

POLYTRON® PT 6100 D



Stand-disperser (High-End Line)

POWERFUL, FLEXIBLE-USE DISPERSER

With digital controller, numerous applications

« Working volume 0.1 bis 30,000 ml »



KINEMATICA
DISPERSING AND MIXING TECHNOLOGY

POLYTRON® - Efficient and Powerful Disperser

This instrument meets the highest standards of reproducibility and scaling up and the reserve capacities of this motor enable the handling of larger quantities without any decline in quality. The fully digitized control and regulation system is very easy to operate. The illuminated LCD displays all required parameters which can be adjusted if necessary, with the membrane keypad.

TECHNICAL INFORMATION

Processing volume (water)
0.1 to 30,000 ml

Tip speed
Up to max. 32 m/s

Applicable aggregates
ø 5 to 65 mm

Speed range
500 to 26,500 rpm

Drive coupling
Aggregates with F coupling

Noise level (drive without aggregate)
82 dB(A) at 26,500 rpm

Motor
Universal with carbon brushes

Drive power
1700W

Connection voltage
110 - 230 V ± 10%, 50Hz / 60Hz

Relative humidity (max.)
80% during storage
80% during operation

Operating temperature
0 - 40 °C

PC interfaces
RS-232 (D SUB 9)
USB socket B

Protection class acc. to DIN
IP 20

Dimensions (L x B x H)
Drive: 235 x 164 x 313 mm

Weight
Drive: 7.4 kg

EMC standards
IEC/EN 61000-6-2 / EN 61000-6-3

Safety standard
IEC/EN 61010-2-51

THE EXPERT FOR YOUR LABORATORY

For more than 60 years, we have been perfecting the rotor/stator technology, working in close cooperation with users and universities. When using our technology, your test samples will be dispersed into homogeneous, chemical systems. Depending on the type of samples you will get homogeneous emulsions, dispersions or suspensions. This is the best foundation for all subsequent analyses or formulations.

ERGONOMICS

- Easy operation with an on-off switch and membrane keypad
- Digital speed control for long equipment life
- Protection against overheating, overload and blocking
- Speed stability even with changes in viscosity
- Easy to adjusted motor height (depending on the stand)
- Aggregates quickly switched with Click & Go coupling
- Easy aggregate clean-up with EasyClean Design

SCALE-UP



LABORATORY

PILOT PLANT

PRODUCTION

You can use test results to scale-up to our pilot plant and industrial POLYTRON® machines. The volume range for on batch units is seamlessly available up to 10,000 liters.

RESULTS ARE CONVINCING

SMALLEST SIZES OF PARTICLES/DROPLETS
because precise analysis require homogeneous samples

EFFICIENT SAMPLE PREPARATION
because fast dispersion saves time

STANDARD OR CUSTOM-MADE AGGREGATES
perfected for and in cooperation with the users

CLEANING AND DISASSEMBLY
EasyClean Design makes it very simple

QUICK ENGAGEMENT OF THE AGGREGATES by using Click & Go

BEST MATERIALS AVAILABLE
because without them, we could not call it Swiss Made

DURABILITY is a Swiss virtue



Users / Application ranges



General homogenizer applications

Dispersions, suspensions, and emulsions

Dispersing of resins and pigments

Dispersion of plant, animal and human tissue samples in various liquids and volumes

Dissolving solids even at higher viscosities

Formulation of lotions, creams and foodstuffs

Extraction of active pharmaceutical ingredients (API) in pills and tablets

Preparation of samples for quality assurance/control

This list provides a small selection of possible applications.

Kinematic dispersion using the rotor/stator system

Who is the founder of it?

The roots of today's KINEMATICA began in the former chemical/physical research institute of Prof. P. Willems in Lucerne Switzerland, the inventor of the modern rotor/stator dispersion technology.

