

# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL



Original operating manual  
Version 7\_04/2025

# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL

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### NOTICE

- This operating manual is valid for versions U65/30 INTEGRAL, U85/45 INTEGRAL and U120/45 INTEGRAL, hereinafter called "INTEGRAL" or the "marking system".
- This operating manual contains important information on the safety and operation of the INTEGRAL marking system and is an integral part of the product.
- The operating manual must always be stored at the place of use or with the device.
- Before starting to work with the INTEGRAL, the operating manual and all safety instructions must be read and understood. When working with the INTEGRAL, all safety and handling guidelines must be observed, as well as local, national and international regulations. The marking system is subject to occupational safety legislation.
- We have thoroughly checked the content of this operating manual. However, deviations may still occur.

## MARKATOR® contacts

---

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## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 1 General information

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#### 1.1 Product description

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The CNC needle marking systems MV5 U65/30 INTEGRAL and U85/45 INTEGRAL are the ideal marking systems for rational, permanent, gentle marking of all types of workpieces in all types of automated production systems. Naturally, pressure-sensitive, thin-walled, painted, hollow and slightly curved products can be marked. The marking system is part of a coordinated modular system.

With its extremely compact construction, the integrated control unit and simple programming, our marking system stands out as a quick-to-integrate mounting unit that can be integrated into automatically controlled processes (such as PLC).

##### The integrated control unit

A control unit is integrated into the marking head. Six LEDs on the housing monitor operating voltage, origin position X, origin position Y, marking readiness, marking in progress and errors. Optionally an integrated display can be used for monitoring (U85/45 INTEGRAL and U120/45 INTEGRAL only). Integration into an automatic production system is done through the PC software delivered with the unit.

The modern computer software is clearly and structurally designed. The logical, self-explanatory user interface requires very little programming knowledge during operation. An external PC provides access to the controls either through the existing Ethernet or a USB-B interface with the included XL Control software, or the marking system is optionally operated through a web browser. For protection from dirt, all ports are covered.

For fast, easy connection to a PLC (Siemens S7), the internal Ethernet port can be controlled through an optional PLC functional module.

Synchronization between the marking system and an external control (such as a robot control, PLC or computer) can be done by default through 4 digital inputs and outputs. Optionally, for U85/45 INTEGRAL and U120/45 INTEGRAL there are 2 additional card slots available, which can accept additional communication cards, such as Profinet, Profibus or Ethernet 2 port cards.

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### 1.2 Scope of delivery

- MV5 INTEGRAL needle marking head:
  - U65/30 (Item No. 5260 00 000)
  - U85/45 without display (Item No. 5263 01 000)
  - U85/45 with display (Item No. 5263 11 000)
  - U120/45 without display (Item No. 5262 01 000)
  - U120/45 with display (Item No. 5262 11 000)
- Standard carbide marking needle 90° (Item No. 5141 00 191)
- XL CONTROL PC software (Item No. 5034 30 001, 5034 00 044)
- Power supply cable, usable with a drag chain, length approx. 10 m (Item No. 899 860 497)
- Round On/Off plug (Item No. 899 860 495)
- Push-pull plug RJ45 (Item No. 899 860 148)
- Connection cable USB-A/USB-B (Item No. 899 860 208)
- Program option A
  - Time, date, auto numbering 1 (2), shift identification, wait time (already installed by default on the central unit)
- Program option B (COMFORT)
  - Information command, prepositioning, message command, absolute positioning, multi marking, speed, editable time, editable date, device type selection, read keyboard (Item No. 5031 02 043)
- Operating manual German/English according to MARKATOR® standard on data medium (Item No. 5260 00 700)
- EC declaration of conformity (item No. 5034 00 004)



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## 2 Safety

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### 2.1 Symbols and terms

---

These symbols indicate warnings, prohibitions and advice that point to hazards and must always be heeded:



This warning means that death, severe bodily injury or serious property damage **will** occur if the precautions are not taken.



This warning means that death, severe bodily injury or serious property damage **may** occur if the precautions are not taken.



This warning means that death, minor bodily injury or minor property damage **may** occur if the precautions are not taken.



This symbol indicates advice for making work easier or a reference to further information.

This document uses the following terms:

#### Marking file

All data for marking are contained in a Marking file.

#### Marker command

A Marking file consists of one or more marker commands.

### 2.2 Intended use

---

The marking system is intended only for marking metals and hard plastics. Living things, explosive products and products that are under pressure must never be marked with the marking system.

Any other use is impermissible! The complete product must never be modified or rebuilt. Never throw or drop the marking system.

Any application of the marking system other than its intended use is considered misuse and is forbidden. The manufacturer accepts no liability for personal injury or property damage due to unintended use.

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### 2.3 Personnel requirements

---

All activities must be performed only by appropriately qualified personnel. Basic knowledge of keyboarding and basic computer functions are required.

Only expert personnel are to carry out control and maintenance.

#### Definition of expert personnel

Expert personnel are those who have technical knowledge and experience due to specialized training. Such personnel are capable of performing the work assigned to them and of recognizing and preventing hazards on their own.

#### Electrical expert

An electrical expert is a person who is trained in his special area of responsibility and knows the relevant standards and regulations. Due to his specialized training and experience, an electrical expert can perform work on electrical systems and independently recognize and prevent potential hazards.

#### Definition of operator, user and administrator

The only people permitted to act as operators, users or administrators are those who can be expected to perform their work reliably. People with impaired reactions, such as from drugs, alcohol or medication, are not permitted.

### 2.4 General safety regulations

---



**CAUTION**

#### Injury hazard!

- Marking is allowed only on metals and hard plastics.
- Defective devices must not be used until they have been fully repaired by a professional! Repairs and maintenance must be performed only by trained, authorized personnel!

*Failure to comply may lead to minor injury.*



**NOTICE**

- **Electrical installations** must be performed only by electrical experts.
- Only **MARKATOR®-approved** accessories are to be used on the marking system!
- Repairs are to be performed only by MARKATOR® personnel.
- The **warranty** on the marking system's parts is void if repairs are made during the warranty period without the manufacturer's approval.

*The model plate on the marking system and the information in the technical data must be observed.*

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### 2.5 Safety rules when working with the INTEGRAL

**CAUTION**



#### Crushing hazard!

- Never reach under the marking system during the marking process!
- Never reach into the marking system's working area during the marking process!

Body parts may be caught and crushed by the movement of the axis or the marking needle.

**CAUTION**



#### Burn hazard from hot magnets and surrounding components.

- Before touching (e.g. when marking, changing needles or performing maintenance), all parts of the marking head must be cooled to a safe temperature (measure the temperature, if necessary)!
- Dangerously hot parts must be touched only with heat-protective gloves or heat-protective clothing!

Limbs may be burned by hot components!

**CAUTION**



#### Noise injury hazard!

- Depending on the workpiece to be marked, noise may be produced. If the noise is too loud according to current legal regulations, hearing protection must be worn (measure the noise, if necessary)!
- The operator is responsible for providing hearing protection.

Failure to wear such protection can cause hearing damage.

**CAUTION**

- Strong marking force must always be used when the marker needle strikes the workpiece. Always avoid "air marking". Otherwise, the magnet may be damaged.
- The marking needle may shift in the idle state because the stepper motors go into energy-saving mode. For this reason, a reference run is executed before each marking.

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### 3 First use

---

#### **CAUTION**

##### **Injury hazard due to falling parts!**

- Use caution
- Unpack with care
- When choosing a place to set up and assemble, consider INTEGRAL's weight.

Parts may fall or tip. This can cause injury.

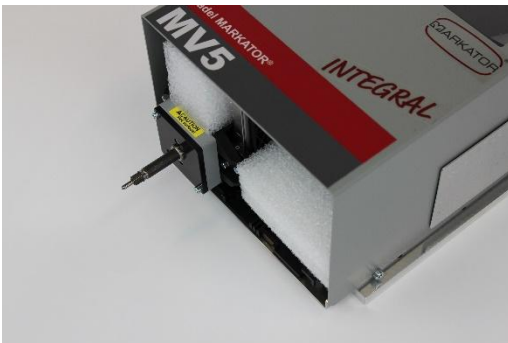
#### **NOTICE**

##### **Risk of damage**

Do not throw away the transport guard. Attach it again every time INTEGRAL is transported.

Before attaching the transport guard, allow the magnet to cool.

1. Unpack the marking system and check the delivery for completeness and transport damage. Report transport damage to the responsible carrier immediately. If parts are missing or defective upon delivery, contact MARKATOR® immediately!
2. Remove and store transport guard.



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### 3.1 Installing the INTEGRAL MV5 marking system

---

#### NOTICE

Observe the data sheets!

1. Chose the assembly site.
2. Take noise protection measures.

#### NOTICE

Such measures can be:

- Preventing workpiece vibration
- Insulating the space
- Attaching insulation between the workpiece mount and the clamneedleg surface.

3. Attach the (optional) height adjustment device to the INTEGRAL.

#### NOTICE

Optionally, pneumatic Z-axes can be used as the height adjustment device.

#### NOTICE

An optimally adjusted end position damper must not cause any spring back. Avoid hitting the end positions hard.

4. Attach the INTEGRAL to the height adjustment device (optional).

#### NOTICE

The INTEGRAL should be mounted in such a way that various necessary distances can easily be set by turning the height adjustment device.

√ INTEGRAL is ready to operate.

### 3.2 Make the electrical connections

---

#### CAUTION

Risk of damage! Connect INTEGRAL according to the needle assignment. The power supply technical data absolutely must be observed. Failure to comply can result in total damage!

#### NOTICE

Falling hazard from connection lines! Route the connection lines so that there is no hazard!

1. Connect and inspect all electrical connections according to the connection diagram.
2. Turn on INTEGRAL.

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### 3.3 Operating the INTEGRAL from XL CONTROL or a web browser

To operate the INTEGRAL, the XL CONTROL operating manual must be observed.

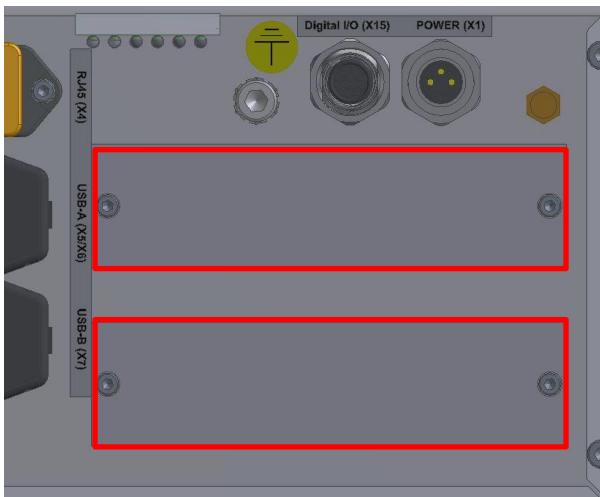
### 3.4 Optional INTEGRAL U85/45 and U120/45: Connecting the communication cards

## NOTICE

The INTEGRAL U85/45 and U120/45 has 2 optional card slots for data transfer.

The following communication cards can be added:

Program option O/I: PROFINET CU 2 PORT XL version 2 <b>Observe the operating manual 5034 00 065 Profinet CU LWL!</b>	(5031 02 070)
Program option O/I: PROFIBUS <b>Observe Profibus operating manual 5034 00 041!</b>	(5131 02 001)
Program option O/I: PROFINET LWL 2 PORT XL <b>Observe the operating manual 5034 00 065 Profinet CU LWL!</b>	(5030 59 000)
Program option O/I: ETHERNET IP 2 PORT (Rockwell protocol) <b>Observe the operating manual for the 5034 00 067 Ethernet IP 2 PORT!</b>	(5030 70 000)
External power supply card for PROFINET 2 PORT XL / ETHERNET IP 2 PORT <b>Observe the operating manual 5034 00 065 Profinet CU LWL!</b>	(5030 58 000)



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### 4 Operation














#### 4.1 Operating the INTEGRAL

## NOTICE

INTEGRAL is operated from an external keyboard, through the XL Control software, or through the Google Chrome web browser.

The requirement for all xthe following entries, settings and control functions:

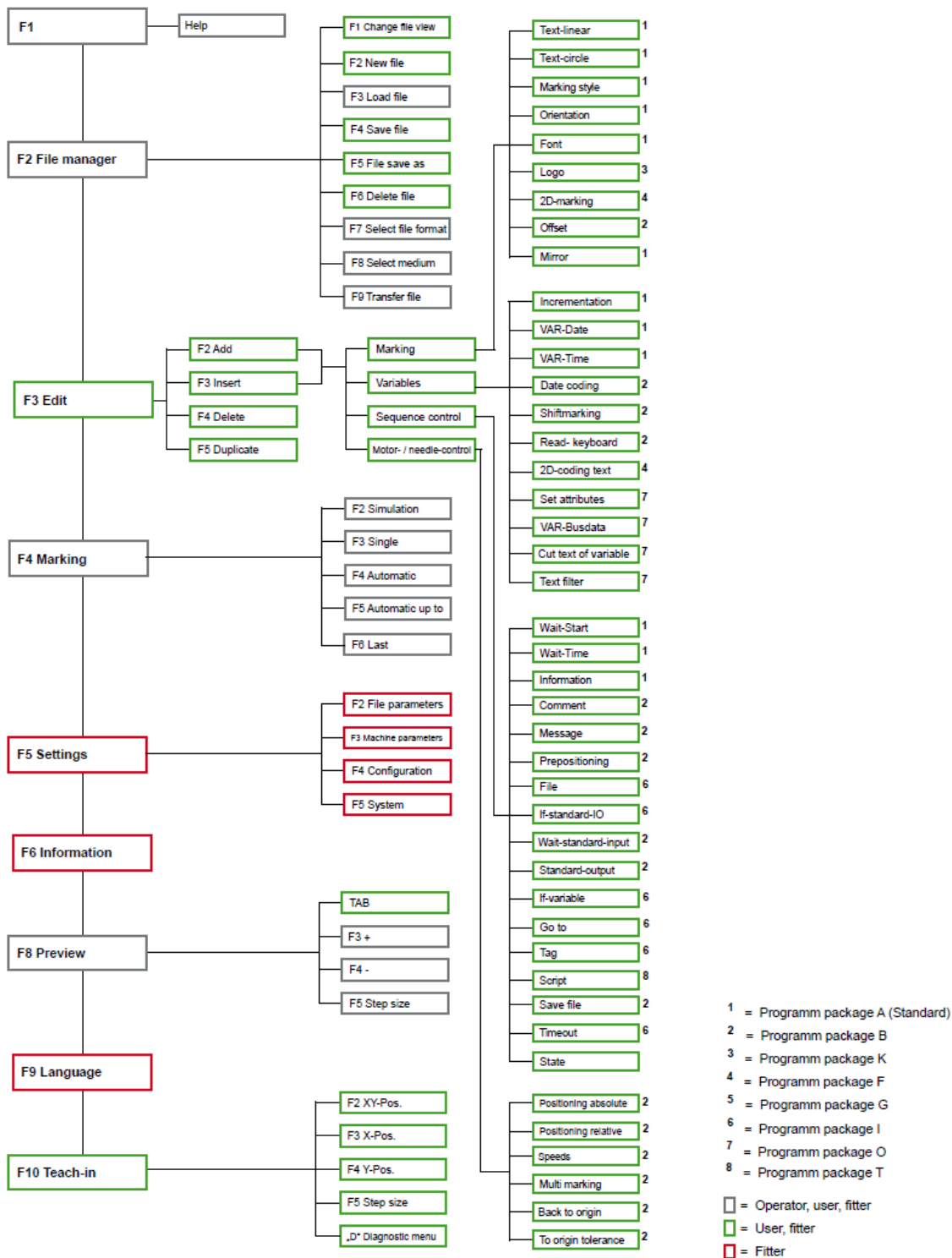
✓ The INTEGRAL is switched on.

	<b>Left arrow key</b>	Cursor moves leftward
	<b>Right arrow key</b>	Cursor moves rightward
	<b>Up arrow key</b>	Cursor moves up
	<b>Down arrow key</b>	Cursor moves down
 - 	<b>Function keys</b>	See description of function keys
	<b>Key button</b>	Password input
	<b>Insert key</b>	change the writing mode
	<b>Delete key</b>	delete the entries or characters behind the cursor
	<b>Back erase key</b>	delete the entries or characters before the cursor
	<b>ESC key</b>	cancel an entry jump to previous menu
	<b>Enter key</b>	The current value is confirmed Jump to a new line A message is confirmed with OK
	<b>Shift key</b>	Change between upper and lower case

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### 4.1.1 Menu structure



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### 4.1.2 Turn on INTEGRAL

## NOTICE

The INTEGRAL has no on/off switch. As soon as the correct voltage is applied externally, the INTEGRAL starts.

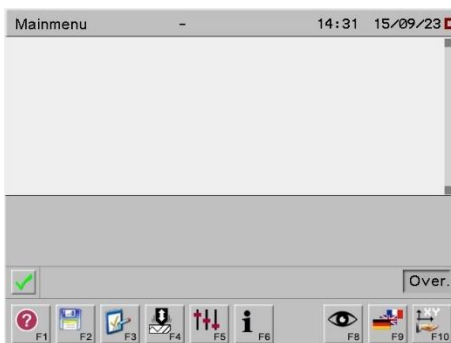
The connection values must be observed!

