

MARKATOR®-PRODUCT RANGE

# MARKING SYSTEMS MV5 ZE 401 **XL**



# MARKATOR®

## ABOUT US

We are experts in durable and economic marking of industrial parts to help eliminate forgery.

MARKATOR® have been developing and manufacturing high-quality systems for dot peen and scribe marking for over 25 years. We also produce hand-held and machine-operated marking tools. We can meet our customers needs individually and precisely.

Our aim is to achieve the highest quality possible. We attach importance to solid consulting, customer-related development and user-friendly marking systems.

We maintain a constant dialogue with our customers and their applications which help us maintain a continual development, optimisation and innovations within our product range.

Our benefits are completed with a committed and professional service manned by our highly-qualified employees.

See for yourself! We look forward to getting to know you!



# FUNCTIONALITY OF DOT PEEN AND SCRIBE MARKING

## Dot peen marking

A solid carbide pin oscillates by pneumatic and electronic means. It is moved by two carriages in the x and y direction and strikes the material by an up and down movement.

Depending on the impact frequency the marking either becomes a continuous or a single dotted line – perfect for characters, logos or two-dimensional codes, e.g. Data Matrix Code. The force produced by the single dot marks is negligible.



## Scribe marking

Compared to dot peen marking the scribe pin does not strike into the material with an up and down movement. It is pressed into the material. In this position the carbide or diamond scribe pin is moved by two carriages in x and y direction. The MARKATOR® scribe marking system offers optimal adaptability and high quality at a maximum marking speed. The marking system is suitable for almost all materials – from hardened steel to pressure-sensitive finished products.



## Single dot marking

As an alternative variation of the dot peen marking, the marking of single dot characters works also through a carbide marking pin which works pneumatic or electric. Single dots are achieved by the defined up and down movement of the marking pin. Through to the exact definition of the dots, the matrix fonts are produced in the uniform size of 5 x 7 or 9 x 13. The technology of the single dot marking also allows to mark accurate 2D-Codes.

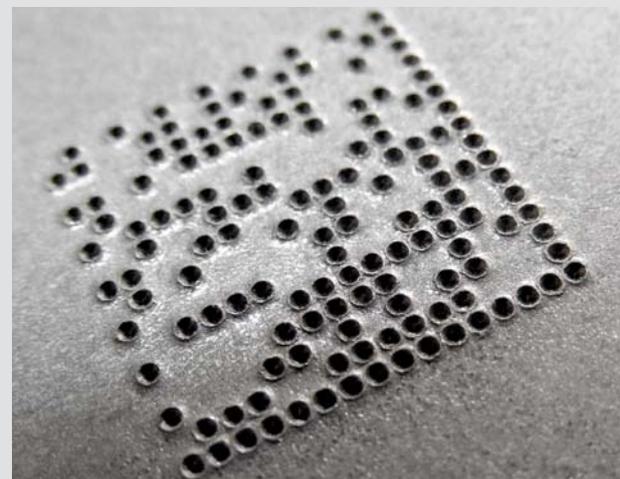


## Data Matrix Code

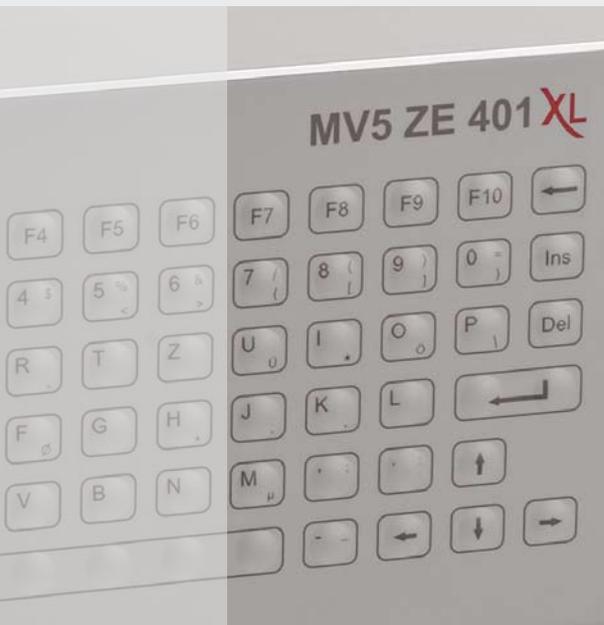
For all applications relating to fast production lines, difficult interfaces, a small marking area or safe codes, a 2D-Code is the perfect solution.

