

Gamma XD

Service Manual – Diagnostics

28.12.2015

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1 About this document

- ▶ Make sure that this document is accessible at all times.
- ▶ Insert all supplements received from Durst Phototechnik AG into this document.
- ▶ Read and comply with this document and all other documents in the service documentation.

1.1 Purpose and target group

This document is part of the service documentation and contains information on the facilities for emergency operation and for diagnostics in the event of faults.

This information applies to printers of the Gamma XD range of Durst Phototechnik AG and should be referred to by the following personnel:





- Durst service engineers (service engineer Durst group)
- General service technicians (service technician distributor)

1.2 Revisions

Edition of the document	What is new?
28.12.2015	First edition <ul style="list-style-type: none"> – Updated error code list from 20.10.2015 (Ver. 6Z)

Tab. 1: Revision index

1.3 Symbols and markers

Symbol	Meaning
✓	Pre-requirement for an action
▶	Request for a single-step action
1.	Step within a request for a multi-step action
↪	Result of an action sequence
	Note for easier or safer work
→	Cross-reference
 DANGER!	Immediately dangerous situation, where disregard of the safety measures will lead to death or serious injury.
 WARNING!	Potentially dangerous situation, where disregard of the safety measures may lead to death or serious injury.
 CAUTION!	Potentially dangerous situation, where disregard of safety measures may lead to minor injury.
NOTE!	Potentially dangerous situation, where disregard of safety measures may lead to damage to property.

Tab. 2: Symbols and markers

1.3.1 Structure of warnings

Warnings are structured as follows (shown here as an example: the warning level "WARNING"):



WARNING! Type and source of the hazard

Consequences of the hazard.

▷ Measures for avoiding the hazard.

▷ Read the warning and comply with it.

1.4 Terminology

Acronym	Meaning
IF	Initializing faults
CF	Communication faults
EF	Electrical faults
AF	Action related faults
PF	Printing faults
ICF	Ink circulation faults
HT	Header Tank
HTP	Header Tank Pump
HTRV	Header Tank Refill Valve
FT	Feeding Tank
RT	Return Tank
HTC	Header Tank Circulation
MTP	Main Tank Pump
MTRP	Main Tank Refill Pump

Tab. 3: Terminology used in this manual

2 Troubleshooting

2.1 Automatic self-healing function

If there is any issue on the machine, such as no communication to a PCB, or a PCB has been changed, or a movable axis is not initialized, or anything similar. Use the automatic self-healing function.

■ Automatic self- healing function:

1. Unlock the doors
2. Physically open the doors
3. Physically close the doors
4. Lock the doors

➔ Now the Gamma will analyse itself and depending on the issue he will act to fix it.
The whole procedure may take up to 2-4min.

2.2 Initializing faults

IF001

- After pressing the Reset and Initializing button:
- Process stops after the reboot of the ISPPE

Cause:

- Doors aren't closed and locked.
- Sliding covers of the print sledge aren't closed

Suggestion:

- ▶ Close and lock the doors. Process will finish automatically.
- ▶ Close sliding cover, close and lock the doors. Process will finish automatically.

IF002

- After pressing the Reset and Initializing button:
- Process exits when the PE should move

Cause:

- Missing power supply 400VAC to the Omron drivers
- Omron drivers in Error state
- Motor control PCB in error state

Suggestion:

- ▶ Check if F5 is switched ON
- ▶ Measure power supply 400VAC on X121
- ▶ Reset the Omron driver, the Motor control PCB, Electronic unit:
 - Switch OFF the MCB F14
 - Switch ON the MCB F14
- ▶ Press the Reset and Initialize button

IF003

- PE dose not move, Error 240 shown on the Omron Driver

Cause:

- The motor break is dose not open during a motor movement
- Wrong power supply to the motor
- Control PCB Error

IF001

- Suggestion:
- ▶ Check if the motor break is connected to X130 pin 45 and 46.
 - ▶ Check the wiring from the Pilz unit to the motor break.
 - ▶ Check the wiring from the Head Driver Omron X120 clamp 14 (Break -) to the motor break.
 - ▶ Check the Omron power supply 400VAC at the Omron drive L1,L2,L3
 - ▶ Reset the Omron drive
 - Switch OFF the MCB F14
 - Switch ON the MCB F14
 - ▶ Exchange Omron drive

IF004

- After looking the doors:
 - Print engine dose move up
 - Error “Crash Sensor detected” gets shown

Cause: • Pilz input I12 is active

- Suggestion:
- ▶ Check if crash is active
 - ▶ Check relay K109

Tab. 4: Initializing fault

2.3 Communication fault

CF001

- Wrong values shown from the PCB's, such:
 - All main tanks empty
 - LCC tank level 0.0
 - LCC Temp. 88.8
 - When pressing F5 the processing bar goes very slowly

Cause: • Durst – RS485 BUS communication is interrupted

- Suggestion:
- ▶ Execute SReset command, (to reinitialize the BUS communication)
 - ▶ Checking if all the data cables are plugged in correctly
 - ▶ Check power supply

CF002

- When pressing F5 the processing bar goes very slowly
- In the LOG file is written: "OpenIsppLink failed No such file or directory"
 - No communication with the PCB's

Cause: • Communication between ISPPE and WS is interrupted.

- Suggestion:
- ▶ Resetting the ISPPE:
 1. Doors must be closed and locked.
 2. Switch of the WS
 3. Switch OFF the MCB F12
 4. Switch ON the MCBF12
 5. Wait for 30s (time needed for the ISPPE to boot up)
 6. Switch on the WS
 7. Wait for 2min
 8. Press F5, processing bar goes straight to 100% within a few seconds.
 9. Automatically the Print Head Voltages get send.
 - ▶ ISPPE is reset

CF003

- The level from the FR (feeding reservoir) and the RR (return reservoir) show 0.0 mm and the Header tank speed is 0%

Cause: • Durst – optical fibre BUS communication is interrupted

- Missing power supply 5VDV
- Missing power supply 36VDC
- Missing power supply 30VDC (only Gamma 148XD)

- Suggestion:
- ▶ Check if the optical fibre loop is closed
 - ▶ Execute HReset command, (to reboot the CR PCB's and to reinitialize the BUS communication)
 - ▶ Measure on X103 the power supply 5VDC and 36VDC.
 - ▶ Measure on X103 the power supply 30VDC (only Gamma 148XD).

CF004

- In the beginning from each answer from a command in the LOG file is a question mark. (i.e.: ? .10QGTxxxxxx)

Cause: • End terminal resistance on RS485 communication bus is faulty

- Suggestion: ▶ Check if end terminal resistance is plugged in correctly
 ▶ Measure the resistance, must have 120Ohm
 ▶ Check if the resistance is mounted on the correct pins from the RJ45 connector (Pin 1 & 2).
 ▶ Change the end terminal resistance

CF005

- No communication with one CR, on one EM the 3.3 VDC LED is off but the 5VDC LED is ON

Cause: • 3.3VDC power supply is pulled to ground, by a fault unit.

- Suggestion: ▶ Disconnecting the 2 flex print cable for the MM's. Reconnecting them one by one to find out the error. May a cable or a MM are pulling the 3.3VDC to ground.
 ▶ Changing the QSR- control PCB

CF006

- QSR PCB Firmware update via WS not possible

Cause: • Automatic Gamma Type configuration incorrect. For example gamma type is: .01QGT98171, that means 17 MM's (normal value 05-15) and 1 Slot per MM (normal value 3).

- Suggestion: ▶ Resetting the electronic unit and the ISPPE:
1. Switch OFF the MCB F14
 2. Switch ON the MCB F14
 3. Doors must be closed and locked
 4. Switch of the WS
 5. Switch OFF the MCB F12
 6. Switch ON the MCB F12
 7. Wait for 30s (time needed for the ISPPE to boot up)
 8. Switch on the WS
 9. Wait for 2min
 10. Press F5, processing bar goes straight to 100% within a few seconds.
 11. Automatically the Print Head Voltages get send.

CF007

- EM, data communication LED is blinking fast after pressing the Reset and INIT button.
 - After an addition pressing of the Reset and INIT button, communication LED is on, showing communication is functional

Cause: • Short optical fibre cable is damaged, only a low amount of light is passing through.

- Suggestion: ▶ Changing the damaged cable.

Tab. 5: Communication fault

2.4 Electrical fault

EF001

- Not possible to turn on the Gamma.
 - Pilz input sliding cover PE is OK

Cause: • Pilz input I9 is of.

- Suggestion:
- ▶ Check if one or more line phases are missing. Or if the Voltage is below 230VAC +/- 10%.
 - ▶ Check fuses from the line monitoring relays (F30,F31,F32) on X3
 - ▶ Check functionality from line monitoring relay (K2,K3,K4)

EF002

- Not possible to move the PE.
 - Gamma was initialized

Cause: • Same as on IF002
• Missing input I7 on Omron PLC A10

- Suggestion:
- ▶ Same as on IF002
 - ▶ Check if relay K115 (next to the Omron PLC) is turned ON (green LED ON)
 - ▶ Check if aspiration bar (SUCKING_REF_POS) and purge tray (MAIN_REF_POS) are in reference position.
 - ▶ Check if relay K106 (MAIN_REF_POS) and K108 (SUCKING_REF_POS) are turned ON and if the giving the right feedback via X1675 (for K106) and X1679 (for K108)

EF003

Detailed error .10EE9604_1040 or 1041 or 1042

Cause: • Issue switching on 144VDC power towers

- Suggestion:
- ▶ Check function of relay K100 for error 1040 / relay K101 for error 1041 / relay K102 for error 1042
 - ▶ Check cables on motor control PCB connector X1692

EF004

Purge tray: during a movement, the tray moves out of reference position and then stops.

