



Profile & Measurement Projectors



Vertical and horizontal profile and measurement projectors Optical Comparators

Just the right equipment for each measurement task – precise, reliable, fast ... a real benefit for everyone.



SIMPLY PRECISE



Hohlmeide

Profile Projectors



Versatile – efficient – ergonomic

Affordable entry-level models in genuine Schneider quality.

Whether designed as a benchtop or as a floor-standing model, and whether used for individual measurement operations or more extensive comparison tasks – profile projectors by Dr. Heinrich Schneider Messtechnik provide a wealth of benefits for every user. Whatever the task, they are the epitome of efficiency!

Application areas

State-of-the-art profile projectors developed by Dr. Heinrich Schneider Messtechnik have earned an outstanding reputation in the world of metrology, setting new standards in terms of accuracy and precision. Designed with consistently high quality, Schneider devices have continuously shown their excellence for decades, and they have proved to be reliable companions in any environment. Whether featuring a 2-axis digital display or Schneider's M2 Measurement and Analysis Software, and whether or not integrating an edge sensor: all benchtop models are fully functional without any additional accessories being required. Thanks to their intuitive operation, users do not need to undergo tedious familiarisation processes. The combined benefits of the profile projectors thus help users maximise efficiency whilst minimising non-productive times. What better way could there be to save time and money?



Figure:
PV 360 with 2-axis
digital display

Vertical profile projector PV 300

The perfect choice for reliable measurement of plastic parts, seals and gaskets, dies, profiles and other objects.

Standard features of PV 300

- 300-mm projection screen with crosshairs (graticule)
- LED transmitted light illumination

Optional features of PV 300

- Triple revolving nosepiece
- Digital angle display
- 360-mm projection screen
- Measurement stages with larger working (coverage) areas
- Quick-adjustment feature for X and Y

Profile Projectors

Vertical profile projector PV 600 in floor-standing design

The perfect choice for reliable measurement of stamped parts, profiles, dies, tools and other objects.

Available variants of PV 600

- Standard package PV 600 equipped with a 2-axis digital display
- Standard package PV 600 equipped with M2
- Standard package PV 600 equipped with M2 and an external edge sensor

Standard features of PV 600

- 600 mm screen with crosshairs (graticule)
- LED transmitted light illumination

Optional features of PV 600

- Triple revolving nosepiece
- Laterally attached measuring stage equipped with a manually operated rotation axis for tool measurement

For more detailed information, please visit our website at www.dr-schneider.de

Machines shown may include optional accessories.



Common features of all profile projectors

Special features and benefits

- Razor-sharp workpiece contour representation facilitates accurate measurement
- Robust design for safe and reliable everyday operation

Standard features

- Template holder (support clips)
- Protractor, rotatable through 360°, vernier 1'
- LED transmitted light illumination

Optional features

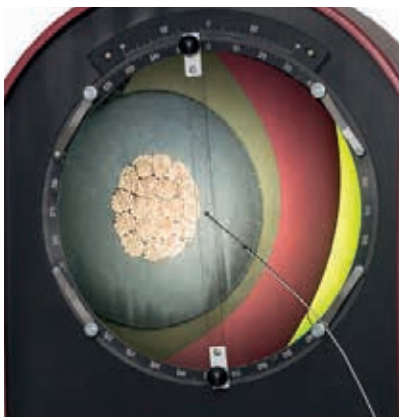
- Digital angle display for the projection screen
- Telecentric objectives (lenses) from 5- to 100-fold magnification
- Further options are available upon request

Accessories

- Black-out device
- Rotary stage
- Precision vice
- Centre point block or manual rotation axis SK40
- Concentricity gauge
- Precision jaw chuck with angle indicator
- Further accessories are available upon request

