

# CRYOSTAT WATER BATH

521-TD



## Technical Specifications

|                             |                                    |
|-----------------------------|------------------------------------|
|                             | 521-1 Amb. +5°C to 100°C           |
| Temperature Range           | 521-2 0°C to 100°C                 |
|                             | 521-3 -30°C to 100°C               |
|                             | 521-4 0°C to 150°C                 |
|                             | 521-5 -30°C to 150°C               |
| Temperature control         | PID                                |
| Digital display             | colored 4 digit TouchScreen        |
| Temperature sensor          | PT 100                             |
| Retransmission door         | 4 to 20mA                          |
| Interior capacity           | 13L                                |
| Thermal uniformity at -25°C | ± 0,5°C                            |
| Thermal uniformity at 0°C   | ± 0,5°C                            |
| Thermal uniformity at 37°C  | ± 0,5°C                            |
| Thermal uniformity at 100°C | ± 0,5°C                            |
| Refrigeration capacity      | 20 0 -20°C<br>320 250 150 W        |
| Pump capacity               | 10 lpm                             |
| Pump pressure               | 3 to 6 psi                         |
| Refrigeration system        | Hermetic compressor                |
| Refrigerating Gas           | R134a                              |
| Heating system              | Stainless steel tubular resistance |
| Protection grade            | IP 20                              |
| Electrical specs            | 110V or 220V 50Hz/60Hz             |

## Product description

- Stainless Steel pump for internal and external circulation inside system which allows inside liquid circulation or external parts (accessories) circulation to refractometers, condensers, etc
- Exterior: corrosion resistant and epoxy powder coated
- Interior chamber: AISI 304 stainless steel
- High durability and easy-to-clean.

## Technical Characteristics

- CFC free refrigerant filled
- Polyurethane Foam Insulation (PUF)
- Temperature control and reading through sensor PT100 with 0,1°C resolution
- Variety of temperature range (check technical specifications chart).

## ethik EXCLUSIVE SOFTWARE



Better user interaction software, for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 3" screen.



Saves up to 10 different programs for ramp/ soak ( 60 segments each) with the possibility of naming each program.



Exclusive security system which allows access control (LOGIN) for every user.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential.

## INCLUDED ACCESSORIES AND COMPONENTS



- Plain lid with handle
- Operational Manual
- RBC Calibration Certificate for the temperature controller
- Connection for Data Logger (4 to 20mA)

## OPTIONAL



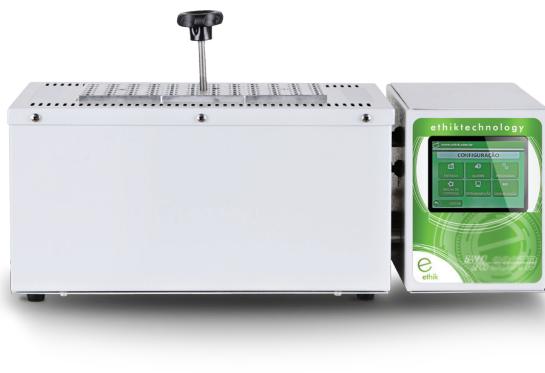
- IQ, OQ, PQ protocols
- Software for RDC 17 and GAMP5 requirements
- Communication RS485

## Criostat Water Bath 521-TD information

| MODEL | INTERIOR           |          |           |                    | EXTERIOR |          |           |                   |
|-------|--------------------|----------|-----------|--------------------|----------|----------|-----------|-------------------|
|       | WIDTH mm           | DEPTH mm | HEIGHT mm | CHAMBER CAPACITY L | WIDTH mm | DEPTH mm | HEIGHT mm | EXTERNAL VOLUME L |
| ALL   | 250                | 130      | 150       | 13                 | 420      | 420      | 750       | 132               |
| MODEL | ELECTRICAL SPECS W |          |           |                    |          |          |           |                   |
| ALL   | 15                 |          |           |                    | 1200     |          |           |                   |

# DRY BLOCK HEATER

330-TD



## Product description

- Ideal for Enzyme Reactions, Inactivation of Serum, Incubation and Other Laboratory Procedures
- Microprocessor-controlled temperature for Ambient +4°C ~ 100°C
- Compacted construction for labs that need heat in a dry atmosphere for small volume samples
- High quality aluminum block, interchangeable regarding the kind of tube used for the experiment (see technical specifications chart).

## Technical Characteristics

- Temperature control and reading through sensor PT100 with 0,1°C resolution
- Interchangeable blocks flexibility.

## Technical Specifications

|                                |                                    |
|--------------------------------|------------------------------------|
| Temperature Range              | Amb. +4°C to 100°C                 |
| Temperature Control            | PID                                |
| Resolution                     | ± 0,1°C                            |
| Display                        | colored 4 digit TouchScreen        |
| Temperature Sensor             | PT 100                             |
| Retransmission door            | 4 to 20mA                          |
| Temperature uniformity at 37°C | ± 0,5°C                            |
| Heating system                 | Stainless steel tubular resistance |
| Protection grade               | IP 20                              |
| Electrical specs               | 110V or 220V 50Hz/60Hz             |

### BLOCK DESCRIPTION

|              |   |           |
|--------------|---|-----------|
| USI.024.0001 | Block with micro centrifuge opening 0,5ml Ø8mm  | 34 flasks |
| USI.024.0006 | Block with micro centrifuge opening 1,5ml Ø11mm | 24 flasks |
| USI.024.0005 | Block with test tube opening Ø13mm              | 24 flasks |
| USI.024.0010 | Block with test tube opening Ø15mm              | 15 flasks |
|              | Test tube 2,0ml                                 |           |
|              | *Special opening                                |           |

### OPTIONAL



- IQ, OQ, PQ protocols
- Software for RDC 17 and GAMP5 requirements
- Communication RS485

## Dry Block Heater 330-TD information

| SIZE | INTERIOR |          |           |                | EXTERIOR |          |           |
|------|----------|----------|-----------|----------------|----------|----------|-----------|
|      | WIDTH mm | DEPTH mm | HEIGHT mm | BLOCK QUANTITY | WIDTH mm | DEPTH mm | HEIGHT mm |
| 1    | 75       | 100      | 45        | 1              | 325      | 210      | 160       |
| 2    | 150      | 100      | 45        | 2              | 375      | 210      | 160       |
| 3    | 225      | 100      | 45        | 3              | 475      | 210      | 160       |

| SIZE | WEIGHT Kg | ELETICAL SPECS W |
|------|-----------|------------------|
| 1    | 3         | 600              |
| 2    | 4         | 800              |
| 3    | 5         | 1100             |

### ethik EXCLUSIVE SOFTWARE



Better user interaction software, for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 3" screen.



Saves up to 10 different programs for ramp/ soak ( 60 segments each) with the possibility of naming each program.



Exclusive security system which allows access control (LOGIN) for every user.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential.

### ACCESSORIES AND COMPONENTS



- Aluminum blocks - set for every model and can be changed on order (see block chart)
- Operation manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)

# INNER SHAKING PRECISION BATH

500-TD



## Technical Specifications

|                            |                              |
|----------------------------|------------------------------|
| Work temperature range     | Ambient +4°C to 100°C        |
| Temperature control        | PID                          |
| Resolution                 | ± 0,1°C                      |
| Display                    | Colored 4 digits TouchScreen |
| Temperature sensor         | PT 100                       |
| Interior capacity          | 12 to 28 liters              |
| Output                     | 4 to 20mA                    |
| Thermal uniformity at 37°C | ± 0,5°C                      |
| Thermal uniformity at 60°C | ± 1,0°C                      |
| Heating system             | Stainless steel resistance   |
| Circulation system         | Stainless steel shaft        |
| Protection grade           | IP 20                        |
| Electrical specs           | 110V or 220V 50Hz/60Hz       |

## Product description

- Excellent Temperature Precision
- Exterior: corrosion resistant and epoxy powder coated
- Interior chamber: AISI 304 stainless steel
- High durability and easy-to-clean.

## Technical Characteristics

- Temperature control and reading through PT100 sensor with 0,1°C resolution
- Water circulating system for temperature uniformity
- Size availability from 12 to 28 liters (check technical specification chart)

## ethik EXCLUSIVE SOFTWARE



Better user interaction software, for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 3" screen.



Saves up to 10 different programs for ramp/ soak ( 60 segments each) with the possibility of naming each program.



Exclusive security system which allows access control (LOG-IN) for every user.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential.

## INCLUDED ACCESSORIES AND COMPONENTS



- Plain lid with handle
- Operational Manual
- RBC Calibration Certificate for the temperature controller
- Connection for Data Logger (4 to 20mA)

## OPTIONAL



- IQ, OQ, PQ protocols
- Software for RDC 17 and GAMP5 requirements
- Communication RS485

## Inner Shaking Precision Bath 500-TD information

| SIZE | INTERIOR |          |           |                    |                    | EXTERIOR |          |           |                    |
|------|----------|----------|-----------|--------------------|--------------------|----------|----------|-----------|--------------------|
|      | WIDTH mm | DEPTH mm | HEIGHT mm | CHAMBER CAPACITY L | CHAMBER CAPACITY L | WIDTH mm | DEPTH mm | HEIGHT mm | CHAMBER CAPACITY L |
| 1    | 300      | 200      | 150       | 12                 | 9                  | 490      | 270      | 340       | 45                 |
| 2    | 400      | 250      | 150       | 19                 | 15                 | 590      | 320      | 340       | 64                 |
| 3    | 400      | 300      | 150       | 23                 | 18                 | 590      | 370      | 340       | 74                 |
| 4    | 500      | 300      | 150       | 28                 | 22,5               | 690      | 370      | 340       | 87                 |

| SIZE | WEIGTH Kg | ELETICAL SPECS W |
|------|-----------|------------------|
| 1    | 5         | 600              |
| 2    | 7         | 600              |
| 3    | 8         | 1200             |
| 4    | 10        | 1200             |

# PRECISION DUBNOFF SHAKING WATER BATH

304-TPA



## Product description

- Dubnoff shaking water bath, horizontal platform shaking, versatile in test tubes and flasks accommodation
- Stainless steel AISI 304 interior, corrosion resistant powder-coated steel exterior chassis
- High durability and easy-to-clean

## Technical Characteristics

- Microprocessor control with digital Led 4 digits display and 0,1°C resolution. Ramp/soak programming, leveled in 60 steps, assuring versatility and autonomy to the equipment
- Visual alarm system settable for highest and lowest temperature and for temperature range
- PT 100 temperature sensor with 0,1°C resolution allowing control and monitoring

## Technical Specifications

|                     |   |
|---------------------|---|
| Temperature Range   | Amb.+4°C to 100°C                           |
| Temperature Control | PID   |
| Resolution          | ± 0,1 ° C                                   |
| Display             | LED   |
| Temperature Sensor  | PT 100                                      |
| Retransmission Door | 4 to 20mA                                   |
| Chamber capacity    | 36 L "unloaded"                             |
| Heating System      | Stainless steel tubular electric resistance |
| Shaking System      | Reciprocal horizontal 25 mm course          |
| Shaking Speed       | 20 to 220 RPM                               |
| Protection Grade    | IP 20                                       |
| Electrical Specs    | 110V 50/60Hz and 220V 50/60Hz               |

## INCLUDED ACCESSORIES AND COMPONENTS:



- 01 (one) tray with 12 AISI 304 stainless steel clips for 250ml Erlenmeyer.
- AISI 304 Stainless steel gable cover
- Temperature controller RBC Calibration Certificate
- Data Logger (4 to 20 mA) output

## OPTIONAL



- IQ, OQ and PQ protocols
- Different Clips and Fasteners

## Dubnoff 304-TPA Bath Information

| MODEL   | CHAMBER  |          |           |           | EXTERIOR |          |           |          |
|---------|----------|----------|-----------|-----------|----------|----------|-----------|----------|
|         | WIDTH mm | DEPTH mm | HEIGHT mm | HEIGHT. I | WIDTH mm | DEPTH mm | HEIGHT mm | HEIGHT I |
| 304-TPA | 600      | 400      | 150       | 36        | 800      | 480      | 300       | 115      |

| MODEL   | WEIGHT Kg | ELECTRICAL SPECS W |
|---------|-----------|--------------------|
| 304-TPA | 57        | 2100               |

# VISCOMETER WATER BATH

521-7TD



## Technical Specifications

|                      |                                    |
|----------------------|------------------------------------|
| Temperature Range    | 0°C to 100°C                       |
| Temperature Control  | PID                                |
| Resolution           | ± 0,1°C                            |
| Display              | colored 4 digit TouchScreen        |
| Temperature Sensor   | PT 100                             |
| Retransmission door  | 4 to 20mA                          |
| Inner capacity       | 19L "unloaded"                     |
| Pump pressure        | 3 to 6 psi                         |
| Refrigeration system | Hermetic compressor                |
| Refrigerating gas    | R134a                              |
| Heating system       | Stainless steel tubular resistance |
| Protection grade     | IP 20                              |
| Electrical specs     | 110V or 220V 50Hz/60Hz             |

## OPTIONAL



- IQ, OQ, PQ protocols
- Software for RDC 17 and GAMP5 requirements
- Communication RS485

## Product description

- Water bath normally used with Brookfield Viscometer, possible use with 600 and 1000ml beakers, exclusive stainless steel pump interior/exterior shaking system, allowing high performance temperature control in other equipment (example: refractometer, condenser, etc).
- Exterior: corrosion resistant and epoxy powder coated
- Interior chamber: AISI 304 stainless steel
- High durability and easy-to-clean.

## Technical Characteristics

- CFC free refrigerant filled
- Thermal isolation with low temperature dissipation
- Temperature control and reading through sensor PT100 with 0,1°C resolution
- Microprocessor-controlled temperature with digital Led 4 digits display and 0, 1°C resolution.
- Visual alarm system settable for highest and lowest temperature and for temperature range.

## INCLUDED ACCESSORIES AND COMPONENTS



- Plain lid with handle
- Operation manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)

## ethik EXCLUSIVE SOFTWARE



Better user interaction software, for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 3" screen.



Saves up to 10 different programs for ramp/ soak ( 60 segments each) with the possibility of naming each program.



Exclusive security system which allows access control (LOGIN) for every user.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential.