Cause: • Missing wrong signal from K105, K106

- Suggestion:
- ▶ Check if relay is placed well in his socket
 - ▶ Check relay serial number, SN ending with xxx.5000 are faulty relays. The need to be replaced with SN ending with xxx.5010
 - ▶ Check cable connection form the relay to the motor control PCB

EF005

Pilz show OFault faulty

Cause: • No current flow on a output IM19 and IM0

- Suggestion:
- ▶ Check if the ground cable is connected at X130 clamp 12
 - ▶ Check if the bridge between X130 clamp 1 and clamp 12 is made (ground connection)
 - ▶ Check if the relay if functional

EF006

Waste pump is not switching ON

Cause: • Waste pump gets no power supply

- Suggestion:
- ▶ Check cables on X131 clamp 1 and 2
 - ▶ Check the relay K111 if is functional
 - ▶ Check if the power gets switched through the relay
 - ▶ Check fuse on X102 clamp 27

EF007

Red and Orange LED are fast and alternately blinking.

Cause: • Module Head Sink Ink Temperature is on 88.8 C.

- Suggestion:
- ▶ EM Temp sensor is faulty.
 - ▶ Change EM

EF008

UPS output only 200VAC, input is 230VAC

Cause: • Wrong settings in the UPS unit

- Suggestion:
- ▶ Check setting in the UPS
 - ▶ Change UPS

Tab. 6: Electronic fault

2.5 Action related fault

AF001

- After exchanging a PCB:
 - No communication to the PCB
 - When pressing F5, the process bar goes very slowly

Cause: • PCB not visible in the bus- communication
 • BUS communication is interrupted

Suggestion: ▶ Execute SReset command, (to reinitialize the BUS communication)
 ▶ Checking if all the data cables are plugged in correctly
 ▶ Checking if the dip switches are set correctly

AF002

- After exchanging the VPTC:
 - ERROR 927D get shown

Cause: • Wrong dip switch setting (only on Gamma 98/108XD)

Suggestion: ▶ Change dip switch setting to not recognise overflow sensors.

AF003

- After performing any works on the print engine:
 - The Gamma is switched OFF, and it is not possible to turn it ON

Cause: • Sliding cover door lock is not totally closed and / or locked

Suggestion: ▶ Close the sliding cover form the print engine (both sides).
 ▶ Open and reclose the sliding cover to ensure that the door lock closes correctly.

AF004

- After changing a EM in CR xx
 - During printing a Printjob,all colour are printing except that CR where the EM got changed.

Cause: • New EM has older or newer firmware as the others

Suggestion: ▶ Update EM firmware, in order that all EM's has the same version.

Tab. 7: Action related fault

2.6 Printing related fault

PF001

■ Error: Print process failed ready, gets show during the preparing of a print job.

Cause: • Number of MM in the license, dose not match the number of MM's mounted.

Suggestion: ► Change the number of MM's in the license code.

PF002

Gamma is in printing mode, but no tile get printed (no error).

Cause: • Missing print start signal

Suggestion: ► Check fuse on X102 clamp nr.10
► Check cables on ISSPE subprint X-EXT

PF003

■ Step motor control communication lost, during the preparing of a print job

Cause: • The solenoid selection valve is burned out, and it creates a short cut when it gets switched.

Suggestion: ► Checking the solenoid selection valve, in case it is broken exchange it.
► Check the relay K110
► Checking the fuse on X102 clap 27
► Checking the cable connection

Tab. 8: Printing related fault

2.7 Ink circulation fault

ICF001

- Error: The header tank pump circulation speed goes from 75% - 80%, down to around 60%.

- Cause:
- The ink filter is nearly blocked.
 - The lung filter is nearly blocked

Suggestion: ► Identifying if the ink or lung filter is blocked and change it.

ICF002

- The header tank pump circulation speed is shown as 0%.

- Cause:
- The header tank is in overflow state (the level of the RR or FR is less than 10mm).

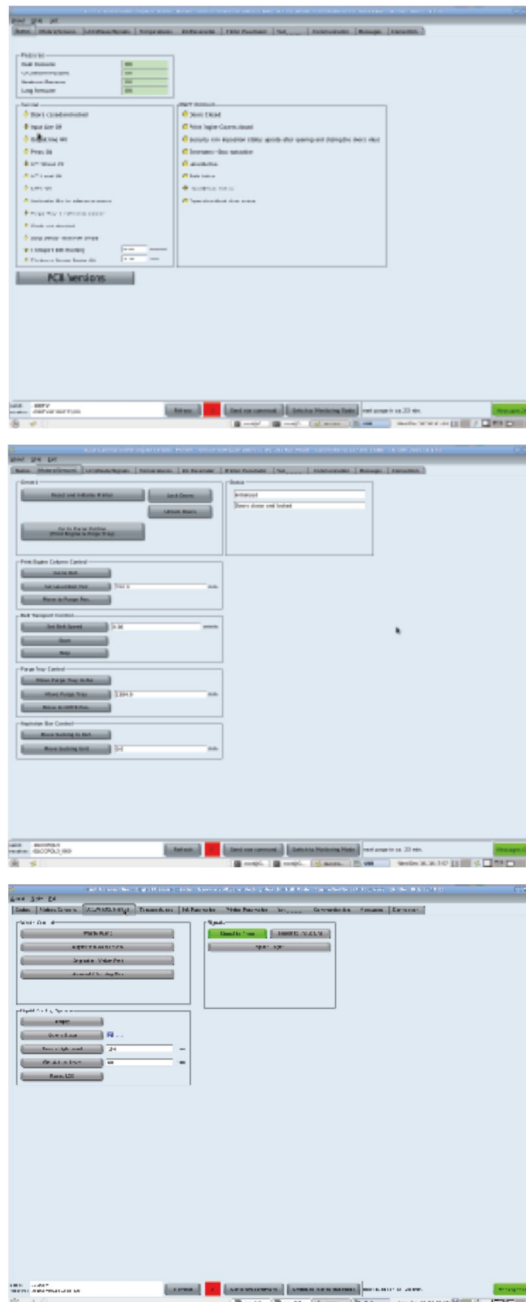
- Suggestion:
- In the User software: Perform 1-2 pressure purge to lower the level in the HT. Then automatically the header tank pump will start.
 - In the Service software, check the level of the header tank RR and FR. If the level in 1 or 2 tanks is lower than 10mm, then the system is in overflow state. It is needed to lower the ink level, performing a manual purge.
 - If the HT was in overflow it is needed to check if ink is inside the safety overflow reservoirs (return and feeding).

Tab. 9: Ink circulation fault

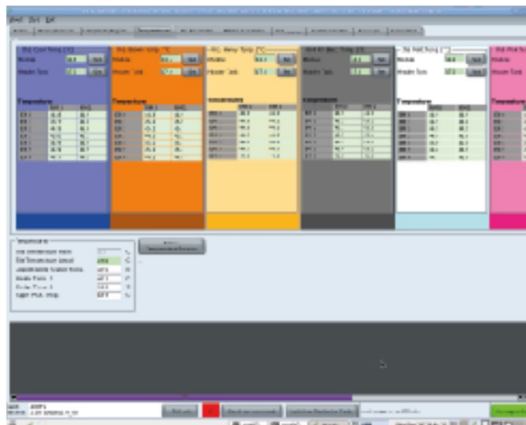
3 Troubleshooting with service software

- The service software (SSW) is part of the standard software package. The SSW is designed as a troubleshooting tool. It is possible to control all the single units/ parts of the machine. As well a LOG file, search tool is included.
- Only by Durst HQ trained engineers are allowed to work with the SSW

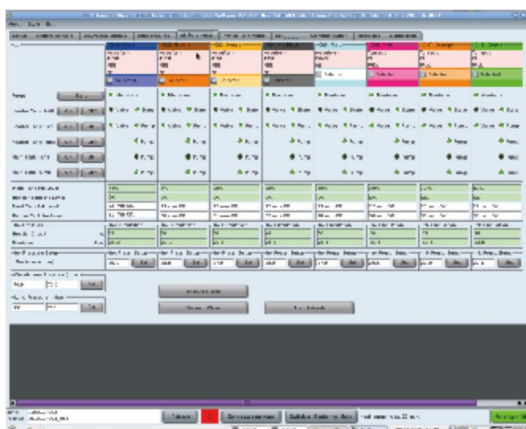
3.1 Service software tabs



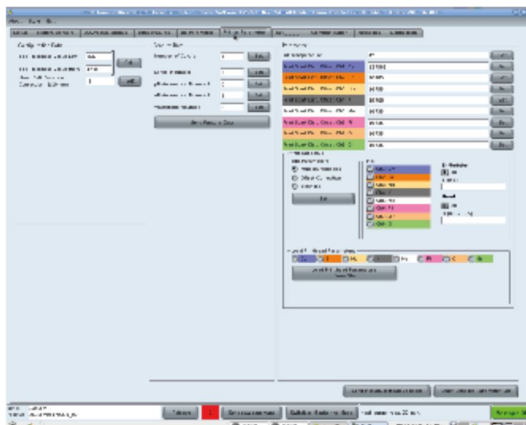
- The **Status Tab** is designed to show in one page all imported status information from the whole machine.
- Is also possible to query all the firmware versions from all mounted PCB's.
- The **Motor/Sensor Tab** is designed to control the movable parts and to **Reset and Initialize** the machine.
- There are dedicated areas for controlling the Print Engine, Belt Transport, Purge Tray, Aspiration Bar and Doors.
- The **LCC/Waste/Signal Tab** is designed to control the Aspiration unit, Liquid cooling unit and the Line Signals.