Technical data for profile projectors

Model		PV 300		PV 360		PV 600					
2-axis digital display		✓		✓		✓					
M2		✓		✓		✓					
M2 with external edge sensor		✓		✓		✓					
Measurement range	mm	200 x 100		200 x 100		250 x 125					
Optional		300 x 200; 400 x 200; 500 x 200									
Magnification		10	20	50	100	5	10	20	50	100	
Field of view (FOV)	mm	36	18	7.2	3.6	120	60	30	12	6	
Working distance	mm	115	97	53	45	258	134	128	90	45	
Screen diameter	mm	300		360		600					
Projection accuracy											
in incident light	%	0.10		0.10		0.08					
in transmitted light	%	0.15		0.15		0.10					
Max. distortion	%	0.1		0.1		0.2					
Resolution	mm	0.001		0.001		0.001					
Max. workpiece weight											
on glass plate	kg	10		10		20					
Dimensions	mm	W 925		W 925		W 1120					
		D 965		D 965		D 1350					
		H 1260		H 1260		H 1850					
Stage size	mm	400 x 240		400 x 240		520 x 325					
Weight	kg	130		130		450					
Electric power supply		220-240 VAC, 50-60 Hz, 1 kW									



LED incident light kit

High-performance LED incident light kit

... designed for easy retrofitting on measurement and profile projectors

Eight well-focused **high-performance LEDs** ensure **optimum illumination** of workpiece surfaces and provide **brilliant workpiece representation** on the comparator's **ground-glass screen**. The incident light ring can be fitted to different objectives (lenses) by means of an adapter. Depending on the type of device, multiple incident light rings can be used in one revolving nosepiece.

Measurement Projectors

High-end projectors for vertical and horizontal measurement – available in benchtop and floor-standing design

Designed for reliable measurement on the shop floor and in the measurement room

Application areas for measurement projectors

State-of-the-art measurement projectors developed by Dr. Heinrich Schneider Messtechnik have earned an outstanding reputation in the world of metrology, setting new standards in terms of accuracy and precision. Designed with consistently high quality, Schneider devices have shown their excellence innumerable times over the past decades.

Since speed and precision are key on the shop floor and in the measuring room, the well-conceived rigid design of the projectors' physical structure makes a winning team with their robust functional architecture, which is supported by the M2 measurement software (installed as a standard on a tablet PC) and by a high-precision edge sensor. All projectors have been designed to provide easy and intuitive operation to a broad range of users. Since the devices allow measurement operations to be performed in close proximity to the manufacturing area, efficiency is maximised whilst non-productive times are greatly reduced. What better way could there be to save time and money?

Horizontal measurement projector MH 360

The perfect choice for reliable measurement of tools, turned parts, shafts, pipes/tubes and other objects.

Especially when it comes to measuring turned parts, projector MH 360 shows its particular strengths: Simply place the object to be inspected vertically on the stage of the device, and the measurement can begin.

- Easy measurement of heavy workpieces weighing up to 50 kg
- 360-mm projection screen with engraved crosshairs (graticule)
- Edge sensor incorporated into the optical path
- LED transmitted light illumination

Optional equipment of MH 360

- LED incident light illumination, dimmable
- Swivelling light arm for transmitted light illumination
- M3 measurement software with multi-touch panel PC and image processing & analysis functionality (imaging probing system)
- Dual-objective (lens) changer (nosepiece)



For more detailed information, please visit our website at www.dr-schneider.de

Vertical measurement projector MV 360

For reliable measurement of plastic parts, seals/gaskets, dies, profiles and other objects



Machines shown may include optional accessories.