## Viscometer Water Bath 521-7TD information

| MODEL   | INTERIOR |          |           |                    | EXTERIOR |          |           |
|---------|----------|----------|-----------|--------------------|----------|----------|-----------|
|         | WIDTH mm | DEPTH mm | HEIGHT mm | CHAMBER CAPACITY L | WIDTH mm | DEPTH mm | HEIGHT mm |
| 521-7TD | 155      | 230      | 153       | 5                  | 343      | 605      | 453       |

| MODEL   | ELETICAL SPECS W |
|---------|------------------|
| 521-7TD | 1500             |

# WATER BATH ORBITAL SHAKER

501-D



## Product description

- Controlled water bath temperature and orbital shaking motion, versatile accommodation for tubes and flasks
- Exterior: corrosion resistant and epoxy powder coated
- Interior chamber: AISI 304 stainless steel
- High durability and easy-to-clean.

## Technical Characteristics

- Microprocessor-controlled temperature with digital 4 digits LED display and 0, 1°C resolution.
- Saves up to 60 segments of ramp/ soak, providing a versatile and autonomous analysis
- Digital control of temperature and rotation
- Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential
- Temperature measurement through class A, PT-100 Sensor with 0,1°C resolution.

## Technical Specifications

|                     |                            |
|---------------------|----------------------------|
| Temperature Range   | Amb. +4°C to 60°C*         |
| Temperature Control | PID                        |
| Resolution          | ± 0,1 °C                   |
| Display             | LED                        |
| Temperature Sensor  | PT 100                     |
| Retransmission door | 4 to 20mA                  |
| Inner capacity      | 19 L "unloaded"            |
| Heating System      | Stainless steel resistance |
| Shaking System      | Orbital 25 mm course       |
| Shaking Speed       | 20 to 220 RPM              |
| Protection Grade    | IP 20                      |
| Electrical Specs    | 110V or 220V 50Hz/60Hz     |

## OPTIONAL



- IQ, OQ, PQ protocols
- Different fasteners or clips.

## INCLUDED ACCESSORIES AND COMPONENTS



- 01(one) tray with 04 (four) AISI 304 stainless steel fasteners for 1000ml Erlenmeyer or 01(one) tray with 06 (six) AISI 304 stainless steel fasteners for 500ml Erlenmeyer or 01(one) tray with 09 (nine) AISI 304 stainless steel fasteners for 250ml Erlenmeyer, clients choice
- AISI 304 stainless steel gable cover
- RBC Calibration Certificate for the temperature controller
- Operation manual
- Connection for Data Logger (4 to 20mA).

## Water Bath Orbital Shaker 501-D information

| MODEL | INTERIOR |          |           |                    | EXTERIOR |          |           |               |
|-------|----------|----------|-----------|--------------------|----------|----------|-----------|---------------|
|       | WIDTH mm | DEPTH mm | HEIGHT mm | CHAMBER CAPACITY L | WIDTH mm | DEPTH mm | HEIGHT mm | VOLUME EXT. L |
| 501-D | 300      | 400      | 160       | 19                 | 500      | 550      | 450       | 124           |

| MODEL | WEIGHT Kg | ELETTRICAL SPECS W |
|-------|-----------|--------------------|
| 501-D | 50        | 1200               |

# CLIMATE CHAMBER

420-CLDTS



## Product description

- Environmental Test Chambers designed for pharmaceutical stability drug testing. Other applications include: shelf life studies, stability and package testing, temperature elevation studies.
- Great value per footprint
- Precise temperature and humidity control
- Low water and power consumption
- Designed to fit the most exigent pharmaceutical requirements
- Exterior: and epoxy powder coated
- Interior chamber: AISI 304 stainless steel
- High durability and easy-to-clean
- Easy installation, low investment to adjust the climatic chamber installing area
- Low noise level.

## Technical Characteristics

- Ecological refrigeration system, no CFC
- Thermal isolation with low temperature dissipation, silicon sealed door
- Temperature control and reading through sensor PT100 with 0,1°C resolution
- Exclusive humidity system that does not damage the outside of the tested product
- Temperature elevation protection system, assuring product's integrity in stability tests
- Humidity display equipped with a 0,1% RH resolution probe
- Inner door in tempered glass for better inner visualization, no test interruption and easy recovery of the controlled ambience
- External door with key locking system
- Easy access for humidity system cleaning and maintenance
- Size flexibility from 150 to 1.200 liters (check technical specification chart)
- Reverse osmosis water treatment system included.

## ethik EXCLUSIVE SOFTWARE



Better user touch screen interaction software, for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 6" screen.



Exclusive security system which allows access control (LOGIN) for every user



- Programmable software to activate audio-visual alarm in case of exceeded temperature or humidity rate.
- Software that shows on screen lack of water or out of programmed range humidity level.

## INCLUDED ACCESSORIES AND COMPONENTS



- Stainless steel wire tray
- Audio and visual alarm system in case of temperature, humidity and lack of water flaws
- Mechanical adjustable security thermostat
- Reverse osmosis water treatment
- Side access to inner chamber for cables and tubes
- Operational manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)

## OPTIONAL



- IQ, OQ, PQ protocols
- Software for RDC 17 and GAMP5 requirements

## Technical Specifications

|                                |                                    |
|--------------------------------|------------------------------------|
| Temperature range              | 20°C to 60°C                       |
| Humidity range                 | 20 to 90%RH                        |
| Temperature control            | PID                                |
| Temperature control resolution | ± 0,1°C                            |
| Humidity control resolution    | ± 0,1%Ura                          |
| Display Resolution             | colored 4 digit TouchScreen        |
| Temperature sensor             | PT 100                             |
| Humidity sensor                | Capacitive probe 0,1% resolution   |
| Output                         | 4 to 20mA                          |
| Inner capacity                 | 150 to 1200 L                      |
| Water flow entrance            | Automatic with level control       |
| Water connection entrance      | 1/2" Bsp                           |
| Drain connection               | 3/4" Bsp                           |
| Flow pressure                  | 0,5 to 4 kgf/cm2                   |
| Temperature uniformity         | ± 2°C                              |
| Humidity uniformity            | ± 5%                               |
| Refrigeration system           | Hermetic compressor                |
| Refrigeration gas              | R134a                              |
| Heating system                 | Stainless steel tubular resistance |
| Protection grade               | IP 20                              |
| Electrical specs               | 110V or 220V 50Hz/60Hz             |
| Output Plug                    | 3 pins, NBR IEC 60309-1            |

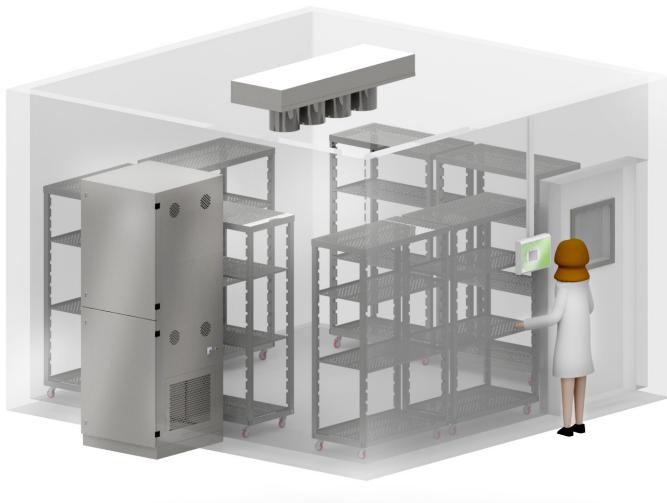
## Climatic Chamber 420 CLDTS Information

| SIZE | INTERIOR |          |           |                 | EXTERIOR |          |           |                 |
|------|----------|----------|-----------|-----------------|----------|----------|-----------|-----------------|
|      | WIDTH mm | DEPTH mm | HEIGHT mm | INTERN VOLUME L | WIDTH mm | DEPTH mm | HEIGHT mm | EXTERN VOLUME L |
| 150  | 500      | 500      | 550       | 138             | 660      | 820      | 1370      | 741             |
| 300  | 500      | 500      | 1180      | 295             | 660      | 780      | 1780      | 916             |
| 600  | 670      | 680      | 1280      | 583             | 830      | 970      | 1880      | 1514            |
| 900  | 1011     | 685      | 1335      | 925             | 1160     | 975      | 1909      | 2160            |
| 1200 | 1250     | 750      | 1300      | 1219            | 1430     | 1100     | 1900      | 2989            |

| SIZE | WEIGHT Kg | ELETICAL SPECS WV | TRAY AMOUNT SUPPORT | TRAY AMOUNT | MAXIMUM WEIGHT PER TRAY Kg | DOOR AMOUNT |
|------|-----------|-------------------|---------------------|-------------|----------------------------|-------------|
| 150  | 82        | 4200              | 5                   | 3           | 20                         | 1           |
| 300  | 101       | 4500              | 11                  | 5           | 20                         | 1           |
| 600  | 167       | 4500              | 12                  | 5           | 30                         | 1           |
| 900  | 245       | 9600              | 12                  | 5           | 30                         | 2           |
| 1200 | 329       | 9600              | 12                  | 5           | 30                         | 2           |

# CLIMATIC ROOM

421-SLDTs



## Product description

- Turnkey projects built with high quality panels, clean room finishing following all sanitary and security system requirements, anti-locking door system and inner illumination
- Prepared to attend the highest criteria in the pharmaceutical industry requirements.

## Technical Characteristics

- Room assembled with steel and PU or EPS isothermal panels, produced on a continuous lamination process, sealed under high pressure, on a Male-Female joint system, clean room finishing pattern painted on a matte white color
- Ecological refrigeration system, CFC free
- External door with key locking system and inner anti panic system assuring security even in the case of the door locked externally with the lights out
- Silent operation. Maintaining external noise under 40 dB
- Inner illumination system with 2 sealed hoppers with 100 W lamps capacity , with panel switch.

**Shelving and mobile Racking Systems made to order, as the client's needs)**

### INCLUDED ACCESSORIES AND COMPONENTS



- Audio and visual alarm system in case of temperature, humidity and water leakage failures
- Mechanical adjustable security thermostat
- Reverse osmosis water treatment
- Operation manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)

### OPTIONAL



- IQ, OQ and PQ qualification protocols

### ethik EXCLUSIVE SOFTWARE



Better user interaction software, easier to program and Portuguese language menu.



Software that shows on screen water leakage and out of programmed rate humidity levels.



Exclusive security system which allows access control (LOGIN) for every user.



Programmable software to activate audio-visual alarm in case of exceeded temperature or humidity rate.

### Technical Specifications

|                                |                                    |
|--------------------------------|------------------------------------|
| Temperature range              | 20°C to 60°C                       |
| Humidity range                 | 20% to 90%RH                       |
| Temperature control            | PID                                |
| Temperature control resolution | ± 0,1°C                            |
| Humidity control resolution    | ± 0,1%                             |
| Display Resolution             | Colored 4 digit TouchScreen        |
| Temperature sensor             | PT 100                             |
| Humidity sensor                | Capacitive probe 0,1% resolution   |
| Output                         | 4 to 20ma                          |
| Water connexion                | 1/2" Bsp                           |
| Drain connection               | 3/4" Bsp                           |
| Input pressure                 | 0,5 to 4 kgf/cm2                   |
| Refrigeration system           | Hermetic compressor                |
| Refrigeration gas              | R134a                              |
| Heating system                 | Stainless steel tubular resistance |
| Protection grade               | IP 20                              |
| Electrical specs               | 110V or 220V 50Hz/60Hz             |

# LABORATORY REFRIGERATOR

412-TD



## Technical Specifications

|                                  |                                    |
|----------------------------------|------------------------------------|
| Temperature range                | 0°C to 20°C                        |
| Temperature control              | PID                                |
| Temperature control resolution   | ± 0,1°C                            |
| Display Resolution               | Colored 4 digit TouchScreen        |
| Temperature sensor               | PT 100                             |
| Retransmission output            | 4 to 20mA                          |
| Inner capacity                   | 86 to 600                          |
| Temperature uniformity at a 5°C  | ± 3,0°C                            |
| Temperature uniformity at a 15°C | ± 3,0°C                            |
| Defrost system                   | Smart eletric                      |
| Refrigeration system             | Hermetic compressor                |
| Refrigeration gas                | R134a                              |
| Heating system                   | Stainless steel tubular resistance |
| Protection grade                 | IP 20                              |
| Electrical specs                 | 110V or 220V 50Hz/60Hz             |

## OPTIONAL



- Qualification protocols IQ, OQ and PQ
- Software for RDC 17 and GAMP5 requirements

## Product description

- Great capacity vs footprint
- Precise temperature control
- Exterior: corrosion resistant treatment and epoxy powder coated
- Inside: stainless steel
- High durability and easy-to-clean.

## Technical Characteristics

- Ecological refrigeration system, no CFC
- Thermal isolation with low temperature dissipation, magnetic sealed door
- Temperature control and reading through sensor PT100 with 0,1°C resolution
- Size flexibility from 86 to 600liters (check technical specification chart)
- Smart defrost system for better performance and thermal balance, no need for a stop to maintenance.

## ethik EXCLUSIVE SOFTWARE



Better user interaction software , for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 3" screen.



Saves up to 10 different programs for ramp/soak (60 segments each) with the possibility of naming each program.



Exclusive security system which allows access control (LOGIN) for every user.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential.

## INCLUDED ACCESSORIES AND COMPONENTS



- Wired tray
- Side door for calibration, 37mm diameter
- Operational manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)
- Audio and visual open door, exceeded temperature rate and defrost alarm
- Shutting down circulation device when door opens

## Laboratory Refrigeration 412-TD information

| SIZE | INTERIOR |          |           |                 | EXTERIOR |          |           |                 |
|------|----------|----------|-----------|-----------------|----------|----------|-----------|-----------------|
|      | WIDTH mm | DEPTH mm | HEIGHT mm | INTERN VOLUME L | WIDTH mm | DEPTH mm | HEIGHT mm | EXTERN VOLUME L |
| 86   | 450      | 350      | 550       | 87              | 580      | 680      | 1170      | 461             |
| 155  | 550      | 350      | 870       | 167             | 680      | 680      | 1490      | 689             |
| 255  | 550      | 400      | 1160      | 255             | 680      | 730      | 1780      | 884             |
| 335  | 550      | 510      | 1200      | 337             | 680      | 840      | 1820      | 1040            |
| 600  | 670      | 680      | 1320      | 601             | 800      | 1010     | 1940      | 1568            |

| SIZE | WEIGHT Kg | ELETICALSPECSS V | TRAY AMOUNT SUPPORT | TRAYS | MAXIMUM WEIGHT PER TRAY Kg | DOORS |
|------|-----------|------------------|---------------------|-------|----------------------------|-------|
| 86   | 51        | 600              | 4                   | 1     | 20                         | 1     |
| 155  | 76        | 800              | 4                   | 3     | 20                         | 1     |
| 255  | 97        | 800              | 6                   | 4     | 20                         | 1     |
| 335  | 114       | 1000             | 6                   | 4     | 30                         | 1     |
| 600  | 172       | 1500             | 6                   | 4     | 30                         | 1     |

# LABORATORY REFRIGERATOR / FREEZER COMBINED

417-TD



## Technical Specifications

|                                |                                    |
|--------------------------------|------------------------------------|
| Refrigerator temperature range | 0°C to 20°C                        |
| Freezer temperature range      | -20°C to 0°C                       |
| Temperature control            | PID                                |
| Temperature control resolution | ± 0,1°C                            |
| Display Resolution             | Colored 4 digit TouchScreen        |
| Temperature sensor             | PT 100                             |
| Output                         | 4 to 20mA                          |
| Inner capacity câmara fria     | 180 L                              |
| Inner capacity freezer         | 120 L                              |
| Defrost system                 | Smart electric                     |
| Refrigeration system           | Hermetic compressor                |
| Refrigeration gas              | R134a                              |
| Heating system                 | Stainless steel tubular resistance |
| Protection grade               | IP 20                              |
| Electrical specs               | 110V or 220V 50Hz/60Hz             |

## OPTIONAL



- Qualification protocols IQ, OQ and PQ
- Software for RDC 17 and GAMP5 requirements
- RS 485 output

## Product description

- Great capacity vs footprint
- A two-in-one equipment with separated temperature control in each chamber, great space saving on a lab
- Precise temperature control
- Exterior: corrosion resistant treatment and epoxy powder coated
- Inside: stainless steel
- High durability and easy-to-clean
- Excellent technology that provides even more precise results.

