

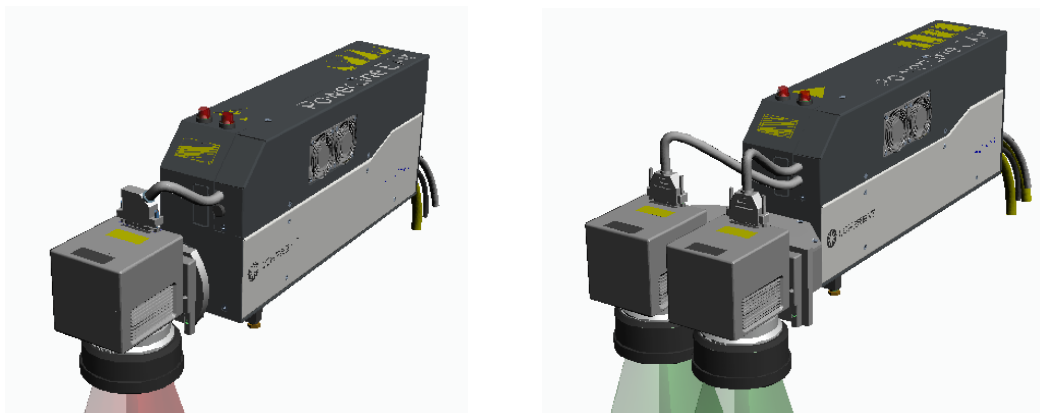
PIB 22-40

Introducing PowerLine E 6/12 QS Laser Marker

Introduction

Coherent Munich introduces the PowerLine E 6 QS (AC) and the PowerLine E 12 QS (AC) laser markers. These laser markers are air-cooled versions of our successful water-cooled green laser markers PowerLine E 12 SHG and PowerLine E 20/30 SHG. The PowerLine E 12 QS (AC) is available with beam splitter for semiconductor related applications, too.

Please note that the names follow the new nomenclature of our laser markers. 'E' stands for end-pumped, '6' and '12' refer to the nominal average output power of 6 and 12 W. 'QS' indicates that both products use q-switched lasers with second-harmonic generation (wavelength = 532 nm). 'AC' indicates both laser markers are air-cooled. Please note, that there is no model specifically tailored for the semiconductor industry.



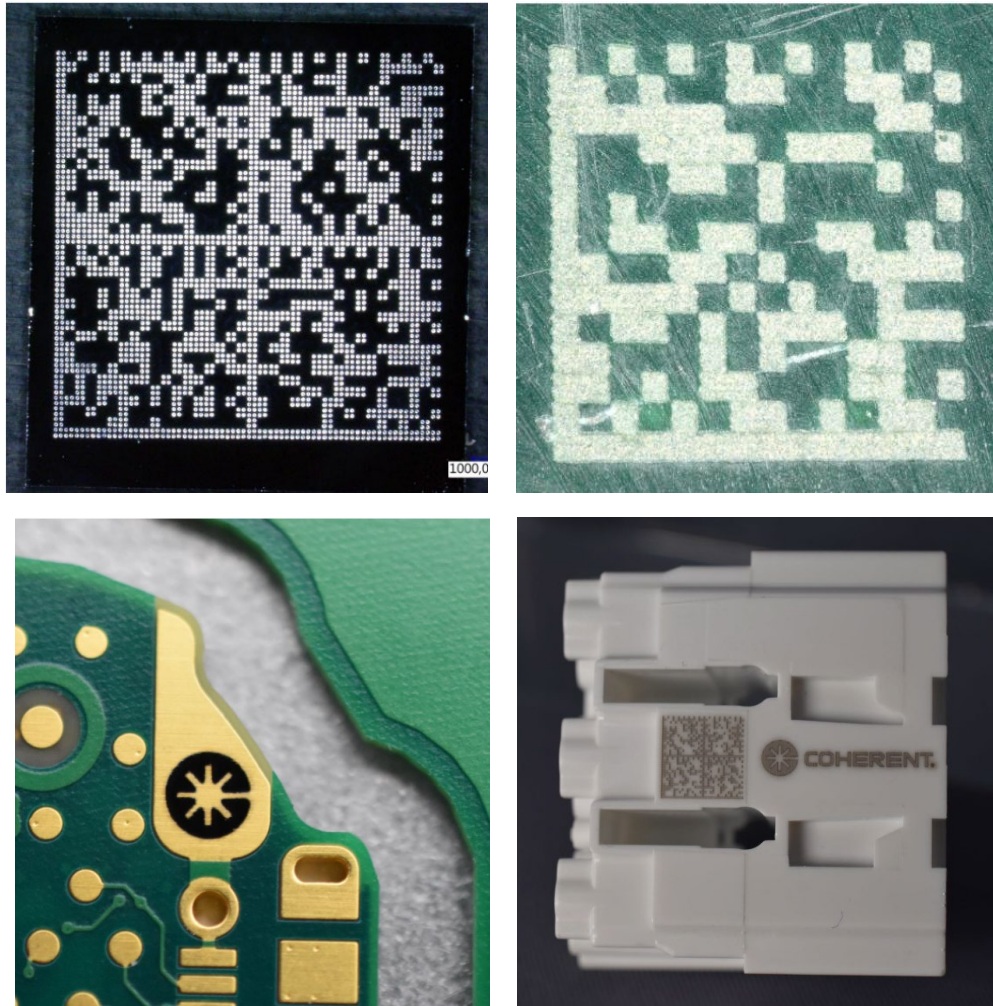
Key Advantages (compared to water-cooled models)