Standard features of MV 360

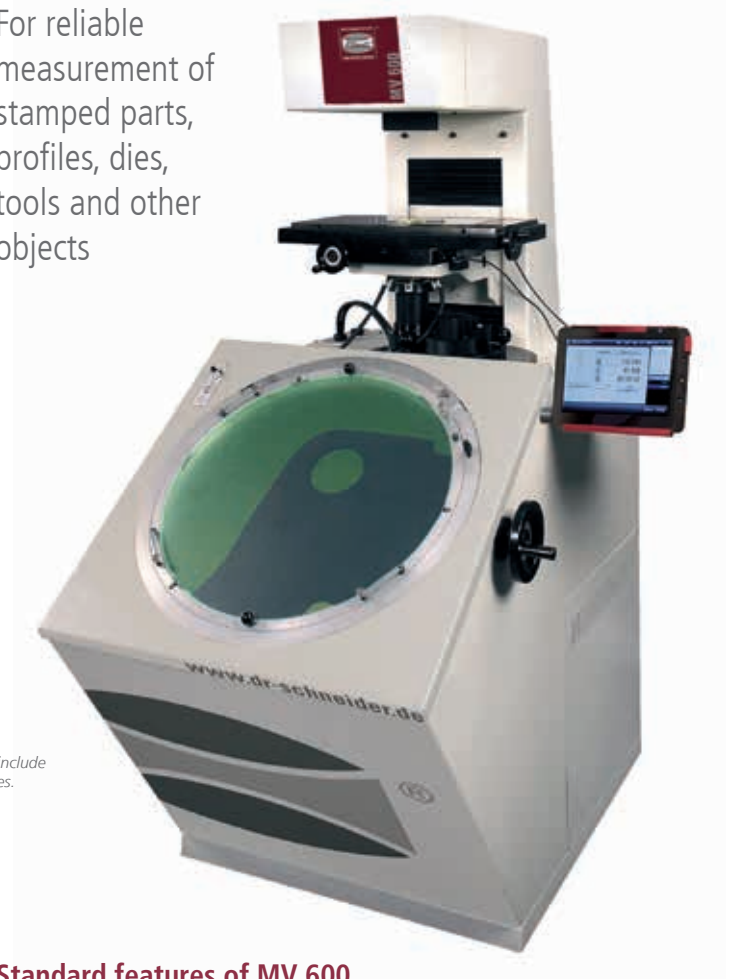
- Quick adjustment of the measurement stage
- Measurement range 200 x 100 mm
- 360-mm projection screen with crosshairs (graticule)
- Edge sensor incorporated into the optical path
- LED transmitted light illumination

Optional features of MV 360

- Helix-type swivel option thanks to a pivot-mounted plate superposed on the measuring stage
- LED incident light illumination, dimmable
- Triple revolving nosepiece for fast objective (lens) change
- M3 measurement software with multi-touch panel PC and image processing & analysis functionality (imaging probing system)
- Digital angle display for the rotation function of the projection screen
- Further options are available upon request

Vertical measurement projector MV 600 in floor-standing design

For reliable measurement of stamped parts, profiles, dies, tools and other objects



Standard features of MV 600

- Large-scale display of the workpiece
- Quick adjustment of the measurement stage
- Triple revolving nosepiece accommodating different objectives (lenses)
- 600-mm projection screen with engraved crosshairs (graticule)
- LED transmitted light illumination

Optional features of MV 600

- M3 measurement software with multi-touch panel PC and image processing & analysis functionality (imaging probing system)
- LED incident light illumination, dimmable
- Digital angle display for the rotation function of the projection screen
- Laterally displaced column and SK50 manual rotation axis for measurement of tools with large diameters
- Telecentric objectives (lenses) from 5- to 100-fold magnification
- Further options are available upon request

Measurement Projectors

Common features of all measurement projectors:

Special features and benefits

- High acutance (sharpness of contours) for reliable measurement
- Smooth and easy operation
- Consistent quality of measurement results
- No device readjustment required
- Measurement of cylindrical and cubic workpieces with consistent accuracy and precision
- Reproducible, repeatable and documentable workpiece quality and measurement results
- Generation of tabular and graphical measurement reports (protocols)