1. Apply voltage.

- √ The INTEGRAL starts.
- √ The controls perform a self-test.
- √ The *start window* appears.



2. Press **any** key.



- √ The INTEGRAL is in operator mode.

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### 4.1.3 Operator, user, administrator functions

Access to control functions depends on the functional level selected:

#### Operator level

The following functions can be performed without a password:

- Entering passwords
- Single marking (without entering the marking text)
- Showing the marking preview

#### User level

By entering a user password, the user can perform all operator functions, as well as the following functions:

- Create a new Marking file
- Save marking file
- Save marking file as
- Delete marking file
- Edit marking file
- Select and manage placeholders
- Teach-in, diagnosis

#### Administrator level

By entering an administrator password, the administrator can perform all operator and user functions, as well as the following functions:

- Select the operator language
- Display system information (option)
- Making system settings
- Format memory (delete data)
- Edit the marking preview

### 4.1.4 Password input

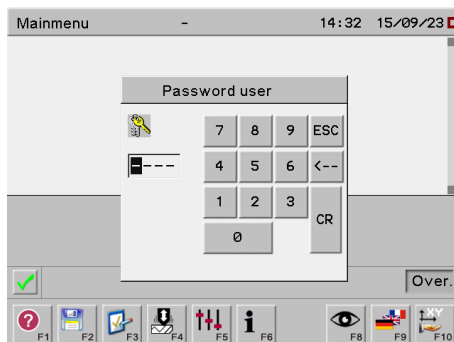


**NOTICE**

User password: 1111  
Administrator password: 2222

1. Press the **F11** key.

✎ The following dialog box appears.



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2. Enter the administrator password and confirm with the **Enter** key.

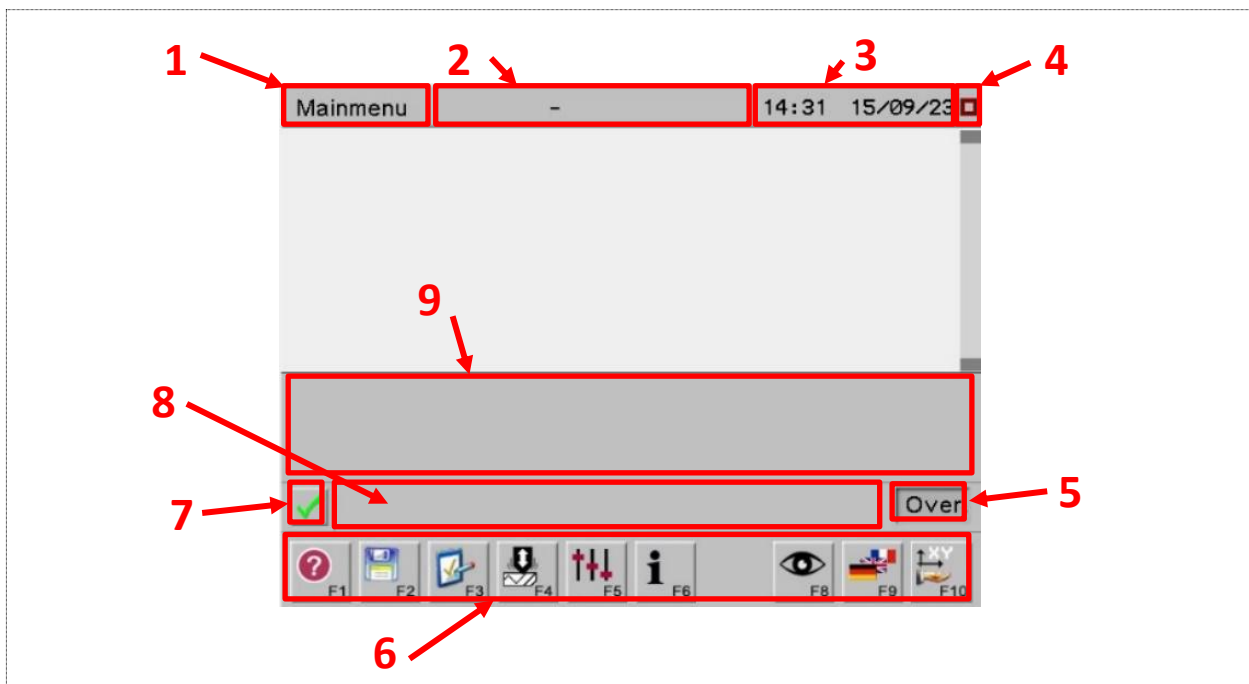
➤ A false entry will take you back to the operator level.



### 4.1.5 Overview of displays

**NOTICE**

The display depends on the current password level.



1	Menu display	6	Function keys
2	File name	7	Signal character
3	Time and date	8	Status line / Line info
4	CAN bus status	9	Parameter for marked line
5	Writing mode		










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### 4.1.6 Function keys



Meaning:

	Help		Information
	File		
	Edit		Preview
	Marking		Language
	Settings		Teach-in

### 4.1.7 Select the operator language

**NOTICE**

This function is only possible after entering the administrative password.

✓ The *Main menu* window appears.

1. Press the **F9** key.



2. Select the operator language with the **space bar** or the **arrow** keys, and confirm with the **Enter** key.

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The following languages are available			
German	Polish	Greek	Bulgarian
English	Portuguese	Russian	Hebrew
French	Finnish	Czech	Romanian
Italian	Danish	Hungarian	Chinese
Dutch	Norwegian	Arabic	Japanese
Spanish	Turkish	Slovak	Swedish
<i>Other languages upon request...</i>			

- ✓ The operator language has been changed.
- ✓ The *Main menu* window appears.

### 4.1.8 Keyboard lock

**NOTICE**

A password unlocks the keyboard.

1. Press the **F11** key.
2. Enter code **7777** for the keyboard lock and press the **Enter** key to activate.

- ✓ The *Main menu* window appears.
- ✓ Keyboard lock is active.



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### 4.1.9 Insert special characters

**NOTICE**

Various special characters are available, depending on the font.

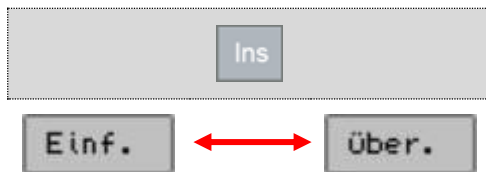
Special characters can be entered into a text field using the combination “%CCxxx”. The following combinations are available according to the ASCII table:

Code	Symbol	Code	Symbol	Code	Symbol	Code	Symbol
%CC031	Ω	%CC161	ı	%CC179	³	%CC189	½
%CC114		%CC163	£	%CC181	μ	%CC190	¾
%CC131		%CC169	©	%CC182	¶	%CC216	Ø
%CC152	~	%CC174	®	%CC185	¹	%CC248	ø
%CC153	™	%CC178	²	%CC188	¼		

### 4.1.10 Selecting the writing mode

**NOTICE**

To change from Insert to Overwrite, the cursor must be in the text field.



<b>Einf.</b>	<b>Insert mode</b> The new character is inserted to the left of the cursor.
<b>Über.</b>	<b>Overwrite mode</b> The character below the cursor is overwritten by the new character.

### 4.2 Displaying system information

**NOTICE**

This function is only possible after entering the user password.

**NOTICE**

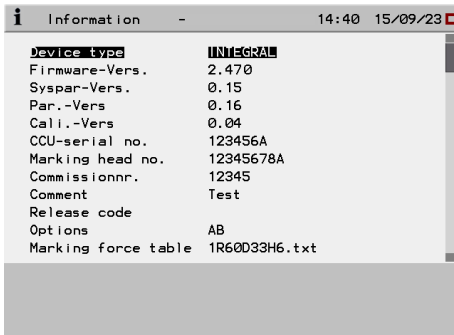
In the *Information* menu, a MARKATOR® activation code can be entered to activate post-purchased program options.

✓ The *Main menu* window appears.

1. Press the **F6** key.

# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL



2. Use the **arrow** keys to scroll up and down to the desired information.
3. Press the **ESC** key to go back to the *main menu*.

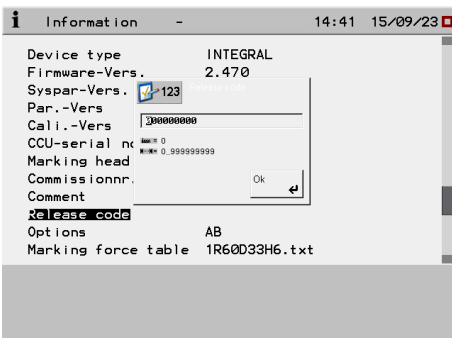
### 4.2.1 Release program option

## NOTICE

This function is only possible after entering the user password.

✓ The *Main menu* window appears.

1. Press the **F6** key.
2. Use the **arrow** keys to go to the *activation code* and confirm with the **Enter** key.
3. Enter the activation code and confirm with the **Enter** key.



4. Press the **ESC** key to go back to the *main menu*.

✓ The corresponding option is activated.

# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 4.3 Making system settings

## NOTICE

This function is only possible after entering the user or administrator password.

✓ The *Main menu* window appears.

1. Press the **F5** key.
2. Press **F5**.
3. Select the system setting with the **arrow** keys, press the **Enter** key, **change value**, and confirm with Enter:

System settings	Standard value	Range
Brightness	65	30 ... 100
Time	Time value	
Date	Date value	
Switch between standard and daylight savings time	ON	OFF/ON
USB keyboard	German	German / Cyrillic / English / Norwegian / Swedish / Danish / Hungarian
Keyboard lock password	7777	
User password	1111	
Administrator password	2222	

4. Press the **ESC** key to go back to the *main menu*.

✓ The corresponding value is changed.

✓ The *Main menu* window appears.

### 4.4 Optional display (INTEGRAL U85/45 and U120/45)

## NOTICE

INTEGRAL is operated from an external keyboard, through the XL Control software, or through the Google Chrome web browser.

The optional display serves as visible output for the HMI (human-machine interface) and as a control screen.

### 4.5 Optional laser pointer (INTEGRAL U85/45 and U120/45)

## WARNING

Do not look directly into the laser. This can cause eye injury.

To help record the position at which marking should begin, a laser pointer is integrated into INTEGRAL U85/45 and U120/45.

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## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 5 Operation

#### 5.1 Choosing and changing the marking needle

The marking needle must be selected based on the material to be marked. Marker needles differ in material and tip angle.

The following marking needles are available:

Order No.	Properties		Application	Order No. Set of 5
	Angle	Radius		
5141 00 161	60°	0.1 mm	especially soft materials	5141 05 161
5141 00 191	90°	0.1 mm	Standard universal marker needle	5141 05 191
5141 00 112	110°	0.2 mm	especially hard materials	5141 05 112
5141 16 030	160°	0.3 mm	Low bulge	5141 05 030
5041 29 151	90°	0.1 mm	Extended carbide marking needle, length 47 mm (+10 mm)	
5041 19 102	60°	0.1 mm	Extended carbide marking needle, length 47 mm (+10 mm)	
5041 19 262	110°	0.2 mm	Extended carbide marking needle, length 47 mm (+10 mm)	

## NOTICE

The marking needle is a wear part that must be changed at various regular intervals.

1. Turn off INTEGRAL.
2. Insert an Allen wrench (SW 2.5 mm) through the hole of the needle plunger of the magnet to prevent the needle plunger from twisting.

# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL



3. Unscrew the collet nut **counterclockwise** using a box wrench (SW 6 mm).



4. Pull the marking needle out of the chuck.



5. Insert the new marker needle into the chuck until it stops.



6. Tighten the collet nut **clockwise** to 6 Nm of torque. Remove the ring wrench and Allen wrench.

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## MV5 U65/30, U85/45, U120/45 INTEGRAL



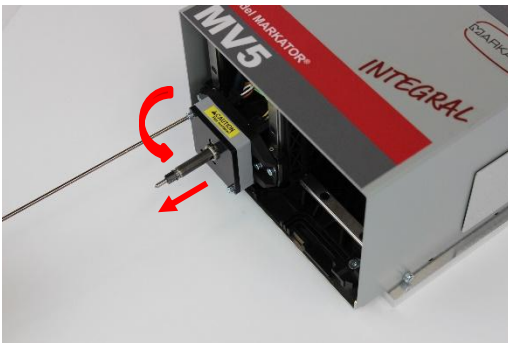
√ The marker needle is installed.

### 5.2 Replacing the magnet

#### NOTICE

The magnet is a wear part that must be changed at various regular intervals.

1. Turn off INTEGRAL.
2. Remove the marking needle according to Chapter 5.1.
3. Loosen the two screws of the magnet with an Allen wrench (SW 2.5 mm) counterclockwise.



4. Pull the magnet out of the mount and remove it.

#### NOTICE

Store functional magnets in a cool, dry place.  
Dispose of defective magnets immediately.

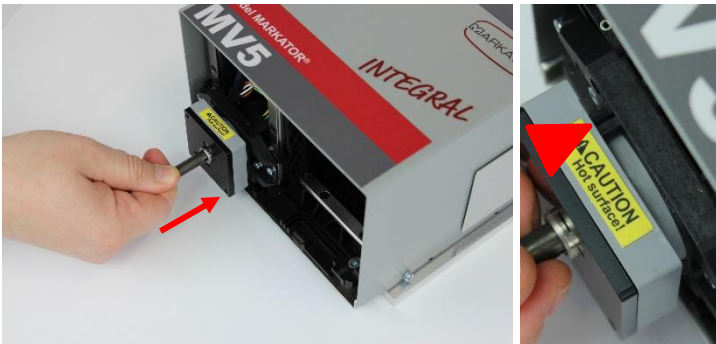
5. Guide the new magnet into the mount carefully.

#### NOTICE

Insert the magnet carefully and beware of the contacts. Never use force!

# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL



6. Tighten the magnet's two screws clockwise with an Allen wrench (SW 2.5 mm).



7. Attach the marking needle according to Chapter 5.1.
8. Turn on INTEGRAL.

**NOTICE**

When it is turned on, the new magnet is detected.

- √ The magnet has been changed.

### 5.3 Installing logos on the INTEGRAL

**NOTICE**

Creation of logos is described in the operating manual, Option HPGL (Item No. 5034 00 045).

**NOTICE**

The logo must be installed on the INTEGRAL before it can be inserted into the marking file as a command.

**NOTICE**

This function is only possible after entering the user or administrator password.

**NOTICE**

The USB stick used must be formatted to FAT-32.

# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL

✓ The *Main menu* window appears.

1. Insert the **USB stick** the logo is stored on into the INTEGRAL's USB port.
2. Press the **F2** key.
3. Press the **F8** key.



✓ The storage location *USB stick* appears.



### NOTICE

4. Press the **F7** key.





If *INTEGRAL* appears, you are at the INTEGRAL's storage location. In that case, press the F8 key again to get to the *USB stick*'s storage location.

✓ All logos on the USB stick are shown.

### NOTICE

If *.dat* files are shown, the F7 key needs to be pressed again until the F7 key graph changes to *-cgp/.cft* and logos are displayed.

	The <b>storage location USB stick</b> appears. The highlighted file is copied to <b>INTEGRAL</b> .
	The <b>storage location INTEGRAL</b> appears. The highlighted file is copied to the <b>USB stick</b> .

5. Press the **F9** key.

✓ The logo is transferred to the INTEGRAL and is now in the device's memory.  
Transfer can take a few seconds.

### NOTICE

Marking files, logos and fonts can also be transferred to the USB stick.

### NOTICE

To be able to mark the logo, it still has to be inserted into the marking file.

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## MV5 U65/30, U85/45, U120/45 INTEGRAL

## 6 Programming

### 6.1 File manager function keys

**NOTICE**

These functions are only possible after entering the user or administrative password.

#### 6.1.1 F1: Show/hide file info

Show file info

File 1.dat	5.7kB	27.01.22	10:13
File 2.dat	5.7kB	27.01.22	10:14

Hide file info

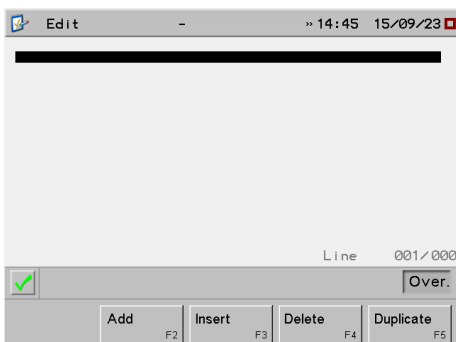
File 1.dat	
File 2.dat	

#### 6.1.2 F2: Create a marking file

✓ The *Main menu* window appears.

1. Press the **F2** key.
2. Press the **F2** key.
3. If the current Marking file has not yet been saved:

✓ The Edit menu opens.



✓ All parameters are reset to the respective default values.

✓ The marking file can be edited.

#### 6.1.3 F3: "Load" a Marking file

✓ The *Main menu* window appears.

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## MV5 U65/30, U85/45, U120/45 INTEGRAL

1. Press the **F2** key.
2. Use the **arrow** keys to jump to the desired file.
3. Use the **F3** or **Enter** key to select and load the marking file.



- ✓ The marking file has been loaded. The selected file name is shown in the header.
- ✓ The *Main menu* window appears.

### 6.1.4 F4: “Save” marking file

**NOTICE**

For a marking file to be saved, it must already be loaded.

**NOTICE**

For changes to a marking file not to be lost, it must be saved after every change!