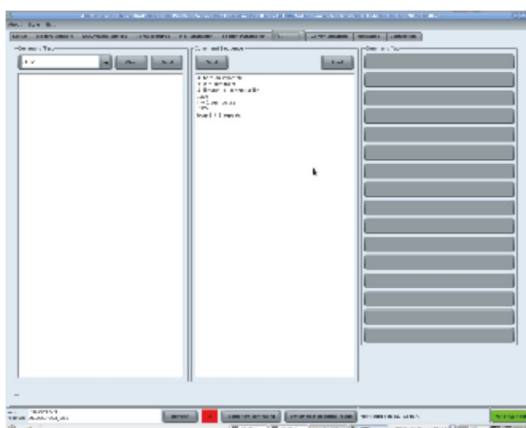
- The **Temperature Tab** is designed to give an overview off all the temperatures in the machine
- From single colors the Main Tank, Header Tank, EM and MM is shown.
- System temperatures such as: ISPPE FPGA, Sledge, Liquid cooling, Tile
- Teaching the sledge Temperature sensor is also possible from here.



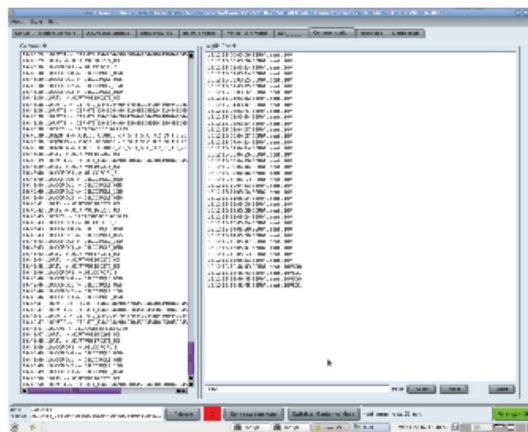
- The **Ink Parameter Tab** is designed, to give an overview of a single ink circulation and to operate it.



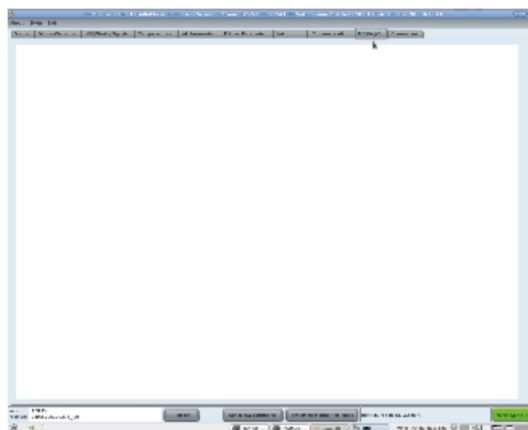
- The **Parameter Tab** is designed, for modifying the machine configuration.



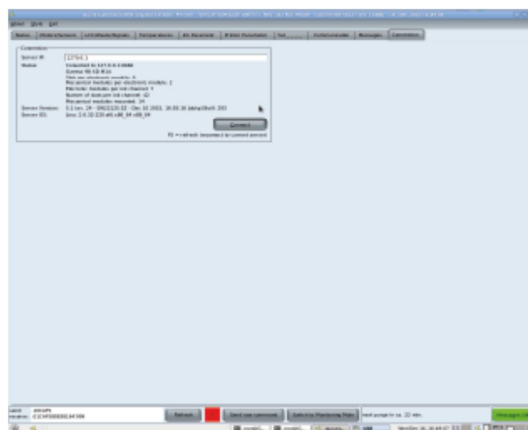
- The **Yat Tab** is designed for sending pre-defined command list to the machine.
- The pre-defined commands may be downloads form the FTP.



- The **Communication Tab** is designed, to view the LOG- file which includes a search function as well.



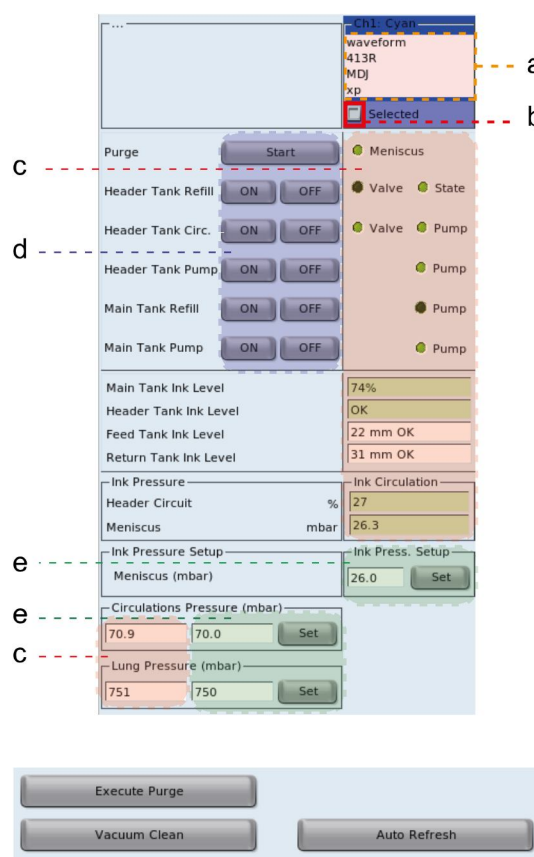
- The **Messages Tab** is designed, to display all the error messages.



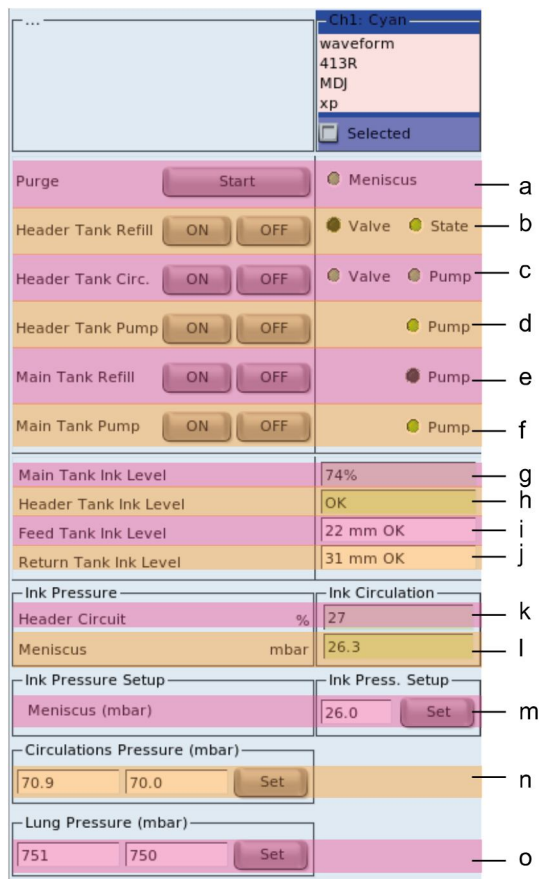
- The **Ink Connection Tab** is designed, to display and manage the connection to the internal data base (DB).

3.1.1 Ink Paramter Tab

- The ink parameter tab is the most powerful tab from the whole SSW. With the tab it is possible to control the whole ink circulation system, primary (Main Tank) and secondary (Header Tank).
- Using that tab it is possible to see which valves and pumps are switched on. You can see the actual level of the main tank, header tank (feeding reservoir and return reservoir), header tank pump speed in % and the actual meniscus, circulation and lung pressure.
- It is possible to switch all the valve and pumps which are involved in the ink circulation. And it is possible to set a new meniscus, circulation and lung pressure.



- The area “a” indicates the actual loaded WF.
- The area “b” indicates the selector checkbox. By making a tick, the buttons from the area “d” apply to that color row (CR).
- The area “c” which is marked light red, indicates all the actual values and states.
- The area “d” which is marked in light blue, indicates the buttons to switch single valves, pumps and systems.
- The area “e” which is marked in light green, indicates the set value and buttons.
- Pressing the **Execute Purge** button, will execute a normal pressure purge.
- Pressing the **Vacuum Clean** button, will execute a vacuum clean cycle.
- Pressing the **Auto Refresh** button, will refresh automatically the **Feed Tank Ink Level** and the **Return Tank Ink Level**, for all CR. The other values need to be refresh manually or automatically after the standard time interval.



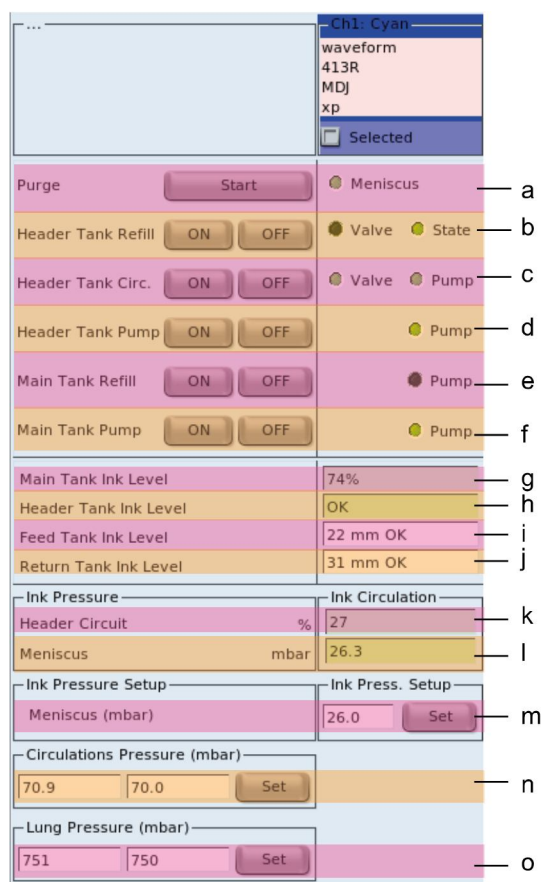
- a: section to control the “Meniscus / Purge” valve. By pressing the **Start** button the following sequence get started:

1. The Header Tank Refill valve (HTRV) get closed.
2. The purge/ meniscus valve switch to purge pressure
3. After ~ 1 sec. the purge/ meniscus valve switch to meniscus pressure.
4. If the HTRV was turned OFF before the sequence started it stay OFF. If the HTRV was turned ON before the sequence started it, get switched back ON.

