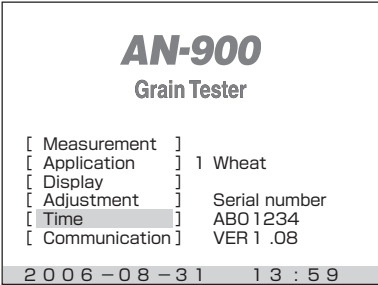



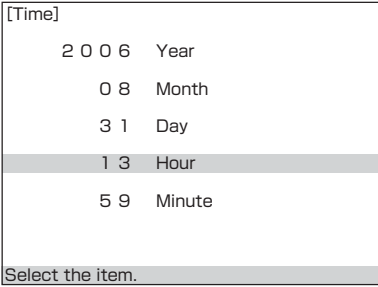



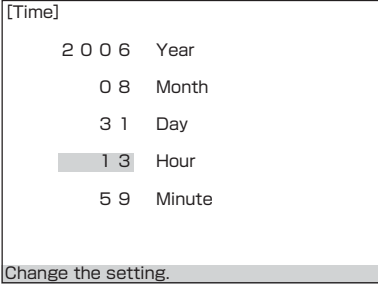




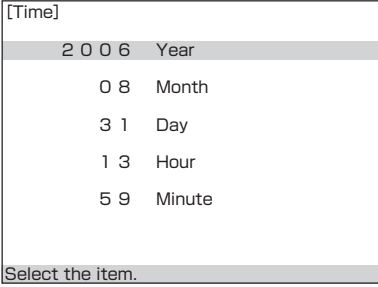

Operation	Display	Explanation
<p>1. By using   keys, select the "Adjustment" setting.</p>	 <p style="text-align: center;"><b>AN-900</b> Grain Tester</p> <pre>[ Measurement ] [ Application ] 1 Wheat [ Display      ] [ Adjustment  ] Serial number [ Time        ] ABO1234 [ Communication] VER1.08 2006-08-31 13:59</pre>	
<p>2. Press the  key, and select "Automatic adjustment" by using   keys.</p>	 <pre>[Adjustment] Application 1 Wheat BIAS / Protein      -00.1%       / Moisture    +00.1%  BIAS Auto-adjustment with STD. sample.  Select the item.</pre>	
<p>3. Press the  key.</p>	 <pre>[Adjustment] Application 1 Wheat Ingredient values of the registered standard sample. Protein      06.0% Moisture     15.5%  [Enter] Start BIAS auto-adjustment.</pre>	<p>The composition values should be the same of standard sample's.</p> <p>Compositions of standard sample are changeable per each standard sample.</p>
<p>When you want to adjust individual composition values, use   keys, and change the highlighted composition. Then press the  key. Using   keys, you will be able to revise the values. When they are to your selection, press the  key.</p>	 <pre>[Adjustment] Application 1 Wheat Ingredient values of the registered standard sample. Protein      06.0% Moisture     15.5%  Change the setting.</pre>	<p>While you press the  key, you can increase and decrease the values quickly with   keys.</p>

Operation	Display	Explanation
<p>4. After confirming both composition values are correct, and press the  key.</p>	<div style="border: 1px solid black; padding: 5px;"> <p>[Adjustment] Application 1   Wheat</p> <p style="text-align: center;">Remove the sample and surely close the hood. Press the "EXECUTE"</p> <p style="background-color: #cccccc; padding: 2px;">Standard measurement BIAS Auto-adjustment in progress...</p> </div>	
<p>5. Empty the measurement chamber, and, after you are sure that you have properly closed the cover, and press the  key.</p>	<div style="border: 1px solid black; padding: 5px;"> <p>[Adjustment] Application 1   Wheat</p> <p style="text-align: center; background-color: #cccccc; padding: 2px;">Measurement in progress...</p> <p style="background-color: #cccccc; padding: 2px;">Standard measurement BIAS Auto-adjustment in progress...</p> <p style="text-align: center;">↓</p> <div style="border: 1px solid black; padding: 5px;"> <p>[Adjustment] Application 1   Wheat</p> <p style="text-align: center;">Set the sample and surely close the hood. Press the "EXECUTE"</p> <p style="background-color: #cccccc; padding: 2px;">Surface measurement BIAS Auto-adjustment in progress...</p> </div> </div>	<p>Never open the cover during Measurement.</p>
<p>6. Set the sample case in the measurement chamber, and after making sure that you have close the cover and press the  key.</p> <p>"Turn over the sample ..." is displayed, it doesn't matter which side you test first.</p>	<div style="border: 1px solid black; padding: 5px;"> <p>[Adjustment] Application 1   Wheat</p> <p style="text-align: center; background-color: #cccccc; padding: 2px;">Measurement in progress...</p> <p style="background-color: #cccccc; padding: 2px;">Surface measurement BIAS Auto-adjustment in progress...</p> <p style="text-align: center;">↓</p> <div style="border: 1px solid black; padding: 5px;"> <p>[Adjustment] Application 1   Wheat</p> <p style="text-align: center;">Turn over the sample and surely close the hood. Press the "EXECUTE"</p> <p style="background-color: #cccccc; padding: 2px;">The reverse measurement BIAS Auto-adjustment in progress...</p> </div> </div>	<div style="text-align: center;">  </div> <p>Never open the cover during Measurement.</p>