## Technical Characteristics

- Ecological refrigeration system, no CFC
- Thermal isolation with low temperature dissipation, magnetic sealed door
- Temperature control and reading through sensor PT100 with 0,1°C resolution
- Size flexibility from 86 to 600liters (check technical specification chart)
- Smart defrost system for better performance and thermal balance, no need for a stop to maintenance.

## ethik EXCLUSIVE SOFTWARE



Better user interaction software, for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 3" screen.



Saves up to 10 different programs for ramp/soak (60 segments each) with the possibility of naming each program.



Exclusive security system which allows access control (LOGIN) for every user.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential.

## INCLUDED ACCESSORIES AND COMPONENTS



- Wired tray
- Mechanical adjustable security thermostat
- Side access to each chamber for cables and tubes
- Operational manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)
- Audio and visual open door, exceeded temperature rate and defrost alarm
- Shutting down circulation device when door opens

## Laboratory refrigerator/ Freezer combined 417-TD information

| SIZE                    | INTERIOR |          |           |                 | EXTERIOR |          |           |                 |
|-------------------------|----------|----------|-----------|-----------------|----------|----------|-----------|-----------------|
|                         | WIDTH mm | DEPTH mm | HEIGHT mm | INTERN VOLUME L | WIDTH mm | DEPTH mm | HEIGHT mm | EXTERN VOLUME L |
| Refrigerator (superior) | 500      | 450      | 800       | 180             | 644      | 780      | 2027      | 1012            |
| Freezer (inferior)      | 500      | 450      | 550       | 124             |          |          |           |                 |

| SIZE                    | WEIGHT Kg | ELETTRICAL SPECS W | TRAY AMOUNT SUPPORT | TRAYS | MAXIMUM WEIGHT PER TRAY Kg | DOORS |
|-------------------------|-----------|--------------------|---------------------|-------|----------------------------|-------|
| Refrigerator (superior) | 120       | 1700 Total         | 5                   | 2     | 20                         | 1     |
| Freezer (inferior)      |           |                    | 3                   | 1     | 20                         | 1     |

# PHOTOSTABILITY CHAMBER

424-CF



Compact and functional chamber in conformity with ANVISA rules GUIDE ICH Q1B (option 2, UV radiation and fluorescent day-light lamp).

## Product description

- Single chamber
- Test experience and measurement at the same exposition time
- When test is over the lamps go out and the equipment maintains temperature until the user arrives
- No complex controllers such as luxmeters and radiometers that need constant calibration
- The luminosity efficiency values can be confirmed by chemical test (quinine chemical actinometric system), validated test by United States Pharmacopeia (USP, pharmacopeia forum 24m(3) : 6334, 1998) which determines limit test time (VIS + UVA). This chemical method can be easily done in all samples expositions.

## Technical Characteristics

- Mirrors on the inside for better luminosity distribution and uniformity
- Air circulation to guarantee constant temperature on the sample exposition area
- Automated locking system to prevent door opening during test time
- Hourmeter for lamp change control - indicates when lamps are improper for use
- Economical lamp use, easy access and no filters needed
- Ecological refrigeration system, no CFC
- Thermal isolation with low temperature dissipation and magnetic door sealing
- Temperature control and reading through sensor PT100 with 0,1° resolution
- Software with digital programmable timer that allows a test experiment of 99:59 recurring hours
- Microprocessor-controlled temperature with digital LED 4 digits display and 0, 1°C resolution.
- Visual alarm system settable for highest and lowest temperature and for temperature range.

## Technical Specifications

|                                |                                    |
|--------------------------------|------------------------------------|
| Temperature range              | 15°C to 60°C                       |
| Temperature control            | PID                                |
| Sample exposition area         | 1400 cm <sup>2</sup>               |
| Integrated illumination        | > 1,2 m lux.h                      |
| UV                             | > 200w.h/m <sup>2</sup>            |
| Temperature control resolution | ± 0,1°C                            |
| Digital Indication             | LCD                                |
| Temperature sensor             | PT 100                             |
| Retransmission output          | 4 to 20 mA                         |
| Refrigeration system           | Hermetic compressor                |
| Refrigerating gas              | R134a                              |
| Heating system                 | Stainless steel tubular resistance |
| Protection grade               | IP 20                              |
| Electrical specs               | 110V or 220V 50Hz/60Hz             |

## INCLUDED ACCESSORIES AND COMPONENTS



- Side calibration door, 37 mm diameter
- Operational manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)

## OPTIONAL



- IQ, OQ e PQ protocols

## Photostability Chamber 424-CF Information

| MODEL  | INTERIOR  |                    |           | EXTERIOR |          |           |
|--------|-----------|--------------------|-----------|----------|----------|-----------|
|        | WIDTH mm  | DEPTH mm           | HEIGHT mm | WIDTH mm | DEPTH mm | HEIGHT mm |
| 424-CF | 620       | 250                | 110       | 740      | 585      | 970       |
| MODEL  | WEIGHT Kg | ELECTRICAL SPECS W |           |          |          |           |
| 424-CF | 51        | 600                |           |          |          |           |

# TAPPED DENSITY TESTER

303-D



## Product description

- Equipment designed for powder, granules and similar product's density measurement and tests, in conformity with USP Method 1 and Method 2
- External structure: acoustic cabinet to prevent loud noises in the lab area and glass window.

## Technical Characteristics

- LCD display control panel with Membrane function keypad for tap/min and test-run time selection
- Tap Count: 250 to 300 RPM selectable on the equipment
- Drop height: 14.0mm to 3.0mm, selectable on the equipment.

## Technical Specifications

|                  |                        |
|------------------|------------------------|
| Timer            | 1 - 600 m              |
| Tap count        | 1 - 9999               |
| Electrical specs | 110V or 220V 50Hz/60Hz |
| Protection grade | IP 20                  |

## INCLUDED ACCESSORIES AND COMPONENTS



- Operational manual
- 250 ml and 100 ml glass cylinders

## OPTIONAL



- IQ and OQ qualification protocols

## Tapped density tester 303D information

| WIDTH mm | DEPTH mm | HEIGHT mm | ELECTRICAL SPECS W | WEIGHT Kg |
|----------|----------|-----------|--------------------|-----------|
| 560      | 510      | 710       | 100                | 37        |

# DISINTEGRATION TESTER

301



## Technical Specifications

|                                |                                    |
|--------------------------------|------------------------------------|
| Temperature range              | Amb. +5°C to 50°C                  |
| Temperature control resolution | ±0,1                               |
| Temperature uniformity at 37°C | ±0,5                               |
| Digital Timer                  | Programmable up to 99h             |
| RPM                            | 29 and 32 RPM.                     |
| Output                         | 4 to 20 mA                         |
| Heating system                 | Stainless steel tubular resistance |
| Electrical specs               | 110V or 220V 50Hz/60Hz             |
| Protection grade               | IP 20                              |

## INCLUDED ACCESSORIES AND COMPONENTS



- Operational manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)

## ► Product description

- Disintegration testing determines whether tablets or capsules disintegrate within a defined period of time when placed in a liquid medium compliant with USP<701>
- Exterior: corrosion resistant treatment and epoxy powder coated
- Stainless Steel (AISI 304) basket rack

## Technical Characteristics

- Temperature control and reading through sensor PT100 with 0,1°C resolution
- Run-time and temperature microprocessed control, digital LCD display, sound alarm for end of test warning.
- Immersion heater and circulator module guarantees temperature stability of the water bath and no vibration
- Simple operation and easy cleaning baskets and bath
- Lift-out of the baskets is performed manually or automatically (depending on model)
- Acrylic water bath with frontal drain.

## Available Disintegration Tester models

- 301/AC: Lift-out of the baskets is performed manually; 01, 03 or 06 simultaneously driven baskets
- 301/AUT: Lift-out of the baskets is performed automatically; 01, 03 or 06 simultaneously driven baskets
- 301/IND : Lift-out of the baskets is performed independently; 03 or 06 baskets
- 301/AUT IND: Lift-out of the baskets is performed automatically and independently; 03 or 06 baskets

## OPTIONAL



- IQ and OQ qualification protocols

THIS EQUIPMENT ATTENDS AMERICAN PHARMACOPEIA SPECIFICATIONS USP<701>

## Included Accessories

| RACKS | GLASS VESSELS | BASKETS | TESTER TUBERS | ACRYLIC DISC |
|-------|---------------|---------|---------------|--------------|
| 1     | 1             | 1       | 6             | 6            |
| 3     | 3             | 3       | 18            | 18           |
| 6     | 6             | 6       | 36            | 36           |

## Information by Model 301 series

| RACKS | WIDTH mm | DEPTH mm | HEIGHT mm | ELECTRICAL SPECS W | WEIGHT Kg |
|-------|----------|----------|-----------|--------------------|-----------|
| 1     | 400      | 280      | 600       | 700                | 32        |
| 3     | 680      | 280      | 600       | 700                | 39        |
| 6     | 1200     | 280      | 600       | 1300               | 52        |

# OVULES AND SUPPOSITORIES DISINTEGRATION TESTER

302-OV



## Technical Specifications

|                                |                                    |
|--------------------------------|------------------------------------|
| Temperature range              | Amb. +5°C to 50°C                  |
| Temperature control resolution | ±0,1                               |
| Temperature uniformity at 37°C | ±0,5                               |
| Digital Timer                  | Programmable up to 99h             |
| Output                         | 4 to 20 mA                         |
| Heating system                 | Stainless steel tubular resistance |
| Electrical specs               | 110V or 220V 50Hz/60Hz             |
| Protection grade               | IP 20                              |

## Product description

- Equipment developed for disintegration tests on ovules and suppositories simulating the real human body conditions, with high precision and technology microprocessor controller
- Externally: corrosion resistant treatment and epoxy powder coated.

## Technical Characteristics

- Temperature control and reading through PT100 sensor with 0,1°C
- Microprocessor electronic digital timer. Sound alarm at end of test time; multiple configuration setting with manual or automatic adjustments
- Immersion heater and circulator module guarantees temperature stability of the water bath and no vibration
- Magnetic shaking system allows user to homogenize solution inside vessel
- Rotation system for suppository door, allows 180° rotation in horizontal axis
- Translucent acrylic water bath with frontal drain.

## INCLUDED ACCESSORIES AND COMPONENTS



- Operation manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)
- 5,000ml glass vessel for disintegration device (interchangeable)

## OPTIONAL



- IQ and OQ protocols

## Ovules and suppositories desintegration system 302-OV information

| MODEL  | WIDTH mm | DEPTH mm | HEIGHT mm | ELETICAL SPECS W | WEIGHT Kg |
|--------|----------|----------|-----------|------------------|-----------|
| 302-OV | 540      | 340      | 550       | 700              | 30        |

# TABLET HARDNESS TESTER

298-ATTS/298-EDTS



## Product description

- Tablet hardness measuring equipment in 2 versions: ATTS model - for automated hardness measurement and EDTS model - for hardness, diameter and thickness of the tablet.

### ATTS Technical Characteristics

- Automatic calculation of average and standard deviation
- Designed for 30mm diameter or length (oblongs) tablet and 12mm of thickness
- Automatic measure unit conversion
- Collecting box for tested tablets
- Clear test area for easy cleaning
- Easy to use automatic test system
- Interactive menu.

### EDTS Technical Characteristics

- Automatic calculation of average and standard deviation
- Designed for 30mm diameter or length tablet and 12mm of thickness
- Automatic measure unit conversion
- Collecting box for tested tablets
- Clear test area for easy cleaning
- Automatic test system
- Interactive menu.

## Technical Specifications

|   |  |
|---|--|
| Physical tablet characteristics           | Maximum hardness 30Kgf / diameter or length max. 30mm / thickness max. 12mm. |
| Hardness resolution                       | 0,1  |
| Dimensional resolution                    | 0,1  |
| Output                                    | 4 to 20mA  |
| Hardness measurement unit (manual select) | Kgf; N or lb   |
| Thickness measurement unit (EDTS model)   | mm   |
| Display Resolution                        | Colored 4 digit TouchScreen  |
| Protection grade                          | IP 20  |
| Electrical specs                          | 110V or 220V 50Hz/60Hz   |

## ethik EXCLUSIVE SOFTWARE



Better user interaction software , for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 6" screen.



Performs up to 30 batches with capacity of 50 samples per batch.



Batch number inserting possibility.



Automatic calculation of average and standard deviation.