The sequence is also called the **Manual purge**

The LED like indication signals if the meniscus pressure is active (green “LED”) or the purge pressure (black “LED”).

- b: section to control the Header Tank refill valve. By pressing the ON or the OFF button you switch the consent for the HDRV ON or OFF. The LED like indication signal next to **State** signals if the consent is given (green LED) or not (black LED). The LED like indication signal next to **Valve** signals if the valve is open (green LED) or closed (black LED).
- c: section to control the Header Tank Circulation (HTC). By pressing the ON or the OFF button you switch the HTC ON (Circulation valve ON & Header tank Pump ON) or OFF (Circulation valve OFF & Header tank Pump OFF). The LED like indication signal next to **Valve** signals if valve is switched to circulation pressure (green LED) or to meniscus pressure (black LED). The LED like indication signal next to **pump** signals if the pump is turned ON (green LED) or turned OFF (black LED).



- d: section to control the Header Tank Pump (HTP). By pressing the ON or the OFF button you switch the HTP ON or OFF. The LED like indication signal next to **Pump** signals if the pump is switched ON (green LED) or OFF (black LED).
- e: section to control the Main Tank Refill Pump (MTRP). By pressing the ON or the OFF button you switch the MTRP ON or OFF. The LED like indication signal next to **Pump** signals if the pump is switched ON (green LED) or OFF (black LED).
- f: section to control the Main Tank Pump (MTP). By pressing the ON or the OFF button you switch the MTP ON or OFF. The LED like indication signal next to **Pump** signals if the pump is switched ON (green LED) or OFF (black LED).
- g: section to indicate the main tank level form 0-100% in 1% steps.
- h: section to indicate the all over status of the heater Tank Ink level. Indicated states “OK” or “NOK”.
- i: section to indicate the level of the feed tank.
- j: section to indicate the level of the return tank.
- k: section to indicate the speed of the header tank pump in %, from 0-100% in 1% steps.
- l: section to indicate the actual meniscus pressure (measured in the meniscus unit).
- m: section to set the meniscus pressure.
- n: section to set the circulation pressure and to indicate the actual circulation pressure (measured in the meniscus unit).
- o: section to set the lung pressure and to indicate the actual lung pressure (measured in the meniscus unit).

3.1.2 Communication Tab

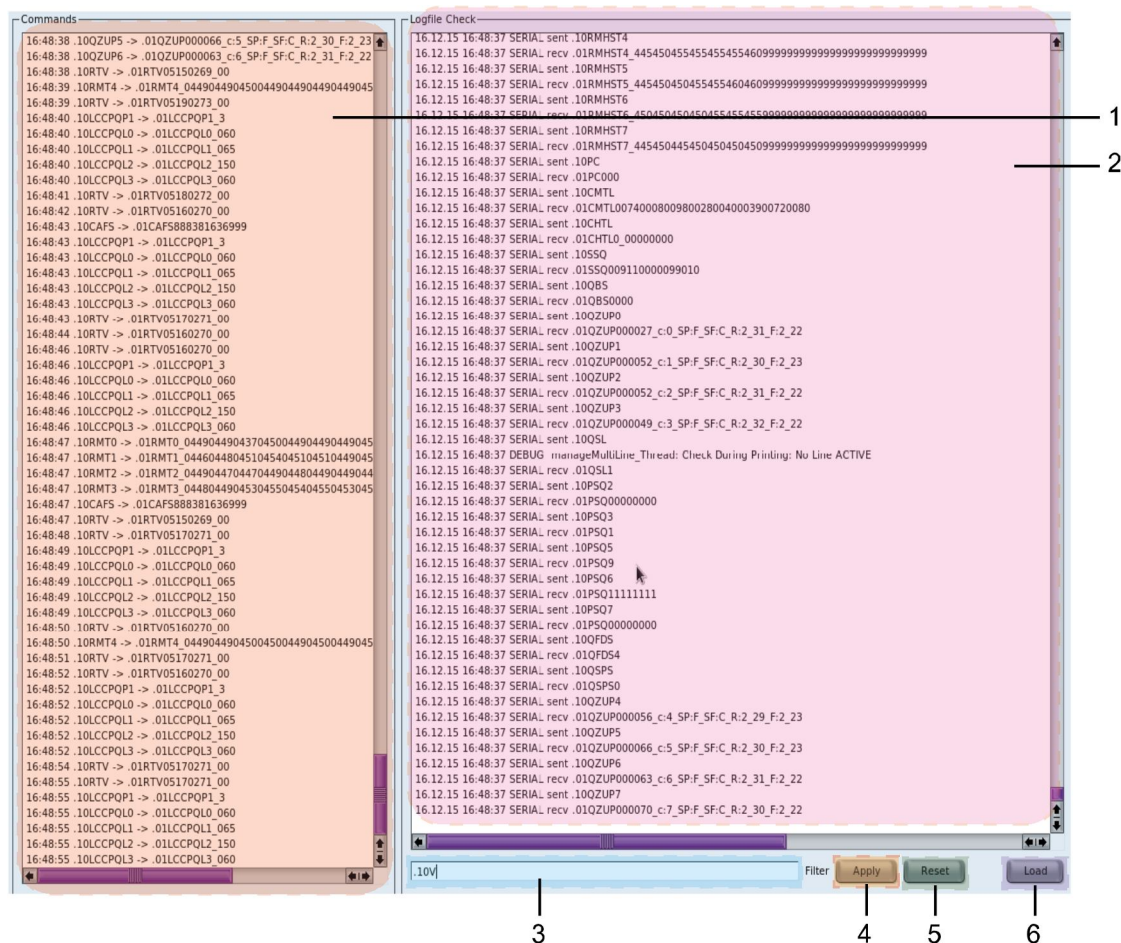


Fig. 1: Communication tab

- | | | | |
|---|---|---|--|
| 1 | Actual running LOG File | 5 | Apply button, to apply the search filter on the loaded LOG file. |
| 2 | Loaded Log file, complete form the actual day | 6 | Reset button, to reset the applied filter on the loaded LOG file. |
| 3 | Text field, for entering the filter value | 7 | Load button, to load the whole today's Log file. |
| 4 | Text field, for entering the filter value | | |

3.1.3 Motor and sensor tab

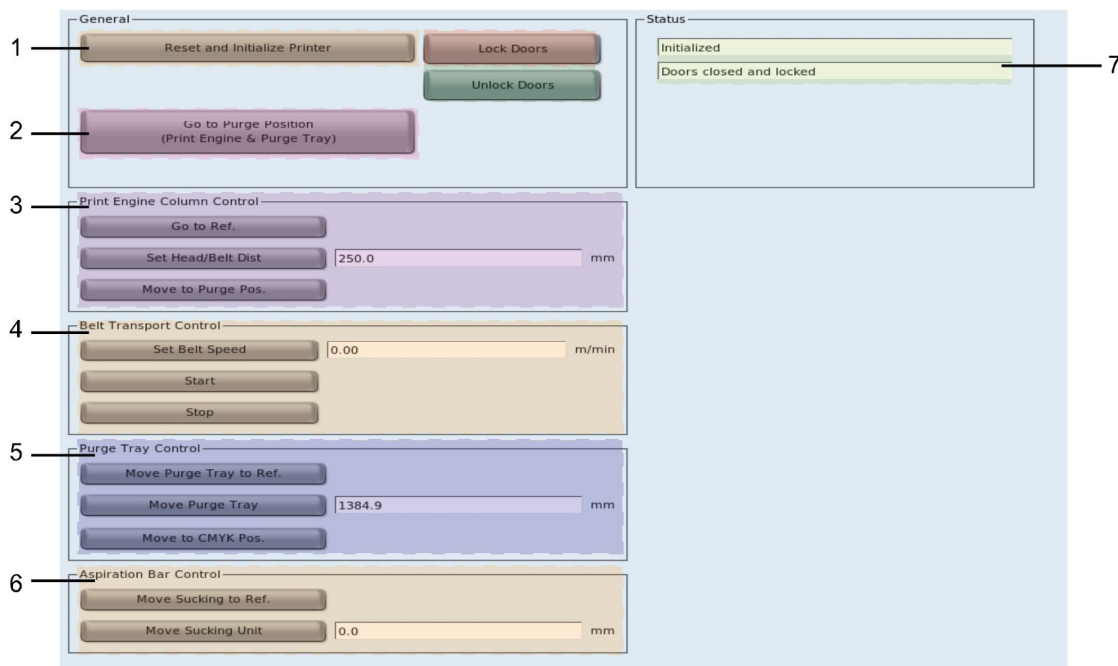


Fig. 2: Motor Sensor Tab

- | | |
|--|---|
| <p>1 Reset and Initialize Printer button, pressing that button performs a hardware and software reset and initialize all movable axis. It may takes ~ 2 min for execution.</p> <p>2 Go to Purge Position button, pressing that button moves the purge tray and print engine to purge position.</p> <p>3 Section to operate the print engine (PE) manually.</p> | <p>4 Section to operate the Transport Belt manually.</p> <p>5 Section to operate the Purge Tray manually.</p> <p>6 Section to operate the Aspiration Bar manually.</p> <p>7 Shows the printer status.</p> |
|--|---|