The Data Matrix Code is one of the most important representatives in the range of two-dimensional codes. It is already the standard coding of the future. This modern and machine readable marking, provides a high information density and an omnidirectional readability. The reconstruction of the data content by the Reed-Solomon error correction is even possible in cases where the code is destroyed by up to 25%.

The carbide marking pin pushes dots into the material by a defined up and down movement. The content of the precise Data Matrix Code can be read via a scanner.



# CENTRAL CONTROL UNIT MV5 ZE 401 XL



The central control unit MV5 ZE 401 XL with the dimension of 19" is the all-rounder of all MARKATOR® controllers. It is designed especially for industrial marking jobs.

All components for daily marking tasks – such as the power units for stepping motors, microprocessors and memories – are combined on a compact control module. Additionally it offers both, the implementation of further step motor cards for further axes and I/O cards for simple control functions.

Using a DEVICENET-/INTERBUS-/PROFIBUS-, or a PROFINET card (also LWL), the central control unit MV5 ZE 401 XL can be embedded to a production process (e.g. SPS).

A foil keyboard and a large high-resolution LC-colour display with a resolution of 640 x 480 pixels are integrated in the front plate as a standard. The display eases the creating and the modifying of the marking files and enables an easy diagnosis of the central control unit. The foil keyboard makes a simple programming of the marking files possible.

## Software

In developing the software program of the central control unit special emphasis was placed on producing a simple, intuitive and easy to operate device. Due to the logical, self explanatory user-interface, only little programming skills are required when operating the central control unit.

The coloured icons of the software help to identify the different functions and make the navigation very easy. The parameters of the marking file which are currently set are clearly evident. The factory-made pre-settings can be adjusted and saved any time (password-protected), by using the easy to understand operating manual.

Because of the big, internal memory storage of the central control unit, several hundred marking files, logos and fonts can be saved directly on the unit. Through to the use of the latest processor technologies, a fast navigation and fast access times can be provided. The software is available in several languages.

## Preview

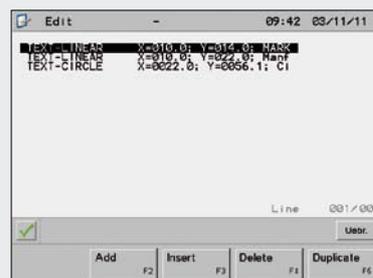
The preview function enables to check the created marking files directly on the LC colour display of the central control unit.

With this function, the parameters set via the x- and y-coordinates can be checked in advance and if necessary can be modified directly via the display. Incorrect markings may be excluded, using this feature.

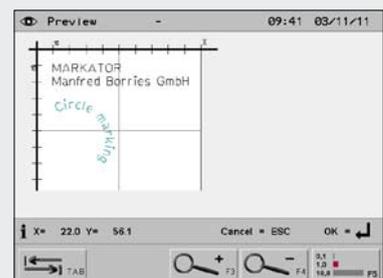
Also it is possible to modify the parameters of the marking lines directly from the preview-function.



Start window



Programming window



Preview window

## Connections

### Interfaces:

#### USB-A:

- Connection of an USB-Stick, to save and to transfer marking files, fonts and logos
- Connection of an USB-Stick to transfer CSV-files (optionally)
- Data transfer via a Barcode-Scanner
- Connection of an USB-keyboard