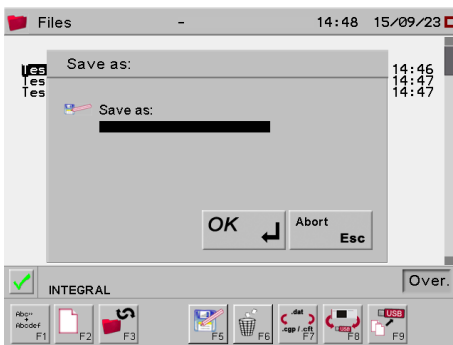
- ✓ The *Main menu* window appears.
  1. Press the **F2** key.
  2. Press the **F4** key.
- ✓ The marking file has been loaded.
- ✓ The *Main menu* window appears.

### 6.1.5 F5: “Save a Marking file as”

- ✓ The *Main menu* window appears.
  1. Press the **F2** key.
  2. Press the **F5** key.
- ✓ The window *Save file as* appears.

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## MV5 U65/30, U85/45, U120/45 INTEGRAL



3. Enter the file name.

4. Press the **Enter** key.

✓ The marking file has been saved and reloaded with the new file name.

✓ The *Main menu* window appears.

### 6.1.6 F6: “Delete” Marking file

✓ The *Main menu* window appears.

1. Press the **F2** key.

2. Use the **arrow** keys to select marking file.

3. Press the **F6** key.

4. Press the **Enter** key.



5. Press the **Enter** key to confirm the security question.

✓ The marking file has been deleted.

### 6.1.7 F7: “Filter” marking files, logos and fonts

✓ The *Main menu* window appears.

1. Press the **F2** key.

2. Press the **F7** key.

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## MV5 U65/30, U85/45, U120/45 INTEGRAL

✓ Depending on the mode selected

**either:**

Only Marking files are shown.



**or:**

Only logos, fonts and CSV files are shown.



### 6.1.8 F8: “Select data medium” (INTEGRAL ↔ USB stick)

✓ The *Main menu* window appears.

1. Press the **F2** key.
2. Press the **F8** key.

✓ Depending on the mode selected

**either:**

Files are shown that are saved to INTEGRAL.



**or:**

Files are shown that are saved to the USB stick.



### 6.1.9 F9: “Copy” marking file to INTEGRAL or USB stick

✓ The *Main menu* window appears.

1. Press the **F2** key.
2. Use the **arrow** keys to select the file to be copied.
3. Press the **F9** key.

# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL

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**either:**

The highlighted file is copied to INTEGRAL.



**or:**

The highlighted file is copied to the USB stick.



# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.2 Marking commands

**NOTICE**

These functions are only possible after entering the user or administrative password.

Commands	Marking	Variables	Sequence control	Needle / motor controls
<b>Option A</b>				
Linear text	■			
Circular text	■			
Marking style	■			
Orientation	■			
VAR incrementation		■		
Information			■	
Font	■			
VAR-date		■		
VAR-time		■		
Wait-start			■	
Wait-time			■	
Mirror	■			
<b>Option B</b>				
Save file			■	
Date encoding		■		
Comment			■	
Read-keyboard		■		
Message		■		
Multi-marking				■
Positioning absolute				■
Positioning relative				■
Reference run				■
Shift marking		■		
Prepositioning			■	
Waiting for standard input			■	
Standard output			■	
Reference run tolerance			■	
<b>Option D</b>				
Ethernet				

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## MV5 U65/30, U85/45, U120/45 INTEGRAL

Commands	Marking	Variables	Sequence control	Needle / motor controls
<b>Option F</b>				
2D marking				
2D coding text				
<b>Option I</b>				
If-standard-IO				
IF-VARIABLE				
Go to				
Tag				
Timeout				
File				
Status				
<b>Option K</b>				
Logo				
<b>Option O</b>				
Set attributes				
Cut out variable text				
VAR-BUSDATA				
Filter text				
<b>Option T</b>				
Script				

**NOTICE**

Always save marking files when changes have been made!

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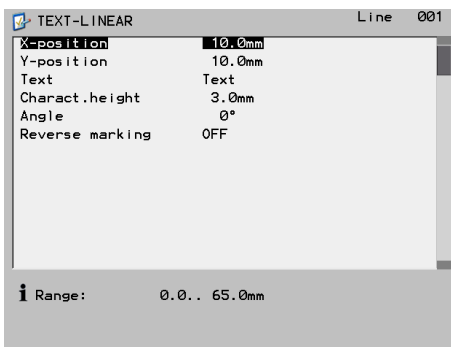
## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.2.1 Option A: Linear text

<b>Function:</b>	
A specified text or a text made from a variable is to be marked.	
<b>Parameter:</b>	
X-position	0,0 ... 65.0 mm / 0.0 ... 85.0 mm / 0.0 ... 120.0 mm (depending on model)
Y-position	0.0 ... 30.0 mm / 0.0 ... 45.0 mm (depending on model)
Text	Fixed text or variable, max. 100 characters
Character height	0.7... 99.9 mm
Angle	0° ... 359°
Reverse marking	OFF/ON
<b>Description:</b>	
The <b>x position</b> indicates the marking point's coordinates in connection to the x orientation. The <b>y position</b> indicates the marking point's coordinates in connection to the y orientation. In <b>Text</b> , a fixed text or a variable is entered. The machine variables are used with <b>;%\$M</b> and the file variables with <b>;%\$D</b> . <b>Example: %\$M8</b> Through <b>Charact.height</b> , the height of the font can be specified. <b>Angle</b> can be used to change the text orientation. Through <b>Reverse marking</b> , a function can be activated so that with two lines, the first line is marked from left to right, and the second line from right to left, and so on.	

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Marking* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to the *Text-linear* command and confirm with the **Enter** key.



4. Make the settings.
5. Use the **ESC** key to exit.

✓ The *Edit* window appears.


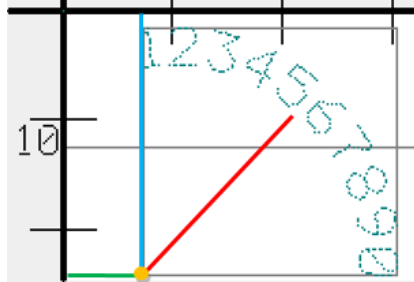



✓ A *Text-linear* command is inserted.

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## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.2.2 Option A: Circular text

<b>Function:</b>	
A specified text or a text made from a variable is to be marked in circular form.	
<b>Parameter:</b>	
X center	-999.0... 999.0 mm
Y center	-999.0... 999.0 mm
Text	Fixed text or variable, max. 100 characters
Character height	0.7... 99.9 mm
Radius	1.0... 999.0 mm
Angle	0° ... 359°
Direction	+ / -
Reverse marking	OFF/ON
<b>Description:</b>	
Use <b>X-center</b> to specify the center of the circle in X-position (this can even be outside the marking range!).	
Use <b>Y-center</b> to specify the center of the circle in Y-position (this can even be outside the marking range!).	
In <b>Text</b> , a fixed text or a variable is entered. The machine variables are used with <b>;%M</b> and the file variables with <b>;%D</b> . <b>Example: %M8</b>	
Through <b>Charact.height</b> , the height of the font can be specified.	
Use <b>Radius</b> to specify the radius in connection to the <b>Orientation</b> command and the <b>Direction</b> of the text.	
Use <b>Angle</b> to specify the starting point of the text circle.	
Direction determines the writing direction, whether clockwise (+) or counterclockwise (-).	
Through <b>Reverse marking</b> , a function can be activated so that with two lines, the first line is marked from left to right, and the second line from right to left, and so on.	

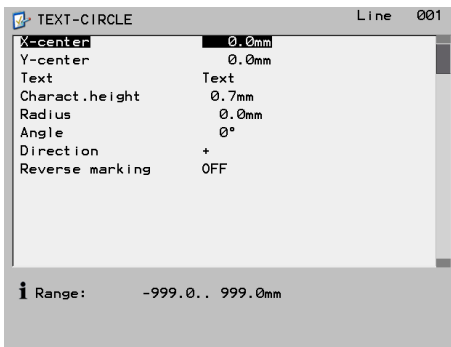
	Center of circle	
	X coordinates of the circle's center	
	Y coordinates of the circle's center	
	Radius	

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Marking* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to the *Text-circle* command and confirm with the **Enter** key.

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## MV5 U65/30, U85/45, U120/45 INTEGRAL



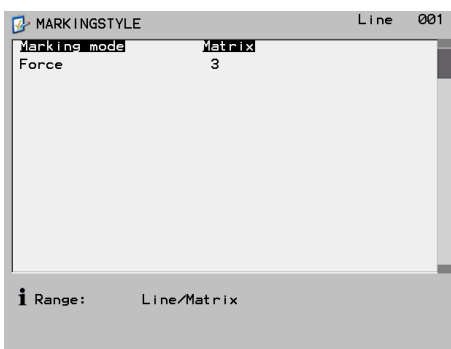
4. Make the settings.
5. Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ A *Text-circle* command has been inserted.

### 6.2.3 Option A: Marking style

<b>Function:</b>	
With the marking style command, the marking mode and the force of a marking can be set.	
<b>Parameter:</b>	
Marking mode	Line / Matrix
Thickness	0 ... 30
<b>Description:</b>	
<b>Marking mode</b> is used to select whether the subsequent marking is a <i>linear marking</i> or a <i>dot matrix marking</i> . Through <b>Force</b> the marking force is proportionally set from 0 to 30.	

- ✓ The *Edit* window appears.
1. Press the **F2** or **F3** key to append or insert the command.
  2. Use the **arrow** keys to jump to the *Marking* command selection and confirm with the **Enter** key.
  3. Use the **arrow** keys to jump to the *Marking style* command and confirm with the **Enter** key.



4. Make the settings.

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5. Use the **ESC** key to exit.

✓ The *Edit* window appears.

✓ A marking style command has been inserted.

### 6.2.4 Option A: Orientation

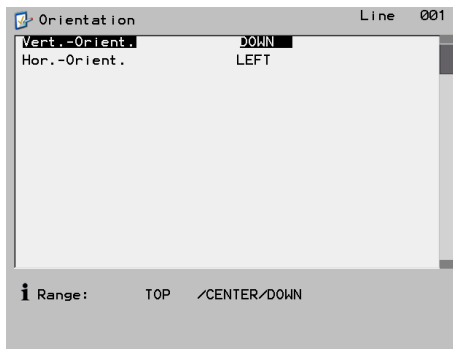
<b>Function:</b>	
The text is oriented relative to the starting point (X and Y coordinates).	
<b>Parameter:</b>	
Vert.-Orient.	Up / Middle / <b>Down</b>
Hor.-Orient.	<b>Left</b> / Middle / Right
<b>Description:</b>	
A text to be marked can aligned horizontally in the left, middle or right positions. The vertical alignment can be selected as up, middle or down. The text orientation is horizontal to the X-position and vertical to the Y-position. The standard setting is horizontal left and vertical down.	

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.

2. Use the **arrow** keys to jump to the *Marking* command selection and confirm with the **Enter** key.

3. Use the **arrow** keys to jump to the *Orientation* command and confirm with the **Enter** key.



4. Make the settings.

5. Use the **ESC** key to exit.

✓ The *Edit* window appears.

✓ An *Orientation* command has been inserted.

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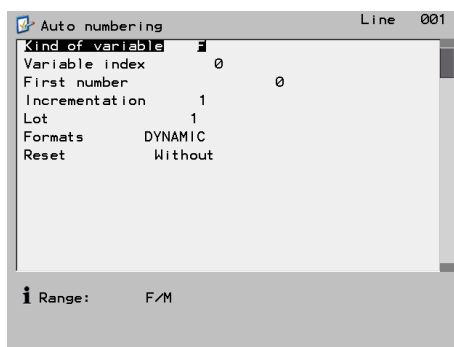
## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.2.5 Option A: Incrementation

Function:	
The Incrementation command automatically generates a sequential number in the marking controls. This is saved with a variable that can be called up and used or highlighted.	
Parameter:	
Variable type	D / M (file variables / machine variables)
Variable index	0 ... 24
First number	0 ... 999999999
Incrementation	-32000 ... 32000
Lot	0 ... 32000
Format	Dynamic / 0 / 00 / 000 / 0000 / 00000 / 000000 / 0000000 / 00000000 / 000000000 (1st Up to a 9-place digit sequence)
Reset	None / End of day / End of month
Description:	
<b>Kind of variable</b> can be used to select whether the sequential number should be saved to the file or machine variables.	
<b>Variable index</b> is for selecting the index that belongs to the variable type.	
<b>First number</b> is used to determine what the starting number should be.	
<b>Incrementation</b> is used to determine the value for each sequential number.	
Lot is used to determine after how many markings (command passes) counting should continue.	
<b>Format</b> is for setting how many digits to display.	
<b>Reset</b> can be used to determine whether – and if so, when –incrementation should be reset to the first number.	

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Variables* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to *Incrementation* command and confirm with the Enter key.



4. Make the settings.
5. Use the **ESC** key to exit.

✓ The *Edit* window appears.

✓ An *Incrementation* command has been inserted.

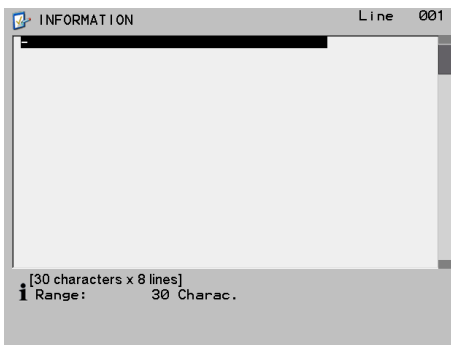
# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.2.6 Option A: Information

<b>Function:</b>	
The entered text is displayed once at the beginning of the marking file, thus allowing information on the loaded marking file to be shown on the display of the marking controls.	
<b>Parameter:</b>	
Line 1 ... Line 8	Fixed text or variable (30 characters x 8 characters)
<b>Description:</b>	
If this command is present in the marking file, the entered information comes up on the marking controls display right at the time the user jumps to the automatic menu (F4).	

- ✓ The *Edit* window appears.
1. Press the **F2** or **F3** key to append or insert the command.
  2. Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.
  3. Use the **arrow** keys to jump to the *Information* command and confirm with the **Enter** key.



4. Make the settings.
  5. Use the **ESC** key to exit.
- ✓ The *Edit* window appears.
- ✓ An *Information* command has been inserted.

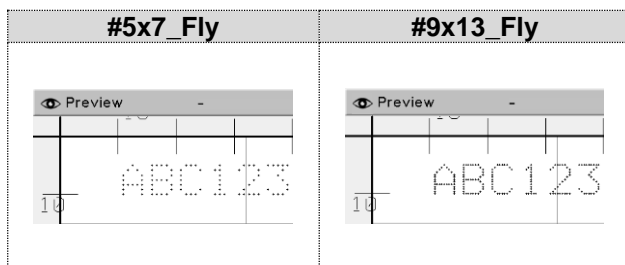
# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL

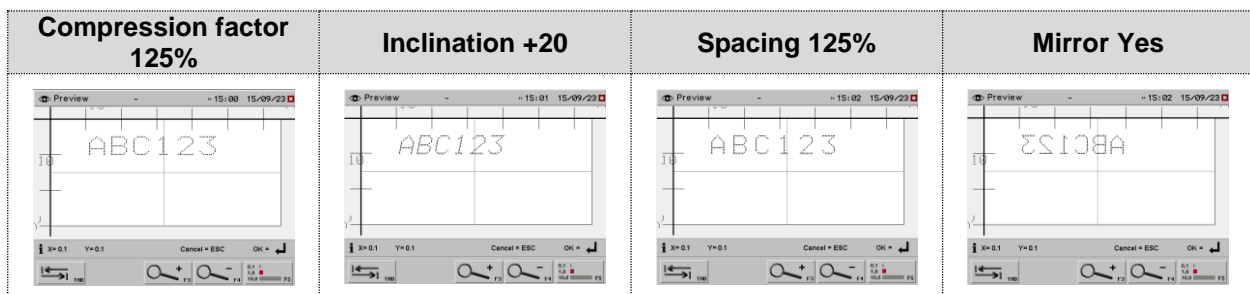
### 6.2.7 Option A: Font

<b>Function:</b>	
This command is for using the integrated standard fonts and the extra fonts prepared for the customer.	
<b>Parameter:</b>	
Font	Name, maximum 40 characters
Character height	0.7... 99.9 mm
Compression factor	25% ... 400% (standard 100%)
Inclination	-30° ... 30° (italic)
Spacing	75% ... 250% (standard 100%)
Underline	NO / YES
Overline	NO / YES
Mirror	NO / YES
<b>Description:</b>	
There are several standard fonts on the marking controls. Optionally, more fonts can be saved to the marking controls, and how the standard fonts are selected is determined in the Font command.	
<b>Font</b> is used to select the font. Dot matrix fonts are shown with "#" in the name.	
<b>Charact.height</b> is used to change the height of the font.	
<b>Compres.factor</b> is used to draw out or compress the entire letter sequence. This also affects the spaces between the characters.	
<b>Inclination</b> can be used to create a type of italic script; the characters are tilted.	
<b>Spacing</b> is used to widen or narrow the space between characters.	