3.1.4 Status Tab

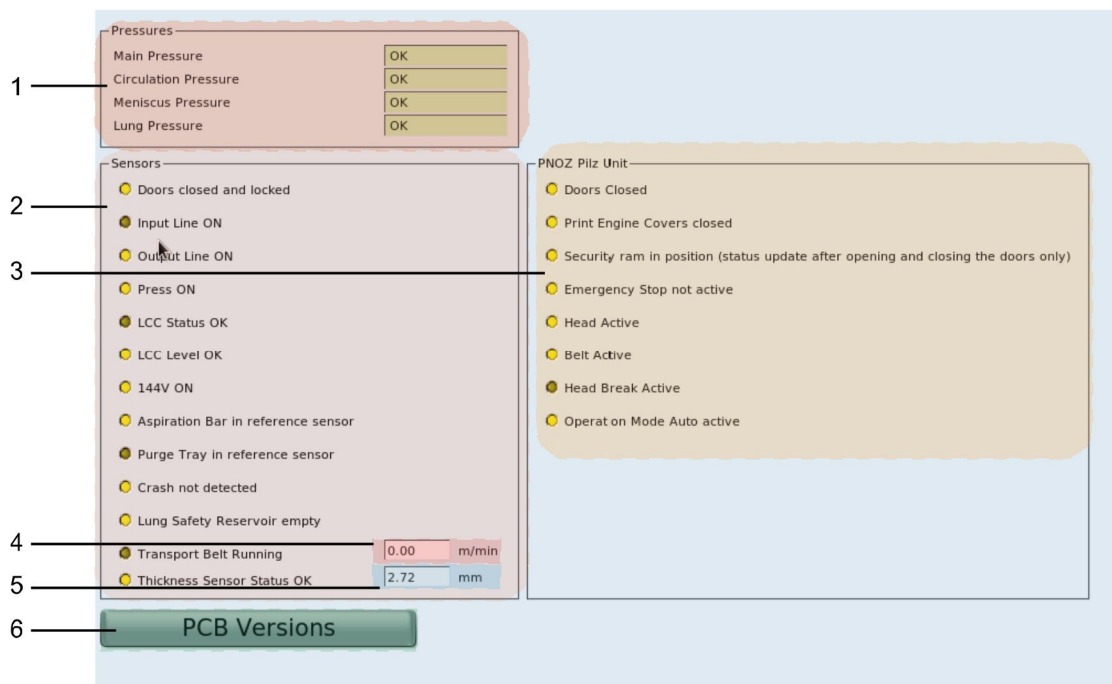


Fig. 3: Sensor Tab

- | | |
|---|---|
| <p>1 Status Overview of the single air pressures.</p> <p>2 Sensor status.
LED like indication signal. Light yellow means ON (sensor active/ pressed), dark yellow means OFF (sensor not active/ pressed).</p> | <p>3 Pilz Input/output status.
LED like indication signal. Light yellow means ON (signal active), dark yellow means OFF (signal not active).</p> <p>4 Shows the actual belt speed</p> <p>5 Shows the actual read thickness value</p> <p>6 PCB Version button, pressing that button will display a list with all the mounted PCB's and his corresponding firmware version. If no firmware version (0Z, or xZ) is displayed, means no communication to that PCB.</p> |
|---|---|

4 Commands

- The communication between the front end workstation and the printer is given by a bi-directional optical datalink, and a wired RS485 bus. Commands are transferred between the ISPPE Board located in the workstation and the single PCB's located in the printer.
- Commands are basically formed as text strings, based on serial commands as used in older printers. The structure of the commands is quite simple, consisting of the following fields:

Start with dot (0x2E)	Address of receiver (0x31)	Address of Transmitter (0x30)	Command	Data	Termination (free)
.	1	0	x	y	<.....>

4.1 Test commands most useful for service

Description	Command	Your notes
Reading the temperatures	.10CAFS	
Switching ON/OFF pumps	.10CPC	
Reading Meniscus-, Circulation- Lung- pressure	.10RMLP	
Reading thickness sensor	.10RTV	
Query machine process	.10PROCQ	
Query header tank system	.10QZUP	

Tab. 10: Useful commands

4.2 Commands list

Name	Command	Answer
AutoHeadTileDistanceMode	.10AHTDMx	.01AHTDMx
	– x = 0 : none	– x = 0 : ok
.10AHTDMx	– x = 1 : secure	– x = 1 : error
	– x = 2 : adaptive	– x = 2 : started
		– x = 3 : busy
		– x = 9 : failure
e.g.: 10AHTDMx → 01AHTDM3		

Name	Command	Answer
CheckAmbientTemperature	.10CAFS	.01CAFSaaabbbcccd
.10CAFS		– aaa = print carriage temp. left
read temperatures		– bbb = print carriage temp. left
in 1/10°C		– ccc = ISPPE PCB temp
		– ddd = not used
	e.g.: 10CAFS → 01CAFS281288455000	
CancelErrorQueue	.10CEx	.01CEy
.10CE	– x = 0 : cancel all errors and DO NOT return errors for the next 24h	– y = 0 : ok
Cancel all errors in queue	– x = 1 : starts putting errors in error queue normally	
	e.g.: 10CE0 → 01CE0	
CheckHeaderTankLevel	.10CHTL	.01CHTLx_cmykbw
.10CHTL		– x = 0 : ok
Checking the status of the header tank ink level. Possible status is full or not full. 1 st digit from the answer is a general overview and then the single colors are listed.		– x = 1 : NOK
		– c,m,y,k,b,w = 0 : ok
		– c,m,y,k,b,w = 1 : NOK
	e.g.: 10CAFS → 01CAFS281288455000	
CheckMotorControlExecution	.10CMCE	.01CMCEx>.....
.10CMCE		– x = 0 : ok
Checking the status of the motor control PCB.		– x = 1 : error
The values in the answer after ">" are only for internal use.		– x = 2 : started
		– x = 3 : busy
		– x = 9 : communication error
	e. g. : .10CMCE -> .01CMCE0>....	
CheckMainTankLevel	.10CMTL	.01CMTLxxxxxyxxxxyxxxxyxxx...
.10CMTL		– y = 0 : ok
Checking the status off all main tanks.		– y = 1 : NOK
Depending on the mounted colors the command answer might be longer or shorter		– xxx = ink level in %
	e.g. : .10CMTL → .01CMTL003300550066010000770088...	

Name	Command	Answer
CommandPumpControl	.10CPCxyz	.01CPCx
	– x = color : 0 = CH1	– x = 0 : ok
.10CPC	1 = CH2	– x = 1 : NOK
Command to control the pumps	2 = CH3	
	4 = CH5	
	5 = CH6	
	6 = CH7	
	7 = CH8	
	– y = pump : 2 = Header tank	
	3 = Air Compressor	
	4 = Waste	
	5 = Sucking	
	6 = Main tank refill	
	7 = Main tank circulation	
	Note: 3,4,5 may only be used in combination with CH0	
	– z = state : 0 = ON	
	1 = OFF	
	e.g. : .10CPC010 → .01CPC0	
CheckStepControlExecution	.10CSCE	.01CSCE>.....
		– x = 0 : ok
.10CSCE		– x = 1 : error
Check status of step motor control.		– x = 2 : started
The values in the answer after ">"		– x = 3 : busy
are only for internal use.		– x = 9 : communication error
	e.g. : .10CSCE -> .01CSCE0>....	
GetExtendedError	.10EE	.01EEeeee_xxxx_p
		– eeee = error code
.10EE		– xxxx = error parameter
Reads all the errors from the error queue.		– p = 0 : no error
After extracting the error from the queue, the error get canceled		D : Doors aren't looked
		W : Warning
		E : Error print stop
		e : Error low risk
		U : User action needed
		S : Service action needed
		N : System fault, inform Durst HQ
	.10EE -> .01EE9102_0000_W	

Name	Command	Answer
FlipDoorsClose	.10FDOCx	.01FDOCx
.10FDOC	<ul style="list-style-type: none"> – x = 0 : open – x = 1 : close 	<ul style="list-style-type: none"> – x = 0 : ok – x = 1 : error – x = 2 : started – x = 3 : busy – x = 9 : communication error
Controls the closing and opening of the sliding doors		
	.10FDOC0 -> .01FDOC3	
GetHeaderTankRefillBitStatus	.10GHRBS	.01GHRBSx_a,b,c,d,e,f,g,h
.10GHRBS		<ul style="list-style-type: none"> – x = 0 : general OK – x = 1 : general NOK – a,b,c,d,e,f,g,h = 0 : ok 1 : NOK 9 : error
To check the activation state on the refill valve form each color		
	.10GHRBS -> .01GHRBS0_00000000	
GetInstalledPcbVersion	.10GIPVpxy	.01GIPV_XXXX
.10GIPV	<ul style="list-style-type: none"> – p = M: Module - PCB <ul style="list-style-type: none"> • x = color • y = Emodule – p = I: ISPPE FPGA Digital Design Version <ul style="list-style-type: none"> • x = 0 • y = 0 – p = C: ISPPE Firmware version <ul style="list-style-type: none"> • x = 0 • y = 0 – p = T: Header Tank - PCB <ul style="list-style-type: none"> • x = color • y = 0 – p = U: Cortex IO - PCB <ul style="list-style-type: none"> • x = 0 = Maintank-PCB • y = 0 – p = P: Cortex IO - PCB, Meniscus <ul style="list-style-type: none"> • x = 0 = Meniscus-PCB • y = 0 – p = L: Cortex IO - PCB, LCC <ul style="list-style-type: none"> • x = 0 = LCC PCB • y = 0 – p = X: Motor Control - PCB <ul style="list-style-type: none"> • x = 0 = Motor Control • y = 0 – p = S: Step Control - PCB <ul style="list-style-type: none"> • x = 0 = Step Control • y = 0 	<ul style="list-style-type: none"> – XXXX = PCB version
Reading out the PCB versions		

