Zumbach

SWISS PRIME MEASURING SINCE 1957

RAYEX® S

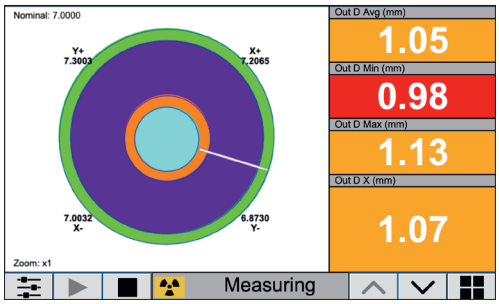
Static X-Ray Measuring and Control System

EASY AND RELIABLE MEASUREMENT

The new RAYEX S system combines modern X-Ray technology and easy operation in one unit.
The high flexibility and convincing performance of RAYEX S are providing significant advantages:

- **Fast installation and commissioning**
- **Easy operation and product setting**
- **Longevity, especially of X-ray sources**
- **Easy maintenance and service**

Easy and Reliable Measurement of Diameter, Ovality, Wall Thickness and Eccentricity for Products up to 100 mm (3.9 in.) Outer Diameter
Cables: Coax, CATV, Silane, Jackets
Tubing/Pipe: PVC, PE, PA, Composite Pipes, Automotive, etc.
Hoses: Rubber, Medical, Silicone, PTFE, etc.



KEY FEATURES AND ADVANTAGES

- **High stability and accuracy**
  – Repeatability within 0.04 mm (.0023 in.)
  – No calibration needed
  – No need for material-specific adjustments
- **Simple concept and easy to use**
  – Display of four wall thickness and two diameter measuring points incl. resulting ovality
  – Two X-ray sources mounted 90° to each other
  – No moving parts
- **X-ray sources**
  – Extremely robust and stable
  – Easy to exchange, no realignment
  – Expected lifetime up to 4 years
  – No water cooling required
- **X-ray safety**
  – Comprehensive shielding concept
  – Minimal scatter, no lead necessary
  – Outside radiation level meets national and international standards
- **For all materials / combinations**
  – Plastics, foam, rubber, composites (metal/plastics), foamed structures
  – Up to four layers measurable
- **Embedded bus communication interface**
  The RAYEX S is available with an embedded bus interface for integration into the customer's line control system.
  – User friendly setup of the product recipe
  – Readout of all measurement results possible
  – Ethernet and Profinet IO interfaces available
- **USYS processor and display unit**
  The proven Zumbach processors for process monitoring, control and data acquisition.
  – Continuous display of measurement results
  – Recipe management
  – Monitoring of limit values
  – Statistics recording and protocolling
  – Line speed control
  – Compatible with other Zumbach devices

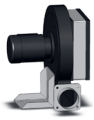
OPTIONS ACCESSORIES

VISU-Touch
The VISU-Touch enables manual control and can be mounted on the RAYEX S or used separately. For applications that are controlled via an interface, the VISU-Touch is used as a local display.

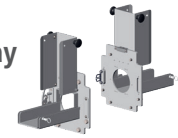
- Graphic display with backlight, signalling, keyboard input
- Power supply from RAYEX S via Ethernet (PoE)
- Ethernet network cable cat. 6 S / FTP with RJ45 connectors

Verification Kit
The set includes a calibration pattern holder and a certified calibration standard for checking.

Blower
To keep the measuring zone free of contamination, we recommend connecting a blower.

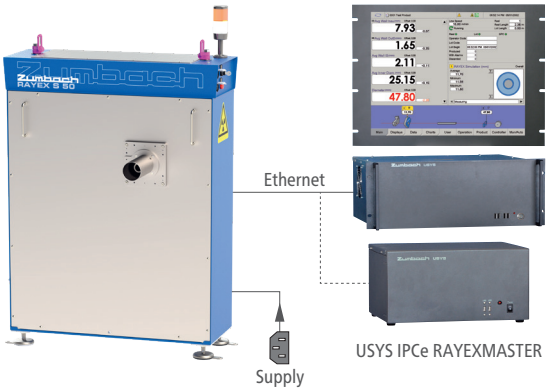


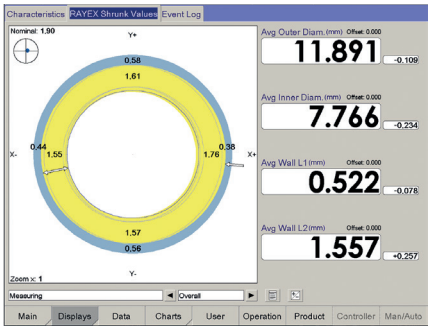
Custom made X-ray protective tubes on request



