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Translation of the original operating manual

Markoprint integra PP108

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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
- Contamination of the unit
- not been stored in accordance with the intended use

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 conforming 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 determined that the unit has not been stored, installed, handled and maintained in accordance with the intended use. Contamination of the unit, improper use or unauthorised changes or repairs of the units are excluded from coverage by warranty.

Cleaning and maintenance

There are no moving parts in the print head requiring regular maintenance.

However, for printing onto outer packaging (e.g. cartons, trays, sacks, etc.) it must be expected that dust and fibre particles carried along are freed and adhere to the nozzle plate of the print head. Over a period of time, this can lead to a worsening of the print quality (see also → ***Chapter*** Faults***, page 78***).

If the dirt proves to be too stubborn and cannot be removed by wiping with a cleaning pad or rinsing, please return the device to the manufacturer for professional cleaning. Please note that this constitutes a service which entails costs, 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 Markoprint integra PP108.
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*.

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

Explanation of Technical Terms

Technical Term	Explanation
Conveyor	The conveyor transports the products, which should be printed and pass them by the print head
DPI	**D**ots **P**er **I**nch 1 Inch = 25,4mm
Encoder	See shaft encoder
LED	Light emitting diode
Nozzle plate	On the nozzle plate are 500 nozzles arranged, which ejected the ink.
Print direction	Direction of movement of the product on the conveyor belt viewed from the control system in the print direction
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
Seiko	Manufacturer of the print head module

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 78***) 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 integra PP108 has been designed, built and must be used exclusively for the intended purpose described.
The Markoprint integra PP108 serves to create print images and to print these from the top or side onto smooth and absorbent product surfaces. The product must pass the Markoprint integra PP108, i.e. positioned on 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.

WARNING **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.

CAUTION **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.

⚠CAUTION **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.

⚠CAUTION **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 2002/95/EG 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 printing procedure.

Technical Specifications

General

Dimensions (H x W x D in mm)	See drawings in appendix
Weight	About 6000g, without ink
Environmental Temperature:	15 - 40 ° C
Environmental Conditions:	30-85 % relative humidity (non-condensing)
Protection Rating	IP 40
Maximum operating time	The system is designed for continuous operating

Electrical

Input voltage at the device:	90 - 240 V AC / 50-60Hz (1~)
Current consumption:	max. 1,7 A
Power consumption:	max. 150 W
Power consumption 36V avr:	0,85 A
Power consumption 36V max:	2,25 A
Power consumption Standby:	5 W

Data interfaces

EIA 232	Sub-D 15 pole
Ethernet	RJ45
USB	USB-A socket for stick

Connections

Sensor	Sub-D 15 pol
Encoder	Sub-D 15 pol
In-/Outputs	Sub-D 15 pol
EIA 232	Sub-D 15 pol
USB	USB-A socket for stick
Ethernet	RJ45

Performance data

Cable length System unit / Power supply in m	1,8
Text layout	Software iDesign / iDesign Touch
Parameter input	Software iDesign / iDesign Touch
Fonts **(optional)**	all available Windows fonts customer-specific fonts
Print height in mm **Markoprint integra PP108**	 1 to 108
Max. print resolution[1)] in dpi	360dpi vertical 50 to 900dpi horizontal
User language Software:	German, English, French, Spanish, Japanese and more
Barcodes[1)]	EAN 8, EAN 13, EAN 128, Code 2/5, Code 2/5 check, Code 39, Code 39 check, Code 128, DUN14, GS1 Databar, other on request
2D-Codes[1)]	Datamatrix, GS1 Datamatrix, QR-Code, PPN-Code, other on request
Automatic functions[1)]	Date, Time, Counter, customer-specific links
Graphic	**Monochrome** bitmap-graphics can be created i.e. with Paint or other software.
Print image storage	9 print images for a direct print start, any number for print start via Ethernet / EIA232 / USB-stick
Print image length	13.500 Pixel = 0,975m at 360dpi
Storage; optional expandable in GB	4
Storage in MB	32

Max. print speed in m/min at 360 dpi (depending on resolution)	
Markoprint integra PP108 Print	30
Markoprint integra PP108 Basic	30
Markoprint integra PP108 Advanced	60
Markoprint integra PP108 Pro	150
Print direction	L/R or R/L, from top (IN PREPARAION) or side. Print from bottom is **not** possible.

[1)] Not available in all Markoprint integra PP108 versions

Inks

Article No.	Type
400	Ink PP108 MOF Black
400	Flush solution PP108

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 Markoprint integra PP108 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.

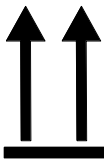
Scope of Delivery - Basic:

- 1 x System unit Markoprint integra PP108
- 72900535 - USB-Stick, Content: → ***Chapter*** USB-Stick files***, page 91***
- 40075165 - Operating Manual on the USB-Stick
- 71700015 - iDesign-Software on the USB-Stick
- 72900063 - Power cable 1,85m

Optional Accessories → ***Chapter*** List of Accessories and Spare parts***, page 84***

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

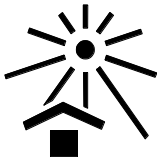
The arrowheads indicate the top of the package. They must always face upward to avoid damage to the content.

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 and Unpackaging

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 incl. print head 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 40°C.
- Air temperature gradient: < 10°C/hr
- Relative humidity: 25 - 60%.

Storage print heads

Overlay

If the print head is stored for a longer period of time or not used, different nozzles may become blocked.

Therefore:

– Fill the print head with new ink after 6 months at the latest and before commissioning!

Store the print heads under following conditions:
When a print head is stored or not used for more than six months, ink deposits may form, which can result in the clogging of different nozzles.
In this case, fill the print head with fresh ink before using.
Procedure:

- Leave the nozzle plate closed with the nozzle locking clamp!
- Remove the feeder tube on the head and pump the old ink out of the ink supply system
- Then remove the return flow at the print head and pump the old ink out of the print head
- Finally, rinse out the head and resume operation.

Customers having replacement heads in storage should rotate these every three months. In this way, the customer has a regular control over the functional integrity of his print heads.

All print heads should be tested once before installation.

Before storage of the print heads the ink bottle must be taken out and stored according the storage instructions given below ink bottles.
The print head must be closed with the nozzle clip and the vent cock of the ink system must be closed. See also Disassembly of the print head.

Storage ink bottles

New original ink bottles can be stored up to one year. Please have a look at the printed best before date! The shelf life can be varying with the different ink types.
Store the ink bottles under 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 Markoprint integra PP108 for printing images quickly and cleanly onto absorbent product surfaces.
A print image, for instance, contains product descriptions, graphics, quantities, shelf life data, barcodes and product serial numbers.
The print images can be created directly with PC intsalled iDesign software installed and can be sent to the Markoprint integra PP108 via USB stick, network connection or serial EIA 232 connection.
Up to 9 print images can call up for printing via keyboard.
Any number of print images can select for print start via Ethernet / EIA232 / USB-stick.

System unit

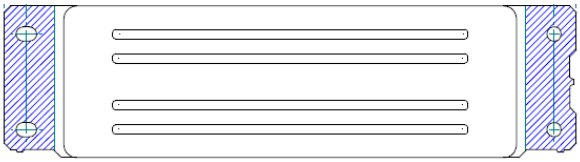
The Markoprint integra PP108 essentially consists of the ink system with the power supply connector and a printhead with integrated control electronics and the connections for rotary encoder, external photocell, inputs/outputs on the back of the printhead. On the upper side there is a foil keyboard with 3 keys, 4 control LEDs and a USB-A socket for USB stick data transfer.
The print head is connected to the ink system via a 1.2m long hose.

The system unit is mounted directly to the production line using an optional mounting bracket.

Print head

The print head works with piezo technology. Ink channels are behind the nozzle plate. The ink circulate in the ink channels by the capillary effect. Each ink channel consists of piezo crystals that contract by an electrical impulse, pressing ink against the nozzle plate. The nozzle plate forms the ink into individual drops that are ejected onto the printing surface. When the drops exit the print head, a suction pressure is generated that pulls more ink from the ink system. The surface tension of the ink present directly at the nozzles prevents ingress of air into the ink channels. Please note that the print head must be protected from strong vibrations. Strong impacts may lead to disruption of the surface tension and ingress of air into the head.

The nozzle plate consists of 4 rows with 384 nozzles each, which result 1536 nozzles with 360dpi resolution. The nozzle row A is located on the right when looking at the nozzle plate.



The nozzles are sensitive to pressure and scratches. Therefore they may be wiped off with the special foam cleaning pads lightly and without pressure.

Ink system

The ink system consists of an ink tank that is filled with ink. The ink content is max. 700ml. If the ink content is less than 200ml, an empty ink message is displayed (ink LED turns red). Only then a new 500ml ink bottle can be screwed into the system. The ink bottle empties completely and can be removed again.

There are two pumps in the ink system for ink flow and ink return. These run during operation continuously and are controlled by a pressure sensor in the print head. A continuous ink circulation is formed. This guarantees that the correct pressure is always available at the nozzles and that air and dirt are removed behind the nozzles.
If air enters the nozzles as a result of a vibration, it is automatically removed.

The pressure control allows the print head to be positioned independently of the ink system. The head can be mounted higher or lower than the ink system.

When switched off, ink is sucked out of the head so that no ink can leak from the head. To do this, the system must be shut down before switching off the mains voltage.

System versions

The Markoprint integra PP108 print system is in five different versions available: Markoprint integra PP108 -*Print*, -*Basic*, -*Advanced*, -*Pro and* -*Ultimate*.

The Markoprint integra PP108 will be delivered as Print version standard. If the requirements exceed the scope of services of the Print version, an upgrade with costs to one of the other versions is available. Please see → ***Chapter*** Software-Upgrade***, page*** 90.

The specifications of the separate versions can be found in the following table.

FUNCTION	**SYSTEM VERSION**				
	Print	***Basic***	***Advanced***	***Pro***	***Ultimate***
Max Speed at 360 dpi	30	30	60	90	150
Layout length	0,97m	0,97m	0,97m	0,97m	0,97m
DPI horizontal	360 (50–900)	360 (50–900)	360 (50–900)	360 (50–900)	360(50-900)
DPI vertical	360	360	360	360	360
Fonts	Printer + TTF	Printer + TTF	Printer + TTF	Printer + TTF	Printer + TTF
Number of layouts	9	9	9	9	9
Text fields	Yes	Yes	Yes	Yes	Yes
Counter fields	No	No	Yes	Yes	Yes
Date fields	No	Yes	Yes	Yes	Yes
Date offset	No	No	Yes	Yes	Yes
Variables	No	No	No	No	No
Logos	Yes	Yes	Yes	Yes	Yes
Barcodes	No	No	Yes	Yes	Yes
2-D Codes	No	No	No	Yes	Yes
Action fields	No	No	Yes	Yes	Yes
USB-Stick Data transfer	Yes	Yes	Yes	Yes	Yes
Ethernet interface	Yes	Yes	Yes	Yes	Yes
Password	No	No	No	No	Yes
EIA232	Yes	Yes	Yes	Yes	Yes

FUNCTION	SYSTEM VERSION				
	Print	***Basic***	***Advanced***	***Pro***	***Ultimate***
Internal sensor	No	No	No	No	No
External sensor	Yes	Yes	Yes	Yes	Yes
Encoder	Yes	Yes	Yes	Yes	Yes
In-/ Outputs	4E / 4A	4E / 4A	4E / 4A	4E / 4A	4E / 4A
Ink level display	LED	LED	LED	LED	LED

Complete overview Markoprint integra PP108

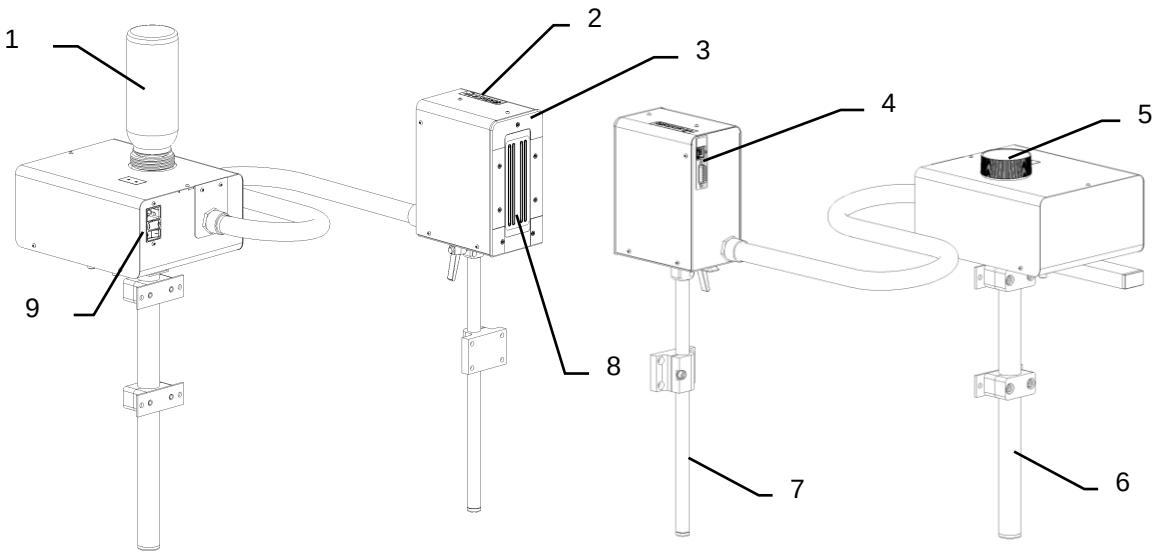


Fig. 1: Markoprint integra PP108

No.	Description
1	INK BOTTLE ONLY FOR FILLING
2	CONTROL PANEL WITH ENTRY KEYS, LED-STATUS LIGHTS, USB-A SOCKET
3	FRONT PLATE
4	NETWORK CONNECTION (RJ45), OPTION (SUB-D 15 POL)
5	COVER INK SYSTEM
6	MOUNTING BRACKET INK SYSTEM
7	MOUNTING BRACKET PRINT HEAD
8	NOZZLE PLATE
9	POWER-SOCKET

Seiko – print head module RC1536L

NOTICE

Material damage

The print head can be damaged by incorrect disassembly.

Therefore:

– Never remove the print head - this would invalidate the warranty.

The print head Markoprint integra PP108 has 1536 individually controllable nozzles on 108mm in the nozzle plate.
The nozzle plate is fixedly connected to the print head module and can't be disassembled.
The print head can't opened / disassembled.