Name	Command	Answer
	.10GIPVM12 -> .01GIPV_DA3392P1	
GoToReference	.10GTRx	.01GTRx
	– x = H : Print carriage	– x = 0 : ok
.10GTR	– x = M : Purge tray	– x = 1 : error
For referencing movable actors	– x = S : Aspiration bar	– x = 2 : started
		– x = 3 : busy
		– x = 9 : communication error
	.10GTRH -> .01GTRH3	
GetTileTemp	.10GTT	.01GTTx_vvv_www_xxx_yy
		– x = 0...Printing line
.10GTT		– vvv = actual temperature
Reading tile temperature, from the		– www = mean temperature
tile temperature sensor		– xxx = mean temperature over 100 tiles
		– yy = length of measurement in 4cm unit
	.10GTT -> .01GTT1_999_999_999_99	
GetPrintState	.10GPT0_Lx	.01GPTz_Lw
	– x = 0...Printing line	– z = 0 : ON
.10GPT		– z = 1 : OFF
Get information about the print		– z = 3 : Execution
status		– w = Line
	.10GPS0 -> .01GPS1_L0	
LCCQueryOperationMode	.10LCCPQM0	.01LCCPQMx
		– x = 0 : Empty circuit
.10LCCPQM0		– x = 1 : Filling circuit
Query the actual operating status		– x = 2 : Emptying circuit
		– x = 3 : Filled circuit
		– x = A : leakage error (if level drops below "OK" level during operation)
		– x = B : Error during filling (tank doesn't reach < high level)
		– x = C : Error during emptying (tank doesn't reach high level)
		– x = D : Error during leakage check (Pressure not reach in 20sec., pressure not stable over 1min)
		– x = E : Error during circulation (pump press. <0,5bar)

Name	Command	Answer
LCCQueryParameterState	.10LCCPQPx	.01LCCPQPx_yyy
	– x = 0 : Temperature	– x = 0, yyy : Temperature in °C
.10LCCPQP	– x = 1 : circuit status	– x = 1, y : 0 = empty
Query state of LCC parameters	– x = 2 : Circulation pressure	– x = 1, y : 1 = filling
	– x = 3 : tank level	– x = 1, y : 2 = emptying
		– x = 1, y : 3 = filled
		– x = 2, yyy : Circulation pressure
		– x = 3, y : 0 = empty level
		– x = 3, y : 1 = low level
		– x = 3, y : 2 = ok level
		– x = 3, y : 3 = high level
ProcStart	.10PROCSTARTxy	.01PROCSTARTxy
	– Gamma (referencing all motor axis and switching on 144VDC	– x = 0 : Initializing the Gamma (referencing all motor axis and switching on 144VDC
.10PROCSTART	– x = 1 : CLR cycle	– x = 1 : CLR cycle
Starts / Stops an machine process.	– x = 2 : Vacuum cycle	– x = 2 : Vacuum cycle
	– x = 3 : Purge cycle	– x = 3 : Purge cycle
	– y = 0 : manually activating, as soon as all conditions are valid it will be executed.	– y = 0 : OK
	– y = 1 : process is turned off permanently.	– y = 1 : NOK
	Note: Also the Gamma can not execute the process anymore. A SReset or a manually activating of the process will reactivate it.	
	.10PROCSTART00 -> .01PROCSTART00	
ProcStatusQuery	.10PROCSQ	.01PROCSQwxyz
		– w = INIT cycle
.10PROCSQ		– x = CLR cycle
Query the status of the process status		– y = Vacuum cycle
		– z = Purge cycle
		– w,x,y,z = 0 : OK
		– w,x,y,z = 1 : Not started
		– w,x,y,z = 2 : Started
		– w,x,y,z = 3 : Busy
		– w,x,y,z = 7 : Disabled
		– w,x,y,z = 8 : Waiting for execution
		– w,x,y,z = 9 : Error
	.10PROCSQ -> .01PROCSQ0317777777777777	

Name	Command	Answer
PrintStart	.10PSx	.01PSx
	– x = 0 : Stop	– x = 0 : OK
.10PS	– x = 1 : Start	– x = 1 : NOK
Print start	.10PS1 → .01PS0	
PumpStateQuery	.10PSQ2	.10PSQabcdefgk
	– x = 2 : Header Tank	– a = CH1
.10PSQ		– b = CH2
Pump status		– c = CH3
		– d = CH4
		– e = CH5
		– f = CH6
		– g = CH7
		– k = CH8
		– abcdefgk = 0 : ON
		– abcdefgk = 1 : OFF
	.10PSQ2 → 01.PSQ00000000	
QueryBeldSpeed	.10QBS	.01QBSyyyy
		– yyyy = Beld speed in mm/s
.10QBS		
Reading the actual belt speed	.10QBS -> .01QBS1500	
QueryFlipDoorStatus	.10QFDS	.01QBSx
		– x = 0 : Open left right
.10QFDS		– x = 1 : Closed, not locked
Status of Flip doors, E-Stop and security ramp		– x = 2 : Right door open
		– x = 3 : Left door open
		– x = 4 : Doors locked
		– x = 5 : E- Stop active
		– x = 6 : Security ramp position
		– x = 0xA : Gamma is turned off
		– x = 0xE : Error
	.10QFDS -> .01QFDS4	
QueryFeatureData	.10QFD	.01QFDabcdefgkjl
		– a = colors mounted
.10QFD		– b = lines mounted
Read actual set Gamma feature data		– c = pMaintenanceMounted
		– d = aMaintenanceMounted
		– e = NewMotorControlMounted
		– f = not used
		– g = not used
		– k = not used
	.10QFD -> .01QFD1100000000	

Name	Command	Answer
QueryGammaType	.10QGT	.01QGTtttmmr – ttt = Gamma Name – mm = Mounted MM's – r = internal use
.10QGT Read actual set Gamma type		
QueryHeadBeldDistance	.10QHBD	.01QHBDyxxxx – y = 0 : OK – y = 1 : NOK – y = 2 : started – y = 3 : busy – y = 9 : error – xxxx = distance in 0,1mm
.10QHBD Get the actual set distance between the head and the belt		
	.10QHBD -> .01QHBD02050	
QueryPrintStartDistance	.10QPSD	.01QPSDxxxx
.10QPSD Reading out the last written print start distances		
Note: Only for internal use		
QueryPressSignalStatus	.10QPSS	.01QPSSwxyzzzzz – w = Line 0 – x = Line 1 – y = Line 2 – z = not used – w,x,y,z = 0 : ON – w,x,y,z = 1 : OFF – w,x,y,z = 9 : Error
.10QPSS Checking if Press is ON or OFF		
	.10QPSS -> .01QPSS00001111	
QueryPrintedTiles	.10QPT	.01QPTxxxxxxx_Lz – x = Amount of printed tiles – z = Line number
.10QPT Checking the actual printed tiles.		
QuerReferenceX	.10QRx	.01QRyx – y = H : Head – y = M : Purge tray – y = S : Aspiration bar – x = 0 : ok – x = 1 : error – x = 3 : started – x = 9 : failure
– x = Head – x = Maintenance – x = Sucking	– x = H : Head – x = M : Purge tray – x = S : Aspiration bar	
.10QRx Chekcing the reference state of the axes		
	.10QRM -> .01QRM3	

Name	Command	Answer
QueryStatusCompenserSignal	.10QSCS	.01QSCSwxzyzzzz – w = Line 0 – x = Line 1 – y = Line 2 – z = not used – w,x,y,z = 0 : ON – w,x,y,z = 1 : OFF – w,x,y,z = 9 : Error
.10QSCS		
Get status of the input line		
	.10QSCS -> .01QSCS0111	
QueryStatusPressSignal	.10QSPS	.01QSPSwxzyzzzz – w = Line 0 – x = Line 1 – y = Line 2 – z = not used – w,x,y,z = 0 : ON – w,x,y,z = 1 : OFF – w,x,y,z = 9 : Error
.10QSPS		
Get status of the press signal		
	.10QSPS -> .01QSPS0111	
QueryTransitMode	.10QTRM	.01QTRMx – x = 0 : ON – x = 1 : OFF – x = 2 : Failure – x = 9 : error
.10QTRM		
Query of the actual transit mode state		
	.10QTRM -> .01QTRM1	
QueryZup	.10QZUPx – x = 0 : CH1 – x = 1 : CH2 – x = 2 : CH3 – x = 3 : CH4 – x = 4 : CH5 – x = 5 : CH6 – x = 6 : CH7 – x = 7 : CH8	.01QZUPaaaabb_c:d_SP:F_SF:C_R:e_ff_F:g_kk – a = not used – bb = pump speed in % – e = status of return tank – ff = level of return tank – g = status of feeding tank – kk = level of feeding tank – e,f = 0 : empty (error) – e,f = 1 : Low level (without error) – e,f = 2 : Overflow (without error) – e,f = 3 : Overflow (error)
.10QZUP		
Query the pump speed and the header tank level of an individual CH		
RTCBlockingPrintStartSensor	.10RBPSx_Lz – x = 0 : Release – x = 1 : Blocking – z = Line index	.01RBPSx_Lz – x = 0 : ok – x = 1 : Nok – z = Line index
.10RBPS		
Command for blocking the print start sensor. When printer is not in printing (e.g. during a purge cycle)		
	.10RBPS1 -> .01RBPS1_L0	

Name	Command	Answer
ReadModuleHEatSinkTemperature	.10RMHSTx	.01RMHSTx_aaabbcccddeeeffggg
	– x = 0 : CH1	– x = 0 : CH1
.10RMHST	– x = 1 : CH2	– x = 1 : CH2
Check EM-temperature	– x = 2 : CH3	– x = 2 : CH3
	– x = 3 : CH4	– x = 3 : CH4
	– x = 4 : CH5	– x = 4 : CH5
	– x = 5 : CH6	– x = 5 : CH6
	– x = 6 : CH7	– x = 6 : CH7
	– x = 7 : CH8	– x = 7 : CH8
		– aaa = EM0 temperature 1/10°
		– bbb = EM1 temperature 1/10°
		– ccc = EM2 temperature 1/10°
		– ddd = EM3 temperature 1/10°
		– eee = EM4 temperature 1/10°
		– fff = EM5 temperature 1/10°
		– ggg = EM6 temperature 1/10°
	.10RMHST0 → .01RMHST0_455455460465465470475	
ReadMeniscusLungPressure	.10RMLPxy	.01RMLPxyzzz
	– x = 0 : CH1	– x = 0 : CH1
.10RMLP	– x = 1 : CH2	– x = 1 : CH2
Reading meniscus lung pressure	– x = 2 : CH3	– x = 2 : CH3
	– x = 3 : CH4	– x = 3 : CH4
	– x = 4 : CH5	– x = 4 : CH5
	– x = 5 : CH6	– x = 5 : CH6
	– x = 6 : CH7	– x = 6 : CH7
	– x = 7 : CH8	– x = 7 : CH8
	– y = A : Actual	– y = A : Actual
	– y = S : SRAM	– y = S : SRAM
	– y = E : EEPROM	– y = E : EEPROM
		– zzz = pressure 1/10mBar
	.10RMLP0 → .01RMLP0_286	