#### Standard fonts



#### Examples

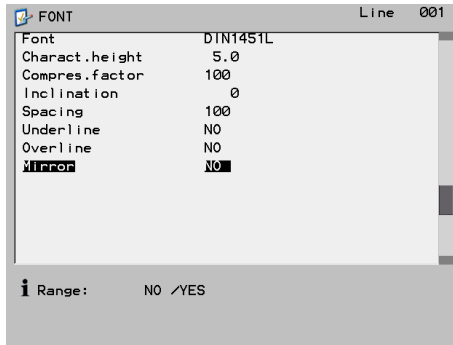


✓ The *Edit* window appears.

# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Marking* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to *Font* command and confirm with the **Enter** key.



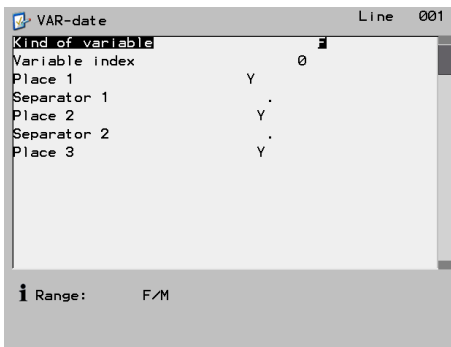
4. Make the settings.
5. Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ A *Font* command has been inserted.



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## MV5 U65/30, U85/45, U120/45 INTEGRAL



4. Make the settings.
5. Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ A *VAR-date* command has been inserted.

To insert the individual date into the text field, such as only the current day, month or year, the following variables can be entered into the text:

<b>Day (1 to 31)</b>	%DB1 = 1 %DB2 = 01
<b>Month (1 to 12)</b>	%DM1 = 1 %DM2 = 01
<b>Year</b>	%DY1 = 5 %DY2 = 15 %DY3 = 2015
<b>Calendar week (1 to 53)</b>	%DW1 = 1 %DW2 = 01
<b>Day of the week (Monday = 1 to Sunday = 7, Monday = 01 to Sunday = 07)</b>	%DT1 = 1 %DT2 = 01
<b>Day of the year (1 to 366)</b>	%DK1 = 1 %DK2 = 01 %DK3 = 001

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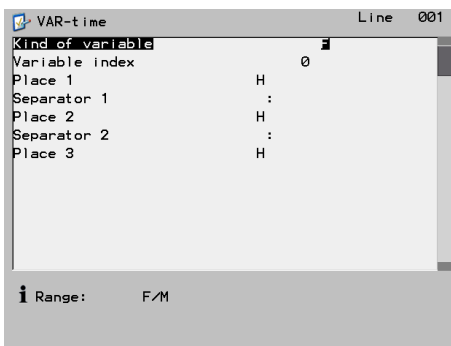
## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.2.9 Option A: VAR-time

<b>Function:</b>	
The Time command generates the current time and writes it in a freely selectable format into the indicated variable.	
<b>Parameter:</b>	
Variable type	D / M (file variables / machine variables)
Variable index	0 ... 24
Time format 1	- / H / HH / M / MM / S / SS
Separate 1	/ . / , / / / - / : / * / _ / ' / " "
Time format 2	- / H / HH / M / MM / S / SS
Separate 2	/ . / , / / / - / : / * / _ / ' / " "
Time format 3	- / H / HH / M / MM / S / SS
<b>Meaning:</b>	
H	Hour, one digit, e.g. 9
HH	Hour, two digits, e.g. 09
M	Minute, one digit, e.g. 5
MM	Minute, two digits, e.g. 15
S	Second, one digit, e.g. 3
SS	Second, two digits, e.g. 33
<b>Description:</b>	
<b>Kind of variable</b> can be used to select whether the value should be saved to the file or machine variables.	
<b>Variable index</b> is for selecting the index that belongs to the variable type.	
<b>Time format 1, 2 and 3</b> is for determining which values should be used.	
In <b>Separate 1, 2 and 3</b> , the specific delimiter is indicated for separating the time values.	

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Variables* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to the *VAR-time* command and confirm with the **Enter** key.



4. Make the settings.
5. Use the **ESC** key to exit.

# Operating manual

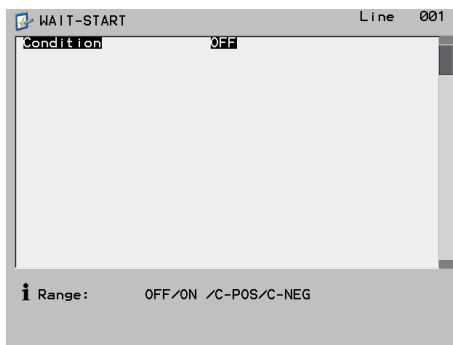
## MV5 U65/30, U85/45, U120/45 INTEGRAL

- ✓ The *Edit* window appears.
- ✓ A *VAR-time* command has been inserted.

### 6.2.10 Option A: Wait-start

<b>Function:</b>	
The Wait-start command is for sequence control of a marking file. At the programmed location, the marking file is stopped and be started in a controlled manner with a signal.	
<b>Parameter:</b>	
State	OFF / ON / F-POS / F-NEG
<b>Meaning:</b>	
OFF	Logical "0" triggers a start.
ON	Logical "1" triggers a start.
F-POS	A positive flank triggers the start –Signal from "0" to "1".
F-NEG	A negative flank triggers the start –Signal from "1" to "0".
<b>Description:</b>	
With the Wait-start command, the marking file's run is stopped until a restart is triggered. The source of the start signal can be: <ul style="list-style-type: none"><li>• The F4 key</li><li>• Start input signal from the standard I/O-board</li><li>• Start signal from the communication card</li></ul>	

- ✓ The *Edit* window appears.
  1. Press the **F2** or **F3** key to append or insert the command.
  2. Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.
  3. Use the **arrow** keys to jump to the *Wait-start* command and confirm with the **Enter** key.



4. Make the settings.
  5. Use the **ESC** key to exit.
- ✓ The *Edit* window appears.
  - ✓ A *Wait-start* command has been inserted.

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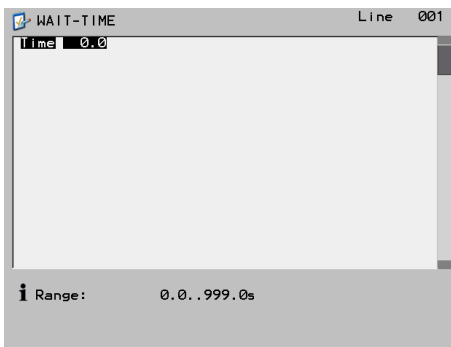
## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.2.11 Option A: Wait-time

<b>Function:</b>	
Processing of the following command lines is delayed until the set time has expired.	
<b>Parameter:</b>	
Time	0.0 ... 999.0s
<b>Description:</b>	
Processing of the following command lines is delayed until the set time has expired.	

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to the *Wait-time* command and confirm with the **Enter** key.



4. Make the settings.
5. Use the **ESC** key to exit.

✓ The *Edit* window appears.

✓ A *Wait-time* command has been inserted.

### 6.2.12 Option A: Mirror

<b>Function:</b>	
The Mirror command marks the subsequent text in mirror image.	
<b>Parameter:</b>	
Mirror	OFF/ON
<b>Description:</b>	
The command marks the subsequent text on the Y-axis in mirror image. This command can be used when marking on transparent plastics or for relief marking.	

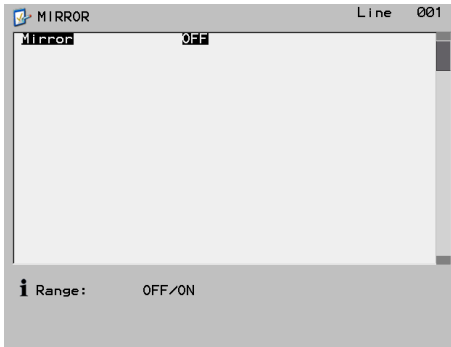
✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.

# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL

2. Use the **arrow** keys to jump to the *Marking* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump the *Mirror* command and confirm with the **Enter** key.



4. Make the settings.
5. Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ A *Mirror* command has been inserted.

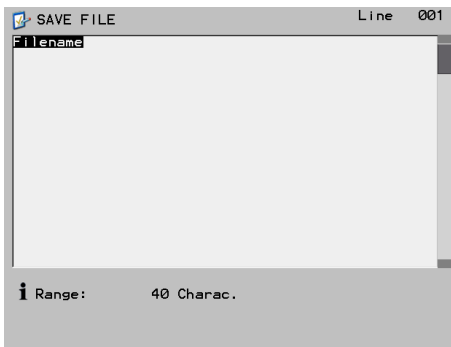
### 6.2.13 Option B: Save file

<b>Function:</b>	
The Save file command in a program to save the current file status.	
<b>Parameter:</b>	
File name	File name, max. 40 characters
<b>Description:</b>	
The Save file command is mainly inserted at the end of a file, so the current status of the file is saved. The command is programmed by placement in the program, so at the beginning or end by entering the file name. The file name must be in the marking controls in the form of an existing file. A file name does not need to have the identifier ".dat".	

- ✓ The *Edit* window appears.
1. Press the **F2** or **F3** key to append or insert the command.
  2. Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.
  3. Use the **arrow** keys to jump to the *Save file* command and confirm with the **Enter** key.

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## MV5 U65/30, U85/45, U120/45 INTEGRAL



4. Make the settings.
5. Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ A *Save file* command has been inserted.

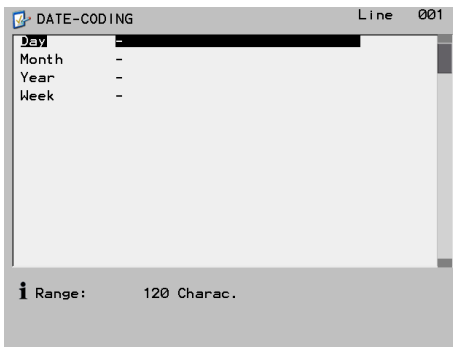
### 6.2.14 Option B: Date encoding

<b>Function:</b>	
The Date encoding command is for using the date to create and mark a customer-specific code.	
<b>Parameter:</b>	
Day	Text, max. 120 characters (VAR-date: TC)
Month	Text, max. 120 characters (VAR-date: MC)
Year	Text, max. 120 characters (VAR-date: YC)
Week	Text, max. 120 characters (VAR-date:WC)
<b>Description:</b>	
For each date parameter, a number, a letter or a special character can be entered to serve as a code. <b>The command is always used in connection with the VAR-date command.</b> To be able to do the programming, the characters must always be separated by a comma. Exception: For year encoding, a "start year" must always be indicated, and only 3 characters can be used per code. Otherwise, the number of characters must agree with the possible number of days, months or weeks, or else no code is shown anymore, but just one (1).	

- ✓ The *Edit* window appears.
1. Press the **F2** or **F3** key to append or insert the command.
  2. Use the **arrow** keys to jump to the *Variables* command selection and confirm with the **Enter** key.
  3. Use the **arrow** keys to jump to the *Date encoding* command and confirm with the **Enter** key.

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## MV5 U65/30, U85/45, U120/45 INTEGRAL



4. Make the settings.
5. Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ A *Date encoding* command has been inserted.

### Example

The day should be indicated as a letter or special character.

Delimiter "/"

The year should be indicated with 3 digits (2022 = 022)

### Programming

Day = A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, \$, %, &, #

Year = 22:022,023,024,025,026

### Result for 1/31/2022



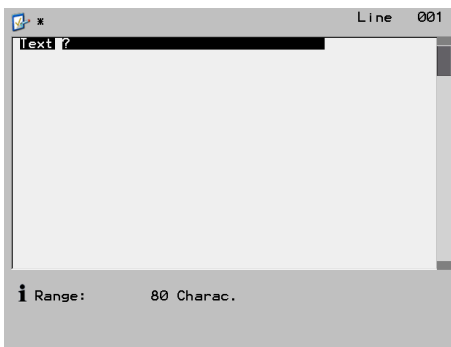
# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.2.15 Option B: Comment

<b>Function:</b>	
This command can be used for commenting on and explaining other commands. This is a marking file with many commands.	
<b>Parameter:</b>	
Text	Text, max. 80 charac.
<b>Description:</b>	
The comment command has no effect on the marking process. Marking commands can be commented and explained. Comments in the marking file make it possible to better understand the programming later. Thus, even changes from other people can be easily made, because the function of the marking file is understood. Comments are shown in green color in the marking file.	

- ✓ The *Edit* window appears.
1. Press the **F2** or **F3** key to append or insert the command.
  2. Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.
  3. Use the **arrow** keys to jump to the *Command* command and confirm with the **Enter** key.



4. Make the settings.
  5. Use the **ESC** key to exit.
- ✓ The *Edit* window appears.
- ✓ A *Comment* command has been inserted.

# Operating manual

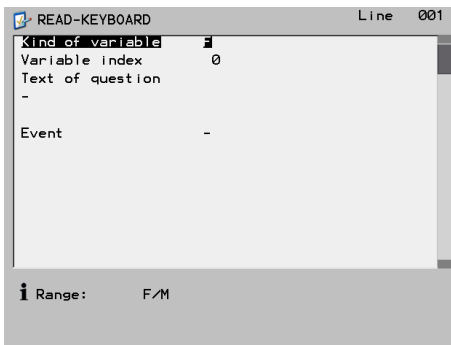
## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.2.16 Option B: Read-Keyboard

<b>Function:</b>	
Insertion of texts through a barcode scanner or keyboard.	
<b>Parameter:</b>	
Variable type	D / M (file variables / machine variables)
Variable index	0 ... 24
Text of question	Text, 2 lines of 30 characters each
Event	- / Start
<b>Description:</b>	
The read keyboard can be used when text is to be input manually by the operator or read in through a barcode scanner.	
<b>Kind of variable</b> and <b>Variable index</b> are used to determine the variable in which the typed- or scanned-in data should be stored.	
In Text of question, instructions or questions can be entered that calls on the operator to perform an activity, such as, "Scan barcode."	
<b>Event</b> "-" or "Start" can be used to specify whether the last entered or scanned text will be shown in the entry field during the next run. The text can be confirmed or overwritten.	

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Variables* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to the *Read-keyboard* command and confirm with the **Enter** key.



4. Make the settings.
5. Use the **ESC** key to exit.

✓ The *Edit* window appears.

✓ A *Read-keyboard* command has been inserted.

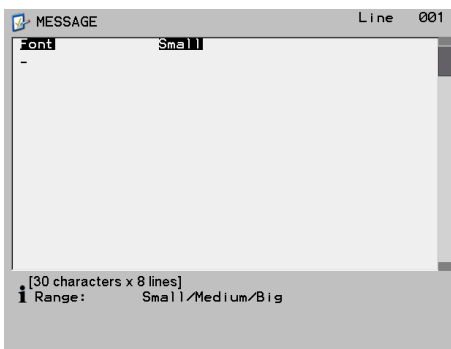
# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.2.17 Option B: Message

<b>Function:</b>	
This command can be used to show messages visibly on the display.	
<b>Parameter:</b>	
Font	Small / Medium / Large
Lines 1 to 8	max. 30 characters per line
<b>Description:</b>	
Every time a marking file is running at this command the programmed text is shown. This can be fixed text or a text from a variable. For example, if the text from machine variable M4 is used, %\$M4 must be input in the line. To close the display during the process, later a message command must be inserted in which a "-" (hyphen) is inserted. The message disappears.	

- ✓ The *Edit* window appears.
1. Press the **F2** or **F3** key to append or insert the command.
  2. Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.
  3. Use the **arrow** keys to jump to the *Message* command and confirm with the **Enter** key.



4. Make the settings.
  5. Use the **ESC** key to exit.
- ✓ The *Edit* window appears.
- ✓ A *Message* command has been inserted.

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### 6.2.18 Option B: Multi-marking

## NOTICE

The marking depth does not increase proportionally to the *Factor* x, but the material compacts ever stronger until no greater marker depth can be reached. Based on experience, a maximum *boost factor* of 3 is enough; higher factors must be questioned.

#### Function:

Through a *boost factor* parameter, the marking is done several times at the same location. Through this, no greater marking depth can be reached.

#### Parameter:

Boost fact.            1 – 9 (standard magnet), 1 – 2 (strong magnet)

#### Description:

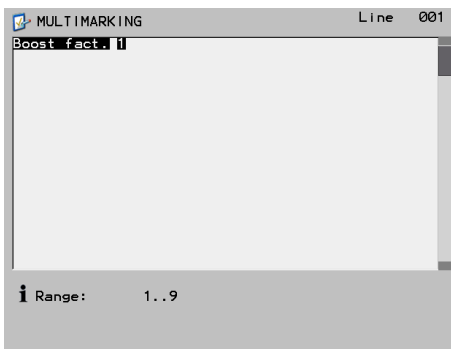
The command can be used where a deeper marking should be reached or where a text should be highlighted versus another marking.

Attention: The marking time and wear to the needle and magnet increase.

Every text programmed in the marking file after this command contains the indicated boost factor X. If this is to be reset to 1, the command must be inserted again before the subsequent text with the value 1.

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Motor-/needle-control* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to the *Multi marking* command and select the command with the **Enter** key.



4. Make the settings.
5. Use the **ESC** key to exit.

✓ The *Edit* window appears.

✓ A *Multi marking* command has been inserted.

