

Translation of the original operating manual

Markoprint X2JET plus Touch

Part number of documentation 72800145



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General information

General Survey

Congratulations! You have purchased a high-quality print system. Our concern is to make sure that you profit from this system to your entire satisfaction over many years. In order to ensure this, we strongly recommend you to let our experienced specialists perform the installation.

Limitation of Liability

All pieces of information and notes of this manual have been arranged in consideration of applicable standards and regulations, state-of-the-art technology as well as our cognition and experiences over many years.

The manufacturer assumes no liability for damages caused by:

- Non-observance of this manual
- Non-observance of the intended use
- Use of unqualified personnel
- Manipulations at the system
- Technical changes
- Use of spare parts that are not approved by the manufacturer
- Soiling of the system
- Improper storage

The actual scope of delivery may differ from the explanations and illustrations provided herein in the case of special designs, additional order options or after recent technical changes.

The obligations of the supply contract the General Trading Conditions as well as the Terms of Delivery of the manufacturer and the valid legal regulations at the moment of conclusion of a contract generally apply.

Technical changes within the scope of improvement and development are subject to change without notice.

Warranty Clause

The warranty conditions are conform to the valid General Trading Conditions of the manufacturer at the moment of purchase.

Warranty or repair claims against the manufacturer will be rejected if it is established that the device has not been stored, installed, handled and serviced as intended. Soiling of the system, improper use or unauthorized modification or repair of the device are excluded from the warranty.

Cleaning and Maintenance

There are no moving parts in the system's print head that require regular maintenance.

When print on packaging (e. g. cartons, trays, sacks, etc.), however, it must be expected that dust and fibre particles that are carried along will loosen and adhere to the wet nozzle plate of the print head. This can lead to a degradation of the print quality over time (→ **Chapter** Faults, **page 134**).

If the soiling proves to be too stubborn and cannot be removed by a rinsing process, please return the unit to the manufacturer for professional cleaning. Please note that this service is free of charge even during the warranty period.

Copyright Protection

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Purpose and Scope of this service manual

This manual enables safe and effective use of the **Fehler! Verweisquelle konnte nicht gefunden werden..**

The Operating manual is a component of the device and must be stored close to the device to be accessible to the staff at all times. The staff must have read this manual thoroughly and understand the content before starting any work. Compliance with all safety notes and instructions given in this manual is a basic prerequisite to safe operation.

Furthermore, the local accident prevention regulations and general safety provisions for the area of application of the device are applicable.

Images in this manual serve to provide a basic understanding and may differ from the actual device version.

In addition to this manual, the instructions in the annexure on the components included are also applicable.

Hints for Use of this Manual

Please find in the following a detailed explanation of the notations and representations as used in this manual.

Keys and buttons which you must push appear in squared brackets.

Example: Push [Start] - button to save changes...

Procedures which should be followed in a specific order are listed in numbered paragraphs.

Step	Procedure
1	Disconnect power plug

Important messages are written in bold text and/or highlighted in grey.

This is an example for an important message!

Special notes:



... refers to a chapter or document.

Figures and drawings are numbered serially.

Images in this manual serve to provide a basic understanding and may differ from the actual system version. Figures may be stated without protection device for clarification.

Explanation of Technical Terms

Technical Term	Explanation
CartClip	HP cartridge holder for storage of already opened cartridges to protect them against leaking or drying out of nozzle plate
Cartridge	See ink cartridge
Conveyor	The conveyor transports the products, which should be printed and pass them by the print head
DPI	Dots Per Inch 1 Inch = 25,4mm
Encoder	See shaft encoder
HP	Hewlett Packard - Manufacturer for ink cartridges
HP print head HP 2.5 print head	Print head with HP cartridge from the CompactLine family, which can be connected to the Fehler! Verweisquelle konnte nicht gefunden werden..
Ink cartridge	Original HP cartridge TIJ 2.5 , model type 45 Original Lexmark cartridge
Ink system	System for the ink bottle and ink supply of the MX print heads
LED	Light emitting diode
LX	Lexmark – Manufacturer for ink cartridges
LX cartridge	Ink cartridge of Lexmark
Maintenance station	Includes power supply, vacuum pump and catch tank for the MX print head
MX	Print system with MX print heads 50 and 100mm
MX print head	Print head with Trident print head module Multiline MX family, which can be connected to the Fehler! Verweisquelle konnte nicht gefunden werden..
MX 50	Print head with Trident print head module Multiline MX family with 50mm print height
MX 100	Print head with Trident print head module Multiline MX family with 100mm print height
Nozzle plate	On the nozzle plate are a double-row arrangement of 300 nozzles each row, from which ink is ejected.
Piezo	A piezo crystal changes its length with voltage.
Piezo-print head	A print head, which ejects ink by a piezo crystal.
ppi	Pulse per inch

Print direction	Print direction indicates the direction of movement of the product on the conveyor belt viewed from the controller in the print direction
Print head	Exist of one or more print head modules, combined to one unit
Print head module	Consist of holding fixture for the ink cartridge, electronics and connection socket and the connection to the controller
Print intensity	Contrast of the print image. If necessary this parameter must be changed to optimize the print image. A higher intensity gives greater blackening and longer ink drying time
Print speed	Print speed = Speed of the conveyor. The speed of the conveyor must be keep constant
Print start delay	Offset print, i.e. by how much is printing delayed in millimeters after the product is detected by the light barrier.
Print width	The number of pixel can be increased or decreased using this parameter. The print image becomes narrower or wider
Product sensor	A sensor for the detection of the product. Mostly used are optical sensors (photo sensor, light barrier, reflex sensor)
Sensor	See product sensor
Shaft encoder	A shaft encoder is used for the automatic detection of the conveyor speed and defines the print speed
TIJ	Thermal Ink Jet - print function of the HP and LX cartridges
Trident	Manufacturer of the MX Piezo print heads
XR	Print system with XR 71 printhead
XR 71 printhead	Printhead with Xaar 501 printhead module, which can connect to the Markoprint X2JET plus Touch
Zoom	The number of pixel can be increased or decreased using this parameter. The print image becomes narrower or wider
ZTV II	Bulk Ink Supply System

Customer Service

Please contact your local distributor for technical information.

If failures at the print system occur, you should be prepared with the following information:

- Detailed error description.
- All information on the name plate of the print system.
- Version number of the system software and of the iDesign Software
- Configuration (Print, Basic, Advanced, Pro)
- Special functions of the software or hardware
- When did the error occur for the first time?

Prior to call our hotline service, please have a look at the manual (→ *Chapter Faults, page 134*) for potential references to eliminate the error.

Furthermore, our staffs are always interested in new information and experiences with the use of the product and which may be valuable for improvements to our products.

Safety Regulations

Behavior in Case of an Emergency

The operating personnel have to be familiar with the operation and the location of safety, accident notification-, first aid- and rescue devices.

What to do in Case of an Emergency?

- Initiate immediately all required emergency measures for injured persons. Observe valid safety regulations in any case in order to avoid further damages to persons.
- Call medical attendance for injured persons.
- Eliminate all accident causes.

General Safety Regulations

Safety regulations provide information in written and symbol form in order to warn you against dangers and to instruct you to avoid any damage to persons or to properties. Safety regulations are started by signal words indicating the level of danger. Safety regulations may be placed directly at the print system or in documents about this print system.

Explanation of Danger Degrees



This symbol indicates a hazardous situation which, if not avoided, will result in death or serious injury. All safety regulations have to be observed to avoid any damage to persons.



This symbol indicates a hazardous situation which, if not avoided, could result in death or serious injury. All safety regulations have to be observed to avoid any damage to persons.



This symbol indicates a hazardous situation which, if not avoided, may result in minor or moderate injury. All safety regulations have to be observed to avoid any damage to persons.



This symbol indicates a hazardous situation which, if not avoided, may result in damage to properties. All safety regulations have to be observed to avoid any damage to properties.

Intended Use

The working reliability of the print system is ensured only with intended use.

The Markoprint X2JET plus Touch has been designed, built and must be used exclusively for the intended purpose described.

The **Fehler! Verweisquelle konnte nicht gefunden werden.** serves to create print images and print them from the top or side to smooth and absorbent product surfaces. The product must pass the print head, i.e. by a conveyor belt.

All working conditions and instructions, prescribed in this manual, will be observed.

Any use beyond the intended use or any alternative use of the equipment is regarded as misuse and may lead to hazardous situations.

Misuse of the device may lead to hazardous situations. Refrain, in particular, from subjecting the apparatus to the following:

Modification, retrofitting or alteration of the apparatus or individual sub-assemblies.

Any claims arising from damages due to undesignated use are rejected.

Reasonably Foreseeable Misuse

Another use as fixed in the „Intended Use“ or even more applies as not intended!

For damages caused by not intended use

- The operator bears the complete responsibility,
- The manufacturer assumes no liability.

If you do not use the system according to the regulations, risks may occur!

Not intended uses are e.g.:

- operation in explosive atmosphere
- the print system comes in contact with food ...

Retrofitting and Changes at the Print System

Unauthorized retrofitting and changes at the system lead to an immediate expiration of liability and warranty covered so far by the manufacturer! This is also valid for interventions and program changes at programmable control systems as well as program changes at control units as far as they are not described in this Manual.

The electromagnetic performance of the system can be affected by amendments or changes of any kind.

Do not arrange any changes or amendments at the systems without consultation and written approval of the manufacturer.

Warning Notices at Print System

Particular sources of danger at the print system are marked by yellow labels. The used pictograms point out to following dangers:



Danger to Life

Special hazards

The following section identifies the remaining risks, determined following a risk analysis.

Observe the safety notes listed here and the warnings in other chapters of the manual to minimize health hazards and avert hazardous situations.



Danger to life through electric shock!



DANGER TO LIFE!

Contact with live parts poses imminent danger to life. Damaged insulation or individual components can be lethal.

Therefore:

- Immediately switch off the power supply and initiate repairs if the insulation is damaged.
- Work on the electrical system may only be performed by electricians.
- Before working on the electrical system, disconnect from the mains (remove mains plug) and check that power is off.
- Always disconnect mains before performing cleaning and repair tasks.
- Keep moisture from live parts. Moisture may cause a short-circuit.



Risk of injury through incorrect handling of batteries!



RISK OF INJURY!

Rechargeable and primary batteries contain toxic heavy metals. They must be treated as special refuse and deposited at municipal collection points or be disposed of by a specialized company. Batteries must be handled with particular care.

Therefore:

- Never throw batteries into a fire or subject batteries to high temperatures. Explosion hazard.
- Do not charge batteries. Explosion hazard.
- Fluid escaping through incorrect use may cause skin irritations. Avoid contact with the fluid. In case of contact with the fluid, rinse with ample water. If the fluid comes into contact with the eyes, rinse immediately with water for 10 minutes and consult a doctor without delay.

**Edges and corners pose risk of injury!****RISK OF INJURY!**

Sharp edges and pointed corners may cause abrasions and cuts to the skin.

Therefore:

- Be cautious when working near sharp edges and pointed corners.
 - If in doubt, wear protective gloves.
-

**Risk of stumbling posed by dirt, objects lying about and connecting lines!****RISK OF INJURY!**

Dirt, objects lying about and connecting lines for power, data- and signal lines may cause slipping and stumbling resulting in severe injuries.

Therefore:

- Always keep working area clean.
 - Remove objects no longer required.
 - Mark stumbling areas with yellow-black marking tape.
 - Non tension connecting lines to system and pass it that no places of danger do arise.
-

Remaining Risks

The print system is constructed for a safe operation. Hazards that are not preventable due to construction purposes are limited as far as possible by protection devices. A certain amount of risk is always existent! The knowledge about the remaining risks assists you to arrange your work safer and to avoid incidents. In order to avoid the dangers, please observe additionally the particular security advice in the single chapters.

Disposal

This print system complies with the RoHS EU-Regulation 2011/65/EU with observance of the fixed using prohibitions and avoiding pollutants.

Authorized persons

Work at the print system should only be performed by reliable personnel. Please comply with the legal age!

Only trained personnel are allowed to operate the print system. Trainees, apprentices etc. must be supervised by an experienced person while working at the print system.

Prior to start running the labeler the operator has to ensure that the manual of the labeler is available to all users of the machine and that the users have read and understood the manual. Only then the system may be put in operation.

The responsibility for the different tasks at the print system must be clearly specified and kept. There must be no ambiguous authorities for this may put the safety of the users at risk. Arrange a detailed work schedule if several persons work on the machine.

All work on the electrical equipment must be carried out by skilled electricians only. Failures may be eliminated by authorized personnel only.

All work associated with the assembly, adjustment and maintenance at the machine may be carried out only by trained or instructed personnel.

The operator of the machine must ensure that the personnel are trained in dealing with the integrated control system prior to fix machine errors or maintain the system.

Personal Protective Equipment

Wear following protective equipment when performing work at the system:



SAFETY SHOES

Wear for protection against falling off parts and slipping.



PROTECTIVE CLOTHING

Are tight-fitting clothes with low tensile strength, with tight sleeve and without distant parts

Wear a hairnet if applicable

Do not wear jewelry or wrist watches



PROTECTIVE GOGGLES

For protection against splashes of detergents and flying parts



SAFETY GLOVES

For protection against sharp-edged items

Personal Protective Equipment for the following tasks	Protective Clothing	Safety Shoes	Safety Gloves	Protective Goggles
Transport	x	x	x	
Setting up and connecting of the system	x	x	x	x
Maintenance Work	x		x	x
	The documentation of the manufacturer of the single system components has to be observed!			

Working Places Operator Personnel

The print system is an automatic working system and does not require any operation for the print procedure.

Technical Specifications

General

Dimensions (H x W x D in mm)	108 x 219 x 231 (excl. bracket and connections)
Weight	2850 g
Environmental Temperature:	5 - 40 ° C
Environmental Conditions:	10-90 % relative humidity (non-condensing)
Protection Rating	IP 40
Maximum operating time	The system is designed for continuous operating

Electrical

Voltage Power Supply:	90 - 240 V AC / 50-60Hz (1~)
Current consumption:	max. 0,5 A
Power consumption:	max. 60 W
Power consumption Standby:	< 5 W

Data interfaces

Ethernet	RJ45
USB A	USB-A socket
USB-B	USB-B socket
RS232	25pin Sub-D socket

Connections

Input voltage	24V +- 10% max. 500mA
Sensor	M8 4-pole
Encoder	M8 4-pole
External	Sub-D 25-pole
Alarm	M12 8-pole

Supply voltage 24V +- 10%

The switching threshold of the inputs is $12V \pm 2V$.

The sensors / encoders must be designed for 24V operating voltage. E.g. $24V \pm 10\%$ or $10V - 30V$

The inputs are NPN as standard, but can be rejumped to PNP with the iDesign software.

Performance data

Cable length in m	
Power supply	2
Print head cable	3
Max. length print head cable:	Up to 13 for HP heads, Up to 50 for LX, MX or XR heads
Max. length LAN-cable:	Up to 50
Text layout	Software iDesign
Parameter input	Keyboard on the device / Software iDesign
Screen	TFT display QVGA 5,7" 320x240 pixel with background lighting
Fonts	all available Windows fonts
(optional)	customer-specific fonts
Print height in mm	
HP / LX print heads:	1 to 25
MX print heads:	3 to 200
XR print heads:	1 to 142
Maximum horizontal print resolution¹⁾ in dpi	
HP / LX print heads:	900
MX print heads:	600
XR print heads:	600
Vertical print resolution¹⁾ in dpi	
HP / LX print heads:	300 / 600
MX print heads:	192 / 64 (channel)
XR print heads:	180
User language Control system / Software:	German, English, French, Spanish, further on request
Barcodes¹⁾	EAN 8, EAN 13, EAN 128, 2/5 ITF, 2/5 with check 128, UPC A, UPC E DUN14, GS1 Databar Omnidir./Expand
2D-Codes¹⁾	Datamatrix, GS1-Datamatrix, OR-Code, PPN-Code

Automatic functions¹⁾	Date, Time, Counter, Variables, Action fields, customer-specific links
Graphic	Monochrome bitmap-graphics can be created i.e. with Paint or other software.
Text memory in GB	Max. 1
Font- und Logo memory in GB	Max. 1
Memory; optional expandable in GB	32
User memory in MB	64
Maximum print speed in m/min (depending on resolution) HP 2.5 at 300dpi HP 2.5 at 300dpi HiSpeed Version Recommended for barcodes	90 180 Max. 60
Maximum print speed in m/min (depending on the resolution) LX at 300dpi LX at 300dpi HiSpeed Version Recommended for barcodes	90 240 Max. 90
Maximum print speed in m/min (depending on the resolution) MX at 200 dpi	60
Maximum print speed in m/min (depending on the resolution) XR at 180 dpi	67
Print direction	L/R or R/L, from top or side. Print from bottom is not possible.

¹⁾Not available in all Fehler! Verweisquelle konnte nicht gefunden werden. versions

Transport, Packaging and Storage

Transport

Check the delivery for completeness and transport damages immediately upon receipt. Proceed as follows in case of externally visible transport damage:

- Decline delivery or accept with reservation only.
- Record extent of damage in the transport documentation or on the delivery note of the carrier.
- Initiate complaint.

Scope of delivery

The scope of delivery of the **Fehler! Verweisquelle konnte nicht gefunden werden.** depends on the ordered options and the customer's application. Please control the scope of delivery when receiving the systems on the basis of the delivery note.

Scope of Delivery - Basic:

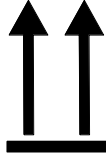
- 1x *Fehler! Verweisquelle konnte nicht gefunden werden.* control system
- 1x Power cable
- 1x CD, content: → *Chapter* USB-Stick files, *page 147*
- 1x Operation manual (CD)
- 1x iDesign-Software (CD)
- 1x USB-cable A-B
- 1x Grounding cable

Optional:

- Print head: HP-print head, LX-print head, MX-print head or XR print head
- Print head cable
- Mounting bracket
- Photo sensor
- Shaft encoder
- Traffic light

Symbols on Packaging

As part of the installation and further use it may happen that the operator put user or maintenance personnel in charge of handling of packages. Therefore note the following important notes.



This way up

The arrowheads indicate the top of the package. They must always face upward to avoid damage to the content.



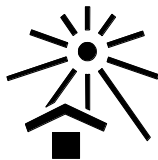
Fragile

Identifies packages with fragile or sensitive contents. Handle the package with care, do not drop or subject to impacts.



Keep dry

Keep packages away from moisture and keep dry.



Protect from heat

Protect packages from heat and direct sunlight.

Transport und Unpacking

Safety Instructions

NOTICE

Material damage due to incorrect transport!

Remove the packaging material and the transportation safety devices on installation site and transport the print system in its original packaging to the place of installation.

CAUTION



Danger due falling parts!

- Wear safety shoes!

Packaging

On Packaging

The individual packages are packed in accordance with the expected transport conditions. Only environmentally-friendly materials were used for packaging. Packaging serves to protect the individual components against transport damage, corrosion and other damage, up to the assembly stage. Do not, therefore, damage the packaging - remove shortly before assembly only.

Original packaging is available from the manufacturer to ensure optimal dispatch of the system.

Please contact your local distributor.

Handling of packaging materials

Dispose of packaging material in accordance with the applicable statutory provisions and local regulations.

NOTICE

Environmental damage!

Packaging materials are valuable raw materials and can, in many cases, be re-used or profitably recycled and re-used.

Therefore:

- Dispose of packaging materials in an environmentally-responsible manner.
 - Observe the locally applicable disposal regulations. If necessary, commission a specialized company for disposal.
-

Storage

Controller

Store the controller under the following conditions:

- Do not store outdoors.
- Keep dry and free of dust.
- Do not expose to aggressive media.
- Keep away from direct sunlight.
- Avoid mechanical shock.
- Storage temperature: 5°C to 45°C.
- Relative humidity: maximum 60%.

Construction and function

Brief description

The Fehler! Verweisquelle konnte nicht gefunden werden. is a thermal Inkjet Coder of Weber Marking Systems GmbH, for printing images quickly and cleanly onto smooth and absorbent product surfaces.

A print image, for instance, contains product descriptions, graphics, quantities, shelf life data, barcodes and product serial numbers.

Print layouts can be created with the included iDesign software and can send via network connection, USB interface or serial EIA 232 connection or by USB-stick to the Fehler! Verweisquelle konnte nicht gefunden werden..

Controller

The Fehler! Verweisquelle konnte nicht gefunden werden. controller consists of:

- The electronics inside the housing
- A keyboard for input of parameter and settings and a navigation- / OK-button and the INFO-button.
- Five menu selection-buttons for the direct selection of the shown display menu points
- A color display
- The connectors on the system back for power supply, input for encoder, input for sensor and other in-/outputs

The Fehler! Verweisquelle konnte nicht gefunden werden. can be used as table system or can be installed on the production line directly with special optional mounting brackets or as wall-mounted system.

System versions

The *Fehler! Verweisquelle konnte nicht gefunden werden.* is available as standard version **Advanced** and as **Pro**-version with extended functions.

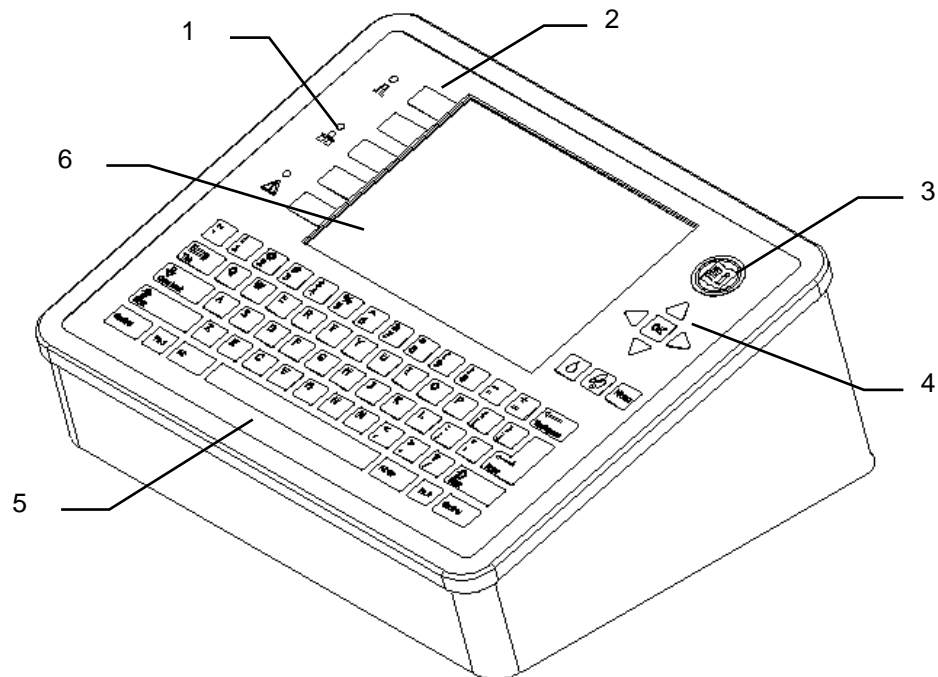
Functions *Fehler! Verweisquelle konnte nicht gefunden werden.* **Advanced:**

Print speed up to 90m/min with HP at 300dpi, counter, date with best before, variable input, 2D barcodes, 1m print length (up to 2m at 300 dpi without zoom optimization), data backup with USB-Stick, interface functions, data base connection.

Functions *Fehler! Verweisquelle konnte nicht gefunden werden.* **Pro:**

Like *Fehler! Verweisquelle konnte nicht gefunden werden.* **Advanced** extra: Hi-Speed adjustable with print speed up to 240 m/min with LX at 300 dpi, up to 3m text length (up to 2m at 300 dpi without zoom optimization), password protection.

