ISO-14001
ISO-9001

SPECIFICATION SHEET

TOA DKK

BOILING POINT ANALYZER

Model: **BPM**

This analyser measures the distillation points of petroleum products such as naphtha, kerosene and gas oil. It is used in the oil refining industry for distillation control and product quality control. It also contributes to increased yield of intermediate distillates.

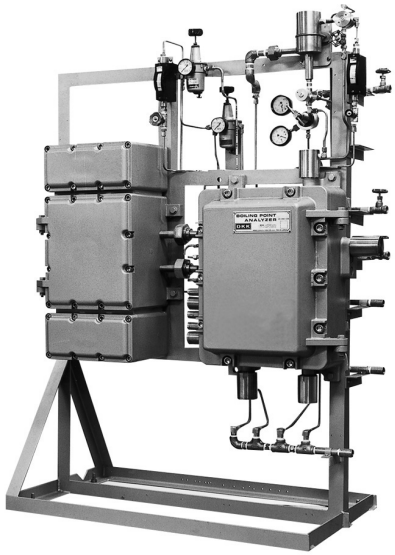
FEATURES

- Certified flame proof explosion protected construction to JIS d2G4. Meets with NEC Glass 1, Group D, Division 1.
- Full automatic measurement controlled by microprocessor based controller. The temperature at each distillation point is held until the next measurement cycle is completed.
- Can measure up to 8 distillation points. These can be freely selected between IBP and EP by operation of controller.
- Features tough stainless steel flask that can be easily disassembled for cleaning, thus preventing errors due to fouling.
- Distillation point detection by photoelectrically sensing condensate level using image sensor for stable measurement
- Determination of IBP (initial Boiling Point) and EP (End Point) from calculations based on distillation-temperature curve.

STANDARD SPECIFICATIONS

• Analyzer Section

Product Name	: Boiling point analyser
Model	: BPM
Analyser Measurement Object	: Distillation points of naphtha, kerosene, gas oil etc.
Measurement Method	: Batch distillation method
Explosion Protection	: Flameproof explosion protected construction (JIS d2G4) Meets with NEC Class 1, Group D, Division 1.
Measurement Ranges	
Light gas oil	: Standard 0~400°C
Kerosene	: Standard 0~300°C
Naphtha	: Standard 0~200°C
Measurement Cycle	: 15~30 min. (depending on measurement object, and measurement point)
Detection Point	: 8 points between IBP and EP (freely set)
Repeatability	: within ±1%FS
Power Requirements	: 100V AC±10%, 50/60Hz
Power Consumption	: 700VA
Warm-up Time	: 3 hours
Ambient Temperature	: 0~40°C
Installation Site	: Avoid direct sun light and provide under rainproof shelter for outdoor installation
Paint Colour	: Metallic silver (analyser rack)
Dimensions	: 1300(w) x 950(d) x 2000(h) mm
Weight	: Approx.450kg (including analyser, sample preconditioner and rack)
Sample Moisture Content	: Max. 500ppm
Sample Supply	: 0.2~0.5L/min.
Sample Pressure	: Min. 0.4MPa
Sample Temperature	: 20~40°C (To be lower than sample IBP)
Sample Viscosity	: Max. 6mPa/S at 30°C
Piping Connections	
Sample inlet	: Rc ½
Sample outlet	: Rc ½
Air inlet	: RC ¼



Instrument Air	
Pressure	: 0.4~0.7MPa
Consumption	: 400NL/batch
Cooling Water	
Inlet Connection	: Rc ½
Outlet Connection	: Rc ½
Quality	: Equivalent to city water
Temperature	: 0~35°C (lower than sample IBP)
Pressure	: 0.1~0.3Mpa
Flow rate	: 0.5L/min.