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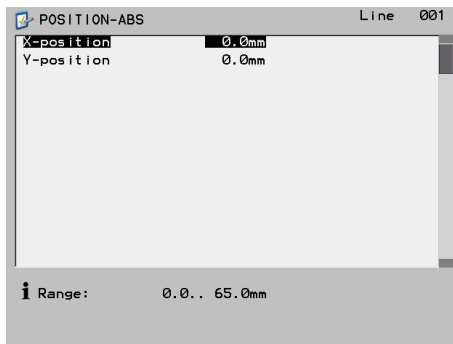
## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.2.19 Option B: Positioning absolute

<b>Function:</b>	
With this command, the marking needle can be moved to a specific point of the marking area. The coordinates refer to the origin position of the marking system.	
<b>Parameter:</b>	
X-position	max. x-travel range in mm
Y-position	max. x-travel range in mm
<b>Description:</b>	
This command is used to move around or to specific areas or specific points. If there are interference contours, for example, they can be moved around with the positioning absolute command. It is important that the contour be moved around after the marking process also, to avoid a collision during the marking system's reference run.	

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Motor-/needle-control* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to the *Positioning absolute* command select the command using the **Enter** key.



4. Make the settings.
5. Use the **ESC** key to exit.

✓ The *Edit* window appears.

✓ A *Positioning absolute* command has been inserted.

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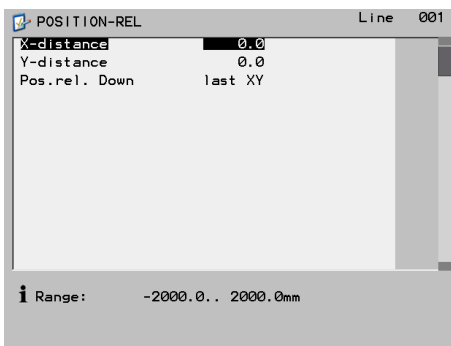
## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.2.20 Option B: Positioning relative

<b>Function:</b>	
With this command, the marking needle can be moved to a relative point of the marking area. The coordinates relate to the last XY coordinates or the last location.	
<b>Parameter:</b>	
X-distance	-2000.0... 2000.0 mm
Y-distance	-2000.0... 2000.0 mm
Pos.rel. down	last XY / location
<b>Description:</b>	
The <b>X-distance</b> parameter can be used to set to what extent the X-coordinate should change relative to the previous location or X-coordinate.	
The <b>Y-distance</b> parameter can be used to set to what extent the Y-coordinate should change relative to the previous location or Y-coordinate.	
<b>Pos.Rel. down</b> is used to set whether the last known X/Y coordinate or the last location of the marking needle should be used as a reference.	

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Motor-/needle-control* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to the *Positioning relative* command selection and confirm with the Enter key.



4. Make the settings.
5. Use the **ESC** key to exit.

✓ The *Edit* window appears.

✓ A *Positioning relative* command has been inserted.

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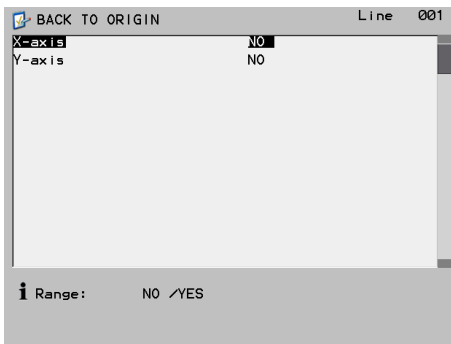
## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.2.21 Option B: Reference run

<b>Function:</b>	
The Reference run command triggers a reference run for each axis set to YES.	
<b>Parameter:</b>	
X-axis	NO / YES
Y-axis	NO / YES
<b>Description:</b>	
If that standard Reference run in the machine parameters is selected, a reference run must be executed in the marking file. Otherwise, after every restart and after every marking, a move to origin of the marking system is automatically executed.	

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Motor-/needle-control* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to the *Positioning relative* command selection and confirm with the Enter key.



4. Make the settings.
5. Use the **ESC** key to exit.

✓ The *Edit* window appears.

✓ A *Reference run* command has been inserted.

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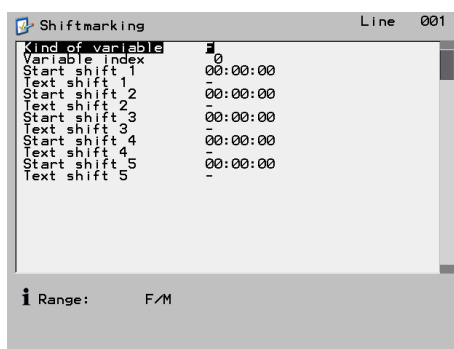
## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.2.22 Option B: Shift marking

<b>Function:</b>	
A shift-specific text can be created and marked. This is stored in the indicated variables and can be reused.	
<b>Parameter:</b>	
Variable type	D / M
Variable index	0 - 24
Start of shift 1	00:00:00
Text shift 1	-
Start of shift 2	00:00:00
Text shift 2	-
Start of shift 3	00:00:00
Text shift 3	-
Start of shift 4	00:00:00
Text shift 4	-
<b>Description:</b>	
Through the shift identification command, a shift-specific text can be created in any variable. The shift identification command takes on the creation role. The text is marked through a text-linear command, for example. <b>Start shift 1, 2 or 3</b> is used to specify the time when the specific shift begins. In <b>Text shift 1, 2 and 3</b> , the specific text is entered that is to be stored in the variable. This variable can be used for marking. Important: A shift can never last more than 24 hours. If the actual shift is longer, it must be extended with a new shift. The shift times must be specified as ascending. If a shift is not used, it must be filled with the values of the previous shift.	

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Variables* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to the *Shift identification* command and select with the **Enter** key.



4. Make the settings.
5. Use the **ESC** key to exit.

✓ The *Edit* window appears.

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✓ A *Shift identification* command has been inserted.

### Example

Variable type	M
Variable index	12
Start of shift 1	00:00:00
Text shift 1	Night shift
Start of shift 2	06:00:01
Text shift 2	Morning shift
Start of shift 3	14:00:01
Text shift 3	Afternoon shift
Start of shift 4	22:00:01
Text shift 4	Night shift

For example, in variable M12, depending on the current clock time, the text “Night shift”, “Morning shift” or “Afternoon shift” is stored. A Text-linear command can be used to mark this text.

### 6.2.23 Option B: Prepositioning

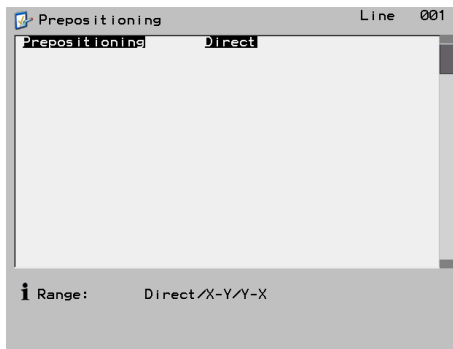
<b>Function:</b>	
This command is used so that the marking needle does not wait in origin position on the marking start, but on the first known coordinate of the first subsequent command with coordinates. The command is used for time-critical markings.	
<b>Parameter:</b>	
Prepositioning	Direct / X-Y / Y- X
<b>Description:</b>	
With the setting Direct, the axes move direct to the first known coordinate. With the setting X-Y, the X-axis moves to the X-coordinate first, and then the Y-axis to the Y-coordinate. With the setting Y-X, the Y-axis moves to the Y-coordinate first, and then the X-axis to the X-coordinate. In this way, even interference contours can be bypassed.	

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to the *Prepositioning* command and select with the **Enter** key.

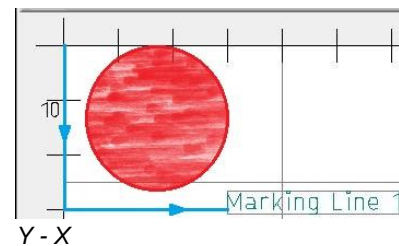
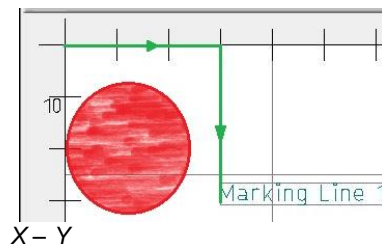
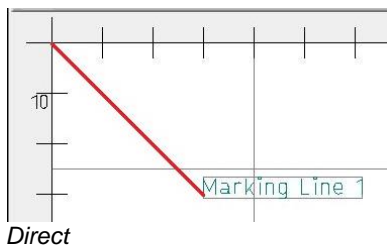
# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL



4. Make the settings.
5. Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ A *Prepositioning* command has been inserted.



### 6.2.24 Option B: Wait-standard-input

<b>Function:</b>	
Individual inputs of a digital I/O card configured to "Standard" can be queried with the Wait-Standard-Input command. If the desired state is reached, the marking controls jump to the next marking line.	
<b>Parameter:</b>	
Input	Start / Stop / Dismiss error / Uni 3 / Uni 4 / Uni 5 / Uni 6 / Uni 7
State	OFF / ON / F-POS / F-NEG
<b>Meaning:</b>	
OFF	Logical "0" on this input triggers a start
ON	Logical "1" on this input triggers a start
F-POS	A positive flank at this input triggers the start –Signal from "0" to "1".
F-NEG	A negative flank at this input triggers the start –Signal from "1" to "0".
<b>Description:</b>	
Input can be used to choose the input where waiting should occur. <b>State</b> can be used to choose the state to which the input defined in input should react. The marking file is only processed further if the defined status is present at the defined input.	

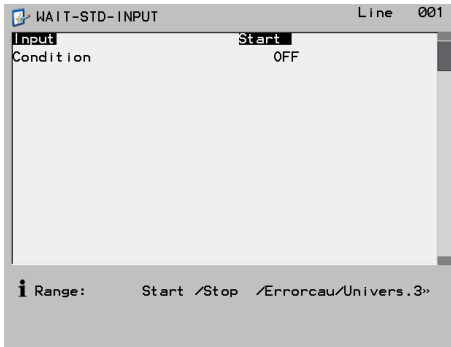
- ✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.

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- Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.
- Use the **arrow** keys to jump to the *Wait-standard-input* command and select the command with the **Enter** key.



- Make the settings.
- Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ A *Wait-standard-input* command has been inserted.

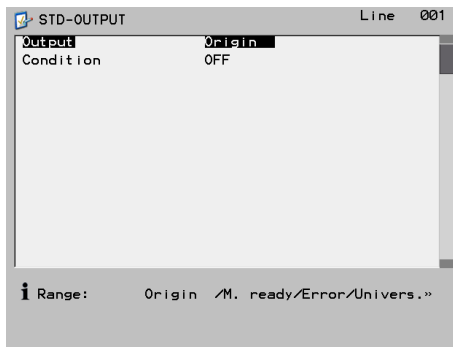
### 6.2.25 Option B: Standard output

<b>Function:</b>	
The standard-output command is for communication with additional hardware. For example, a solenoid valve, a light barrier, a relay, and much more can be controlled using a "standard" configured digital I/O card.	
<b>Parameter:</b>	
Output	Origin position / M. ready / Error / Uni 4 / Uni 5 / Uni 6 / Uni 7
State	OFF / ON / INV
<b>Meaning:</b>	
OFF	Logical "0" on this input triggers a start
ON	Logical "1" on this input triggers a start
INV	Invert = the state is turned over
<b>Description:</b>	
<b>Output</b> can be used to choose the output where issuance should occur.	
<b>State</b> can be used to choose the state in which issuance should occur at the output.	

- ✓ The *Edit* window appears.
- Press the **F2** or **F3** key to append or insert the command.
  - Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.
  - Use the **arrow** keys to jump to the *Standard-output* command and select the command with the **Enter** key.

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4. Make the settings.
5. Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ A *Standard-output* command has been inserted.

### 6.2.26 Option D Ethernet

**NOTICE**

Observe operating manual 5034 00 063 Option Ethernet!

### 6.2.27 Option F: 2D marking

**NOTICE**

For reasons of mechanical hysteresis, for data matrix codes, bidirectional marking is **not** recommended. This recommendation should especially be observed for small data matrix codes!

**Function:**

The 2D-marking command executes marking of a data matrix code. The text encoded in the 2D marking must first be encoded using the 2D coding text command.

**Parameter:**

X-position	0,0 ... 65.0 mm / 0.0 ... 85.0 mm / 0.0 ... 120.0 mm (depending on model)
Y-position	0.0 ... 30.0 mm / 0.0 ... 45.0 mm (depending on model)
Grid	0 ... 500
Height	0.0... 200.0 mm
Width	0.0... 200.0 mm
Angle	0 ... 359°
Bidirectional	OFF/ON

**Description:**

The **x position** indicates the marking point's coordinates in connection to the x orientation. The **y position** indicates the marking point's coordinates in connection to the y orientation.

**Grid** is used to define the spacing between the points of the data matrix code in 0.1 mm steps. If the value is above 0, the width and height values are ignored.

Through **Height**, the data matrix code's height can be set in mm.

Through **Width**, the data matrix code's width can be set in mm.

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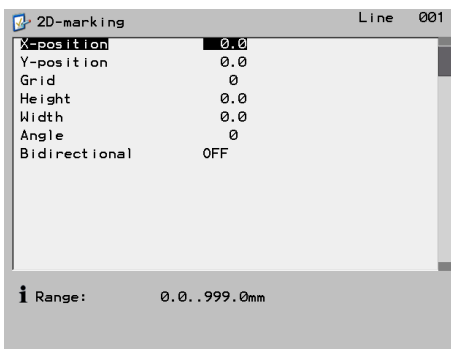
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Through **Angle**, the data matrix code's orientation can be changed.

Through **Bidirectional ON**, a function can be activated in which a row of points from left to right, and the second row from right to left can be marked, and so on.

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Marking* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to the *2D marking* command and select with the **Enter** key.



4. Make the settings.
5. Use the **ESC** key to exit.

✓ The *Edit* window appears.

✓ A *2D marking* command has been inserted.

### 6.2.28 Option F: 2D coding text

#### Function:

A specified text should be encoded (converted) as a data matrix code.

#### Parameter:

Text	Text, max. 80 charac.
Size	Autom. / 12x12 / 14x14 / 16x16 / 18x18 / 20x20 / 22x22 / 24x24 / 26x26 / 8x18 / 8x32 / 12x26 / 12x36 / 16x36 / 10x10 / 16x48 / 32x32 / 36x36 / 40x40 / 44x44 / 48x48 / 52x52 / 64x64 / 72x72 / 80x80 / 88x88 / 96x96 / 104x104 / 120x120 / 132x132 / 144x144 / ---
GS1	No / Yes

#### Description:

In **Text**, a fixed text or a variable can be entered that is encoded for the 2D marking command.

**Size** is used to select the code size.

**GS1** can be used to choose whether the GS1 standard is to be taken into account in this data matrix code.

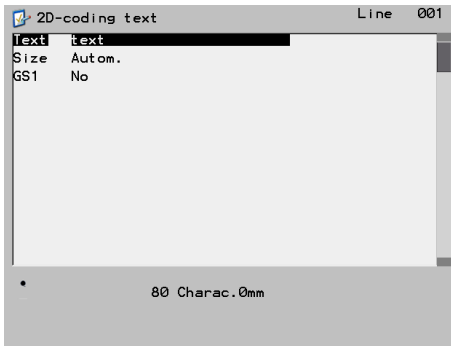
✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Variables* command selection and confirm with the **Enter** key.

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- Use the **arrow** keys to jump to the *2D coding text* command and select with the **Enter** key.



- Make the settings.
- Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ A *2D coding text* command has been inserted.

### 6.2.29 Option I: If-standard-IO

#### Function:

The If-standard-IO command can be used to query individual inputs and outputs of an I/O-board. If the desired state is present, the marking controls jump to a defined point (mark) of the marking file. Commands in between are not taken into account.

#### Parameter:

In-/Output	Start / Stop / Dismiss error / Uni3-In / M. ready / Error-A / Origin / Uni3-Out / Uni4-In / Uni5-In / Uni6-In / Uni7-In / Uni4-Out / Uni5-Out / Uni6-Out / Uni7-Out
State	OFF/ON
Tag	Name of tag, max. 20 characters

#### Description:

**In-/Output** is for defining which input or output is queried.

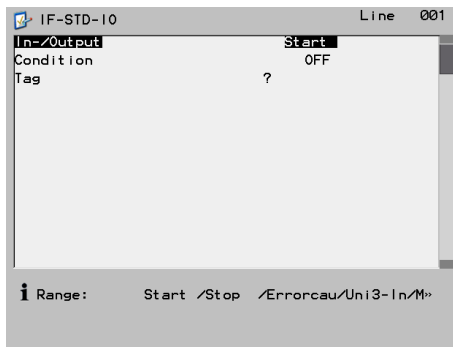
State is for setting whether the OFF or ON state should be reacted to.

If the desired state is present, the marking controls jump to the target point indicated in **Tag**. If the desired state is not present, the marking controls jump to the next marking line.

- ✓ The *Edit* window appears.
- Press the **F2** or **F3** key to append or insert the command.
  - Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.
  - Use the **arrow** keys to jump to the *If-standard-IO* command and select the command with the **Enter** key.

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4. Make the settings.
5. Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ An *If-standard-IO* command has been inserted.

### 6.2.30 Option I: IF-VARIABLE

#### Function:

The state of two values (e.g. the content of variables or a fixed value) can be compared to each other. If the result is positive, a jump is made to a specific target point in form of the mark command. If the result is negative, the unit continues with the following marking command.