The **Fehler! Verweisquelle konnte nicht gefunden werden.** control systems will be delivered as Advanced version standard. If the requirements exceed the scope of services of the Advanced version, an upgrade with costs to the Pro version is available. See also → *Chapter Software-Upgrade, page 146.*

Overview Fehler! Verweisquelle konnte nicht gefunden werden. **controller***Fig. 1: X2JET plus controller*

No.	Description
1	STATUS LIGHTS
2	FUNCTION BUTTONS
3	INFO-BUTTON
4	NAVIGATION- / OK-BUTTON
5	KEYBOARD
6	DISPLAY / TOUCHSCREEN

Overview of the control system connections

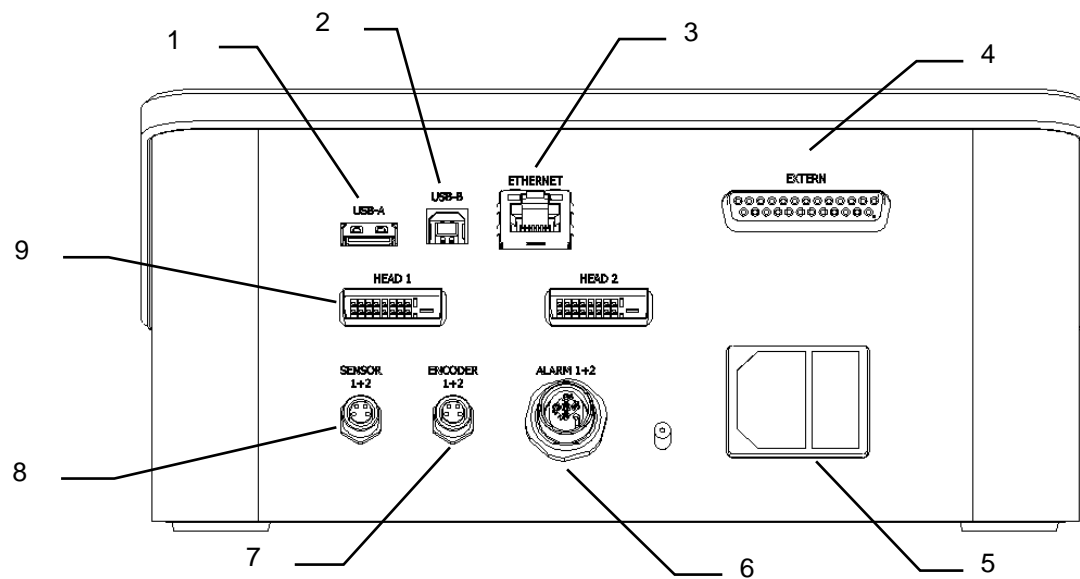


Fig. 2: X2JETplus control system back- / connection side

No.	Description
1	USB-A
2	USB-B
3	NETWORK CONNECTION
4	OPTIONAL IN-/OUTPUTS
5	POWER CONNECTION
6	ALARM - M12
7	ENCODER - M8
8	SENSOR - M8
9	PRINT HEAD CONNECTIONS

Nameplate

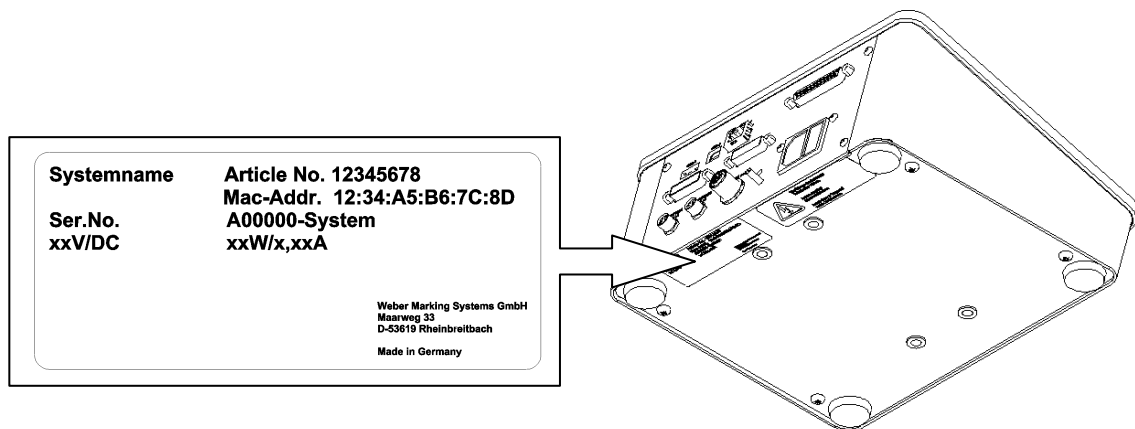


Fig. 3: X2JET plus controller bottom side

The nameplate is attached to the bottom of the device and displays the following:

- System type
- Serial number
- MAC address
- Article number
- Supply voltage
- Power consumption
- Address of manufacturer

Installation and Initial Operation

Safety notes



Danger to life through electric shock!



DANGER TO LIFE!

Contact with live parts poses imminent danger to life. Damaged insulation or individual components can be lethal.

Therefore:

- Immediately switch off the power supply and initiate repairs if the insulation is damaged.
- Work on the electrical system may only be performed by electricians.
- Before working on the electrical system, disconnect from the mains (remove mains plug) and check that power is off.
- Always disconnect mains before performing cleaning and repair tasks.
- Keep moisture from live parts. Moisture may cause a short-circuit.



Risk of stumbling posed by dirt, objects lying about and connecting lines!



RISK OF INJURY!

Dirt, objects lying about and connecting lines for power, data- and signal lines may cause slipping and stumbling resulting in severe injuries.

Therefore:

- Always keep working area clean.
- Remove objects no longer required.
- Mark stumbling areas with yellow-black marking tape.
- Non tension connecting lines to system and pass it that no places of danger do arise.

**Edges and corners pose risk of injury!****RISK OF INJURY!**

Sharp edges and pointed corners may cause abrasions and cuts to the skin.

Therefore:

- Be cautious when working near sharp edges and pointed corners.
 - If in doubt, wear protective gloves.
-

Installation

Only an optimally aligned installation of the system can ensure a continuous operation with a low rate of failures and a minimum wear. For an optimized installation of the system, fine tunings adapted to environmental conditions are essential. For the fine tunings, a complex expert knowledge is required basing on experience with print technique.

The complexity of a wear-optimized installation requires a high measure of specialized knowledge and experience, which cannot be obtained completely by reading this manual. Therefore the installation of the print system must be made by a technician from your local distributor or examined by a final inspection. Damage or damages based on an incorrect installation, represent no case of warranty.

Requirements to the Site of Installation

When choosing the installation location the following conditions apply:

- Consider the generally accepted ergonomic criteria in accordance with workplace ordinances as well as country-specific legislation.
- The installation location must be a dry and dust-free room, ideally with an ambient temperature of approx. 18...25 °C.
- The installation location may not be subject to fast temperature fluctuations (condensation!).
- Do not set up the controller directly next to or above hot surfaces, since this will affect cooling of the controller.
- If the controller is operated on a tripod (accessory), the stability of the tripod on an even foundation must be ensured.
- The controller may not be exposed to flammable, explosive, corrosive gases or chemical vapors.
- The controller may not be installed in the vicinity of high voltage equipment or power supplies.
- The controller may not be subjected to direct vibrations or shocks.
- Keep controller away from oil or water.
- The controller may not be exposed to strong magnetic or electric fields.

Placing the Control System

- The installation position has to provide sufficient access for user and service technician. The power plugs must be easy to access to cut the voltage anytime.
- Observe that all mounting parts are fixed sufficiently.
- Consider all points of the "Intended Use" in the chapter safety regulations.

To achieve a clean, sharp print result the distance from the product to be printed to the cartridge nozzle plate is important. The optimum distance is 0 to 4 mm between the deflector and the product. A greater distance will adversely affect the print result, particularly at high conveyor belt speeds.

The higher the print speed the shorter must be the distance. At speeds of less than 20 m/min a distance of up to 4 mm between the nozzle plate and the product may still be acceptable.

Positioning the Control System

NOTICE**Material damage due to improper print system installation!**

With the print system switched on, a defect may occur in the system electronics.

Therefore:

- Only install the system when it is switched off.
 - Network cables only connect or disconnect if the power supply is dead voltage.
-

NOTICE**Material damage due to induced currents!**

If the connection cables of the controller run close to high voltage or heavy current cables in the cable duct, induction may cause malfunctioning or damage.

Therefore:

- Lay all connection cables of the controller spatially separate from high voltage and heavy current cables.
-

NOTICE**Material damage due to an incorrect control system installation!**

Faults on the control system can happen by potential differences between control system and conveyor belt.

Therefore:

- An electro-conductive connection between control system and conveyor belt must be established.
-

NOTICE**Material damage due to not properly installed connecting cables!**

Improper installation of the connecting cables can cause damages to these.

Therefore:

- When laying the cables, ensure that cables are not tripping hazards and do not lay them around corners and sharp edges. Avoid abrasive surfaces.
-

Required Resources

Setscrew wrench (Allen key[®]) SW5

Instruction

Please install the control system as follows:

Step	Procedure
1	Set up the controller ... <ul style="list-style-type: none">• on an even and adequately load-bearing surface• mount on a tripod• Install it on a production line with the optional available mounting brackets.• Install it on a wall with the optional available mounting brackets.
2	Connect the control system with the conveyor belt electro-conductive.

Installation of the print heads

For information on mounting the print heads, refer to the respective operating instructions of the print head.

Connecting the control system

The Print system needs electricity for its functions. Please find more details in the chapter "Technical Data".

Connecting to Supply Voltage

Requirements

Power supply according to "Technical Data" is installed close (max. 1,5 m away) to the control system.

Instruction

Please connect the control system with supply voltage as follows:

Step	Procedure
1	Compare the mains data with the technical data of the control system. → Chapter Technical Specifications, page 21 Elektrischen Anschluss nur bei Übereinstimmung vornehmen!
2	Connect the power plug to the power socket on the control system.

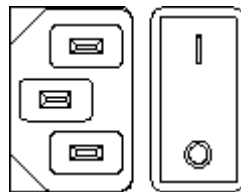


Fig. 4: Power socket control system

3	Connect the power plug with an isolated ground receptacle.
---	--

Connecting of the Print heads

Requirements

The print head is mounted on a production line.

Instruction

Please connect the print head with the control system as follows:

Step	Procedure
1	Connect the print head cable of the first head (top head in a cascaded installation) to the HEAD 1 socket and tighten.



Fig. 5: Print head connection socket at the back of the control system

2	Connect the print head cable of the second head to the HEAD 2 socket and tighten.
---	--



Fig. 6: Print head connection socket at the back of the control system

The controller must be switched off for the connection..

Connecting the optional Shaft Encoder

Requirements

- The optional shaft encoder is mounted at the production line.
- Ideally runs the measuring wheel of the shaft encoder on the conveyor belt, near the print system.
- The encoder is activated in the system menu.

Instruction

Please connect the optional shaft encoder with the control system as follows:

Step	Procedure
1	If necessary install the optional shaft encoder on the production line and connect it to the Encoder socket.



Fig. 7: Encoder socket (M8 4-pole) at the back side of the control system

Connecting the optional Product Sensor

Requirements

- The optional shaft encoder is mounted at the production line.
- Between the sensor and the nozzle plate is maximum a product, because another print activation is otherwise ignored.

Instruction

Please connect the optional product sensor with the control system as follows:

Step	Procedure
1	If necessary install the optional shaft encoder on the production line and connect it to the Sensor socket.

**SENSOR
1+2**



Fig. 8: Sensor socket (M8 4-pole) at the back side of the control system

Connecting the optional Alarm Light

Requirements

The optional alarm light is mounted at the production line.

Instruction

Please connect the optional alarm light with the control system as follows:

Step	Procedure
1	If an alarm light (accessory) is installed, connect the alarm light cable to the Alarm socket and tighten.

ALARM 1+2



Fig. 9: Alarm socket (M12) at the back side of the control system

Connection for optional Inputs / Outputs

Requirements

The cabling of the socket is connected according the requirements.

Instruction

Please connect the optional inputs with the control system as follows:

Step	Procedure
1	Connect and tighten the input cable to the Extern socket, if external inputs are installed.



Fig. 10: Extern socket (Sub-D 25-pole) at the back side of the control system

Connection to a network

A RJ-45-connection allows a connection of the print system to the customer LAN (Local Area Network).

The LED on the top of the system lights green if a network is available. The LED flashes yellow with data communication.

Instruction

Please connect the control system with the network as follows:

Step	Procedure
1	If required connect the print system to the network by a RJ45 socket.

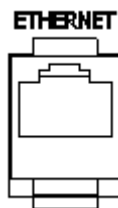


Fig. 11: Ethernet socket (RJ 45) at the back of the control system

Each IP address can place in a network once only. Otherwise there is an address conflict and the system can't address. Please contact your system administrator.

Configuration of the print technology

The **Fehler! Verweisquelle konnte nicht gefunden werden.** can control the print technologies HP, LX and MX. The **Fehler! Verweisquelle konnte nicht gefunden werden.** has two channels, which provide a combination of the different print technologies.

After the system has been installed, the configuration of the print technologies is shown and can set up with the first switch on (→ **Chapter Switch on**, page 45).

The configuration of the selectable print technologies is possible like shown in the following list.

Configuration of the channels	
1 – 2	Description
HP – HP	The system controls HP print head modules exclusively. Up to two print head modules are selectable.
HP – MX	The system controls one HP print head module and one MX print head module.
HP - XR	The system controls one HP print head module and one XRprint head module
MX – MX	The system controls MX print head modules exclusively. Up to two print head modules are selectable.
MX – LX	The system controls one MX print head module and one LX print head module.
MX - XR	The system controls one MX print head module and one XR print head module
LX – LX	The system controls LX print head modules exclusively. Up to two print head modules are selectable.
LX - MX	The system controls one LX print head module and one HP print head module.
LX - XR	The system controls one LX print head module and one XR print head module

The **Fehler! Verweisquelle konnte nicht gefunden werden.** control system is configured to HP – HP standard by the delivery and can customize to the desired configuration if needed.

Requirements

- The print system is correct installed.
- The print system is connected to the power supply.

Instruction

Please adjust the configuration of the print technology as follows:

Step	Procedure
1	Switch the system on. → Chapter Switch on , page 45
2	The display shows the company logo and changes to the configuration menu.

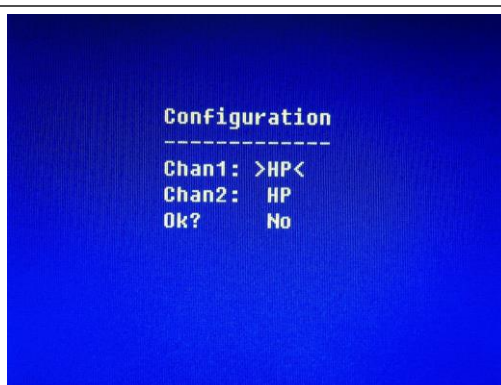







Fig. 0-1: Configuration menu print technology

3	Set the desired print technology for channel 1 (Chan1) by the navigation keys  .
4	Change to channel 2 (Chan2) by the navigation key  and set it like described in step three.
5	After the desired configuration, change to Ok by the navigation key  and set the value to Yes by the navigation key  .
6	Press the OK-button  to confirm and finish the procedure.
7	The system restarts and reboot in the adjusted configuration.

If a system is false configured or should be reconfigured, the start display can be reactivated for the configuration of the print technology.

Instruction

Please call up the print technology configuration as follows:

Step	Procedure
1	Press the function key [F4] in the main menu to call up the service menu.
2	After call up the service menu, press the [CTRL] - and [=] –keys at the same time. The display shows short a waiting picture and returns to the service menu automatically.
3	Switch the system off. → <i>Chapter Switch off, page 46</i>
4	Switch the system on. → <i>Chapter Switch on, page 45</i>
5	Configure the system like described above.

The user has in the sub menu **Print head configuration** (→ Chapter **Print head configuration**, page 115) the option to adapt the settings in the control system with the configuration of the print heads. I.e. it will set which type of print head is connected to the system, e.g. two separate print heads (Single) or a dual print head (Twin).

Operation

Switch on

Requirements

- The print system is connected with power.

Instruction

Please switch the print system on as follows:

Step	Procedure
1	Set the switch from 0 to I on the back of the control system.




Fig. 12: ON-/OFF-Switch on the top of the control system

2	The controller must conduct a self-test and briefly indicates the unit version number after the company logo has passed through the display. After approx. 20 seconds the status menu-1 appears on the display.
---	---

When starting the system unit the progress of the starting process can be monitored on the LED's. If errors occur during booting, an error code is transmitted via the LED's and can be analysed in more detail.
→ Chapter Boot-LED messages, page 138

The configuration of the print technology must be set with the initial operation. Here the system doesn't boot up completely for now, first the configuration of the print technology must performed.
→ Chapter Print technology configuration, page 43

Switch off

Requirements

- The print system is connected with power and switched on

Instruction

Please switch the print system off as follows:

Step	Procedure
1	Set the switch from I to 0 on the back of the control system.

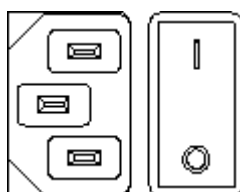




Fig. 13: ON-/OFF-switch on the back of the control system

Menu navigation

On the right side of the display are the buttons for menu navigation, which allow the user to navigate within the menus and enable to make settings.

About the up / down arrow key ▲ ▼ movements are performed within the menu and changed after selecting with the right / left arrow keys ◀ ▶ to set values. In some menus it's also possible to insert values by the keypad directly. Press the OK-button  after menu selection, enter the desired value by the keypad and confirm with the OK-button .

The Menu button is placed below the arrow buttons. Pressing the menu button takes you back to the main menu with the status displays.

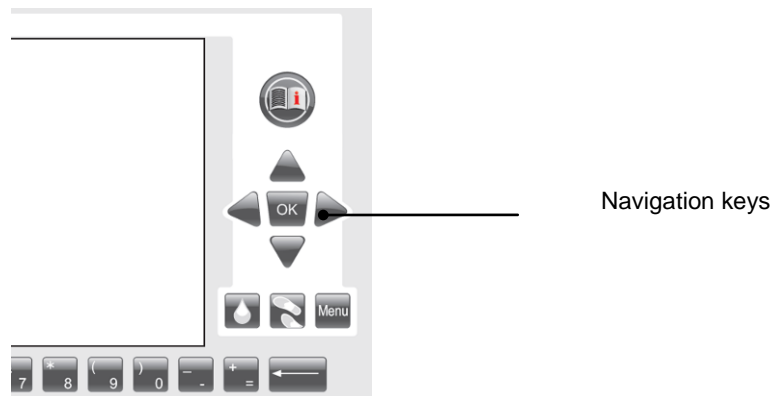


Fig. 14: Menu navigation keys

On the left side of the display are five function keys, which enable the operator to enter the sub-menus. In the sub-menus the function keys are used for print head selection for that settings should be made. Furthermore, in the main menu a print start or print stop can be set by pressing the first function key on the top. By pressing the last function button in submenu you make a move one level back.

The respective assignment of function levels is displayed directly next to the display and the menu changes depending on the level.

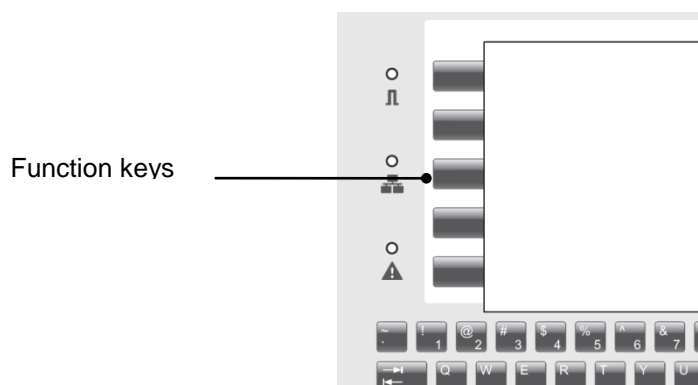


Fig. 15: Function keys

Menu navigation Fehler! Verweisquelle konnte nicht gefunden werden.

The operation of the Fehler! Verweisquelle konnte nicht gefunden werden. happened by a 5,7" resistive touch with a high-resolution display.

The touch responds to pressure, so that it can operate with gloves or a stylus.

The Fehler! Verweisquelle konnte nicht gefunden werden. can operate via the touch-optimized full keyboard and also via the function keys. The operation structure corresponds 1:1 the X2JET plus.

Press on the top (scroll up) or the bottom (scroll down) picture to move within the menu. If the top or bottom picture is pressed longer, you scroll through the whole menu automatically.



Fig. 16: X2JET Touch Menu navigation

The operator can see the status of the separate print heads in the main menu. By pressing the print head symbol once, the print heads can select separately. The actual load print images will be shown in a preview. If the print image is longer than in the preview displayed, the operator can view the loaded print image by pressing on the left or right half of the print image.



Fig. 17: X2JET Touch print image preview

If the operator pressed the print head symbol twice, a dialog with the current print image name, the number of the previously print image and the number of prints of the selected print image, which can be print with a full cartridge, appears. The dialog disappears after ca. 5 seconds.

A blue circle signalizes the operator by pressing the touch surface that the pressure point is detected correct.

After unhand the touch surface the blue circle shrinks to a point, which shows the center point of the pressure range.

Indicator lights

Indicator lights on the control system

LED's, which light up in different colours according to the operating mode, are located on the left side of the display. The LED's for status sensor, network and Warning are characterized with symbols.

The meaning of the different coloured messages is explained in the table below.

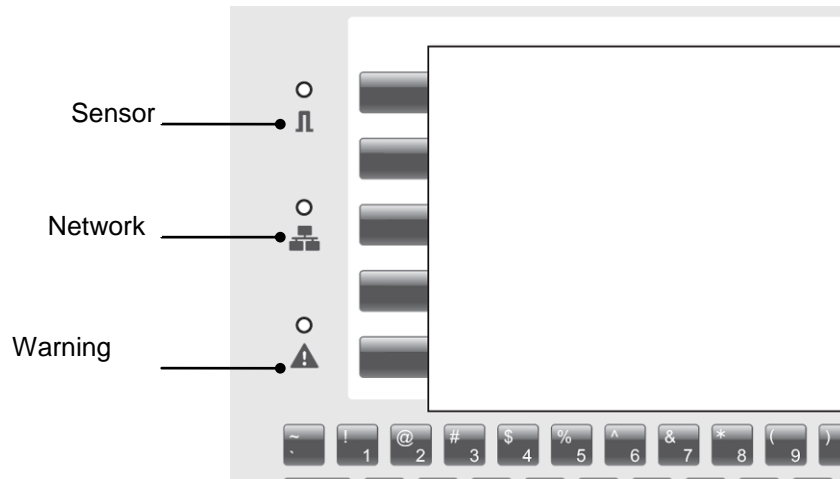





Fig. 18: Indicator lights

Symbol	Function	Description	Reason
	Sensor-LED	<p>● GREEN: Active</p> <p>● YELLOW: Start signal present</p> <p>● RED: Failure</p>	<p>Lights from start to print end</p> <p>No print text</p> <p>No encoder signal</p>
	Network-LED	<p>● GREEN: O.K.</p> <p>● YELLOW: Active</p> <p>● RED: Failure</p>	<p>Connected</p> <p>Data transfer</p>
	System-Status	<p>● GREEN: O.K.</p> <p>● YELLOW: Warning</p> <p>● RED: Failure</p>	<p>All heads OK</p> <p>One or more Print heads warning</p> <p>One or more Print heads failure</p>

Status lights in the main menu

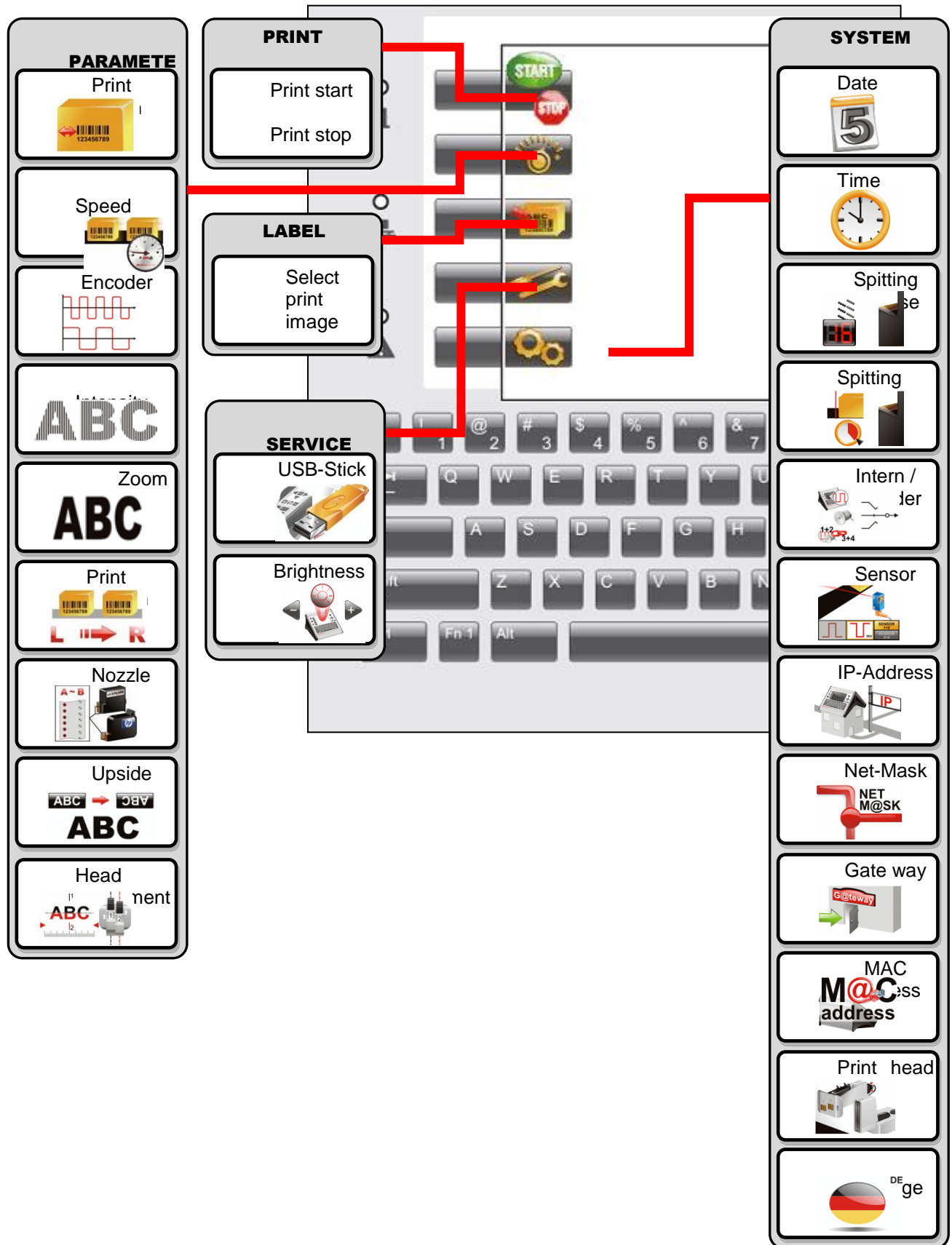
In the main menu are three status lights for each print head modules mapped, which inform about the status of print start, the print head module and ink level of cartridge.