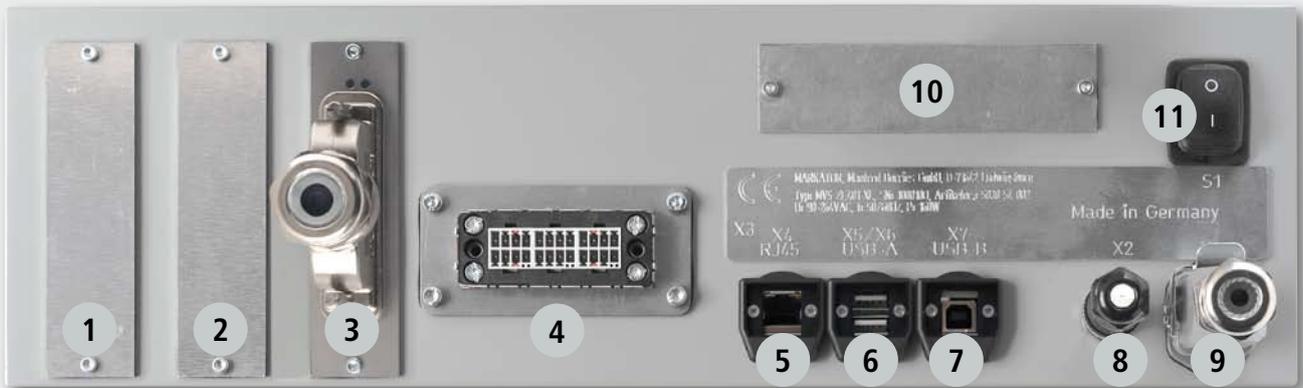
#### Ethernet

- Connection to the PC-Software
- Easy transfer of marking files, logos and fonts
- Network-connection to the central control unit (optionally)

#### Digital exchange of signals with an external control unit (e.g. PLC)

- Inputs: START, STOP with configurable STOP-Input
- ERROR ACKNOWLEDGEMENT and separate START-STOP-connection
- Output: READY; ERROR, BASIC POSITION, READY FOR MARKING

More energy efficiency through to the use of the latest technologies



1. Slot for optional cards

2. Slot for BUS cards

3. Digital I/O-card

4. Marking head connection

5. Ethernet-interface

6. USB-A-interface

7. USB-B-interface

8. Emergency Stop

9. Power supply

10. Slot for external power supply

11. Mains switch



# INTEGRATION UNITS DOT PEEN MARKERS

The compact CNC dot peen markers MV5 U30, U100 and U 200 are used for rational, durable and gentle marking of a wide range of work pieces - from hardened steel through to materials which are pressure sensitive, thin walled, laminated or round finished products. The technology is designed for large quantities and short cycle times.

Highest quality marking coupled with ideal adaptability are the features of the marking heads at a very good price performance ratio.

The marking axes are driven by two brushless stepper motors which guarantee optimal wear behavior. Due to the hardened, ground and chromed guides in connection with a combination of a self-lubricating slide and ball bush bearings, all dot peen markers work maintenance-free.

The marking head works independently and can be used also in difficult positions.

The marking is produced by a full carbide-marking pin. This marking pin is available in several sizes which provide the required adjustment needed to mark on different materials.

The pneumatically driven marking pin oscillates quickly and can be reground several times.

The stylus for the seating of the marking pin is maintenance-free.

#### Available marking areas:

MV5 U30 (30 x 65 mm)

MV5 U100 (100 x 100 mm)

MV5 U200 (200 x 100 mm)

## MV5 U30 & U100 & U200

### Marking area (x/y):

30 x 65 mm (MV5 U30)

100 x 100 mm (MV5 U100)

200 x 100 mm (MV5 U200)

### Available character heights:

1,0 up to 99,9 mm,  
stepless adjustable in 1/10-steps

### Marking direction:

Any, from 0° to 359°

### Fonts:

Standard fonts, similar to DIN 1451  
(other fonts optionally available)

### Data Matrix Code:

The marking of precise Data Matrix Codes is optionally available (technology of single dot marking)

### Available characters:

Capital and small letters A to Z,  
figures 0 to 9, various punctuation marks

### Resolution of the stepping motors:

0,05 mm for a very high marking quality



## Our latest generation of marking heads

The CNC marking heads MV5 U50, U80 and U120 have been developed especially for the use in production lines and can be integrated very easy due to their very compact housing.