#### Parameter:

1. Value	max. 10 characters or variables
1. Condition	= (equal), <> (greater less), > (greater than), >= (greater than or equal to), < (less than), <= (less than or equal to)
2. Value	max. 10 characters or variables
Tag	Name of tag, max. 20 characters

#### Description:

Under **Value 1**, a value or variable can be inserted.

This value is compared through the **condition** to the **2nd value**.

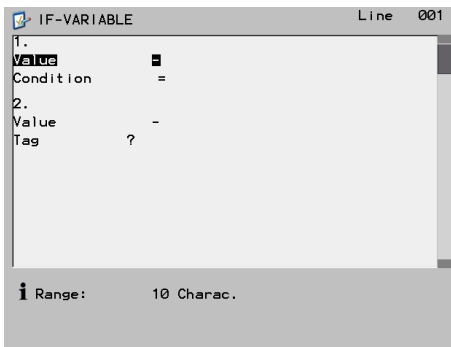
Fixed or flexible values can be used in the form of variables.

*Logically, in one of the two values a variable is used, or else the "Go to" command can be used.*

- ✓ The *Edit* window appears.
1. Press the **F2** or **F3** key to append or insert the command.
  2. Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.
  3. Use the **arrow** keys to jump to the *If-VAR* command and select with the **Enter** key.

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4. Make the settings.
5. Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ An *If-VAR* command has been inserted.

### 6.2.31 Option I: Go to

#### Function:

With this command, one jumps to a defined target point in form of the Tag command, through which the command lines can be skipped over. The *Go to* command is used only in relation to the *Tag* command.

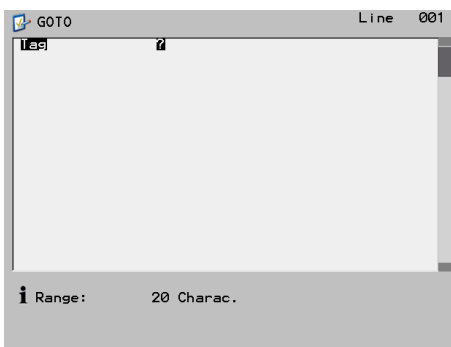
#### Parameter:

Tag	Name of tag, max. 20 characters
-----	---------------------------------

#### Description:

The **Tag** parameter is used to specify a destination point in form of a tag to jump to. It is important to ensure that the tag has the identical type style (upper and lower case) in the **Tag** command and in the **Go to** command!

- ✓ The *Edit* window appears.
1. Press the **F2** or **F3** key to append or insert the command.
  2. Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.
  3. Use the **arrow** keys to jump to the *Go to* command and select with the **Enter** key.



4. Make the settings.

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5. Use the **ESC** key to exit.

✓ The *Edit* window appears.

✓ A *Go to* command has been inserted.

### 6.2.32 Option I: Tag

#### Function:

The *Tag* command defines a separate target point in the marking file to jump to.

#### Parameter:

Tag                      Name of tag, max. 20 characters

#### Description:

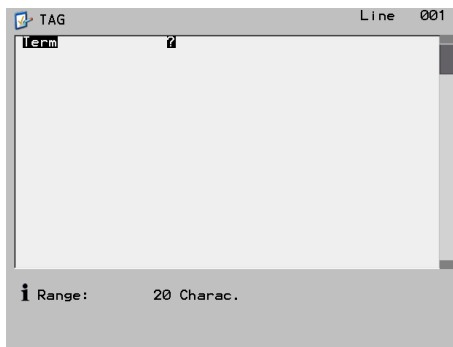
The *Tag* command can be used to define a point in the marking file that one can spring to. This point is designated through the parameter *Term*. The case must definitely be taken into account.

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.

2. Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.

3. Use the **arrow** keys to jump to the *Tag* command and select with the **Enter** key.



4. Make the settings.

5. Use the **ESC** key to exit.

✓ The *Edit* window appears.

✓ A *Tag* command has been inserted.

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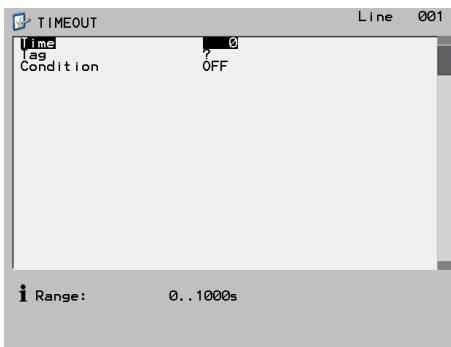
## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.2.33 Option I: Timeout

<b>Function:</b>	
The Timeout command is used to set the amount of time that a particular process can take before a timeout error is triggered.	
<b>Parameter:</b>	
Time	0 ... 1000s
Tag	Name of tag, max. 20 characters
State	OFF/ON
<b>Description:</b>	
A timeout command must be placed before and after the command or commands to be time-monitored. For the first timeout command, the following must be set: Through <b>Time</b> , the timespan must be specified that is allowed to pass before the next timeout command is reached. <b>Tag</b> is used to specify which defined target point in the form of a <i>Tag</i> should be jumped to if the timespan is not adhered to, e.g., "Error". Through the <b>State</b> of the first timeout, time monitoring is activated through the ON setting. For the second timeout command, <i>State</i> must be set to OFF to deactivate the time, so that the central unit does not unintentionally jump to the error routine.	

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to the **Timeout** command and select with the **Enter** key.



4. Make the settings.
5. Use the **ESC** key to exit.

✓ The *Edit* window appears.

✓ A *Timeout* command has been inserted.

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### 6.2.34 Option I: File

**NOTICE**

The marking file must be saved in the memory of the control unit.

**NOTICE**

The suffix **.dat** for marking files must not be given in the command!

#### Function:

Through the File command, the "subfile" can be called up and processed during the program flow.

#### Parameter:

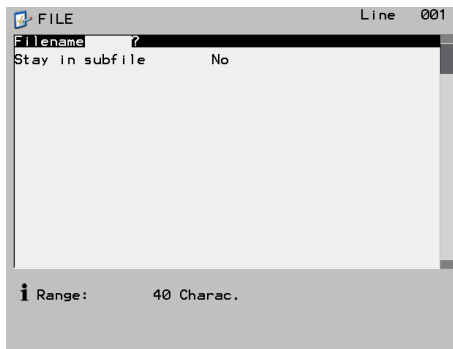
File name	Up to 40 characters
Stay in Subfile	Yes / No

#### Description:

The File command can be used to call up a type of "subfile" during the program flow. The subfile must also be in the marking controls' memory. If the program runs to the File command line, the file will be loaded at the location where the command is. If the subfile is processed, it automatically jumps back into the previous file under the File command to completely finished processing this file.

✓ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to the *File* command and select with the **Enter** key.



4. Make the settings.
5. Use the **ESC** key to exit.

✓ The *Edit* window appears.

✓ A *File* command has been inserted.

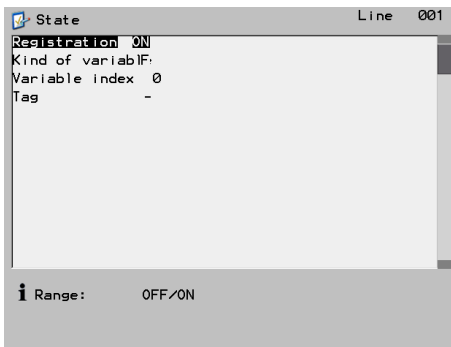
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### 6.2.35 Option I: State

<b>Function:</b>	
The <i>State</i> command enables recording (= ON) of the message in the status line in a file variable or machine variable.	
<b>Parameter:</b>	
Recording	OFF / ON (default ON)
Variable type	D / M
Variable index	0 - 24
Tag	- (no jump), Name of tag, max. 20 characters
<b>Description:</b>	
The <i>State</i> file is used to write text outputs of the status line to a file or machine variable. The text is preceded by a 6-digit error number followed by a colon and a space. Recording starts from the marking line where the <i>State</i> command is located, and <b>Recording</b> is set to ON. If a <b>tag</b> other than the hyphen is entered, further processing of the marking file starts at this tag. If the status text is in a variable, it can be taken over by a superordinate control.	

- ✓ The *Edit* window appears.
1. Press the **F2** or **F3** key to append or insert the command.
  2. Use the **arrow** keys to jump to the *Sequence control* command selection and confirm with the **Enter** key.
  3. Use the **arrow** keys to jump to the *State* command and select with the **Enter** key.



4. Make the settings.
  5. Use the **ESC** key to exit.
- ✓ The *Edit* window appears.
- ✓ A *State* command has been inserted.

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### 6.2.36 Option K: Logo

## NOTICE

The logo width changes in relation to the height and can therefore not be adjusted.

#### Function:

With the Logo command, previously created logos can be marked. The CE logo is saved to the device by default. Logos are created through the program "HPGL" and must be saved to the marking system. Only then they can be selected with the **arrow** keys through the Logo command.

#### Parameter:

Graphic name	Name of logo, max. 40 characters
X-position	0,0 ... 65.0 mm / 0.0 ... 85.0 mm / 0.0 ... 120.0 mm (depending on model)
Y-position	0.0 ... 30.0 mm / 0.0 ... 45.0 mm (depending on model)
Logo height	0.0 mm to 120.0 mm
Angle	0° to 359°
Marking	No / Yes

#### Description:

**Graphic name** is the logo name under which the logo was previously created and saved. A distinction is made between 2 logo types: Dot matrix logos and line-marked logos. For dot matrix logos, a "#" is placed before the name.

If several logos are available, the left and right arrow keys can be used to select a logo.

**X- and Y-position** indicate the position of the logo in the marking field on the orientation.

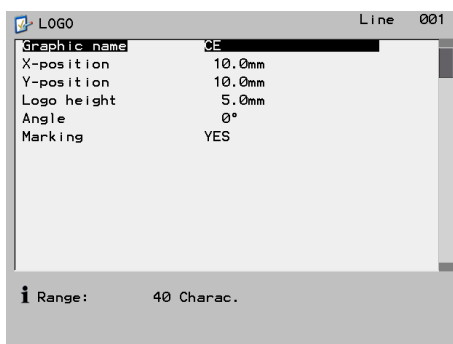
**Logo height** is the height of the logo. The width of the logo changes proportionally to the logo's height.

The **Angle** gives the logo's clockwise orientation.

Marking can be used to select whether the logo should be highlighted or displayed in the ZE.

✍ The *Edit* window appears.

1. Press the **F2** or **F3** key to append or insert the command.
2. Use the **arrow** keys to jump to the *Marking* command selection and confirm with the **Enter** key.
3. Use the **arrow** keys to jump to the *Logo* command and select with the **Enter** key.



4. Make the settings.
5. Use the **ESC** key to exit.

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- ✓ The *Edit* window appears.
- ✓ A *Logo* command has been inserted.

### 6.2.37 Option O: Set attributes

<b>Function:</b>	
With the Set attributes command, various attributes for marking such as marking position, character height, angle, etc., can be set externally.	
<b>Parameter:</b>	
Parameter	Text or variable, max. 100 characters
<b>Description:</b>	
With the <i>Set attribute</i> command, the values listed below can be changed in the course of a marking file. <b>Important: No value may be entered in the subsequent command that is to use the attribute! If the X-position is transmitted, the field for the X-position must be filled with "---" (hyphen hyphen hyphen) in the subsequent command.</b> If several values are transmitted, they must be separated by a semicolon, e.g.: <b>%X100;%Y200;%H50</b> produces X=10.0 mm, Y=20.0 mm and height = 5.0 mm	

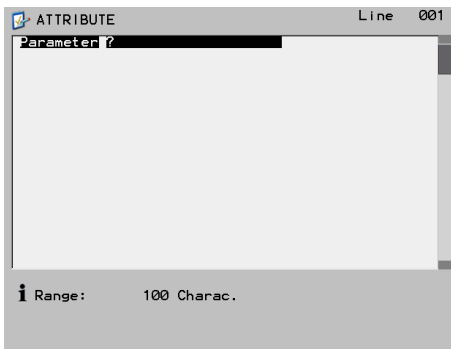
#### Possible attributes

Attribute	Description	Example
Xxxxx	X-position in 0.1 mm steps	X1000 = 100.0 mm
Yxxxx	Y-position in 0.1 mm steps	Y0500 = 50.0mm
Hxxx	Character height in 0.1 mm steps	H050 = 5.0mm
Rxxx	Radius in 0.1 mm steps	R100 = 10.0 mm
Wxxx	Angle in degrees	W180 = 180°
Bxxx	Compression factor (as %)	B120 = 120%
Nxx	Inclination (in degrees)	N10 = 10°
Dxxx	Spacing (as %)	D120 = 120%
Ixxx	Data matrix grid	I10 = 1.0 mm point spacing

- ✓ The *Edit* window appears.
  1. Press the **F2** or **F3** key to append or insert the command.
  2. Use the **arrow** keys to jump to the *Variables* command selection and confirm with the **Enter** key.
  3. Use the **arrow** keys to jump to the *Set attribute* command and select with the **Enter** key.

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4. Make the settings.
5. Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ A *Set attribute* command has been inserted.

### 6.2.38 Option O: Cut text out of variable

#### Function:

With the command Cut text of variable, variable contents can be copied out of file and machine variables and inserted into other variables. This allows splitting a longer text into smaller texts and then marking.

#### Parameter:

Kind of variable 1	D / M
Variable index 1	0 - 24
Start position	1 - 80
Stop position	1 - 80
Kind of variable 2	D / M
Variable index 2	0 - 24
Using variables	Free text, max. 30 characters

#### Description:

**Kind of variable and index 1** is used to select the variable from which the required characters are to be copied.

The **Start position** tells at which character of Variable 1 copying is to begin.

The **Stop position** tells up to which character of Variable copying is to end.

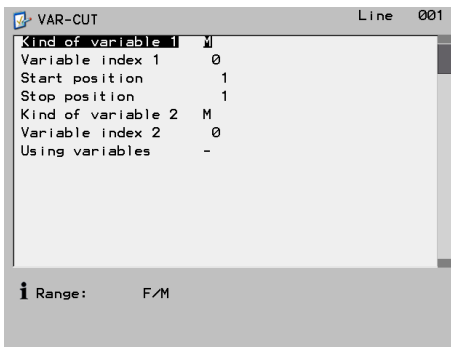
**Kind of variable and index 2** indicates which variable of the text to be copied should be inserted.

**Using variables** is a free text field.

- ✓ The *Edit* window appears.
1. Press the **F2** or **F3** key to append or insert the command.
  2. Use the **arrow** keys to jump to the *Variables* command selection and confirm with the **Enter** key.
  3. Use the **arrow** keys to jump to the *Cut text of variable* command and select with the **Enter** key.

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4. Make the settings.
5. Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ A *Cut text of variable* command has been inserted.

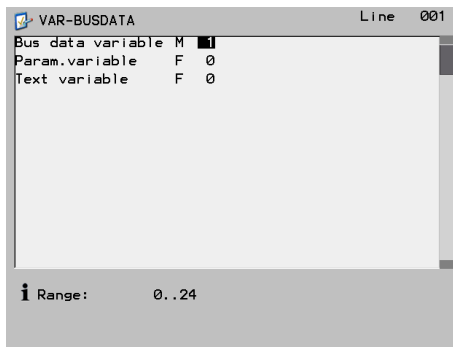
### 6.2.39 Option O: VAR-BUSDATA

<b>Function:</b>	
The <i>VAR-BUSDATA</i> command separates parameter data from text data from a string.	
<b>Parameter:</b>	
Bus data variable	M + Index 0 ... 24
Parameter variable	D/M + Index 0 ... 24
Text variable	D/M + Index 0 ... 24
<b>Description:</b>	
The <i>VAR-BUSDATA variable</i> is used to determine the variable to be specified as the source. The data from a PLC are sent to this variable, for example.	
<i>Parameter variable</i> is used to determine the variable in which the strings' parameter data are copied.	
<i>Text variable</i> is used to determine the variable in which the strings' text data are copied.	
<b>A string can look like this:</b>	
%X100;%Y200;%H50;Text ABC	
<b>Parameter variable:</b> %X100;%Y200;%H50;	
<b>Text variable:</b> Text ABC	

- ✓ The *Edit* window appears.
1. Press the **F2** or **F3** key to append or insert the command.
  2. Use the **arrow** keys to jump to the *Variables* command selection and confirm with the **Enter** key.
  3. Use the **arrow** keys to jump to the *VAR-BUSDATA* command and select with the **Enter** key.

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4. Make the settings.
5. Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ A *VAR-BUSDATA* command has been inserted.

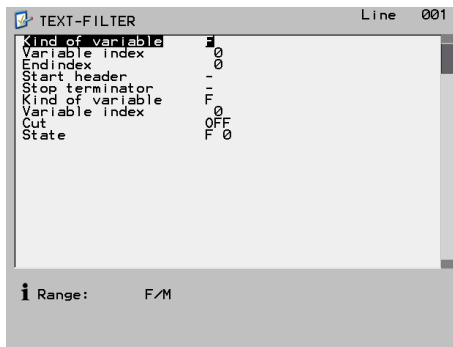
### 6.2.40 Option O: Filter text

Function:	
Filters text from a larger text.	
Parameter:	
Variable type	D / M
Variable index	0 - 24
Endindex	Value of <i>variable index</i> to 24 from which the text is to be filtered.
Start identifier	Character sequence after which the text to be filtered is to be cut or pasted.
Stop identifier	Character sequence that marks the end of the text to be filtered.
Variable type	D / M
Variable index	0 - 24
Cut	ON / OFF
Status	D / M 0 - 24
Description:	
Filters the text between the character strings defined in the start identifier and stop identifier parameters from one or more consecutive variables and copies it to the 2nd Variable.	