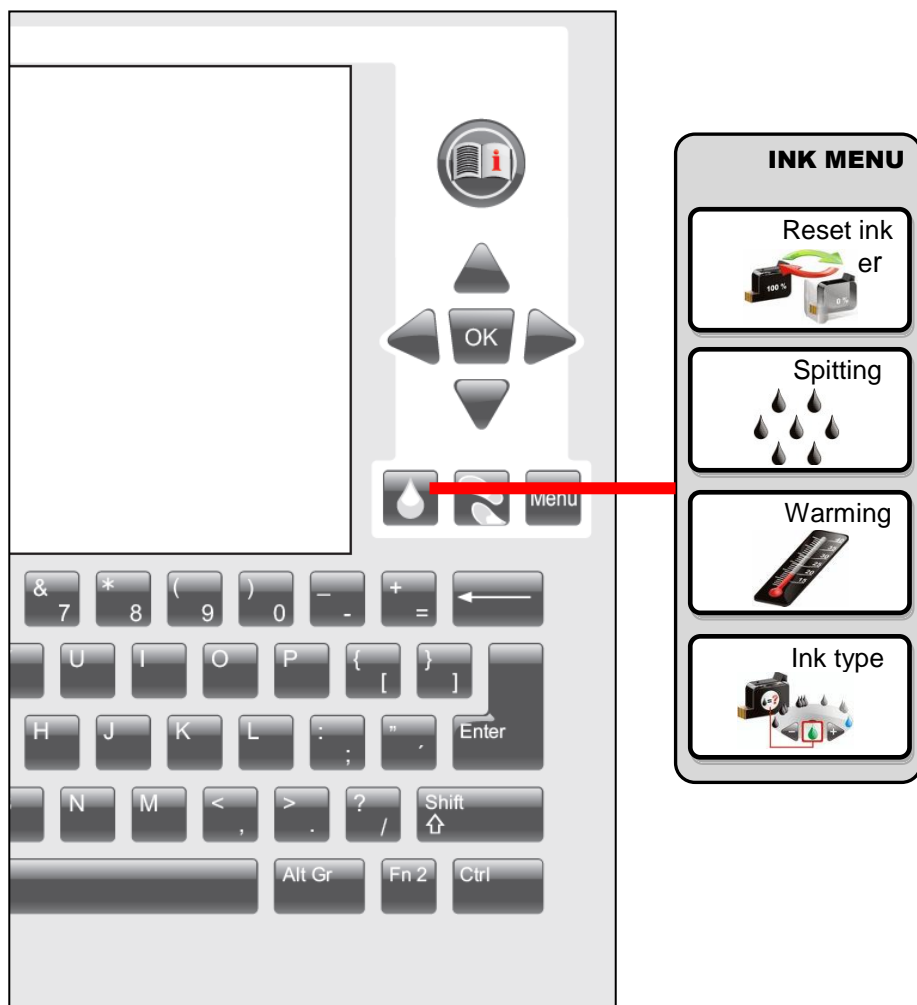
Fig. 19: Indicator lights in the main menu





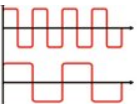





Status panel	Display / Description	Reason
Upper status panel Sensor / Encoder	<div>No display</div> <div>Busy</div> <div>Sensor</div> <div>Encoder</div>	<div>Displayed when OK, print is not active.</div> <div>Active print</div> <div>With print stop and piled sensor.</div> <div>No shaft encoder connected, but activated in the system.</div>
Middle status panel Print head module	<div>OK</div> <div>Pause</div> <div>Text?</div> <div>Kart.?</div>	<div>Ready for print</div> <div>Print stop / pause</div> <div>Not text assigned</div> <div>No cartridge, cartridge empty, cartridge defect</div>
lower status panel Cartridge	<div>100%</div> <div>Warning</div> <div>0%</div>	<div>Ink level 100% to 6%</div> <div>Ink level below 5%</div> <div>Cartridge empty</div>

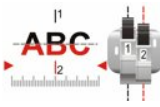








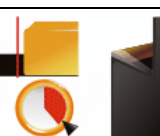
Menu structure

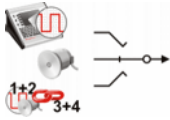
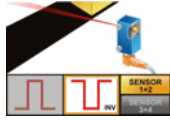













Depending on the print head type, certain menus look different or are unavailable.



Display	Menu	Description
	Print	In the main menu a print start or print stop can be set by pressing the first function key. Print images can select before print start and added with variable data.
	Parameter	Print start delay, print speed, divider encoder, intensity, zoom, print direction, selection of nozzle row, upside down and Head adjustment can be set in this menu.
	Print delay	The print start delay can be set in this menu, i.e. by how much is printing delayed in millimetres after the product is detected by the light barrier. → Chapter Print start delay , page 63
	Speed	If the product speed is extremely uniform, the use of the rotary encoder may be dispensed with. For this purpose, the speed can be set in the Speed submenu by setting Encoder Intern in the system menu. NOTE: This menu is only available if Encoder Intern is set in the menu. → Chapter To set constant print speed , page 65
	Encoder	When the rotary encoder is connected the pulse per inch can be set to synchronise the printing speed. NOTE: This menu is only available if Encoder Intern is set in the menu. → Chapter To set the encoder resolution , page 67
	Intensity	The contrast of the print image can be set in the print intensity menu. A higher intensity gives greater blackening and longer ink drying time.
	Zoom	In the print width menu point, the number of pixels is increased or reduced. The print image is therefore made wider or narrower. → Chapter To set the Zoom , page 69
	Direction	The parameter print direction indicates the direction of movement of the product on the conveyor belt viewed from the controller in the print direction. → Chapter Print direction , page 70
	Nozzle	Each ink cartridge has two rows of nozzles (A and B), for which different settings can be made in the Nozzle Menu. NOTE: Only available for HP and Lexmark print heads → Chapter Nozzle row , page 70
	Upside down	The setting Upside Down causes the print image to be printed upside down. → Chapter Upside down , page 72

Display	Menu	Description
	Head adjustment	The setting head adjustment compensated mechanical imprecisions by multi head applications. → Chapter Head adjustment , page 73
	Label	Print images can be create, change, delete and select for print. → Chapter Print image , page 74 Display/Setting for selected print head module
	Service	The settings save data, load data into the memory of the X2JET plus and adjust the display brightness can be made in the service menu.
	USB-Stick	Load data from the USB stick to the memory of the X2JETplus or save data from the X2JETplus to the USB stick in the USB-stick menu. NOTE: This menu is only busy with an connected USB stick.
	Brightness	The display brightness can be set in this menu. → Chapter Brightness , page 105
	System	System settings can be made in this menu.
	Date	The date is displayed in this menu and can be set here. → Chapter Date , page 106
	Time	The time is displayed in this menu and can be set here. → Chapter Time , page 106
	Spitting Impulse	In the menu Spitting impulses the setting whether and how many spit impulses should been done when the device is switched on, or will be performed before applying the print. → Chapter Spitting Impulse , page 107
	Spitting time	In this sub-menu can be set in which time between two prints, a spitting is performed → Chapter Spitting time , page 108

Display	Menu	Description
	Internal Pulse / Encoder	The print speed must correspond to the conveyor belt speed. To ensure this it can be set in the Internal Pulse print head submenu how this is predetermined. Intern means that the predetermined speed of the conveyor belt is kept constant, and Extern means that the exact transport speed is transmitted to the controller by the optionally available encoder. → Chapter Internal Pulse print head, page 109
	Sensor	In this sub menu can be set which sensor input is used. → Chapter Select sensor , page 111
	IP-Address	The IP address is indicated in this menu. → Chapter IP address , page 112
	Net-Mask	Indication of net mask. → Chapter Net-Mask , page 113
	Gate-Way	Indication of Gateway address. → Chapter Gate-Way , page 114
	MAC Adresse	Indication of MAC address. → Chapter MAC-address , page 114
	Print head configuration	In sub-menu head configuration , the operator can control the settings in the device which has to adapt the structural configuration of the print heads. → Chapter Print head configuration , page 115
	DE Language	In this menu the language can be set as desired.
	Ink menu	Reset ink counter, purge, warming and the ink type can be set in this menu Depending on the print head type there are different submenus.
	Reset ink counter	This function causes the ink level to be reset after inserting a new cartridge. (Print head specific). NOTE: Only available for HP print heads. → Chapter Reset ink counter , page 118

Display	Menu	Description
	Purge	During the purging process ink is ejected from all the nozzle ducts. WARNING: Protect the environment from pollution! → Chapter To rinse the nozzles manually , page 119
	Warming	Indication of the temperatures and calibration of the warming setting. NOTE: The calibration isn't possible for LX print heads, the correction will be done by the system automatically. This menu point displays in this case the temperature only. This menu point isn't available for MX print heads. → Chapter Warming , page 119
	Ink type	In this menu can be set up the used ink type. This effects an automatically set up of all relevant parameters. Depending on the application it's necessary to fit the parameters. The parameter is variable adjustable for print head 1+2 and 3+4 by pairs. This setting isn't possible for LX print heads, the ink type will be automatically detected by the system. → Chapter Set ink type , page 122


Main menu

In the main menu, the operator can check the status of print heads. The main menu is shown in figure **Fehler! Verweisquelle konnte nicht gefunden werden.**. The print heads can be selected separately by the navigation keys ▲ ▼. The current print head selection is shown with a changing colored background (see figure below).

The current loaded print image is shown as preview in the right part of the main menu. If the print image is longer than the shown preview, the operator can see the whole print image by scrolling with the navigation keys ◀ ▶. The height of the print image is shown in relation to the possible print height of the print head. I.e. if a print image with 100 mm height is loaded in the memory of a MX 50 print head (max. print height 50 mm), only the upper half of the print image will be printed and shown in the preview accordingly. A part of the print image preview is shown grey with the use of MX-50, MX-150, MX-250 and MX-350 print heads (see figure **Fehler! Verweisquelle konnte nicht gefunden werden.**).



Fig. 20: Main menu with print image preview MX-50

By pressing the OK button  the text info is shown instead of the print image preview, which contains following information: name of the print head, number of prints of the current loaded print image and number of possible prints of the current loaded print image by a completely filled cartridge. The display will be blanked after five seconds automatically or the operator has the opportunity to pre-change in the standard view by pressing the OK button again.

In the figure (**Fehler! Verweisquelle konnte nicht gefunden werden.**) below the upper print head module is selected. If the operator made changes in the submenus, the changes will only take place to the selected print heads.



Fig. 21: Main menu with status display

The **Fehler! Verweisquelle konnte nicht gefunden werden.** technology enables a combination of different print technologies, which must be configured from the user with the initial operation. (→ **Chapter Configuration of the print technology of the print technology**, page 43). Furthermore the user has, like described in → **Chapter Print head configuration**, page 115 the option to configure the connected print head modules. The figure (**Fehler! Verweisquelle konnte nicht gefunden werden.**) above shows the configuration of a Markoprint X2JET plus as LX system, that is set as two Single print heads in the print head configuration.

The figure **Fehler! Verweisquelle konnte nicht gefunden werden.** shows also the configuration of a **Fehler! Verweisquelle konnte nicht gefunden werden.** as LX system, that is set as Twin print head in the print head configuration.



Fig. 22: Main menu with status display

The selection of the configuration should match the architectural design of the print heads, otherwise it may lead to an incorrect representation of the printed images. If a change relating to the desired product labelling occurs and an adjustment of the print heads or print technology is necessary, so please contact your local distributor.

Password protection:

If menus should be protected via password this is possible to activate via iDesign software. See iDesign manual.

The user name of the user which is working with password protection will be shown at the bottom left corner.

To deactivate a user press the info button or after 2 minutes of inactivity the user will be deactivated.





Print start

In the main menu a print start can be set by pressing the top function key.
For a print start activation can be differ between following alternatives:

- You will start a print image without counter or variable data.
- You will continue the print of the last print image with a counter or variable data without input of new data.
- You will start to print a new selected print image with a counter and variable data with input of new data.


Instruction

Please activate a print start for a print image without variable fields etc. as follows:

Step	Procedure
1	Press once shortly the function key [START] left of the display.
	
Fig. 0-1: Function key left of the display	
2	Select the desired print image by pressing the navigation keys  ,  , or by entering the print image name by keypad.
3	Confirm the selected print image by pressing the OK-button  .






Instruction

Please activate a print start for the last print image without the input of new data as follows:

Step	Procedure
1	Press once shortly the function key [START] left of the display.
	
Fig. 0-2: Function key left of the display	
2	The assignment of keys changes between the individual steps. Please follow the display! Press the function key [START] shortly again left of the display.

Instruction

Please activate a print start for print image with the input of new data as follows:


Step	Procedure
1	Press once shortly the function key [START] left of the display.
	
	Fig. 0-3: : Function key left of the display
2	Select the desired print image by pressing the navigation keys   , or by entering the print image name by keypad.
3	Confirm the selected print image by pressing the OK-button  .
4	Enter the desired start value by the keypad and confirm it with the OK-button  . If there are several print fields in the print image, the start values must be entered in the same procedure.

Print stop

In the main menu a print stop can be set by pressing the top function key.

Instruction

Please activate a print stop / print pause as follows:

Step	Procedure
1	Press once shortly the function key left of the display.
	
	Fig. 0-4: Function key left of the display

Print start delay

The print start delay can be set in this menu, i.e. by how much is printing delayed in millimeters after the product is detected by the light barrier.
The delay can be selected between 0 and 999 millimetres.

About iDesign the operator can adjust the left or right edge of the print image as a reference point for print position. The parameter can be set under button **"System Settings"** → tab **"Advanced Settings"** submenu → **"Extra configuration"** menu → **"Delay reverse print"**. By default, the right edge is taken as reference.

By this setting, potential problems are solved in reverse print. The left edge of a short print image would be, under the mentioned conditions in Example 2, at another location on the product, than the left edge of a longer print image, if no adjustment of the printing position would be made. Example 3 shows, that no adjustment of the print position is necessary, to print different long print images at the same position.

Example 1:

Product direction from right to the left and the left edge of print image as reference point.

← Delay → **Text12345**

← Delay → **Text12**

Example 2:

Product direction from left to the right and the right edge of print image as reference point.

Text12345 ← Delay →

Text12 ← Delay →

Example 3:

Product direction from left sight to right sight and the left edge of print image as reference point (with calculation of the print start).

← Delay →

Text12345






← Delay →

Text12

Please note that the print start delay must be set up bigger than the text length. If the print start delay is set up to small the print layout would be print complete. For example: by a text length of 25 mm the setup of the delay between 0 and 25 mm has no effect.

Instruction

Please set up the print start delay in the control system as follows:

Step	Procedure
1	Press setting key  in main menu.
2	The sub menu Print position appears.
3	Set the desired value by pressing the navigation keys   , or press the OK-button  , enter the determined value by the keypad and confirm with the OK-button  .

To set constant print speed

The print speed of the print heads must match the conveyor belt speed; otherwise print images may be distorted.

There are 2 ways to match the print speed to the conveyor belt speed:

- Internal constant print speed
- External variable print speed via rotary encoder

The setting of internal / external speed can be set as described under → *Chapter Internal **Pulse** print head, page 109.*

If no rotary encoder is connected to the controller, the conveyor belt speed must be measured or estimated and the determined value entered as a parameter. A test image can then be used for fine-tuning the print speed.

The following parameters must be entered:

- **Print speed**
Print speed = Conveyor belt speed. The conveyor belt speed must remain constant!
- **Print intensity**
Print image contrast. If necessary, this parameter may have to be changed to optimise the print image to the product surface. Higher intensity means increased density and slower drying of the ink. Default value for HP and LX is 300dpi, 192dpi for MX.
- **Zoom**
This parameter enables an increase or decrease of the number of pixels. This renders the print image wider or narrower.
The printed image is widened or narrowed even if the DPI setting is changed. This can be prevented when the zoom is in the advanced settings set to "fixed zoom = yes". Then it is printing always 1:1, if setting on the image is 100%, regardless of the DPI setting. This setting should not be used with bar codes, because it can cause distortion. The default is "fixed zoom = No".
About the iDesign software the operator can adjust to the fixed zoom. The setting is the iDesign software under the button "System Settings" → tab "**Advanced Settings**" submenu → "**periphery**" menu item → "**fixed zoom**".

The maximum speed depends on the intensity:

At 600 dpi the print speed may be up to 30 m/min.

At 300 dpi the print speed may be up to 60 m/min.

At 200 dpi the print speed may be up to 90 m/min.

At 150 dpi the print speed may be up to 120 m/min.

A print speed 50% higher can be obtained with a rotary transducer.








This setting lies outside the specification and must be carefully tested!

A double speed can be reached with the High Speed function by the *Fehler! Verweisquelle konnte nicht gefunden werden.* **Pro** version. At a resolution up to 300x300dpi the print speed may up to 180 m/min.

Parameter	Min.	Max.	Unit
Print speed	1	400	m/min
Print intensity	50	900	dpi
Zoom	10	900	%

Instruction

Please set the print speed on the control system as follows:

Step	Procedure
1	Press setting key  in main menu.
2	The sub menu Print position appears.
3	Call up the submenu Speed by pressing navigation key  .
4	The sub menu Speed appears.
5	Set the desired conveyor speed value by pressing the navigation keys  or press the OK-button  , enter the determined value by the keypad and confirm with the OK-button  .
6	Call up the submenu Zoom by pressing navigation key  .
7	The sub menu Zoom appears.
8	Set the desired value by pressing the navigation keys  .

To set the encoder resolution

If a rotary encoder is connected to the controller, the print speed is automatically matched to the conveyor belt speed through the impulses of the rotary encoder. The following parameters must be entered:

- **Rotary encoder resolution**
the resolution is the number of pulses per inch (ppi).
- **Intensity**
the intensity in dpi (dots per inch).
- **Printing width**
The number of pixel can be increased or decreased using this parameter. The print image becomes narrower or wider.

Calculation example of rotary encoder resolution:

The standard rotary encoder has a friction wheel circumference of 200 mm and generates 5 000 impulses per revolution. If the friction wheel of the rotary encoder runs directly on the belt, the calculation is as follows:

1. Conversion to inches: $200 \text{ mm} / 25.4 \text{ mm} = 7.874 \text{ inches}$
2. Resolution of the rotary encoder: $5000 \text{ impulses} / 7.874 \text{ inches} = 635 \text{ impulses/inch} = \mathbf{635 \text{ dpi}}$
3. To get even finer settings, the pulse will be doubled internal.
4. If you set a divider of 4, you will get a resolution of 318 dpi (**$635 \times 2/4$**). This value must be entered for the intensity.

If a standard rotary encoder is mounted directly onto a shaft, the distance to be measured is the distance covered by a product on the conveyor belt during a single rotary encoder revolution (e.g. 300 mm).
















5. Conversion to inches: $300 \text{ mm} / 25.4 \text{ mm} = 11.81 \text{ inches}$
6. Resolution of the rotary encoder:
 $5000 \text{ impulses} / 11.81 \text{ inches} = 423 \text{ impulses/inch} \times 2 = \mathbf{846 \text{ dpi}}$
The result of divider 2 is **426 dpi**.

The calculated value must be then fine-tuned, using the test image. (Speedtest.001)

Parameter	Min.	Max.	Unit
Rotary encoder	50	5000	ppi
Print intensity	50	900	dpi
Zoom	10	900	%

Instruction

Please set up the variable print speed as follows:

Step	Procedure
1	Press system key  in main menu.
2	The sub menu Date appears.
3	Call up the submenu Int. Pulse/Encoder by pressing navigation key  .
4	The sub menu Int. Pulse/Encoder appears.
5	Set the value on Encoder by pressing Navigation keys   .
6	Change by pressing the menu button  or the Back button  in the main menu.
7	The main menu appears.
8	Press settings key  in main menu.
9	The sub menu Print position appears.
10	Call up the submenu Divider Encoder by pressing the navigation key  .
11	The sub menu Divider Encoder appears.
12	Set the desired value by pressing the navigation key   .
13	This setting is made automatically by using the rotary encoder of Weber Marking Systems GmbH. If another rotary encoder is used or the encoder runs directly on the spindle, the dpi value must be calculated and entered.
14	Call up the sub menu Intensity by pressing the navigation key  .
15	The sub menu Intensity appears.
16	Set the desired value by pressing the navigation keys   , or press the OK-button  , enter the determined value by the keypad and confirm with the OK-button  .

To set the Zoom

The zoom of the print image can be varied with the zoom value. At a zoom of 100%, the print image is printed 1:1 as displayed in the iDesign.

With this parameter a change in the size of the print image is achieved. If the parameter is reduced the print image becomes narrower by delaying individual pixel gaps. This compresses the print image and enables the ink consumption to be reduced.

By printing of barcodes you must look out for print optimal with 300 dpi and 100%. Other dpi values or an enlarging or narrowing can cause deformations.

By default, the image will be printed in different widths dependent on the adjusted intensity (dpi). The print width can be adjusted by the zoom.

The print image is in the width 1:1 with a resolution of 600 dpi.

With a resolution of 300 dpi, the print image is more than twice the width 1:2, caused of the halved intensity.






Change the zoom to 10% - 900% in the menu. The value can be changed in 1% steps.

Pay attention, that a widening or narrowing of barcode prints have the right measure. **Follow the chart!**

Barcode width		Allowed Zoom factors with fixed zoom.									
1					100	200	300	400	500	600	...
2				50	100	150	200	250	300	350	...
3			33	66	100	133	166	200	233	266	...
4	25	50	75	100	125	150	175	200	225	...	
5	40	60	80	100	120	140	160	180	200	...	
6	33	50	66	83	100	116	133	150	166	183	...

Instruction

Please set up the zoom as follows:




Step	Procedure
1	Press system key  in main menu.
2	Call up the submenu Zoom by pressing navigation key.
3	The sub menu Zoom appears.
4	Set the desired value by pressing the navigation keys   , or press the OK-button  , enter the determined value by the keypad and confirm with the OK-button  .

Print direction

The parameter print direction indicates the direction of movement of the product on the conveyor belt viewed from the controller in the print direction. The setting options are from left to right or from right to left.

Instruction

Please set up the print direction as follows:

Step	Procedure
1	Press setting key  in main menu.
2	Call up the submenu Print direction by pressing the navigation keys  .
3	The sub menu Print direction appears.
4	Set the desired value by pressing the navigation keys  .

Nozzle row

The setting of the nozzle rows is only possible for using HP or Lexmark print heads.

Each HP- or LX- ink cartridge has two nozzle rows (A and B). One nozzle row has 150 nozzles.

The nozzles in row A print the uneven numbers 1, 3, 5, 7. The nozzles in nozzle row B print the even numbers 2, 4, 6, 8.

When printing with one nozzle row, A or B, alternately with each second vertical nozzle is printed at 300dpi. In this mode, the nozzles are uniformly stressed and the speed setting is not as critical as with A + B.

If, for instance, using A ~ B, every second print image is of poor quality, nozzle row A; or nozzle row B can be activated. To print with the good nozzle row only.

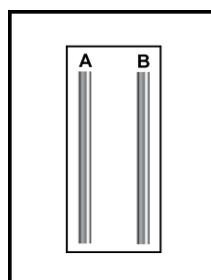


Fig. 23: Nozzle plate ink cartridge





If A + B is set, the print simultaneously with all nozzles in both nozzle rows is printed. The speed must be synchronized exactly, so that the ink drops lay exactly one upon the other. Otherwise a shadow is on the print image.

Nozzle row	Description
A ~ B	Printing with both nozzle rows, alternating. The first print image is printed with nozzle row A and the second text with nozzle row B. Vertical resolution: 300 dpi
A + B	Printing with both nozzle rows together. Vertical resolution: 600 dpi
A	Printing only with nozzle row A. Vertical resolution: 300 dpi
B	Printing only with nozzle row B. Vertical resolution: 300 dpi

With setting A + B, the print speed must be accurately set, to produce a good print result. Otherwise the print image is blurred.

Instruction

Please select a nozzle row as follows:




Step	Procedure
1	Press setting key  in main menu.
2	The sub menu Print position appears.
3	Call up the submenu Nozzle row by pressing navigation key  .
4	The sub menu Nozzle row appears.
5	Set the desired value by pressing the navigation keys   .

In the Hi-Speed mode (only Markoprint X4JET plus Pro version) the setting of the nozzle rows A~B cannot vary!

Upside down

Instruction

Please set up the upside down print as follows:

Step	Procedure
1	Press setting key  in main menu.
2	The sub menu Print position appears.
3	Call up the submenu Upside down by pressing navigation key  .
4	The sub menu Upside down appears.
5	Set the desired value by pressing the navigation keys  .

Head adjustment

A mechanical imprecision between the print head modules / cartridges by multi-head systems can be compensated in this menu.

It is maximal $\pm 1 - 2$ mm, which must be compensated.

A value from -50 to +50 can be entered to adjust the respective print head rightward or leftward.

The respective print head goes rightward with a + value and leftward with a - value.

Requirements:

The print head must be installed horizontally. There may not be an overlap or gap between the cartridges. It's the best to check this with a layout, which goes over all print heads.

The print speed must set up optimal. The nozzles A+B must be correct in one row by prints with two nozzle rows. This can be checked with a loupe. There may not be a "shadow print".

Divider and intensity must be set up optimal by printing. The nozzles A+B must be correct in one row by prints with two nozzle rows. This can be checked with a loupe. There may not be a "shadow print".







Procedure

Please proceed as follows to set up a head correction:

Step	Procedure
1	Set all values for the head adjustment to „0“.
2	I.e. by a quad head all values for head 1 will set to „0“. Then a test print will made, which goes over all print heads.
3	If there is a horizontally stowing between the first and the second print head module, it can be compensated with the head adjustment of print head 2.
4	Proceed the same way with print head 3 and 4.
5	If there is a stowing after changing the cartridge, correct only the stowing of this cartridge.

Instruction

Please set the head adjustment as follows:

Step	Procedure
1	Press setting key  in main menu.
2	The sub menu Print position appears.
3	Call up the submenu Head adjustment by pressing navigation key  .
4	The sub menu Head adjustment appears.
5	Set the desired value by pressing the navigation keys   , or press the OK-button  , enter the determined value by the keypad and confirm with the OK-button  .