The precise and stable mechanism and the high quality and double guided linear guides in x- and y-direction guarantee optimum power transmission on the work piece and with this a very high repeat accuracy and an extremely precise and warp-free marking result. This characteristic fulfills the high requirements which are needed for the marking of 2D-Codes (optional) in several industrials. All marking heads are solidly guided and in connection with the high performance stepping motors they can be used in any position. The marking heads also convince due to the rapid marking speed for short marking times.

The marking is produced by a full carbide-marking pin. This marking pin is available in several sizes which provide the required adjustment needed to mark on different materials. The pneumatically driven marking pin oscillates quickly and can be reground several times.

The stylus for the seating of the marking pin is maintenance-free.

The compact generation of marking heads convinces through durability, optimal wear behavior and a very good price performance ratio.

### Available marking areas:

- MV5 U50/25 (50 x 25 mm)
- MV5 U80/25 (80 x 25 mm)
- MV5 U120/25 (120 x 25 mm)
- MV5 U50/45 (50 x 45 mm)
- MV5 U80/45 (80 x 45 mm)
- MV5 U120/45 (120 x 45 mm)

### MV5 U50/25 & U80/25 & U120/25

#### Marking area (x/y):

- 50 x 25 mm (MV5 U50/25)
- 80 x 25 mm (MV5 U80/25)
- 120 x 25 mm (MV5 U120/25)
- (optional y-movement of 45 mm)

#### Available character heights:

1,0 up to 24,9 mm, stepless adjustable in 1/10-steps

#### Marking direction:

Any, from 0° to 359°

#### Fonts:

Standard fonts, similar to DIN 1451 (other fonts optionally available)

#### Data Matrix Code:

The marking of precise Data Matrix Codes is optionally available (technology of single dot marking)

#### Available characters:

Capital and small letters A to Z, figures 0 to 9, various punctuation marks

#### Resolution of the stepping motors:

0,05 mm for a very high marking quality



- Easy integration through to compact housing
- High quality, double guided linear guides in x- and y-direction:
  - > Very precise markings / 2D-Codes
  - > High repeatability
  - > Durability
- Short marking times
  - > Latest control technology
  - > Minimal moving masses

# TOTAL OVERVIEW OF DOT PEEN- AND SCRIBE-MARKER

## CNC-scribe marker MV5 VU2

Marking area (x/y):  
80 x 50 mm



## CNC-scribe marker MV5 VU2 SPRINT plus

Marking area (x/y):  
80 x 50 mm

## CNC-dot peen marker MV5 U50/25

Marking area (x/y): 50 x 25 mm

### Optional:

50 x 45 mm (MV5 U50/45)

80 x 25 mm (MV5 U80/25)

80 x 45 mm (MV5 U80/45)

120 x 25 mm (MV5 U120/25)

120 x 45 mm (MV5 U120/45)



## CNC-dot peen marker MV5 U30

Marking area (x/y): 30 x 65 mm

### Optional:

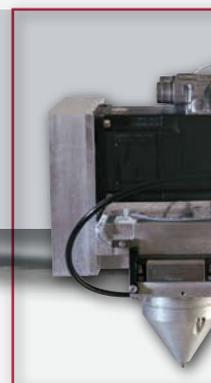
100 x 100 mm (MV5 U100)

200 x 100 mm (MV5 U200)



## CNC-scribe marker MV54 SPRINT

Marking area (x/y):  
160 x 60 mm



# S WITH THE CENTRAL CONTROL UNITS MV5 ZE 401 XL



**CNC-scribe marker  
MV5 VU4**

Marking area (x/y): 80 x 50 mm

Optional:

- 160 x 50 mm (MV5 VU5)
- 80 x 100 mm (MV5 VU6)
- 160 x 100 mm (MV5 VU7)
- 100 x 100 mm (MV5 VU0)



**CNC-scribe marker  
MV5 VU4 ECO SPRINT**

Marking area (x/y): 80 x 50 mm

Optional:

- 160 x 50 mm (MV5 VU5)
- 80 x 100 mm (MV5 VU6)
- 160 x 100 mm (MV5 VU7)