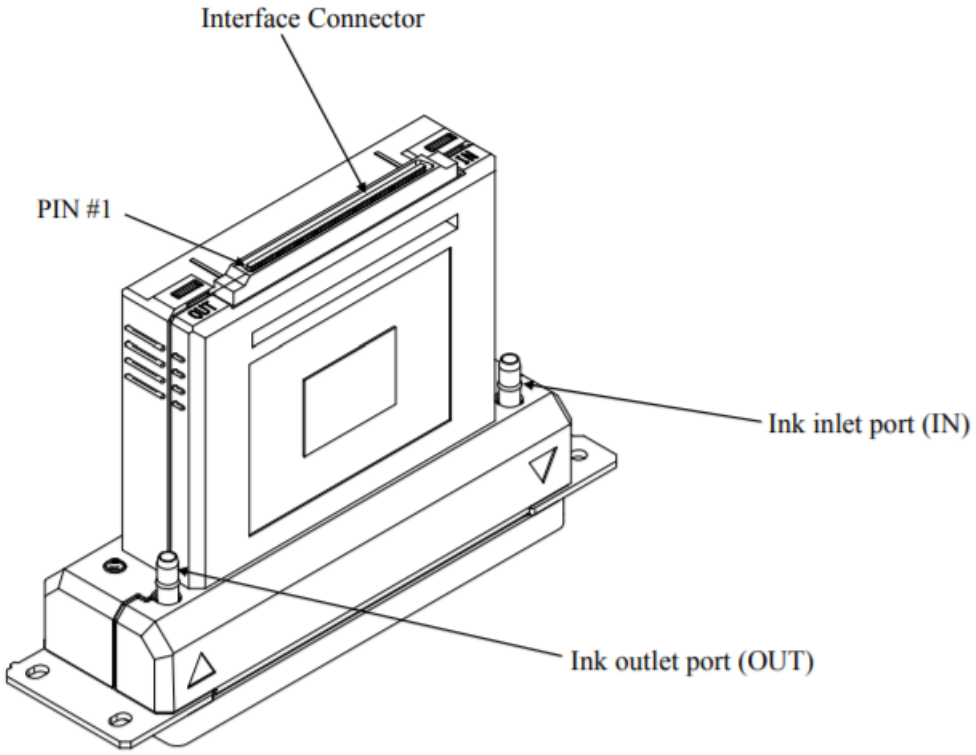


Fig. 2: Seiko – printhead module PP

The single print head has a maximum print height of 108mm.

The print head is connected to its own ink system via a special flexible hose containing the ink line and the control cable. The hose is 1.2m long as standard. The ink system can be mounted higher or lower. The ink pressure in the print head is controlled by an internal sensor.

Example for assembly:

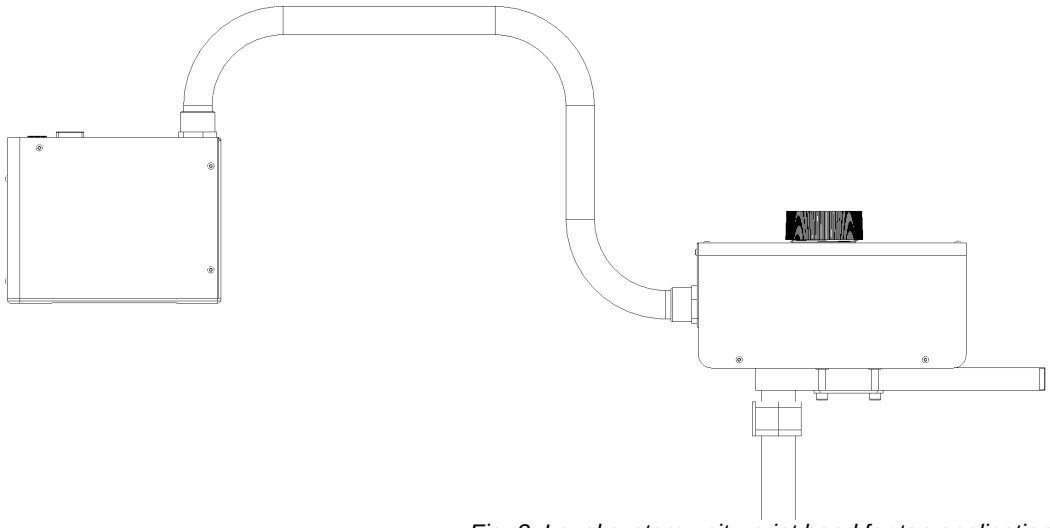


Fig. 3: Level system unit - print head for top application

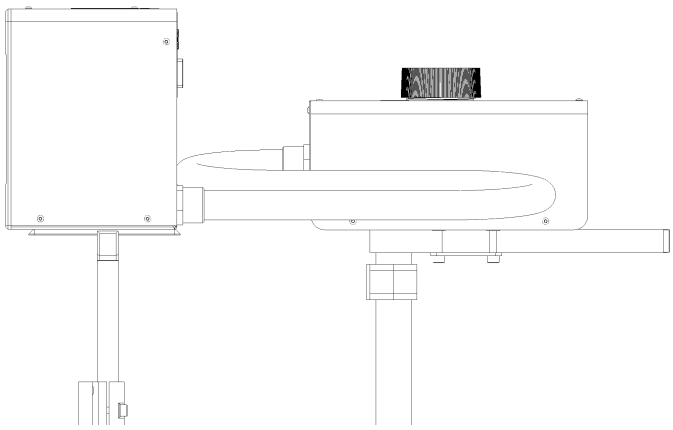


Fig. 4: Level system unit - print head for top system with side printing

Only the ink listed on the label of the unit may be used in the system.
The use of another ink will cause a total breakdown of the print system!

The system must not be run dry / without ink.
The system is supplied filled with ink. Ink could escape if the device is not closed and not stored properly.
If ink has leaked, the system must be checked before commissioning to make sure that ink has not leaked into the housing and electronics.

Name plate

The nameplate is attached at the bottom of the system 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

WARNING

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.

CAUTION

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

CAUTION

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 Print System

- Look for good product guidance, so that the product can't damage the print head.
- The mounting position should be vibration-free, so that the print head can operate safely. Otherwise use a separate stand.
- The installation position has to provide sufficient access for user and service technician.
- 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 nozzle plate is important. The optimum distance is 0 to 3 mm between the nozzle plate 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 higher than 3 mm between the nozzle plate and the product may still be acceptable.

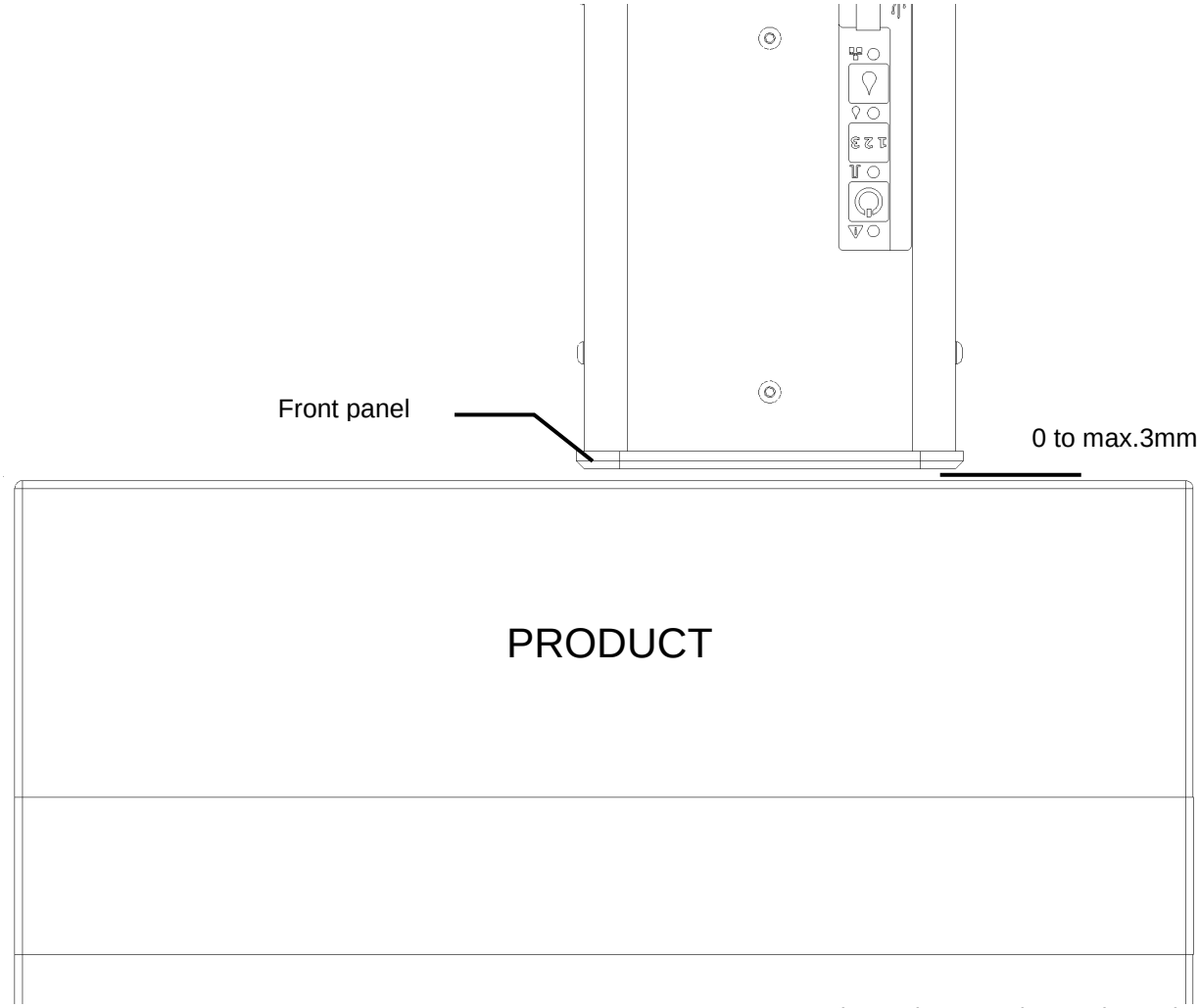


Fig. 5: Distance Print Head - Product

Positioning the Print 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

Possible material damages!

Product mounting rails prepared by the customer protect the system unit from vibrations and damage while the product is passing the system unit.

Required Resources

- Setscrew wrench (Allen key®)

Instruction

Please install the print system as follows:

Step	Procedure
1	Attach mounting brackets to the production line.
2	Slide the ink system and printhead onto the mounting brackets.
3	Set the distance between the print head and the product surface. A distance of 0 to 3 mm is optimal. Mount the ink system horizontally and place the nozzle plate vertically to the product transport direction

Step	Procedure

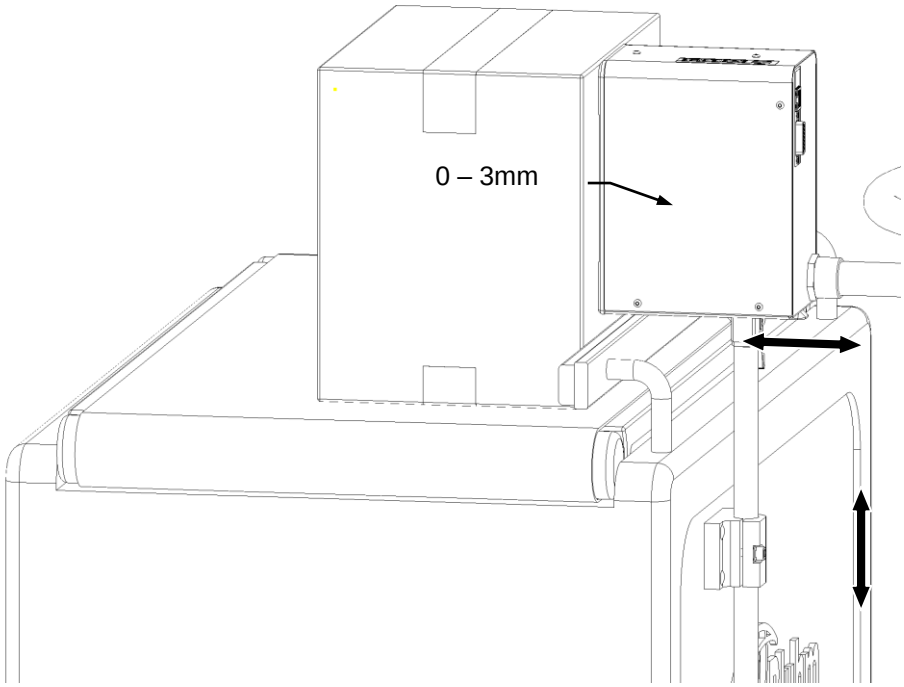


Fig. 6: Markoprint integra PP108 mounted on production line

4	Lock the system unit by tightening the Allen screws.
5	A product deflector / guidance in running direction in front of the print head should be mounted to protect the print head.

Connecting the Print System

NOTICE

Possible material damages!

To prevent faults due to potential differences, an electro-conductive connection between control unit and conveyor belt must be established.

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.

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

Overview of the print system connectors

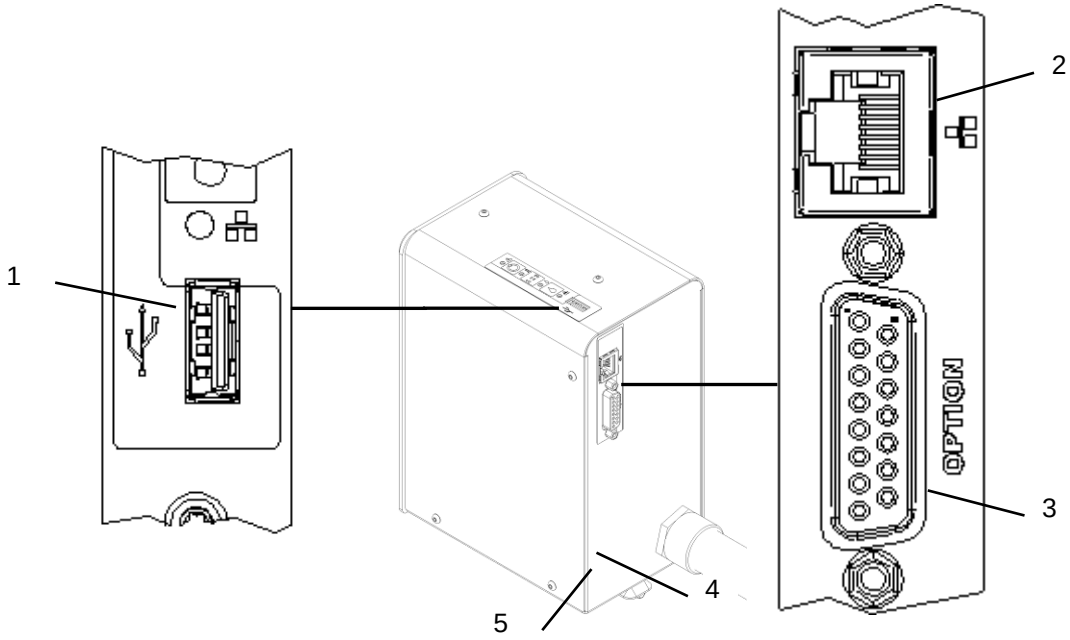


Fig. 7: Electrical connections

No.	Description
1	USB-A
2	ETHERNET (RJ45)
3	OPTIONS: EIA232, SENSOR, ENCODER, IN-/OUTPUTS

Connection of the grounding cable

To prevent faults due to potential differences, an electro-conductive connection between control unit and conveyor belt must be established.

Requirements

- The system is switched off.
- The grounding cable is pre-assembled at the ground bolt of the system.

Instruction

Please connect the system with the conveyor as follows:

Step	Procedure
1	Connect the free end of the grounding cable electro conductive with the conveyor.

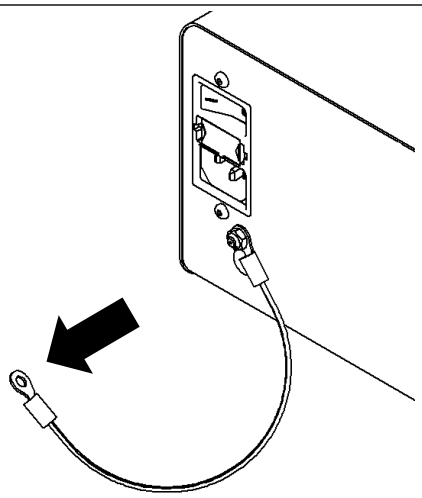


Fig. 8: Grounding cable at the system

Connecting to Supply Voltage

Requirements

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

Instruction

Please connect the print system with supply voltage as follows:

Step	Procedure
1	Connect the power cable with the power supply at the Markoprint integra PP108.