Print image

Print images can be created, changed, deleted or call up to print in the menu print image creation.

Print images are combination of texts, graphics, barcodes and function elements (i.e. counter and variable).

Quick guide print image creation

Here you find the quick guide description of an easy print image creation and to call this to print.

A print image with the text „Example“ will be created and called for print.


Instruction

So you create a print image with the text „Example“ and call this to print:

Step	Procedure
1	Press the [Print image]-key  in the main menu.
2	The menu Print image appears.



Fig. 24: Menu print image

3	Press the [New print image]-key  .
4	The menu Print image creation appears.

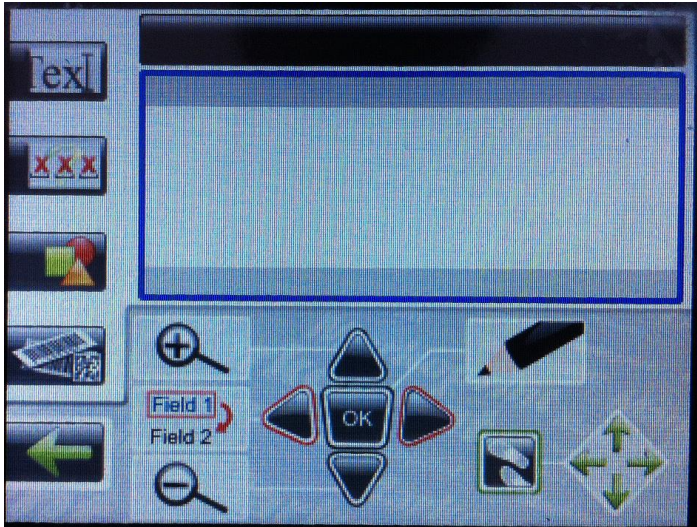

Step	Procedure
	

Fig. 25: Menu Print image creation

5	Press the [Add text]-key 
---	--

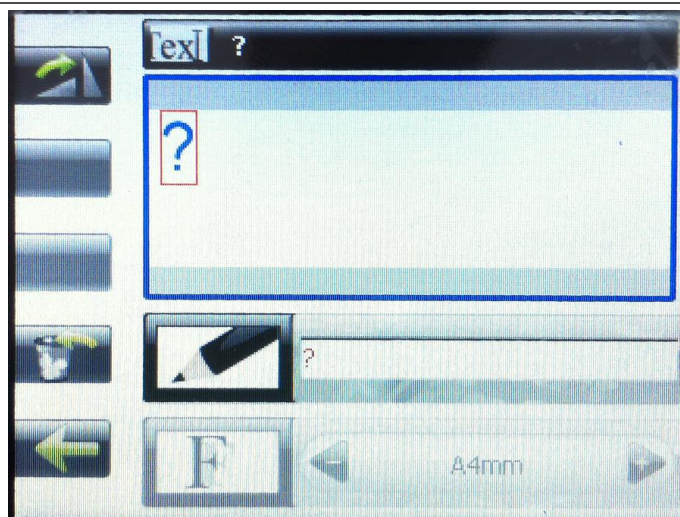


Fig. 26: New text field

6	Enter the text „Example“, or any text via the keyboard. The keyboard works like a standard PC-keyboard.
---	--

Step	Procedure
	

Fig. 27: Text field „Example“




7	Press once the navigation-key  to change the font size.
8	Press the navigation-keys  to set up the desired font size. In the example Fig. Fehler! Verweisquelle konnte nicht gefunden werden. was „A8mmB“ selected. This means font Arial with a height of 8mm in Bold design.




Fig. 28: Print image creation font size

9	Press twice the [Back]-key  to call up the memory name.
10	Insert a memory name via keyboard. In the example in Fig.7-20 the print image was saved under the name „Example“.

Step	Procedure
	

Fig. 29: Print image creation memory name

11	Press the [Save]-key  for saving.
12	Press the [Start]-key to call up for print.
13	The print image is shown in the print image preview in the main menu.

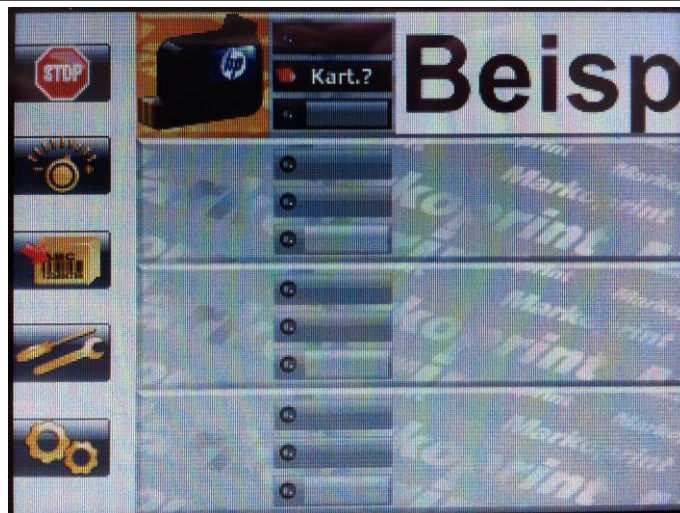








Fig. 30: Print image preview in the main menu

14	If the print image is bigger than the representation of the standard-preview, press the navigation-keys  to view the whole print image.
----	--

Loading print image

Instruction







Please load a print image for print as follows:

Step	Procedure
1	Press Print image key  in the main menu.
2	The sub menu Print image appears.
3	Select the print image by pressing the navigation keys   , or enter the name of the desired print image by the keypad.
4	If the print image is longer as the display preview, it is possible to the whole print image by pressing the navigation keys   .
5	Confirm the selected print image by pressing the [START]-button.
6	The display changes to the main menu and the selected print image is shown in the preview of the main menu and is print by activation of the sensor.

Change print image

Instruction

Please change an available print image as follows:

Step	Procedure
1	Press the Print image-key  in the main menu.
2	The submenu Print image appears.
3	Make a print image selection by pressing the navigation-keys   or insert the name of the desired print image via keyboard.
4	If the print image is bigger than the representation of the standard-preview, press the navigation-keys   to view the whole print image.
5	Press the key  to change the selected print image .

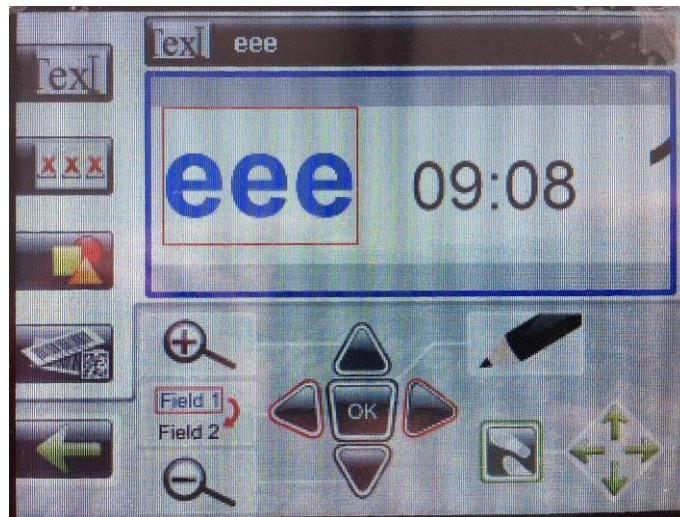







Fig. 31: Menu Change print image

6	Select the print field, which should be changed by pressing the navigation-keys   . The selected print field is marked with a red frame and a blue display of the field content.
7	Press the [OK]-key  to confirm.
8	There are different settings depending on the selected print field. The setting possibilities are shown below the print image and can leaf through the navigation-keys   .


Step	Procedure
	

Fig. 32: Menu Change print image





- 9 Switch to the input field and make changes by pressing the navigation keys .
- The prompt is signaled by the appearance of the cursor and the blue display of the text in the input field.



Fig. 33: Menu Change print image

- 10 Select the relevant input position in the text by pressing the navigation-keys  and insert the desired change by keyboard.
- 11 Press the [OK]-key  to confirm.
- 12 Press the [Back]-key  to leave the input field.
- 13 Now you can edit, like described in step 9, further fields in the print image.
- 14 Positioning the inserted print fields in the print image, like described in → Chapter Position the print field in the print image, page 84.

Step	Procedure
15	Afterward the changes are completed save the print image, like described in → <i>Chapter</i> Save print image, <i>page</i> 86 .

Create a new print image

A print image comprises of different elements and fields:

- Text
- Logo
- Barcode
- Date
- Time
- Variable
- Counter
- Action fields


Instruction

Please create a new print image as follows:

Step	Procedure
1	Press the [Print image]-key  in the main menu.
2	The menu Print image appears.



Fig. 34: Menu Print image

3	Press the [New print image]-key  .
4	The menu Print image creation appears.

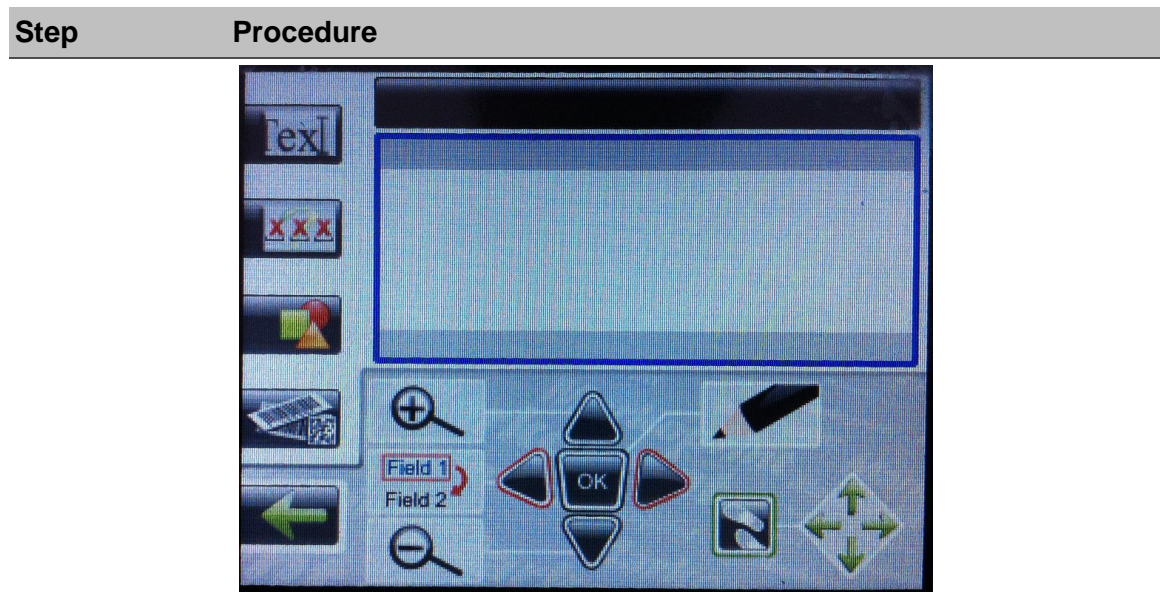


Fig. 35: Menu Print image creation

5	<p>Add a new field or several new fields and make the field specific settings as desired.</p> <p>Following fields can insert in the print image:</p> <ul style="list-style-type: none"> • Text • Logo • Barcode • Date • Time • Variable • Counter <p>Please note the following chapter.</p>
6	<p>Positioning the inserted print fields in the print image, like described in → <i>Chapter</i> Position the print field in the print image, <i>page 84</i>.</p>
7	<p>Afterward the print image creation is completed save the print image, like described in → <i>Chapter</i> Save print image, <i>page 86</i>.</p>





Position the print field in the print image

A print field can positioned as follows:

- Free positioning of a print field in the print image, i.e. move pixel by pixel.
- Positioning the print field by align with the boundary area of the print image and the boundary area of other print fields.





Instruction

Positioning the print field in the print image pixel by pixel as follows:

Step	Procedure
1	Select first the print field, which should positioned, by the navigation-keys  .
2	Press the [Step]-key  .
3	Now the print field can free positioned by the navigation-keys  .
4	Press the [OK]-key  , or the [Back]-key to close the process.
5	After the creation process is closed, save the print image, like described in → <i>Chapter Save print image, page 86</i> .

Instruction

Please position a print field with the help of the boundary area of the print image or other print fields:




Step	Procedure
1	Select first the print field, which should positioned, by the navigation-keys  .
2	Press the [Step]-key  twice.
3	The print field can now align with the navigation-keys  on the boundary areas of the print image and the boundary areas of other print fields in the print image.
4	Press the [OK]-key  , or the [Back]-key to close the process.
5	After the creation process is closed, save the print image, like described in → <i>Chapter Save print image, page 86</i> .

Turn a print field in the print image

Not all fields can be turned, i.e. 2D-codes can't be turned.

Instruction


Please turn a print field in the print image as follows:

Step	Procedure
1	Select first the print field, which should be positioned, by the navigation-keys  .
2	Press the [Turn]-key  .
3	The print field will be turned through 90° clockwise with each keypress.
4	Press the [OK]-key  , or the [Back]-key to close the process.
5	After the creation process is closed, save the print image, like described in → <i>Chapter Save print image, page 86</i> .

Save print image

Instruction

Please save a new or changed print image as follows:

Step	Procedure
1	After you have created/changed the print image as desired, press the [Back]-key  to leave the menu.
2	It appears a prompt for input of a memory name.

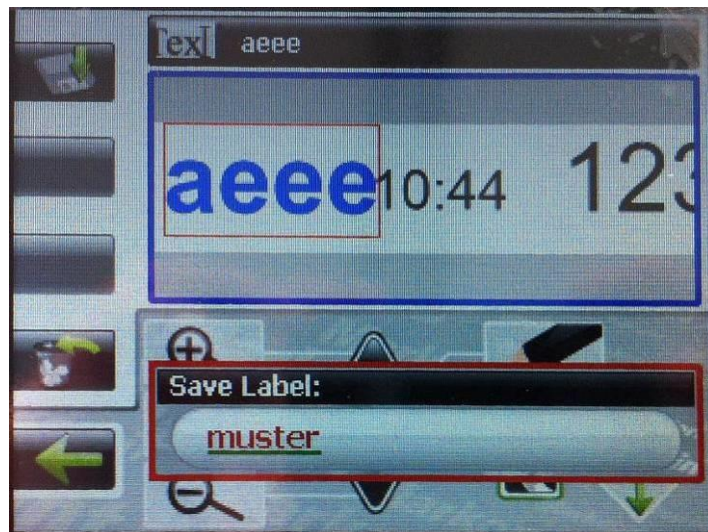


Fig. 36: Menu Save print image

- | | |
|---|--|
| 3 | <p>You have following possibilities:</p> <ul style="list-style-type: none"> • Save the print image under the same name (if a print image was changed or a new created should replace the existing one) • Save the print image under a new name. • Abolish the changes. • Return to the print image change. |
|---|--|

To save the print image under a new name, insert a new name by the keyboard and press the [Save]-key.

To save the print image under the same name, press the [Save]-key. The print image data of the changed print image will be overwrite!

To abolish the changes, press the [Delete]-key and confirm it by pressing the [Delete]-key again. The assignment of keys change during the delete process – Follow the display.

To return to the print image change, press the [Back]-key.

Insert a text field in the print image

Static texts will be inserting in the print image as text fields.

Requirements

- You are in the menu print image creation. See → *Chapter Create new print image, page 82*

Instruction

Please insert a new text field in the print image as follows:


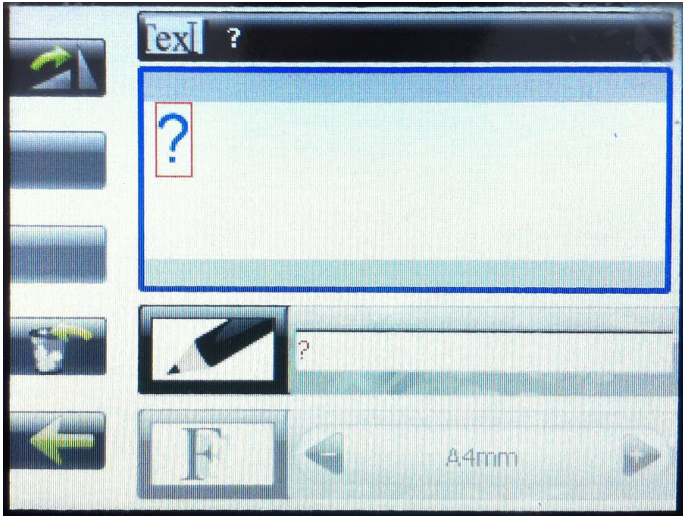



Step	Procedure
1	Press the key [Add text] 
	
2	Insert the desired text via the keyboard. The keyboard works like a standard PC-keyboard. If a text field should be changed, note Chapter Change print image, page 79
3	Insert the text „Example“, or any text via the keyboard and confirm it by pressing the [OK]-key  .

Fig. 37: New text field



Fig. 38: Text field „Example“

- | | |
|---|--|
| 4 | Press once the navigation-key  to change the font size. |
| 5 | Press the navigation-keys  to set up the desired font size.
In the example Fig. Fehler! Verweisquelle konnte nicht gefunden werden. was „A8mm“ selected. This means font Arial with a height of 8mm in Bold design. |
| 6 | Position the inserted print field in the print image, like described in → <i>Chapter</i>
Position the print field in the print image, <i>page 84</i> . |
| 7 | After the creation process is closed, save the print image, like described in
→ <i>Chapter</i> Save print image, <i>page 86</i> . |

Ask your local distributor for further fonts.

Insert a date field in the print image

A date is embedded in the print image as a date field.

Date fields are not static, but dynamic fields; their display format is defined by variables. The current date is retrieved from the system clock. By printing the current date will be also obtained from the system clock.

Any combination of variables can be used to configure the display format. Punctuation marks (e.g. full stop, colon, hyphen, space etc.) can be inserted between the individual codings.

ab.cd.gh are preset.



Forward dating, for instance to print a best before date (BBD), can be defined by the offset parameters year, month and day.

Requirements

- You are in the menu print image creation. See → *Chapter Create a new print image*, page 82

Instruction

Please insert a new date field in the print image as follows:

Step	Procedure
1	Press the [Add variable field]-key  .
2	Press the [Add date field]-key  .
3	The date field appears in the print image.

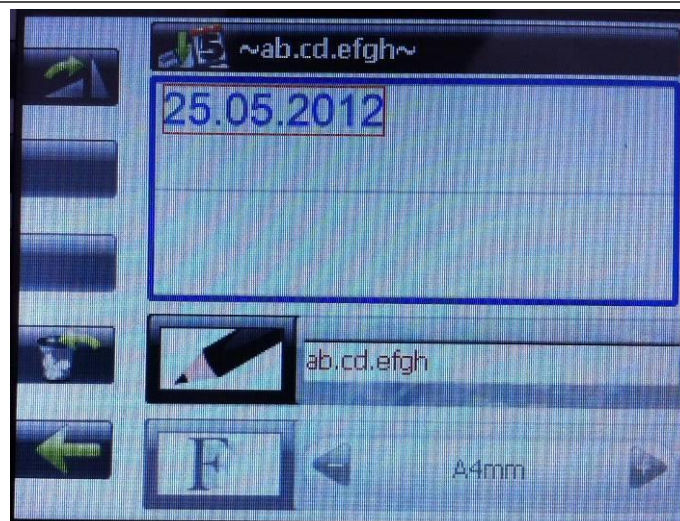




















Fig. 39: Menu print image creation date field

4	Change the input mask of the date field by pressing once the right navigation-key  .
5	Adapt the image of the date as desired. The introduction of the chapter will

Step	Procedure
	help.
6	Press the [OK]-key  to confirm.
7	Press the navigation-key  once to change to the selection field for the font size.
8	Press the navigation-keys   to set the desired font size.
9	Change to the selection field for date offset by the day by pressing the navigation-key  once.
10	Set the date offset by day as desired by pressing the navigation-keys   or by direct input via the keyboard. The date offset by day can set between 0 and +9999 days.
11	If the date offset was inserting by keyboard, press the [OK]-key  to confirm.
12	Change to the date offset by month by pressing the navigation-key  .
13	Set the date offset by month as desired by pressing the navigation-keys   or by direct input via the keyboard. The date offset by month can set between 0 and +99 months.
14	If the date offset was inserting by keyboard, press the [OK]-key  to confirm.
15	Change to the date offset by year by pressing the navigation-key  .
16	Set the date offset by year as desired by pressing the navigation-keys   or by direct input via the keyboard. The date offset by year can set between 0 and +99 years.
17	If the date offset was inserting by keyboard, press the [OK]-key  to confirm.
18	Change to the display field of the field number by pressing the navigation-key  once. This is needed for action field links. The field number will be generate automatically and can't change with the creation of date fields.
19	Position the inserted print field in the print image, like described in → <i>Chapter</i> Position the print field in the print image, <i>page 84</i> .
20	After the creation process is closed, save the print image, like described in → <i>Chapter</i> Save print image, <i>page 86</i> .

Date variables

Acceptation of the specific variable letters:

Variable	Meaning
a	Day, tens
b	Day, units
c	Month, tens
d	Month, ones
e	Year, thousands
f	Year, hundreds
g	Year, tens
h	Year, ones
i	Hour, tens
j	Hour, ones
k	Minute, tens
l	Minute, ones
m	Second, tens
n	Second, ones
ooo	Month, as string
ppp	Day of the year
Q	Weekday
rr	Calendar week
s	Hour as character (0=A, 1=B, ..., 23=Z)
t	Shift code (max. 4 digits)
u	Day of the year, hundreds
v	Day of the year, tens
w	Day of the year, ones
A	Day, ones (zero suppression)
B	Day as character (1-9=A, 10-19=B, 20-29=C, ...)
C	Month, tens (zero suppression)
D	Month as character (1=A, 2=B, ..., 12=M)
G	Year, tens (zero suppression)
H	Year, units as character (0=C, 1=M, 2=E, 3=A, 4=D, 5=J, 6=O, 7=H, 8=N, 9=S)

I	Hour, tens (zero suppression)
K	Minute, tens (zero suppression)
L	Minutes, tens as character (0=A, 1=B, ..., 5=F)
M	Second, tens (zero suppression)
Q	Weekday as character (1=A, 2=B, ..., 7=G)

Insert a time field in the print image

The time is embedded in the print image as a time field.

Time fields are not static, but dynamic fields; their display format is defined by variables. The current time is retrieved from the system clock. By printing the current time will be also obtained from the system clock.

Any combination of variables can be used to configure the display format. Punctuation marks (e.g. full stop, colon, hyphen, space etc.) can be inserted between the individual codings.

ij:kl:mn are preset.

Variable	Description	Display
ij:kl:mn	Time	11:20:35

Variable	Description
i	Hour, tens
j	Hour, ones
k	Minute, tens
l	Minute, ones
m	Second, tens
n	Second, ones



You can find the whole list of all date/time formats in the appendix. → Chapter Date variables, page 91
Date and time formats can be combined.

Requirements

- You are in the menu print image creation. See → *Chapter Create a new print image, page 82*

Instruction

Please insert a new time field in the print image as follows:

Step	Procedure
1	Press the [Add variable field]-key  .
2	Press the [Add time field]-key  .
3	The time field appears in the print image.

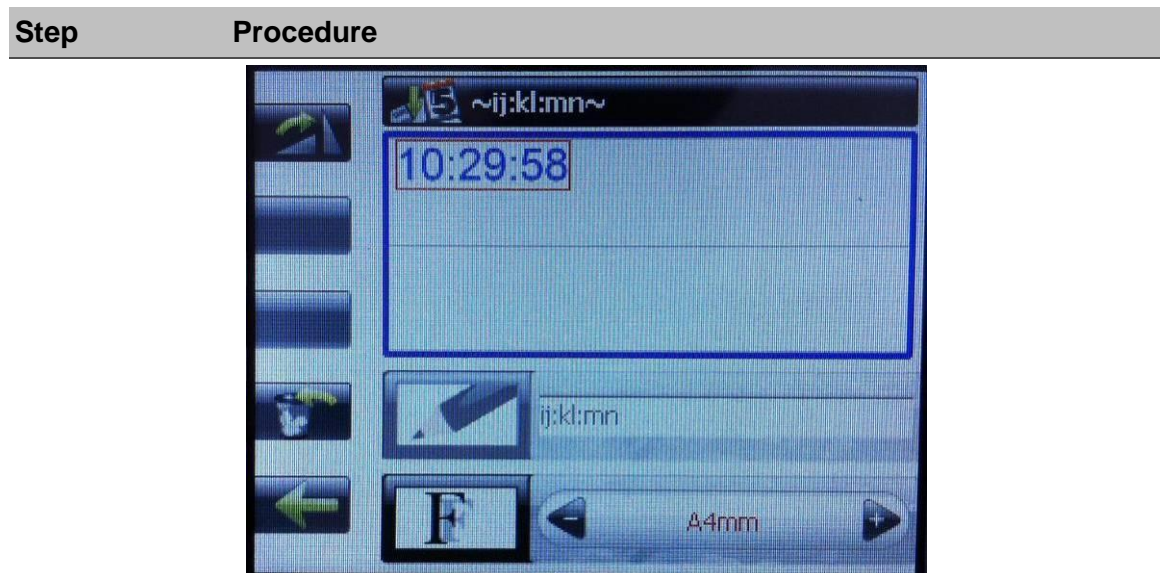








Fig. 40: Menu Print image creation time field

4	Change the input mask of the time field by pressing once the right navigation-key  .
5	Adapt the image of the time as desired. The introduction of the chapter will help.
6	Press the [OK]-key  to confirm.
7	Press the navigation-key  once to change to the selection field for the font size.
8	Press the navigation-keys  to set the desired font size.
9	By pressing the navigation-key  , the menu runs through some settings, which are necessary by a combination of date- and time field. See → <i>Chapter Insert a date field in the print image, page 89</i>
10	Press the navigation-key  several times to see a field number at the end of the input-menu. This is needed for action field links. The field number will be generate automatically and can't change with the creation of time fields.
11	Position the inserted print field in the print image, like described in → <i>Chapter Position the print field in the print image, page 84.</i>
12	After the creation process is closed, save the print image, like described in → <i>Chapter Save print image, page 86.</i>

Insert a variable field in the print image

Variables are inserted in the print image by means of variable fields.