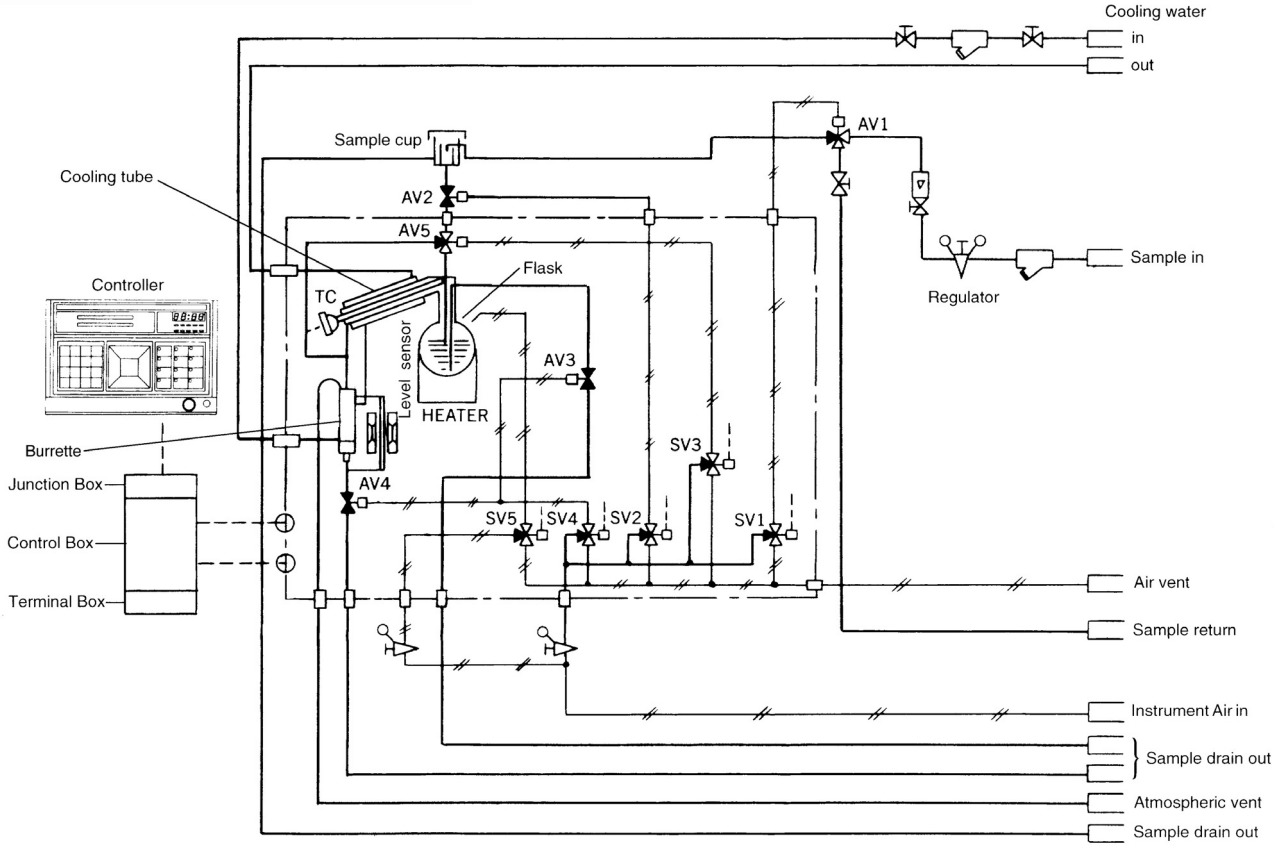
• Controller

Model	: U-32
Programming	: Interactive command entry on display
Functions	: • Automatic calibration
	: • Self diagnostic malfunction of sampling, liquid sensing for water chiller, and thermocouple is performed and a message is displayed.
	: • Remote control; Automatic operation can be started and stopped by a contact signal input from host computer.
	: • 2 streams switching measurement (option)
Outputs	
Contact Outputs	: Contact switching sensing signal, analysis start signal, stream signal (option). Rating: 110V AC, 0.1A or 30V DC 0.5A
Analogue output	: Meas. temp. hold (isolated) 4~20mA DC (Max load: 600¤)
Input Signals	: Contact signal from host computer (operation)
Ambient Temperature	: 0~40°C
Power Requirements	: 100V AC ±10% , 50/60Hz (other voltages available as options)
Power Consumption	: 100VA
Dimensions	: 288(w) x 195(d) x 192(h) mm
Weight	: Approx. 7kg
Installation	: Panel mount
Location	: Non-hazardous area (Indoor)