## OPTIONAL



- IQ,OQ and PQ protocols
- Software for RDC 17and GAMP5 requirements
- Matrix printer
- Up to 50kgf hardness

## Durometer 298 ATTS and EDTS Information

| MODEL         | WIDTH mm | DEPTH mm | HEIGHT mm | WEIGHT Kg | ELETICAL SPECS W |
|---------------|----------|----------|-----------|-----------|------------------|
| ATTS and EDTS | 415      | 360      | 256       | 5         | 100              |

## INCLUDED ACCESSORIES AND COMPONENTS



- Acrylic collecting box for tested tablets
- Brush for cleaning
- Operation manual
- RBC Calibration Certificate for temperature controller.
- Connection for Data Logger (4 to 20mA)

# TABLETS AND CAPSULES AUTOMATED DISSOLUTION TESTER

DTSA



## Technical Specifications

|                                |                                    |
|--------------------------------|------------------------------------|
| Temperature range              | Amb. +5°C to 50°C                  |
| Temperature control            | PID                                |
| Temperature control resolution | ± 0,1°C                            |
| Display Resolution             | Colored 4 digit TouchScreen        |
| RPM                            | 20 to 220 Rpm ± 1 Rpm              |
| Digital Timer                  | Programmable up to 99h             |
| Output                         | 4 to 20mA                          |
| Temperature sensor             | PT 100                             |
| Drain connection               | 3/8"                               |
| Temperature uniformity at 37°C | ± 0,5°C                            |
| Heating system                 | Stainless steel tubular resistance |
| Protection grade               | IP 20                              |
| Electrical specs               | 110V or 220V 50Hz/60Hz             |

## Product description

- Automated version for dissolution test
- Ideal for research, formulations and quality control
- Compacted built, following all USP protocols
- Can be complemented with automated sampling station.

## Technical Characteristics

- Temperature control and reading through PT100 sensor with 0,1° resolution
- One piece water bath with round edges to assure best asepsis
- Off-line system with automatic raising and lowering of the drive head
- External flow through heater reduces the influence of external vibrations and ensures a constant temperature
- Simultaneous medicament pouring system by user (manual pouring).

## ethik EXCLUSIVE SOFTWARE



Better user interaction software , for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 6" screen.



Exclusive security system allows access control (LOGIN) for every user.



10 different users capacity and memory for a 100 methods.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential.

## OPTIONAL



- IQ,OQ and PQ protocols
- Software for RDC 17and GAMP5 requirements
- Automated sampling station

## INCLUDED ACCESSORIES AND COMPONENTS



- Translucent glass vessels
- AISI 316 stainless steel baskets (Apparatus I); AISI 316 stainless steel paddles (Apparatus II), and AISI 316 stainless steel shafts, all with sanitary polishing, marked serial number for identification in case of IQ protocol.
- Acrylic vessel covers to avoid evaporation
- Centralization vessel covers
- Acrylic storage kit (for tools and apparatus)
- Connection for Data Logger (4 to 20mA)
- Operation manual
- RBC Calibration Certificate for temperature controller

## Dissolution Tester DTSA series Information

| RACKS | WIDTH mm | DEPTH mm | HEIGHT DRIVE HEAD DOWN mm | HEIGHT DRIVE HEAD UP mm | ELETICAL SPECS W | WEIGHT Kg |
|-------|----------|----------|---------------------------|-------------------------|------------------|-----------|
| 6     | 690      | 560      | 690                       | 850                     | 1400             | 56        |
| 8     | 690      | 560      | 690                       | 850                     | 1400             | 65        |

## Circulation and heating system

| RACKS | WIDTH mm | DEPTH mm | HEIGHT mm |
|-------|----------|----------|-----------|
| 6     | 370      | 160      | 410       |
| 8     | 370      | 160      | 410       |

# LABORATORY FREEZER

415-TD



## Technical Specifications

|                                |                                    |
|--------------------------------|------------------------------------|
| Temperature range              | -20°C to 0°C                       |
| Temperature control            | PID                                |
| Temperature control resolution | ± 0,1 °C                           |
| Display Resolution             | Colored 4 digit TouchScreen        |
| Temperature sensor             | PT 100                             |
| Inner capacity                 | 86 to 600 l                        |
| Defrost system                 | Smart electric                     |
| Refrigeration system           | Hermetic compressor                |
| Refrigeration gas              | R134a                              |
| Heating system                 | Stainless steel tubular resistance |
| Protection grade               | IP 20                              |
| Electrical specs               | 110V or 220V 50Hz/60Hz             |

## Product description

- Great value and small footprint
- Temperature control precision
- Externally: corrosion resistant treatment and epoxy powder coating
- Internally: stainless steel
- High durability and easy cleaning.

## Technical Characteristics

- Ecological refrigeration system , no CFC
- Size flexibility from 86 to 600 liters (check technical specifications chart)
- Temperature control and reading through PT100 sensor with 0,1°C resolution
- High thermal insulation, low temperature dissipation. Door built with magnetic gasket
- Smart defrost process assures better performance and thermal balance, no need to stop functioning for maintenance.

## ethik EXCLUSIVE SOFTWARE



Better user interaction software , for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 3" screen.



Saves up to 10 different programs for ramp/soak (60 segments each) with the possibility of naming each program.



Exclusive security system which allows access control (LOGIN) for every user.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential.

## INCLUDED ACCESSORIES AND COMPONENTS



- Wired tray
- Operation manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)
- Air circulation stop when door opens
- Side calibration door; 37mm
- Sound and visual alarm indicates door open, defrost and out of programmed range temperature

## OPTIONAL



- IQ,OQ and PQ protocols
- Software for RDC 17 and GAMP5 requirements
- Communication RS 485

## Laboratory Freezer – 415 TD - Information

| SIZE | INTERIOR |          |           |                   | EXTERIOR |          |           |                   |
|------|----------|----------|-----------|-------------------|----------|----------|-----------|-------------------|
|      | WIDTH mm | DEPTH mm | HEIGHT mm | VOLUME INTERIOR l | WIDTH mm | DEPTH mm | HEIGHT mm | VOLUME EXTERIOR l |
| 86   | 450      | 350      | 550       | 87                | 600      | 690      | 1190      | 493               |
| 155  | 550      | 350      | 870       | 167               | 700      | 690      | 1510      | 729               |
| 255  | 550      | 400      | 1160      | 255               | 700      | 740      | 1800      | 932               |
| 335  | 550      | 510      | 1200      | 337               | 700      | 850      | 1840      | 1095              |
| 600  | 670      | 680      | 1320      | 601               | 820      | 1020     | 1900      | 1589              |

| SIZE | WEIGHT Kg | ELETICAL SPECS W | TRAY AMOUNT SUPPORT | TRAY AMOUNT QUANTITY | MAXIMUM WEIGHT PER TRAY Kg | DOOR AMOUNT |
|------|-----------|------------------|---------------------|----------------------|----------------------------|-------------|
| 86   | 54        | 600              | 4                   | 1                    | 20                         | 1           |
| 155  | 80        | 800              | 4                   | 3                    | 20                         | 1           |
| 255  | 103       | 800              | 6                   | 4                    | 20                         | 1           |
| 335  | 120       | 1000             | 6                   | 4                    | 30                         | 1           |
| 600  | 175       | 1500             | 6                   | 4                    | 30                         | 1           |

All technical specs are defined on a 25°C ambient temperature and maximum 10% voltage fluctuation, respecting all installation criteria mentioned on equipment's operation manual. Ethik reserves the right to change these subjects at any time without further notice.

# LABORATORY REFRIGERATOR / FREEZER COMBINED

417-TD



## Product description

- Great capacity vs footprint
- A two-in-one equipment with separated temperature control in each chamber, great space saving on a lab
- Precise temperature control
- Exterior: corrosion resistant treatment and epoxy powder coated
- Inside: stainless steel
- High durability and easy-to-clean
- Excellent technology that provides even more precise results.

## Technical Characteristics

- Ecological refrigeration system, no CFC
- Thermal isolation with low temperature dissipation, magnetic sealed door
- Temperature control and reading through sensor PT100 with 0,1°C resolution
- Size flexibility from 86 to 600liters (check technical specification chart)
- Smart defrost system for better performance and thermal balance, no need for a stop to maintenance.

## Technical Specifications

|                                |                                    |
|--------------------------------|------------------------------------|
| Refrigerator temperature range | 0°C to 20°C                        |
| Freezer temperature range      | -20°C to 0°C                       |
| Temperature control            | PID                                |
| Temperature control resolution | ± 0,1°C                            |
| Display Resolution             | Colored 4 digit TouchScreen        |
| Temperature sensor             | PT 100                             |
| Output                         | 4 to 20mA                          |
| Inner capacity câmara fria     | 180 L                              |
| Inner capacity freezer         | 120 L                              |
| Defrost system                 | Smart electric                     |
| Refrigeration system           | Hermetic compressor                |
| Refrigeration gas              | R134a                              |
| Heating system                 | Stainless steel tubular resistance |
| Protection grade               | IP 20                              |
| Electrical specs               | 110V or 220V 50Hz/60Hz             |

## OPTIONAL



- Qualification protocols IQ, OQ and PQ
- Software for RDC 17 and GAMP5 requirements
- RS 485 output

## ethik EXCLUSIVE SOFTWARE



Better user interaction software, for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 3" screen.



Saves up to 10 different programs for ramp/soak (60 segments each) with the possibility of naming each program.



Exclusive security system which allows access control (LOGIN) for every user.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential.

## INCLUDED ACCESSORIES AND COMPONENTS



- Wired tray
- Mechanical adjustable security thermostat
- Side access to each chamber for cables and tubes
- Operational manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)
- Audio and visual open door, exceeded temperature rate and defrost alarm
- Shutting down circulation device when door opens

## Laboratory refrigerator/ Freezer combined 417-TD information

| SIZE                    | INTERIOR |          |           |                 | EXTERIOR |          |           |                 |
|-------------------------|----------|----------|-----------|-----------------|----------|----------|-----------|-----------------|
|                         | WIDTH mm | DEPTH mm | HEIGHT mm | INTERN VOLUME L | WIDTH mm | DEPTH mm | HEIGHT mm | EXTERN VOLUME L |
| Refrigerator (superior) | 500      | 450      | 800       | 180             | 644      | 780      | 2027      | 1012            |
| Freezer (inferior)      | 500      | 450      | 550       | 124             |          |          |           |                 |

| SIZE                    | WEIGHT Kg | ELETTRICAL SPECS W | TRAY AMOUNT SUPPORT | TRAYS | MAXIMUM WEIGHT PER TRAY Kg | DOORS |
|-------------------------|-----------|--------------------|---------------------|-------|----------------------------|-------|
| Refrigerator (superior) | 120       | 1700 Total         | 5                   | 2     | 20                         | 1     |
| Freezer (inferior)      |           |                    | 3                   | 1     | 20                         | 1     |

# PORTRABLE DIGITAL TABLET HARDNESS TESTER

298/DGP



## Product description

- Equipment developed to perform hardness measuring on pills, fertilizers, candies, animal food, pellets, etc
- Portable and easy handling.

## Technical Characteristics

- Digital microprocessor with liquid crystal viewer (LCD)
- Applied force visualization in real time until tablet's breaking point
- Aluminum body and knob, polycarbonate structure and translucent acrylic sample protector
- Clear test area for easy cleaning
- Automatic shut down after 2 minutes of stand by.

## OPTIONAL



- Fastening rack, depressed area for hardness tests in fertilizers, pellets, animal food and others
- This rack allows the equipment usage on workbench and depressed jaw base assures precision on measurement of animal food, pellets and fertilizers.

## INCLUDED ACCESSORIES AND COMPONENTS



- Operation manual
- Calibration Certificate – traceable RBC
- Four (04) 1,5V batteries

## Technical Specifications

|   |                       |
|---|-----------------------|
| Physical tablet characteristics           | Maximum diameter 25mm |
| Hardness resolution                       | 0,1                   |
| Precision                                 | 0,1                   |
| Scale                                     | 4 to 20mA             |
| Hardness measurement unit (manual select) | Kgf; N or lb          |
| Protection grade                          | IP 20                 |
| Electrical input                          | 4 x 1,5V batteries    |

# TABLET HARDNESS TESTER

298-ATTS/298-EDTS



## Product description

- Tablet hardness measuring equipment in 2 versions: ATTS model - for automated hardness measurement and EDTS model - for hardness, diameter and thickness of the tablet.

### ATTS Technical Characteristics

- Automatic calculation of average and standard deviation
- Designed for 30mm diameter or length (oblongs) tablet and 12mm of thickness
- Automatic measure unit conversion
- Collecting box for tested tablets
- Clear test area for easy cleaning
- Easy to use automatic test system
- Interactive menu.

### EDTS Technical Characteristics

- Automatic calculation of average and standard deviation
- Designed for 30mm diameter or length tablet and 12mm of thickness
- Automatic measure unit conversion
- Collecting box for tested tablets
- Clear test area for easy cleaning
- Automatic test system
- Interactive menu.

## Technical Specifications

|   |  |
|---|--|
| Physical tablet characteristics           | Maximum hardness 30Kgf / diameter or length max. 30mm / thickness max. 12mm. |
| Hardness resolution                       | 0,1  |
| Dimensional resolution                    | 0,1  |
| Output                                    | 4 to 20mA  |
| Hardness measurement unit (manual select) | Kgf; N or lb   |
| Thickness measurement unit (EDTS model)   | mm   |
| Display Resolution                        | Colored 4 digit TouchScreen  |
| Protection grade                          | IP 20  |
| Electrical specs                          | 110V or 220V 50Hz/60Hz   |

## ethik EXCLUSIVE SOFTWARE



Better user interaction software , for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 6" screen.



Performs up to 30 batches with capacity of 50 samples per batch.



Batch number inserting possibility.



Automatic calculation of average and standard deviation.

## OPTIONAL



- IQ,OQ and PQ protocols
- Software for RDC 17and GAMP5 requirements
- Matrix printer
- Up to 50kgf hardness

## Durometer 298 ATTS and EDTS Information

| MODEL         | WIDTH mm | DEPTH mm | HEIGHT mm | WEIGHT Kg | ELETICAL SPECS W |
|---------------|----------|----------|-----------|-----------|------------------|
| ATTS and EDTS | 415      | 360      | 256       | 5         | 100              |

## INCLUDED ACCESSORIES AND COMPONENTS



- Acrylic collecting box for tested tablets
- Brush for cleaning
- Operation manual
- RBC Calibration Certificate for temperature controller.
- Connection for Data Logger (4 to 20mA)

# BENCHTOP REFRIGERATED ORBITAL SHAKER INCUBATOR

430-RDBP



## Product description

- Developed for tests that need constant orbital shaking and controlled temperature
- Benchtop equipment, with electronic and compacted electronic refrigeration system
- Low power consumption
- Silent operation.

## Technical Characteristics

- Digital microprocessor temperature controller (PID); 0,1°C resolution; solid state relay and Pt 100 sensor
- 03 digits microprocessor digital controller rotation controller, allowing precise control of rotation (RPM) with known and adjustable time lapses on min/sec (mm:ss) with 4 different programs of 12 segments (ramps and levels)
- Forced air circulation to assure temperature uniformity
- Refrigerating and Heating system through compacted electronic device which generates heat and cold using no refrigerating gas or mechanical components
- Translucent acrylic door with upper opening and injected handle
- Built internally with AISI 430 stainless steel; externally: carbonated steel, corrosion resistant treatment and epoxy powder treatment
- Leveling support.