Variable fields are used if a print image contains data (e.g. batch numbers) that change frequently. This can be automated, shortly before the print image is released for printing.

The operator can insert a new variable value in the variable field before a print image is called or the old text retained.



It is possible to enter several variable fields in a text.

Requirements

- You are in the menu print image creation. See → *Chapter Create a new print image, page 82*

Instruction

Please insert a variable field in the print image as follows:

Step	Procedure
1	Press the [Add variable field]-key  .
2	Press the [Add variable field]-key  .
3	The variable field appears in the print image.

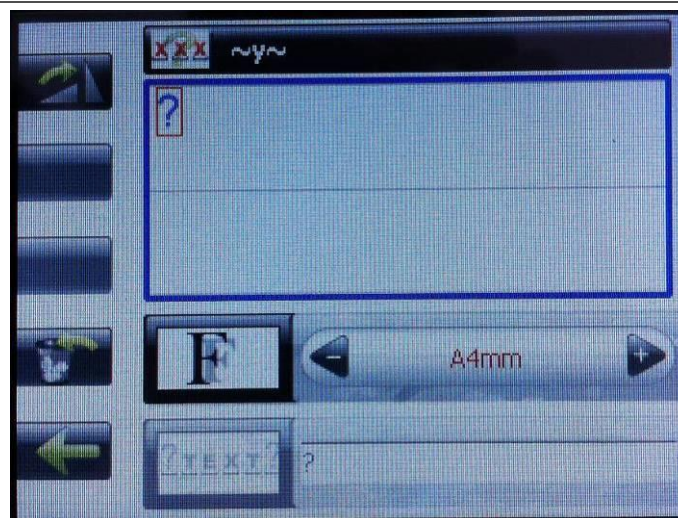







Fig. 41: Menu Print image creation variable field

4	Press the navigation-keys   to set the desired font size.
5	Change to the input field for the variable specification by pressing the navigation-key  once.
6	Insert the variable specification as desired in the input field. Please note the description, which follow this instruction!
7	Change to the input field for the nomination of the variable field by pressing the navigation-key  . The nomination of the variable field appears in the prompt by print start of the print image.

Step	Procedure
	The nomination makes sense if several variable fields are contained in the print image. This can be better vary from the prompt after print start.
8	Name the variable field as desired, i.e. with batch number.
9	Change to the display field of the field numbers by pressing the navigation-key  once. This is needed for action field links. The field number will be generate automatically and can't change with the creation of date fields.
10	Position the inserted print field in the print image, like described in → <i>Chapter</i> Position the print field in the print image, <i>page 84</i> .
11	After the creation process is closed, save the print image, like described in → <i>Chapter</i> Save print image, <i>page 86</i> .

There are some alternatives for an input available, which have different effects:

- The standard registered „?“ in the input field will be deleted and the variable is insert with a certain number of characters:
With every print start of the print image appears a prompt of the variable data. You can see the inserted text of the variable field in the input field. This can be adapt or overwrite. Any characters can be inserted when overwriting, but it will only accept so many characters like make in the variable specification.
- The variable specification in the input field will not change and the standard registered „?“ is insert in the input field:
It appears a prompt of the variable data with every print start of the print image. You can insert any text with any length.
- The standard registered „?“ is registered in the input field and the variable specification will be added with a number of characters:
It appears a prompt of the variable data with every print start of the print image. The inserted text of the variable field can be seen in the input field. This can be adapt or overwrite. Any characters can be inserted when overwriting.

Via the delivered iDesign software the setting can make, with a connection between PC and software, whether the variable specification of the print image creation appears static with the print start in the prompt or whether the entry of the last print start appears.

Insert a counter field in the print image

The counters are inserted in the print image through counter fields.

Counter fields are inserted to print consecutive numbers on labels i.e.: labels must be print.

When starting to print, the counter starting value appears in the first print. When reaching the end count, the counter re-starts at the starting value.

If the end value is smaller than the starting value, counting is downward.

Example 1:

Starting value: 01, end value: 10, step size: 2, repeats: 3

Print: 01, 01, 01, 03, 03, 03, 05, 05, 05....

Example 2:

Starting value: 10, end value: 1, step size 1, repeats: 0



Print: 10, 9, 8, 7....1, 10, 9, 8, 7....

Requirements

- You are in the menu print image creation. See → *Chapter Create a new print image, page 82*

Instruction

Please insert a new counter field in the print image as follows:

Step	Procedure
1	Press the [Add variable field]-key  .
2	Press the [Add counter field]-key  .
3	The counter field appears in the print image.

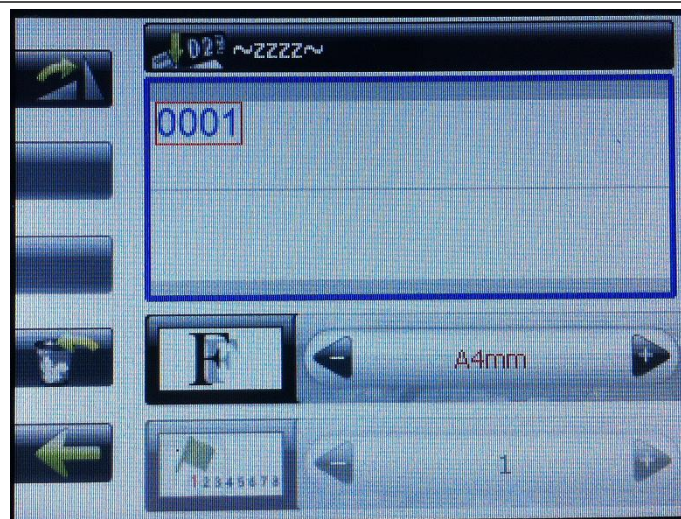




















Fig. 42: Menu Print image creation counter field

4	Press the navigation-keys  to set the desired font size.
5	Change to the input field for the counter start value by pressing the navigation-key

Step	Procedure
	 once.
6	Enter the desired counter start value via the keyboard and confirm with the [OK]-key  , or set the counter start value by pressing the navigation-keys   . The counter start value can set between 0 and 99999999.
	Please note the description, which follow this instruction!
7	Change to the input field for the counter end value by pressing the navigation-key  .
8	Enter the desired counter end value via keyboard and confirm with the [OK]-key  , or set the counter end value by pressing the navigation-keys   . The counter end value can set between 0 and 99999999.
9	Change to the input field for the counter step size by pressing the navigation-key  .
10	Insert the desired counter step size via keyboard and confirm with the [OK]-key  , or set the counter step size by pressing the navigation-keys   . The counter step size can set between 0 and 99999999.
11	Change to the input field for the print repeat of the counter by pressing the navigation-key  .
12	Insert the desired number of print repeat of counter via keyboard and confirm with the [OK]-key  , or set the print repeat by pressing the navigation-keys   . The print repeat can set between 0 and 9999.
13	The field number is shown at the end of the input-menu by pressing the navigation-key  . This is needed for action field links. The field number will be generate automatically and can't change with the creation of counter fields.
14	Position the inserted print field in the print image, like described in → <i>Chapter</i> Position the print field in the print image, <i>page 84</i> .
15	After the creation process is closed, save the print image, like described in → <i>Chapter</i> Save print image, <i>page 86</i> .

There are some alternatives for an input available, which have different effects:

Via the delivered iDesign software the setting can make, with a connection between PC and software how the counter start value will be specified by print start.

Following options are available:

- Specification of the start value from the print image.
- Specification of the start value by user input.
- Specification of the start value by the last start value.
- Specification of the start value by the last start value or by user input.

Insert a logo in the print image

Graphics (logos) can be inserted in a print image as logo or bitmap files.

The created bitmap files must be monochrome BMP!

The table below shows the file type and the available pixel height for the different print head types.

The numbers of pixels refer to the full print height of the print head.

For example: 256 with the Maxiline 100 for 100mm height. A logo with 64 pixels would be 25 mm high.

Print head type	File type	Max. pixel height
MX 50	Bitmap	128/print head
MX 100	Bitmap	256/ print head
XR	Bitmap	500/print head
HP	Bitmap	300/ink cartridge
LX	Bitmap	300/ ink cartridge

Via the delivered iDesign software the logos can send to the control system, with a connection between PC and software. See Fig. **Fehler! Verweisquelle konnte nicht gefunden werden..**

Therefore please note the delivered manual of the software!

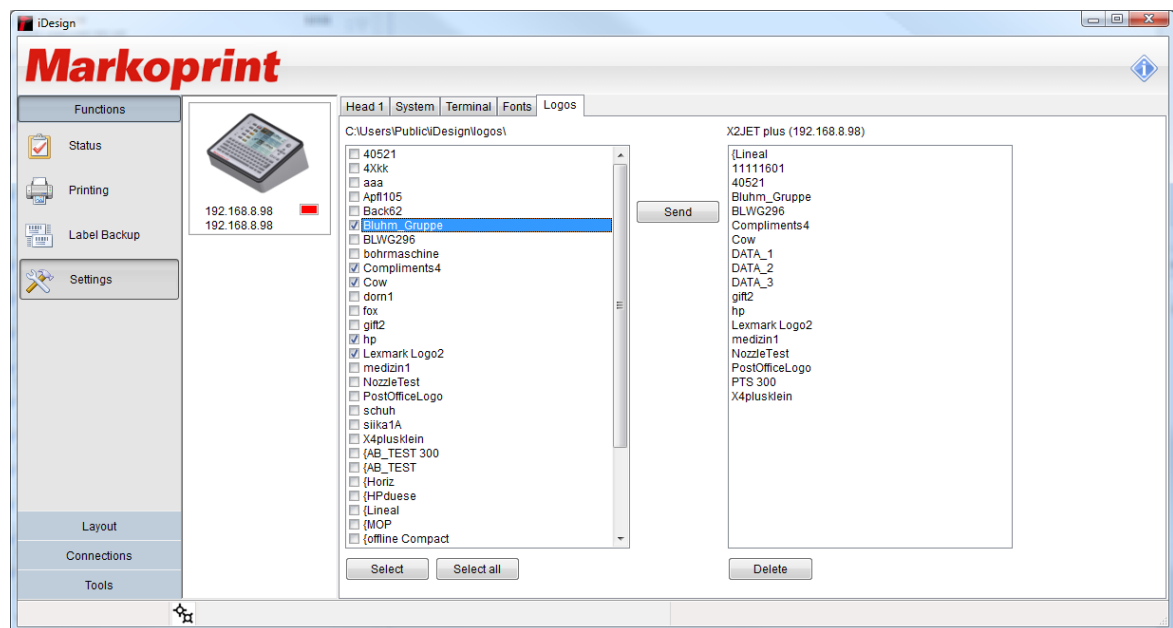






Fig. 43: iDesign Send logos

Requirements

- You are in the menu print image creation. See → Chapter Create a new print image, page 82

Instruction

Please insert a new logo in the print image as follows:

Step	Procedure
1	Press the [Add logo]-key  .
2	Press the navigation-keys   to select the desired logo and confirm with the [OK]-key  .
3	Position the inserted print field in the print image, like described in → <i>Chapter</i> Position the print field in the print image, <i>page 84</i> .
4	After the creation process is closed, save the print image, like described in → <i>Chapter</i> Save print image, <i>page 86</i> .

Insert a barcode in the print image

A barcode is machine-readable writing comprising of parallel lines and gaps of various widths.

The data in the barcode can also be displayed in plain text, legible to humans, in a line of plain text directly below the barcode. If the barcode cannot be read, the data can be evaluated manually.

iDesign offers a range of barcode and 2D Code types, depending on the selected printer:

Barcode type	Description	Stellen
EAN 8	Numerical commercial barcode; used worldwide.	8
EAN 13	Numerical commercial barcode; used worldwide.	13
EAN 128	Numerical commercial logistics code. Variable fields for date, counter and scale as options.	max. 70
Code 128	Full ASCII barcode; medical-pharmaceutical technology.	max. 70-
Code 2 of 5	Numerical industrial (materials-handling) barcode, always with even number of digits. Also designated 2/5 interleaved, ITF 2/5)	min. 2 max.40
DUN 14 *	Numerical industrial barcode (materials-handling)	14
UPC A UPC E	Same as EAN 13 , but special 1 st digit code. Is normally set to 0 followed by 11 digit code. The 13th digit is an automatically generated test digit. Used in USA/Canada.	13
Code 39	Alphanumeric barcode for industry, electronics, pharmaceutical.	max.40
UCC	Same as Code 2 of 5. For trading in the USA.	14
Data Matrix	A 2D code for the electronics industry and pharmaceutical sector.	max.256
EAN Data Matrix	A 2D code for the electronics industry and pharmaceutical sector.	max.256
QR Code	A 2D-code for Japan and Marketing purposes specially	max.256
PPN-Code	Pharmacode	max.256
GS1 Databar	Omnidirectional	16
GS1 Databar	Expanded	max. 70














Requirements

- You are in the menu print image creation. See → *Chapter Create a new print image, page 82*

Instruction

Please insert a new barcode in the print image as follows:

Step	Procedure
1	Press the [Add Barcode/Datamatrix-Code]-key  .

Step	Procedure
2	Press the [Barcode]-key  .
3	Select the desired barcode-type by pressing the navigation-keys   .
4	Change to the input field for the barcode by pressing the navigation-key  .
5	Geben Sie den gewünschten Dateninhalt des Barcodes über die Tastatur ein.
6	Change to the selection field for the plain text font size of the barcode by pressing the navigation-key  .
7	Press the navigation-keys   to set the desired font size for the plain text.
8	Change to the selection field for the barcode height by pressing the navigation-key  .
9	Insert the desired barcode height via keyboard and confirm with the [OK]-key, or set the barcode height by pressing the navigation-keys   .
10	Change to the selection field for the line width of the barcode by pressing the navigation-key  .
11	Insert the desired barcode line width via keyboard and confirm with the [OK]-key, or set the barcode line width by pressing the navigation-keys   .
12	Position the inserted print field in the print image, like described in → <i>Chapter</i> Position the print field in the print image, <i>page 84</i>
13	After the creation process is closed, save the print image, like described in → <i>Chapter</i> Save print image, <i>page 86</i> .









Insert a 2D-code in the print image

Requirements

You are in the menu print image creation. See → *Chapter Create a new print image, page 82*

Instruction

Please insert a new 2D-code in the print image as follows:

Step	Procedure
1	Press the [Add Barcode/Datamatrix-Code]-key  .
2	Press the [Datamatrix]-key  .
3	Select the desired 2D-code type by pressing the navigation-keys  .
4	Change to the input field for the 2D-code by pressing the navigation-key  .
5	Insert the desired data content of the 2D-code via keyboard.
6	Change to the selection field of the 2D-code size by pressing the navigation-key  .
7	Insert the 2D-code size via keyboard and confirm with the [OK]-key or set the desired 2D-code size by pressing the navigation-keys  .
8	Change to the selection field for the dot-size of the 2D-code by pressing the navigation-key  .
9	Insert the desired 2D-code dot size via keyboard and confirm with the [OK]-key, or set the 2D-code dot size by pressing the navigation-keys  .
10	Position the inserted print field in the print image, like described in → <i>Chapter Position the print field in the print image, page 84</i> .
2D-Codes can't be turned!	
11	After the creation process is closed, save the print image, like described in → <i>Chapter Save print image, page 86</i> .




USB-Stick

Load data from the USB stick to the memory of the **Fehler! Verweisquelle konnte nicht gefunden werden.** or save data from the **Fehler! Verweisquelle konnte nicht gefunden werden.** to the USB stick in the USB-stick menu.

This menu is only busy with a connected USB stick.

Instruction

Please change data between USB-stick and control system as follows:

Step	Procedure
1	Press the Service key  in the main menu.
2	The submenu USB-Stick appears.
3	Insert the USB stick.
4	The submenu USB-Stick is shown.
5	Select the desired memory method by pressing the navigation keys  and confirm with  .

Following memory methods are available:

Data backup from Fehler! Verweisquelle konnte nicht gefunden werden. to USB-Stick:

Display	Description
Texts	Save the texts, which are stored in the Fehler! Verweisquelle konnte nicht gefunden werden. , to an USB-Stick.
Backup	Backup of all data on an USB-stick
Parameter	Backup of the adjusted parameter value.

Data transfer from USB-stick to the memory of the Fehler! Verweisquelle konnte nicht gefunden werden.:







Display	Description
Texts	Transfer the stored texts from the USB stick to the memory of the Fehler! Verweisquelle konnte nicht gefunden werden.
Restore	Transfer the data backup from the USB-stick to the memory of the Fehler! Verweisquelle konnte nicht gefunden werden.
Parameter	Transfer the parameter values, which are stored on the USB-stick, to the memory of the Fehler! Verweisquelle konnte nicht gefunden werden.
Fonts	Transfer the fonts, which are stored on the USB-stick, to the memory of the Fehler! Verweisquelle konnte nicht gefunden werden.

Brightness

The display brightness can be set in this menu.

Instruction

Please set the display brightness as follows:







Step	Procedure
1	Press the service key  in the main menu .
2	The submenu USB-Stick appears.
3	Call up the submenu Brightness by pressing the navigation key  .
4	Set the Brightness by pressing the navigation keys   , or press the OK-button  , enter the desired value by the keypad and confirm with the OK-button  .

Date

In this menu the date is been shown and can be adjusted.

Instruction

Please set the date as follows:








Step	Procedure
1	Press the System key  in the main menu.
2	The sub menu Date appears.
3	Set the date by pressing the navigation keys   and confirm with the OK key  , or press the OK-button  , enter the determined value by the keypad and confirm with the OK-button  .

Time

In this menu the time is been shown and can be adjusted.

Instruction

Please set the time as follows:

Step	Procedure
1	Press the System key  in the main menu.
2	The sub menu Date appears.
3	Call up the submenu Time by pressing navigation key  .
4	The sub menu Time appears.
5	Set the time by pressing the navigation keys   and confirm with the OK key  , or press the OK-button  , enter the determined value by the keypad and confirm with the OK-button  .

Spitting Impulse

NOTICE

Property damage caused by squirting ink!

The spitting can result in unwanted contamination of the environment.




The spitting leads to an increased ink consumption.

In the menu **spitting impulse** the operator can set, whether and how many spit impulses will be performed when the device is switched on, or before applying the print. Depending on the settings, the Spit impulse effects an ejection of ink drops between 1 - 100, with a clock rate of 2 kHz from each nozzle. This may be necessary for ink types with lower drying time, to avoid drying out the nozzles and ensure a good print start. In the following chapter "**Spitting time**" the operator can adjust, whether a pulse-Spitting is executed or not, depending on the elapsed time between the prints.

For example: It could be advisable to adjust the value to 20 spit impulses and 30 seconds spit time. This means that the printing of all products 1-29 seconds nothing happens. Only 30 seconds after no product is passing, the spitting is performed once before the next printing with 20 pulses.

Instruction

Please set the spit impulse as follows:




Step	Procedure
1	Press the System key  in the main menu.
2	The sub menu Date appears.
3	Call up the submenu Spit pulse by pressing navigation key  .
4	The sub menu Spit pulse appears.
5	Set the desired value by pressing the navigation keys  .

Spitting time

In this sub menu is set, after which time a spitting operation is run between two prints. The setting Spitting impulse would be necessary for reasons mentioned in Chapter Spitting impulses. The values range from 1 - to set 999 seconds.

Instruction

Please set the spitting time as follows:

Step	Procedure
1	Press the System key  in the main menu.
2	The sub menu Date appears.
3	Call up the submenu Spitting time by pressing navigation key  .
4	The sub menu Spit pulse appears.
5	Set the desired value by pressing the navigation keys  .

Internal Pulse print head



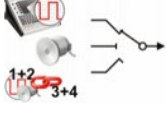
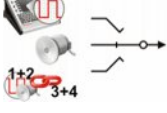
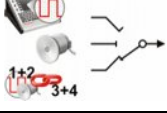
The print speed must relate to the conveyor speed. If the conveyor speed is constant, the print speed can adjust fix, otherwise a shaft encoder should be used, which measure the conveyor speed and adapt the print speed continuous.

The **Fehler! Verweisquelle konnte nicht gefunden werden.** has two channels, which enable the connecting two encoders to the control unit. I.e. there are two independently operating signals available to align the print speed. One channel is for the print head modules 1 are available and the other channel for the print head modules 2.

By this procedure it is possible to print with head modules 1 and 2 on a production line and with print modules 3 and 4 on another production line with a different speed.

If both channels should work with the same encoder, the signal from head 1 +2 can be coupled to the signal head 3 +4.

The following settings are possible:







Display	Channel	Description
	1	In this setting, the print speed for print head modules 1 is determined with an internal pulse.
	1	In this setting, the print speed for print head modules 1 is determined with an encoder.
	2	In this setting, the print speed for print head modules 2 (independently of the print head modules 1) set with an internal pulse.
	2	In this setting, the print speed for print head modules 2 (independently of the print head modules 1) set with an encoder.
	2	In this setting, the print speed for print head modules 2 is coupled to the input of the print head modules 1.

If internal pulse setting is chosen, the speed of conveyor belt must be determined and entered into the controller.

Enter the determined conveyor belt speed as described under → *Chapter To set the encoder resolution, page 67.*

Instruction

Please set the parameter of the print speed as follows:

Step	Procedure
1	Select the desired print head module by pressing the navigation keys   and press the System key  in the main menu
2	The sub menu Date appears.
3	Call up the submenu Pulse print head by pressing navigation key  .
4	The sub menu Pulse print head appears.
5	Set the desired value by pressing the navigation keys   .

Select sensor

In this menu the used sensor can be adjusted. Following settings are possible:

- Sensor 1+2
- Sensor 1+2 inverse
- Sensor 3+4
- Sensor 3+4 inverse

There are 2 sensor inputs „Sensor 1+2“ and „Sensor 3+4“. Standard is Pin 4 for the output of the sensor. Some sensors send the inverse signal on Pin 2. This can be used with the parameter “Sensor 1+2 inverse”.




It is also possible two heads on one channel, to assign to two different sensor inputs.

So head 1 can get the start signal from Pin4 (Sensor 1+2) and head 2 the start signal from Pin2 (Sensor 1+2 inverse). So all four heads can be triggered independently.

→ Chapter Sensor, page 148

Instruction

Please select the sensor as follows:





Step	Procedure
1	Press the System key  in the main menu.
2	The sub menu Date appears.
3	Call up the submenu Select Sensor by pressing navigation key  .
4	The sub menu Select Sensor appears.
5	Set the desired value by pressing the navigation keys  .

IP address

In this sub menu the IP-address is displayed, or can set here.

Instruction

Please show / adjust the IP address in the menu as follows:






Step	Procedure
1	Press the System key  in the main menu to select the desired heads.
2	The sub menu Date appears.
3	Call up the submenu IP-address by pressing navigation key  .
4	The sub menu IP-address is displayed.
5	Activate the input by press  .
6	Set the IP address by the keypad. If not all characters are needed in the justify, it can be changed to the next justify with the navigation keys.
7	Confirm with  .

Net-Mask

In this sub menu the Net-Mask is displayed, or can set here.

Instruction

Please set / show the Net-Mask in the menu:






Step	Procedure
1	Select the desired print head module by pressing the navigation keys  and press the System key  in the main menu
2	The sub menu Date appears.
3	Call up the submenu Net-Mask by pressing navigation key  .
4	The sub menu Net-Mask is displayed.
5	Activate the input by press  .
6	Set the Net-Mask by the keypad. If not all characters are needed in the justify, it can be changed to the next justify with the navigation keys.
7	Confirm with  .

Gate-Way

In this sub menu the Gate-Way-address is displayed, or can set here.

Instruction

Please show / set the Gate-Way-address in the menu as follows:




Step	Procedure
1	Select the desired print head module by pressing the navigation keys  and press the System key  in the main menu
2	The sub menu Date appears.
3	Call up the submenu Gate way address by pressing navigation key  .
4	The sub menu Gate-Way-Address appears.
5	Activate the input by press  .
6	Set the Gate-Way address by the keypad. If not all characters are needed in the justify, it can be changed to the next justify with the navigation keys.
7	Confirm with  .

MAC-address

In this sub menu the MAC-address is displayed.

Instruction

Please show the MAC-address on the system as follows:

Step	Procedure
1	Select the desired print head module by pressing the navigation keys  and press the System key  in the main menu
2	The sub menu Date appears.
3	Call up the submenu MAC-address by pressing navigation key  .
4	The sub menu MAC-address appears.

Print head configuration

The **Fehler! Verweisquelle konnte nicht gefunden werden.** has on the input side two channels, which provide the controller unit with signals for sensor, encoder, and outputs an alarm signal on the output side (e.g. for connecting an alarm lamp). I.e. there are two independently operating signals for triggering print, alignment of the print speed and to issue alerts available. One channel is for the print head modules 1 available and the other channel for the print head modules 2. Furthermore, the connections to the print head modules are also split into two channels. About this procedure, the simultaneous control of different printing technologies is realized. The configuration of the selectable print technologies will be delivered as HP – HP standard. The configuration of the print technologies is shown and can set up with the first switch on of the system. → *Chapter Configuration of the print technology, page 43.*

The configuration of the selectable print technologies is possible like mentioned in the table below.