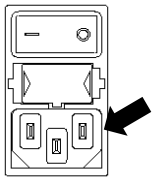


Fig. 9: Power supply

2	Connect the power cable with the power connector.

Connecting the optional Shaft Encoder

If more options will be used simultaneously, a splitter-box (Art.-No.: 72900545) can used.

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.

Instruction

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

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

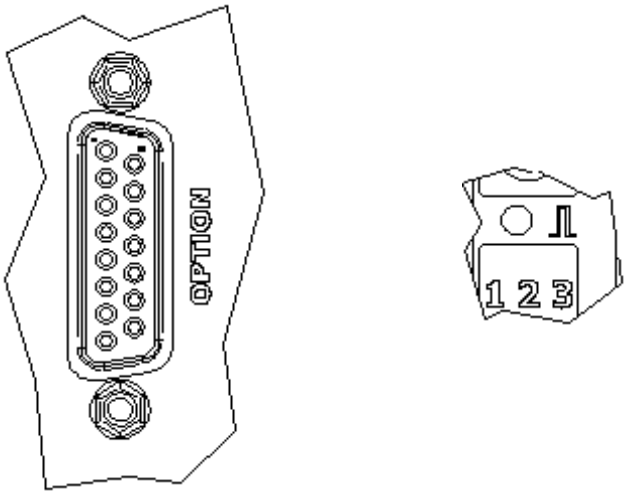


Fig. 10: Option-Socket (Sub-D 15-pole) on the system-back and Sensor-LED on the back side of the system

2	Set the system-clock to Shaft encoder by the iDesign software. (System settings – Print parameter)
3	Set the shaft encoder resolution by the iDesign software. 600 dpi with the delivered shaft encoder with friction wheel from Weber (600 dpi optimized). (System settings – Print Parameter)
4	Set the intensity by the iDesign software so, that the desired effective resolution can be reached (180 dpi is standard). (System settings – Print parameter)
5	The Sensor / Encoder LED lights red, if the shaft encoder isn't connected or doesn't rotate.

Connecting the optional Product Sensor

If more options will be used simultaneously, a splitter-box (Art.-No.: 72900545) can used.

Requirements

- The optional product sensor is mounted at the production line or at the print head directly.
- The sensor is mounted in product running direction, near the Markoprint integra PP108.
- 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 print system as follows:

Step	Procedure
1	If necessary install the optional product sensor at the production line or print head and connect it to the option-connection socket.

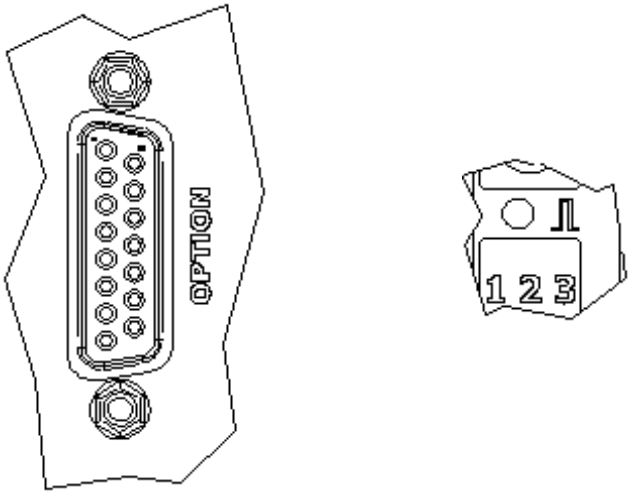


Fig. 11: Option-Socket (Sub-D 15-pole) on the system-back and Sensor-LED on the top side of the system

2	The sensor input is set to External. Standard in the iDesign software. (System settings – Advanced settings - Periphery)
3	The Sensor LED lights green with print activation from product identification to the end of the print.
4	If no print image is loaded, the Sensor LED lights yellow as long as the sensor is covered.

Connection to a network

A RJ-45-connection allows a connection of the print system to the customer LAN (Local Aera Network).
The LED on the top of the system lights green if a network is available. The LED flashes yellow with data communication.
The LED lights red if a failure exists.

Instruction

Please connect the print system with the network as follows:

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

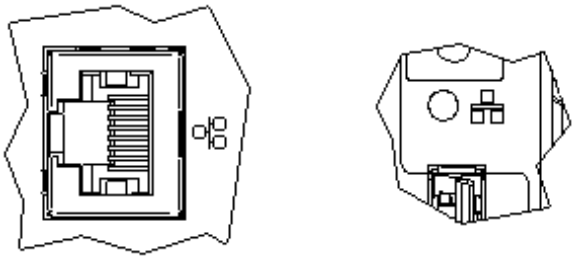


Fig. 12: Ethernet-socket (RJ 45) on the system-back and network LED on the top side of the system.

2	Connect the USB-stick to the Markoprint integra PP108 to write a system image on the stick.
3	Connect the USB-stick to a PC with iDesign and set the desired free IP address for the system by the iDesign software. (System settings – System Config – IP-Address)
4	Add the system in the iDesign software to operate it by the iDesign software. (Connections – Add system – Enter name and IP address)
5	Connect the USB-stick to the Markoprint integra PP108 again to adopt the new settings.
6	The Markoprint integra PP108 is now displayed as Ethernet system in iDesign.

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.

Installation of the Markoprint integra PP108

NOTICE

Material damages due to misuse!

Unnecessary removal and re-insertion of the ink bottle can lead to overfilling of the ink system and can cause damages.

Therefore:

– Avoid unnecessary removal and insertion of the ink bottle.

– Replace the ink bottle only, when the system reports „Empty ink bottle“.

Requirements

- The print system is installed correctly, solid and vibration-free.
- All electronic connections are connected.

Instruction

Please start up the Markoprint integra PP108 as follows:

Step	Procedure
1	Switch on the system and wait one minute until the ink circuit is completely filled with ink.
2	Remove the locking clamp from the nozzle plate and store it in a suitable location.

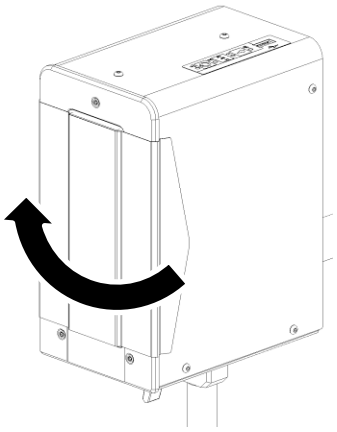


Fig. 13: Remove the locking clamp

3	Make test print.
4	If some nozzles do not write, clean the nozzle plate as described in the next chapter.
5	The return pump runs continuously and the flow pump is pulsed approx. 50%
6	If this is not the case, replace the nozzle clamp and wait 1-2 minutes until the pumps are working regularly.

Rinsing / Cleaning Print head

NOTICE

Material damage due to ink leavings!

Rinsing of the MX-Top print head results increased ink consumption and can lead to undesirable contamination of the environment.

Therefore:

- Secure the environment against leaking ink.
- Afterwards wipe the nozzle plate once with a lint-free cloth

Clean the print head if the print quality is impaired → ***Chapter*** Faults***, page 78***.

Briefly pressing the [ON/OFF] button and the [INK] button will start a rinse cycle. his means that the return pump stops working and only the flow pump runs for about one second to rinse ink from the nozzles.

Instruction
Please rinse the print head as follows:

Step	Procedure
1	Press the [ON-/OFF]-button and the [INK]-button.

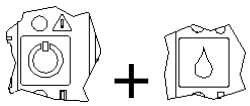


Fig. 14: Rinse the nozzles

Wipe nozzle plate

NOTICE

Material damage due to improper handling!

The printhead nozzle plate is extremely sensitive and can be irreparably damaged if improperly handled.

Therefore:

- NEVER wipe over a dry nozzle plate.
- Use only the cleaning cloths recommended and available from us.
- Do NOT wipe back and forth over the nozzle plate. Wipe in one go and in one direction.
- Do not apply pressure to the nozzle plate.
- Use only the cleaning agents recommended and offered by us.

Requirements

The nozzle plate is NOT dry (Rinsing or spary on the cleaning agent, leave to act briefly and carry out the rinsing process)

Instruction

Please wipe the nozzle plate as follows:

Step	Procedure
1	Wipe over the nozzle plate in one go and in one direction. Do not apply any pressure to the nozzle plate.

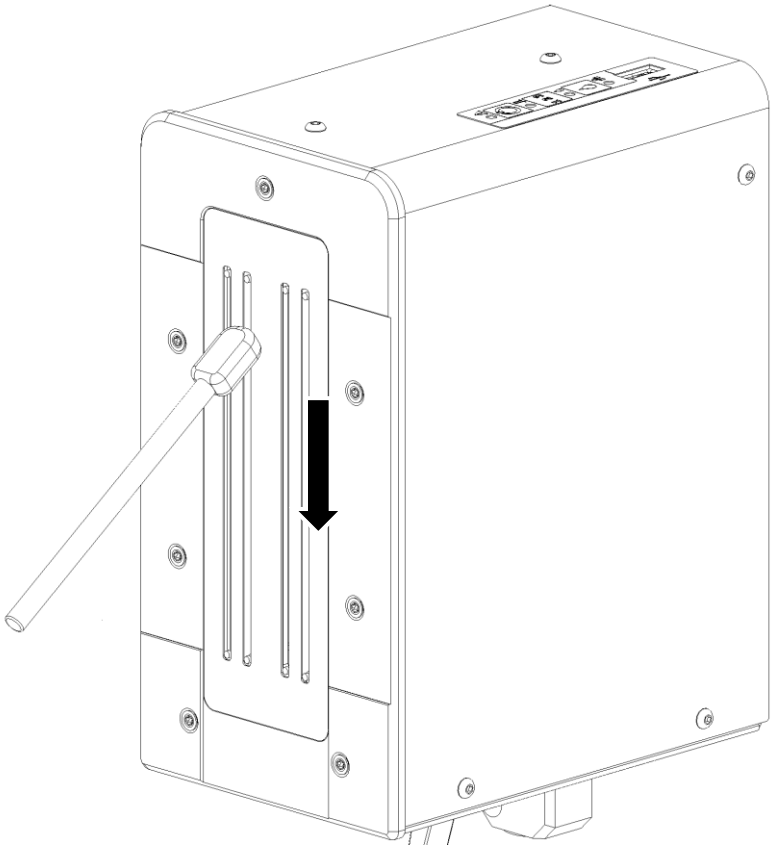


Fig. 15: Wiping the nozzle plate

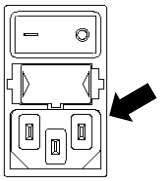
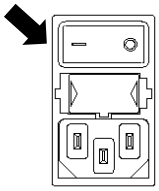
After rinsing, a test print should be done. If the print result is not satisfactory, repeat steps bleeding and rinsing.

If the contamination is too stubborn and cannot be removed by the rinsing procedure, return the unit to our factory for expert cleaning. Please note that this constitutes a service which entails costs, even during the warranty period.
If the normal unit environment is constantly subject to large dust accumulation, we recommend having the unit cleaned at the factory in regular intervals of once or twice per year.

Installation of an unfilled system

The systems are delivered ready filled with ink.
If a system for some reason is delivered unfilled, proceed as follows:

Instruction
Please fill the system with ink as folows:

Step	Procedure
1	Install the Markoprint integra PP108 (head and ink system) stable and horizontal on a mounting bracket.
2	Connect the system with the power supply.
	
3	Switch on the power.
	
4	The ink LED and status LED should light yellow after start up, because the ink tank is empty.
5	Screw in the ink bottle until the seal is open and wait until the bottle has emptied. Pay attention to the correct ink type!

Step	Procedure

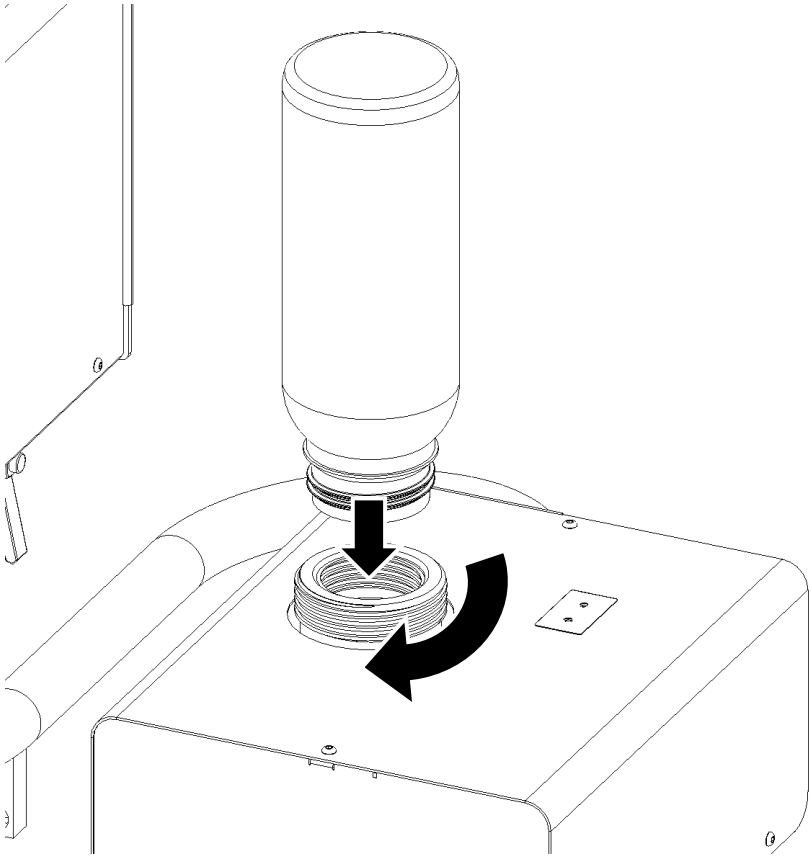


Fig. 16: Insert ink bottle

6	The ink should run in the ink tank. If the tank is full, the ink LED lights green. (This takes up to 30 sec.)
7	Wait 1 -2 minutes until the ink circuit is completely filled and the pumps work regularly.
8	Remove the locking clamp of the nozzle plate and keep it in a convenient place.

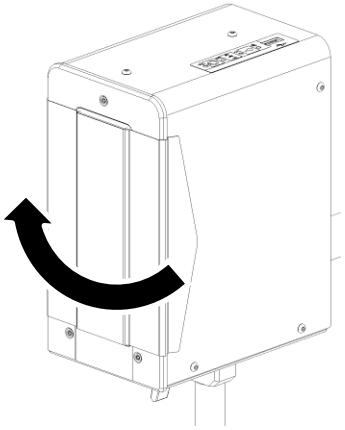


Fig. 17: Remove locking clamp

9	Assign a print image: Press the [123]-button and the[ON-/OFF]-button. Now the status LED should light green.

Step	Procedure
10	Make a test print: Press short the [INK]-button.
11	If the nozzles don’t print at all, repeat the purge procedure.