## Technical Specifications

|                                |                        |
|--------------------------------|------------------------|
| Temperature range              | 20°C to 50°C           |
| Temperature control            | PID                    |
| Temperature control resolution | ± 0,1°C                |
| Display Resolution             | LED                    |
| RPM                            | 20 to 220 RPM          |
| Temperature sensor             | PT 100                 |
| Output                         | 4 to 20ma              |
| Heating system                 | Electrical resistance  |
| Protection grade               | IP 20                  |
| Electrical specs               | 110V or 220V 50Hz/60Hz |

## FASTENERS OPTIONS



- 12 (twelve) AISI 304 stainless steel fasteners for 125ml Erlenmeyers
- 09 (nine) AISI 304 stainless steel fasteners for 500ml Erlenmeyers
- 04 (four) AISI 304 stainless steel fasteners for 1000ml Erlenmeyers

## OPTIONAL



- IQ,OQ and PQ protocols

## INCLUDED ACCESSORIES AND COMPONENTS



- 12 (twelve) AISI 304 stainless steel fasteners for 250ml Erlenmeyers
- Operation manual
- Data Logger(4 to 20ma) connection

## Benchtop refrigerated orbital shaker incubator 430-RDBP information

| MODEL    | INTERIOR |          |           | EXTERIOR (CLOSED DOOR) |          |           |
|----------|----------|----------|-----------|------------------------|----------|-----------|
|          | WIDTH mm | DEPTH mm | HEIGHT mm | WIDTH mm               | DEPTH mm | HEIGHT mm |
| 430-RDBP | 400      | 400      | 300       | 530                    | 760      | 600       |

| EXTERIOR (OPENED DOOR) |          |           |
|------------------------|----------|-----------|
| WIDTH mm               | DEPTH mm | HEIGHT mm |
| 530                    | 800      | 1200      |

| MODEL    | WEIGHT Kg | ELETICAL SPECS W |
|----------|-----------|------------------|
| 430-RDBP | 70        | 800              |

# BENCHTOP REFRIGERATED ORBITAL SOLUBILITY SHAKER INCUBATOR

430-RSBP



## Product description

- Developed for Pharmaceutical Industry solubility studies
- Benchtop equipment, with electronic and compacted electronic refrigeration system
- Low power consumption
- Silent operation.

## Technical Characteristics

- Digital microprocessor temperature controller (PID); 0,1°C resolution; solid state relay and Pt 100 sensor
- 03 digits microprocessor digital controller rotation controller, allowing precise control of rotation (RPM) with known and adjustable time lapses on min/sec (mm:ss) with 4 different programs of 12 segments (ramps and levels)
- Forced air circulation to assure temperature uniformity
- Refrigerating and Heating system through compacted electronic device which generates heat and cold using no refrigerating gas or mechanical components
- Translucent acrylic door with upper opening and injected handle
- Built internally with AISI 430 stainless steel; externally: corrosion resistant treatment and epoxy powder treatment
- Leveling support
- Translucent acrylic door with upper opening and injected handle
- Double platform with ø57 drilled holes (Schott flasks 100ml GL45), capacity for 18 tubes, (9 on each platform)
- Leveling support.

## Technical Specifications

|                                |                                    |
|--------------------------------|------------------------------------|
| Temperature range              | 37°C ( $\pm 1,0^{\circ}\text{C}$ ) |
| Temperature control            | PID                                |
| Temperature control resolution | $\pm 0,1^{\circ}\text{C}$          |
| Display Resolution             | LED                                |
| RPM                            | 20 to 220 RPM                      |
| Temperature sensor             | PT 100                             |
| Output                         | 4 to 20mA                          |
| Heating system                 | Electrical resistance              |
| Protection grade               | IP 20                              |
| Electrical specs               | 110V or 220V 50Hz/60Hz             |

## OPTIONAL



- Serviço de Qualificação IQ,OQ e PQ

## INCLUDED ACCESSORIES AND COMPONENTS



- Double platform
- Operation manual
- Temperature controller RBC calibration certificate
- Data Logger (4 to 20ma) connection.

## Benchtop refrigerated orbital solubility shaker incubator 430-RSBP information

| MODEL    | INTERIOR |          |           | EXTERIOR (CLOSED DOOR) |          |           |
|----------|----------|----------|-----------|------------------------|----------|-----------|
|          | WIDTH mm | DEPTH mm | HEIGHT mm | WIDTH mm               | DEPTH mm | HEIGHT mm |
| 430-RSBP | 337      | 342      | 270       | 370                    | 593      | 472       |

| EXTERIOR (OPENED DOOR) |          |           |
|------------------------|----------|-----------|
| WIDTH mm               | DEPTH mm | HEIGHT mm |
| 370                    | 593      | 799       |

| MODEL    | WEIGHT Kg | ELETTRICAL SPECS W |
|----------|-----------|--------------------|
| 430-RSBP | 70        | 800                |

# BOD INCUBATOR

411-TD



## Technical Specifications

|                                |                             |
|--------------------------------|-----------------------------|
| Temperature range              | 15°C to 60°C                |
| Temperature control            | PID                         |
| Temperature control resolution | ± 0,1°C                     |
| Display Resolution             | Colored 4 digit TouchScreen |
| Temperature sensor             | PT 100                      |
| Inner capacity                 | 86 to 600 liters            |
| Heating System                 | Electrical resistance       |
| Protection grade               | IP 20                       |
| Electrical specs               | 110V or 220V 50Hz/60Hz      |

## Product description

- Great value and small footprint
- Temperature control precision
- Externally: corrosion resistant treatment and epoxy powder coating
- Internally: stainless steel
- High durability and easy cleaning.

## Technical Characteristics

- Ecological refrigeration system , no CFC
- Size flexibility from 86 to 600 liters (check technical specifications chart)
- Temperature control and reading through PT100 sensor with 0,1°C resolution
- High thermal insulation, low temperature dissipation. Door built with magnetic gasket.

## ethik EXCLUSIVE SOFTWARE



Better user interaction software , for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 3" screen.



Saves up to 10 different programs for ramp/soak (60 segments each) with the possibility of naming each program.



Exclusive security system which allows access control (LOGIN) for every user.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential.

## INCLUDED ACCESSORIES AND COMPONENTS



- Wired tray
- Operation manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)
- Air circulation stop when door opens

## OPTIONAL



- IQ,OQ and PQ protocols
- Software for RDC 17 and GAMP5 requirements
- Communication RS 485

## BOD Incubator 411-TD information

| SIZE | INTERIOR |          |           |                   | EXTERIOR |          |           |                   |
|------|----------|----------|-----------|-------------------|----------|----------|-----------|-------------------|
|      | WIDTH mm | DEPTH mm | HEIGHT mm | VOLUME INTERIOR I | WIDTH mm | DEPTH mm | HEIGHT mm | VOLUME EXTERIOR I |
| 86   | 450      | 350      | 550       | 87                | 570      | 680      | 1170      | 453               |
| 155  | 550      | 350      | 870       | 167               | 670      | 680      | 1490      | 679               |
| 255  | 550      | 400      | 1160      | 255               | 670      | 730      | 1780      | 871               |
| 335  | 550      | 510      | 1200      | 337               | 670      | 840      | 1820      | 1024              |
| 600  | 670      | 680      | 1320      | 601               | 790      | 1010     | 1940      | 1548              |

| SIZE | WEIGHT Kg | ELETICAL SPECS W | TRAY AMOUNT SUPPORT | TRAY AMOUNT INCLUDED | MAXIMUM WEIGHT PER TRAY Kg | DOOR AMOUNT |
|------|-----------|------------------|---------------------|----------------------|----------------------------|-------------|
| 86   | 51        | 600              | 4                   | 1                    | 20                         | 1           |
| 155  | 76        | 1000             | 4                   | 3                    | 20                         | 1           |
| 255  | 97        | 1000             | 6                   | 4                    | 20                         | 1           |
| 335  | 114       | 1000             | 6                   | 4                    | 30                         | 1           |
| 600  | 172       | 1000             | 6                   | 4                    | 30                         | 1           |

# ORBITAL SHAKER INCUBATOR

430-D / 430-RD



## ► Product description

- Developed for tests that need constant orbital shaking on a controlled temperature ambience
- Temperature control precision
- Ground equipment
- High durability and easy cleaning.

## Technical Characteristics

- Digital microprocessor temperature controller (PID); 0,1°C resolution; solid state relay and Pt 100 sensor
- 03 digits microprocessor digital controller rotation controller, allowing precise control of rotation (RPM) with known and adjustable time lapses on min/sec (mm:ss) with 4 different programs of 12 segments (ramps and levels)
- Forced air circulation to assure temperature uniformity
- Door equipped with glass window
- Built internally with AISI 430 stainless steel; externally: corrosion resistant treatment and epoxy powder treatment
- 5mm aluminum platform to accommodate all kinds of tubes, flasks, etc
- Leveling support.

## Modelo 430-RD

- Sealed compressor, CFC free (ecological R134A gas) refrigeration system.

## Technical Specifications

|                                |                        |
|--------------------------------|------------------------|
| Temperature range Mod. 430-D   | Amb. +15°C to 60°C     |
| Temperature range Mod. 430-RD  | 15°C to 60°C           |
| Temperature control            | PID                    |
| Temperature control resolution | ± 0,1°C                |
| Display Resolution             | LED                    |
| RPM                            | 20 to 220 RPM          |
| Temperature sensor             | PT 100                 |
| Output                         | 4 to 20ma              |
| Heating system                 | Electrical resistance  |
| Protection grade               | IP 20                  |
| Electrical specs               | 110V or 220V 50Hz/60Hz |

## FASTENERS OPTIONS



- 40 (forty) AISI 304 stainless steel fasteners for 125ml Erlenmeyer's
- 12 (twelve) AISI 304 stainless steel fasteners for 500ml Erlenmeyer's
- 06 (six) AISI 304 stainless steel fasteners for 1000ml Erlenmeyer's

## OPTIONAL



- IQ,OQ and PQ protocols

## INCLUDED ACCESSORIES AND COMPONENTS



- 40 (forty) AISI 304 fasteners for 250ml Erlenmeyers
- Operation manual
- Temperature controller RBC calibration certificate
- Data Logger (4 to 20ma) connection.

## Orbital shaker incubator 430-D / 430-RD information

| MODEL        | INTERIOR |          |           | EXTERIOR |          |           |
|--------------|----------|----------|-----------|----------|----------|-----------|
|              | WIDTH mm | DEPTH mm | HEIGHT mm | WIDTH mm | DEPTH mm | HEIGHT mm |
| 430D e 430RD | 930      | 600      | 350       | 1150     | 820      | 830       |

| MODEL        | EXTERIOR (OPENED DOOR) |          |  |
|--------------|------------------------|----------|--|
|              | WIDTH mm               | DEPTH mm |  |
| 430D e 430RD | 800                    | 450      |  |

| MODELO | WEIGHT Kg | ELETICAL SPECS W |
|--------|-----------|------------------|
| 430-D  | 125       | 850              |
| 430-RD | 155       | 900              |

# PLANT GROWTH / BOD INCUBATOR

411- FPD



## ► Product description

- Ideal equipment for plant, animal and culture studies with day/night time simulation and time alternation
- Great value and small footprint
- Temperature control precision
- Externally: corrosion resistant treatment and epoxy powder coating
- Internally: stainless steel
- High durability and easy cleaning.

## Technical Characteristics

- Ecological refrigeration system , no CFC
- Refrigeration, heating and diurnal control is required in a single chamber
- Size flexibility from 86 to 600 liters (check technical specifications chart)
- Temperature control and reading through PT100 sensor with 0,1°C resolution
- Electronic microprocessor timer with digital display, sound alarm, hour – minute scale from 00:00 to 99:59 hours/minutes, day – night simulation with time alternation
- High thermal insulation, low temperature dissipation. Door built with magnetic gasket.

## Technical Specifications

|                                |                        |
|--------------------------------|------------------------|
| Temperature range              | 15°C to 60°C           |
| Temperature control            | PID                    |
| Temperature control resolution | ± 0,1 °C               |
| Display Resolution             | LED                    |
| Temperature sensor             | PT 100                 |
| Output                         | 4 to 20mA              |
| Inner capacity                 | 86 to 600 l            |
| Refrigeration system           | Hermetic compressor    |
| Refrigeration gas              | R134a                  |
| Heating system                 | Electrical resistance  |
| Protection grade               | IP 20                  |
| Electrical specs               | 110V or 220V 50Hz/60Hz |

## INCLUDED ACCESSORIES AND COMPONENTS



- Trays (see information chart)
- Operation manual
- Temperature controller RBC Calibration Certificate
- Side calibration door, 37mm
- Connection for Data Logger (4 to 20 mA)
- Air circulation shutting device for when door opens.

## OPTIONAL



- IQ, OQ and PQ protocols

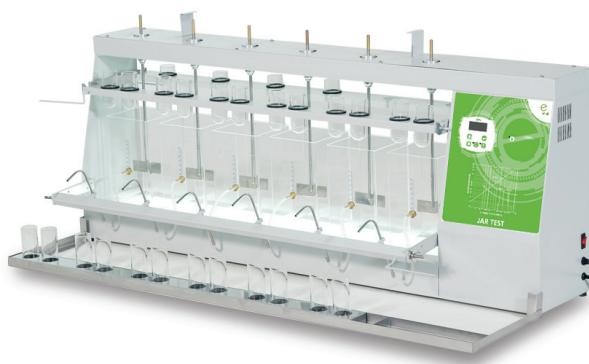
## PLANT GROWTH / BOD INCUBATOR 411 FPD Information

| SIZE | INTERIOR |          |           |                      | EXTERIOR |          |           |                      |
|------|----------|----------|-----------|----------------------|----------|----------|-----------|----------------------|
|      | WIDTH mm | DEPTH mm | HEIGHT mm | VOLUME<br>INTERIOR l | WIDTH mm | DEPTH mm | HEIGHT mm | VOLUME<br>EXTERIOR l |
| 86   | 450      | 350      | 550       | 87                   | 570      | 680      | 1170      | 453                  |
| 155  | 550      | 350      | 870       | 167                  | 670      | 680      | 1490      | 679                  |
| 255  | 550      | 400      | 1160      | 255                  | 670      | 730      | 1780      | 871                  |
| 335  | 550      | 510      | 1200      | 337                  | 670      | 840      | 1820      | 1024                 |
| 600  | 670      | 680      | 1320      | 601                  | 790      | 1010     | 1940      | 1548                 |

| SIZE | WEIGHT Kg | ELETICAL SPECS W | TRAY SUPPORT QUANTITY | TRAY AMOUNT QUANTITY | MAXIMUM WEIGHT PER TRAY Kg | DOOR AMOUNT |
|------|-----------|------------------|-----------------------|----------------------|----------------------------|-------------|
| 86   | 51        | 600              | 4                     | 1                    | 20                         | 1           |
| 155  | 76        | 800              | 4                     | 3                    | 20                         | 1           |
| 255  | 97        | 1000             | 6                     | 4                    | 20                         | 1           |
| 335  | 114       | 1000             | 6                     | 4                    | 30                         | 1           |
| 600  | 172       | 1000             | 6                     | 4                    | 30                         | 1           |

# JAR TESTER

FLOCCULATOR 218-LDB



## Product description

Essential equipment in water treatment station, optimizes the operation enhancing the produced water quality and reducing costs testing the efficiency of flocculation or precipitation agents.