Configuration of channels	
1 - 2	Description
HP – HP	The device controls at only HP print head modules. Up to two print head modules can be controlled.
HP – MX	The device controls one HP print head modules and one MX print head modules.
MX – MX	The device controls at only MX print head modules. Up to two print head modules can be controlled.
MX – LX	The device controls one MX print head modules and one LX print head modules.
LX – LX	The device controls at only LX print head modules. Up to two print head modules can be controlled.
LX - HP	The device controls one LX print head modules and one HP print head modules.
XR - XR	The device controls at only XR print head modules. Up to two print head modules can be controlled.
XR - ??	The device controls one XR print head module and one other print head module.





In sub menu **head configuration**, the operator can adjust the configuration in the device, which has to be in accordance with the structural configuration of the print heads. The possible combinations are at this point, even for a HP - HP device configuration exemplified:

Configuration HP – HP:

Configuration	Description
2x Single	Two single print heads with one input or output port for the print head modules 1 and 2 the print head modules.
1x Twin	One twin print head with one input/output port for the print head modules 1 +2.

Instruction

Please configure the print heads as follows:

Step	Procedure
1	Press the System key  in the main menu.
2	The sub menu Date appears.
3	Call up the submenu Head Configuration by pressing navigation key  .
4	The sub menu Head Configuration appears.
5	Select the desired channel by pressing the corresponding function keys.
6	Set the head configuration as desired by pressing the navigation keys   .





The selection of the configuration should match the architectural design of the print heads, otherwise it may lead to an incorrect representation of the printed images. If a change relating to the desired product labelling occurs and an adjustment of the print heads or print technology is necessary, so please contact your local distributor.

User language

It is possible to switch the user language of the Fehler! Verweisquelle konnte nicht gefunden werden. to English, German, or other languages.

Instruction

Please set the user language as follows:

Step	Procedure
1	Press the System key  in the main menu.
2	The sub menu Date appears.
3	Call up the submenu Select language by pressing navigation key  .
4	The sub menu Select user language appears.
5	Select the desired language by pressing the navigation key  and confirm with  .

Reset ink counter






The reset of the ink counter is only possible for using HP print heads. In HP MK2 and LX cartridges the ink level is detected automatically. This menu isn't available by using MX or XR print heads.

Reset the ink counter after inserting a new ink cartridge.

Each ink cartridge is displayed in **main menu** with its current ink level as a percentage.

Instruction

Please reset the ink counter as follows:

Step	Procedure
1	Call up the ink menu by pressing the ink key  ..
2	Call up the submenu Ink reset by pressing the navigation key  .
3	Set the value to „YES“ by pressing the navigation keys   and confirm with  .

In LX cartridges, the ink level is stored in an internal memory of the cartridge and does not need a reset if new cartridge is used.

The controller knows the current ink level of the cartridge. The ink is stored in 7% increments. The exactly value of the actual used cartridge will be saved in the control system related to the print head module. This can result an inaccuracy by an inserting in different print head modules.

In HP MK2 cartridges, the ink level is stored in the SmartCard Chip of the cartridge and does not need a reset if new cartridge is used.

The controller knows the current ink level of the cartridge. The ink is stored in 1% increments.

The automatic storage of ink level only works with distributed Ink cartridges by Weber Marking Systems.

Only ink cartridges by Weber Marking Systems are supported by the print heads.

To rinse the nozzles manually

NOTICE

Material damage due to squirting ink!

The spitting can result in unwanted contamination of the environment.

Therefore:

- Hold a moist cloth in front of the ink cartridge nozzle plate.

After extended periods of no printing, it may be necessary to rinse the ink cartridges to open up clogged nozzle ducts again.





During rinsing (purging), all ink cartridge nozzle ducts are addressed to eject some ink. The rinse process takes max. 2 seconds or rather so long as the button will be pressed and hold.

Requirements

- Absorbent cloth
- Or paper / cardboard

Instruction

Please rinse the nozzle channels as follows:

Step	Procedure
1	Call up the ink menu by pressing the ink key  .
2	Call up the menu item Spitting by pressing the navigation key  .
3	Set the value "YES" (OK) by pressing the navigation keys  .
4	Hold a moist cloth or a sheet of paper in front of the ink cartridge nozzle plate!
5	The spit impulse is activate by pressing the OK-button  and proceed as long as the key will be pressed.

Warming

NOTICE

Material damages due to false settings of the warming function!

It is important to ensure that the warming is not turned on accidentally, as this can cause damage to the cartridge or a defective printed image.

Therefore:


- Do not set the warming accidentally.


Warming can be used to increase the print quality and enhance the restart printing.

The Warming can be activated by the iDESIGN software. The adjustment is in the iDesign software under button „System settings“ → tab „Advanced settings“ → sub menu „Warming“ → menu „Warming“.

If the warming is activated, the cartridges must be calibrated. The calibration of the cartridge (temperature sensor in the cartridge) is necessary because the sensors in the cartridge have large tolerances. The calibration is only necessary when the cartridges are changed.

The calibration of the warming is only necessary when HP print heads are used. When the warming function for LX- print heads is switched on, the correction is made automatically. The Warming menu serves only to display the temperature. This menu isn't available by using MX print heads.

The calibration is performed by **Fehler! Verweisquelle konnte nicht gefunden werden.** in the System menu  where also the ink level can reset.

Configuration	Description
	Ambient temperature – Temperature of the HP-Board in the head housing.
	Head temperature – Temperature of the nozzle plate.
	Head-ID – Identification number is used for service.

In the line head temperature (Hd. Temp) the current temperature in the cartridge is displayed.

If a value over 100 (149 or similar) is displayed there is no cartridge or a defective cartridge is inserted.

After the calibration, the head temperature (Hd. Temp) shows the same value as the ambient temperature (Ab. Temp) which reference sensor is located on the HP board in the print head module. The temperature of the HP board is about 5 ° C higher than the actual ambient temperature because the board warms up in the print head housing.


While the Warming menu is open, the warming is turned off. When the menu is left, the warming will be reactivated.



Only calibrate cartridges with ambient temperature. Very cold or warm cartridges falsify the result. It is the best to observe the temperature for a while (about a minute) if the temperature is stable.

By every cartridge replacement (using a new cartridge), you have to reset the ink level, so that the ink calculation / ink warning is working properly and calibration must be performed.

Instruction

Please calibrate the head temperature as follows:

Step	Procedure
1	Call up the ink menu by pressing the ink key  .

Step	Procedure
2	Call up the submenu Warming by pressing navigation key  .
3	The Head temperature is calibrated by pressing the OK key  .

Set ink type

Depending on the application is the use of a specific ink type necessary. The different characteristics of the inks need an individual setting of the Fehler! Verweisquelle konnte nicht gefunden werden..

If HP MK2 or LX print heads are used, the ink type will be detected by the control system automatically and takes the ink specific settings.

The automatic setting of the ink type works only with ink cartridges sold by Weber Marking Systems!




Ink cartridges, which are not distributed by Weber Marking Systems will not supported by the print heads.

If HP print heads are used, the setting must be done from the user directly on the Fehler! Verweisquelle konnte nicht gefunden werden.- control system. Therefore the Fehler! Verweisquelle konnte nicht gefunden werden. have under the menu item **select ink type** the possibility to choose basic settings. Certainly it's necessary to adapt special settings, dependent on the application.

The setting of the ink type must accord with the ink type of the used cartridge. Otherwise there are incorrect presentations of print images.

Instruction

Please set the ink type as follows:

Step	Procedure
1	Call up the ink menu by pressing the ink key  .
2	Call up the submenu Ink type by pressing navigation key  .
3	Set the desired ink type by pressing the navigation keys  .

Configurable inputs and Outputs

The **Fehler! Verweisquelle konnte nicht gefunden werden.**- controller offers the possibility of the M12 (ALARM) and the 15-pin SUB-D connector (EXTERNAL) to use as additional inputs / outputs. The used pins of the pin assignment → *Chapter Disassembly*
When end of the useful life expires, the system must be disassembled and disposed in an environmentally-friendly manner.

Safety

Staff



Danger to life through electric shock!



DANGER TO LIFE!

Contact with live parts poses imminent danger to life. Damaged insulation or individual components can be lethal.

Therefore:

- Immediately switch off the power supply and initiate repairs if the insulation is damaged.
- Work on the electrical system may only be performed by electricians.
- Before working on the electrical system, disconnect from the mains (remove mains plug) and check that power is off.
- Always disconnect mains before performing cleaning and repair tasks.
- Keep moisture from live parts. Moisture may cause a short-circuit.



Risk of injury caused by improper disassembly!



WARNING!

Stored residual energy, sharp-edged components, points and corners on and inside the apparatus or on the required tools may cause injuries.

Therefore:

- Ensure adequate space before starting any work.
 - Handle exposed sharp-edged components with care.
 - Keep the work area clean and tidy! Loosely stacked or scattered components and tools are potential causes of accidents.
 - Secure components to prevent falling down or falling over.
 - Consult the manufacturer if uncertain.
-

- Disassembly may only be performed by specially trained specialized staff.
- Work on the electrical system may only be performed by electricians.

Disposal

NOTICE

Environmental damage due to incorrect disposal!

Electrical scrap, electronic components, lubricants and other auxiliary materials are subject to hazardous waste treatment regulations and may only be disposed of by approved specialized companies!

Unless return or disposal agreements were made, submit disassembled components for recycling:

- Scrap metals.
- Submit plastic components for recycling.
- Dispose of other components according to material composition.

The local municipal authorities or specialized disposal companies provide information on environmentally compatible disposal.

List of Accessories and Spare parts

NOTICE

Safety hazard due to incorrect spare parts!

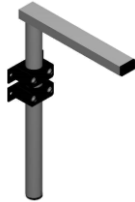
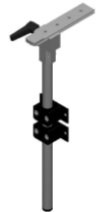



Incorrect or faulty spare parts may affect safety and cause damage, malfunctions or failure.

Therefore:





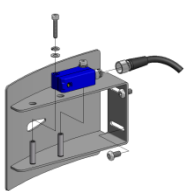
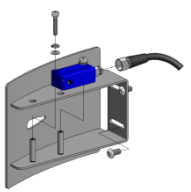


- Only use original spare parts from the manufacturer.



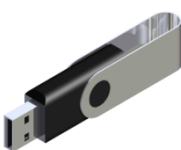


Procure spare parts via contracted dealers or directly from the manufacturer.


Mounting brackets

No.	Figure	Article	Description	Order no.
1		Mounting bracket controller MX print head	For a fixing on a conveyor from the side.	71800027
2		Mounting bracket HP print head	For a fixing on a conveyor from the side, with quick fastener to take the head out of the mounting bracket without technical tools. Model „Dovetail“	72801010
3		Mounting bracket HP print head TOP	For a fixing on a conveyor from the top, with quick fastener to take the head out of the mounting bracket without technical tools. Model „Dovetail“	72801011
4		Mounting bracket MX print head TOP	For a fixing on a conveyor from the top.	71800029
5		Floor stand for 1 or 2 print heads	For a fixing on a conveyor from the top.	71800034

Other

No.	Figure	Subassembly	Description	Order no.
1		PE sensor NPN, 10...30V DC Standard M18	including 5.0 m connecting and adapter cable (M12 to M8) and universal holder	72801012
2		PE sensor NPN, 10...30V DC M8	including 0.6 m connecting cable and VA holder, for direct mounting of the print head from the side	72801013
3		PE sensor NPN, 10...30V DC, external 32x15mm	for mounting behind the front panel, including 0.6 m connecting cable	72801014
4		PE sensor (NPN), 10-30V DC, X2JET/X4JET MX	Inkl. 5,0m Anschlusskabel (M8 auf M8) zur direkten, seitlichen Montage am MX Druckkopf	72801074
5		PE sensor (NPN), 10-30V DC, X2JET/X4JET mit MX 50 Abweiser	Inkl. 5,0m Anschlusskabel (M8 auf M8) zur seitlichen Montage am MX 50 Druckkopf	72801077
6		PE sensor (NPN), 10-30V DC, X2JET/X4JET mit MX 100 Abweiser	Inkl. 5,0m Anschlusskabel (M8 auf M8) zur seitlichen Montage am MX 100 Druckkopf	72801079
7		Rotary encoder (600dpi) Spring arm holder	Rotary encoder with spring arm and aluminium friction wheel (600dpi), including connecting and adapter cable (M12 to M8)	72801018
8		Rotary encoder Spring arm holder	Rotary encoder with spring arm and plastic friction wheel, including connecting and adapter cable (M12 to M8)	72801015

No.	Figure	Subassembly	Description	Order no.
9		Rotary encoder (600dpi) Angle holder	Rotary encoder with angle holder and aluminium friction wheel (600dpi), including connecting and adapter cable (M12 to M8)	72801019
10		Rotary encoder Angle holder	Rotary encoder with angle holder and plastic friction wheel, including connecting and adapter cable (M12 to M8)	72801016
11		USB-data-stick	Version 1	72901202
12		CartClip	for retaining ink cartridges type 15/45	72900074
13		Ink-Aktivator	for de-aerating and cleaning the ink cartridges	72900108
14		CartClip	for retaining LX ink cartridges	72902026
15		Measuring wheel	Measuring wheel for encoder, optimized for 600 dpi	72900454
16		O-Ring	O-ring for encoder measuring wheel (600 dpi) Dimensions: 55x5; NBR	72900455
17		Alarm light	„Alarm light“ (red/yellow/green) for an optical display of the operation	22702287
18		Cable	Connecting cable 1m	72900225
19		Cable	Connecting cable 3m Standard accessories with every print head	72900053
20		Cable	Connecting cable 5m	72900085
21		Cable	Connecting cable 10m	72900226
22		Cable	Connecting cable 25m	72900228
23		Cable	Extension cable 5m	72900086

No.	Figure	Subassembly	Description	Order no.
24		Cable	Extension cable 10m	72900227
25		Cable	Adapter M8 connector to M12 socket 0,6m	72901035
26		Cleaning stick	Cleaning stick to clean the nozzle plate	40007189

Appendix

Ink chart

The Fehler! Verweisquelle konnte nicht gefunden werden. contains ink tables for the different print systems. The optimal value of an ink will be automatically adopted by the ink selection.

If the parameters were changed in the iDesign software, the changed parameters stay active till a new ink type will be select on the Fehler! Verweisquelle konnte nicht gefunden werden..

The ink tables are stored as excel tables in the HMI account: „InkPar.csv“.

The chart can be adapted customized with a Software-Update → *Chapter* Software-Update, *page 146* and can transferred to the Fehler! Verweisquelle konnte nicht gefunden werden. memory.

Changes of the ink parameter can cause bad print images and should change from qualified persons only.

„InkPar.csv“ (for HP systems):

SET Nr.	Bezeichnung S-Nr	Inhalt	Spannung	Fire Time	Spitting	Spit Rows	Spit Delay	Warming	Warm Temp	Warm time	Sub Fire	Spit Interval	Auto Off	Order No	Correction
1	STABL	4	100	110	190 Off	0	0 No		20	0	190	0	0	B3F57A	
2	DIBL	5	100	110	190 Off	0	0 No		20	0	190	0	0		
3	MIBL2	14	129	105	190 Off	0	0 No		20	0	190	0	0		
4	SCRD	8	100	110	190 Off	0	0 No		20	0	190	0	0		
5	SCGN	9	100	110	190 Off	0	0 No		20	0	190	0	0		
6	SCBLU	10	100	110	190 Off	0	0 No		20	0	190	0	0		
7	WEBL	11	100	110	190 Off	0	0 No		20	0	190	0	0		
8	UVC1	28	100	110	190 Off	0	0 No		20	0	190	0	0		
9	BEABL	30	100	80	240 before	25	5 Yes		45	1	190	0	0		
10	UVINV	12	100	110	190 Off	0	0 No		20	0	190	0	0		
11	IRINV	13	100	110	190 Off	0	0 No		20	0	190	0	0		
12	G1BL	15	100	110	190 Off	0	0 No		20	0	190	0	0		
13	CMBLK	25	100	110	190 Off	0	0 No		20	0	190	0	0		
14	RCBLU	26	100	110	190 Off	0	0 No		20	0	190	0	0		
15	RCRD	27	100	110	190 Off	0	0 No		20	0	190	0	0		
16	UltraBlack	31	100	110	190 Off	0	0 No		20	0	190	0	0		
17	FastSolid	33	100	80	240 before	25	60 Yes		45	1	190	0	0		
18	CMBLK2	34	100	110	190 Off	0	0 No		20	0	190	0	0		
19	NPBLK	35	100	80	240 before	25	60 Yes		45	1	190	0	0		
20	Bulk400	99	952	110	190 Off	0	0 No		20	0	190	0	0		
21	FSBLK	36	100	80	240 before	25	60 Yes		45	1	190	0	0		
22	PTBLK	37	75	87	180 Off	0	0 No		20	0	190	0	0		
23	HP 2580	38	75	87	180 Off	0	0 No		20	0	190	0	0	B3F58A	
24	WDBLK1	39	100	110	190 Off	0	0 No		20	0	190	0	0		
25	WDBLK2	40	100	110	190 Off	0	0 No		20	0	190	0	0	40016702	
26	SDBLK1	41	75	110	230 Off	0	0 No		20	0	190	0	0		
27	SDBLK2	42	75	86	180 Off	0	0 No		20	0	190	0	0	REORDER PN	
28	SDBLK3	43	75	86	230 Off	0	0 No		20	0	190	0	0	40017072	

InkParLX.csv“ (for LX-Systems):

SET Nr.	Bezeichnung S-Nr	Inhalt	Spannung	Fire Time	Spitting	Spit Rows	Spit Delay	Warming	Warm Temp	Warm time	Sub Fire	Spit Interval	Auto Off	Voltage
1	???	1	80	110	70 Off	0	0 Yes		47	1	25	0	0	
2	GP+	2	80	110	72 Off	0	0 Yes		47	1	25	0	0	
3	CS1	3	70	110	70 Off	0	0 Yes		42	1	25	0	0	
4	SD1	4	80	110	70 Off	0	0 Yes		42	1	25	0	0	
5	RD1	5	60	110	70 Off	0	0 No		42	1	25	0	0	
6	NP1	6	100	108	55 Off	0	0 No		20	0	23	0	0	1
6	NP1	6	100	95	72 Off	0	0 No		20	0	25	0	0	2

„InkParMX.csv“ (for MX-Systems):

SET Nr.	Bezeichnung S-Nr	Inhalt	Spannung	Fire Time	Spitting	Spit Rows	Spit Delay	Warming	Warm Temp	Warm time	Sub Fire	Spit Interval	Auto Off
1	SC II	1	100	110	190 Off	0	0 No		20	0	190	0	0
2	Versa	2	100	110	190 Off	0	0 No		20	0	190	0	0
3	A 5000	3	100	110	190 Off	0	0 No		20	0	190	0	0

Software-Update

Software update with USB-Stick

Requirements

- Following folder must be copied to an empty USB-Stick: HMI, HMI+, HTML and System.
- The **Fehler! Verweisquelle konnte nicht gefunden werden.** is switched off.

The system must never be switched off during the update.

If the update is not completed, the system can't start.

To renew the bootloader, the system must then be sent to the manufacturer.

Instruction

Please proceed a software update with USB-stick as follows:

Step	Procedure
1	Make sure that the Fehler! Verweisquelle konnte nicht gefunden werden. control system is off.
2	Insert the USB stick with the new version in the lateral USB socket.
3	Switch on system and when the start logo appears (Bluhm/Weber, Fehler! Verweisquelle konnte nicht gefunden werden.) keep the INFO button pushed.
4	The following then appears on the display: Prg: 0 PV1.0xx → new Program Version GA.: 0GV0.032 → new Gate Array Version Copy to SD?
5	By briefly pressing the OK button the new version is copied to the internal SD card and the system restarts.
6	Wait until the system is in normal operating mode.
6	Now remove the USB-Stick.

Software-Upgrade

A software upgrade with costs is comfortably possible via the Weber Marking Partner Portal.

Please contact your consultant or local distributor to get an software-upgrade.

You can find a detailed instruction of the software upgrade below the search key „Configuration upgrade“ in the Wiki of the Weber Marking Partner Portal.

USB-Stick files

Following files are saved on the USB-stick:

- iDesign-Software
- Manual Fehler! Verweisquelle konnte nicht **gefunden werden**.
- Manual iDesign Software
- Leaflet

The required files for software updates:

- HMI-directory
- HMI+ -directory
- HTML-directory
- System-directory

Plug connection, *page 139*.

A variety of configurations are possible and so the connectors for output of status messages (OK, Warning, Error), cartridge level messages (5% low / empty), print ready and print pulse are possible to use. On the input side signals for heating, spitting, print direction, upside print, stop and text selection are possible.

The settings can be done by the iDesign software below *Functions* → *System settings* → *Advanced settings* or by the Web-Browser below *Settings* → *Advanced settings*.

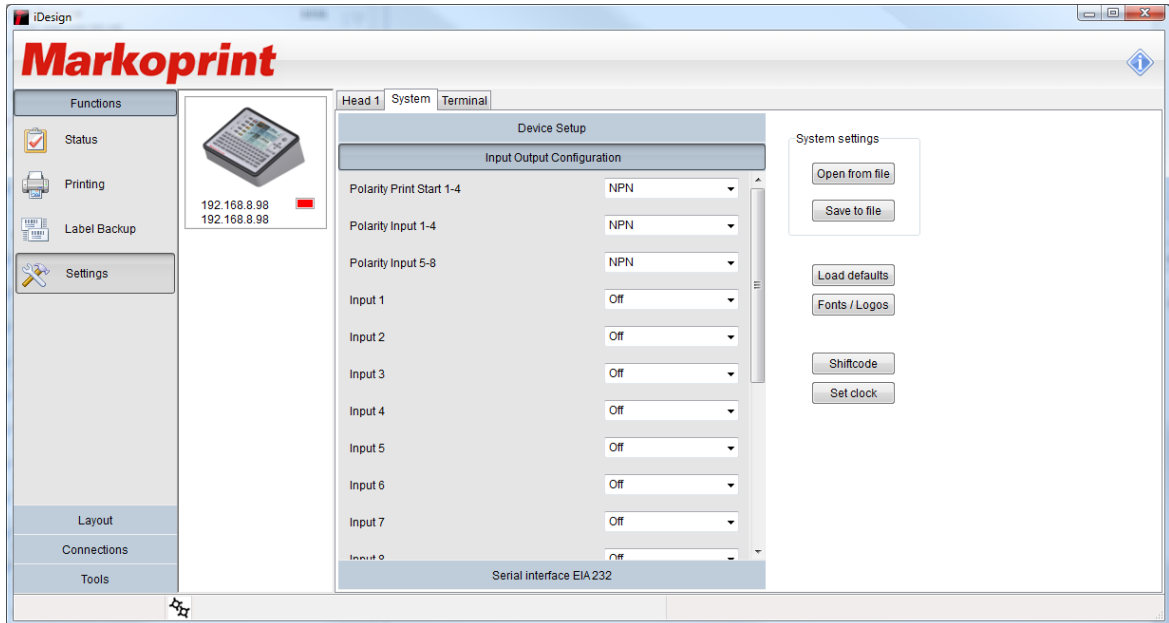


Fig. 44: User interface Software iDesign

iDesign

Please note the delivered iDesign manual!

Installation iDesign

Double click the setup.exe file on the DVD.
The software will be installed to the folder C:\User\Official\iDesign.
To start iDesign click on the iDesign desktop button.

Connection to the control system

- USB
- Ethernet
- EIA232

Faults

The following chapter describes possible causes of malfunctions and how to remedy these.

In case of frequent faults, reduce the service intervals depending on the actual work load.

Please contact your local distributor with regard to faults that cannot be remedied with the information provided below.

Safety

Staff

- The fault remediation work described here, unless specified otherwise, can be performed by the operator.
- Some tasks may only be performed by specially trained specialised staff or exclusively by the manufacturer; this is specifically pointed out in the description of the individual faults.
- Work on the electrical system may only be performed by electricians.



Danger to life through electric shock!



DANGER TO LIFE!

Contact with live parts poses imminent danger to life. Damaged insulation or individual components can be lethal.

Therefore:

- Immediately switch off the power supply and initiate repairs if the insulation is damaged.
- Work on the electrical system may only be performed by electricians.
- Before working on the electrical system, disconnect from the mains (remove mains plug) and check that power is off.
- Always disconnect mains before performing cleaning and repair tasks.
- Keep moisture from live parts. Moisture may cause a short-circuit.

**Risk of injury caused by improper disassembly!****WARNING!**

Improper fault remediation may cause severe injury to persons, or material damage.

Therefore:

- Ensure adequate working space before starting any work.
 - Keep the working area clean and tidy! Loosely stacked or scattered components and tools are potential causes of accidents.
-

Table of faults**Controller**

Disorder	Possible cause	Troubleshooting	Recovered by
Controller does not start	No power supply	Check power supply	Electrician
No screen display	No signal from the system	Start system	Instructed person
Print system does not produce a print image	No start pulse	Check photocell and connection cable	Electrician
	Print parameter incorrect	Check print parameter, adjust if necessary	Instructed person
	Fault in the electronics of the print system	Send print system in for repairs	Manufacturer
	Faulty rotary encoder or incorrect rotary encoder settings	Check rotary encoder and encoder settings	Instructed person

Boot-error messages

If an error number is displayed during booting of the system, this can be limited by means of the following list.