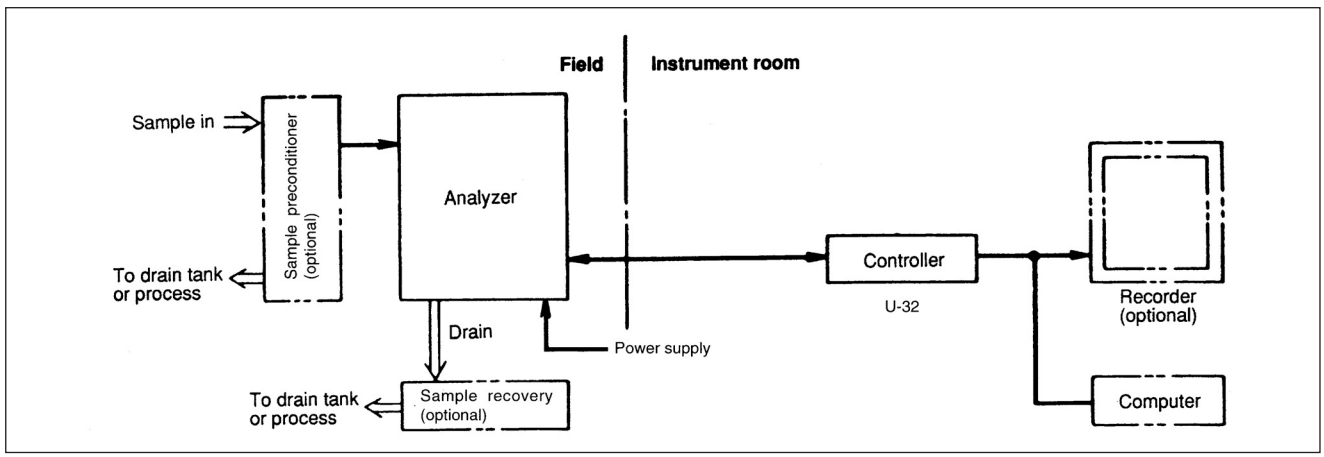
PRINCIPLE OF OPERATION

- The sample enters a sample cup through a strainer, regulator, flow meter and valve AV1. The surplus sample overflows from the cup and flows to drain.
- When valve AV1 closes and valve AV2 opens, the sample enters into flask.
- When valve AV2 closes, volumetering is completed.
- A heater is energized and the flask is heated. Vaporized sample passes through cooling tube and drops into a burette.
- The sample accumulated in the burette enters the sensing tube where the level rises according to the distillate quantity and is detected by a level sensor.
- When the preset distillation point is detected, the controller holds the distillation temperature value and provides a corresponding output.
- When the sample is completely distilled and the end point is detected by the controller, the heater is turned off and valve AV4 opens to discharge the distillate to drain.
- By opening valve AV2, AV3 and AV3, the flask is cooled down by sample flow.
- The above steps are automatically repeated.

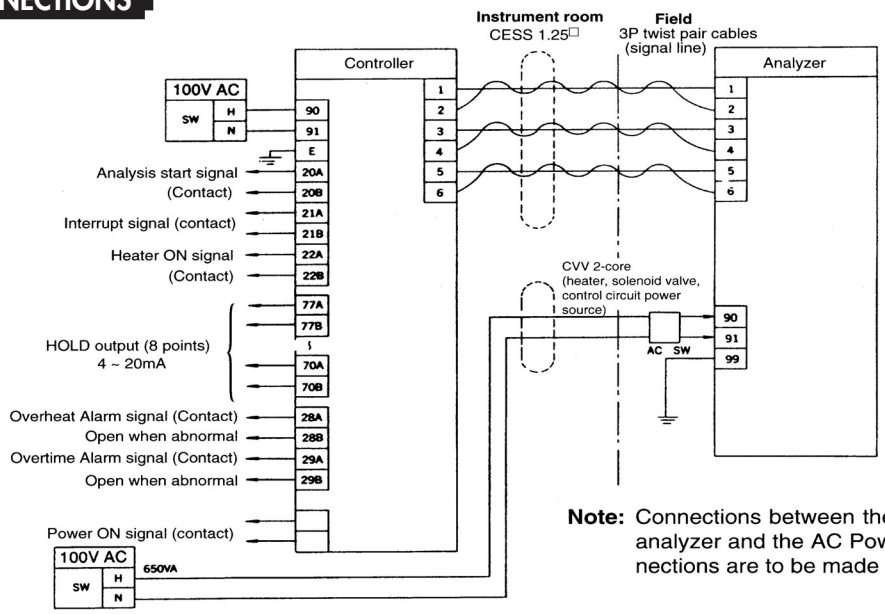
MEASUREMENT SYSTEM DIAGRAM



SYSTEM CONFIGURATION



TERMINAL CONNECTIONS



Note: Connections between the controller and analyzer and the AC Power Supply connections are to be made by customer.