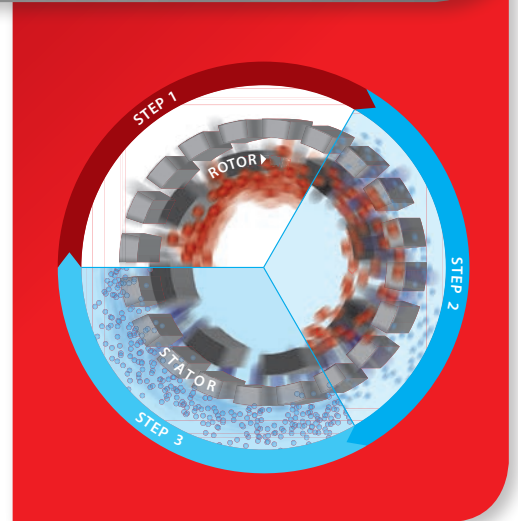
THE PRINCIPLE:

The spinning rotor generates a vacuum. The sample is drawn in and discharged to the outside through the stator's slots. Between the rotor/stator (shear gap), the product is subject to high deceleration-tangential and radial acceleration forces. The individual particles/droplets are torn apart and thus reduced in size; they are reduced several micrometers in size through additional cutting and crashing effects.

THE RESULT:

Microscopic dispersions, emulsions, suspensions, and foams are generated. Droplets, particles, and gas bubbles are reduced to several micrometers or smaller. Small and large substances are dispersed more economically, faster, and better than with any other system.

Your samples are efficiently «**POLYTRONIZED**».



Aggregate Technology

Unrivaled!

The high efficiency and the uniqueness of our POLYTRON® dispersing aggregate can only be achieved through superior manufacturing precision and the sophisticated KINEMATICA design method. This is 100% Swiss Made.

STANDARD AGGREGATES (EC DESIGN, WITH TWO OR MORE SPROCKETS)

This is all you need for popular applications in the preparation of samples and formulation development. The cutting teeth embedded in the head of the tool optimize the pre-crushing of the sample. An enclosed ring design provides optimum protection for those teeth and prevents them from bending.

SPECIAL AGGREGATES (W, M, B, DS, Z DESIGN)

Specializations in the chemical, pharmaceutical, cosmetic, and food industry, as well as the life sciences, makes new designs inevitable. These aggregates are based on state-of-the-art technology and only available from KINEMATICA.

The highly specialized tool is subject to further development that involves close cooperation with our customers and universities. Thus, it is continuously perfected for specific applications.

MATERIALS

Whether you need a tool with standard or special geometry, all aggregates are manufactured from high-alloy stainless steel 316L, electrolytically polished and made in Switzerland.

BEARINGS

Depending on the diameter, our aggregates are made with high-quality plastic, special carbide or bronze/carbide bearings. They have excellent mechanical properties and chemical resistance and have FDA approvals. Super high-speed ball bearings are used in the couplings to provide stability at speeds of up to 30,000 rpm.

CLEANING AND DISASSEMBLY

EasyClean: Our technology ensures the simplest removal and fast cleaning, either by hand, dishwasher, or autoclave. Disassembling the precisely fitting components is simple and fast.

LOCKING SYSTEM

All our POLYTRON® aggregates are fitted with a high-precision quick-release system: The Click & Go

Dispersing aggregates for PT 6100 D

EC «STANDARD DISPERSING AGGREGATE»



Design

The universal geometry uses two rows of teeth, is suitable for a large spectrum of laboratory applications, and it is reliable and efficient

Selection and applications

- All standard dispersing tasks
- Grinding of animal and human tissue samples in a variety of fluids and volumes
- Sample preparation for the extraction and dissolution of organic materials

- Sample preparation for medical diagnostic procedures as well as DNA analysis
- Extractions of systems/substances from vegetable-derived samples
- Disruption of animal and human cells
- Deagglomeration of united cell structures
- Intensive mixing

Sales No.:	Description	ø/length mm	Volume ml	max. Tip speed
11030297	PT-DA 05/2EC-F078	5 / 78	0.1 - 5	5
11030298	PT-DA 07/2EC-F101	7 / 101	0.3 - 10	8
11030299	PT-DA 12/2EC-F154	12 / 154	3 - 250	14
11030302	PT-DA 20/2EC-F193	20 / 193	20 - 2'000	22
11030305	PT-DA 30/2EC-F250	30 / 250	100 - 4'000	30
11030311	PT-DA 30/4EC-F250	30 / 250	100 - 4'000	30
11030313	PT-DA 36/2EC-F250	36 / 250	200 - 4'500	34
11030317	PT-DA 36/4EC-F250	36 / 250	200 - 4'500	34
11030320	PT-DA 40/2EC-F250	40 / 250	200 - 5'000	36
11030325	PT-DA 45/2EC-F250	45 / 250	200 - 6'000	40
11030329	PT-DA 45/6EC-F250	45 / 250	200 - 6'000	40
11030330	PT-DA 50/2EC-F250	50 / 250	300 - 10'000	44
11030335	PT-DA 50/4EC-F250	50 / 250	300 - 10'000	44
11030338	PT-DA 60/2EC-F250	60 / 250	300 - 30'000	50