- No cooling-unit required, no water in the system
- External 19-inch-PC replaced by an ITX motherboard inside the supply unit
- Less space occupied by the laser marker in the supply rack
- Improved pricing compared to water-cooled models (in anticipation of medium-term price increase of water-cooled models)

Key Message / Applications

The PowerLine E 6/12 QS (AC) were tested with various applications. Spot roundness and pulse energy stability could be efficiently assessed by soft marking of silicon. Spot diameter in silicon was consistently around 78 microns with a marking depth of 1.4 microns. The silicon material that was driven out by the laser pulse created a bead with a height of 1.8 microns. Marking into laminated solder stop material of IC substrates was tested as well as black hatching of gold

pads. In all tested applications the performance of the PowerLine E 6/12 QS (AC) equaled the performance of their water-cooled counterparts.



Positioning

The PowerLine E 6/12 QS (AC) addresses the same markets as the green PowerLine E 12 SHG and PowerLine E 20 SHG laser markers. Green DPSS lasers are primarily used in the semiconductor industry but gain importance in other markets too, especially for the marking of organic components. Green laser markers offer smaller spot sizes than IR laser markers. In many organic materials they deliver superior marking results.

The attractive pricing of the air-cooled models will allow us to gain more market share. Main reason for cost reduction is that no expensive water chiller is needed. Since water chillers are components that often are replaced during the lifetime of a laser maker, the cost advantage does not only affect investment but running costs, too. Moreover, air-cooled lasers are easier to integrate and to maintain. Part of the cost advantage of the PowerLine E 6/12 QS (AC) models comes from the use of the ITX-PC that is integrated into the supply unit.

Specifications

Form factor of the PowerLine E 6/12 QS (AC) equals the form factor of our PowerLine E Air series of IR laser markers. Technical specifications are almost identical to the specification of their water-cooled counterparts. Please refer to the data sheet on PIC.

Unlike their water-cooled counterparts, the PowerLine E 6/12 QS (AC) models have collimated laser beams. Advantage is that working distance does no longer depend on beam expansion factor but only on focal distance of the objective. Please note, that consequentially work distance and beam expander will often be different from water-cooled laser markers for the same application.

We recommend using the PowerLine E 6/12 QS (AC) laser markers only when ambient temperature is between 18°C and 35°C. If operated outside this temperature range either start-up behavior of the laser or performance stability can suffer.

Specifications of pulse width and M^2 are slightly different from water-cooled versions because a different crystal is used. We have verified that these differences do not have a negative impact on marking performance.

Pricing

PowerLine E 6/12 QS (AC) laser markers are configurable products. They can be configured using configurator model MOD00756 and MOD00757 (beam splitter version). Our First Level Support Team will help you preparing quotes for these products. List prices of standard PowerLine E 6 / 12 QS (AC) are listed below. Please note, that there is a price advantage of about 1,600 US\$ compared to water-cooled models when choosing air-cooled models.

1 PowerLine E 6 QS (AC)	65.765 US\$
<ul style="list-style-type: none">- End-pumped DPSS laser with Nd:YVO4 crystal- Wavelength: 532 nm- Average power: - (cw), 6 W (50 kHz), M2: 1.5- Frequency: 5-200 kHz, pulse width: 40 ns (50 kHz)- Air cooling- Collimation optics- RCU (ITX) control system- VLM editor, RCU and laser console software, Windows 10- Supply unit 3 RU x 19" x 460 mm (H x W x D)- PC (ITX motherboard with CPU) integrated into supply unit- Protection rating: Laser head / galvo (IP54), supply unit (IP20)- Length of feed line: 3 m or 5 m- Dimensions according to technical drawing	
1 Galvanometer Scanner SC10 for 532 nm	
1 f-Theta objective, 532 nm, f-170 mm	
1 Beam expander / 532 nm / Fixed Expansion Factor / 85 mm	
1 PowerLine E 12 QS (AC)	72,765 US\$
<ul style="list-style-type: none">- End-pumped DPSS laser with Nd:YVO4 crystal- Wavelength: 532 nm- Average power: - (cw), 12 W (50 kHz), M2: 1.5- Frequency: 15-200 kHz, pulse width: 25 ns (50 kHz)- Air cooling- Collimation optics- RCU (ITX) control system- VLM editor, RCU and laser console software, Windows 10- Supply unit 3 RU x 19" x 460 mm (H x W x D)- PC (ITX motherboard with CPU) integrated into supply unit- Protection rating: Laser head / galvo (IP54), supply unit (IP20)- Length of feed line: 3 m or 5 m- Dimensions according to technical drawing	
1 Galvanometer Scanner SC10 for 532 nm	
1 f-Theta objective, 532 nm, f-170 mm	
1 Beam expander / 532 nm / Fixed Expansion Factor / 85 mm	