**CNC-scribe marker  
MV5 VU4 SPRINT**

Marking area (x/y): 80 x 50 mm

Optional:

- 160 x 50 mm (MV5 VU5)
- 80 x 100 mm (MV5 VU6)
- 160 x 100 mm (MV5 VU7)



# INTEGRATION UNITS SCRIBE MARKERS



The solid scribe markers MV5 VU4, MV5 VU4 ECO SPRINT and MV5 VU4 SPRINT are extremely reliable marking heads designed for daily use. They are equipped with linear slides in connection with high quality precision ball screw spindles and guarantee a high degree of repeatability. Furthermore the quality guidance used on the scribe markers produces extreme steadiness and long durability. The scribe markers are based on a long-standing continuous development and are characterized by dynamic marking speeds, highest marking qualities and optimal adaptability on a good price performance ratio.

The technology is designed to work on large production numbers producing exceptional quantity on short cycle times in a three-shift operation. The marking heads are factory set for the integration in production- and assembly-lines or testing plants, providing a quick and trouble-free integration in automatic – e.g. SPS-controlled – processes of productions lines is possible.

## MV5 VU4

**Marking area (x/y):**  
80 x 50 mm

**Marking speeds:**  
Up to 2 characters/second  
(3-4 mm character height)

**Available character heights:**  
1,0 up to 49,9 mm, stepless  
adjustable in 1/10-steps

**Fonts:**  
Standard fonts, similar to  
DIN 1451 (other fonts  
optionally available)

**Marking direction:**  
Any, from 0° to 359°

**Available characters:**  
Capital and small letters A to Z,  
figures 0 to 9, various punctuation marks

**Several marking forces:**  
Stepless, adjustable via the pressure regulator

**Resolution of the stepping motors:**  
0,0125 mm for a very high marking quality



## MV5 VU4 ECO SPRINT

**Marking area (x/y):**  
80 x 50 mm

**Marking speeds:**  
approx. 3-4 seconds for 10 characters  
(3-4 mm character height)

**Available character heights:**  
1,0 up to 49,9 mm, stepless  
adjustable in 1/10-steps

**Fonts:**  
Standard fonts, similar to  
DIN 1451 (other fonts  
optionally available)

**Marking direction:**  
Any, from 0° to 359°

**Available characters:**  
Capital and small letters A to Z,  
figures 0 to 9, various punctuation marks

**Several marking forces:**  
Stepless, adjustable via the pressure regulator

**Resolution of the stepping motors:**  
0,0125 mm for a very high marking quality



The marking heads and styluses are maintenance-free and incorporate a pneumatically driven solid diamond marking pin. The marking head works self-sufficient.

**MV5 VU4**

High quality standard scribe marking head for a wide range of marking applications.

**MV5 VU4 ECO SPRINT**

Short cycle times? No problem! This version is capable of marking 10 characters 3-4 mm high in just 3-4 seconds.

**MV5 VU4 SPRINT**

Our highest performing system. This version is capable of marking 10 characters 3-4 mm high in just 2-3 seconds.

**Optional marking areas available (not shown):**

MV5 VU5: 160 x 50 mm

MV5 VU6: 80 x 100 mm

MV5 VU7: 160 x 100 mm

MV5 VU0: 100 x 100 mm



**MV5 VU4 SPRINT**

**Marking area (x/y):**

80 x 50 mm

**Marking speeds:**

approx. 2-3 seconds for 10 characters (3-4 mm character height)

**Available character heights:**

1,0 up to 49,9 mm, stepless adjustable in 1/10-steps

**Fonts:**

Standard fonts, similar to DIN 1451 (other fonts optionally available)

**Marking direction:**

Any, from 0° to 359°

**Available characters:**

Capital and small letters A to Z, figures 0 to 9, various punctuation marks

**Several marking forces:**

Stepless, adjustable via the pressure regulator

**Resolution of the stepping motors:**

0,0125 mm for a very high marking quality



Power unit for SPRINT version.