M «OUTSIDE CUTTING BLADES»



Design

Outside blades pre-crush samples that are larger than the rotors diameter. Subsequently, they can be dispersed inside the generator

Selection and applications

- Dispersing of large samples made simple
- All standard dispersing applications similar to EC aggregate

Sales No.:	Description	ø/length mm	Volume ml	max. Tip speed
11030300	PT-DA 12/2MEC-F154	12 / 154	3 - 250	14
11030303	PT-DA 20/2MEC-F193	20 / 193	20 - 2'000	22
11030307	PT-DA 30/2MEC-F250	30 / 250	100 - 4'000	30
11030308	PT-DA 30/2MG-F273*	30 / 273	100 - 4'000	30
11030315	PT-DA 36/2MEC-F250	36 / 250	200 - 4'500	34
11030322	PT-DA 40/2MEC-F250	40 / 250	200 - 5'000	36
11030323	PT-DA 40/2MG-F250*	40 / 250	200 - 5'000	36
11030332	PT-DA 50/2MEC-F250	50 / 250	300 - 10'000	44
11030333	PT-DA 50/2MG-F250*	50 / 250	300 - 10'000	44
11030340	PT-DA 60/2MEC-F250	60 / 250	300 - 30'000	50
11030341	PT-DA 60/2MG-F250*	60 / 250	300 - 30'000	50

* M-design aggregate in gas-tight model

W «W-DESIGN»



Design

The W design prevents fibrous, stringy or solid samples from clogging the aggregate

Selection and applications

- Dispersing fibrous, stringy or solid samples (e.g., pieces of meat)
- All standard dispersing applications similar to EC aggregate

Sales No.:	Description	ø/length mm	Volume ml	max. Tip speed
11030301	PT-DA 12/2WEC-F154	12 / 154	3 - 250	14
11030304	PT-DA 20/2WEC-F193	20 / 193	20 - 2'000	22
11030294	PT-DA 20/2G-F210*	20 / 210	20 - 2'000	30
11030309	PT-DA 30/2WEC-F250	30 / 250	100 - 4'000	30
11030345	PT-DA 30/2WMEC-F250**	30 / 250	100 - 4'000	30
11030319	PT-DA 36/2WEC-F250	36 / 250	200 - 4'500	34
11030346	PT-DA 36/2WMEC-F250**	36 / 250	100 - 4'500	34
11030324	PT-DA 40/2WEC-F250	40 / 250	200 - 5'000	36
11030328	PT-DA 45/2WEC-F250	45 / 250	200 - 6'000	40
11030334	PT-DA 50/2WEC-F250	50 / 250	300 - 10'000	44
11030342	PT-DA 60/2WEC-F250	60 / 250	300 - 30'000	50

* W-design aggregate in gas-tight model

** W-Design aggregate with knives

KINEMATICA aggregates solve all problems you are faced with every day in the laboratory. Using our Click & Go quick release makes the changing of aggregates very easy.

G «GASTIGHT»

Design

Integrated mechanical seals

Selection and applications

- Under pressure or vacuum
- Preventing air from being added to emulsions
- Corrosive acid mixtures