Boot-Error	Description
01	General hardware error
02	Memory error
03	Timer error
04	SPI / Bluetooth error
05	Gate Array error
06	Display error
07	SD Card error
08	USB-A error
09	Real time clock error
10	Multitasking-error

MInit-Error	Description
01	File device error
02	File system error
03	Parameter error
04	User Call error
05	TCP-IP error
06	Print control error



Init-Error	Description
01	File device error
02	File system error
03	User call error

Main Error	Description
01	General hardware error
02	Memory error
03	Timer error
04	SPI / Bluetooth error
05	Gate Array error
06	Display error
07	SD Card error
08	USB-A error
09	Real time clock error
10	Multitasking error
11	Ethernet error
12	USB-B error
13	HP head error
14	Control error
15	NV-RAM error

SW-configuration error	Description
-1	Invalid data
-2	Wrong check sum
-3	Wrong Header-ID
-4	Unknown HW-Revision
-5	Unknown MOP-serial number
-6	Wrong MAC-address

Boot-LED messages

During booting of the system progress can be determined by means of the LED.
If the system stops during booting the cause can be determined by means of the LED.
FC means flashing. An error can be determined on the basis of the number of flashes.

Status-LED 	Sensor-LED 	Description
● ye	● ye	Write 64MB memory
● rd	—	Read/ invert 64MB memory
—	● rd	Read/ test 64MB memory
● ye	—	Test ok / Load BootMain from SPI
—	● ye	Programming and start of BootMain
● ye	● rd	BootMain initialization
—	—	Fatal error
● rd	● rd	Boot error 4x = SPI; 5x = GA; 6x = Displ; 7x = SD-Card; 8x = USB; 9x = RTC; 10x = Task
● rd	FC: ● rd	Init error 1x = Dev; 2x = FS; 3x= UsrCl
● rd	FC: ● gn	SD card read
● ye	● gn	Wait for stick
● ye	● rd / ● gn	No boot data
● ye	● rd / —	Write 64MB memory
● ye	● ye / ● gn	Bootting from stick?
● ye	● ye / ● rd	Copy from stick?
● ye	● gn / —	Copy Ok
● gn	—	Main program loaded and started

Disassembly

When end of the useful life expires, the system must be disassembled and disposed in an environmentally-friendly manner.

Safety

Staff



Danger to life through electric shock!



DANGER TO LIFE!

Contact with live parts poses imminent danger to life. Damaged insulation or individual components can be lethal.

Therefore:

- Immediately switch off the power supply and initiate repairs if the insulation is damaged.
 - Work on the electrical system may only be performed by electricians.
 - Before working on the electrical system, disconnect from the mains (remove mains plug) and check that power is off.
 - Always disconnect mains before performing cleaning and repair tasks.
 - Keep moisture from live parts. Moisture may cause a short-circuit.
-



Risk of injury caused by improper disassembly!



WARNING!

Stored residual energy, sharp-edged components, points and corners on and inside the apparatus or on the required tools may cause injuries.

Therefore:

- Ensure adequate space before starting any work.
 - Handle exposed sharp-edged components with care.
 - Keep the work area clean and tidy! Loosely stacked or scattered components and tools are potential causes of accidents.
 - Secure components to prevent falling down or falling over.
 - Consult the manufacturer if uncertain.
-

- Disassembly may only be performed by specially trained specialized staff.
- Work on the electrical system may only be performed by electricians.

Disposal

NOTICE

Environmental damage due to incorrect disposal!

Electrical scrap, electronic components, lubricants and other auxiliary materials are subject to hazardous waste treatment regulations and may only be disposed of by approved specialized companies!

Unless return or disposal agreements were made, submit disassembled components for recycling:

- Scrap metals.
- Submit plastic components for recycling.
- Dispose of other components according to material composition.

The local municipal authorities or specialized disposal companies provide information on environmentally compatible disposal.

List of Accessories and Spare parts

NOTICE

Safety hazard due to incorrect spare parts!

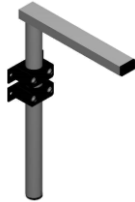
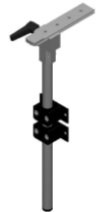


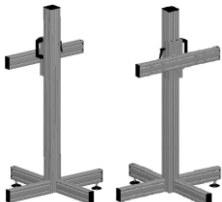
Incorrect or faulty spare parts may affect safety and cause damage, malfunctions or failure.

Therefore:





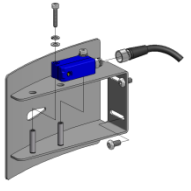
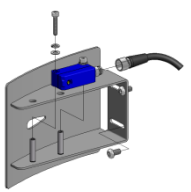


- Only use original spare parts from the manufacturer.



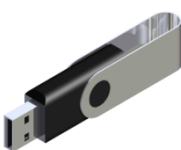


Procure spare parts via contracted dealers or directly from the manufacturer.


Mounting brackets

No.	Figure	Article	Description	Order no.
1		Mounting bracket controller MX print head	For a fixing on a conveyor from the side.	71800027
2		Mounting bracket HP print head	For a fixing on a conveyor from the side, with quick fastener to take the head out of the mounting bracket without technical tools. Model „Dovetail“	72801010
3		Mounting bracket HP print head TOP	For a fixing on a conveyor from the top, with quick fastener to take the head out of the mounting bracket without technical tools. Model „Dovetail“	72801011
4		Mounting bracket MX print head TOP	For a fixing on a conveyor from the top.	71800029
5		Floor stand for 1 or 2 print heads	For a fixing on a conveyor from the top.	71800034

Other

No.	Figure	Subassembly	Description	Order no.
1		PE sensor NPN, 10...30V DC Standard M18	including 5.0 m connecting and adapter cable (M12 to M8) and universal holder	72801012
2		PE sensor NPN, 10...30V DC M8	including 0.6 m connecting cable and VA holder, for direct mounting of the print head from the side	72801013
3		PE sensor NPN, 10...30V DC, external 32x15mm	for mounting behind the front panel, including 0.6 m connecting cable	72801014
4		PE sensor (NPN), 10-30V DC, X2JET/X4JET MX	Inkl. 5,0m Anschlusskabel (M8 auf M8) zur direkten, seitlichen Montage am MX Druckkopf	72801074
5		PE sensor (NPN), 10-30V DC, X2JET/X4JET mit MX 50 Abweiser	Inkl. 5,0m Anschlusskabel (M8 auf M8) zur seitlichen Montage am MX 50 Druckkopf	72801077
6		PE sensor (NPN), 10-30V DC, X2JET/X4JET mit MX 100 Abweiser	Inkl. 5,0m Anschlusskabel (M8 auf M8) zur seitlichen Montage am MX 100 Druckkopf	72801079
7		Rotary encoder (600dpi) Spring arm holder	Rotary encoder with spring arm and aluminium friction wheel (600dpi), including connecting and adapter cable (M12 to M8)	72801018
8		Rotary encoder Spring arm holder	Rotary encoder with spring arm and plastic friction wheel, including connecting and adapter cable (M12 to M8)	72801015

No.	Figure	Subassembly	Description	Order no.
9		Rotary encoder (600dpi) Angle holder	Rotary encoder with angle holder and aluminium friction wheel (600dpi), including connecting and adapter cable (M12 to M8)	72801019
10		Rotary encoder Angle holder	Rotary encoder with angle holder and plastic friction wheel, including connecting and adapter cable (M12 to M8)	72801016
11		USB-data-stick	Version 1	72901202
12		CartClip	for retaining ink cartridges type 15/45	72900074
13		Ink-Aktivator	for de-aerating and cleaning the ink cartridges	72900108
14		CartClip	for retaining LX ink cartridges	72902026
15		Measuring wheel	Measuring wheel for encoder, optimized for 600 dpi	72900454
16		O-Ring	O-ring for encoder measuring wheel (600 dpi) Dimensions: 55x5; NBR	72900455
17		Alarm light	„Alarm light“ (red/yellow/green) for an optical display of the operation	22702287
18		Cable	Connecting cable 1m	72900225
19		Cable	Connecting cable 3m Standard accessories with every print head	72900053
20		Cable	Connecting cable 5m	72900085
21		Cable	Connecting cable 10m	72900226
22		Cable	Connecting cable 25m	72900228
23		Cable	Extension cable 5m	72900086

No.	Figure	Subassembly	Description	Order no.
24		Cable	Extension cable 10m	72900227
25		Cable	Adapter M8 connector to M12 socket 0,6m	72901035
26		Cleaning stick	Cleaning stick to clean the nozzle plate	40007189

Appendix

Ink chart

The Fehler! Verweisquelle konnte nicht gefunden werden. contains ink tables for the different print systems. The optimal value of an ink will be automatically adopted by the ink selection.

If the parameters were changed in the iDesign software, the changed parameters stay active till a new ink type will be select on the Fehler! Verweisquelle konnte nicht gefunden werden..

The ink tables are stored as excel tables in the HMI account: „InkPar.csv“.

The chart can be adapted customized with a Software-Update → Chapter Software-Update, **page 146** and can transferred to the Fehler! Verweisquelle konnte nicht gefunden werden. memory.

Changes of the ink parameter can cause bad print images and should change from qualified persons only.

„InkPar.csv“ (for HP systems):

SET Nr.	Bezeichnung S-Nr	Inhalt	Spannung	Fire Time	Spitting	Spit Rows	Spit Delay	Warming	Warm Temp	Warm time	Sub Fire	Spit Interval	Auto Off	Order No	Correction
1	STABL	4	100	110	190 Off	0	0 No		20	0	190	0	0	B3F57A	
2	DIBL	5	100	110	190 Off	0	0 No		20	0	190	0	0		
3	MIBL2	14	129	105	190 Off	0	0 No		20	0	190	0	0		
4	SCRD	8	100	110	190 Off	0	0 No		20	0	190	0	0		
5	SCGN	9	100	110	190 Off	0	0 No		20	0	190	0	0		
6	SCBLU	10	100	110	190 Off	0	0 No		20	0	190	0	0		
7	WEBL	11	100	110	190 Off	0	0 No		20	0	190	0	0		
8	UVC1	28	100	110	190 Off	0	0 No		20	0	190	0	0		
9	BEABL	30	100	80	240 before	25	5 Yes		45	1	190	0	0		
10	UVINV	12	100	110	190 Off	0	0 No		20	0	190	0	0		
11	IRINV	13	100	110	190 Off	0	0 No		20	0	190	0	0		
12	G1BL	15	100	110	190 Off	0	0 No		20	0	190	0	0		
13	CMBLK	25	100	110	190 Off	0	0 No		20	0	190	0	0		
14	RCBLU	26	100	110	190 Off	0	0 No		20	0	190	0	0		
15	RCRD	27	100	110	190 Off	0	0 No		20	0	190	0	0		
16	UltraBlack	31	100	110	190 Off	0	0 No		20	0	190	0	0		
17	FastSolid	33	100	80	240 before	25	60 Yes		45	1	190	0	0		
18	CMBLK2	34	100	110	190 Off	0	0 No		20	0	190	0	0		
19	NPBLK	35	100	80	240 before	25	60 Yes		45	1	190	0	0		
20	Bulk400	99	952	110	190 Off	0	0 No		20	0	190	0	0		
21	FSBLK	36	100	80	240 before	25	60 Yes		45	1	190	0	0		
22	PTBLK	37	75	87	180 Off	0	0 No		20	0	190	0	0		
23	HP 2580	38	75	87	180 Off	0	0 No		20	0	190	0	0	B3F58A	
24	WDBLK1	39	100	110	190 Off	0	0 No		20	0	190	0	0		
25	WDBLK2	40	100	110	190 Off	0	0 No		20	0	190	0	0	40016702	
26	SDBLK1	41	75	110	230 Off	0	0 No		20	0	190	0	0		
27	SDBLK2	42	75	86	180 Off	0	0 No		20	0	190	0	0	REORDER PN	
28	SDBLK3	43	75	86	230 Off	0	0 No		20	0	190	0	0	40017072	

InkParLX.csv“ (for LX-Systems):

SET Nr.	Bezeichnung S-Nr	Inhalt	Spannung	Fire Time	Spitting	Spit Rows	Spit Delay	Warming	Warm Temp	Warm time	Sub Fire	Spit Interval	Auto Off	Voltage
1	???	1	80	110	70 Off	0	0 Yes		47	1	25	0	0	
2	GP+	2	80	110	72 Off	0	0 Yes		47	1	25	0	0	
3	CS1	3	70	110	70 Off	0	0 Yes		42	1	25	0	0	
4	SD1	4	80	110	70 Off	0	0 Yes		42	1	25	0	0	
5	RD1	5	60	110	70 Off	0	0 No		42	1	25	0	0	
6	NP1	6	100	108	55 Off	0	0 No		20	0	23	0	0	1
6	NP1	6	100	95	72 Off	0	0 No		20	0	25	0	0	2

„InkParMX.csv“ (for MX-Systems):

SET Nr.	Bezeichnung S-Nr	Inhalt	Spannung	Fire Time	Spitting	Spit Rows	Spit Delay	Warming	Warm Temp	Warm time	Sub Fire	Spit Interval	Auto Off
1	SC II	1	100	110	190 Off	0	0 No		20	0	190	0	0
2	Versa	2	100	110	190 Off	0	0 No		20	0	190	0	0
3	A 5000	3	100	110	190 Off	0	0 No		20	0	190	0	0

Software-Update

Software update with USB-Stick

Requirements

- Following folder must be copied to an empty USB-Stick: HMI, HMI+, HTML and System.
- The **Fehler! Verweisquelle konnte nicht gefunden werden.** is switched off.

The system must never be switched off during the update.

If the update is not completed, the system can't start.

To renew the bootloader, the system must then be sent to the manufacturer.

Instruction

Please proceed a software update with USB-stick as follows:

Step	Procedure
1	Make sure that the Fehler! Verweisquelle konnte nicht gefunden werden. control system is off.
2	Insert the USB stick with the new version in the lateral USB socket.
3	Switch on system and when the start logo appears (Bluhm/Weber, <i>Fehler! Verweisquelle konnte nicht gefunden werden.</i>) keep the INFO button pushed.
4	The following then appears on the display: Prg: 0 PV1.0xx → new Program Version GA.: 0GV0.032 → new Gate Array Version Copy to SD?
5	By briefly pressing the OK button the new version is copied to the internal SD card and the system restarts.
6	Wait until the system is in normal operating mode.
6	Now remove the USB-Stick.

Software-Upgrade

A software upgrade with costs is comfortably possible via the Weber Marking Partner Portal.

Please contact your consultant or local distributor to get an software-upgrade.

You can find a detailed instruction of the software upgrade below the search key „Configuration upgrade“ in the Wiki of the Weber Marking Partner Portal.

USB-Stick files

Following files are saved on the USB-stick:

- iDesign-Software
- Manual **Fehler! Verweisquelle konnte nicht gefunden werden.**
- Manual iDesign Software
- Leaflet

The required files for software updates:

- HMI-directory
- HMI+ -directory
- HTML-directory
- System-directory

Plug connection

Sensor

Sensor input: 24V
 Standard: NPN (switching to GND)
 Can be changed to PNP via software.

Photocell with 4-pole M8 round plug

PIN	Description	Value	Unit
1	Power	+ 24	V
2 – Sen2	Start pulse (inverted signal)	Input standard NPN	-
3	GND	0	V
4 – Sen1	Start pulse	Input standard NPN	-

The PIN2 can optionally be used as an additional input. This must be programmed customer-specifically.
 Standard is the inverse output by many sensors. The input can selected as sensor 1+2 inverted in the menu.
 Signal threshold 12V +- 2V

Encoder

Encoder input: 24V
 Standard: NPN or push-pull max. 100kHz

Rotary encoder with 4-pole M8 round plug

PIN	Description	Value	Unit
1	Power, max. 10mA	+ 24	V
2			
3	GND	0	V
4	Encoder signal	Standard: NPN or push-pull	-

View on plug back side

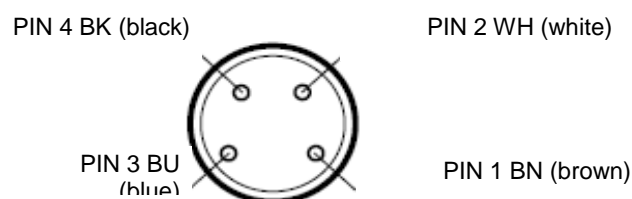


Fig. 45: Socket 4-pole M8 plug

PIN	Cable colour
1	Brown 24V
2	White input
3	Blue 0V (ground)
6	Black input

When using the splitter cable are both inputs / outputs clearly separated.

The input Pin2 is on a connection on Pin4 (see Fig. **Fehler! Verweisquelle konnte nicht gefunden werden.**).

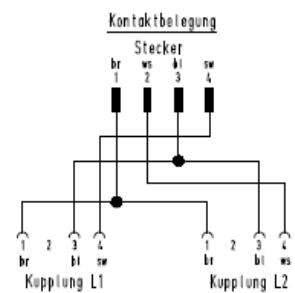
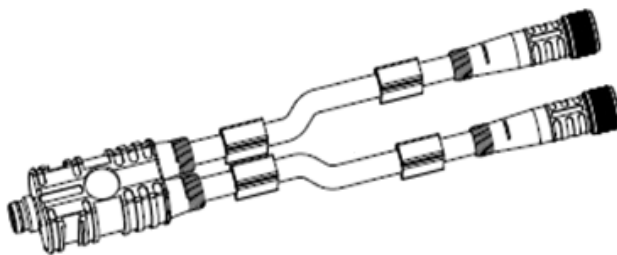


Fig. 46: Splitter cable and whose pin assignment

Alarm light

The alarm light (24V) will be connected to the 8-pole M12-socket.
24V voltage will be switched on the outputs.

PIN	Color	Function
1 – Out1	White	Alarm red lamp
2 – Out2	Brown	Warning orange lamp
3 – Out3	Green	OK green lamp
4 – Out4	Yellow	Reserve
5 – In 7		Reserve
6 – In 8		Reserve
7 - +24V		Power max. 100mA
8 - GND	Red	common contact

External Output

The outputs are potential-free. The relay is designed for 24V. Relay output: max 24 V and max. 100 mA. Standard: Closing contact.

- **Connection**
15-pole Sub-D-socket.
- **Input**
NPN input, can be changed to PNP via software.
- **Standard**
NPN (to GND switching)
- **Input voltage for PNP**
10 V...24 V

PIN	Name	Description	Potential
1	GND	Power	0V
2	RS232	RXD	
3	RS232	TXD	
4	In	User 4	Standard: NPN
5	In	User 5	Standard: NPN
6	In	User 6	Standard: NPN
7	RS232	GND	
8	Encoder channel 2	In	Standard: push pull
9	In	User 3	Standard: NPN
10	Encoder channel 1	In	Standard: push pull
11	Start Channel 1	Input 1	Standard: NPN
12	In	User 2	Standard: NPN
13	In	User 1	Standard: NPN
14	Out 6	Warning	Relais max. 24V / 100mA
15	Out 5	OK	Relais max. 24V / 100mA
16	Out 7	ALARM	Relais max. 24V / 100mA
17	Common	Relais	
18	Out 8	User	Relais max. 24V / 100mA
19	Start channel 2 / inv.	Input 4	Standard: NPN
20	Start channel 2	Input 3	Standard: NPN
21	Out 1	User	24V / max.100mA
22	Out 2	User	24V / max.100mA
23	Out 3	User	24V / max.100mA
24	Out 4	User	24V / max.100mA
25	Vpp	Power	+24V

Splitter cable for 2channel head Art. no.: 72900451

25 pin Sub-D-plug	9pin Sub-D-plug (RS232)
PIN 2 -----	PIN 2
PIN 3 -----	PIN 3
PIN 7 -----	PIN 5

25 pin Sub-D-plug	3pin M12 socket (Encoder)
PIN 1 -----	PIN 3
PIN 8 -----	PIN 4
PIN 25 -----	PIN 1

25 pin Sub-D-plug	3pin DIN socket (Sensor)
PIN 1 -----	PIN 3
PIN 19 -----	PIN 2
PIN 20 -----	PIN 4
PIN 25 -----	PIN 1

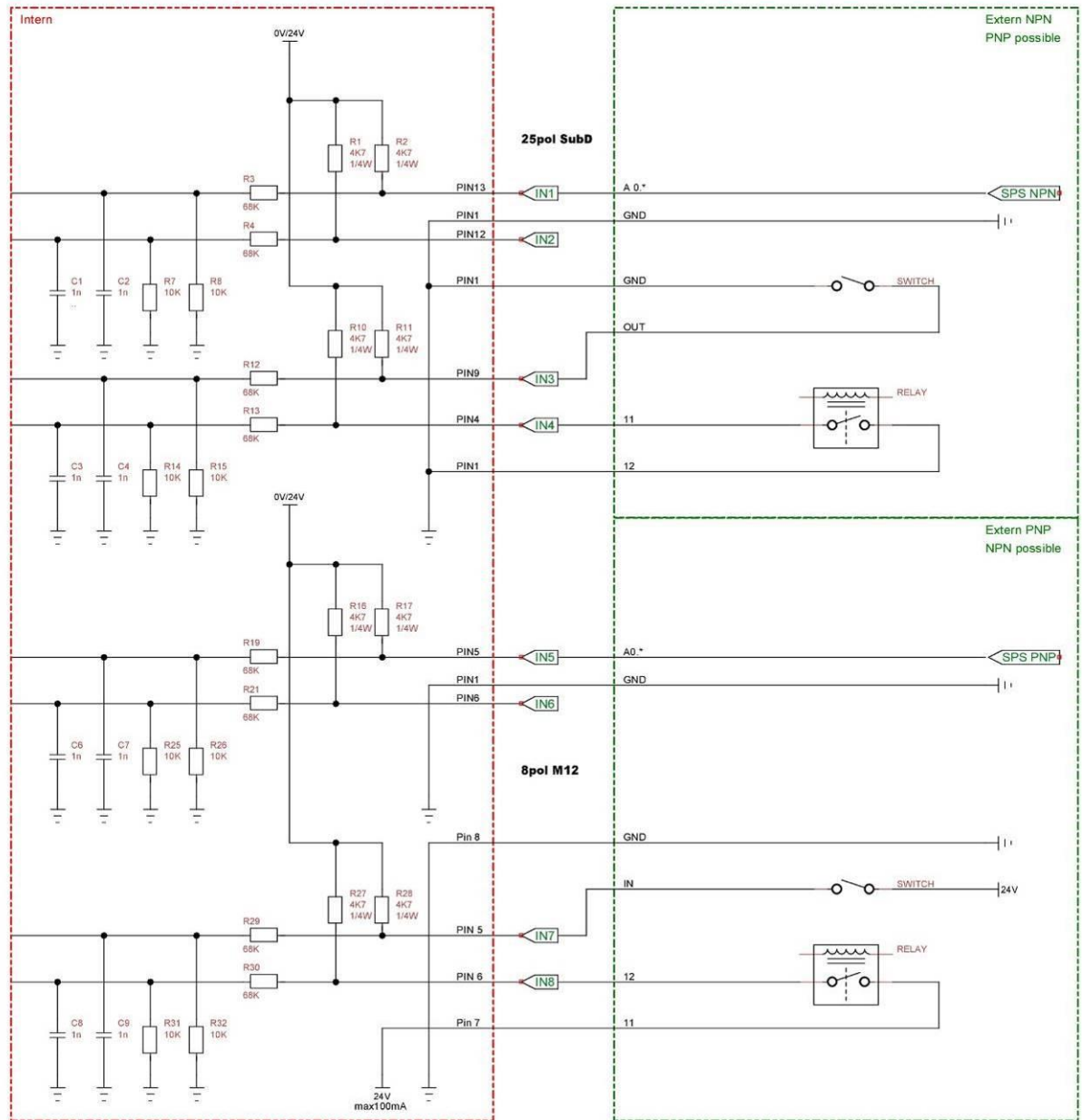
25 pin Sub-D-plug	8pin M12 socket (alarm light)
PIN 1 -----	PIN 8
PIN 14 -----	PIN 2
PIN 15 -----	PIN 3
PIN 16 -----	PIN 1
PIN 17 ---	connect to PIN 25
PIN 25 ---	connect to PIN 17