## Technical characteristics

- Simultaneous applicators for coagulators and polymers.
- Device for simultaneous decanted water sample collecting, on different sedimentation speed.
- Simultaneous collecting device for floating samples, guaranteeing the operator certainty on collecting all samples at the same time, assuring the same fidelity to all samples.
- The only one that comes with a speed gradient range of 10 to 1200/ S-1, producing gradient slopes in function of the stirrer's rotation with or without stators, containing a correction chart on a easy to see location for better and easier visualization or consult.
- Microprocessor digital rotation control which allows two operational modes, automatic and manual.
- On manual mode, a number from 15 to 600 RPM is requested and the equipment will work from this set-point allowing the set changing at anytime.
- The automatic mode allows up to 4 editions of different programs, of 12 segments each, to operate with ramp/soak capabilities.
- Exclusive designed jars made of see-through high resistance acrylic, supports the inside volume of 2000ml with printed graduated scale.
- Exclusive fixation and centralization easy-to-use system, which guarantees that the jars stay in place during the procedure.
- Built in illumination system on the equipment base to provide better visual analyses.
- Electrical Specs: 110V/220V
- Output: 3 pins NBR 14136

## INCLUDED ACCESSORIES AND COMPONENTS



### Mod. 218-3LDB

- 218-3 (03 graduated jars and collector exit)
- 218-3 (09 convex bottom glass tubes for alkaline, coagulant and polymer adding)
- 218-3 (06 flat bottom glass tubes for simultaneous collection)
- Collectors, connections, hoses
- AISI 304 stainless steel discharge support
- Upper support for coagulant tubes

## OPTIONAL



- Floating instrument with sedimentation chamber for Mod. 218-3 LDB.
- Sand filters for Mod. 218-3 LDB and Mod. 218-6 LDB
- Synchronous belt transmission system for higher rotation precision in all jars, for Mod 218-3 LDB and 218-6 LDB

## Jar Test 218 LDB - Information

| MODEL    | INTERIOR |          |           |
|----------|----------|----------|-----------|
|          | WIDTH mm | DEPTH mm | HEIGHT mm |
| 218-3LDB | 700      | 200      | 520       |
| 218-6LDB | 1160     | 200      | 520       |



### Mod. 218-6LDB

- 218-6 (06 graduated jars and collector exit)
- 218-6 (18 convex bottom glass tubes for alkaline, coagulant and polymer adding)
- 218-6 (12 flat bottom glass tubes for simultaneous collection)
- Collectors, connections and hoses
- AISI 304 stainless steel discharge support
- Upper support for coagulant tubes

| MODEL    | WEIGHT Kg | ELETICAL SPECS W |
|----------|-----------|------------------|
| 218-3LDB | 23        | 100              |
| 218-6LDB | 34        | 100              |

# ZERO HEADSPACE EXTRACTOR (ZHE)

220/D



## Product description

- Rotating shaking set. Extracts volatile substances with no headspace.
- Used generally by water and waste treatment stations, research laboratories to analyze solids and semi-solids contaminated by volatile compounds.

## Technical Characteristics

- 3 digits digital microprocessor rotation controller (RPM), allowing precise control of rotation (RPM) and time adjustments on min/sec (mm:ss) with 4 different programs of 12 segments (ramps and levels)
- Shaking speed from 05 up to 30rpm
- Mechanical system by continuous chain gear motor
- Support for 2 extractors and fixation system by plastic handlers guaranteeing a 360° manipulation amplitude
- Acrylic door for extractors protection while in work
- Lid Screw handles with special key to facilitate operation
- 110V or 220V.

## INCLUDED ACCESSORIES AND COMPONENTS



- Two volatile extractors (ZHE), built in 316 stainless steel, 600ml capacity, two 90mm filters supports
- 3 Viton O-rings piston to assure perfect sealing
- Needle valve for control on sample collection luer lock system for 50ml glass syringe
- Compressed air entrance for fast conventional manometer on a 0 to 70Psi scale , automatic opening security valve on 110Psi
- Piston remover for safe system dismantling
- 50ml glass syringe
- Operation manual

## Zero headspace extractor ZHE 220-D

| MODEL    | WIDTH mm | DEPTH mm | HEIGHT mm | ELETTRICAL SPECS W |
|----------|----------|----------|-----------|--------------------|
| 220 - 2D | 450      | 400      | 450       | 100                |

# ETHIK DATA LOGGER

600



## INCLUDED ACCESSORIES AND COMPONENTS



- 15 meter data cable for logger / PC converter connection
- 4 x .5 meter data cables to connect logger to the equipment
- Standard connection for 2 channels (climatic chamber)
- Signal converter for PC USB connection.

## ► Product description

- Highly versatile data logger, allows registering and monitoring of analogical variables in a computer or the device itself
- 8 analogical configurable entrances provides 8 different points registering
- Compact and easy to install, set in a standard electrical box. Can be installed on the wall next to the points it will connect to
- Free supervisory monitoring software for 8 different channels.

## Technical Characteristics

- Thermocouples : J,K,B,R,S,T,N,E
- ThermoResistance: Pt 100
- O3 temperature measuring units: °C, °F, K
- Alarm : 2 output connections NA(SPST) – 3A/ 250V
- Alarm action: off, low, high, burnout
- Offset: independent adjustment for each channel and for cold-junction temperatures
- Memory: 2MB
- Signalization: LED for energizing, alarms, trigger and serial communication
- Configurable scales : -1999 to 9999
- Protocol : Modbus RTU
- Communication Speed: 9600,19200,38400,57600 bps.

## Technical Characteristics Software

- 8 channel monitoring and registering
- Intuitive and modern interface
- Cryptographic data. PDF,CSV and TXT reports
- Customizable reports, logotypes. PDF with charts and history data graphic or logger, including minimum, medium and maximum for each channel
- Online graphic/history
- Calibration and module configuring through its own software.

## Technical Specifications

|                        |  |
|------------------------|--|
| Input channels qty     | 8  |
| Voltage                | 0 to 20mA, 4 to 20mA   |
| Tension                | 0 to 60mV, 0 to 10Vcc, 0 to 5Vcc, 1 to 5 Vcc, +/-10Vcc, +/-5Vcc, +/-60mVcc |
| Reading Accuracy       | +/- 0,3% F.E. +/- 1 digit at 25°C  |
| Reading Capacity       | 900ms / 8 channels   |
| Thermal stability      | 100ppm   |
| Digital Input          | Relay action output 1, 2 or trigger for data LOG                           |
| Digital Filter         | off or 1 to 200 seconds  |
| Serial Communication   | 1500Vac  |
| Communication Standard | RS-485   |
| Software               | monitoring and communication (included)                                    |
| Input                  | 85 to 265Vca/Vcc - 47 to 63Hz  |
| Operation Temperature  | -10 to 55°C  |
| Operation Humidity     | 5 to 95% RH (no condensation)  |
| Protection grade       | IP40   |
| Weight                 | 1Kg  |
| External (WxDxH in mm) | 210 x 90 x 270   |

# BACTERIAL INCUBATOR

410-TD



## ethik EXCLUSIVE SOFTWARE



Better user interaction software , for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 3" screen.



Saves up to 10 different programs for ramp/soak (60 segments each) with the possibility of naming each program.



Exclusive security system which allows access control (LOGIN) for every user.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential.

## Product description

- Designed for culture and bacteriology
- Externally: corrosion resistant treatment and epoxy powder coating
- Internally: stainless steel
- High durability and easy cleaning
- Easy to use.

## Technical Characteristics

- Temperature control and reading through PT100 sensor with 0,1°C resolution
- High thermal insulation, low temperature dissipation. Door built with magnetic gasket
- Inner glass door allows observation inside the chamber without keeping ambience protection
- Forced convection allows rapid temperature response rates and improves uniformity
- Size flexibility from 42 to 630 liters (check Technical Specifications Chart).

## INCLUDED ACCESSORIES AND COMPONENTS



- 1(one) wired tray for workbench models / 1(one) perforated stainless steel tray for ground models
- Operation manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)
- Inner glass door
- Exhaustion damper (check information chart)

## OPTIONAL



- IQ,OQ and PQ protocols
- Software for RDC 17and GAMP5 requirements
- Communication RS485

## Technical Specifications

|                                |                             |
|--------------------------------|-----------------------------|
| Temperature range              | Amb. +15°C to 60°C          |
| Temperature control            | PID                         |
| Temperature control resolution | ± 0,1°C                     |
| Display Resolution             | Colored 4 digit TouchScreen |
| Temperature sensor             | PT 100                      |
| Inner capacity                 | 42 to 630 L                 |
| Heating system                 | Electrical resistance       |
| Protection grade               | IP 20                       |
| Electrical specs               | 110V or 220V 50Hz/60Hz      |

## BACTERIAL INCUBATOR 410 TD Information

| SIZE | INTERIOR |          |           |                 | EXTERIOR |          |           |                 |
|------|----------|----------|-----------|-----------------|----------|----------|-----------|-----------------|
|      | WIDTH mm | DEPTH mm | HEIGHT mm | INTERN VOLUME L | WIDTH mm | DEPTH mm | HEIGHT mm | EXTERN VOLUME L |
| 2    | 350      | 300      | 400       | 42              | 660      | 500      | 570       | 188             |
| 3    | 450      | 400      | 450       | 81              | 760      | 600      | 620       | 283             |
| 4    | 500      | 400      | 500       | 100             | 810      | 600      | 670       | 326             |
| 5    | 600      | 500      | 500       | 150             | 910      | 700      | 670       | 427             |
| 6    | 600      | 550      | 700       | 231             | 910      | 750      | 870       | 594             |
| 7    | 800      | 600      | 700       | 336             | 1180     | 830      | 1560      | 1528            |
| 8    | 900      | 650      | 800       | 468             | 1280     | 880      | 1720      | 1870            |
| 9    | 100      | 700      | 900       | 630             | 1380     | 930      | 1760      | 2259            |

| SIZE | WEIGHT Kg | ELETICAL SPECS W | EXHAUSTION DAMPER            | TRAY SUPPORT QUANTITY | MAXIMUM WEIGHT PER TRAY Kg | DOOR AMOUNT |
|------|-----------|------------------|------------------------------|-----------------------|----------------------------|-------------|
| 2    | 30        | 500              | REGULATOR WITH NO CONNECTION | 3                     | 20                         | 1           |
| 3    | 32        | 880              | REGULATOR WITH NO CONNECTION | 4                     | 20                         | 1           |
| 4    | 37        | 880              | REGULATOR WITH NO CONNECTION | 5                     | 20                         | 1           |
| 5    | 49        | 880              | REGULATOR WITH NO CONNECTION | 5                     | 20                         | 1           |
| 6    | 59        | 880              | REGULATOR WITH NO CONNECTION | 6                     | 40                         | 1           |
| 7    | 122       | 1500             | REGULATOR WITH NO CONNECTION | 6                     | 40                         | 2           |
| 8    | 150       | 1500             | REGULATOR WITH NO CONNECTION | 7                     | 40                         | 2           |
| 9    | 181       | 1500             | REGULATOR WITH NO CONNECTION | 8                     | 40                         | 2           |

# DRYING / STERILIZING OVEN

400-TD - 200°C



## ethik EXCLUSIVE SOFTWARE



Better user interaction software , for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 3" screen.



Saves up to 10 different programs for ramp/soak (60 segments each) with the possibility of naming each program.



Exclusive security system which allows access control (LOGIN) for every user.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential .

## Product description

- Equipment developed to assure the drying of solid components
- Externally: corrosion resistant treatment and epoxy powder coating
- Internally: stainless steel
- High durability and easy cleaning
- Forced air convection guarantees uniform heating.

## Technical Characteristics

- Temperature control and reading through PT100 sensor with 0,1°C resolution
- Excellent thermal insulation, low temperature dissipation. Door built with silicone gasket for higher sealing power
- AISI 304 stainless steel front panel for higher durability
- Size flexibility from 81 to 630 liters (check Information Chart)
- Workbench models equipped with rubber support
- Ground models equipped with lockable castors.