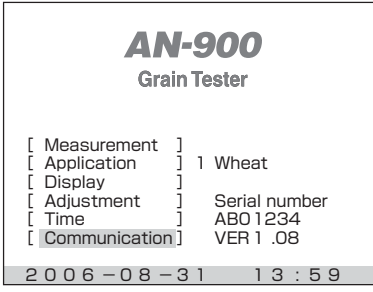



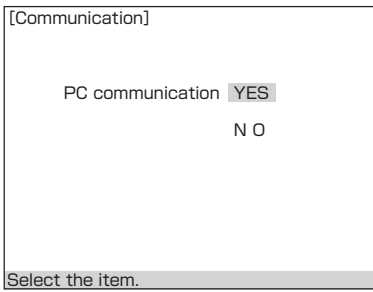

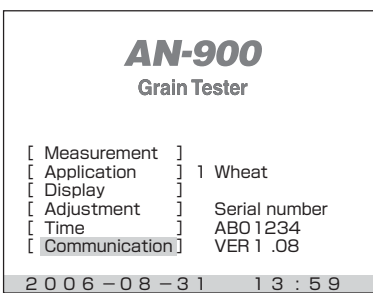
Operation	Display	Explanation
<p>7. Take the sample case out, and turn over it. Set it into the chamber surely close the cover and press the  key again.</p>	<div style="border: 1px solid black; padding: 5px;"> <p>[Adjustment] Application 1 Wheat</p> <p style="text-align: center;">Measurement in progress...</p> <p style="text-align: center;">The reverse measurement BIAS Auto-adjustment in progress...</p> </div> <div style="text-align: center; margin: 10px 0;">  </div> <div style="border: 1px solid black; padding: 5px;"> <p>[Adjustment] Application 1 Wheat</p> <p>BIAS / Protein            - 0 0 . 2 %</p> <p>         / Moisture        + 0 0 . 1 %</p> <p style="text-align: center;">BIAS Auto-adjustment with STD. sample.</p> <p style="text-align: center;">Select the item.</p> </div>	<div style="text-align: center;">  </div> <p>Never open the cover during Measurement. After completing Auto Adjustment, the screen will be back to "Adjustment" display. And then press the  key, the initial screen will be displayed.</p>

**Note :** Sometimes, BIAS adjustment doesn't run correctly - For example when the windows on sample case is dirty or when the sample becomes rather damaged. If it get dirty, measure after wiping the dirt off of it. In case that the sample is damaged, you would be replaced new standard sample.

## 7. Time settings

Operation	Display	Explanation
<p>1. By using   keys, select the "Time" setting.</p>	 <p>AN-900 Grain Tester</p> <p>[ Measurement ] [ Application ] 1 Wheat [ Display ] [ Adjustment ] Serial number [ Time ] AB01234 [ Communication ] VER1 .08</p> <p>2006-08-31 13:59</p>	
<p>2. Press the  key. And select item by using   key.</p>	 <p>[Time]</p> <p>2006 Year 08 Month 31 Day 13 Hour 59 Minute</p> <p>Select the item.</p>	
<p>3. Press the  key. And change bias value by using   keys.</p>	 <p>[Time]</p> <p>2006 Year 08 Month 31 Day 13 Hour 59 Minute</p> <p>Change the setting.</p>	<p>While you press the  key, you can increase and decrease the values quickly with   keys.</p>
<p>4. Press the  key.</p>	 <p>[Time]</p> <p>2006 Year 08 Month 31 Day 13 Hour 59 Minute</p> <p>Select the item.</p>	<p>If you want to set another choices, repeat operation procedure 2~4. If you press the  key, the initial screen will be displayed.</p>