Sales No.:	Description	ø/length mm	Volume ml	max. Tip speed
11030295	PT-DA 20/2G-F210	20 / 210	20 - 2'000	22
11030306	PT-DA 30/2G-F273	30 / 273	100 - 4'000	30
11030312	PT-DA 30/4G-F273	30 / 273	100 - 4'000	30
11030316	PT-DA 36/2G-F273	36 / 273	200 - 4'500	34
11030318	PT-DA 36/4G-F273	36 / 273	200 - 4'500	34
11030321	PT-DA 40/2G-F273	40 / 273	200 - 5'000	36
11030327	PT-DA 45/2G-F273	45 / 273	200 - 6'000	40
11030331	PT-DA 50/2G-F273	50 / 273	300 - 10'000	44
11030336	PT-DA 50/6G-F273	50 / 273	300 - 10'000	44
11030339	PT-DA 60/2G-F273	60 / 273	300 - 30'000	50

Z «Z-DESIGN»

Design

Breaking up of hard samples, with integrated V-notch technology. Additional, integrated holes for cleaning

Selection and applications

- Hard and brittle material
- Sweet corn and grain
- Breaking, open and dispersing of pills
- Breaking, hard grains



Sales No.:	Description	ø/length mm	Volume ml	max. Tip speed
11030310	PT-DA 30/2ZEC-F250	30 / 250	100 - 4'000	29

B «BIOTRONA® HIGH-TURBULENCE MIXER»

Design

High-turbulence mixing head with the least possible shear forces and energy inputs

Selection and applications

- Quick removal and suspension of solid particles; also suitable for high viscosity applications



Sales No.:	Description	ø/length mm	Volume ml	max. Tip speed
11030296	PT-DA 20/BEC-F193	20 / 193	100 - 2'000	21
11030314	PT-DA 36/BEC-F250	36 / 250	300 - 10'000	34
11030326	PT-DA 45/BEC-F250	45 / 250	500 - 30'000	40

DS «DISSOLVER»

Design

A processing head with teeth. The product is radially accelerated

Selection and applications

- Fast mixing and homogenizing of solids in liquid
- Processing of highly viscous products



Sales No.:	Description	ø/length mm	Volume ml	max. Tip speed
11030344	PT-DA 30/DS-F250	30 / 250	500 - 10'000	30
11030337	PT-DA 53/DS-F250	53 / 250	800 - 30'000	47
11030343	PT-DA 65/DS-F250	65 / 250	1'000 - 40'000	50

TIN «TITANIUM NITRATED» - UPGRADE

Design

Rotor and/or stator with up to three rows of teeth with a titanium nitrated (TiN) coating

Selection and applications

- All dispersing applications with abrasive samples



Sales No.:	Description
11035050	TiN rotor for the selected dispersing aggregate, ø 12-60 mm
11035150	TiN stator for the selected dispersing aggregate, ø 12-60 mm

Dispersing vessels

Choosing the right dispersing aggregate is crucial for good results. The right vessel also helps contribute to achieving the desired results.

THE PROBLEM

For normal cylindrical beakers, the flow creates a vortex. The mixing and dispersing efficiency decreases considerably since the product is no longer being optimally processed through the dispersing generator head. This lengthens processing times, requiring more energy input. Depending on the shape of the vortex, this may also lead to additional air being introduced.

THE SOLUTION

Our specially designed GS jars have a cloverleaf-like shape. This effectively interrupts the flow in the radial direction and generates additional counteracting forces. These high turbulences maximize the mixing and dispersion efficiency, thus minimizing processing time and requiring less energy.

THE SELECTION

Our GS-glasses are available in chemical- and temperature-resistant borosilicate glass or in stainless steel, with working volumes from a few milliliters to several liters, with or without lid and with or without sealed feedthrough.



GS vessel principle
(viewed from above)