Name	Command	Answer
ReadMeniscusLungStatus	.10RMLS	.01RMLSn_nnnnnnnnnnnn_nnnnnnnn_nnnn nnnn_aaaaa_bbbbb_ccccc_ddddd_eeee_fff ff_ggggg_hhhhh_iiii_jjjj_kkkkk_llll_mmmmm
.10RMLS		<ul style="list-style-type: none"> – n= only for internal use – aaaaa = meniscus from CH1 in 1/10mBar – bbbbb = meniscus from CH2 in 1/10mBar – ccccc = meniscus from CH3 in 1/10mBar – ddddd = meniscus from CH4 in 1/10mBar – eeeee = meniscus from CH5 in 1/10mBar – fffff = meniscus from CH6 in 1/10mBar – ggggg = meniscus from CH7 in 1/10mBar – hhhhh = meniscus from CH8 in 1/10mBar – iiiii = circulation pressure 1 in 1/10mBar – jjjjj = circulation pressure 2 in 1/10mBar – kkkkk = lung pressure in 1/10mBar – llll = not used – mmmmm = main pressure in mBar
Reading out each actual meniscus, circulation, lung and main pressure		
	.10RMLS→.01RMLS0_000000000000_FDFBFFF_0FFFFFFE_00262_00287_00271_00282_00273_00207_00222_00221_00706_00844_07471_09990_04947	
ReadThicknessValue	.10RTV	.01RTVxxxxyyy
.10RTV		<ul style="list-style-type: none"> – xxxx = actual value from sensor 1/10mm – yyy = calibrated value used in the software 1/10mm
Reading the thickness sensor	.10RTV→.01RTV05200274	
SetBeldSpeed	.10SBSxxxx	.10SPSyxxx_Lz
.10SBS	– xxxx = speed in mm/s	<ul style="list-style-type: none"> – x = 0 : ok – x = 1 : error – x = 2 : started – x = 3 : busy – x = 9 : failure – yyy = just set speed in mm/s
Command set the transport belt speed.		
	.10SPS0 -> .01SPS0_L0	
SetCompensorSignal	.10SCSx_Lz	.10SCSx_Lz
.10SCS	<ul style="list-style-type: none"> – x = 0 : On – x = 1 : Off – z = Line index 	<ul style="list-style-type: none"> – x = 0 : ok – x = 1 : error – x = 9 : failure – z = Line index
Command to switch on the production compensor	.10SCS1 -> .01SCS0	

Name	Command	Answer
SetFeatureData	.10SFDabcde fgkjl	.01SFDx_y
	– a = colors mounted	– x = 0 : ok
	– b = lines mounted	– x = 1 : Nok
.10SFD	– c = pMaintenanceMounted	– y = 0 : feature number
Setting the feature data in the “Gamma”	– d = aMaintenanceMounted	
	– e = NewMotorControlMounted	
	– f = not used	
	– g = not used	
	– k = not used	
	.10SFD2100000000 -> .01SFD0_0	
SetHeadBeldCorrection	.10SHBCxyy	.01SHBCx
	– x = 0 : slow speed	– x = 0 : ok
.10SHBC	– x = 1 : fast speed	– x = 1 : Nok
Function to correct the HBD offset via the software.	– yyyy = distance in 1/10mm	
Note: Be carefully, wrong entry can create a crash.	.10SHBC019 -> .01SHBD0	
SetHeadBeltDistance	.10SHBDxyyy	.01SBHDx
	– x = 0 : positive value	– x = 0 : ok
.10SHBD	– x = 1 : negative value	– x = 1 : error
Move the print carriage to a certain distance	– yy = value in mm	– x = 2 : started
		– x = 3 : busy
		– x = 9 : failure
	.10SHBD04000 -> .01SHBD2	
SpinningLight	.10SLx	.01SLx
	– x = 0 : On	– x = 0 : ok
.10SL	– x = 1 : Off	– x = 1 : error
Turning ON/OFF the indication light		– x = 2 : started
		– x = 3 : busy
		– x = 9 : failure
	.10SL0 -> .01SL0	

Name	Command	Answer
SetMotorControlOutput		.01SMCOx
	.10SMCOxy	– x = 0 : Ok
	– x = 0 : On	– x = 1 : Nok
.10SMCO	– x = 1 : Off	
Manually switching the outputs from the Motor Control PCB.	– y = 0 : Compensor signal	
Note: Manually Switched the outputs, overwrites machine logic.	– y = 1 : Press signal	
	– y = 2 : Warning	
	– y = 3 : Not used	
	– y = 4 : Signal Lamp	
	– y = 5 : Signal Siren	
	– y = 8 : 144VDC Supply 1	
	– y = 9 : 144VDC Supply 2	
	– y = a : 144VDC Supply 3	
	– y = b : 35VDC Supply	
	– y = c : 5VDC Supply	
	.10SMCO80 -> .01SMCO80	
SetMaintenaceDistance	.10SMDxyyyyy	.01SMDx
	– x = 0 : Slow	– x = 0 : ok
.10SMD	– x = 1 : Fast	– x = 1 : error
Move the purge tray to a certain peosition	– yyyyy = distance in 1/10mm	– x = 2 : started
		– x = 3 : busy
		– x = 9 : failure

Name	Command	Answer
SetPrintHeadOffset	.10SPHOCernvvvv	.01SPHx_yyyyy
	– c = 0 : CH1	– x = 0 : ok
	– c = 1 : CH2	– x = 1 : Nok
.10SPHO	– c = 2 : CH3	– vvvvv = just written value
Command to set the slot offset for each head in a EM	– c = 3 : CH4	
	– c = 4 : CH5	
	– c = 5 : CH6	
	– c = 6 : CH7	
	– c = 7 : CH8	
	– e = 0 : EM0	
	– e = 1 : EM1	
	– e = 2 : EM2	
	– e = 3 : EM3	
	– e = 4 : EM4	
	– e = 5 : EM5	
	– e = 6 : EM6	
	– e = 7 : EM7	
	– e = 8 : EM8	
	– rr = 00 : Head 0	
	– rr = 01 : Head 1	
	– rr = 02 : Head 2	
	– rr = 03 : Head 3	
	– rr = 04 : Head 4	
	– rr = 05 : Head 5	
	– vvvvv = value	
	.10SPHO760300100 -> .01SPHO0_00100	
SendingHeadVoltages	Only internal usage	Only internal usage
.10SPHRS		
.10SPHFS		
.10SPHT		
.10SPHV		
Get shown when the Print Head Voltage get send to the Gamma		
SetPressSignal	.10SPSx_Lz	.10SPSx_Lz
	– x = 0 : On	– x = 0 : ok
	– x = 1 : Off	– x = 1 : error
.10SPS	– z = Line index	– x = 2 : started
Command to switch on the production press		– x = 3 : busy
		– x = 9 : failure
		– z = Line index
	.10SPS0 → 01.SPS0	

Name	Command	Answer
SetPrintstartsensorTeachOutput	.10SPTOxdd_Lz	.01SPTOxdd_Lz
	– x = 0 : Teach	– x = 0 : Teach
	– x = 1 : Stop	– x = 1 : Stop
.10SPTO	– dd = delay in sec.	– dd = delay in sec.
Activating single point print start sensor for teaching.	– y = Line index (optional)	– y = Line index
Note: If the teaching mode get not deactivated, the sensor can not measure a thickness.		
	.10SPTO002 -> .01SPTO02_L0	
SystemQuery	.10SQ	.01SQabcde
		– a = Transport belt
		– b = Print carriage
.10SQ		– c = Purge tray
Query the status of the axes		– d = Aspiration bar
		– e = Belt sync
		– a,b,c,d = 0 : Moving
		– a,b,c,d = 1 : Not Moving
		– e = 0 : ok
		– e = 1 : Nok
SetSuckingDistance	.10SSDyyyy	.10SSDx
	– x = 0 : slow speed	– x = 0 : ok
	– x = 1 : fast speed	– x = 1 : error
.10SSD	– yyyy = value in 1/10mm	– x = 2 : started
Move the aspiration bar to a certain distance		– x = 3 : busy
		– x = 9 : failure
	.10SSD0500 -> .01SSD2	

Name	Command	Answer
SensorStateQuery	.10SSQ	.01SSQabcdefgijklmno
.10SSQ		<ul style="list-style-type: none"> – a = Ref. Print carriage – b = Ref. Purge tray – c = not used – d = Ref. aspiration bar – e = not used – f = not used – g = not used – h = Main pressure – i = Meniscus pressure (all together) – j = Circulation pressure (all together) – k = not used – l = not used – m = Signal to press – n = Signal compenser – o = Output line – a,b,d,h,i,j = 0 : OK – a,b,d,h,i,j = 1 : NOK – m,n,o = 0 : On – m,n,o = 1 : Off
Query the status of from all sensors		
	.10SSQ → .01SSQ009110000099010	
StartTransport	.10STx	.01STx
.10ST	<ul style="list-style-type: none"> – x = 0 : On – x = 1 : Off 	<ul style="list-style-type: none"> – x = 0 : ok – x = 1 : error – x = 2 : started – x = 3 : busy – x = 9 : failure
Start the transport belt		
TRansitMode	.10TRMx	.01TRMx
.10TRM	<ul style="list-style-type: none"> – x = 0 : On – x = 1 : Off 	<ul style="list-style-type: none"> – x = 0 : ok – x = 1 : error – x = 2 : started – x = 3 : busy – x = 9 : failure
Start the Gamma in transit mode		
	.10TRM0 → .01TRM0	