## 8. Communication

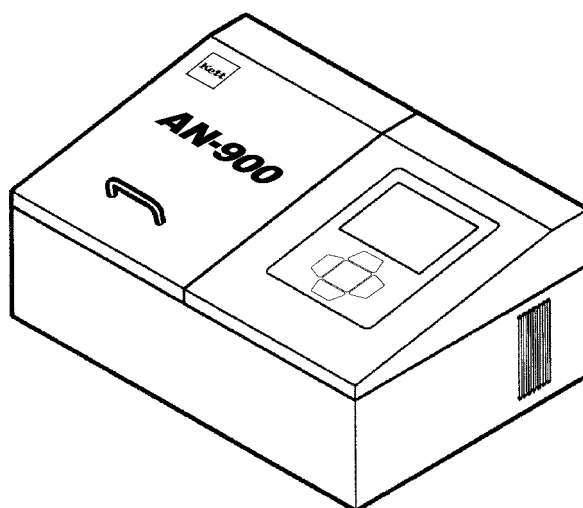
Operation	Display	Explanation
<p>1. By using   keys, select the "Communication" setting.</p>		
<p>2. Press the  key. Select "YES" by using   keys.</p>		<p>If the "YES" is selected, RS-232C port which is located rear-side on chamber is available to use PC.</p>
<p>3. Press the  key. The initial screen will be displayed.</p>		



## 9. Cleaning

When the surface of AN-900 is found dirty, wipe it by soft cloth. If extremely dirty, wipe with wet cloth.

**Note : Do not use any volatile chemicals such as a thinner or benzene.**



## <Appendix > Guidelines for using AN-900 with Maximum Accuracy

### 1. Preface

In order to keep the minor changes' effects on the measurement to a minimum, please be sure to carry out the standard check based on the standard sample at times again when, for example, the multiple people take the measurements or there is a power failure during the measurements or when you believe the results to be doubtful or inaccurate.

### 2. Check for standard sample

#### (1) Standard sample

As a standard sample, short brown and milled rice are included.

#### (2) Standard value

Before supplying standard samples, the composition values of standard samples have been recorded were tested at company to confirm the values and then decided upon.

#### (3) Storage condition of Standard Sample

Standard samples should be stored in cool, dark area like a refrigerator at between 5°C~10°C. The sample we have supplied has a usable period, but this presupposes its being stored in cold storage area. It is possible that storing the date in a warm or room temperature area will cause the standard value changes so please be sure to store it in cool, dark area. Also, be aware of the mentioned valid period of time concerning the life of the standard sample, and try to use extremely new grain as the standard sample.

**Note :** Don't freeze standard sample and put them in freezing-cold storage like a freezer.

#### (4) Measure the standard sample

More than half a day before performing the measurements, take standard sample out of the cold, dark area and put it in the same environment as AN-900. After the sample returns to normal temperature, perform measurements. Measure the standard sample 3 or 5 times, find the average values for each composition, and then compensation of each.

For example, in case of moisture as follows.

	Standard	AV. measurement	Difference
Standard sample	16.0%	16.2%	0.2%

Here, the difference is 0.2%, so if it is in the normal use mode, there is no need to run the bias adjustment. If the difference exceeds 0.2%, however, perform the comparison again with the same formula. If after doing that the result are again exceeding 0.2%, perform a bias adjustment. Refer to "6-4 BIAS Adjustment" on P17.

Composition	Difference of limit (if value exceeds this, perform BIAS)
Protein	0.3%
Moisture	0.2%

To the best of our abilities, we have deemed the limit values printed above to be standard. Selectable limit values that you will perform fixed bias adjustments on depending on the type of room in which you are using it.





***KETT ELECTRIC LABORATORY***

1-8-1 Minami-Magome Ota-Ku, Tokyo 143-8507 Japan  
Tel. +81-3-3776-1121 Fax. +81-3-3772-3001  
URL <http://www.kett.co.jp/> E-mail [overseas@kett.co.jp](mailto:overseas@kett.co.jp)