# INTEGRATION UNIT SCRIBE MARKER MV5 VU2

The latest generation of the scribe marking heads MV5 VU2 joins the CNC scribe marking heads described before. Years of experience with the marking head MV5 VU4 caused the development team of MARKATOR® to this new product. The result of this development step is a tailor-made markinghead for the integration in automatic production lines.

The compact and weight-optimized construction of the marking head MV5 VU2 enables a space-saving installation in a production line and the installation on small industrial robots.

Due to the double guided linear guides and the use of precise ball screws this marking head is very stiff and long-lasting. With this a high level of precision and repeatability at a high marking speed can be guaranteed.

The high quality mechanics together with the continuous development of the MARKATOR®-electronics are especially important when marking a two-dimensional Data Matrix Code. The single dots of the 2D-Codes can be marked very precise also when marking with high marking speeds. This process reliability is essential in nearly all industrial sectors.

Using the option SPRINT plus it is possible to achieve even higher marking speeds. A marking of 10 characters in 3mm character height can be done in approx. 3 seconds.

## MV5 VU2

### Marking area (x/y):

80 x 50 mm

### Marking speeds:

Up to 2 characters/second  
(3-4 mm character height)

### Available character heights:

1,0 up to 49,9 mm, stepless adjustable in 1/10-steps

### Fonts:

Standard fonts, similar to DIN 1451 (other fonts optionally available)

### Marking direction:

Any, from 0° to 359°

### Available characters:

Capital and small letters A to Z, figures 0 to 9, various punctuation marks

### Several marking forces:

Stepless, adjustable via the pressure regulator

### Resolution of the stepping motors:

0,0125 mm for a very high marking quality



## MV5 VU2 SPRINT plus

### Marking area (x/y):

80 x 50 mm

### Marking speeds:

approx 3-4 seconds for 10 characters  
in 3-4 mm character height

### Available character heights:

1,0 up to 49,9 mm, stepless adjustable in 1/10-steps

### Fonts:

Standard fonts, similar to DIN 1451 (other fonts optionally available)

### Marking direction:

Any, from 0° to 359°

### Available characters:

Capital and small letters A to Z, figures 0 to 9, various punctuation marks

### Several marking forces:

Stepless, adjustable via the pressure regulator

### Resolution of the stepping motors:

0,0125 mm for a very high marking quality



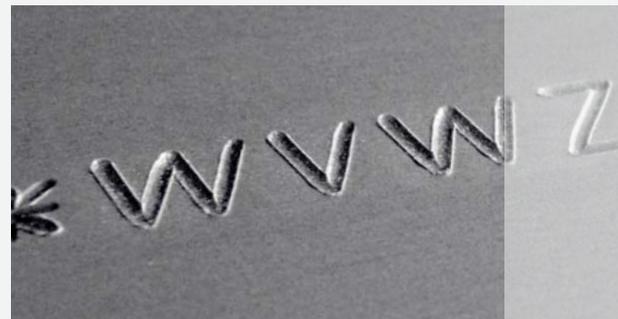
# VIN SCRIBE MARKER MV54 SPRINT

This marking head is bursting with strength! The solid and robust scribe marker MV54 marks powerfully nearly all materials. With a marking area of 160 x 60 mm this marking head is particularly qualified for the marking of deep VIN-numbers. You can rely on it. The double guided linear slides in connection with high quality precision ball screw spindles guarantee exceptional repeatability. Furthermore the quality guidance system used on the scribe marker provides a high steadiness and a long durability. The scribe marker is based on a long-standing continuous development and is characterized by dynamic marking speeds, highest quality marking and optimal adaptability.

The marking head is factory set for the integration in production- and assembly-lines or testing plants, providing a quick and trouble-free integration in automatic – e.g. SPS-controlled – processes of production lines is possible.

The break proof solid carbide marking pin oscillates pneumatically and can be re-grinded several times.

The marking head works self-sufficient.