Standard features

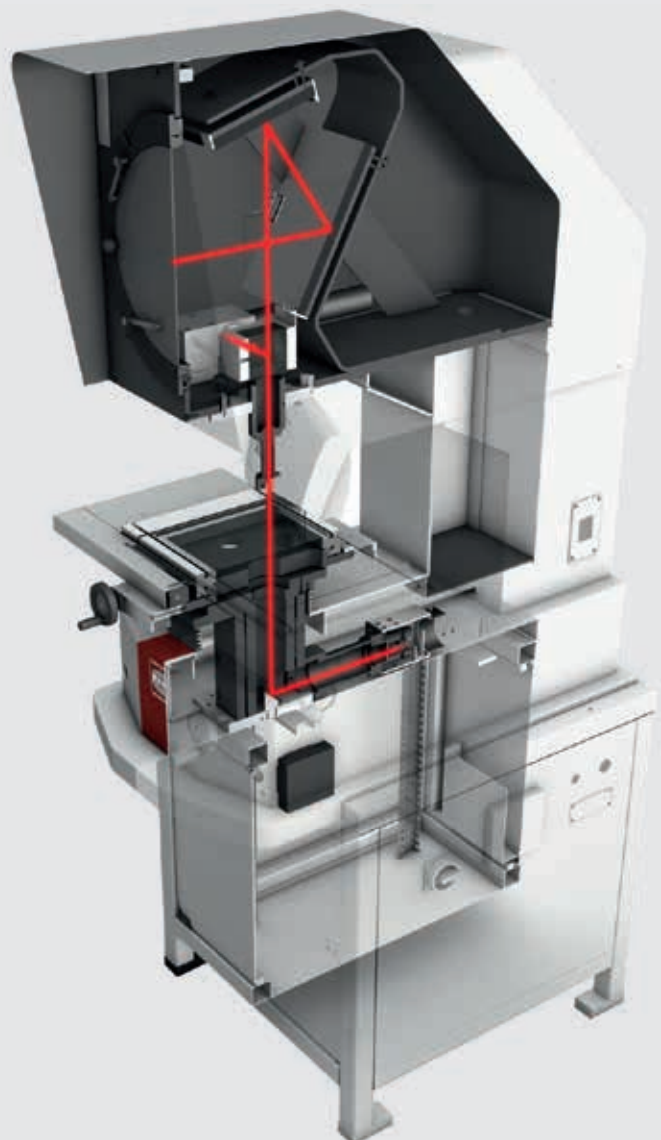
- Template holder (support clips)
- Protractor, rotatable through 360°, vernier 1'
- LED transmitted light illumination
- 0.001 mm resolution scales
- Edge sensor incorporated into the optical path
- Device calibration to DIN EN ISO 10360-7
- M2 measurement software with tablet PC
- Calibrated and adjusted measurement stage surfaces (as a complement and extension to the linear correction function)

Accessories

- Black-out device
- Rotary stage
- Precision vice
- Centre point block or manual rotating axis SK40/50
- Concentricity gauge
- Precision jaw chuck with angle indicator
- Workstation 75
- Further accessories are available upon request

Internal edge sensor

An edge sensor built into the projector's optical path ensures reliable measurement results regardless of the ambient lighting conditions at the projector's place of installation.





MV 600 designed as a special model, equipped with a laterally displaced lifting column (feed axis) and an SK50 manual rotation axis enabling measurement of tools with large diameters. A glass stage with an SK50 tool holder is, of course, also included in the scope of supply.

Technical data for measurement projectors

Model		MH 360		MV 360		MV 600				
Measurement range	mm	250 x 150		200 x 100		250 x 125				
Optional				300 x 200; 400 x 200; 500 x 200						
Magnification		10	20	50	100	5	10	20	50	100
Field of view (FOV)	mm	36	18	7.2	3.6	120	60	30	12	6
Working distance	mm	115	97	53	45	258	134	128	90	45
Screen diameter	mm	360		360		600				
Projection accuracy										
in incident light	%	0.10		0.10		0.08				
in transmitted light	%	0.15		0.15		0.10				
Max. distortion	%	0.1		0.1		0.2				
Resolution	mm	0.001		0.001		0.001				
Max. workpiece weight	kg	50								
on glass plate	kg			20		20				
Length measurement error ¹⁾		Measuring length L in mm								
optical (1D), DIN EN ISO 10360-7		E _{UX, MPE} = (2.5 + L/80 mm) μm, E _{UY, MPE} = (2.5 + L/80 mm) μm								
optical (2D), DIN EN ISO 10360-7		E _{UXY, MPE} = (2.8 + L/50 mm) μm								
Dimensions	mm	W 1000		W 925		W 1120				
		D 1170		D 965		D 1350				
		H 1115		H 1260		H 1850				
Stage size	mm	500 x 135		400 x 240		520 x 325				
Weight	kg	230		180		480				
Electric power supply		220-240 VAC, 50-60 Hz, 1 kW								

¹⁾ Admissible ambient temperature $20^\circ\text{C} \pm 1\text{K}$, temperature gradient $\Delta t_h = 0.5 \text{ K/h}$, $\Delta t_d = 4.0 \text{ K/d}$, measured with a calibrated standard.