Operation

User interface of the print system

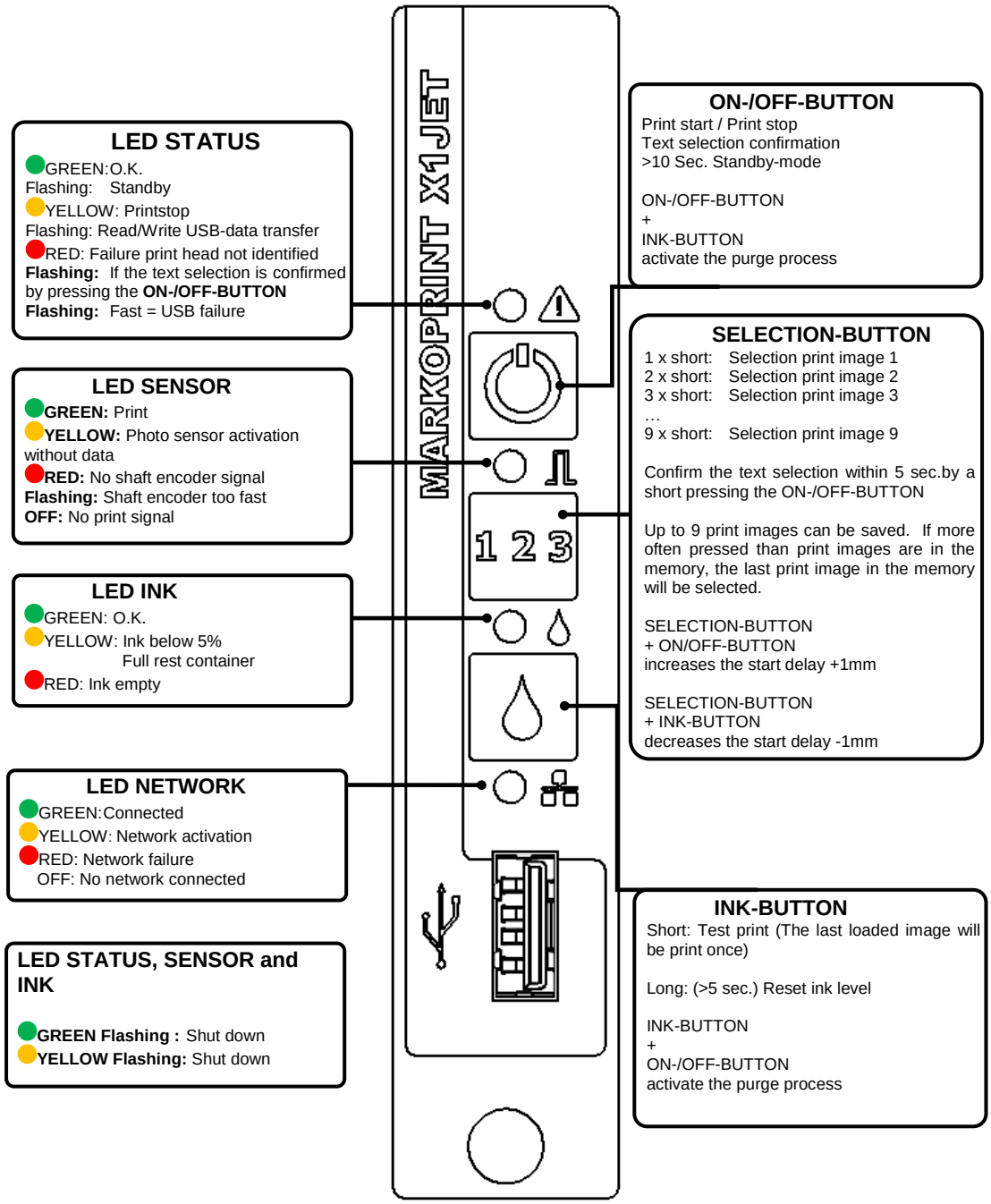


Fig. 18: User interface at the top of the system

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 analyzed in more detail.
→ *Chapter* Boot-LED messages, *page* 92

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 system.

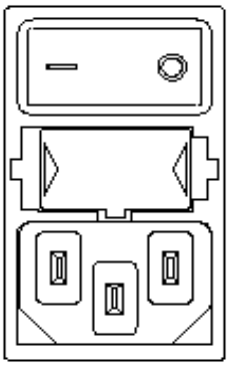


Fig. 19: ON-/OFF-BUTTON on the back side of the system

2	The system must conduct a self-test and is ready for operation after ca. 30 seconds.
3	If the pumps do not start to run in rhythm (return pump continuously, flow pump pulsed approx. 50%), start the rinsing function once or put on the locking clamp until the pumps run in rhythm.

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	Press the Power button for approx. 10 seconds. The Status, 123 and Ink LEDs will flash yellow.
2	After approx. one minute the LEDs flash green and the pumps stop running.
3	Set the switch from I to 0 on the back of the device.

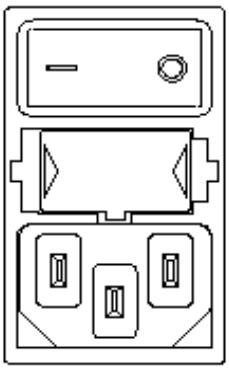


Fig. 20: ON-/OFF-BUTTON on the back side of the system

4	The system is switched off completely and starts into the last operating status the next time it is switched on.
5	The locking clamp is not mounted.

Filling the system

NOTICE

Material damages by misuse!

The early insertion of a ink bottle can cause an overfilling of the ink system and therefore material damages.

Therefore:

– Change the ink bottle only when the system reports „Empty ink bottle“.

Insert the ink bottle

Requirement

- The LED-ink displays „Ink empty“

Instruction

Please fill the ink system as follows:

Step	Procedure
1	Open the ink system by pressing and turning the black cap.

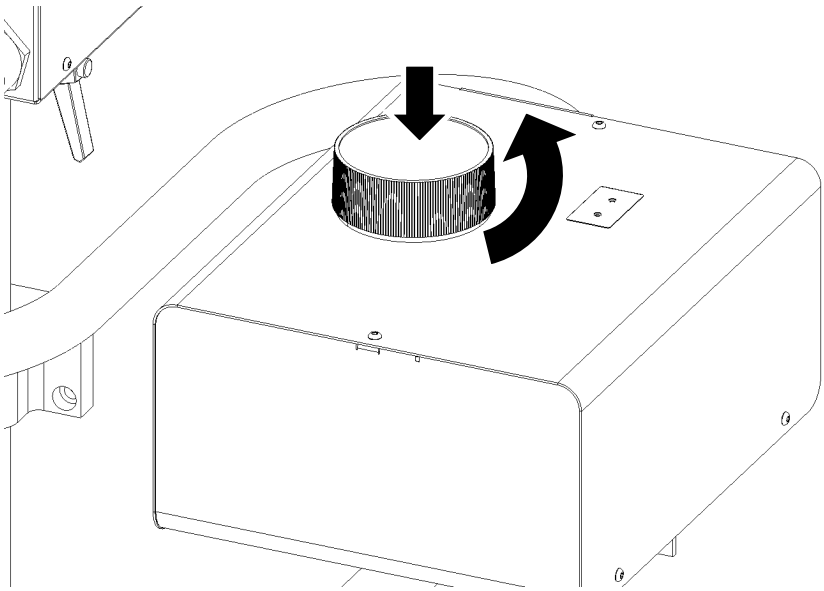


Fig. 21: Open the cap

2	Open the cap of the new ink bottle and check if the seal closes the bottle.
3	Screw the ink upside down until the seal is open and wait until the bottle has emptied. Pay attention to the correct ink type!

Step	Procedure

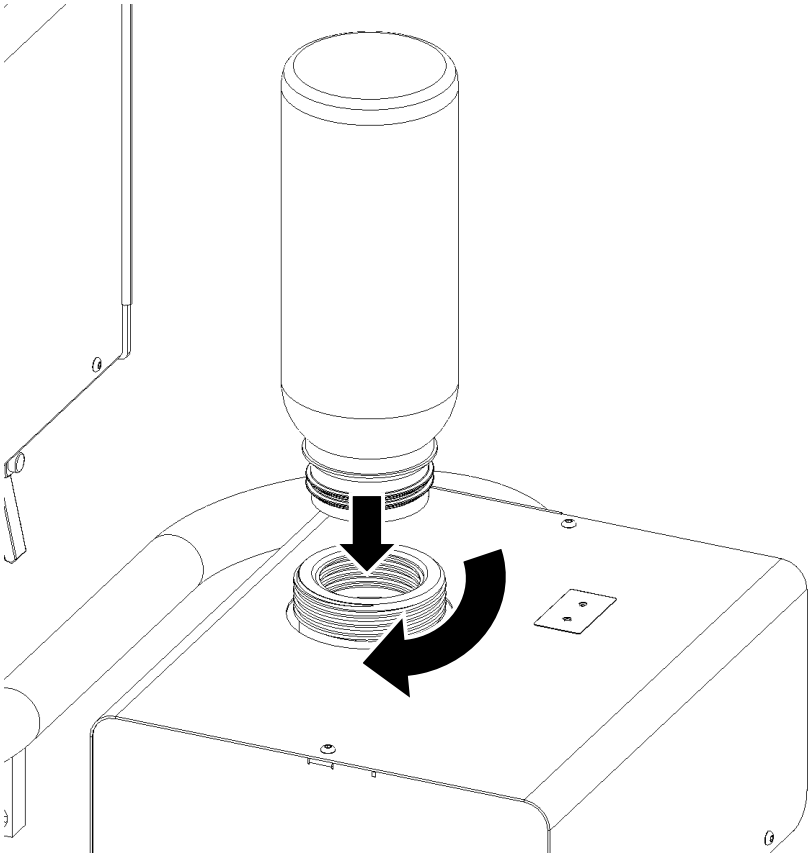


Fig. 22: Screw in the ink bottle

4	The ink should flow into the ink tank now. When the tank is full, the ink LED lights green. (This takes up to 30 seconds.)
5	Unscrew and close the ink bottle. Proper disposal
6	Screw up the black cap.

Print stop

Instruction

Please activate a Print Stop / a Print Pause as follows:

Step	Procedure
1	Presses once short the [ON-/OFF]-Button on the top side of the print system.

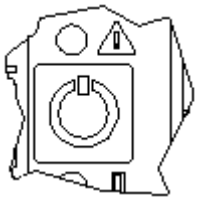


Fig. 23: ON-/OFF-BUTTON on the top of the system

2	The Power LED lights yellow on print stop.

Print start

Instruction

Please activate a Print Start as follows:

Step	Procedure
1	Press once short the [ON-/OFF]-Button on the top side of the print system.

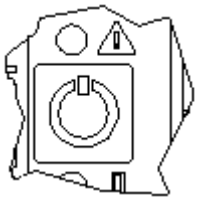


Fig. 24: ON-/OFF-BUTTON on the top of the system

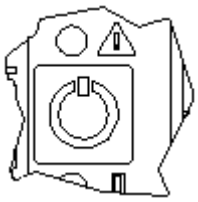
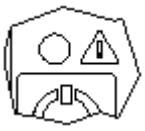
2	The Power LED lights green with successful print activation.

Select print image

Up to nine print images can be saved in the memory of the Markoprint integra PP108 or a direct call up at the system unit.

Instruction

Please select a print image as follows:

Step	Procedure
1	To select the saved print image, ranks third, press the [SELECT]-Button three times short.
	Fig. 25: SELECT-BUTTON on the top of the system
2	To confirm the text selection pressing the [ON-/OFF]-Button within 5 seconds.
	
	Fig. 26: ON-/OFF-BUTTON on the top of the system
3	After pressing the [ON-/OFF]-Button, the selected text is confirmed with the flashing STATUS LED. I.e. if text 3 is selected, the STATUS LED flashes three times.
	
	Fig. 27: Status-LED on the top of the system
4	The print images 1.00J to 9.00J can selected for printing in this way.
5	If only three print images are loaded and the print image 5 is selected, the STATUS LED flashes three times and print image 3 is loaded.

Loading print image

Print Images can load to the Markoprint integra PP108 print system as follows:

- USB-Stick
- Software iDesign with existing network connection via RJ45 or
- By serial interface EIA 232

Load print images incl. fonts, logos and parameter with a USB-stick automatically.

The files can load to a USB-stick by iDesign.

After the connection of a USB stick an automatic run of commands will be made to query the system status.
At the same time a directory „Markoprint“ and a subdirectory with the name of the serial number of the system, i.e. „L12003-x1“ will be created in the main directory of the USB stick. There will be saved all system specific data.
The stick must be connected once on the system to post this information, so that the iDesign software can work with the system after that.

The transfer of the data and commands happen by the Markoprint integra PP108 directly after the connection of the stick. After this the „Status.ast“ file is created.

Process:
After the connection and identification of the stick, the data will be read from the stick and the Status LED flashes quickly meanwhile (4x/second)
Thereafter, data written on the stick and the Status LED flashes slowly meanwhile (2x/second)
If the LED lights constant, the stick can removed after 2 seconds.

Load print image with a USB-Stick

Needed tools

USB-Stick

Requirements

- The used USB stick was connected for an initialization to the Markoprint integra PP108 print system.
- The print image, created with the iDesign Software, is transferred to the USB stick.

Instruction

Please load the print image from the USB-Stick to the memory of the Markoprint integra PP108 print system:

Step	Procedure
1	Connect the USB-Stick to the USB-socket on the top of the print system.

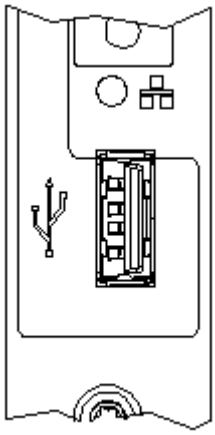


Fig. 28: USB-A socket on the top side of the system

2	Wait until the data exchange is completed. The STATUS LED flashes during the data exchange and lights constant after finishing.

Fig. 29: STATUS-LED on the top of the system

3	Remove the USB-Stick from the print system (2 seconds after the LED flashes constantly).

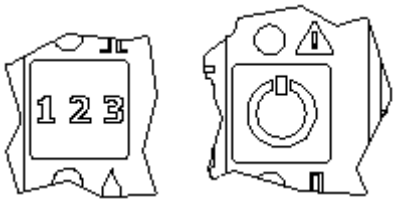
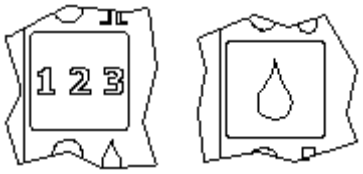
If the USB-stick is removed early or during data transfer, it can happen a data loss or the USB-stick can damaged.

To set the print start delay

It’s possible to change the print start delay at the system with a key combination.

Instruction

Please set the print start delay at the system as follows:

Step	Procedure
1	Press the [SELECT]-Button and the [ON-/OFF]-Button to increase the print start delay.
	
	Fig. 30: SELECT-BUTTON and ON-/OFF BUTTON
2	The delay increase by 1 mm each time the button is pressed.
3	Press the [SELECT]-Button and [INK]-Button to decrease the print start delay.
	
	Fig. 31: SELECT-BUTTON and INK-BUTTON
4	The delay decrease by 1 mm each time the button is pressed.

Loading Print Image with iDesign

Requirements

- The Markoprint integra PP108 print system is connected with the iDesign Software by a network or serial interface.
- It's also possible to transfer the print image to a USB-stick and connect the USB-stick with the system to load the print image.

