

Zumbach

SWISS PRIME MEASURING SINCE 1957

PROFILEMASTER®



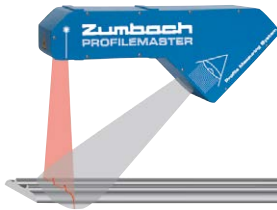
Accurate In-Line Profile Measurement using
Light Section Principle and Machine Vision

PROBLEM DEFINITION AND SOLUTION

The dimensions or even the complete cross-section of profiles and pipes made of metal, plastics or rubber must be continuously measured and monitored in the manufacturing process. The PROFILEMASTER® systems from Zumbach represent an accurate and economical solution to the problem. One or up to six laser / camera modules measure the cross section of the moving profile. A powerful PC based processor adds the partial pictures of the cameras made up of straight lines and radii together to yield the momentary cross section of the profile. All relevant dimensions such as width, height, angle and radii are added together to form the full cross-sectional picture. The nominal values for the profile can be directly imported from the CAD construction (as DXF file) which allows easy and problem free programming. Changes in speed and twist within normal limits have no affect on the measurement.

- For all profiles and pipes including steel, metal, plastic, rubber and other materials
- Measures and monitors product geometry continuously
- Displays key dimensions, angles, radii, etc.
- Alerts operator when product is out of tolerance
- Improved process control and CpK
- Scrap reduction → Savings on raw material and post processing costs
- Increased product quality = Higher customer satisfaction
- Seamless integration of the PC-based system with your network

MEASURING PRINCIPLE



One or multiple lasers (depending on the number of modules) project a visible laser contour on or around the product and this is then registered by a similar number of CCD cameras (light section principle).

A PROFILEMASTER® SYSTEM FOR ANY REQUIREMENT

When designing the PROFILEMASTER® system, concentration was focused on the most suitable solution in terms of price / performance ratio for the application.

- Due to the modularity of the PROFILEMASTER® system this goal could be achieved.
- The combination of 1 to 6 laser / camera modules allows the measurement of virtually all shapes, achieving an optimal measurement result with the smallest possible number of laser / camera modules.

The use of the system is practically unlimited due to the numerous model versions, with or without protective housings. Allowing the PROFILEMASTER® system to be used in a wide range of applications. The range extends from the laboratory applications over extrusion lines for plastics and rubber profile as well as harsh environments that are typical in the production of steel and metal profiles.

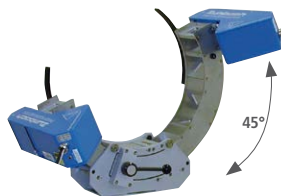
Processor and Display Unit

- Graphical user interface with SPC, data base, remote access, I/O
- Industrial PC, LCD screen, keyboard and mouse



PMM 140D
Measuring field: 140 mm (5.5 in.)

Laser / Camera Module
In many cases, one single module will provide the desired product contour.



PMM 140D-2A
Measuring field: 140 mm (5.5 in.)

Swivel Device
With 2 laser / camera modules.
For relatively clean processes such as extrusion and quality control.



PMM 30/50/80-4K
Measuring field: within
ø 30 / 50 / 80 mm (1.18 / 1.97 / 3.15 in.)

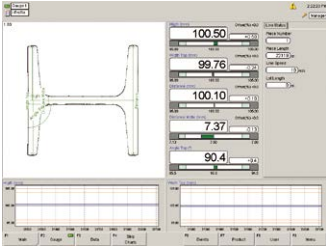
Compact Unit
With 4 measuring modules for universal use in different industrial applications. The C frame design allows for a speedy and optimal installation.



PMM 140D-4F
Measuring field: 170 mm (6.69 in.)

Octagon Version
For 4 laser / camera modules.
For relatively clean processes such as extrusion and quality control.

OPERATION, DISPLAY – LOGGING

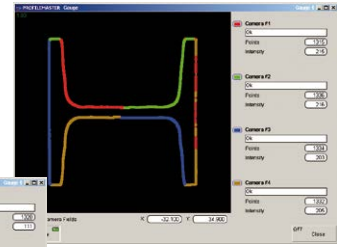


Main Screen

The basic work area shows a summary of the basic data of the measuring process. From here, various windows can be opened with detailed information on statistics, product, SPC etc. The main screen is always visible as the background of the application.

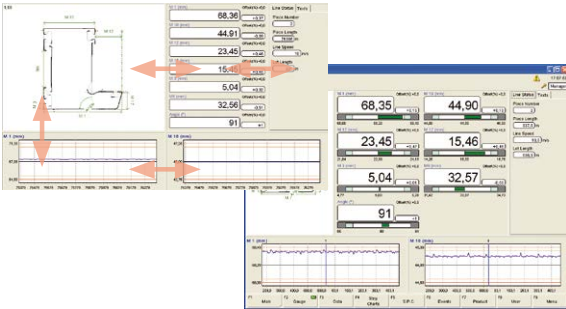
Gauge Screen

This screen displays the contour of the profile captured by the cameras.

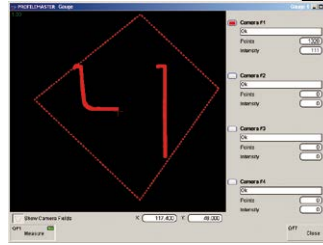


Customized Screen Layouts

Depending on the application, the individual zones within a main screen can be customized in order of importance:

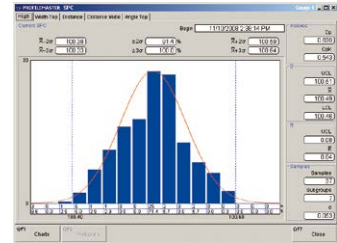


e.g. highlighting the numerical values



Camera View

The view of each individual camera can be displayed and areas of particular interest can be pointed out.