- ✓ The *Edit* window appears.
1. Press the **F2** or **F3** key to append or insert the command.
  2. Use the **arrow** keys to jump to the *Variables* command selection and confirm with the **Enter** key.
  3. Use the **arrow** keys to jump to the *Text filter* command and select with the **Enter** key.

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## MV5 U65/30, U85/45, U120/45 INTEGRAL



4. Make the settings.
5. Use the **ESC** key to exit.

- ✓ The *Edit* window appears.
- ✓ A *Text filter* command has been inserted.

### 6.2.41 Option T: Scripts

**NOTICE**

Observe operating manual 5034 00 063 Option Ethernet!

# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.3 Sample marking files

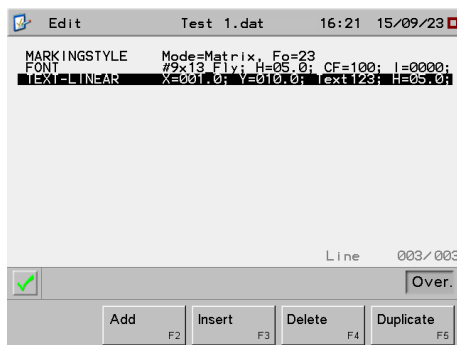
#### 6.3.1 Standard marking file

**NOTICE**

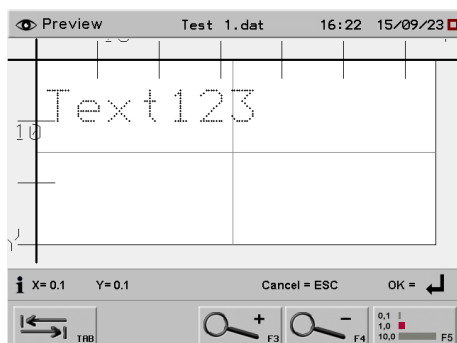
The marking commands Marking style and Font are mandatory on INTEGRAL and must always be inserted before the command to be executed (e.g. linear text, 2D marking, circular text, etc.).

Serial	Command	Parameter	Setting	Description
1	Marking style	Marking mode Thickness	Matrix 23	Marking style Matrix and marking thickness 23 is selected
2	Font	Font	#9_13_Fly	Font is set
3	Linear text	X-position Y-position Text Character height	1.0 mm 10.0 mm Text123 5.0 mm	The marking position and the text and font height are entered.

#### Marking file



#### Result



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### 6.3.2 Marking file for communication card

A string is to be sent to the marking system through a communication card, and the text is to be marked.

Serial	Command	Parameter	Setting	Description
1	VAR-BUSDATA	Busdatavar. Parametervar. Text variable	M 1 D 0 D 1	The data arrive in M1 variables. Parameters are copied to variable D0; the text is copied to variable D1.
2	Marking style	Marking mode Thickness	Matrix 20	Marking style Matrix and marking thickness 20 is selected
3	Font	Font	#9_13_Fly	Font is set
4	Attribute	Parameter	;%\$D0	The variable %\$D0 is entered to the variable. In the next command, the parameters can be adopted, as long as no fixed value is entered (values with hyphens provided!).
5	Linear text	X-position Y-position Text Character height	---.- mm ---.- mm ;%\$D1 5.0 mm	X and Y position is used from the Attribute command. In the text, the variable %\$D1 is entered so that the text stored in this variable can be adopted. Font height is entered fixed at 5 mm.

#### Marking file

```

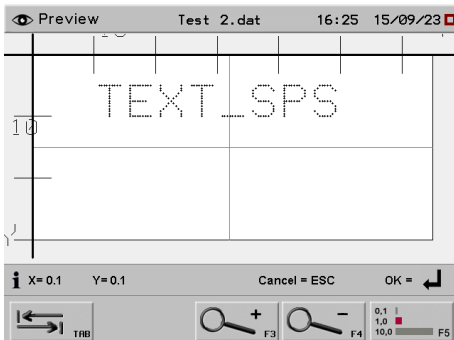
Edit      Test 2.dat      16:24 15/09/23
VAR-BUSDATA      ->01; ; ->00; ; ->01;
MARKINGSTYLE     Mode=Matrix; Fo=20
FONT             #9x13_Fly; H=05.0; CF=100; I=0000;
ATTRIBUTE        >>21100;21100;K1
TEXT-LINEAR      X=---.-; Y=---.-; >TEXT_SPS<; H=05
  
```

Line 005 / 005

Over.

Add F2   Insert F3   Delete F4   Duplicate F5

#### Result



# Operating manual





## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 6.4 Show/edit preview

## NOTICE

The X/Y position can now be changed directly with the **arrow** keys.

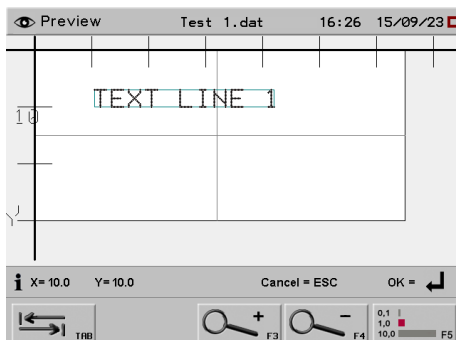
#### Preview function keys:

Key	Function
	Use the <b>Tab</b> key to jump from marking line to marking line. Every highlighted line can be edited using the <b>arrow</b> keys or the <b>Enter</b> key.
	Use the <b>F3</b> key to expand the preview.
	Use the <b>F4</b> key to shrink the preview.
	The step size can be chosen by pressing <b>F5</b> . The step size indicates by how many millimeters the text should be moved by the arrow keys (0.1 mm, 1 mm or 10 mm).

✓ The *Main menu* window appears.

1. Press the **F8** key.

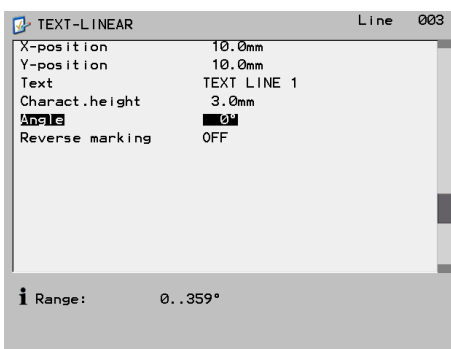
✓ The *Preview* window appears.



2. Edit the marking file through the marking preview using the **function** and **arrow** keys.

✓ The selected marking line is framed:

3. Press the **Enter** key to manually edit the selected marking line in the *parameter menu*.



# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL

4. Press the **ESC** key.

✓ The *Marking preview* window appears.

5. Press the **ESC** key to go back to the *main menu*.

✓ The *Main menu* window appears.

### 6.5 Teach-in



#### Crushing hazard!

- Never reach under the INTEGRAL during teach-in or during the marking process!
- Stay away from the INTEGRAL's working area during the marking process.

#### Body parts may be caught and crushed by the movement of the marking needle.

Because the stepper motors carry no current when at rest, a reference run must be initiated manually before setup.

Press the **X** key to start a reference run.

Always save the marking file after changes.

In teach-in, the X and Y-axes can be moved with the **arrow** keys. Changed values (e.g. X-position) can be adopted with the keys described below into the current marking command:

Key	Function
	Adopt the X and Y-position for the marking line <b>on which the cursor is currently in the marking file</b>
	Adopt the X-position for the marking line <b>on which the cursor is currently in the marking file</b>
	Adopt the Y-position for the marking line <b>on which the cursor is currently in the marking file</b>
	The step size can be chosen by pressing <b>F5</b> . The step size indicates by how many millimeters the text should be moved by the arrow keys (0.1 mm, 1 mm or 10 mm).

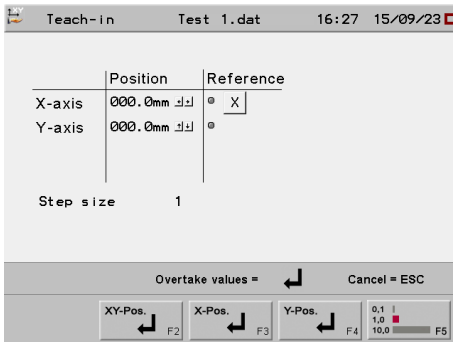
✓ The *Main menu* window appears.

1. Press the **F10** key.

✓ The *Teach-in* window appears.

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2. Process the marking lines correspondingly.

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## 7 Marking and simulating

### 7.1 Safety instructions for marking

**! CAUTION**



#### Crushing hazard!

- Never reach under the INTEGRAL during the marking process!
- Never reach into INTEGRAL's working area during the marking process!

Body parts may be caught and crushed by movement of the axes.

**! CAUTION**



#### Burn hazard from hot magnets and surrounding components.

- Before touching (e.g. when marking, changing needles or performing maintenance), all parts of the INTEGRAL must be cooled to a safe temperature (measure the temperature, if necessary)!
- Dangerously hot parts must be touched only with heat-protective gloves or heat-protective clothing!

Limbs may be burned by hot components!

**! CAUTION**



#### Noise injury hazard!

- Depending on the workpiece to be marked, noise may be produced. If the noise is too loud according to current legal regulations, hearing protection must be worn (measure the noise, if necessary)!
- The operator is responsible for providing hearing protection.

Failure to wear such protection can cause hearing damage.

**! CAUTION**

- Strong marking force must always be used when the marker needle strikes a workpiece. Always avoid "air marking". Otherwise, the magnet may be damaged.
- It is normal for the marking needle to be offset when at rest, because the stepper motor is off in order to save energy. For this reason, an automatic reference run is made before each marking.

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## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 7.2 Running a simulation

#### Mode: Simulation

The marking system's axes move while the magnet remains inactive. No movements are made from the magnet. This allows the marking file procedure to be checked.



✓ The *Main menu* window appears.

1. Press the **F4** key for marking.
2. Press the **F2** key for simulation.

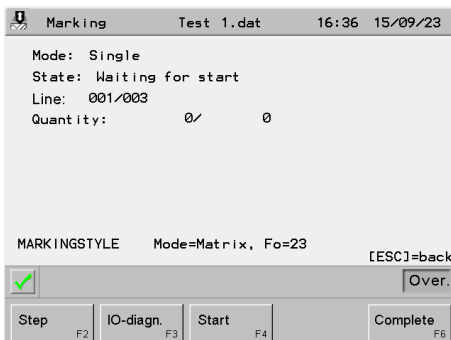
The following **key selection** is available:

Step F2	Step	The marking file is simulated line by line. The <b>F2</b> key must be pressed for execution of each command separately.
IO-diagn. F3	IO-diagn.	The outputs and inputs can be viewed. (Diagnosis menu)
Start F4	Start	The marking is fully simulated.
Complete F6	Complete	The marking menu closes

### 7.3 Perform single marking

#### Mode: Single

The axes of the marking system move; the magnet is active. After the marking file has completely run through once, the marking control leaves single mode. A new mode needs to be selected.



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## MV5 U65/30, U85/45, U120/45 INTEGRAL

✓ The *Main menu* window appears.

1. Press the **F4** key for marking.
2. Press the **F3** key for Single.

The following **selection** is available:

Step F2	<b>Step</b>	The marking file is executed line by line. The <b>F2</b> key must be pressed for execution of each command separately.
IO-diagn. F3	<b>IO-diagn.</b>	The outputs and inputs can be viewed. (Diagnosis menu)
Start F4	<b>Start</b>	The marking is completed.
Complete F6	<b>Complete</b>	The marking menu closes

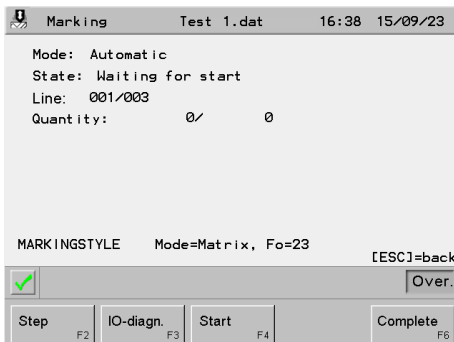
### 7.4 Do automatic marking



When working in automated systems with a communication card, the marking system must always be in Automatic mode. Only in Automatic mode signals "Ready" and "Home Position" can be supplied and data's can be received.

#### Mode: Automatic

The marking file is automatically and completely processed after programming.



✓ The *Main menu* window appears.

1. Press the **F4** key for marking.
2. Press the **F4** key for Automatic.

The following **selection** is available:

Step F2	<b>Step</b>	The marking file is executed line by line. The <b>F2</b> key must be pressed for execution of each command separately.
IO-diagn. F3	<b>IO-diagn.</b>	The outputs and inputs can be viewed. (Diagnosis menu)
Start F4	<b>Start</b>	The marking is completed. This can automatically be triggered by the start signal of a communication or digital I/O-board.

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## MV5 U65/30, U85/45, U120/45 INTEGRAL

Complete F6	<b>Complete</b>	The marking menu closes
----------------	-----------------	-------------------------

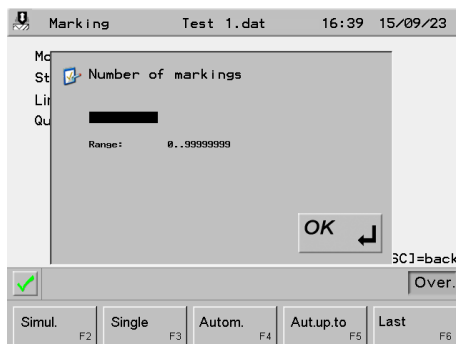
### 7.5 Run automatic up to marking

**NOTICE**

After desired number of markings is entered, the same function keys are available as in Automatic mode.

#### Mode: Automatic up to

The marking file is processed in Automatic mode completely and up to the specified, entered number of marking processes. Once the specified number is reached, the marking controls automatically jump out of Automatic mode.



➤ The *Main menu* window appears.

1. Press the **F4** key for marking.
2. Press the **F5** key for *Automatic up to*.
3. Enter the desired number of markings and confirm with the **Enter** key.

The following **selection** is available:

Step F2	<b>Step</b>	The marking file is executed line by line. The <b>F2</b> key must be pressed for execution of each command separately.
IO-diagn. F3	<b>IO-diagn.</b>	The outputs and inputs can be viewed. (Diagnosis menu)
Start F4	<b>Start</b>	The marking is completed.
Complete F6	<b>Complete</b>	The marking menu closes

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### 7.6 Repeat last marking

#### Mode: Last

The last completed marking is repeated. Once it has been repeated, the marking controls automatically jump out of Last mode.



✓ The *Main menu* window appears.

1. Press the **F4** key for marking.
2. Press the **F6** key for *Last*.

The following **selection** is available:

Step F2	<b>Step</b>	The marking file is executed line by line. The <b>F2</b> key must be pressed for execution of each command separately.
IO-diagn. F3	<b>IO-diagn.</b>	The outputs and inputs can be viewed. (Diagnosis menu)
Start F4	<b>Start</b>	The marking is completed once. After that, the control unit jumps out of Repeat last mode.
Complete F6	<b>Complete</b>	The marking menu closes.

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## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 8 Troubleshooting

**NOTICE**

If you cannot resolve errors yourself, contact MARKATOR® service.

**NOTICE**

Error messages are dismissed by pressing the F5 key in automatic mode.

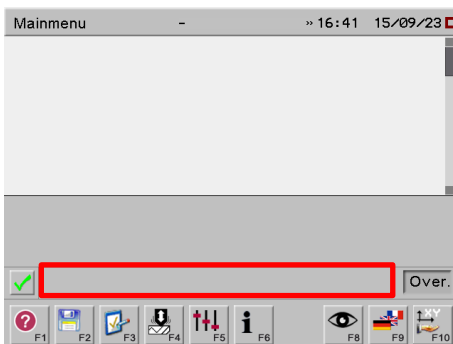
An error is a deviation of a state, process or result from a standard, rule or target. Error are mainly caused by people (human error) due to incorrect operation or changing settings, which results in errors. However, technical errors are always possible.

The following types of information may appear during marking operation:

<b>Warnings</b>	Marking process is not canceled/started
<b>Errors</b>	Marking process canceled

The following chapters show which messages may occur and how certain malfunctions can be repaired.

Error messages are shown in the error message window:



#### 8.1 Warning and error codes

Internally, there are the following **warning and error codes**:

Code	Errors	Possible solution
0x8	Marking controls not activated	- Check the stop input signal and the controller release signal
0x20	X reference run not executed	- Check motors in teach-in (F10) - Check fork light barriers in diagnosis menu
0x40	Y reference run not executed	- Check motors in teach-in (F10) - Check fork light barriers in diagnosis menu
0x200	No stop signal	see error "Marking controls not activated"
0x800	Software option not activated	- Check options in Information menu - Enter release code for missing options
0x1000	T motor critical	- Temperature in drivers becomes critical. Safety function: Let the marking head cool off
0x10000	Error Acceleration	- The-INTEGRAL has accelerated too much. Minimize acceleration

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Command error 0x10		
0x10+1	X-direction exceeded	- Check marking in preview - Shift text into the marking field
0x10+2	Y-direction exceeded	- Check marking in preview - Shift text into the marking field
0x10+5	No jump mark	- Mark designations do not agree - Find the displayed line and check the command
0x10+6	Logo not present	- Check whether the logo is in the controls - Copy the logo to the controls
0x10+7	Font not present	- Check whether the font is in the controls - Copy the font to the controls
0x10+11	File not present	- Check whether the file is in the controls
0x10+15	Circular text too large	- Decrease the number of characters for the circular text marking - Increase the radius
0x10+17	Script option not activated	- Check options in Information menu - Enter release code for missing options

## 8.2 Diagnosis menu

In the diagnosis menu, all electrical signals can be checked.