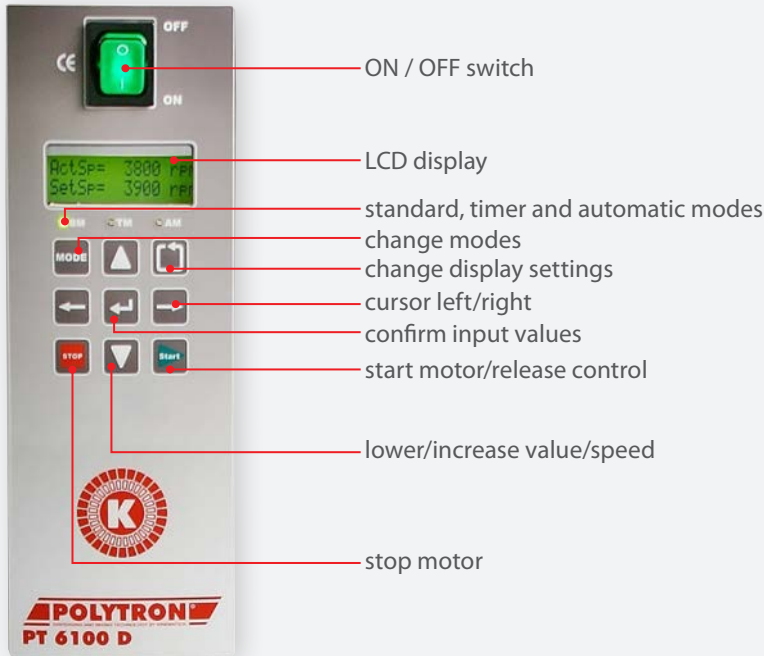
THE RIGHT DISPERSING VESSEL

Designation	Sales no.:	Ø / H (mm)	Process volume	Model	Designation	Sales no.:	Ø / H (mm)	Process volume	Model		
GS 15	11051010	30 / 100	35 ml	Cloverleaf shaped Borosilicate glass	GS100-1	11052001	105 / 150	1'000 ml	Cylindrical Stainless steel	Cylindrical-shaped stainless steel vessel with hook grips	
GS 25	11051011	54 / 150	150 ml		GS100-2	11052002	135 / 170	2'000 ml			
GS 40	11051012	80 / 200	500 ml		GS100-3	11052003	165 / 180	3'000 ml			
GS 50	11051013	90 / 250	1000 ml		GS100-4	11052004	185 / 185	4'000 ml			
GS 60	11051014	100 / 300	1300 ml		GS100-5	11052005	185 / 225	5'000 ml			
GS 15 K	11051020	30 / 100	35 ml		GS100-6	11052006	185 / 265	6'000 ml			
GS 25 K	11051021	54 / 150	150 ml		GS100-8	11052008	210 / 270	8'000 ml			
GS 40 K	11051022	80 / 200	500 ml		GS100-10	11052010	230 / 280	10'000 ml			
GS 50 K	11051023	90 / 250	1000 ml		GS100-1.C	11052101	105 / 150	1'000 ml			Cylindrical-shaped stainless steel vessel with hook grips and a cover with a drop handle made of stainless steel
GS 60 K	11051024	100 / 300	1300 ml		GS100-2.C	11052102	135 / 170	2'000 ml			
GS 15KL08	11051030	30 / 100	35 ml		GS100-3.C	11052103	165 / 180	3'000 ml			
GS 15KL12	11051031	30 / 100	35 ml		GS100-4.C	11052104	185 / 185	4'000 ml			
GS 25KL12	11051040	54 / 150	150 ml	GS100-5.C	11052105	185 / 225	5'000 ml				
GS 25KL20	11051041	54 / 150	150 ml	GS100-6.C	11052106	185 / 265	6'000 ml				
GS 40KL20	11051050	80 / 200	500 ml	GS100-8.C	11052108	210 / 270	8'000 ml				
GS 40KL26	11051051	80 / 200	500 ml	GS100-10.C	11052110	230 / 280	10'000 ml				
GS 50KL20	11051060	90 / 250	1000 ml	GS100-1.C.B.	11052201	105 / 150	1'000 ml	Cylindrical-shaped stainless steel vessel with hook grips, equipped with a baffles part shelf as an insert as a cover with drop handle			
GS 50KL26	11051061	90 / 250	1000 ml	GS100-2.C.B.	11052202	135 / 170	2'000 ml				
GS 60KL20	11051070	100 / 300	1300 ml	GS100-3.C.B.	11052203	165 / 180	3'000 ml				
GS 60KL26	11051071	100 / 300	1300 ml	GS100-4.C.B.	11052204	185 / 185	4'000 ml				
				GS100-5.C.B.	11052205	185 / 225	5'000 ml				
				GS100-6.C.B.	11052206	185 / 265	6'000 ml				
				GS100-8.C.B.	11052208	210 / 270	8'000 ml				
				GS100-10.C.B.	11052210	230 / 280	10'000 ml				