Instruction

Please load a print image from iDesign to the memory of the Markoprint integra PP108 print system as follows:

Step	Procedure
1	Select the menu Functions on the left side of iDesign
2	If several print systems are connected with the iDesign software, click on the illustration of the corresponding print system which shall be selected.
3	Click on the button [Printing].
4	Select the desired directory by pressing the directory button. The print images, saved in iDesign can be found in the directory C:\user\public\iDesign\label standard.
5	Click to select the desired print image. The selected print image is shown in the preview.
6	Click on the button [Print Start] to print the selected print image. A window with "Print start ok" is shortly shown for the confirmation.

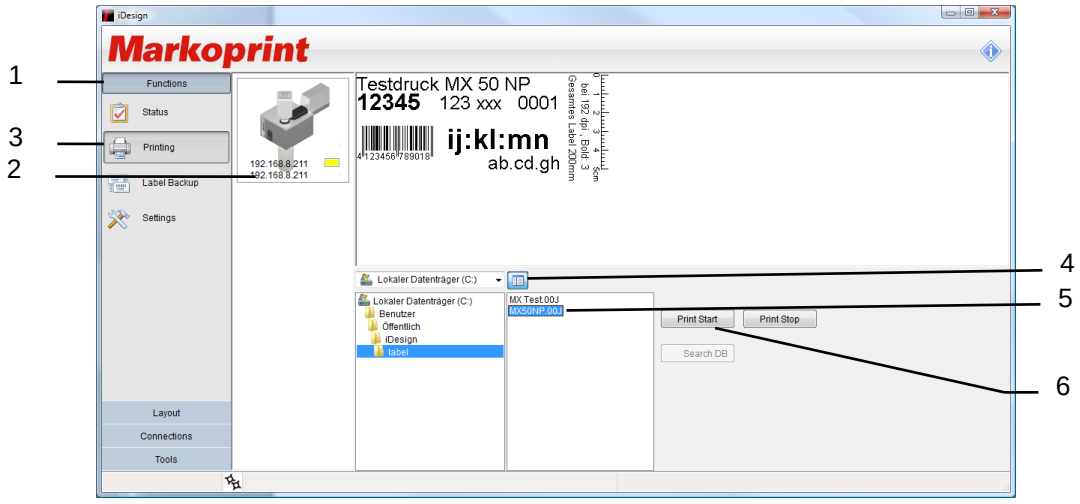


Fig. 32: Print image selection in iDesign

Setting of the parameter by iDesign software (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 millimeters.
The print start delay relates to the beginning of the print layout.

Requirements

- The Markoprint integra PP108 print system is connected with the iDesign software via a network or serial interface.
- Or the settings can be written on the USB-stick and then transferred to the system.

Instruction

Please set the print start delay via the iDesign software as follows:

Step	Procedure
1	Select the menu Functions on the left side of iDesign.
2	If several print systems are connected with the iDesign software, click on the illustration of the corresponding print system which shall be selected.
3	Click on the button [Settings].
4	Click on the menu slide „Print parameter“ to call up the corresponding menu.
5	Set up the print start delay by click on the arrow keys or by input via keypad.

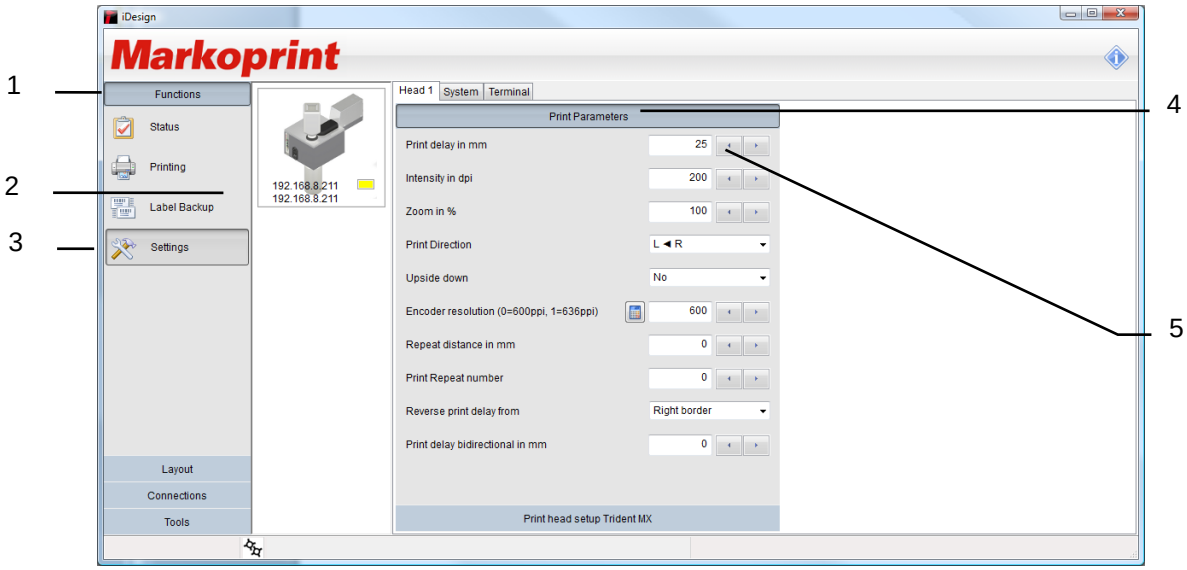


Fig. 33: Set up the print start delay in iDesign

Web-Interface

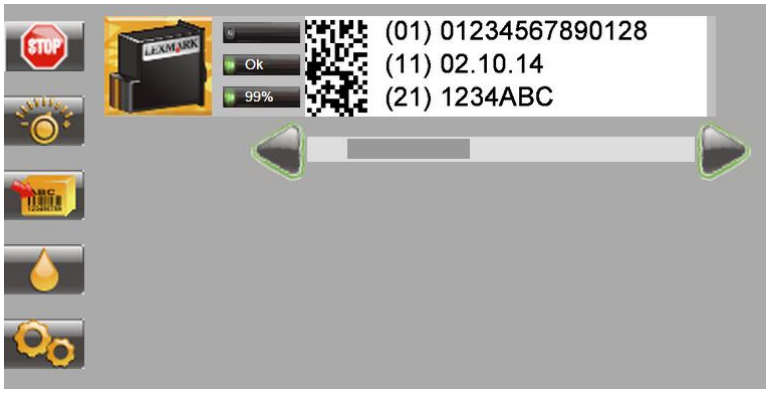
The WEB Interface basically behaves like the X2JET / X4JET plus Touch operation.

The WEB Interface can only be called from one terminal at the same time!
If the WEB Interface of a print system should be operated by another terminal, the existing connection must stop before!

An intro is displayed after starting the WEB Interface.
To skip the intro, click on this.

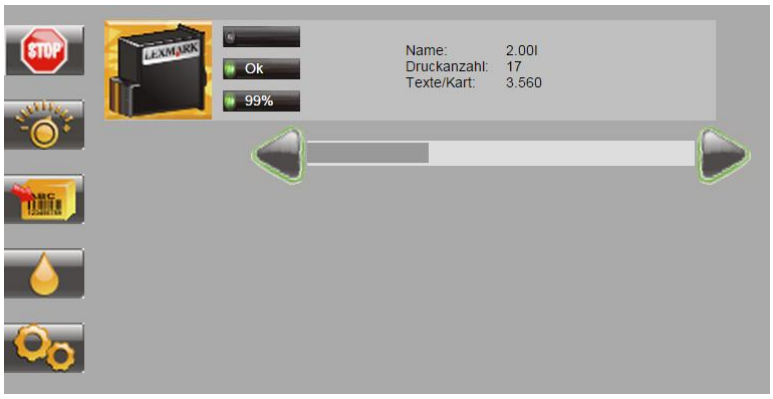
The version number of the system firmware is also displayed.

After that, the status screen is displayed, from which can be navigate:



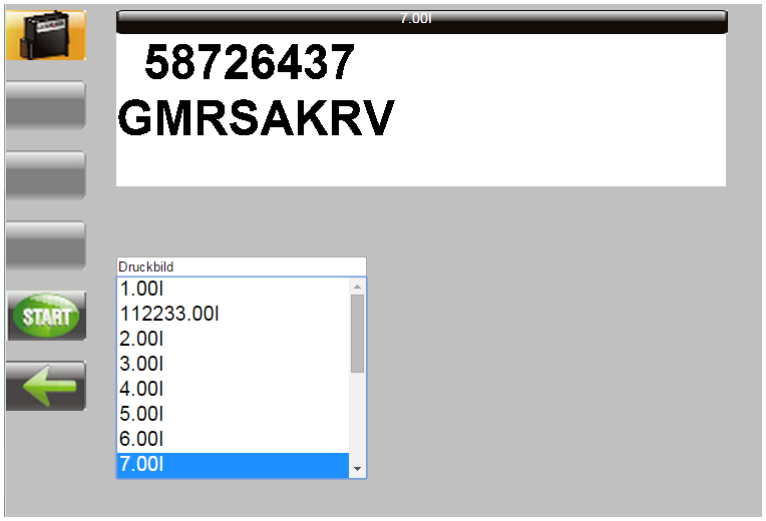
Use the arrow keys to scroll through the print image.

By a click on the print image, the 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, are displayed.



The print can pause with .

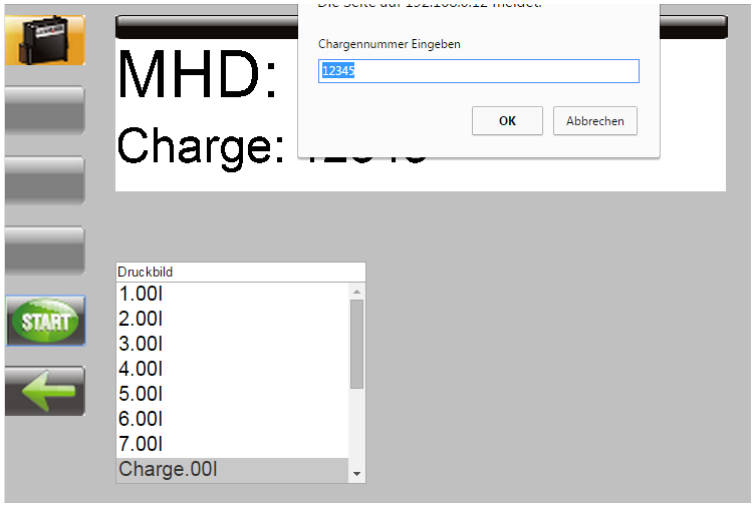
The print can start again or another print image can select with .



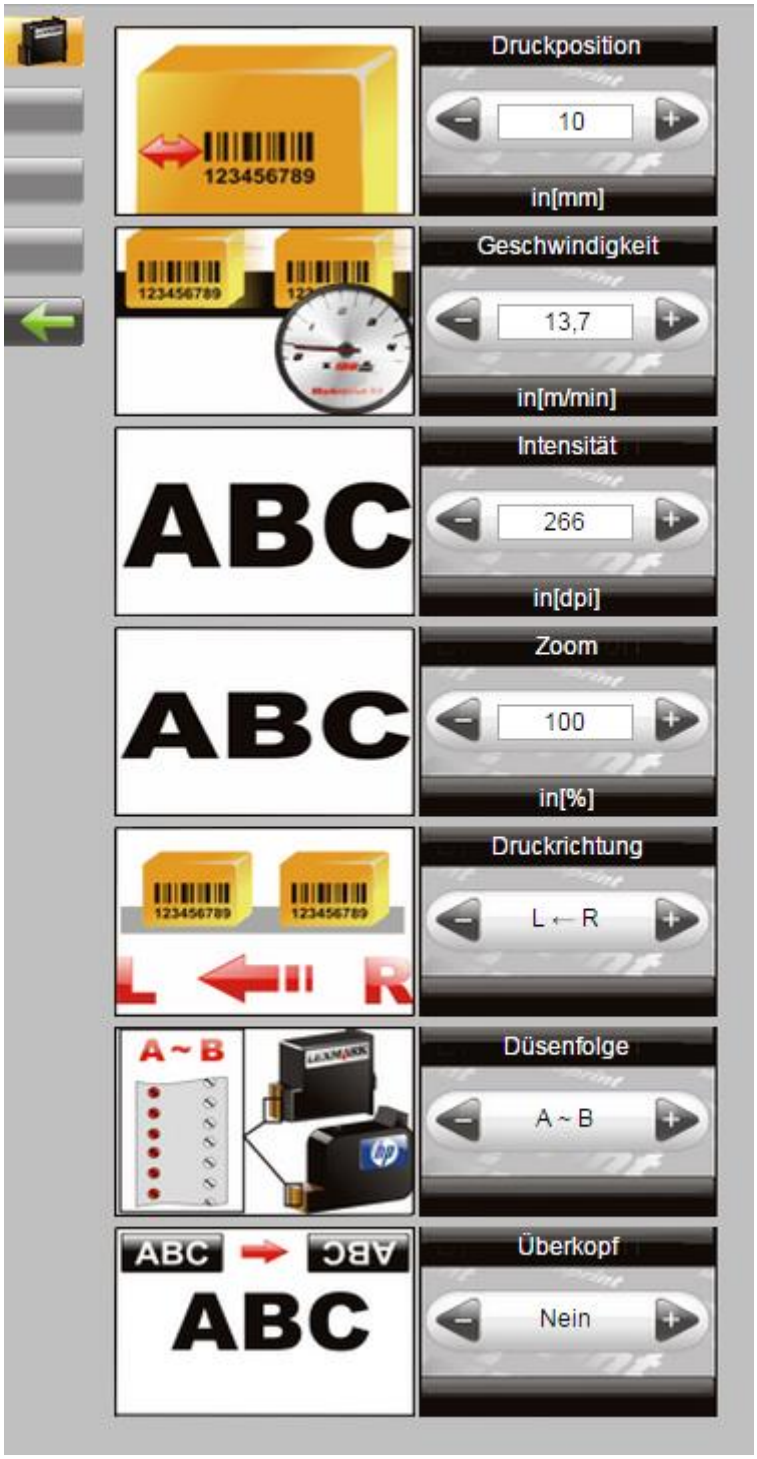
The selected print image can start with .

The last loaded and paused print image restarts with .