✓ The *main menu* and is displayed.

1. Enter the administrator password and confirm with the **Enter** key.
2. Press the F10 key.
3. Press the "D" key.

✓ The *ON/OFF diagnosis* appears.

### 8.2.1 Diagnosis menu – Check digital inputs

✓ The *ON/OFF diagnosis* appears.

1. Use the **arrow** keys to go to the Diagnosis DI and confirm with the **Enter** key.

✓ The *DI DIAGNOSIS* appears.

- Check the entries with the **arrow** keys.

### 8.2.2 Diagnosis menu – Check and switch digital outputs

✓ The *ON/OFF diagnosis* appears.

1. Use the arrow keys to go to the Diagnosis DO and confirm with the Enter key.

✓ The *DI DIAGNOSIS* appears.

- Check the outputs with the arrow keys. Pressing the Enter key manually switches the outputs.

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## MV5 U65/30, U85/45, U120/45 INTEGRAL

### NOTICE

When the diagnosis menu is left, the outputs go back to their original state.

## 8.3 Troubleshooting

### 8.3.1 XL CONTROL does not connect to INTEGRAL

#### Description / possible causes:

The cause of this may be the following:

- INTEGRAL has no voltage
- The INTEGRAL's and the PC's IP addresses are not in the same address range
- INTEGRAL and PC have the same IP address
- The wrong COM port is selected in XL CONTROL.

#### Possible solutions:

- Apply voltage to INTEGRAL
- Check the network connection or USB cable
- Check the IP range in the PC. INTEGRAL standard IP: 192.168.0.50
- Check the PC's COM ports in the device manager

### 8.3.2 X or Y-direction exceeded

#### Description / possible causes:

The cause of this may be the following:

- Marking text not in working area
- Length of marking text has changed and is too long
- Wider letters than usual are marked

#### Possible solutions:

- Check the preview and change the position of the marking text
- Change the width factor or the spacing in the font command to change the text width
- Correct the text position, and change font size if necessary

### 8.3.3 X or Y reference run not executed

### CAUTION

Only check when turned off!

#### Description / possible causes:

The cause of this may be the following:

- Fork light barriers dirty or damaged
- Guide units are dirty or stiff
- Drive(s) defective

#### Possible solutions:

- Make a visual inspection of the fork light barriers when shut off
- Clean the fork light barriers while shut off
- Check the sensors in the diagnosis menu while turned on. Do the sensors switch?
- Manually move the drives in the teach-in menu. Do the axes move?

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## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 8.3.4 INTEGRAL cannot be turned on

<b>Description / possible causes:</b>
The cause of this may be the following: <ul style="list-style-type: none"><li>• No voltage supply connected</li><li>• Voltage supply connected wrong</li><li>• Wrong voltage applied to INTEGRAL</li></ul>
<b>Possible solutions:</b>
<ul style="list-style-type: none"><li>• Check the voltage supply feed line</li><li>• Check the voltage supply</li><li>• Check the voltage, turn on only in the range of 24VDC max. +/-10%</li></ul>

### 8.3.5 Order errors

<b>Description / possible causes:</b>
The cause of this may be the following: <ul style="list-style-type: none"><li>• Parameter of a marking command cannot be executed.</li></ul>
<b>Possible solutions:</b>
<ul style="list-style-type: none"><li>• Read the error line from the error message and check the command in the line of this marking file</li></ul>

### 8.3.6 Open error

<b>Description / possible causes:</b>
The cause of this may be the following: <ul style="list-style-type: none"><li>• The marking controls try to load a marking program that is not in the marking controls.</li></ul>
<b>Possible solutions:</b>
<ul style="list-style-type: none"><li>• Load or create marking file in marking controls</li><li>• Check the marking file name for correct spelling</li><li>• "Program start" setting in the menus F5 Settings, F4 Config. Check and change if necessary</li></ul>

### 8.3.7 Unknown variable

<b>Description / possible causes:</b>
The cause of this may be the following: <ul style="list-style-type: none"><li>• Wrong kind of variable</li><li>• Wrong variable index</li><li>• Wrong variable input</li></ul>
<b>Possible solutions:</b>
<ul style="list-style-type: none"><li>• Check the variable type and variable index, correct if necessary</li><li>• Look for an error in the programming</li><li>• Check correct entry when using a variable, %\$XX</li></ul>

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## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 8.3.8 Magnet strikes too weakly

<b>Description / possible causes:</b>
The cause of this may be the following: <ul style="list-style-type: none"><li>• Impact force has been changed</li><li>• Magnet dirty</li><li>• Magnet worn</li></ul>
<b>Possible solutions:</b>
<ul style="list-style-type: none"><li>• Check whether the impact force has been changed</li><li>• Clean the magnet with a dry or moistened lint-free cloth</li><li>• Replace the magnet</li></ul>

### 8.3.9 Software option not activated

<b>Description / possible causes:</b>
The cause of this may be the following: <ul style="list-style-type: none"><li>• Software option missing</li></ul>
<b>Possible solutions:</b>
<ul style="list-style-type: none"><li>• Check software options</li><li>• Activate software option</li></ul>

## 8.4 MARKATOR® Service

Is it impossible to fix the error on site?  
Are you stuck?

We'll provide even more help!

To get the best assistance, the following information should be provided:

- Note the device's serial number
- Describe the error and if possible provide a photo
- Save the log file

**E-mail:**            **service@markator.de**

**Tel.:**                **+49 (0)7144 / 85 75 – 40**            **8–12 a.m., 1–4 p.m.**

# Operating manual

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## 9 Maintenance and care

---

 **CAUTION**

Safety devices are never allowed to be disabled.

 **CAUTION**

Electrical installations must be performed only by electrical experts.

 **CAUTION**

Burn hazard from hot magnets and surrounding components.

- Before anyone touches the INTEGRAL, all parts must cool down to a safe temperature. Measure the temperature, if necessary!
- Dangerously hot parts must be touched only with heat-protective gloves or heat-protective clothing!
- Limbs may be burned by hot components!

 **NOTICE**

- Repairs and maintenance must be performed only by trained, authorized personnel! Keep unauthorized people away!
- Maintenance must be documented in detailed maintenance reports that include the date, work performed and the person who performed it.
- INTEGRAL must never be cleaned with compressed air or water.
- Use only a soft, dry, lint-free cloth and/or a clean paintbrush for care.  
For heavier contamination, the cloth or paintbrush can be moistened with an assembly power cleaner.
- **To ensure expert service, it is a good idea to have a maintenance contract with MARKATOR®.**

The maintenance and preventive care described below is recommended for an average, normal load on INTEGRAL in daily **single-shift operation without extreme dirt accumulation**.

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### 9.1 Daily maintenance and care

---

The INTEGRAL must undergo a daily visual inspection for damage to the housing. Additionally, the marking needle and the magnet must be checked for damage and physical wear.

#### NOTICE

Marking needles and magnets are wear parts. To prevent production outages, we recommend having at least one marking needle and one magnet in stock per device.

#### 9.1.1 Monitor marking quality

---

Visually monitor marking quality, compared to a perfect reference marking, for example.

#### NOTICE

- During shift operation, this inspection should be done **at the beginning** of each shift.
- The duller the marking needle, the less legible the characters are in small heights.

#### 9.1.2 Two-year maintenance (general overhaul)

---

The guides normally don't need to be lubricated. However, at two-year intervals, they should be inspected.

**A general overhaul can only be done at the factory with special equipment.**

#### NOTICE

If the INTEGRAL cannot be dispensed with:

After agreeing on a date, MARKATOR® provides a loaner device at a fixed price for the time the general overhaul is being done.

Upon request, MARKATOR® will gladly make an appropriate offer.

# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL

### 10 Technical data

#### 10.1 INTEGRAL U65/30, U85/45 and U120/45

Nominal operating voltage	24 VDC +-10%				
Nominal current	max. 13.0 A				
Rated power consumption	312 W				
Performance without process	4.8 W				
Ambient temperature	0° ... +50°C				
Storage temperature	-10° ... +60°C				
Connection cross-section	3x1,5 mm <sup>2</sup> , length 10 m, socket M12 S-coded				
Air humidity	max. 80% (non-condensing)				
Marking range (x/y) in mm	INTEGRAL U65/30:		65		30
	INTEGRAL U85/45:	X-axis:	85	Y-axis:	45
	U120/45 INTEGRAL:		120		45
Character heights	1.0 to 24.9 mm (29.9 mm), continuous in 0.1 mm increments				
Marking position	Flush left, flush right, centered and limited range				
Available fonts	#5x7_fly, #9x13_fly				
Characters available	Upper- and lowercase alphabet with umlauts, numbers 0 to 9 and the following special characters: . , / - _ < > ( ) * = [ ] ß % Ø + ? ! ; : # „ ° ^				
Markable material	Almost any material can be marked — from plastic all the way to hardened steel (max. 62 HRC).				
Height tolerance compensation	Up to 5 mm (with constant marking depth)				
Ports available	USB-A, USB-B, Ethernet				
Weight	INTEGRAL U65/30: 3.2 kg INTEGRAL U85/45: 4.0 kg U120/45 INTEGRAL: 4.6 kg				
Marking needle drive	Electromagnetic (low noise)				
Options	<b>Program option B COMFORT:</b> Offset, shift identification, reading keyboard, date coding, comment, message, pre-positioning, waiting standard input, standard output, save file, absolute and relative positioning, travel speed, multiple marking, reference run				
	<b>Program option F Data matrix:</b> 2D coding text, 2D marking				
	<b>Program option K Logo:</b> Logo				
	<b>Program option I/O PLC:</b> Set Attributes, VAR Bus Data, Cut Variable Text, Filter Text, File, If-Standard IO, If-VAR, Go To, Mark, Timeout, Status				
Noise emission (at idle, without workpiece)	<b>Program option T scripts:</b> A: csv-Import B: XLsocket, mathe, expr C: writeLOG, search string, wv D: ftpput, ftpget E: mathe, expr F: countlines These functions must be activated individually after ordering.				
	76 dB(A), ANSI 1.4 Type 2/IEC 651 Type 2				

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### 10.2 Replacement parts list, exploded drawings, important documents

Replacement parts lists, exploded drawings and other important documents can be found at the following link or with the QR code:



[www.markator.com/manuals/mv5\\_u65\\_u85\\_u120\\_integral](http://www.markator.com/manuals/mv5_u65_u85_u120_integral)

### 10.3 Connection layout voltage supply (X1)

#### Plug type:

Built-in connector Phönix Contact SAC-3P-10.0-PVC/FSS PE SCO - 1411647

Needle	Wire color	Designation	Meaning
1	black	+24V	
3	black	+0V	
PE	green/yellow	PE	Ground conductor

### 10.4 Connection layout digital I/Os (X15)

#### Plug type:

Built-in connector Phönix Contact SACC-DSI-M12FS-12CON-M16/0,5 1419713

Needle	Wire color	Designation	Meaning
1	brown	+24V	Voltage supply for outputs
2	blue	0V	GND for outputs
3	white	Output 1	Origin position
4	green	Output 2	Ready
5	needlek	Output 3	Output error
6	yellow	Output 4	UNI 3 output
7	black	Input 1	Start
8	gray	Input 2	Stop
9	red	Input 3	Acknowledgment
10	purple	Input 4	UNI 3 input
11	gray/needlek	+24V	Voltage supply for inputs
12	red/blue	0V	GND for inputs

# Operating manual

## MV5 U65/30, U85/45, U120/45 INTEGRAL

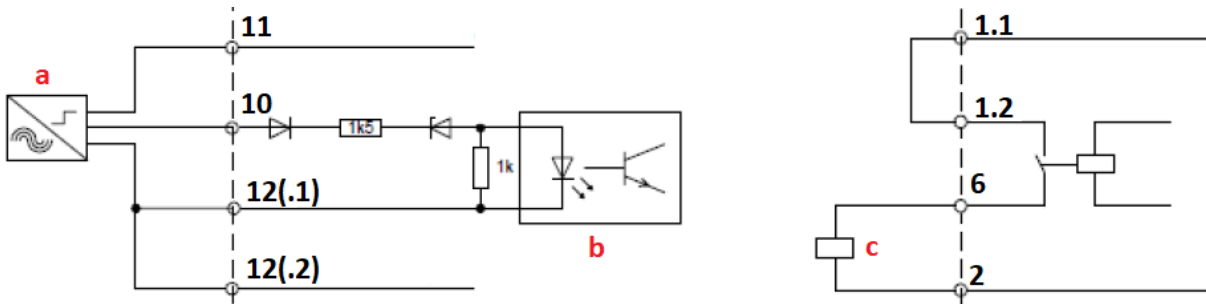
**NOTICE**

Do not connect external 24VDC to pin 1 and pin 2 (power supply of the outputs) and pin 11 and pin 12 (power supply of the inputs)!

**NOTICE**

When working with a function block, the connections on the connector do not have to be connected, as the I/Os can be switched via communication.

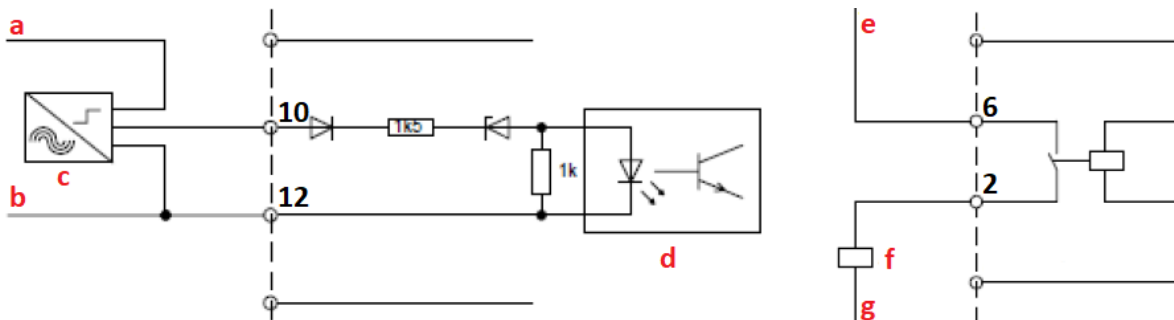
### 10.4.1 Wiring example internal power supply



a	Sensor	b	Optocoupler	c	Actuator
---	--------	---	-------------	---	----------

Pin	Occupancy	Pin	Occupancy
11	+24VDC power supply for inputs	1(.1)	+24VDC power supply for outputs
10	Input 4 (UNI 3 input)	1(.2)	+24VDC Bridge to pin 1
12(.1)	GND Bridge to pin 12	6	Output 4 (UNI 3 output)
12(.2)	GND for inputs	2	GND for outputs

### 10.4.2 Wiring example external power supply



a	External +24 VDC	b	External GND	c	Sensor
d	Optocoupler	e	External +24VDC	f	Actuator
g	External GND				

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Pin	Occupancy	Pin	Occupancy
10	Input 4 (UNI 3 input)	6	Output 4 (UNI 3 output)
12	GND for inputs	2	GND for outputs

### 10.5 Connection RJ45 (X4)

**NOTICE**

The INTEGRAL's network port is the interface for communication by PLC or Ethernet.

The network interface provides the following functions:

- Communication with PLC through functional modules / optional Ethernet
- Operation of XL Control PC software

### 10.6 Connection USB-A (X5 / X6)

**NOTICE**

Various USB devices can be connected through INTEGRAL's USB A port. Never charge mobile phones or other electronic devices through the USB port!

The interface provides the following functions:

- FAT32-formatted USB sticks for copying marking files, logos or fonts to or from the marking controls.
- Use of a USB keyboard
- Use of a USB barcode scanner

### 10.7 Connection USB-B (X7)

The interface provides the following functions:

- Connection to a PC for operation with a USB-A or USB-B cable for the XL Control software.

### 10.8 Assignment of INTEGRAL's status LED

	<b>x0</b>	Origin position X
	<b>y0</b>	Origin position Y
		Ready to mark
		Marking in progress
		Error/malfunction
		Operating voltage

# Operating manual

MV5 U65/30, U85/45, U120/45 INTEGRAL

## 11 Disposal, storage, transport

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### 11.1 Disposal

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#### NOTICE

- No components of INTEGRAL are to be discarded with household waste, and must be appropriately disposed of according to national, state and local regulations.
- The INTEGRAL's owner is responsible for proper disposal.

### 11.2 Storage

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#### NOTICE

The INTEGRAL must be stored dry at no more than 80% non-condensing air humidity

### 11.3 Transport

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#### NOTICE

- In general, care must be taken to avoid damage.
- If damage to the package is detected, immediately check the product for damage. When in doubt, take photos of the packaging and the goods for backup, and report them to the responsible transport company.
- The transport lock must always be attached to INTEGRAL's mechanics for transport.

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