Input wiring on 25-pin SubD plug and 8-pin M12 plug with examples

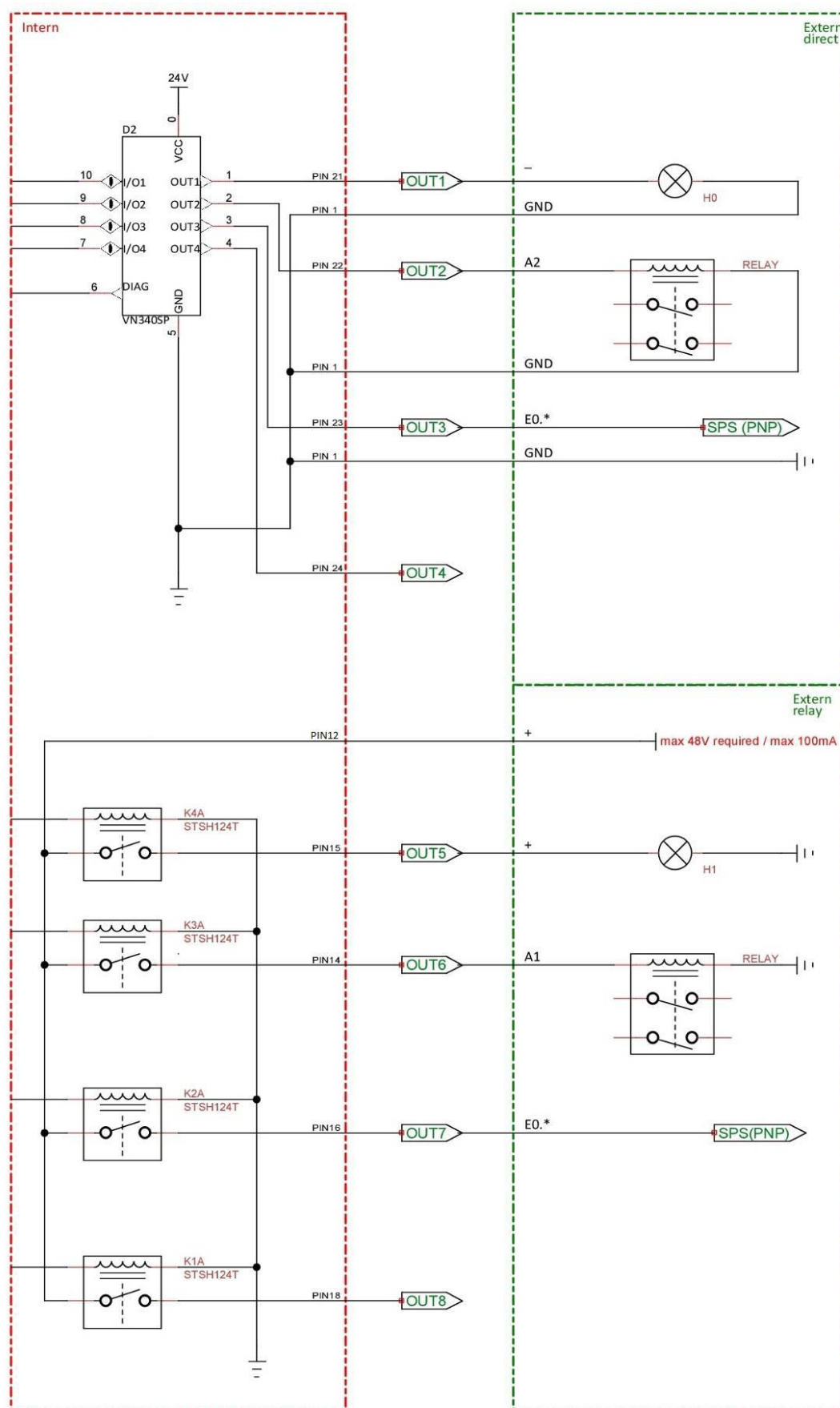
By default, all inputs are set to NPN. The wiring of the inputs can be set to PNP

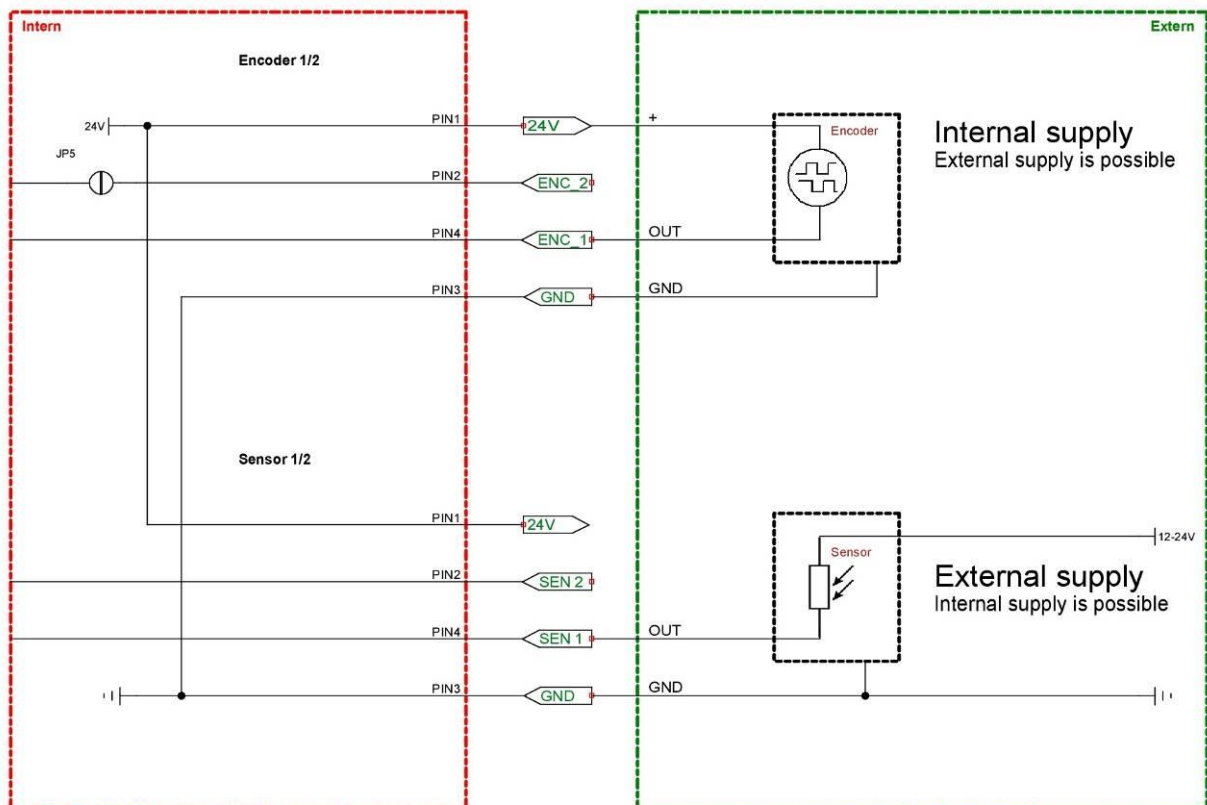
Input 1-6 via 25pin Sub D connector

Input 7-8 via 8-pin M12 alarm connector

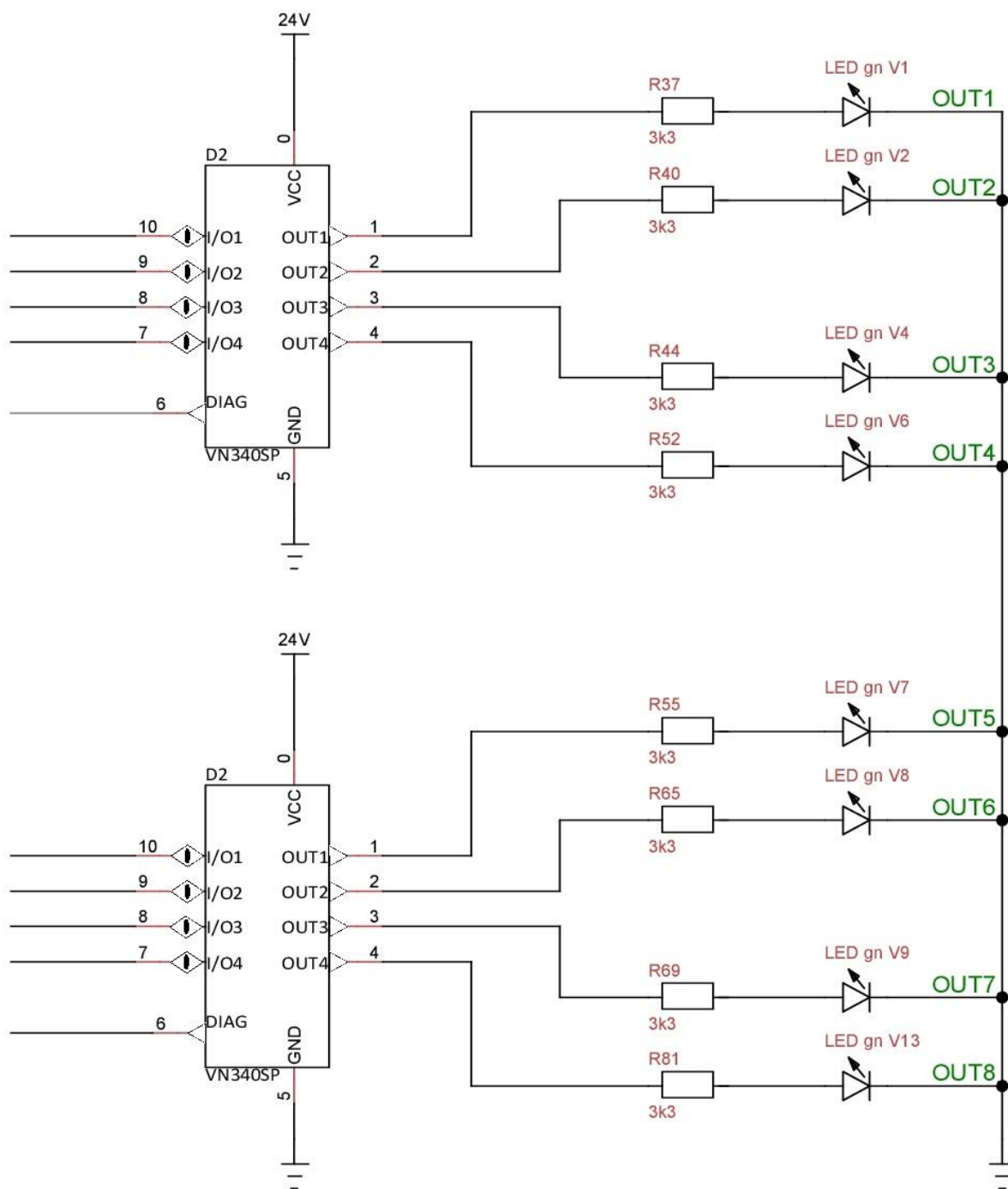


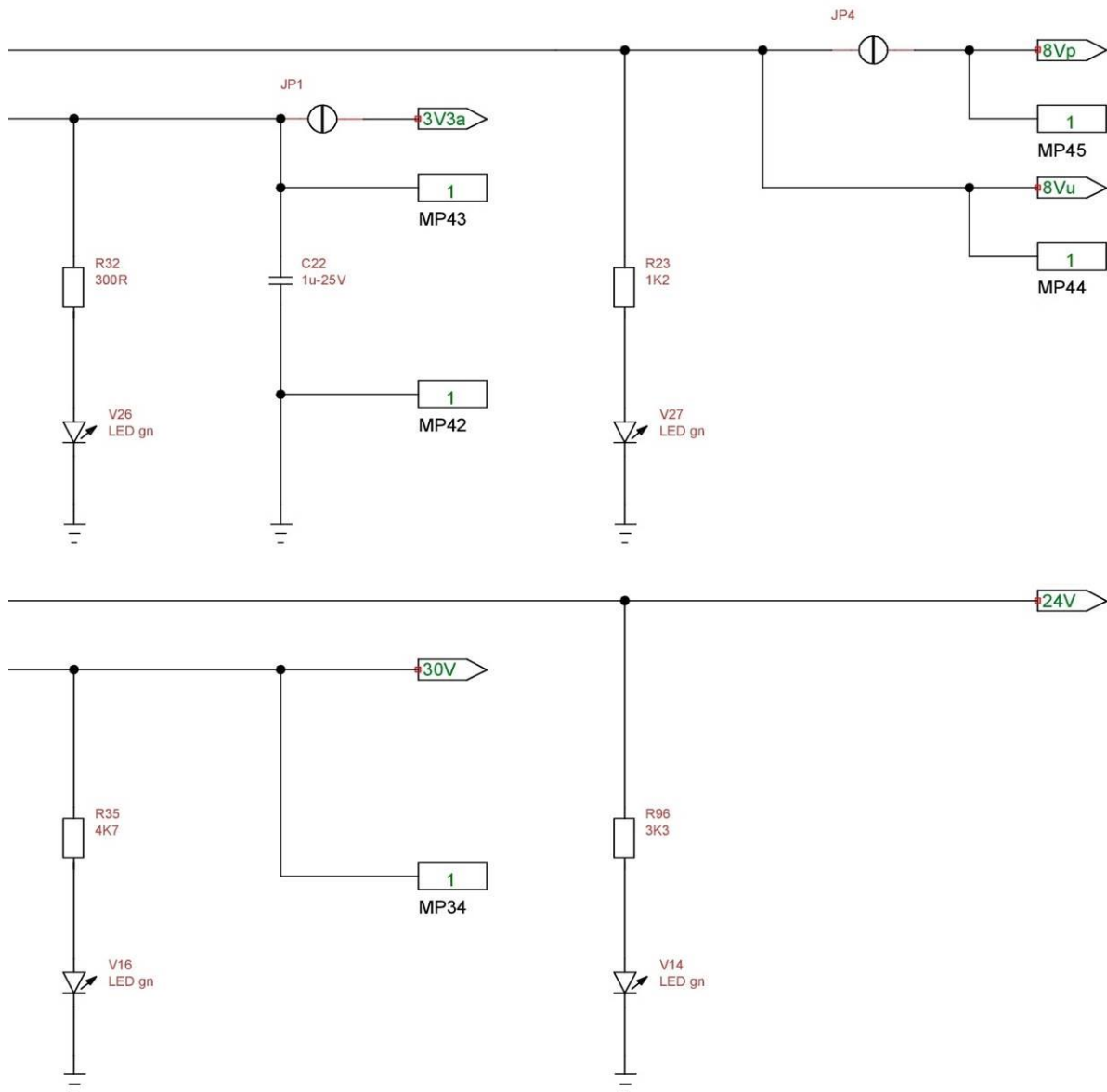
Output wiring at the 25pin SubD connector with examples

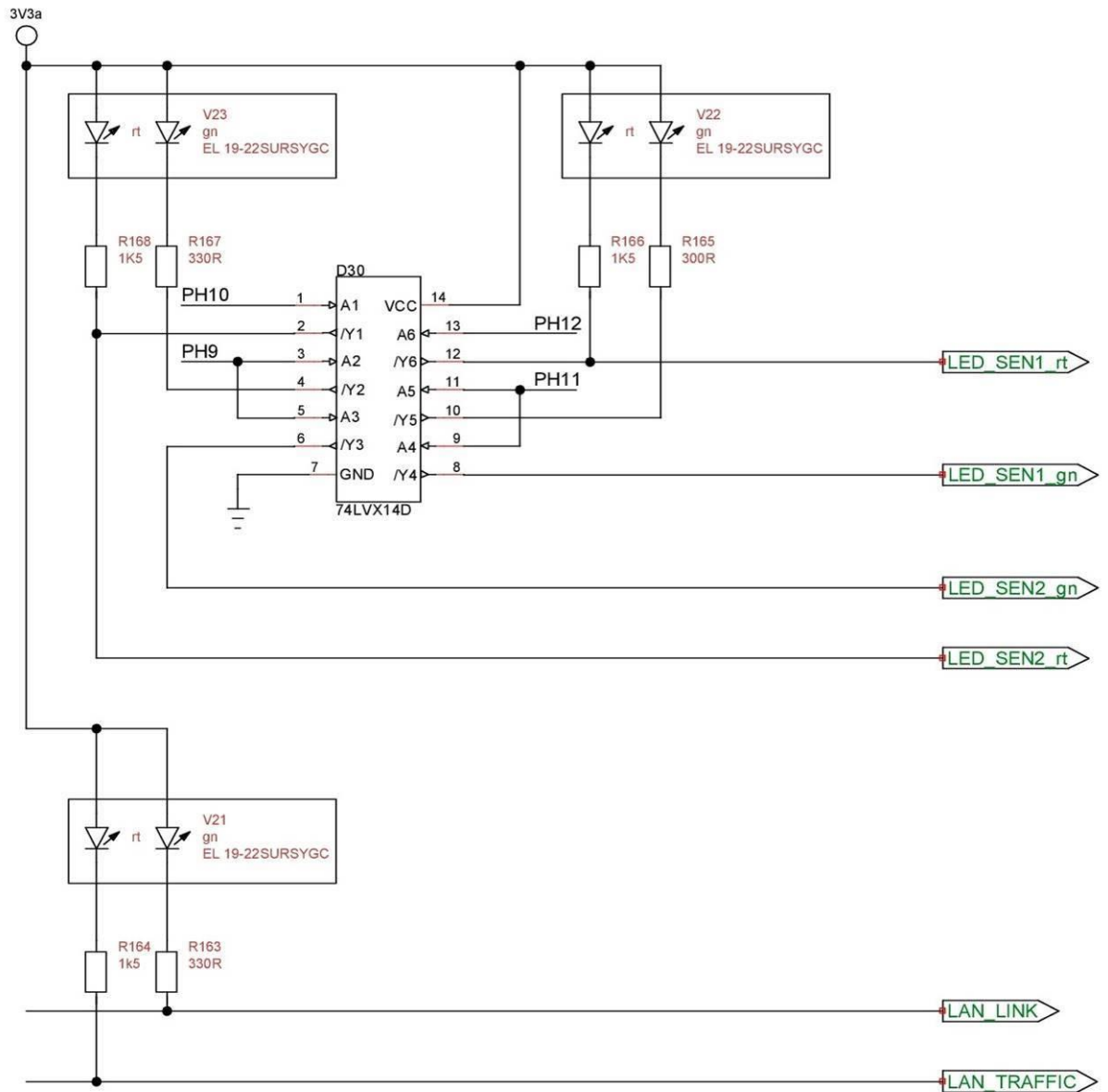


Output wiring of sensor and encoder via 2x 4pin M8 connector with examples

LEDs on the X2JET plus Touch Mainboard







Print head cable

Configuration of the 24+4+1 HP print head cable

PIN	Name	Description	Level
1	DOUT-	out	Lvds
2	DOUT+	out	Lvds
3	AGND	power	0 V
4	DIN_1-	in	Lvds
5	DIN_1+	in	Lvds
6	PWHFIRE-	in	Lvds
7	PWHFIRE+	in	Lvds
8	IR_Signal	out	0 V
9	DIN_2-	in	Lvds
10	DIN_2+	in	Lvds
11	AGND	power	0 V
12	DCLK-	in	Lvds
13	DCLK+	in	Lvds
14	VCC	power	5 V
15	GND	power	0 V
16	res	power	0 V
17	DLOAD-	in	Lvds
18	DLOAD+	in	Lvds
19	AGND	power	0 V
20	HCLK-	in	Lvds
21	HCLK+	in	Lvds
22	AGND	power	0 V
23	HFIRE-	in	Lvds
24	HFIRE+	in	Lvds
C1	VPP	power	24 V
C2	VPP	power	24 V
C3	VPF	power	30 V
C4	VPF	power	30 V
C5	GND	power	0 V

USB A / B

The USB sockets are standard sockets, as used in commercial PCs and USB devices. Insert the USB plug vertically into the USB socket without using force.

PIN	Name	Color	Description
1	VCC	Red	+5 V
2	D-	White	Data -
3	D+	Green	Data +
4	GND	Black	Mass

Ethernet

Network input RJ 45 on the system back.

PIN	Description
1	Transmit+
2	Transmit-
3	Receive+
6	Receive-

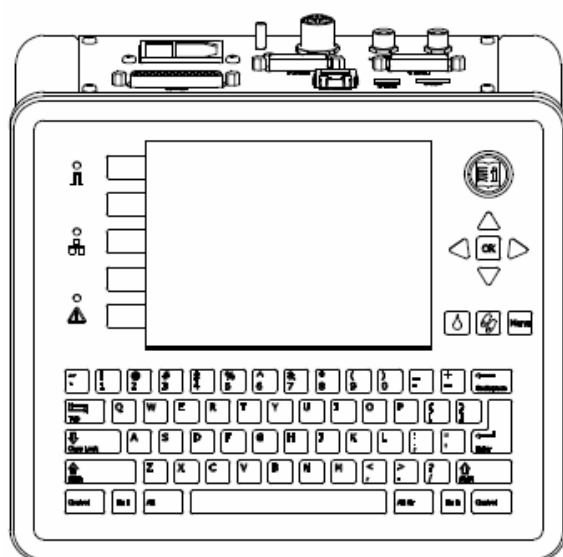
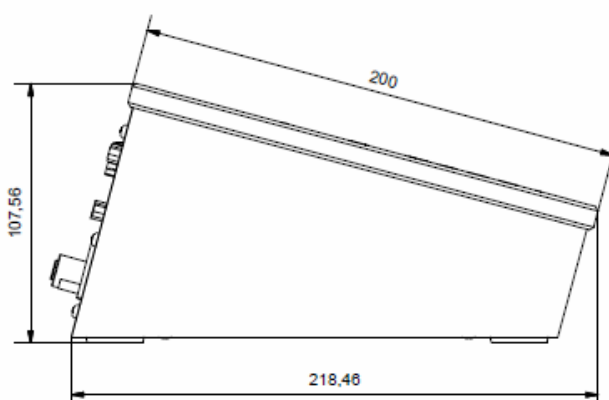
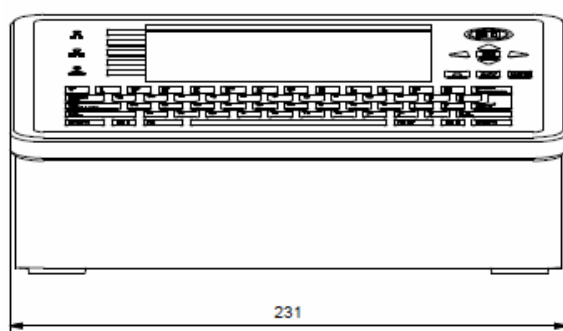
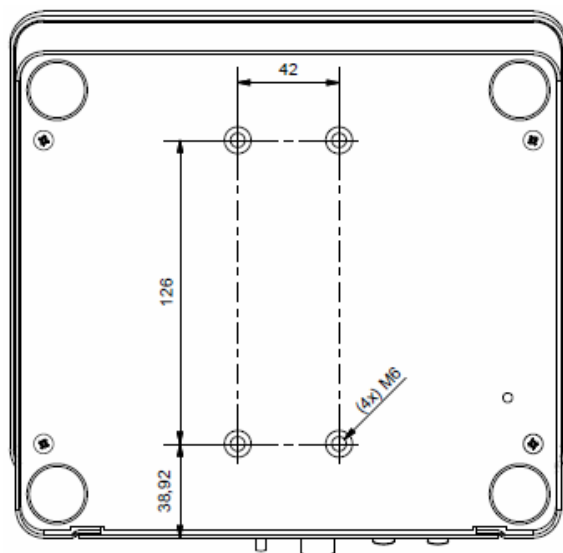
MAC addresses

The MAC address of the respective *Fehler! Verweisquelle konnte nicht gefunden werden.* can be seen on the system directly.

Range from:	To:
00-50-C2-A6-50-00	00-50-C2-A6-5F-FF

Technical drawings

Control system Fehler! Verweisquelle konnte nicht gefunden werden.



Copy the instruction sheet before completing.

[illegible]

Parameter list

Parameter	After Reset	Min.	Max.	Actual value	Unit
Pulse	Internal	Head2	from head 1		
Speed	15,0	1,0	400		m/min
Encoder	600	50	5000		ppi
Print direction	R→L	L→R	R→L		
Upside down	No	No	Yes		
Reflect	Not used				
Print delay	25	0	999		mm
Print repeat distance	0	0	9999		mm
Number of print repeats:	0	0	999		
Intensity	50	300	900		DPI
Print width	100	10	900		%
Nozzle rows	A~B	A,B	A+B		
Head voltage	110				V
Fire time	190				0,01µs
Fire pause	190				0,01µs
Barcode correction	0				Pixel
Ink warning	5	0	100		%
Spitting mode	OFF	BEFORE	INTERVALL		
Number of spit ripping	20	0	100		
Spit delay	10	0	999		s
Spit interval	600	0	999		s
Auto Off	60	0	999		min.
Head correction	0	-50	+50		Pixel
Offset bi directional	0	-20	+20		
Warming	OFF	OFF	ON		
Warming Temp.	45	20	80		°C
Warming timer	0	0	999		s
Counter start value	Not used				
Language	German				-
Head type	1111	1000	4000		
Ink type	STABL				-

Parameter	After Reset	Min.	Max.	Actual value	Unit
User 1	Not used				-
User 2	Not used				
User 3	Not used				
Print mode	Not used				
Save variable fields	Not used				
Sensor	1+2	1+2	3+4		
Turning display	Not used				
Sensor I/O	Not used				
Encoder I/O	Not used				
Trigger output delay	Not used				
Impulse length output	Not used				
HiSpeed	NO	YES	NO		
Fixed print width	YES	NO	YES		
EIA232	Not used				
Polarity input	0000				
Input 1,2	0000				
Input 3,4	0000				
Input 5,6	0000				
Input 7,8	0000				
Output 1,2	3020				
Output 3,4	1000				
Output 5,6	1020				
Output 7,8	3000				

The Fehler! Verweisquelle konnte nicht gefunden werden. will be reset to the basic configuration after sending these commands.

<ESC>K1<CR>

```
<ESC>M*;0000;0150;0004;0000;0000;0000;0025;0000;0000;0300;0100;0000;0110;019  
0;0190;0000;0005;0000;0020;0010;0600;0060;0000;0000;0000;0045;0000;0000;0000;1  
111;0001;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000  
;0000;0000;0000;0000;0000;3020;1000;1020;3000<CR>
```

<ESC>K2<CR>

```
<ESC>M*;0000;0150;0004;0000;0000;0000;0025;0000;0000;0300;0100;0000;0110;019  
0;0190;0000;0005;0000;0020;0010;0600;0060;0000;0000;0000;0045;0000;0000;0000;1  
111;0001;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000  
;0000;0000;0000;0000;0000;3020;1000;1020;3000<CR>
```

<ESC>K3<CR>

```
<ESC>M*;0002;0150;0004;0000;0000;0000;0025;0000;0000;0300;0100;0000;0110;019  
0;0190;0000;0005;0000;0020;0010;0600;0060;0000;0000;0000;0045;0000;0000;0000;1  
111;0001;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;  
0000;0000;0000;0000;0000;0000;3020;1000;1020;3000<CR>
```

<ESC>K4<CR>

```
<ESC>M*;0002;0150;0004;0000;0000;0000;0025;0000;0000;0300;0100;0000;0110;019  
0;0190;0000;0005;0000;0020;0010;0600;0060;0000;0000;0000;0045;0000;0000;0000;1  
111;0001;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;0000;  
0000;0000;0000;0000;0000;0000;3020;1000;1020;3000<CR>
```