PRODUCT CODE

BPM-1- □□□□□□□□□□□□□□

- Power source
  - 1 ··· 100 V AC 50/60Hz (Standard)
  - 2 ··· 110 V AC 50/60Hz
- Measurement range (Temp. measuring range)
  - 1 ··· 0~400℃
- Transmission output
  - 1 ··· 4~20mA DC (Standard)
- Pressure reducing distillation unit
  - A ··· Nil
  - B ··· Equipped (when large amount of carbon precipitation is present)
- Measurement points
  - 1 ··· 1 point
  - 2 ··· 2 points
  - 3 ··· 3 points
  - 4 ··· 4 points
  - 5 ··· 5 points
  - 6 ··· 6 points
  - 7 ··· 7 points
  - 8 ··· 8 points
- Sample pressure
  - 1 ··· 0.4~1.0MPa (G) (Standard)
  - 2 ··· 0.4MPa (G) or less (Sampling pump required)
  - 3 ··· 1.0MPa (G) or more (Relief valve required)
- Cooler (Sample temp.)
  - 0 ··· Nil (IBP or less & 60℃or less) (Standard)
  - 1 ··· With open cooler (150℃or less)
  - 2 ··· Panel cooler (200℃or less)
  - 3 ··· With enclosed cooler (300℃or less)
- Coalescer (Water contents in sample)
  - 0 ··· Nil (Less than 500ppm)
  - A ··· Coalescer, 1 unit (within 501~1000ppm)
  - B ··· Coalescer, 2 units (within 2000ppm)
- Preconditioner filter (Sludge content within sample)
  - 0 ··· Nil
  - 1 ··· Y-shaped strainer with single unit (Pressure: 1.0MPa (G) or less)
  - 2 ··· Y-shaped strainer with double units (Pressure: 1.0MPa (G) or less)
  - 3 ··· Bucket filter with single unit (Pressure: 1.0MPa (G) or less)
  - 4 ··· Bucket filter with double units (Pressure: 1.0MPa (G) or less)
- Waste water recovery unit
  - 0 ··· Nil (Return/atmospheric pressure, free drain)
  - 1 ··· With recovery unit + pump (Air pump)
  - 2 ··· With recovery unit + pump (Electronic pump) (Not applicable for 100V type)
- Preconditioner filter (Cooling water)
  - 0 ··· Nil
  - A ··· Y-shaped strainer with single unit (Pressure: 1.0MPa (G) or less)
  - B ··· Y-shaped strainer with double units (Pressure: 1.0MPa (G) or less)
  - C ··· Bucket filter with single unit (Pressure: 1.0MPa (G) or less)
  - D ··· Bucket filter with double units (Pressure: 1.0MPa (G) or less)
- Instrument air (for AIR operated valve)
  - 1 ··· Above 0.4MPa (G) (Standard)
  - 2 ··· Below 0.4MPa (Booster pump required)
- Std. Solution tank (for calibration)
  - 0 ··· Nil
  - 1 ··· Standard tank (10L) + air or N2 pressure
- Rack type
  - A ··· Open rack (P16F) (Standard)
  - B ··· Open rack (P16F) + roof
- Piping work
  - 0 ··· Nil (Standard)
  - 1 ··· Steam trace + insulator
  - 2 ··· Cool water trace + heat insulator
  - 3 ··· Insulator
  - 4 ··· Heat insulator
  - 5 ··· High pressure (above 1.0MPa (G)) schedule 40 or above
  - 6 ··· Welding (apart from thread connection type)