Measurement Projectors

Application areas for horizontal measurement projectors

Schneider measurement projectors with horizontal optical path are equipped with a highly rigid mechanical stage (XY cross stage). Stage loads of up to 200 kg are measured with the same accuracy and precision as lighter workpieces.

Useful clamping fixtures, such as dead and live centre supports (whether manual, motorised or CNC-controlled) can be easily mounted on the stage.

Standard features

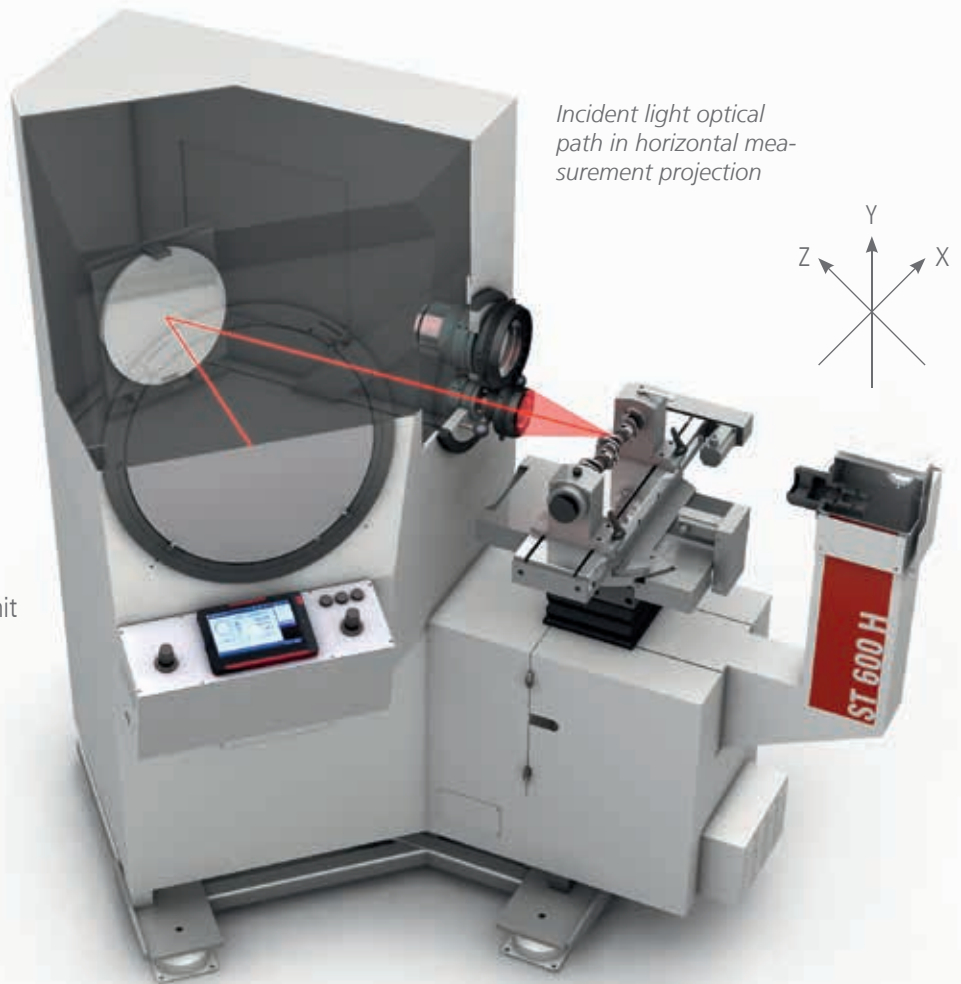
- 600-mm – 1000-mm screen with crosshairs (graticule), depending on the model
- Template holder (support clips)
- Protractor rotatable through 360°, vernier 1'
- Triple revolving nosepiece accommodating different objectives (lenses)
- Measurement range: from 350 x 300 mm to 750 x 300 mm, depending on the model
- Stage size: from 750 x 200 mm to 1200 x 200 mm, depending on the model
- Stage with a swivel range of +/- 20°, vernier 10', for table models R350 and R450
- X, Y and Z axis supported by a needle roller bearing
- Scales with a resolution of 0.1 µm
- Motorisation of all three axes and control via joystick
- Transmitted light and incident light illumination system
- Focusable incident light illumination
- M2 measurement software featuring an edge sensor integrated in the optical path



Machines shown may include optional accessories.