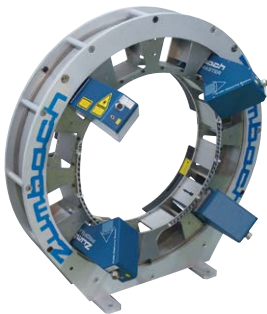


Histogram

Display of current SPC data.



19" cabinet with reserve space for printer



PMM 140D-4A
Measuring field: 170 mm (6.69 in.)

Universal Unit with Angle Adjustment.

To support 1 to 6 laser / camera modules. For relatively clean processes such as extrusion, coating, drawing and similar.



SPS 140-N4
Measuring field: \varnothing 170 mm (6.69 in.) or up to 125 x 230 mm (4.92 x 9.06 in.)

Partially Protected Unit

Constructed with 4 laser / camera modules. For all cold processes and products, even with dust, abrasion, emulsions and similar contaminations. Especially suitable for welded tubes, steel and metal profiles and similar products.



SPS 200-S4-8 / 400-S4-8 / 800-S4-8
Measuring fields: \varnothing 180 mm (7.09 in.) / \varnothing 125 x 230 mm (4.92 x 9.06 in.)
 \varnothing 360 mm (14.17 in.) / \varnothing 250 x 250 mm (9.84 x 9.84 in.)
 \varnothing 800 mm (23.62 in.) / \varnothing 550 x 550 mm (21.65 x 21.65 in.)

Fully protected Version

Features 4 laser / camera modules for harsh environments that are typical in the steel and metal industry. Especially suitable for billets, semi-finished products, H, I, U, L beams etc. These models are also available for hot rolling mills, with additional cooling device.

MEASURING FUNCTIONS

Most geometrical data of a profile can be collected and monitored on an operator-friendly graphic display during production.



Vernier Calipers Measurements
– Calipers



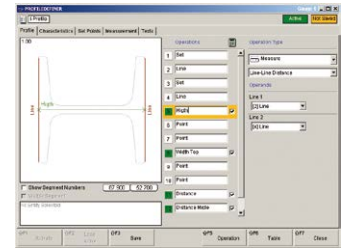
Measurement of distance
– Distance between: two points, point and line, point and arc, arc and line, two arcs, two lines



Angle Measurement
– Angle between two lines



Arc Measurement
– Radius of arc



Definition of the measuring tasks with the "Definer" software.

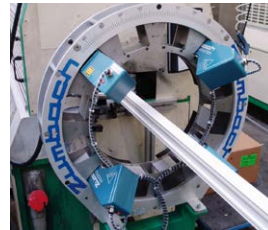
APPLICATION EXAMPLES



SPS 200-S4
Measurement of different hot rolled L profiles.



SPS 140-N4
Measurement of round and special shaped profiles.



PMM 140D-4A
Measurement of door or window profiles.



PMM 80-4K
Measurement of different shapes of drawn steel profiles.

TECHNICAL SPECIFICATIONS

Measuring units

Measuring field ¹⁾ :	Up to ø800 mm (31.5 in.)
Measuring principle:	Light section technique
Light source:	Laser diode red, class 3R
Camera(s):	CCD matrix
Measuring accuracy:	+/- 0.02...0.1 % of the measuring field size ²⁾
Repeatability:	+/- 0.005...0.01 mm ²⁾ (.00020004 in.)
Protection class of the Laser / camera modules:	IP 65

Dimensions: Due to the number of different models, it is not possible to show all individual dimensions within this brochure. Detailed dimensional drawings for each model are available upon request.

¹⁾ Depending on the model and on the product geometry and position

²⁾ Depending on product

Processors

Operating system:	Windows™ embedded
Network:	Via Ethernet
Compact version:	19" case 510 x 500 x 210 mm (4 HU ³⁾) (20.1 x 19.68 x 8.26 in.)
Standard version:	19" cabinet 610 x 645 x 1982 mm (42 HU ³⁾) (24 x 25.4 x 78 in.)
Inputs:	8 digital inputs
Outputs:	8 digital outputs or 4 digital inputs + 4 relay outputs
Power supply:	115 / 230V~, 50 / 60 Hz, 300 VA

[™] Windows is a trademark of Microsoft Corporation

³⁾ HU = Height Unit, 1 HU = 44.45 mm (1.75 in.) without case

• Specifications are subject to change without notice

WORLDWIDE CUSTOMER SERVICE AND SALES OFFICES



Headquarters:
Zumbach Electronic AG
PO Box
CH-2552 Orpund
SWITZERLAND
Tel.: +41 (0)32 356 04 00
sales@zumbach.ch
PROF.002.0002.EN MARCH.2016

BELGIUM, sales@zumbach.be
BRAZIL, vendas@zumbach.com.br
CHINA P.R., sales@zumbach.com.cn
FRANCE, ventes@zumbach.com.fr
GERMANY, verkauf@zumbach.de

INDIA, sales@zumbachindia.com
ITALY, zumit@zumbach.it
SPAIN, gestion@zumbach.es
TAIWAN, zumfareast@giga.net.tw
UK, sales@zumbach.co.uk

North American Headquarters:
Zumbach Electronics Corp.
140 Kisco Avenue
Mount Kisco, NY 10549-1407
Phone +1 914 241 7080
USA
sales@zumbach.com