RAYEX S SOLUTION OVERVIEWS

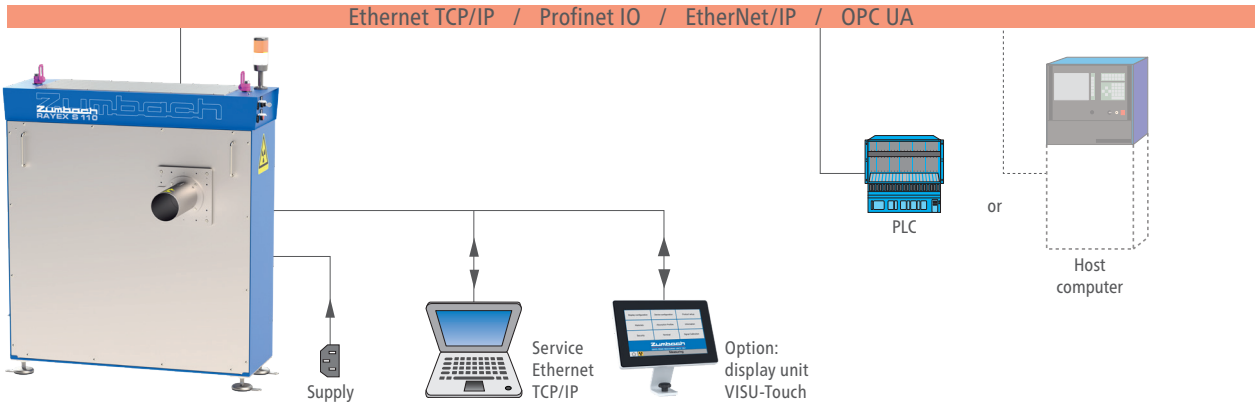
Standalone measuring system with USYS RAYEXMASTER





The USYS IPC 1e/2e processors allow complete process control and optimisation. All measured values can be monitored and logged by the software. The stored product recipes enable easy operation of the system. Additional sensors such as: ODAC laser diameter gauges or KW lump detectors can be connected if required. The USYS processors also has inputs and outputs for alarming the line control and can also communicate with a higher-level system via the HOST interface.

Measuring unit with embedded bus communication interface



The design with embedded communication interface allows the higher-level system to configure and capture measurement results. The measuring algorithm itself is controlled by the RAYEX S and only requires the number of layers and the nominal wall thickness to be specified. All measurement results can be read and processed by the higher-level system. Available interfaces are: Profinet IO, Ethernet TCP/IP, EtherNet/IP and OPC UA.

STANDALONE MEASURING SYSTEM SOLUTION WITH USYS RAYEXMASTER

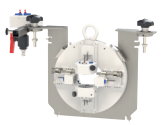
The USYS IPC 1e/2e processors allow complete process control and optimisation. All measured values can be monitored and logged in the software. The stored product recipes enable easy operation of the system. Additional sensors such as: ODAC laser diameter gauges or KW lump and neckdown detectors can be connected if required. The USYS processors also have inputs and outputs for alarming the line control and can also communicate with a higher-level system via the HOST interface.

USYS IPCe RAYEXMASTER

Thanks to the USYS it is also possible to connect the system in combination with other Zumbach gauges.