Optional features

- Integration of a high-resolution CCD camera in the optical path for documented and fast measurement
- M3 measurement software with geometrical functions – a smartly intuitive starter package guiding the user into the field of image processing & analysis (please see the M3 brochure for more details)
- Measurement and analysis software SAPHIR for complex measuring tasks (please see the SAPHIR brochure for more details)
- CNC control for automated workpiece measurement
- Expandable up to 5 axes, thus enabling control of a rotary stage and a swivel unit
- SPC interface for measurement data analysis
- 2D digitising of unknown workpiece contours
- CAD data comparison thanks to a 2D BestFit algorithm
- User management feature enabling multiple operators to perform measurements quickly and easily
- Further options are available upon request.



Highlights

- 2D optical measuring device calibrated in accordance with DIN EN ISO 10360-7
- Ideal for use in harsh industry environments
- Conveniently accessible measurement stage
- Large projection screen for easy user orientation during measurement
- Possibility of fully automated (CNC-controlled) measurement program execution

The whole is more than the sum of its parts ...

... and the quality supplied by Schneider Messtechnik is the best proof of this truth: The optical system, the mirrors as well as the projection screens used by Schneider are, without exception, made of high-quality materials ensuring excellent optical properties. In addition, all components are meticulously installed in an extremely rigid frame. It is the functionally integrated whole which makes the difference and which ensures absolutely accurate measurement results over the projector's entire life cycle. High performance – high reliability – high technology! Dr. Heinrich Schneider Messtechnik will never compromise when it comes to quality and has long made a name for itself as a competent and innovative partner in the field of precision metrology.

Measurement Projectors

Application areas for vertical measurement projectors

Schneider measuring projectors with vertical optical path are equipped with a highly rigid mechanical stage (XY cross stage). Thanks to a special glass plate, workpieces weighing up to 20 kg can be directly positioned on the glass plate.

Useful clamping fixtures, such as dead and live centre supports (whether manual, motorised or CNC-controlled) can be conveniently mounted on the stage.



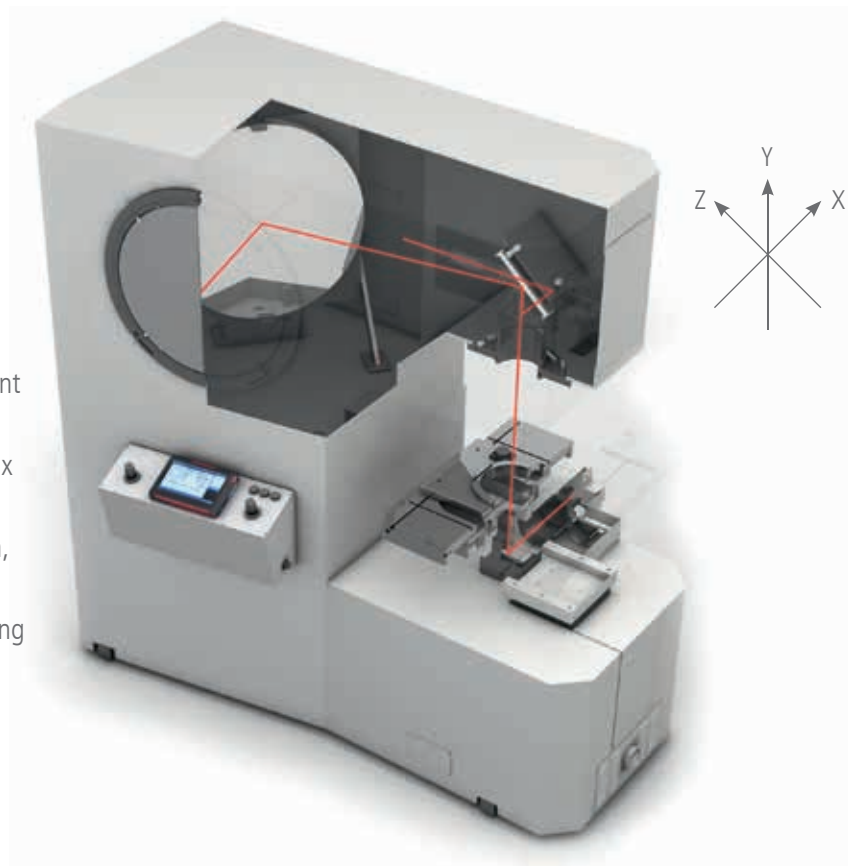
Machines shown may include optional accessories.