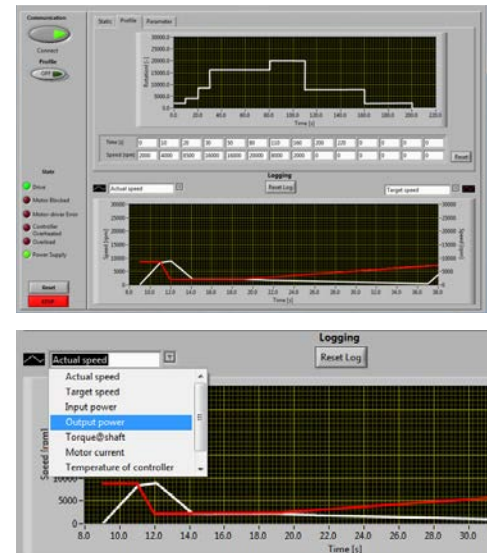
PC control software

CONTROL PANEL

The PT 6100 D is controlled digitally via a keypad. All important operating parameters can be read on the 2-line LCD display.



The free-of-charge software «User Interface PT 6100 D» was developed for the operation and control of the laboratory dispersing system POLYTRON® PT 6100 D. A USB or RS232 interface provides the communication to the computer. The data transmission protocol complies with the Modbus specifications.



OPERATING MODE

- STANDARD MODE: Operation by manual control
- TIMER MODE: Automatic shutdown by recording speed and time
- AUTO MODE: Complete control through the included KINEMATICA software

KINEMATICA SOFTWARE

- Set the speed via PC
- Store speed/time profile to reproduce formulas or processes
- Adjustable temperature limits as stop criterion, for example, to prevent product overheating (with Pt100 temperature probe)
- Graphical representation of parameters with time diagram
- Continuous recording of all parameters listed above in MS Excel format
- PC software and cable included

ADDITIONAL FEATURES

- Memory function: remembers the last speed setting and the time when the device shut off
- displays the product temperature by means of the optional Pt100 temperature probe

PARAMETERS RETRIEVABLE VIA LCD DISPLAY

- Actual speed [AS, rpm]
- Target speed [TS, rpm]
- Power in [Pin, W]
- Power out [Pout, W]
- Moment of force [M Ncm]
- Motor current [I, A]
- Supply voltage [U, V]
- Product temperature (with optional Pt100 temperature probe) [TP, °C]
- Internal temperature controller [Tc, °C]
- Operating hours meter [Oh, h]
- Firmware

SYSTEM REQUIREMENTS:

- Operating system: Windows® XP / 7 / 8 / 10
Required interfaces: 1 x USB or 1 x RS-232



Comfort at the highest level

Modern laboratories want equipment that is easy to handle. This rugged electric tripod offers a variety of benefits.

REQUIREMENTS

The processing of large sample volumes or viscous products requires larger, higher torque drive units and larger aggregates which are quite heavy. These factors were the reasons for making this stand available to our customers.

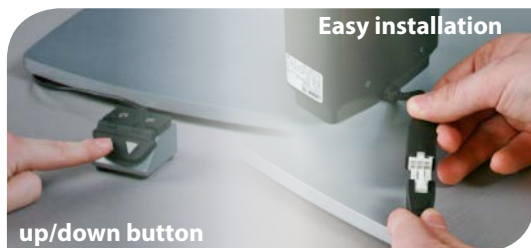
Now, what has long been a part of the standard equipment in the pilot plants, is now available for laboratory use.

PRINCIPLE

- Powerful motor mounted onto the telescopic lifting arm
- Durable, robust construction
- High stability due to the massive aluminum base plate

RESULT

- Easy height adjustment by means of two buttons
- Anti-slip mat included
- Available with optional vessel holder



OTHER STANDS AND ORDER NUMBERS

Sales no.:	11040033	11040036	11040037	11040034
Designation	ST-P 14/590+500, 230 V (EU-plug)	ST-P 14/590+500, 230 V (CH-plug)	ST-P 14/590+500, 230 V (UK-plug)	ST-P 14/590+500, 100-120 V
Description	Electric plate stand with lifting telescopic bar for more ease of use. Incl. up/down button and mat to prevent slipping. The electronics are designed for ambient temperatures of +5°C to +40°C and were tested per EN 60335-1 and UL 962. Weight: 11 kg			



STAND ACCESSORIES

Sales no.:	Designation	Description
11036005	Vessel holder	Vessel holder with guide for ST-P 14/590+500

Order information and accessories

Depending on your specific requirements, it is possible to expand the PT 6100D drive with our functional accessories. Our expert personnel will be happy to assist you and answer all the questions you might have.