ODAC®
Laser measuring heads

Spark Tester
Dielectric Testing/Spark Test



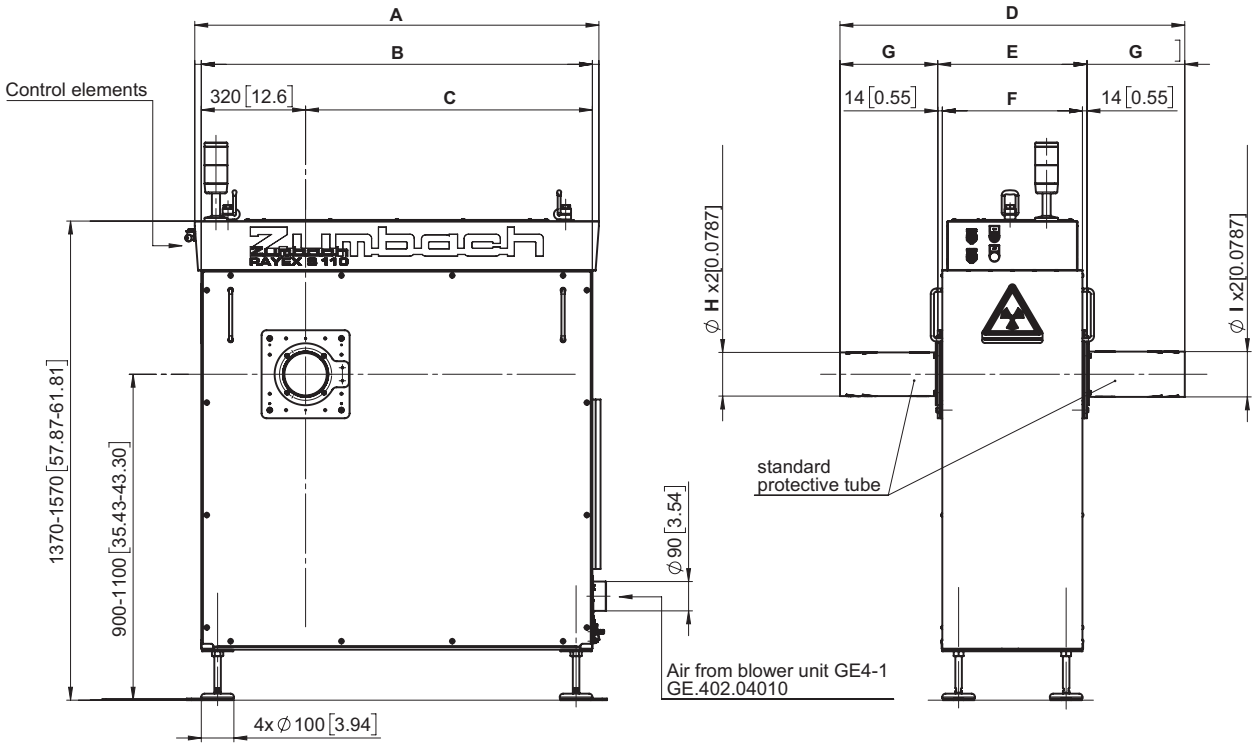
UMAC®
Ultrasonic Measurement Systems

KW
Lump and Neckdown Detection

TECHNICAL DATA

System	RAYEX S 20	RAYEX S 50	RAYEX S 110
Product diameter range approx.	1.5 – 14 mm (.005 – .05 in.)	4.0 – 45 mm (.16 – 1.77 in.)	7.0 – 100 mm (.275 – 3.9 in.)
Measuring field	20 mm (.065 in.)	50 mm (1.97 in.)	110 mm (4.3 in.)
Repeatability (σ)	0.025 mm (.00008 in.)	0.04 mm (.0016 in.)	0.06 mm (.0023 in.)
Resolution	5 µm (.00164 in.)	5 µm (.0002 in.)	5 µm (.0002 in.)
Weight approx.	210 kg (463 lbs.)	264 kg (582 lbs.)	320 kg (705 lbs.)
Scanning frequency	Standard: 1 – 15 scans/s		
Mains voltage / frequency	230 V version: 210...250 VAC / 50/60 Hz 120 V version: 110...130 VAC / 50/60 Hz		
Power consumption	P_{nom} = 120 W / $P_{max.}$ = 620 W		
Current consumption	0.5 A_{nom} / 2.6 $A_{max.}$ (230 VAC), 1 A_{nom} / 4.9 A_{max} (120 VAC)		
Fuses	2 fuses in the mains socket: 250 VAC / 5 x 20 mm 6.3 A time-lag		
Noise level	≤ 70 dBA		
X-Ray data	55 $kV_{max.}$ / max. 1 mA		
"Service", "Webserver" and "Host" interface	Ethernet 10/100BaseT, RJ45 / IP 20		
Ambient temperature	Operating: 5...45° C (41...113° F), Transport / storage: 0...50° C (32...120° F)		
Max. atmospheric humidity	95% (non condensing)		
Altitude	0...2000 m (0...6562 ft.) over sea level		

DIMENSIONS



Model	RAYEX S 20	RAYEX S 50	RAYEX S 110
A	920 (36.22 in.)	1040 (40.94 in.)	1240 (48.82 in.)
B	895 (35.24 in.)	1000 (39.37 in.)	1200 (47.24 in.)
C	690 (27.17 in.)	680 (26.77 in.)	880 (34.65 in.)

Model	RAYEX S 20	RAYEX S 50	RAYEX S 110
D	462 (18.19 in.)	808 (31.81 in.)	1058 (41.65 in.)
E	400 (15.75 in.)	408 (16.06 in.)	458 (18.03 in.)
F	380 (14.96 in.)	380 (14.96 in.)	430 (16.93 in.)
G	31 (1.22 in.)	200 (7.87 in.)	300 (11.81 in.)
H	30 (1.18 in.)	84 (3.31 in.)	134 (5.28 in.)
I	30 (1.18 in.)	88.9 (3.5 in.)	139 (5.47 in.)

• Technical specifications are subject to change without notice

• Dimensions in mm (inch)

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