ST 750 V CNC:

Thanks to the many configuration options both in terms of measuring path and screen diameter, this state-of-the-art instrument meets all modern metrology requirements and opens up a world of application possibilities that multiply even further if an entirely customised model is chosen.

Standard features

- 600-mm – 1000-mm screen with crosshairs (graticule), depending on the model
- Template holder (support clips)
- Protractor rotatable through 360°, vernier 1'
- Triple revolving nosepiece accommodating different objectives (lenses)
- Measurement range: from 300 x 200 mm to 500 x 200 mm, depending on the model
- Stage size: from 600 x 440 mm to 800 x 440 mm, depending on the model
- X, Y and Z axis supported by a needle roller bearing
- Scales with a resolution of 0.1 μm
- Motorisation of all three axes and control via joystick
- High-performance LED transmitted light and LED incident light illumination system
- Focusable incident light illumination
- M2 measurement software featuring an edge sensor installed in the optical path



Transmitted light optical path in vertical measurement projection

Optional features

- Integration of a high-resolution CCD camera in the optical path for documented and fast measurement
- M3 measurement software with geometrical functions – a smartly intuitive starter package guiding the user into the field of image processing & analysis (please see the separate brochure for more details)
- Measurement and analysis software SAPHIR for complex measurement tasks (please see the SAPHIR brochure for more details)
- CNC control for automated workpiece measurement
- Expandable up to 5 axes, thus enabling control of a rotary stage and a swivel unit
- SPC interface for measurement data analysis
- 2D digitising of unknown workpiece contours
- CAD data comparison thanks to a 2D BestFit algorithm
- User management feature enabling multiple operators to perform measurements quickly and easily
- Further options are available upon request

Highlights

- 2D optical measuring device calibrated in accordance with DIN EN ISO 10360-7
- Ideal for use in harsh industry environments
- Conveniently accessible workpiece holder [measurement stage]
- Large projection screen for easy user orientation during measurement
- Possibility of fully automated (CNC-controlled) measurement program execution

The optical system, the mirrors as well as the projection screens used by Schneider are made of high-quality material. They are installed in a rigid frame, which ensures excellent optical properties and thus unparalleled measurement accuracy.

This commitment to quality has established Schneider Messtechnik as a reliable and innovative partner in the field of high-precision measurement so that clients can expect absolutely accurate measurement results over the projector's entire life cycle.

Measurement Projectors

Special solutions

Turn your measuring projector into a 3- to 6-axis CNC measuring machine! Thanks to measurement and analysis software SAPHIR, the device is capable of performing a variety of additional functions, such as fully automated execution of measurement program and automated data acquisition. The obtained data is then professionally processed, prepared and presented in the form of tabular and graphical measurement reports as well as in initial sample inspection reports.

The new generation of measurement projectors combines the most advanced digital technology with the most proven functional features into an innovative high-performance package. A CCD camera integrated in the projector's optical path brings numerous advantages in handling and use:

- Clear and large-size display of the images projected on the ground-glass screen as well as measurement data acquisition with unprecedented precision in the camera's field of view
- High density of measurement points ensures reliable measurement results
- Both the camera and the ground-glass screen of the projector display live images
- Fast and easy comparison of the images captured by the camera and of the images displayed on the ground-glass screen with the required values in order to detect possible deviations
- Reliable measurement of small radii and transition zones
- Measurements in incident light can be integrated into program execution



No deterioration of measurement quality by direct sunlight or unfavourable lighting conditions.