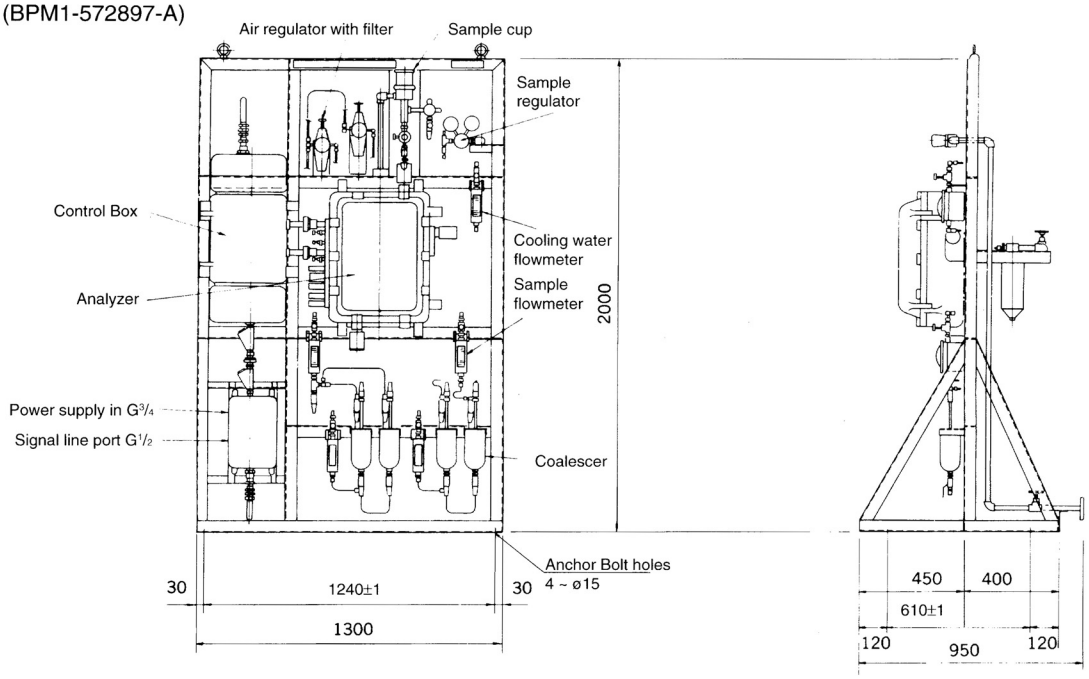
Custom spec. code;	
Numeric digit:	9
Alphabet:	Z

Note 1. Controller must be ordered separately.

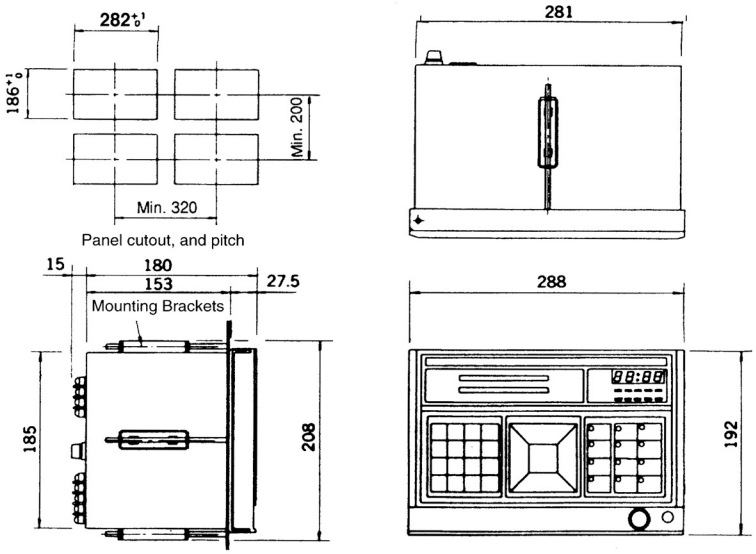
DIMENSIONS

Unit : mm
General tolerance ±10

● **Analyzer**
(BPM1-572897-A)



● **Controller**
General tolerance: ±5
(U3-552008-4A)



DKK-TOA CORPORATION

⚠ CAUTION Do not operate products before consulting instruction manual.

International Operations:
DKK-TOA Corporation
29-10, 1-Chome, Takadanobaba, Shinjuku-ku, Tokyo 169-8648 Japan
Tel: +81-3-3202-0225 Fax: +81-3-3202-5685

Representative Office (Europe):
DKK-TOA European Representative
St. Johns Innovation Centre, Cowley Rd., Cambridge CB4 0WS UK.
Tel : +44 (0)1223-526471 Fax : +44 (0)1223-709239

http://www.toadkk.co.jp