Variable fields are queried each time before a print image starts:

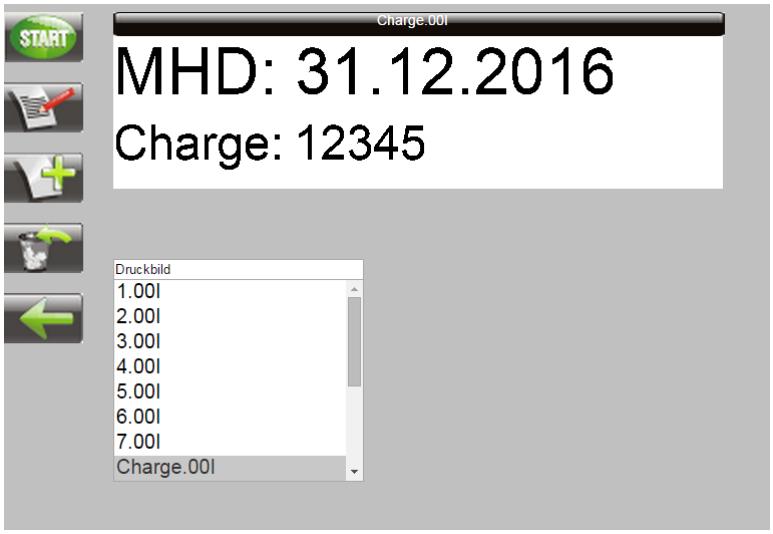


Parameter settings can be selected and changed with :

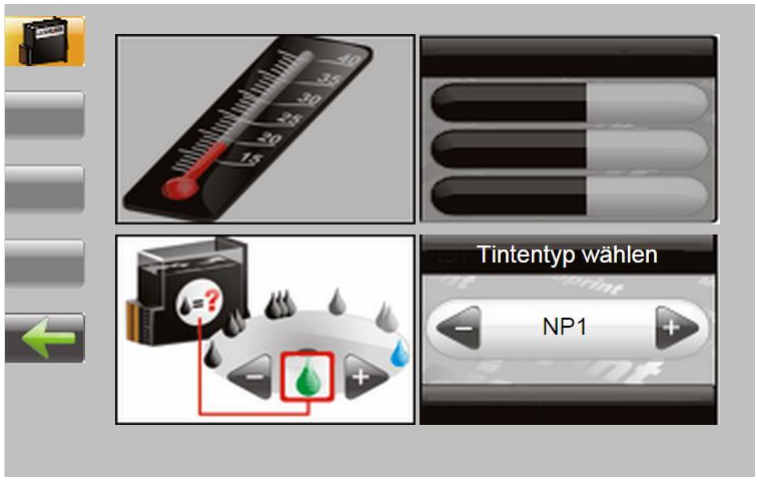


With the button:
a print image can call up for print start
a print image can be changed
a new print image can be created.

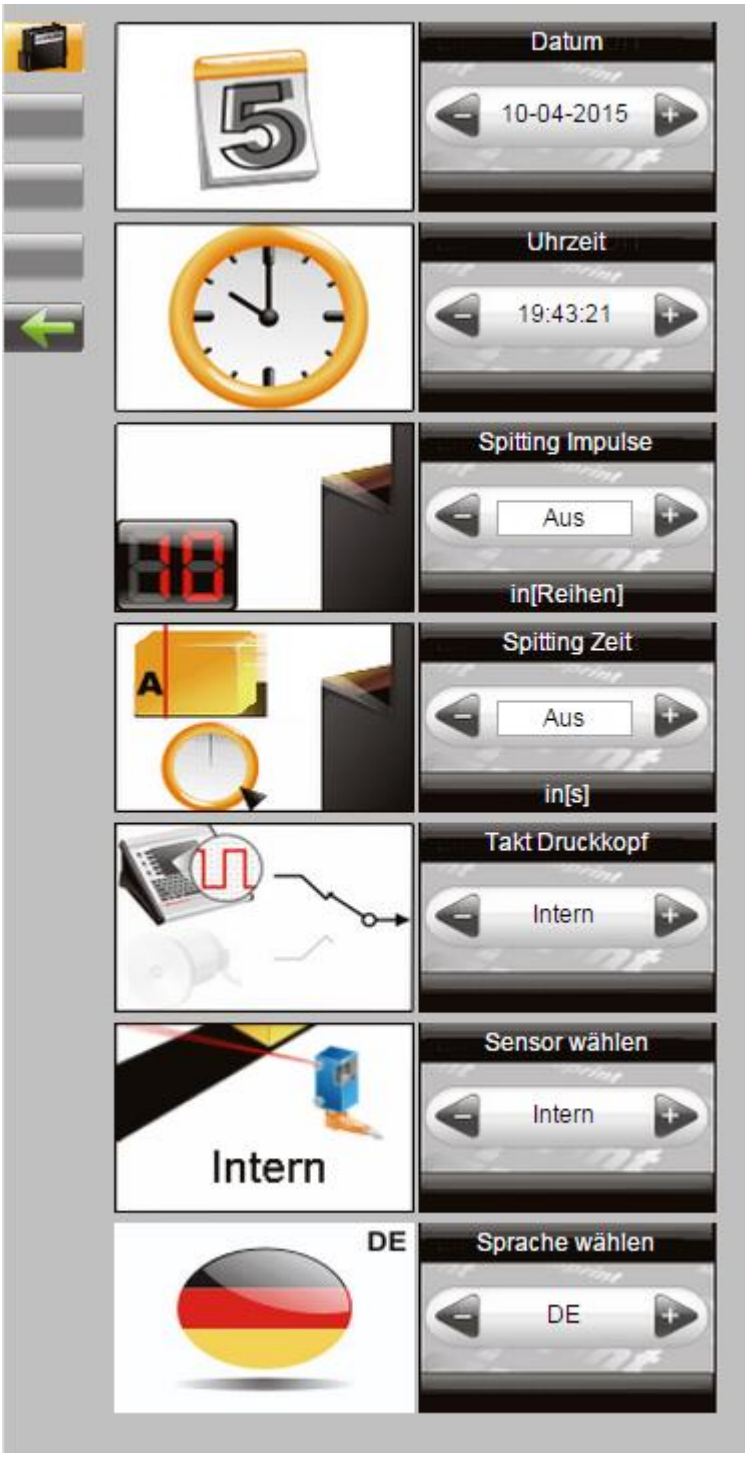
See also Operation Manual X2JET / X4JET plus Touch.



Change the ink settings with .



Call up and change the system settings with :



Configurable In-/Outputs

NOTICE

Material damage due to short-circuit or over voltage!

The outputs are open Collector outputs and may load with max. 100 mA.

The Markoprint integra PP108 has at the 15-pole option socket two in- and four outputs. A variety of configurations are possible and so the connectors for output of status messages (OK, Warning, Error), ink 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 texts for input 1 must be called „!EXT00.00J“ and „!EXT01.00J“ with an external text selection by the inputs. The texts „!EXT00.00J“ to „!EXT15.00S“ can be assigned if all inputs are used.

The setting can be done with iDesign Software in *Functions* → *System settings* → *Advanced settings* or via Web-Browser in *Settings* → *Advanced settings*.

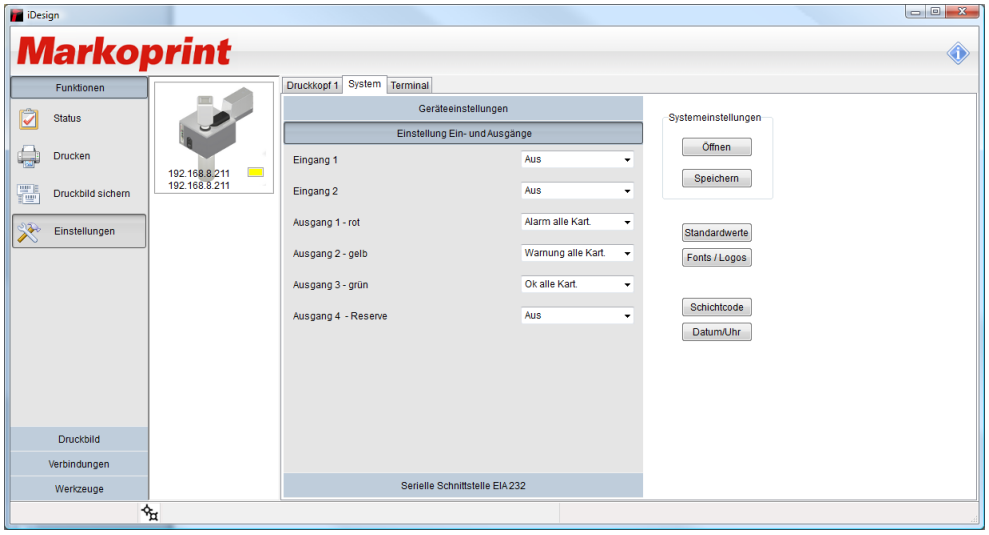


Fig. 34: User interface Software iDesign

Settings by iDesign software

Following print parameter can set up with the iDesign software (Note the instructions of the provided iDesign software manual):

- Print start delay
- Print direction
- Overhead
- Zoom

- Fixed speed
- Speed (Only adjustable if fixed speed is adjusted)
- Intensity (Only adjustable if fixed speed is adjusted)

- Shaft encoder
- Shaft encoder resolution (only adjustable if shaft encoder is adjusted)
- Shaft encoder divider (only adjustable if shaft encoder is adjusted)

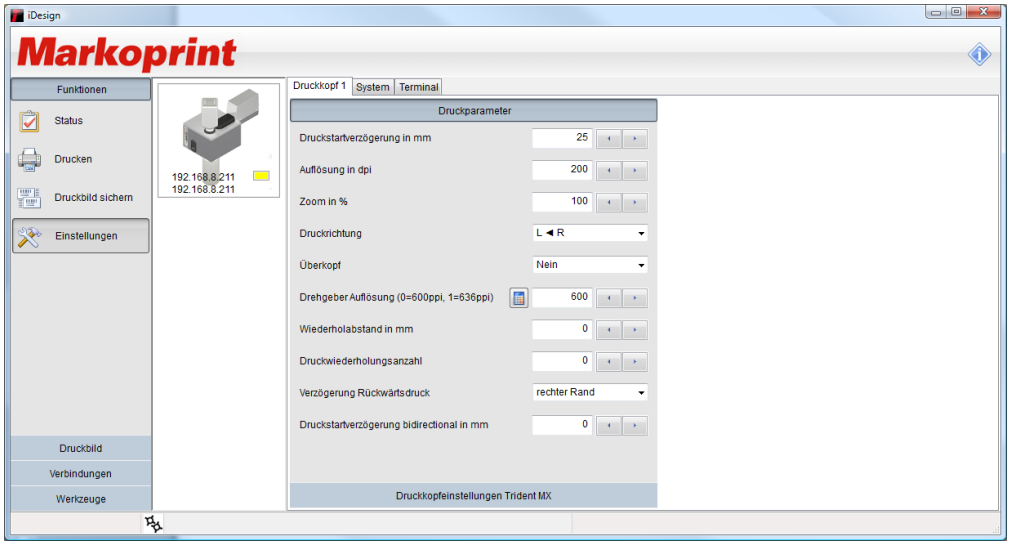


Fig. 35: Set print parameter by iDesign

iDesign

Create a print image

No print images can be created on the Markoprint integra PP108.
Print images can be created and processed with the iDesign software stored on the USB stick. For this purpose, this must be installed on a commercially available PC (follow the enclosed iDesign operating instructions).

The diagram below shows the operating surface of the iDesign software.

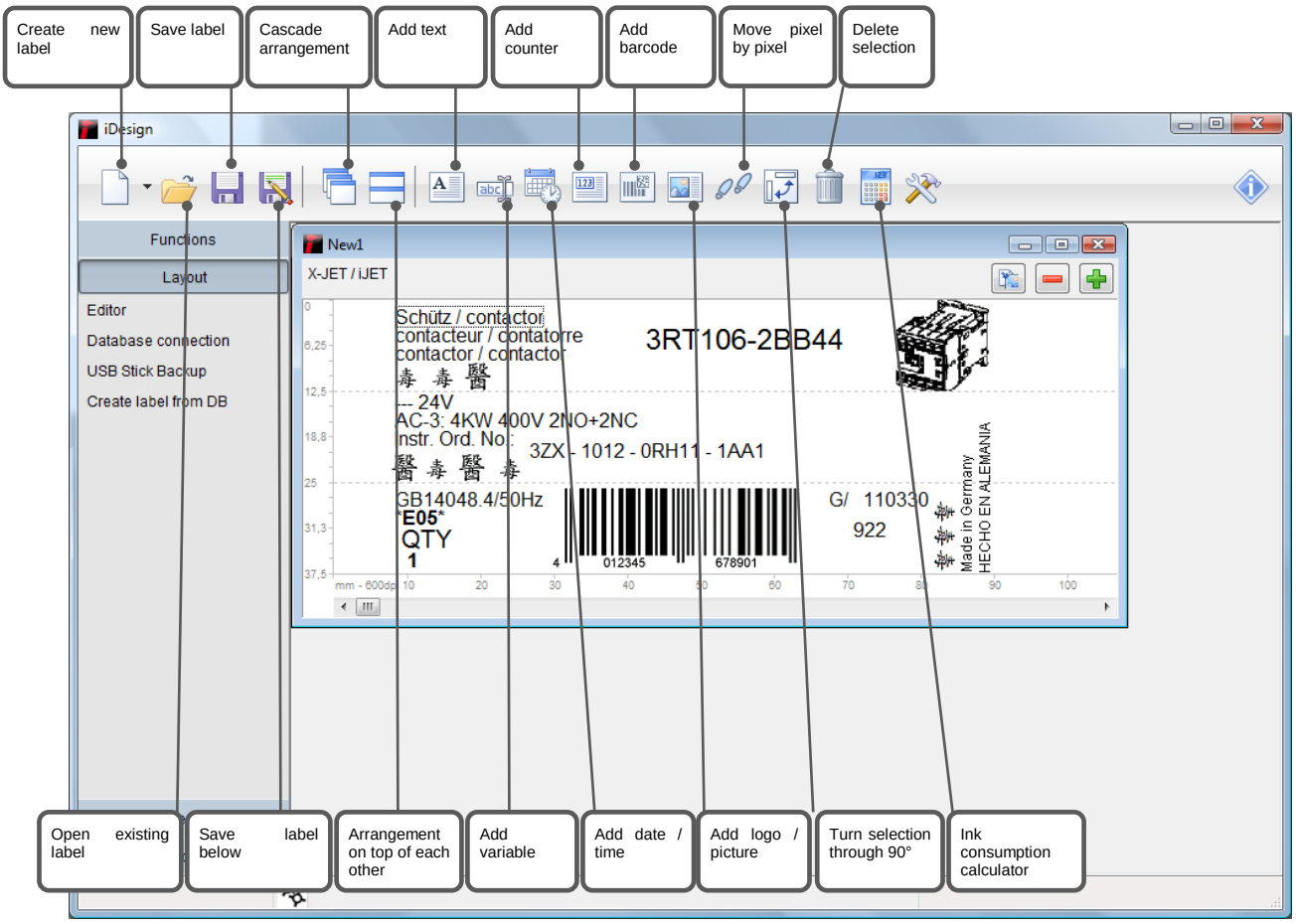


Fig. 36: User interface Editor iDesign Software

Ethernet Connection establishing

To establish an Ethernet connection to the print system you have to know a free Ethernet address.
Please ask your system administrator.

Instruction

Please set an Ethernet address in the system as follows:

Step	Procedure
1	Connect a USB stick to the Markoprint integra PP108 and wait that the status LED stops blinking.
2	Connect the USB stick to a PC with iDesign software. The system will be shown in iDesign.
3	Click in iDesign with the mouse on the system icon and enter the requested IP address under Functions / Settings / System / IP address. Confirm the IP address and add the connection to iDesign.
4	Now connect the USB stick again to the Markoprint integra PP108. The Markoprint integra PP108 should now be visible under the desired IP address.

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 specialized 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.

CAUTION **Risk of injury by improper fault remediation!**

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.

Troubleshooting tasks

Disorder	Possible cause	Troubleshooting	Recovered by
The print head does not print at all	No power supply	Check voltage input and power on switch	Electrician
	No start pulse	Check photo sensor connection (LED pulse)	Electrician
	No print image is assigned	Start print	Instructed person
	No shaft encoder signal	Sensor LED is red. Check shaft encoder and connections	Electrician
	System is configured incorrectly	Check menu settings – system configuration	Instructed person
	Start signal too early or late, relative to the print object	Adjust the corresponding modification in the print parameter menu	Instructed person
	Failure in the electronics of the system or of the print head	Send print head in for repair	Manufacturer
Fine gaps in the print image followed by satellite drops	Paper dust, other dust or fibers in the nozzle openings	Run a purging cycle and wipe the print head carefully clean. If this is unsuccessful, send the print head in for repair	Electrician
Weak and blurred print	Distance between print head and object too large -	Reduce distance to 1-3 mm	Qualified person
Print with false /too small character height	Check used and loaded fonts.	All fonts used in the text must be loaded in the system – IDESIGN Font Manager	Instructed person
Shadow print	Speed setting not correct	Check speed setting (intensity setting for rotary encoder)	Instructed person

Disassembly

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

Staff

WARNING **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.