A sensor or a CCD camera installed in the projector's optical path will always determine the accurate edge values of workpieces independently of ambient light effects.

By moving the swivelling unit or the rotary table, the user can measure the contours of helical teeth and threaded elements.

T-slots and stop edges facilitate fast and accurate mounting of clamping fixtures.

The rotary/swivel unit transforms the measuring projector into a 5-axis CNC measuring machine.

ST 1000 VS CNC:

*A special version of model ST 1000,
designed as a 5-axis CNC measuring centre.*





M2 measurement software with internal edge detector

Measurement software M2 sets new standards for the convenient and accurate measurement of geometrical dimensions by means of profile or measurement projectors (optical comparators). For more detailed information, please request our free brochure "Measurement Software M2".



Measurement software M3 with image processing feature

This valuable tool enables precise measurement of geometrical elements by means of an intuitive multi-touch application. Among its main strengths are the clear and well-structured user interface as well as its innovative image processing functions that ensure fast and reproducible measurement point acquisition. For more detailed information, please request our free brochure "Measurement Software M3".



Interested in staying in tune with the latest in metrology? Then please check out our facebook page!



Interesting product videos and other useful information are available via YouTube.

SAPHIR

Measurement and analysis software SAPHIR

Since "Schneider" is the German word for "tailor", you can rightly conclude that SAPHIR is a truly "tailor-made" measuring software that leaves nothing to be desired: from "A" as in "axis alignment" to "Z" as in "zero-point administration" – SAPHIR is a valuable resource with invaluable features. For further information about this technological gem, please request our free brochure entitled "SAPHIR – 3D Measurement and Analysis Software".

Technical data for measurement projectors

Model		ST 600 H	ST 750 H	ST 1000 H	ST 600 V	ST 750 V	ST 1000 V
		horizontal optical path			vertical optical path		
Measurement range	X·Y mm	350 x 300 / 450 x 300 / 650 x 300 / 750 x 300			300 x 200 / 400 x 200 / 400 x 300 / 500 x 200		
	Z	200			200		
Magnification ¹⁾		5	10	20	25	50	100
Field of view (FOV) ²⁾ / Working distance							
	mm						
ST 600 H und ST 600 V	mm	120 / 220	60 / 136	30 / 144	24 / 118	12 / 100	6 / 48
ST 750 H und ST 750 V	mm	150 / 315	75 / 164	37.5 / 109	30 / 92	15 / 60	7.5 / 47
ST 1000 H und ST 1000 V	mm	200 / 445	100 / 240	50 / 240	40 / 240	20 / 140	10 / 120
Ground-glass screen diameter	mm	depending on the model 600 / 750 / 1000 (further dimensions upon request)					
Projection accuracy							
in transmitted light	%	0.10			0.10		
in incident light	%	0.10			0.10		
Max. distortion	%	0.1			0.1		
Resolution	mm	0.0001			0.0001		
Max. workpiece weight	kg	200			20 (on glass plate)		
Length measurement error		Measuring length L in mm					
optical (1D), DIN EN ISO 10360-7 ³⁾		EUX, MPE = (2.0 + L/80 mm) µm, EUY, MPE = (2.0 + L/80 mm) µm					
optical (2D), DIN EN ISO 10360-7 ³⁾		EUXY, MPE = (2.8 + L/50 mm) µm					
Weight	kg	1200 - 1700					
Electric power supply		220-240 VAC, 50-60 Hz, 1 kW					

¹⁾ Other magnifications upon request

²⁾ Field of view (FOV) for the ground-glass screen

³⁾ Admissible ambient temperature 20°C ± 1K, temperature gradient $\Delta t_h = 0.5 \text{ K/h}$, $\Delta t_d = 4.0 \text{ K/d}$, measured with a calibrated standard $\beta = \text{Magnification factor} = 10 \Delta \text{ Objective (lens) } 10\times$