ADAPTER

Adapters for use with dispersing aggregate with A coupling

Sales No.:	Designation
11035001	Adapter PT-DA / PTA (F/A)

Description

This adapter connects older A-coupling dispersing aggregates such as PT-K / PT-G with this PT 6100 D motor (with F-coupling).



TEMPERATURE PROBE

For measuring the product temperature. The probe can be directly connected to the rear panel of the device.

Sales No.:	Designation
11020050	Pt100

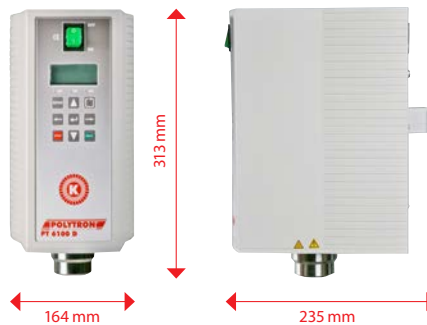
Description

- Temperature range 0 °C to 120 °C
- Temperature displayed on LCD display
- If the temperature probe is used with the PC software, the temperature is displayed and you can set temperature limits and have the software record the current temperatures



DRIVES / COMPLETE SYSTEMS

Sales No.:	Description
Motor	
11010110	POLYTRON® PT 6100 D, 230 V / EU -Power cord, PC software, RS-232/USB connection cable
11010111	POLYTRON® PT 6100 D, 230 V / CH -Power cord, PC software, RS-232/USB connection cable
11010112	POLYTRON® PT 6100 D, 230 V / UK -Power cord, PC software, RS-232/USB connection cable
11010113	POLYTRON® PT 6100 D, 100-120 V / Power cord, PC software, RS-232/USB connection cable
Motor is sold with stand and accessories	
11090121	PT 6100 D, 230 V , EU -Power cord, stand ST-P 14/590+500, PC software, RS-232/USB connection cable
11090122	PT 6100 D, 230 V , CH -Power cord, stand ST-P 14/590+500, PC software, RS-232/USB connection cable
11090124	PT 6100 D, 230 V , UK -Power cord, stand ST-P 14/590+500, PC software, RS-232/USB connection cable
11090123	PT 6100 D, 100-120 V / Power cord, stand ST-P 14/590+500, PC software, RS-232/USB connection cable



KINEMATICA solutions for your homogenizing, dispersing, emulsifying, suspending, crushing, wet milling tasks.

Our staff will be happy to advise you. We will be glad to you additional documentation or present the POLYTRON® systems to you in person.

YOUR APPLICATION IS OUR FOCUS!

KINEMATICA is a leading manufacturer of dispersing and mixing technology for standard and customized applications in the lab, pilot plant and production areas of pharmaceutical, chemical, food, cosmetic and biotech or life science companies worldwide.

Our POLYTRON® batch and MEGATRON® In-line Homogenizers are suitable for many applications:

- Dispersing of non soluble liquids or solids into liquids to finest emulsions/ multiple emulsions or suspensions
- Induction and dispersion of powders into liquids
- Foaming by gas induction into liquids
- Disintegration of tissue samples for preparation in further analysis
- Dispersing of various samples for quality control

We also deliver POLYMIX® Micro Dry Grinding Mills and a variety of POLYMIX® and MICROTRON® Overhead Stirrers and Mixers.

Whatever your application, we are confident that our team of specialists, with over 60 years of experience, will provide the best solution for you.

YOUR SATISFACTION IS OUR GOAL!



BRAND NAMES WITH HISTORY



Batch dispersing/homogenizing units



High turbulent mixing



Inline dispersing/homogenizing units



Dispersing/homogenizing Reactors



Stirrers and dry Mills



Mixer/Blender



Viscometers



KINEMATICA
DISPERSING AND MIXING TECHNOLOGY



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