## Marking area (x/y):

160 x 60 mm

## Marking speeds:

approx. 2-3 seconds for 10 characters  
(3-4 mm character height)

## Available character heights:

1,0 up to 59,9 mm, stepless  
adjustable in 1/10-steps

## Fonts:

Standard fonts, similar to  
DIN 1451 (other fonts  
optionally available)

## Marking direction:

Any, from 0° to 359°

## Available characters:

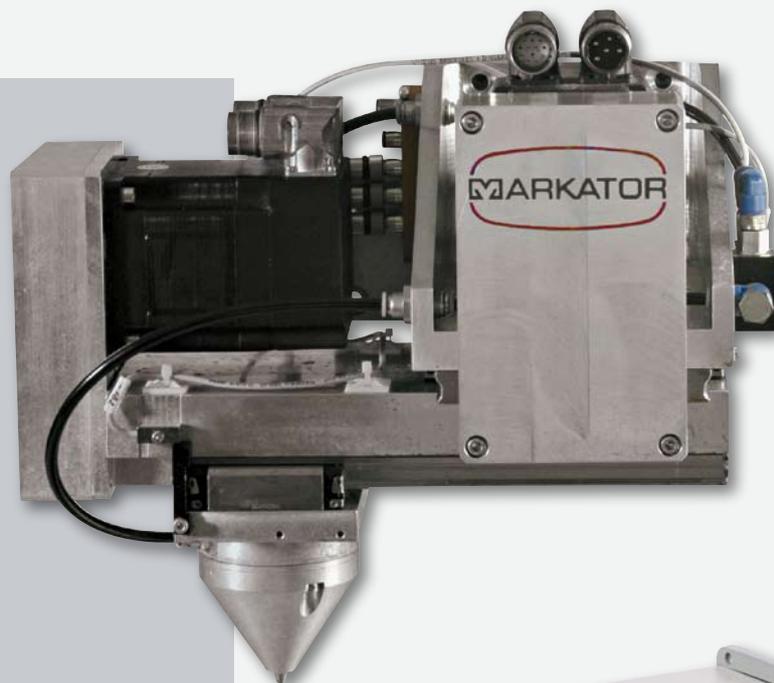
Capital and small letters A to Z,  
figures 0 to 9, various punctuation marks