CAUTION **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.

Disassembly of print head

NOTICE

Sachschäden durch unsachgemäße Demontage!

Auslaufende Tinte, die mit der Elektronik in Berührung kommt, kann zu Sachschäden führen.

Instruction

Please disassemble the Markoprint integra PP108:

Step	Procedure
1	Shut down and switch off the system.
2	Remove power cable and all other connections
3	Clean the nozzle plate and close the nozzle plate with the previously cleaned locking clamp.

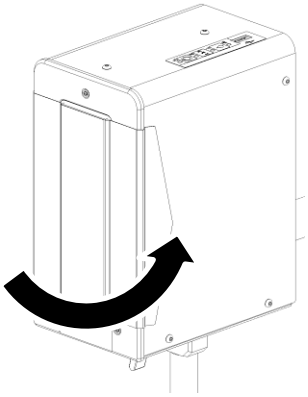


Fig. 37: Put on the locking clamp

4	Clean any external dirt.
5	Disassemble the system and pack it carefully.

To prevent damage during transportation, choose a box with adequate padding. Leave a gap of at least 5cm between unit and box for filling with absorbent and impact-absorbing filling.
Please do not pack unit in plastic bag.
Because any escaped ink cannot be soaked up, it spreads over the whole unit causing damage.

The resulting damage and cleaning overhead unnecessarily increase repair costs.

For best possible transportation, original packaging is available from Weber Marking Systems for this system.

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.

HMI-Display (Human-Machine-Interface)

The print system can be extended by a display. With the HMI display, the current settings can be edited and checked. The HMI display is connected to the 15-pin Sub-D connector of the Markoprint integra PP108 by an adapter cable.

Via 4 status LEDs, various information of the system can be checked and changed.
The HMI display has a start and a stop button to start a print start or stop.

To use the HMI display, the HMI function must be enabled. Please contact your local distributor.

Activate the HMI-Display

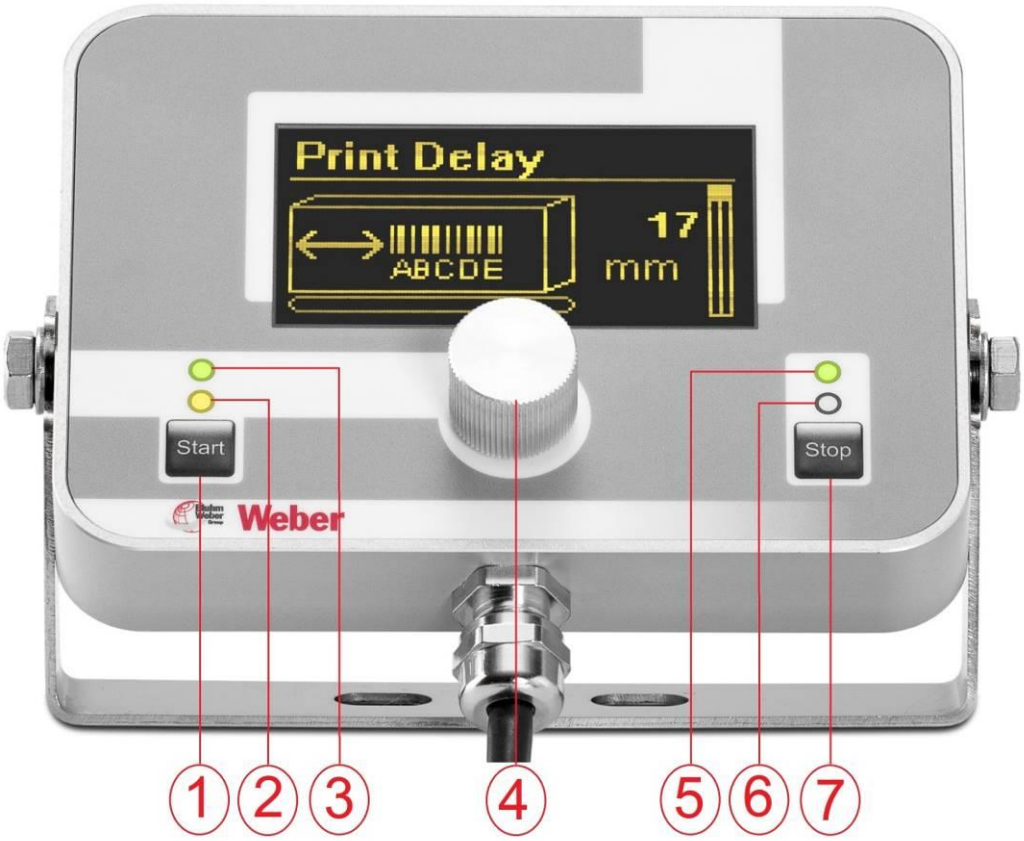
The HMI display can be activated via the local network or with an "initialized" USB stick.

Instruction
How to connect the HMI display with the print system

Conditions:
- The device is switched on.
- A PC with the current iDesign software is available.
- The print system has firmware version 2020g or higher.
- The HMI function has been activated by your responsible distributor.

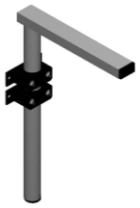
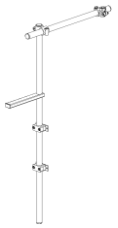
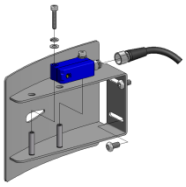
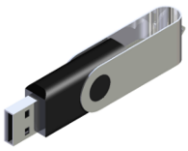
Step	Procedure
1	Connect the 5-pin connector of the HMI display with the HMI connection cable or the HMI Y-cable
2	Connect the 15-pin Sub D connector of the HMI connection cable or the 15-pin Sub D connector of the Y-cable with the print system
3	Activate the HMI function via iDesign with the PC Settings >> System >> Special settings >> Markoprint integra PP108 HMI
4	Now the system properties of the print system and the variables of the print image can be changed and the print image can be selected via the HMI display

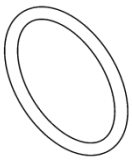
Description of the HMI-Display



1.	Start	Restart after Stop.	
2	Device status	Indicates the status of the connected device.	
		Red	Error, No Cartridge in the System.
		Yellow	Printstop
		Green	OK
3	HMI-status	Status of the HMI-Display	
		Green	Display OK
4	iLogic	Use to navigate in the menus.	
		Rotate	Selection of different menus
		Push	Select sub menu
		Halten	Return to previous menu

5	Sensor	Indicates the status of the sensor. The LED is only active when the sensor is triggered.	
		Red	Encoder-signal lost
		Yellow	Sensor active at printstop
		Green	Print busy
6	Ink cartridge	Indicates the status of the ink cartridge	
		Red	Cartridge empty
		Yellow	Ink level under 5%
		Green	OK
7	Stop	Printstop. The device does not print when the sensor is triggered	

Pos.	Figure	Assembly	Description	Order no.
1		Mounting bracket Compact	For a fixing on a conveyor from the side.	71800027
2		Mounting bracket Top	For a fixing on a conveyor from the top.	IN PREPARATION
3		Sensor (NPN), 10…30V DC Standard M12	Incl. 5.0 m connecting cable (M12 to 15pin Sub-D) and universal holder	72800002
		Sensor (NPN) M8, with bracket for print head mounting	Incl. connecting cable (M8 to 15pin SUB-D) and bracket for print head mounting	72801075
4		Protection plate with sensor (NPN)	Incl. connecting cable (M8 to 15pin SUB-D)	72801076
5		Shaft encoder Spring arm holder	Push-pull output, 5,000 pulses/rev, with spring arm and friction wheel, incl. mounting holder and connecting cable (M12 to 15pin Sub-D) SPLITTER CABLE NECESSARY	72801042
6		Rotary encoder Angle holder	Push-pull output, 5,000 pulses/rev., with angle holder, friction wheel and connecting cable (M12 to 15pin Sub-D) SPLITTER CABLE NECESSARY	72801041
7		USB-data stick	Version 1	72901203

Pos.	Figure	Assembly	Description	Order no.
8		Measuring wheel	Measuring wheel with O-ring for shaft encoder, optimized for 600 dpi	72900454
9		O-Ring	O-Ring for encoder measuring wheel (600 dpi) Dimensions: 55x5; NBR	72900455
10		Splitter cable	Splitter cable for the connection of more than 2 options. Alarm, RS232, Sensor, Encoder	72900545
11		Cleaning stick	Cleaning stick to clean the nozzle plate	40007189
12		Y-cable 1x 15pol Sub-D connector to 1x 15pol Sub-D socket and 1x M12 socket B-coded for HMI	15 pol Sub-D connector with metallized housing and screws. All 15 pins are interconnected and 1x 5pol M12 socket B-coded forHMI. Cable length 25cm, Cable Color Black.	40037993
13		Adapter cable15pol Sub-D connector to M12 socket B-Coded for HMI	15 pol Sub-D connector with metallized housing and screws. to 5pol M12 socket B-coded for HMI Cable length 25cm, Cable Color Black.	40038349

Appendix

Software-Update

Software-update with USB-Stick

Requirements

- The program directories „HMI“, „Html“ and „SYSTEM“ are copied in the main directory of an empty USB-stick.
- The Markoprint integra PP108 is not connected to the power supply.

Instruction

Please proceed the software-update as follows:

Step	Procedure
1	Connect the Markoprint integra PP108 with the power supply and press the [Ink]-button simultaneously and press it as long as the Sensor LED flashes green/red.
2	Connect the USB-stick in the USB socket on the top side of the system.
3	The Sensor LED flashes yellow/red if the program is load.
4	Confirm by pressing the start-button and wait until the system is restart.
5	Remove now the USB-stick.

Software-Upgrade

A software upgrade with costs is comfortably possible via the Weber Marking Partner Portal
Please contact you distributor for a software upgrade.

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

Current software version

Status	Date	Reason for change
3.023	01.02.2019	

USB-Stick files

Following files are saved on the USB-stick:

- iDesign-Software
- Manual Markoprint integra PP108
- Manual iDesign Software
- Leaflet

The required files for software updates:

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

Directory structure:

Markoprint	*L12003-x1*	Status.ast	
	L12004-x1	Status.ast	
		Command.ast	
		Result.ast	
		Log.txt	
		Label	1.00J
			2.00J
		Fonts	A4mm.ft3
			A6mm.ft3
		Logos	Cow.bmp
			HP.bmp

- Global.ast	Is only executed if no Command.ast exists for the system.
- Result.ast	Result of Global.ast

The 9 print images which can call up with the keys: 1.00J to 9.00J.

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

Plug connections

Ethernet

Connection
Network input RJ45 on the back side of the system.

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

USB A

The USB sockets are standard sockets, as used in commercial PCs and USB devices. Insert the USB-stick without force effect normal to the top side of the system in the USB socket.

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

Option

Option socket: 15 pol Sub-D connector

PIN	Description	Value	Unit
1	GND	0	V
2	Output 1 (Alarm)	Open Collector, max 24V / 100mA	
3	Input 1	Input Standard: NPN	
4	Input 2	Input Standard: NPN	
5	Output 3 (Ok)	Open Collector, max 24V / 100mA	
6	Output 4 (Reserve)	Open Collector, max 24V / 100mA	
7	EIA 232	TXD	
8	GND	0	V
9	Output 2 (Warning)	Open Collector, max 24V / 100mA	
10	Start pulse	Input Standard: NPN	
11	Shaft encoder	Input Standard: NPN	
12	Not used		
13	Not used		
14	EIA 232	RXD	
15	Power	+12	V

Splitter cable (72900545)

Pin connection:

15 pol Sub-D-Connector	9pol Sub-D-Connector (EIA232)
PIN 7	PIN 3
PIN 14	PIN 2
PIN 8	PIN 5

15 pol Sub-D-Connector	4pol M12 Socket (Encoder)
PIN 8	PIN 3
PIN 11	PIN 4
PIN 15	PIN 1

15 pol Sub-D-Connector	4pol M12 Socket (Sensor)
PIN 8	PIN 3
PIN 10	PIN 4
PIN 15	PIN 1

15 pol Sub-D-Connector	15 pol Sub-D Socket (Alarm I/O)
PIN 1	PIN 1
PIN 2	PIN 2
PIN 3	PIN 3
PIN 4	PIN 4
PIN 5	PIN 5
PIN 6	PIN 6
PIN 8	PIN 8
PIN 9	PIN 9
PIN 10	PIN 10
PIN 11	PIN 11
PIN 15	PIN 15

Splitter cable HMI (40037993)

15 pol Sub-D connector	15 pol Sub-D socket	M12 socket 5pol B-Coded (HMI)	Description
Pin1	Pin1	PIN3	GND
Pin2	Pin2		Output 1 (Alarm)
Pin3	Pin3		Input 1
Pin4	Pin4		Input 2
Pin5	Pin5		Output 3 (Ok)
Pin6	Pin6		Output 4 (Reserve)
Pin7	Pin7	PIN4	EIA 232
Pin8	Pin8		GND
Pin9	Pin9		Output 2 (Warning)
Pin10	Pin10		Start pulse
Pin11	Pin11		Shaft encoder
Pin12	Pin12		Not used
Pin13	Pin13		Not used
Pin14	Pin14	PIN2	EIA 232
Pin15	Pin15	PIN1	Power

Adapter cable HMI (40038349)

15 pol Sub-D-connector	M12 socket 5pol B-Coded (HMI)	Description
PIN 1	PIN 3	0V
PIN 7	PIN 4	TxD > RxD
PIN 14	PIN 2	RxD > TxD
PIN 15	PIN 1	12/24V

Sensors

Sensor input:
Standard: NPN (switching to GND)
Voltage: 12V (10-30V)
Threshold level: 7V