## INCLUDED ACCESSORIES AND COMPONENTS



- 1(one) wired tray for workbench models / 1(one) perforated stainless steel tray for ground models
- Operation manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)

## OPTIONAL



- IQ,OQ and PQ protocols
- Software for RDC 17and GAMP5 requirements
- Communication RS485

## Technical Specifications

|                                |                             |
|--------------------------------|-----------------------------|
| Temperature range ambiente     | Amb. +15°C a 200°C          |
| Temperature control            | PID                         |
| Temperature control resolution | ± 0,1°C                     |
| Display Resolution             | Colored 4 digit TouchScreen |
| Temperature sensor             | PT 100                      |
| Inner capacity                 | 19 to 630 L                 |
| Output Plug                    | 3 pins NBR 14136            |
| Heating system                 | Electrical resistance       |
| Protection grade               | IP 20                       |
| Electrical specs               | 110V or 220V 50Hz/60Hz      |

## DRYING / STERILIZING OVEN 400 TD – 200° Information

| SIZE | INTERIOR |          |           |                 | EXTERIOR |          |           |                 |
|------|----------|----------|-----------|-----------------|----------|----------|-----------|-----------------|
|      | WIDTH mm | DEPTH mm | HEIGHT mm | INTERN VOLUME L | WIDTH mm | DEPTH mm | HEIGHT mm | EXTERN VOLUME L |
| 1    | 300      | 250      | 250       | 19              | 610      | 450      | 420       | 115             |
| 2    | 350      | 300      | 400       | 42              | 660      | 500      | 570       | 188             |
| 3    | 450      | 400      | 450       | 81              | 760      | 600      | 620       | 283             |
| 4    | 500      | 400      | 500       | 100             | 810      | 600      | 670       | 326             |
| 5    | 600      | 500      | 500       | 150             | 910      | 700      | 670       | 427             |
| 6    | 600      | 550      | 700       | 231             | 910      | 750      | 870       | 594             |
| 7    | 800      | 600      | 700       | 336             | 1160     | 830      | 1560      | 1528            |
| 8    | 900      | 650      | 800       | 468             | 1280     | 830      | 1660      | 1870            |
| 9    | 1000     | 700      | 900       | 630             | 1380     | 930      | 1760      | 2259            |

| SIZE | WEIGHT Kg | ELETICAL SPECS W | EXHAUSTION DAMPER                    | MAXIMUM WEIGHT PER TRAY Kg | MAXIMUM WEIGHT PER TRAY SUPPORT Kg | DOOR AMOUNT |
|------|-----------|------------------|--------------------------------------|----------------------------|------------------------------------|-------------|
| 1    | 23        | 500              | REGULATOR WITH NO CONNECTION         | 3                          | 20                                 | 1           |
| 2    | 38        | 820              | REGULATOR WITH NO CONNECTION         | 3                          | 20                                 | 1           |
| 3    | 57        | 1580             | REGULATOR WITH NO CONNECTION         | 4                          | 20                                 | 1           |
| 4    | 65        | 1580             | REGULATOR WITH NO CONNECTION         | 5                          | 20                                 | 1           |
| 5    | 43        | 1580             | REGULATOR WITH NO CONNECTION         | 5                          | 20                                 | 1           |
| 6    | 59        | 1580             | REGULATOR WITH NO CONNECTION         | 6                          | 40                                 | 1           |
| 7    | 122       | 2350             | REGULATOR WITH CONECTION TUBE Ø100mm | 6                          | 40                                 | 2           |
| 8    | 150       | 2350             | REGULATOR WITH CONECTION TUBE Ø100mm | 7                          | 40                                 | 2           |
| 9    | 180       | 2350             | REGULATOR WITH CONECTION TUBE Ø100mm | 8                          | 40                                 | 2           |

# DRYING / STERILIZING OVEN

400-TD - 300°C



## Product description

- Equipment developed to assure the drying of solid components
- Externally: corrosion resistant treatment and epoxy powder coating
- Internally: stainless steel
- High durability and easy cleaning
- Forced air convection guarantees uniform heating

## Technical Characteristics

- Temperature control and reading through PT100 sensor with 0,1°C resolution
- Excellent thermal insulation, low temperature dissipation. Door built with silicone gasket for higher sealing power
- AISI 304 stainless steel front panel for higher durability
- Size flexibility from 81 to 630 liters (check Information Chart)
- Workbench models equipped with rubber support
- Ground models equipped with lockable castors.

## ethik EXCLUSIVE SOFTWARE



Better user interaction software , for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 3" screen.



Saves up to 10 different programs for ramp/soak (60 segments each) with the possibility of naming each program.



Exclusive security system which allows access control (LOGIN) for every user.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential.

## INCLUDED ACCESSORIES AND COMPONENTS



- 1(one) wired tray for workbench models / 1(one) perforated stainless steel tray for ground models
- Operation manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)

## OPTIONAL



- IQ,OQ and PQ protocols
- Software for RDC 17and GAMP5 requirements
- Communication RS485

## Technical Specifications

|                                |                             |
|--------------------------------|-----------------------------|
| Temperature range              | Ambient +15°C to 300°C      |
| Temperature control            | PID                         |
| Temperature control resolution | ± 0,1°C                     |
| Display Resolution             | Colored 4 digit TouchScreen |
| Temperature sensor             | PT 100                      |
| Inner capacity                 | 19 to 630 liters            |
| Heating system                 | Electrical resistance       |
| Protection grade               | IP 20                       |
| Electrical specs               | 110V or 220V 50Hz/60Hz      |

## DRYING / STERILIZING OVEN 400 TD – 300° Information

| SIZE | INTERIOR |          |          |                        | EXTERIOR |          |           |                        |
|------|----------|----------|----------|------------------------|----------|----------|-----------|------------------------|
|      | WIDTH mm | DEPTH mm | HEIHT mm | INTERIOR VOLUME liters | WIDTH mm | DEPTH mm | HEIGHT mm | EXTERIOR VOLUME liters |
| 1    | 300      | 250      | 250      | 19                     | 690      | 520      | 500       | 179                    |
| 2    | 350      | 300      | 400      | 42                     | 740      | 570      | 650       | 274                    |
| 3    | 450      | 400      | 450      | 81                     | 840      | 670      | 700       | 394                    |
| 4    | 500      | 400      | 500      | 100                    | 890      | 670      | 750       | 447                    |
| 5    | 600      | 500      | 500      | 150                    | 995      | 770      | 750       | 575                    |
| 6    | 600      | 550      | 700      | 231                    | 995      | 820      | 950       | 775                    |
| 7    | 800      | 600      | 700      | 336                    | 1180     | 850      | 1630      | 1635                   |
| 8    | 900      | 650      | 800      | 468                    | 1280     | 900      | 1730      | 1993                   |
| 9    | 1000     | 700      | 900      | 630                    | 1380     | 950      | 1730      | 2268                   |

| SIZE | WEIGHT Kg | ELETICAL SPECS W | EXHAUSTION DAMPER                    | TRAY SUPPORT QUANTITY | MAXIMUM WEIGHT PER TRAY Kg | DOOR AMOUNT |
|------|-----------|------------------|--------------------------------------|-----------------------|----------------------------|-------------|
| 1    | 36        | 820              | REGULATOR WITH NO CONNECTION         | 3                     | 20                         | 1           |
| 2    | 55        | 820              | REGULATOR WITH NO CONNECTION         | 3                     | 20                         | 1           |
| 3    | 79        | 1580             | REGULATOR WITH NO CONNECTION         | 4                     | 20                         | 1           |
| 4    | 89        | 3000             | REGULATOR WITH NO CONNECTION         | 5                     | 20                         | 1           |
| 5    | 57        | 3000             | REGULATOR WITH NO CONNECTION         | 5                     | 20                         | 1           |
| 6    | 78        | 3000             | REGULATOR WITH NO CONNECTION         | 6                     | 40                         | 1           |
| 7    | 131       | 3750             | REGULATOR WITH CONECTION TUBE Ø100mm | 6                     | 40                         | 2           |
| 8    | 159       | 3750             | REGULATOR WITH CONECTION TUBE Ø100mm | 7                     | 40                         | 2           |
| 9    | 180       | 3750             | REGULATOR WITH CONECTION TUBE Ø100mm | 8                     | 40                         | 2           |

# FORCED CONVECTION AND AIR EXCHANGE OVEN

420-TD



## Technical Specifications

|                                |                             |
|--------------------------------|-----------------------------|
| Temperature range              | Amb. + 7°C to 200°C         |
| Temperature control            | PID                         |
| Temperature control resolution | ± 0,1°C                     |
| Display Resolution             | Colored 4 digit TouchScreen |
| Temperature sensor             | Tipo PT 100                 |
| Inner capacity                 | 81 to 640 L                 |
| Heating system                 | Electrical resistance       |
| Protection grade               | IP 20                       |
| Electrical specs               | 110V or 220V 50Hz/60Hz      |

## Product description

- Equipment developed to assure the drying of solid components
- System that assures faster and uniform drying
- Externally: corrosion resistant treatment and epoxy powder coating
- Internally: stainless steel
- High performance and easy cleaning.

## Technical Characteristics

- Air exchange system for drying uniformity
- Temperature control and reading through PT100 sensor with 0,1°C resolution
- Excellent thermal insulation, low temperature dissipation. Door built with silicone gasket for higher sealing power
- Size flexibility from 81 to 640 liters (check technical specs. chart)
- Ground models equipped with lockable castors.

## ethik EXCLUSIVE SOFTWARE



Better user interaction software , for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 3" screen.



Saves up to 10 different programs for ramp/soak (60 segments each) with the possibility of naming each program.



Exclusive security system which allows access control (LOGIN) for every user.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential.

## OPTIONAL



- IQ,OQ and PQ protocols
- Software for RDC 17and GAMP5 requirements
- Communication RS485

## INCLUDED ACCESSORIES AND COMPONENTS



- 1(one) wired tray for workbench models / 1(one) perforated stainless steel tray for ground models
- Exhaustion damper (check information chart)
- Operation manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)

## FORCED CONVECTION AND AIR EXCHANGE OVEN 420 TD Information

| SIZE | INTERIOR |          |           |                     | EXTERIOR |          |           |                     |
|------|----------|----------|-----------|---------------------|----------|----------|-----------|---------------------|
|      | WIDTH mm | DEPTH mm | HEIGHT mm | VOL INTERIOR liters | WIDTH mm | DEPTH mm | HEIGHT mm | VOL EXTERIOR liters |
| 1    | 450      | 400      | 450       | 81                  | 780      | 630      | 1010      | 496                 |
| 2    | 500      | 400      | 500       | 100                 | 830      | 630      | 1060      | 554                 |
| 3    | 600      | 500      | 500       | 150                 | 930      | 730      | 1060      | 720                 |
| 4    | 700      | 550      | 600       | 231                 | 930      | 780      | 1260      | 914                 |
| 5    | 800      | 600      | 700       | 336                 | 1320     | 830      | 1630      | 1786                |
| 6    | 900      | 650      | 800       | 468                 | 1420     | 880      | 1730      | 2162                |
| 7    | 1000     | 700      | 900       | 630                 | 1520     | 930      | 1830      | 2587                |
| 8    | 800      | 800      | 1000      | 640                 | 1350     | 1000     | 1950      | 2630                |

| SIZE | WEIGHT Kg | ELETTRICAL SPECS W | EXHAUSTION DAMPER                    | TRAY SUPPORT QUANTITY | MAXIMUM WEIGHT PER TRAY Kg | DOOR AMOUNT |
|------|-----------|--------------------|--------------------------------------|-----------------------|----------------------------|-------------|
| 1    | 56        | 1580               | REGULATOR WITH NO CONNECTION         | 4                     | 20                         | 1           |
| 2    | 63        | 1580               | REGULATOR WITH NO CONNECTION         | 4                     | 20                         | 1           |
| 3    | 72        | 2350               | REGULATOR WITH NO CONNECTION         | 4                     | 20                         | 1           |
| 4    | 87        | 2350               | REGULATOR WITH NO CONNECTION         | 6                     | 30                         | 2           |
| 5    | 115       | 3000               | REGULATOR WITH CONECTION TUBE Ø100mm | 6                     | 30                         | 2           |
| 6    | 123       | 3000               | REGULATOR WITH CONECTION TUBE Ø100mm | 7                     | 40                         | 2           |
| 7    | 210       | 3000               | REGULATOR WITH CONECTION TUBE Ø100mm | 8                     | 40                         | 2           |
| 8    | 210       | 3000               | REGULATOR WITH CONECTION TUBE Ø100mm | 9                     | 40                         | 2           |

# REFRIGERATED BACTERIAL INCUBATOR

410-TDP



## Technical Specifications

|                                |                             |
|--------------------------------|-----------------------------|
| Temperature range              | 20°C to 50°C                |
| Temperature control            | PID                         |
| Temperature control resolution | ± 0,1°C                     |
| Display Resolution             | Colored 4 digit TouchScreen |
| Temperature sensor             | PT 100                      |
| Inner capacity                 | 19 to 150 l                 |
| Heating system                 | Electrical resistance       |
| Protection grade               | IP 20                       |
| Electrical specs               | 110V or 220V 50Hz/60Hz      |

## Product description

- Refrigerating gas-free high technology refrigeration system, silent operation, low power consumption
- Externally: corrosion resistant treatment and epoxy powder coating
- High durability and easy cleaning
- Easy to use.

## Technical Characteristics

- Exclusive heating and cooling system by electronic module
- Temperature control and reading through PT100 sensor with 0,1°C resolution
- High thermal insulation, low temperature dissipation. Door built with magnetic gasket
- Inner glass door allows observation inside the chamber without keeping ambience protection
- Size flexibility from 19 to 150 liters (check Technical Specifications Chart).

## ethik EXCLUSIVE SOFTWARE



Better user interaction software , for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 3" screen.



Saves up to 10 different programs for ramp/soak (60 segments each) with the possibility of naming each program.



Exclusive security system which allows access control (LOGIN) for every user.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential.

## INCLUDED ACCESSORIES AND COMPONENTS



- 1 Wired tray
- Operation manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)
- Inner glass door
- Exhaustion damper (check information chart)

## OPTIONAL



- IQ,OQ and PQ protocols
- Software for RDC 17and GAMP5 requirements
- Communication RS485

## REFRIGERATED BACTERIAL INCUBATOR 410 – TDP Information

| SIZE | INTERIOR |          |           |                   | EXTERIOR |          |           |                   |
|------|----------|----------|-----------|-------------------|----------|----------|-----------|-------------------|
|      | WIDTH mm | DEPTH mm | HEIGHT mm | VOLUME INTERIOR I | WIDTH mm | DEPTH mm | HEIGHT mm | VOLUME EXTERIOR I |
| 1    | 300      | 250      | 250       | 19                | 630      | 460      | 420       | 122               |
| 2    | 350      | 300      | 400       | 42                | 680      | 510      | 570       | 198               |
| 3    | 450      | 400      | 450       | 81                | 780      | 610      | 620       | 295               |
| 4    | 500      | 400      | 500       | 100               | 830      | 610      | 670       | 339               |
| 5    | 600      | 500      | 500       | 150               | 930      | 710      | 670       | 442               |

| SIZE | WEIGHT Kg | ELETICAL SPECS W | EXHAUSTION DAMPER            | TRAY AMOUNT SUPPORT | MAXIMUM WEIGHT PER TRAY Kg | DOOR AMOUNT |
|------|-----------|------------------|------------------------------|---------------------|----------------------------|-------------|
| 1    | 56        | 70 W             | REGULATOR WITH NO CONNECTION | 3                   | 20                         | 1           |
| 2    | 65        | 70 W             | REGULATOR WITH NO CONNECTION | 3                   | 20                         | 1           |
| 3    | 74        | 70 W             | REGULATOR WITH NO CONNECTION | 4                   | 20                         | 1           |
| 4    | 82        | 70 W             | REGULATOR WITH NO CONNECTION | 5                   | 30                         | 1           |
| 5    | 86        | 70 W             | REGULATOR WITH NO CONNECTION | 5                   | 30                         | 1           |

# REFRIGERATED BACTERIAL INCUBATOR

410-TDR



## ethik EXCLUSIVE SOFTWARE



Better user interaction software , for easy and clear operation.



