

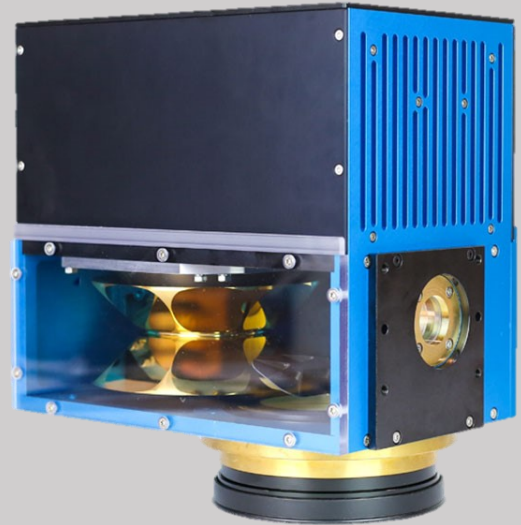
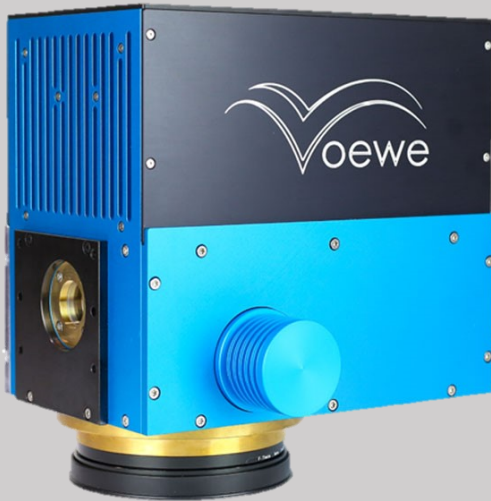
Polygon mirror scanner PM series



Ultrafast 2D beam deflection

30 mm aperture

High power applications



MOEWE's polygon mirror scanners (PM) are designed for ultra-fast high-power laser processing. The system is realized as two-dimensional beam deflection unit available for 2D and 2.5D processing.

KEY FEATURES

- Patented low distortion double polygon mirror
- Large free aperture of 30 mm
- High laser power of 5 kW cw / 3 kW pulsed
- Ultra-fast scan speeds on the entire scanning field (no acceleration loss)
- Full digital, FPGA on-board data processing
- Bitmap graphics up to 32-bit resolution
- Real-time laser switching for highest accuracy

Options and variants

Optics

- Changeable f-theta lenses (standard or customized)
- Optics datasheet for suitable f-thetas available

Hardware

- Encoder IO for treating moving substates
- Fast laser trigger outputs TTL and analogue

The high-end PM scanners stands out with a with a free aperture of 30 mm and a real-time on-board data processing allowing highest accuracy for macro and micro processing on never seen throughputs.

YOUR ADVANTAGES

- Two-dimensional beam deflection allows stand-alone utilization or machine integration (axis, roll-to-roll)
- Multiple digital and analog I/O connectors, Ethernet for communication, encoding, process control
- Applications: Laser marking, micro structuring, Surface cleaning, Drilling, Cutting, spot welding, Engraving (2.5D), and more

Software

- Parameter, bitmap graphics mode
- Up to 32-bit greyscale processing, engraving 2.5D
- Synchronization of multiple scanners
- Real time shifter for dynamic processing

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General specifications

Power supply	Voltage	$+(30 \pm 2) V_{DC}$, GND
	Current	max. 15 A
	Ripple/Noise	max. 200 mVpp
Operating temperature		$+18...+30^{\circ}C$
Humidity		20...90 % rel.H.
Weight		13 kg
Size (LxWxH)		281 x 226 x 253
Input aperture		29.5 mm
Beam displacement		0 mm

Input / Output

Data transfer	1x	Ethernet
Digital Out	3x	5 V @ 120 MHz
Analog Out	2x	0...5 V @ 3 MHz
Analog In	1x	0...5 V
Axis I/O	36 pin	D-Sub-Micro-D
Sync I/O	Master/slave	RJ45
GPIO I/O	20 pin	D-Sub-Micro-D
Aux. I/O	9 and 15 pin	D-Sub
USB 2.0 A		5 V, max. 0.5 A

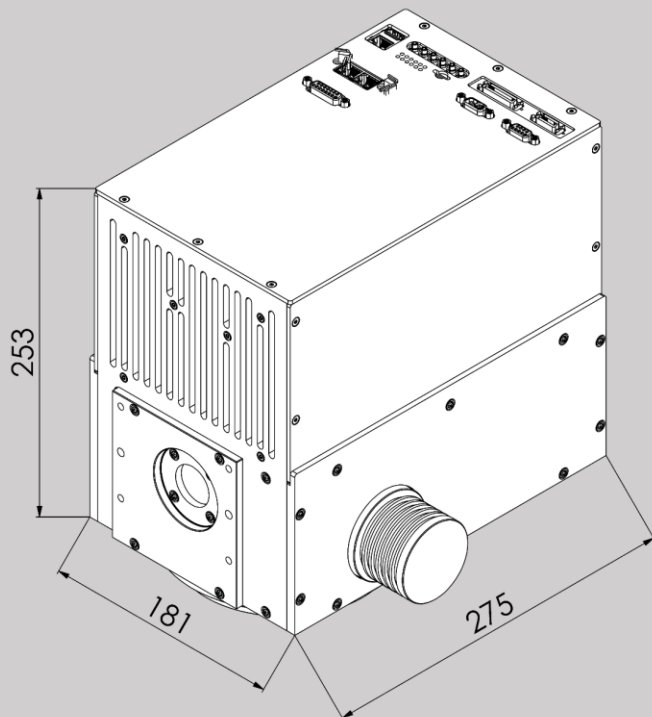
Optical specifications

	Polygon mirror Primary axis	Galvo mirror Secondary axis
Max. deflection	± 0.454 rad	± 0.698 rad
Resolution	$< 2 \mu\text{rad}$ (24-bit)	$< 4 \mu\text{rad}$ (20 bit)
Repeatability	20 μrad	20 μrad (RMS)
Temp. Drift		$< 5 \mu\text{rad/K}$
Max. Lines / s	1,333 Hz @ 10,000 rpm	
Max. scan speed	> 800 m/s @ 10,000 rpm, 420 mm f- θ	
Wavelength	NIR1,030-1,080 nm	
	VIS 515 / 532 nm	
	UV 343 / 355 nm	
	other on request	

Real-time FPGA processing

On-board memory	2 GByte
Scanning field	90 000 x 90 000 pixel
FPGA frequency	200 MHz, (5 ns)
2D b/w bitmaps	BMP (1-bit)
2.5D grey bitmaps	BMP (8,16,24 or 32 bit)

Drawings



A: M5 for objective adapter ring, max. screw-in 10 mm
 B: M6 for scanner mounting, max. screw-in 10 mm
 C: $\varnothing 6$ H7 x 20 for dowel pins ISO 2338-6 m6