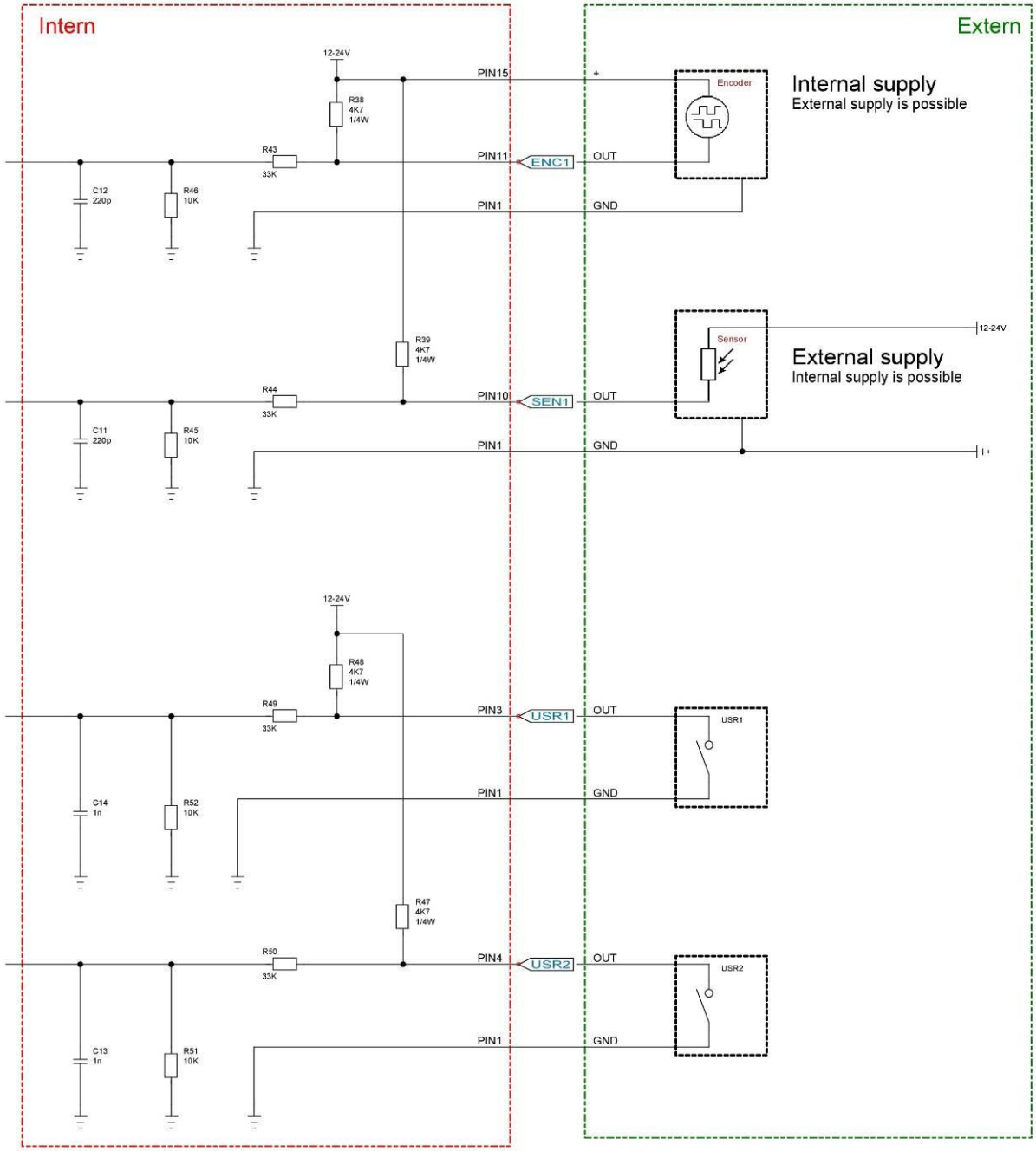
Is the input is switched to PNP a resistance of ca. 2kOhm must connected between the input (Pin10) and ground (Pin1).

Encoder

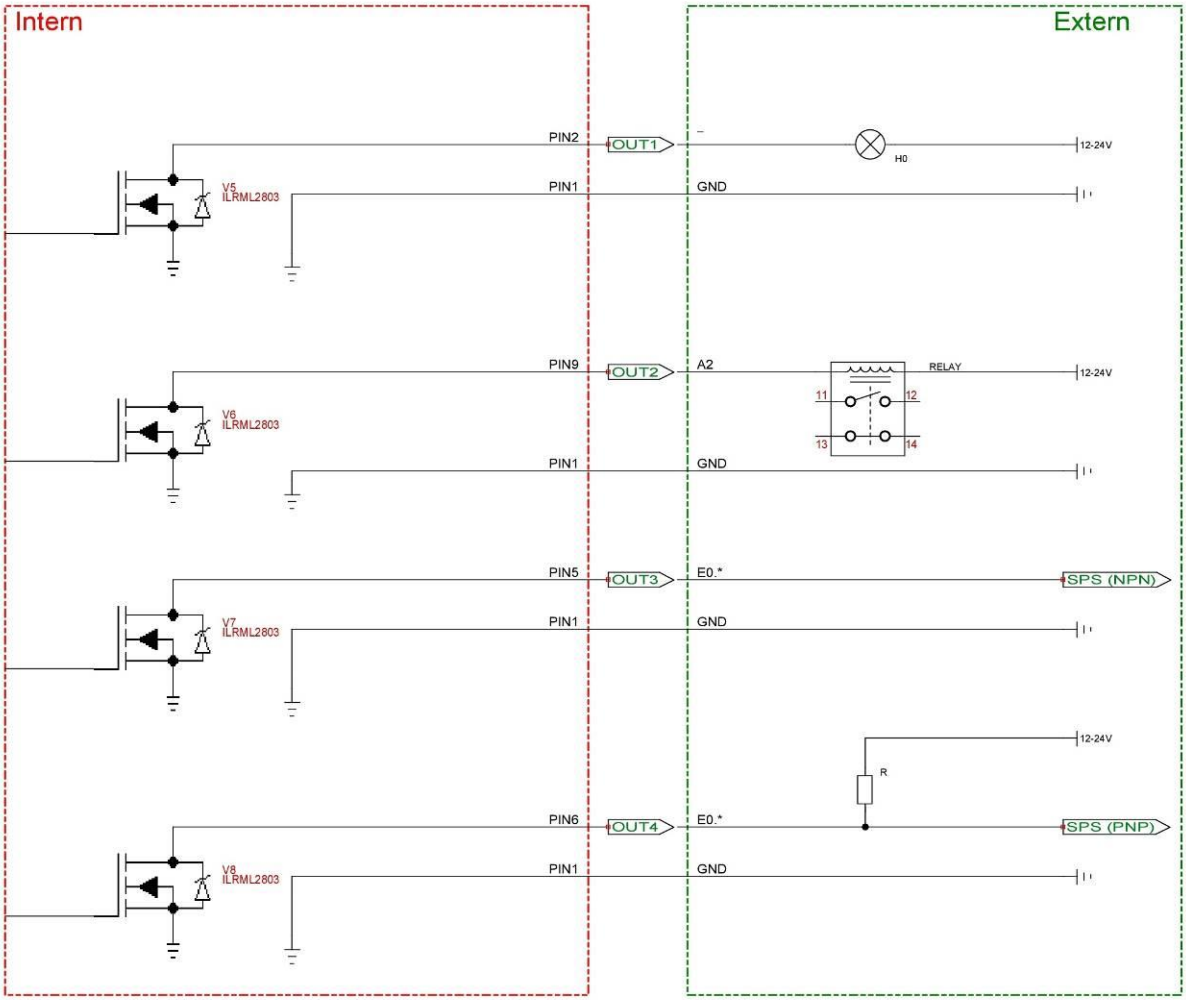
Encoder input:
Standard: Push-pull or NPN (switching to GND)
Voltage: 12V (10-30V)
Threshold level: 7V
Frequency: Max. 150 kHz

Input / output connection for 15 pin Sub-D socket with examples

Examples input**:**



Examples output:



Hose system

Principle of piping:

Mac address

The MAC address of the respective Markoprint integra PP108 can be seen on the name plate of the system. In addition, the Mac address can be seen in the iDesign software.

Instruction

Please see the MAC address by the iDesign software as follows:

Step	Procedure
1	Select the menu Functions on the left side of the iDesign software.
2	If several print systems are connected with the iDesign software, click on the illustration of the corresponding print system which shall be selected.
3	Click on the button [System Settings].
4	Click on the menu slide „System Config“ to call up the corresponding menu.
5	The MAC address can be seen in the corresponding line.

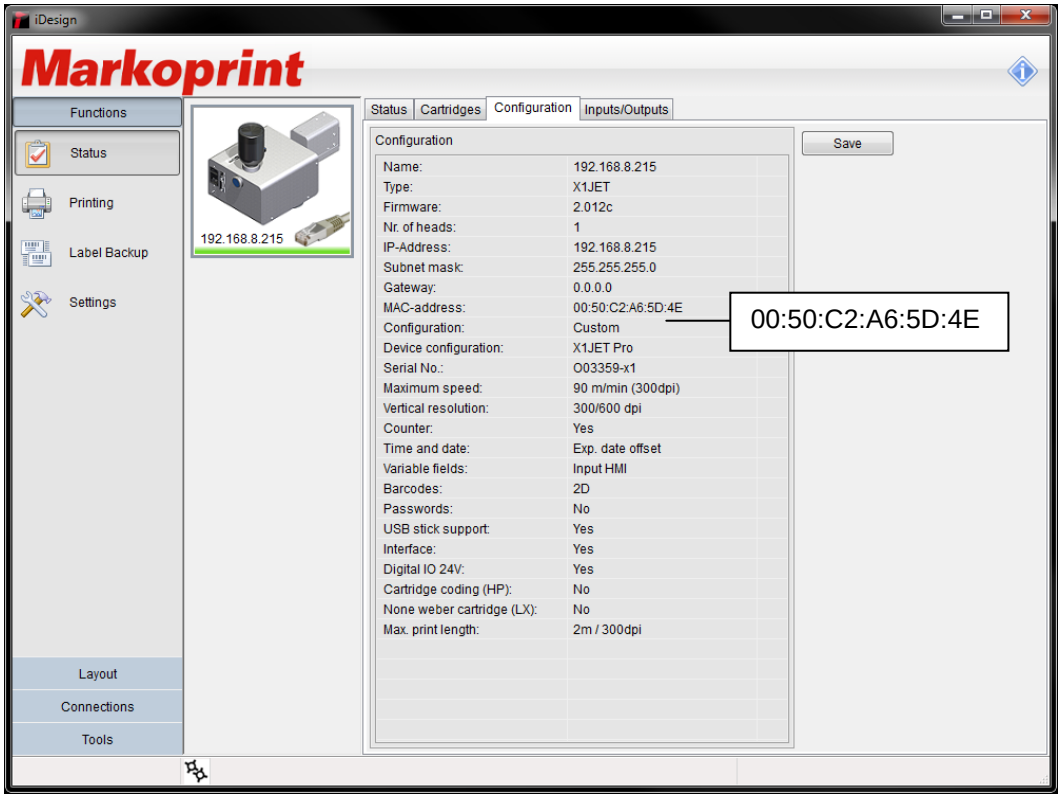
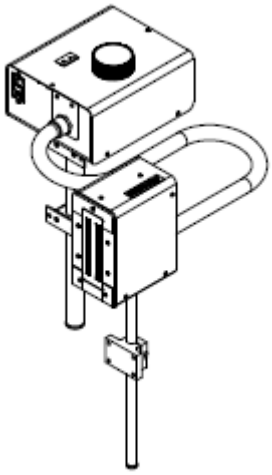


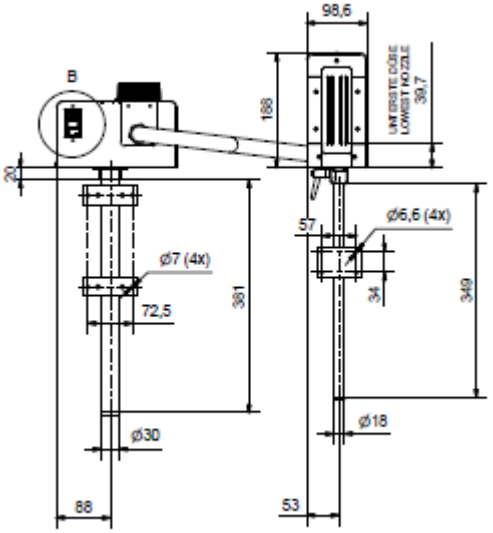
Fig. 38: iDesign System Config

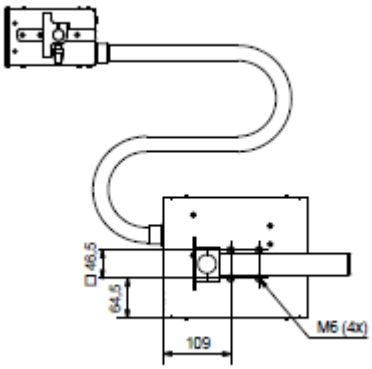
Range from:	To:
00:50:C2:A6:50:00	00:50:C2:A6:5F:FF
40:D8:55:14:50:00	40:D8:55:14:5F:FF

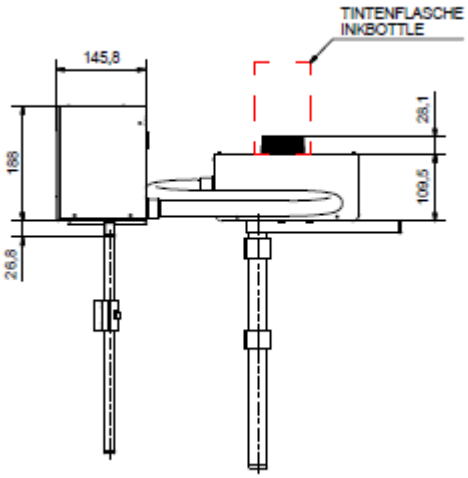
Technical drawings

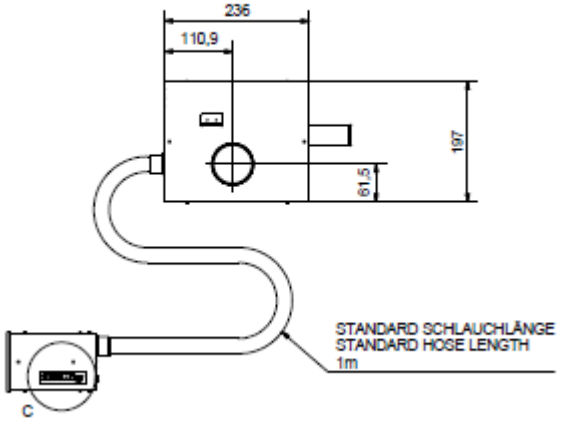
System unit Markoprint integra PP108

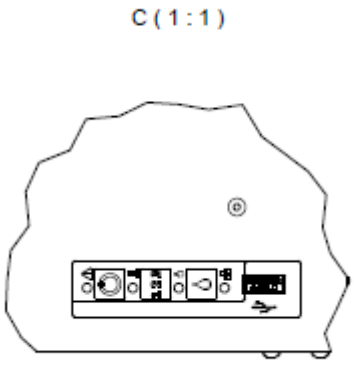












Instruction sheet

Copy the instruction sheet before completing.

Date	Name	Type of instruction	Instruction by	Signature

Parameter list

Parameter	After Reset	Min.	Max.	Current value	Unit
Print start delay	10	0	999		mm
Speed	15	1,0	300,0		m/min
Divider shaft encoder	4	1	50		-
Intensity	300	50	900		dpi
Print width	100	10	900		%
Direction	R -->L	R -->L	L--> R		-
Nozzle row	A~B	A	A+B		-
Overhead	no	no	yes		-
Sensor	Internal	Internal	External		-
Encoder	Internal	Internal	External		-
IP-address		0.0.0.0	255.255.255.255		-
IP-mask	255.255.255.0	0.0.0.0	255.255.255.255		-
Gateway	0.0.0.0	0.0.0.0	255.255.255.255		-
Voltage	11,0	4,0	11,2		V
Fire time	190	50	300		s
Fire pause	190	100	300		s
Ink Min	5	0	99		%
Spitmode	Off	Before	Intervall		-
Columns	1	1	99		-
Delay	1	1	999		s
Intervall	1	1	999		s
Auto Off	0	1	999		min.
Repeat Delay	0	0	999		mm
Repeat Number	0	0	999		
Warming	No	yes	no		
Warming Temp.	20	20	80		°C
Warming off timer	0	0	999		s
Language	Englisch				-
Ink type	STABL				-
User 1	0	0	4		-