Easy and simple control programming of temperature on a colorful and graphic interface on a 3" screen.



Saves up to 10 different programs for ramp/soak (60 segments each) with the possibility of naming each program.



Exclusive security system which allows access control (LOGIN) for every user.



Programmable software for visual alarm activation in case of higher or lower temperature than set point, and temperature differential.

## Product description

- Designed for culture and bacteriology
- Externally: corrosion resistant treatment and epoxy powder coating
- Internally: stainless steel
- High durability and easy cleaning
- Easy to use.

## Technical Characteristics

- Ecological refrigeration system, CFC free
- Temperature control and reading through PT100 sensor with 0,1°C resolution
- High thermal insulation, low temperature dissipation. Door built with magnetic gasket
- Inner glass door allows observation inside the chamber without keeping ambience protection
- Forced convection allows rapid temperature response rates and improves uniformity
- Size flexibility from 19 to 630 liters (check Technical Specifications Chart).

## INCLUDED ACCESSORIES AND COMPONENTS



- 1(one) wired tray for workbench models / 1(one) perforated stainless steel tray for ground models
- Operation manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA)
- Inner glass door
- Exhaustion damper (check information chart)

## OPTIONAL



- IQ,OQ and PQ protocols
- Software for RDC 17and GAMP5 requirements
- Communication RS485

## Technical Specifications

|                     |                             |
|---------------------|-----------------------------|
| Temperature range   | +15°C to 60°C               |
| Temperature control | PID                         |
| Resolution          | ± 0,1°C                     |
| Display Resolution  | Colored 4 digit TouchScreen |
| Temperature sensor  | PT 100                      |
| Inner capacity      | 19 to 630 L                 |
| Heating system      | Electrical resistance       |
| Protection grade    | IP 20                       |
| Electrical specs    | 110V or 220V 50Hz/60Hz      |

## REFRIGERATED BACTERIAL INCUBATOR 410 – TDR Information

| SIZE | INTERIOR |          |           |                 | EXTERIOR |          |           |                 |
|------|----------|----------|-----------|-----------------|----------|----------|-----------|-----------------|
|      | WIDTH mm | DEPTH mm | HEIGHT mm | INTERN VOLUME L | WIDTH mm | DEPTH mm | HEIGHT mm | EXTERN VOLUME L |
| 1    | 300      | 250      | 250       | 19              | 630      | 460      | 710       | 206             |
| 2    | 350      | 300      | 400       | 42              | 680      | 510      | 860       | 298             |
| 3    | 450      | 400      | 450       | 81              | 780      | 610      | 910       | 433             |
| 4    | 500      | 400      | 500       | 100             | 830      | 610      | 960       | 486             |
| 5    | 600      | 500      | 500       | 150             | 930      | 710      | 960       | 634             |
| 6    | 600      | 550      | 700       | 231             | 930      | 760      | 1160      | 820             |
| 7    | 800      | 600      | 700       | 336             | 1140     | 830      | 1570      | 1486            |
| 8    | 900      | 650      | 800       | 468             | 1230     | 880      | 1670      | 1808            |
| 9    | 1000     | 700      | 900       | 630             | 1340     | 930      | 1770      | 2206            |

| SIZE | WEIGHT Kg | ELETICAL SPECS W | EXHAUSTION DAMPER                    | TRAY AMOUNT SUPPORT | MAXIMUM WEIGHT PER TRAY Kg | DOOR AMOUNT |
|------|-----------|------------------|--------------------------------------|---------------------|----------------------------|-------------|
| 1    | 22        | 500              | REGULATOR WITH NO CONNECTION         | 3                   | 20                         | 1           |
| 2    | 34        | 500              | REGULATOR WITH NO CONNECTION         | 3                   | 20                         | 1           |
| 3    | 36        | 880              | REGULATOR WITH NO CONNECTION         | 4                   | 20                         | 1           |
| 4    | 42        | 880              | REGULATOR WITH NO CONNECTION         | 5                   | 20                         | 1           |
| 5    | 54        | 880              | REGULATOR WITH NO CONNECTION         | 5                   | 20                         | 1           |
| 6    | 64        | 880              | REGULATOR WITH NO CONNECTION         | 6                   | 40                         | 1           |
| 7    | 126       | 1500             | REGULATOR WITH CONECTION TUBE Ø100mm | 6                   | 40                         | 2           |
| 8    | 165       | 1500             | REGULATOR WITH CONECTION TUBE Ø100mm | 7                   | 40                         | 2           |
| 9    | 192       | 1500             | REGULATOR WITH CONECTION TUBE Ø100mm | 8                   | 40                         | 2           |

# VACUUM OVEN

440-D



## INCLUDED ACCESSORIES AND COMPONENTS



- Aluminum tray
- Operation manual
- RBC Calibration Certificate, for temperature controller
- Connection for Data Logger (4 to 20mA) .

## Product description

- Equipment developed to assure the drying of solid components with higher efficiency allowing an inner ambience of vacuum or inert gases
- Externally: corrosion resistant treatment and epoxy powder coating
- Internally: stainless steel
- High durability and easy cleaning.

## Technical Characteristics

- Temperature control and reading through PT100 sensor with 0,1°C resolution
- Time controlling through microprocessor electronic timer with hour/minute time scale from 00:00 to 99:59 hours/minutes
- Microprocessor temperature controller, ramp/soak programation (60 segments each) assuring versatility and autonomy
- Directional valve to determine vacuum position, ventilation and gas/air entrance
- Digital vacuometer on a scale of 0 to 760mmHg
- Aluminum tray
- Rubber leveling support.

## OPTIONAL



- IQ,OQ and PQ protocols

## Technical Specifications

|                                |                                    |
|--------------------------------|------------------------------------|
| Temperature range              | Amb. +5°C to 200°C                 |
| Temperature control            | PID                                |
| Temperature control resolution | ± 0,1°C                            |
| Display Resolution             | LED                                |
| Vacuometer                     | Digital - 0 to 760mmHg scale       |
| Temperature sensor             | PT 100                             |
| Output                         | 4 to 20mA                          |
| Inner capacity                 | 27 and 47 L                        |
| Heating system                 | Stainless steel tubular resistance |
| Protection grade               | Ip 20                              |
| Electrical specs               | 110V or 220V 50Hz/60Hz             |

\*Vacuum pump not included.

## Vacuum incubator - 440D Information

| SIZE | INTERIOR |          |           |                 | EXTERNAL |          |           |                 |
|------|----------|----------|-----------|-----------------|----------|----------|-----------|-----------------|
|      | WIDTH mm | DEPTH mm | HEIGHT mm | INTERN VOLUME L | WIDTH mm | DEPTH mm | HEIGHT mm | EXTERN VOLUME L |
| 1    | 300      | 300      | 300       | 27              | 485      | 477      | 640       | 148             |
| 2    | 350      | 450      | 300       | 47              | 535      | 630      | 630       | 212             |

| SIZE | WEIGHT Kg | ELETICAL SPECS W | TRAY AMOUNT SUPPORT | TRAY AMOUNT QUANTITY | MAXIMUM WEIGHT PER TRAY Kg | DOOR AMOUNT |
|------|-----------|------------------|---------------------|----------------------|----------------------------|-------------|
| 1    | 55        | 2400             | 1                   | 1                    | 10                         | 1           |
| 2    | 70        | 2400             | 1                   | 1                    | 10                         | 1           |

# LABORATORY PADDLE BLENDER

130



## Product description

- Equipment developed to facilitate microbiological studies, on food, natural products, pharmaceuticals, cosmetics and environmental samples preparation
- Stainless steel frontal chamber and beaters
- Externally: corrosion resistant treatment and epoxy powder coating
- High durability and easy cleaning.

## Technical Characteristics

- Speed control (RPM) through a microprocessor tachometer with digital indication, up to 4 programs for 12 segments each
- Time controlling through microprocessor electronic timer with hour/minute time scale from 00:00 to 99:59 automated shaking system shut down. Multiple configuration possibilities with manual or automatic SPM adjustments
- Settable from 20 to 200 strokes per minute
- Frontal paddle detachment regulation system on 03 adjustment levels (10,20 and 30mm), optimizing contact area between paddles and bags
- Frontal translucent polycarbonate window highly resistant to impact. Better sample visualization during the procedure.
- Safety device assures full stop of paddles when homogenization compartment opens
- Supports 100ml to 500ml bags, containing or not filter
- Disposer for accidental spills in case of bag rupture
- Closing door flaps assure excellent bag test fixation clip usage for safer bag handling
- Suction cup feet for better equipment fixation on the workbench
- 110V or 220V.

### INCLUDED ACCESSORIES AND COMPONENTS



- Instruction manual

### OPTIONAL



- IQ and OQ protocols

### LABORATORY PADDLE BLENDER – 130 Information

| MODEL | EXTERIOR |          |           |
|-------|----------|----------|-----------|
|       | WIDTH mm | DEPTH mm | HEIGHT mm |
| 130   | 387      | 564      | 385       |

| MODEL | WEIGHT Kg | ELETICAL SPECS W |
|-------|-----------|------------------|
| 130   | 25        | 100              |

# FRIABILITY TESTER

300



## Technical Specifications

|                  |                        |
|------------------|------------------------|
| Drums qty        | 1 or 2 racks           |
| Speeds           | 25 RPM ± 1 RPM         |
| Electrical specs | 110V or 220V 50Hz/60Hz |
| Protection grade | IP 20                  |

## Product description

- High technology and precision equipment for friability and/or abrasion tests with
- Externally: corrosion resistant treatment, epoxy powder coating.

## Technical Characteristics

- Time controlling through microprocessor electronic digital timer and sound alarm for automatic equipment shut down at test end. Multiple configuration options with manual or automatic adjustments
- Translucent USP compliant drum driven by AISI 304 stainless steel axis.

## INCLUDED ACCESSORIES AND COMPONENTS



- Instruction manual
- Friability drum

## OPTIONAL



- IQ and OQ protocols

EQUIPMENT FOLLOWS AMERICAN PHARMACOPEIA SPECIFICATIONS USP<1216>

## Friability-300 Information

| MODEL | WIDTH mm | DEPTH mm | HEIGHT mm | ELETTRICAL SPECS W | WEIGHT Kg |
|-------|----------|----------|-----------|--------------------|-----------|
| 1     | 350      | 300      | 450       | 100                | 16        |
| 2     | 560      | 350      | 450       | 200                | 20        |

# ULTRAFREEZER -86°C

ethik by  Froilabo



## DESCRÍÇÃO DO FREEZER

- Isolação termica com alta performance devido à injeção de poliuretano a vácuo VIP (Vacuum Insulation Panel);
- Válvula de descompressão, permitindo abrir a porta quase que instantaneamente após o seu fechamento;
- Basta a utilização da válvula para descomprimir e permitir a abertura da porta sem nenhum esforço ou perda prolongada de tempo para uma nova abertura de porta;
- Estabilidade de +/- 1°C a -80°C;
- Homogeneidade de +/- 3° C a -80°C;
- Fecho progressivo da porta o que da maior suavidade para fechar e um melhor fechamento da porta;
- Sensores de resposta rápida (Tipo Pt 100);
- Sistema de refrigeração em cascata que garante uma melhor performance;
- Permite trabalhar em ambiente com até 35° C;
- Mais silencioso devido ao novo sistema de ventilação;
- Tecnologia de Isolação VIP proporciona redução do consumo de energia em cerca de 15% quando compara do aos de mesmo porte;
- CFC e HCFC free;
- Atende às normas e diretrizes 60/396/CEE relativas a instalação de gás; as diretrizes de conformidade elétrica: 89/336/CEE modified 92/31/CEE and 93/68/CEE e as diretrizes de baixa voltagem 73/23/CEE modified 93/68/CEE;

## EXCLUSIVIDADE

 ethik by  Froilabo

Não possui separador de óleo no compressor, que é uma das maiores fontes de problemas e manutenção dos Ultrafreezers. Esta nova tecnologia de re-injeção do óleo no compressor abaixa a temperatura, permite melhor performance do óleo e evita a formação de resíduos causadores de queda na performance do compressor. Isto aumenta significativamente a vida útil do compressor.

## GARANTIAS

2  
anos

2 anos de garantia para o Ultrafreezer

5  
anos

5 anos de garantia no compressor, condensador e no ventilador

10  
anos

10 anos de garantia na isolação VIP

## EXCLUSIVO BOSS SYSTEM

Em caso de falha eletrônica nas placas ou de alguma desregulação eletrônica, o BoSS System detecta esta falha e faz com que o compressor passe a funcionar independente da parte eletrônica e fique ligado ininterruptamente. Esta ação mantém a temperatura do freezer, preservando as amostras e aumentando em muito a segurança das mesmas. Fornecendo mais tempo para a equipe de manutenção trabalhar, sem atropelos e não afetará a vida do compressor.

## ASSISTÊNCIA TÉCNICA

Permanente contra defeitos de fabricação com material posto em nossa fábrica.  
Oferecemos contrato de manutenção preventiva e corretiva.

## QUALIFICAÇÃO - Oferecemos serviços de qualificação IQ,OQ e QD.

## Informações por modelo Ultrafreezer BM

| MODELO  | CAPACIDADE L | DIMENSÃO EXTERNA mm      | DIMENSÃO INTERNA mm    | CAPAC. CRIOTUBOS 2ml | COMPARTIMENTOS | PESO Kg | ELÉTRICO    |
|---------|--------------|--------------------------|------------------------|----------------------|----------------|---------|-------------|
| BM 175  | 175          | A 1330 x L 875 x P 712,5 | A 620 x L 630 x P 452  | 12000                | 2              | 185     | 230V / 60Hz |
| BM 340  | 340          | A 1280 x L 875 x P 1012  | A 716 x L 630 x P 752  | 24000                | 2              | 223     | 230V / 60Hz |
| BM 515  | 515          | A 1640 x L 875 x P 1012  | A 1076 x L 630 x P 752 | 36000                | 3              | 267     | 230V / 50Hz |
| BM 690  | 690          | A 2000 x L 875 x P 1012  | A 1436 x L 630 x P 752 | 48000                | 4              | 330     | 230V / 60Hz |
| BM 1000 | 1000         | A 2000 x L 1200 x P 1004 | A 1436 x L 620 x P 765 | 72000                | 4              | 390     | 230V / 60Hz |