

## Technical specifications

### ELMA VMC VISION

#### WELDING POWER

maximum current	13 kA / 15 kA
welding current	direct current
no-load voltage (gun transformer)	12,5 V DC

#### MAINS-CONNECTION DATA

max. voltage	3 x 400V 50 Hz
max. power	130 kVA
continuous power (100% duty cycle)	14 kVA
fuse (delayed-action)	32 A
connection lead (Cu)	4 x 10 mm <sup>2</sup> / 16 mm <sup>2</sup>
protection class	IP 53

#### CONNECTION DATA - WELDING GUN

voltage	560 V / 10 kHz
maximum current (eff.)	230 A / 300 A
air pressure (proportional valve)	6-10 bar

#### COOLING WATER

flow rate	min. 6 l/min
pressure	min. 2 bar
dimensions (H x W x D)	900 x 700 x 600*

weight	95 kg
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### ELMA VISION C-AV & X-AV

#### CONNECTION DATA

primary voltage* / frequency	560 V / 10 kHz
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primary power (50 % duty cycle)	approx. 20 kVA
protection class	IP 21
insulation class	F
cooling type	WF

#### WELDING CIRCUIT

welding current	13 kA
no-load voltage	12,5 V DC

#### MECHANICAL DATA

electrode force	0 - 5,5 kN
weight (without arms)	14,5 kg (X-AV) 10,5 kg (C-AV)

Subject to modifications and amendments.

## References

#### Segment automotive industry:

Audi - Ferrari - Fiat - Krupp-Drauz - Opel  
GM - Saab - Vauxhall - Honda - Jaguar  
Lamborghini - Landrover - Nissan - Ford  
Peugeot - Citroen - Porsche - Renault  
Volvo - BMW - Mini - Smart - Mayach  
Mercedes Benz - Chrysler - Toyota - VW

### ELMA VISION CM/VM & CR/VR

#### CONNECTION DATA

primary voltage* / frequency	560 V / 10 kHz
primary power (50 % duty cycle)	18,7 kVA

#### WELDING CIRCUIT

maximum welding current	13 / 15 kA
no-load voltage	approx. 12,5 V DC

#### WATERCOOLING

flow rate (min.) with temperature sequence 22°C	6 l / min.
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### ELMA VISION CM / CR

#### MECHANICAL DATA

window seize	customized
electrode force, max.	5,5 kN at 6 bar

#### WEIGHT

CM (without arms / hose and cable package)	34 kg
CR (without arms / hose and cable package)	57 kg

### ELMA VISION VM / VR

#### MECHANICAL DATA

arm length	customized
electrode force	depending on arm

#### WEIGHT

VM (without arms / hose and cable package)	35 kg
VR (without arms / hose and cable package)	57 kg

CM = C-Version for Manual production

VM = V-Version for Manual production

CR = C-Version for Robot-guided production

VR = V-Version for Robot-guided production



External control panel for the configuration of the process control

## ELMA VMC VISION

Fully automatic spot welding control unit

No more adjustments  
**JUST weld!**

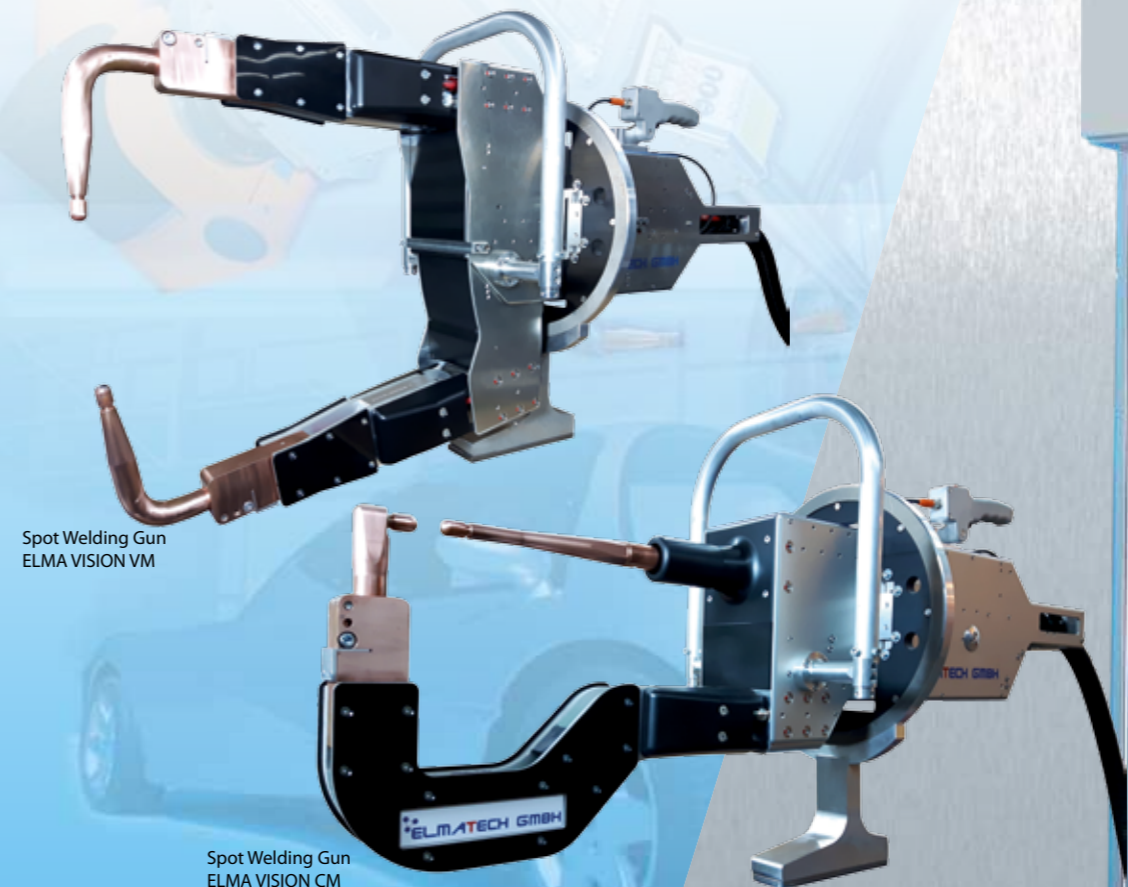
**Process-controlled and fully automatic spot welding control unit for the flexible use in manual and robot-guided production lines of automotive plants.**

Many of today's used materials show high-specific characteristics. In order to process these materials in a high-quality way the requirements to the production line are changing fundamentally.