1 PowerLine E 12 QS (AC) D

87,675 US\$

- End-pumped DPSS laser with Nd:YVO4 crystal
- Wavelength: 532 nm
- Average power: - (cw), 12 W (50 kHz), M2: 1.5
- Frequency: 15-200 kHz, pulse width: 25 ns (50 kHz)
- Air cooling
- Beam splitter for two scanners, split ratio 50:50, center-to-center spacing 120 mm
- Collimation optics
- RCU (ITX) control system
- VLM editor, RCU and laser console software, Windows 10
- Supply unit 3 RU x 19" x 460 mm (H x W x D)
- PC (ITX motherboard with CPU) integrated into supply unit
- Protection rating: Laser head / galvo (IP54), supply unit (IP20)
- Length of feed line: 3 m or 5 m
- Dimensions according to technical drawing

2 Galvanometer Scanner SC10 for 532 nm

2 f-Theta objective, 532 nm, f-170 mm

2 Beam expander / 532 nm / Fixed Expansion Factor / 44.5 mm

Availability Timelines

PowerLine E 6/12 QS laser markers are available with our standard PowerLine E lead times. Please check our lead time report.

Service Strategy & Pricing

Standard warranty period is 24+3 months and covers all components. The additional 3 months are granted as goodwill to allow integrators to integrate the laser marker and ship their system to their customer before warranty period starts.

Product Info	Standard Warranty		Installation	
	Months	Hours	Installation included	Installation by customer
PowerLine E 6 QS	24 + 3	-	No	Possible
PowerLine E 12 QS	24 + 3	-	No	Possible
PowerLine E 12 QS D	24 + 3	-	No	Possible

*) Includes resonator, supply units and ITX PC-boards

Product Info	In warranty			Out of Warranty				
	Primary Strategy	Secondary Strategy	A+ available	Primary Strategy	Secondary Strategy	A+ available	Evaluation Cost	Remote Service?
PowerLine E 6 QS	FS	DR	Yes	FS	DR	Yes	TBD	Yes
PowerLine E 12 QS	FS	DR	Yes	FS	DR	Yes	TBD	Yes
PowerLine E 12 QS D	FS	DR	Yes	FS	DR	Yes	TBD	Yes

FS Field Service DR Depot Repair A+ Selected spares availability at GLS

Part numbers of Service Packages:

Product	Service Module	P/N	Price
PowerLine E 6 QS	A+ Advanced Replacement *)	2267221	3,200 US\$
	P+ Warranty for additional 12 months	2257098	4,300 US\$
PowerLine E 12 QS	A+ Advanced Replacement *)	2267222	4,000 US\$
	P+ Warranty for additional 12 months	2257099	4,800 US\$
PowerLine E 12 QS D	A+ Advanced Replacement *)	2267222	4,000 US\$
	P+ Warranty for additional 12 months	2271371	5,800 US\$

*) Includes resonator, pump diode, supply unit and ITX PC-board

For Agile users: The spare parts lists are available with documents:

D209034: PowerLine E 6 / 12 QS incl. beam splitter configuration

D209006: Supply unit

Set-Up	1 day			
Installation	excl. travelling costs, accommodation and expenses	1336170	1,200 €	\$1,500
Training PL E Service	1 day			
Operator / Service / PM	excl. travelling costs, accommodation and expenses	1391869	2,300 €	\$2,700
Training VLM	2 days			
	excl. travelling costs, accommodation and expenses	1391959	4,600 €	\$5,400
Application Support	1 day			
	excl. travelling costs, accommodation and expenses	1404030	2,300 €	\$2,700

Replacement Products

In most cases the PowerLine E 6 QS and PowerLine E 12 QS will be equivalent replacements for the PowerLine E 12 SHG and PowerLine E 20/30 SHG.

Competitive Landscape

The competition will be the same as for the water-cooled models: Trumpf, Keyence, etc. Laser markers with green wavelength are less common than IR or UV laser markers. With the air-cooled PowerLine E 6/12 QS (AC) we gain competitive strength because of the price advantage of these products compared to their water-cooled counterparts.