## Several marking forces:

Stepless, adjustable via the pressure regulator

## Resolution of the stepping motors:

0,0125 mm for a very high marking quality

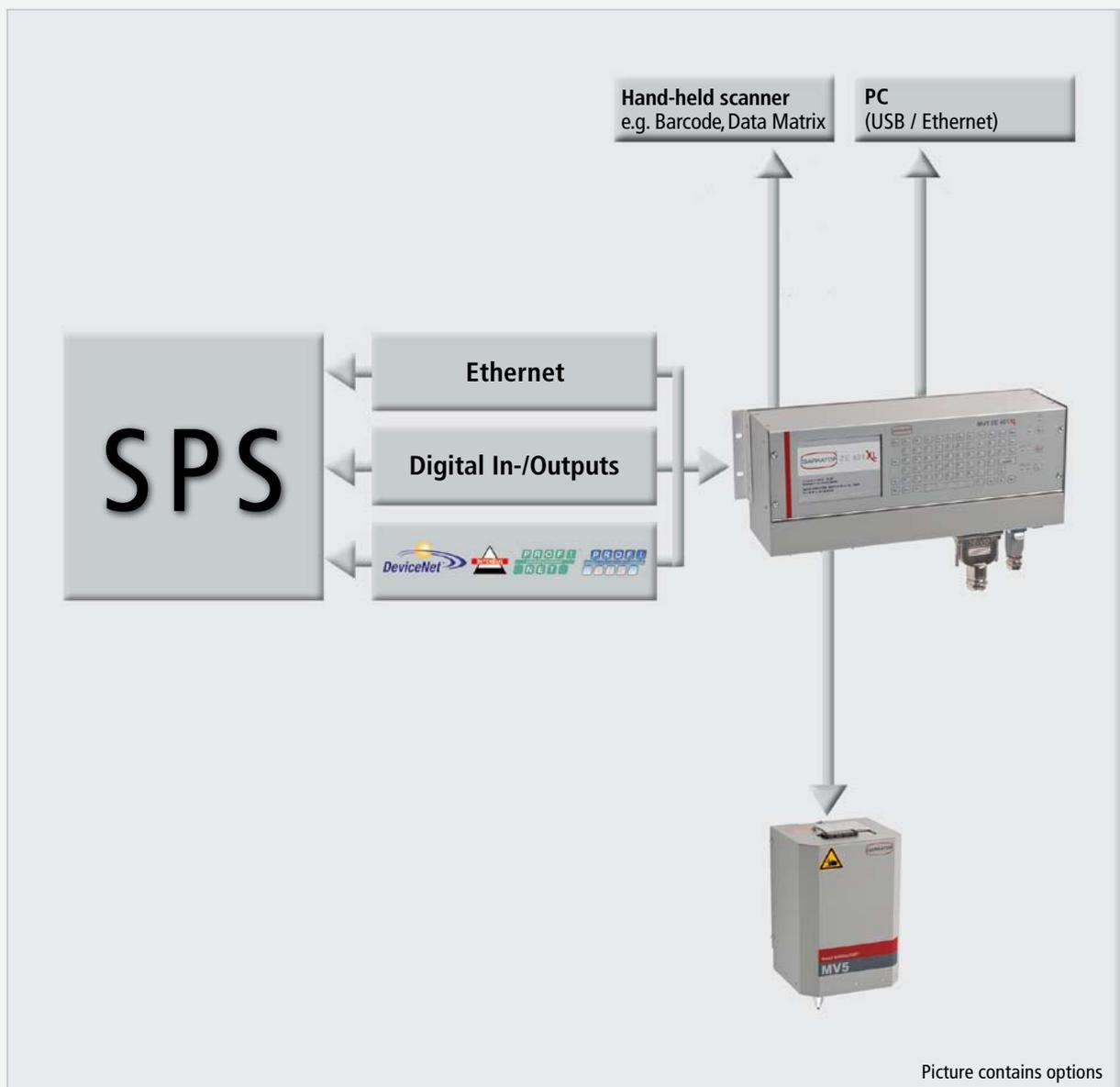


Power unit for SPRINT version.

# COMMUNICATION

The ability to transfer data between the central control units and several device components is provided by the external connection-ports on the rear of the central control units MV5 ZE 100 XL and MV5 ZE 101 XL as described before.

Further options, for example a barcode-scanner can be easily connected. It is also a very simple operation to communicate with an PLC-control via the digital inputs and outputs of the central control unit. Plug-in positions for communication protocols such as PROFIBUS / PROFINET (also LWL) / INTERBUS / DEVICENET are also available on the central control units. With this it is possible to transfer information, marking commands, stop-signals and so on from the central PLC-control to the central control unit and with this to the particular dot-peen- or scribe-marking head.



# MORE PRODUCTS

## Table- and hand-held marking systems

### MV5 T0 ZE 301 XL

Flexible CNC table marking system with a marking area of 100 x 100 mm. Through our modular conception this marking system is extendable with several options.



### MV5 M50/25 ZE 301 XL

Mobile hand-held marking system, perfect to mark heavy, unmovable and large work pieces directly on site. Very space-saving and very handy.



### FlyMarker® PRO

Battery operated, handy and very compact hand-held marking system to mark unmovable and large parts directly on site.



## Central control units

### MV5 ZE 100 XL

This central control unit convinces to its simplicity. It is tailored to the most important features of the automation and profits from the small-sized housing. The central control unit MV5 ZE 100 XL offers a very good price-performance ratio.



### MV5 ZE 101 XL

The central control unit MV5 ZE 101 XL offers the same features than the central control unit MV5 ZE 100 XL. Additionally it is equipped with a high-resolution LC-display and a capacitive keyboard.



### MV5 ZE 301 XL

The central control unit MV5 ZE 301 XL can be used for all MARKATOR® table marking systems. It is equipped with all necessary features for the operation of a self-sufficient table marking system in your workshop.



## Conventional Marking

In addition to the CNC controlled marking systems we also offer products in the range of conventional marking – e.g. impact marking systems, numbering heads, interchangeable steel types, marking tools and every kind of special stamps.