The unique control technology „Virtual Machine“ developed by ELMA-Tech enables a flexible and realtime reaction to these fast changing requirements.

The revolutionary and self-regulating spot welding control unit ELMA VMC VISION is designed and developed for the flexible use in the production lines of the automotive industry.

Designed for all ELMA-Tech  
10 kHz transformer spot  
welding guns





## Fully automatic spot welding control unit ELMA VMC VISION Designed for all ELMA-Tech 10 kHz transformer spot welding guns

All requirements performed by a single device:

- Current / time control (conventional constant current regulation)  
*Adjustments: single-parameter*
- Energy control:  
Bypass and partial isolation compensation, quality assurance system  
*Adjustments ELMA-QS: total - sheet thickness, type of material*
- VISION automatic:  
furthermore to energy control, automatic detection of material type and total sheet thickness  
*Adjustments: NONE - Just activate the start-trigger!*
- Spotting\*

### Characteristics ELMA VMC VISION

- Individual customer solutions due to modular systems
- Compatible with all 10 kHz ELMA-Tech transformer guns
- Digital control - Virtual Machine - with quality assurance system (QA-System) and display
- Precise process regulation
- Energy-control
- Bypass detection
- Reproducible welding quality
- Update ability via USB-device
- Connection for external water cooling for spot gun, transformer, cable and electrodes with water flow monitor
- Configurable hall installation plate\*
- External control panel\* to configure the "Virtual Machine"
- Interconnection with conventional bussystems, e. g. interbus or profinet possible\*

\* optional

### Unique: Self-regulating spot welding guns

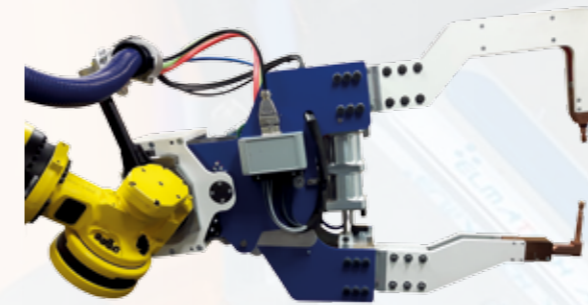
The light weight 10 kHz transformer spot welding guns with integrated cooling system and pulse-sonar-system for electrode distance measurement fulfil easily all requirements given in the production lines of the automotive industry. The light cable hose packet contains all necessary supply lines for current, water and compressed air.

### Characteristics: spot welding gun C-AV & X-AV / CM & VM / CR & VR

- High welding currents even with low fuse rating
- Least possible number of current transitions
- Integrated quality assurance system ELMA-QS with clear quality statement regarding the individual spot weld
- Spot welding in automatic operation VISION - no adjustments required -  
Advantages:  
Precise guidance due to the light weight of the spot welding guns  
No requirement of program selection due to the „Virtual Machine“



## Transformer industry spot welding guns VM / CM & VR / CR



Robot-guided Spot Welding Gun  
ELMA VISION VR



Robot-guided Spot Welding Gun  
ELMA VISION CR

### Characteristics

- 10 kHz medium frequency transformer, weight 7,5 kg
- Lowest gun weights provide a significant easier and faster handling in the manual production; 2/3 lighter than conventional spot welding guns, that means 70 % weight saving for the operator and robot
- High output currents up to 15 kA
- Automatic regulation of electrode force
- Fast reacting servo proportional valve directly integrated into the gun
- Automatic detection of sheet thickness
- Orbital ring vertically adjustable (VM / CM)
- Complete hose and cable package (10 meter) disconnectable via quick coupling
- Shut-off valve for water flow (check valve at reflux) for change of electrode caps (VM / CM)
- Cylinder, piston rod and main bearing guided in precision needle bearings (VM / VR)

CM = C-Version for Manual production  
CR = C-Version for Robot-guided production

VM = V-Version for Manual production  
VR = V-Version for Robot-guided production

**Individual shapes of electrode arms on request!**

## Transformer spot welding guns X-AV & C-AV



Spot Welding Gun  
ELMA C AV (80 mm)



Spot Welding Gun  
ELMA X AV (250 mm)

### Characteristics

- 10 kHz medium frequency transformer, weight 4 kg
- Lowest gun weights (dep. on electrode arms)
- Automatic detection of sheet thickness
- Automatic regulation of electrode force
- High output current up to 13,2 kA
- Extremely light weight hose and cable packet (6 or 10\* meter)
- Orbital ring 360°
- C AV:
  - Fast electrode-exchanging-system
  - Standard electrode arms: wind-down distance 40 - 500 mm
  - Extending of the opening angle by opening the toggle fastener
- X AV:
  - Precision needle bearing mechanism
  - Maximum opening angle 25°
  - Standard electrode arms up to 450 mm

Supported by a well-known automotive manufacturer, the spot welding guns of the series ELMA VISION VM/CM & VR/CR have been designed and developed as innovative product considering the needs of the world market.

\*optional