Related Documents

- Updated manual of air-cooled PowerLine E series (on PIC)
- Datasheet (on PIC)
- Customer-ready PowerPoint presentation (updated standard presentation) (on PIC)
- Integration drawing (on PIC)
- PowerLine Order Form – Revision 2.5 (on PIC)
- PowerLine Price Configurator – Revision 2.3 (on PIC)

Marketing Activities

The datasheet for this laser marker is on the PIC and online on the PowerLine product page:

<https://www.coherent.com/machines-systems/laser-marking-engraving/powerline-series>

You can find the PowerLine E 6/12 QS in the general marking presentation on the PIC.

A blog post and social media post will follow in summer.

For more information about this PIB, please contact:

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Product Line Manager PowerLine

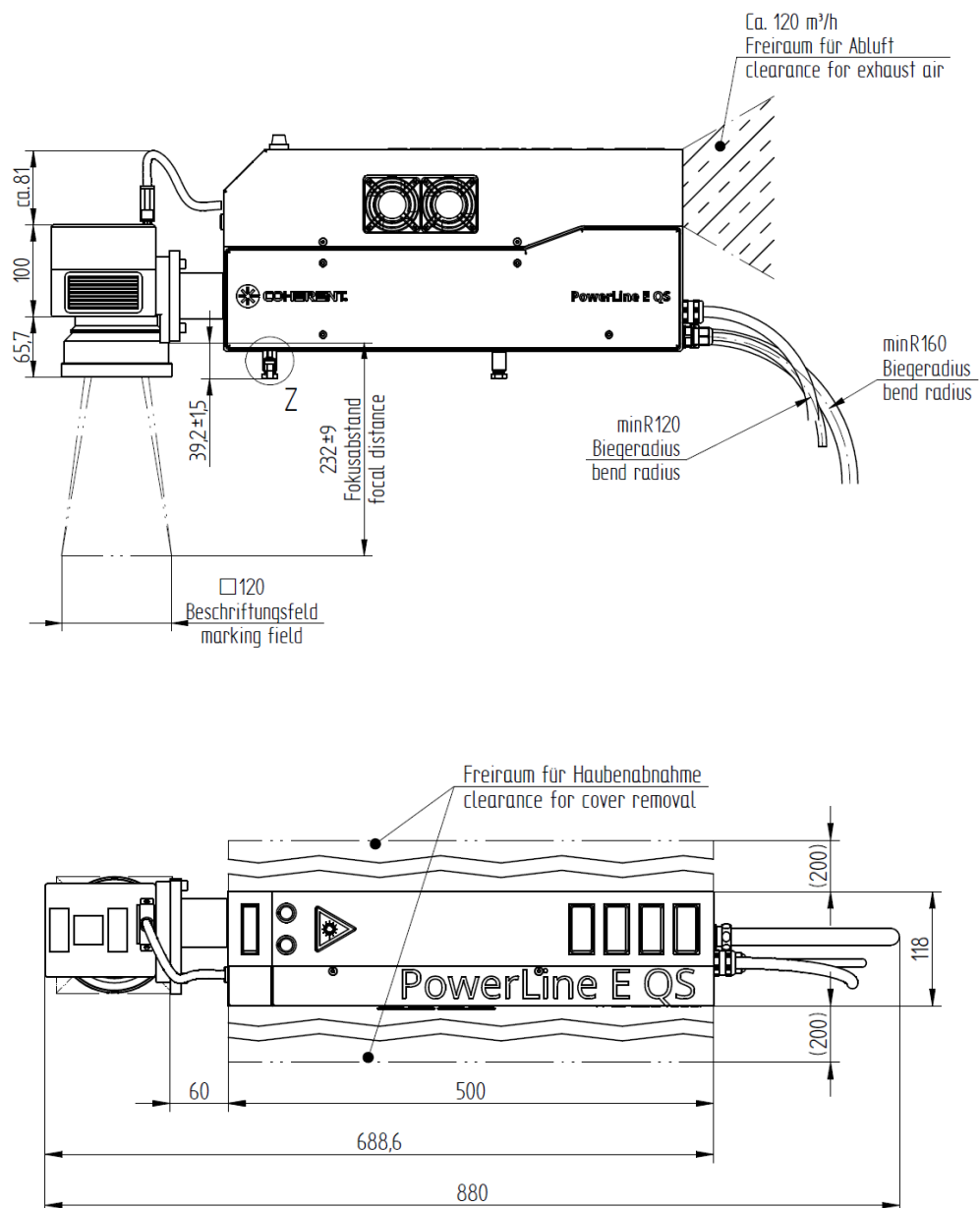
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Integration Drawing

PowerLine E 6 / 12 QS (AC)



Integration Drawing

PowerLine E 12 QS (AC) D – long spitter flange