Name	Command	Answer
ValveControl	.10VCxyz	.01VCx
	– x = 0 : CH1	– x = 0 : On
	– x = 1 : CH2	– x = 1 : Off
.10VC	– x = 2 : CH3	
Switching the single valves	– x = 3 : CH4	
	– x = 4 : CH5	
	– x = 5 : CH6	
	– x = 6 : CH7	
	– x = 7 : CH8	
	– y = 0 : Header Tank Refill	
	– y = 1 : Meniscus/ Purge	
	– y = 4 : Waste suck (only CH1, x =0)	
	– y = 5 : Waste suck fast (only CH1, x =0)	
	– y = 7 : Circulation valve	
	– y = 8 : CLR valve	
	– y = 9 : Airknife (only CH1, x =0)	
	– y = a : Lung / Ambient (only CH1, x =0)	
	– y = b : Aereosol aspiration (only CH1, x =0)	
	– z = 0 : On	
	– z = 1 : Off	
	.10VC010 -> .01VC0	
ValveStatusQuery	.10VSQx	.01VSQabcdefgh
	– x = 0 : Header Tank Refill	– a = 0 : CH1
	– x = 1 : Meniscus/ Purge	– b = 1 : CH2
.10VSQ	– x = 4 : Waste suck	– c = 2 : CH3
Read valve status	– x = 5 : Waste suck fast	– d = 3 : CH4
	– x = 7 : Circulation valve	– e = 4 : CH5
	– x = 8 : CLR valve	– f = 5 : CH6
	– x = 9 : Airknife	– g = 6 : CH7
	– x = a : Lung / Ambient	– h = 7 : CH8
	– x = b : Aereosol aspiration	– a,b,c,d,e,f,g,h = 0 : ON
		– a,b,c,d,e,f,g,h = 1 : OFF
	.10VSQ0 -> .01VSQ00001111	

Name	Command	Answer
WriteMeniscusLungPressure	.10WMLPxyzzz	.01WMLPxyyyy
	– x = S : SRAM	– x = 0 : Ok
	– x = E : EEprom	– x = 1 : Nok
.10WMLP	– y = 0 : CH1	– zzzz = written pressure in 1/10 mBar
Setting the Mensicus, Circulation,	– y = 1 : CH2	
Lung pressure at the EEprom of	– y = 2 : CH3	
the Cortex PCB	– y = 3 : CH4	
	– y = 4 : CH5	
	– y = 5 : CH6	
	– y = 6 : CH7	
	– y = 7 : CH8	
	– y = 8 : Circulation pressure 1	
	– y = 9 : Circulation pressure 2	
	– y = a : Lung pressure	
	– zzzz = pressure in 1/10 mBar	
WritePrintStartDistance	.10WPSDaaaaaabbbbbccccccddddd	.01WPSDx
	deeeeeeffffffggggghhhhhh_Lz	– x = 0 : Ok
.10WPSD	– aaaaaa = distance CH1	– x = 1 : Nok
Write print start distance for each	– bbbbbb = distance CH2	– z = Line index
color	– cccccc = distance CH3	
	– ddddddd = distance CH4	
	– eeeeeee = distance CH5	
	– ffffff = distance CH6	
	– gggggg = distance CH7	
	– hhhhhh = distance CH8	
	– z = Line index	

Tab. 11: Command list

4.3 Advanced firmware commands

Name	Command	Answer
Meniscus Valve Switching time.	.10YSB.0ar_ST	.10YSB.0ar_ST aaaa_bbbb_cccc_dddd_eeee_ffff_gggg_hhhh_iiii_jjjj_kk kk_III_mmm <ul style="list-style-type: none"> – aaaa = distance CH1 – bbbb = switching time meniscus valve CH1 – cccc = switching time meniscus valve CH2 – dddd = switching time meniscus valve CH3 – eeee = switching time meniscus valve CH4 – ffff = switching time meniscus valve CH5 – gggg = switching time meniscus valve CH6 – hhhh = switching time meniscus valve CH7 – iiii = switching time meniscus valve CH8 – jjjj = switching time circulation valve 1 – kkkk = switching time circulation valve 2 – IIII = not used – mmmm = not used <p>Note: IF value 10 or below, it is an indication that in the system is a leakage.</p> <p><u>After a purge the values are not reliable, because during a purge the valves need to switch more often.</u></p>

Tab. 12: Advanced Firmware commands

5 Software Error Messages

5.1 System Errors (0-999)

Nr.	Error Message	Description	Actions
100	MACHINE_SWITCHED_OFF	<ul style="list-style-type: none"> ■ many functions are switched off ■ printing not possible 	▶ Switch ON the printer (green button)
101	E_STOP_ACTIVE	<ul style="list-style-type: none"> ■ emergency stop pressed ■ many functions are switched off ■ printing not possible 	▶ Release the emergency switch
102	REFERENCEALL_NOT_DONE	<ul style="list-style-type: none"> ■ reference not executed ■ 144V are switched off ■ printing not possible 	▶ Close and lock doors ▶ Check error codes from motor control
103	CRASH_ACTIVE	<ul style="list-style-type: none"> ■ Crash sensor was activated ■ printing not possible 	▶ Open doors and remove objects on belt, then close and lock doors
104	ISPPE_TEMPERATURE	<ul style="list-style-type: none"> ■ ISPPE temperature too high. If warning temp. reaching high point 	▶ Check if WS cooling fans are running ▶ Check if filter on WS cooling fans are clean. ▶ Check if cooling air supply is applied.
261	BUMPER_POSITION_NOTOK	<ul style="list-style-type: none"> ■ Security ram not in position ■ many functions are switched off ■ printing not possible 	▶ Put security ram back to position and lock doors
262	DOORS_NOT_LOCKED	<ul style="list-style-type: none"> ■ motor movements are disabled ■ printing not possible 	▶ Close and lock doors

Tab. 13: System Errors

5.2 Power System Errors (1000-1999)

Nr.	Error Message	Description	Actions
1101	SWITCHING_POWER_SUPPLY_144V	<ul style="list-style-type: none"> ■ 	▶ Check and adapt 144V hardware configuration ▶ Numbers of 144V power supply towers must correlate to number of active E-Modules

Nr.	Error Message	Description	Actions
1102	SELECTED_MODULE_DOES_NOT_EXIST	■ wrong input data used	▶ Press the RESET AND INITIALIZE button, to reset the system.
1103	NUMBER_OF_PULSES_OUT_OF_RANGE	■ wrong input data used	▶ Press the RESET AND INITIALIZE button, to reset the system.
1105	SELECTED_PRINTHEAD_DOES_NOT_EXIST	■ wrong input data used	▶ Press the RESET AND INITIALIZE button, to reset the system.
1106	SELECTED_COLOR_CHANNEL_DOES_NOT_EXIST	■ wrong input data used	▶ Press the RESET AND INITIALIZE button, to reset the system.
1107	PARAMETER_COUNT_DURING_PH_VOLTAGE_SETTING	■ wrong input data used	▶ Press the RESET AND INITIALIZE button, to reset the system.
110A	ERROR_144V_SWITCHED_OFF	■ 144V are switched off ■ printing not possible ■ modules not heating ■ Should be warning only	▶ Check MM's temp. ▶ Check LCC status
110B	144V_SAFETY_DOORS_OPEN	■ 144V safety doors open ■ printing not possible ■ modules not heating	▶ Close safety doors ▶ Check closing mechanism and switches...
1201	SWITCHING_POWER_SUPPLY_5V	■ Not possible to switch ON	▶ Check hardware and wiring between motor control and 5V power supply ▶ Check power supply 230V ▶ Press the RESET AND INITIALIZE button, to reset the system.
1202	5V_SWITCHED_OFF	■ 5V are switched off ■ printing not possible ■ modules not working	▶ Check LOG's file to identify why the 5V have been switched off ▶ Press the RESET AND INITIALIZE button, to reset the system.
1203	5V_SUPPLY	■ 5V supply error ■ Printing not possible, modules not working	▶ Check power supply 230V on X106 ▶ Check fuses on X103

Nr.	Error Message	Description	Actions
1204	SWITCHING_POWER_SUPPLY_36V	<ul style="list-style-type: none"> ■ Not possible to switch ON 	<ul style="list-style-type: none"> ▶ Check hardware and wiring between motor control and 36V power supply ▶ Check power supply 230V
1205	36V_SWITCHED_OFF	<ul style="list-style-type: none"> ■ 36V are switched off ■ printing not possible ■ circulation in modules not working 	<ul style="list-style-type: none"> ▶ Check LOG's file to identify why the 36V have been switched off ▶ Press the RESET AND INITIALIZE button, to reset the system.
1026	36V_SUPPLY	<ul style="list-style-type: none"> ■ 36V supply error ■ Printing not possible, module not working 	<ul style="list-style-type: none"> ■ Check power supply 230V on X105 ■ Check fuses on X103
1209	MAINTANK_PUMP_SUPPLY	<ul style="list-style-type: none"> ■ Main tank pump supply error ■ Printing not possible 	<ul style="list-style-type: none"> ■ Check power supply 230V on X104 ■ Check output voltage 24VDC ▶ Check fuses on X102
1300	WAITING_FOR_MACHINE_WARM_UP	<ul style="list-style-type: none"> ■ after switching on 144V ■ wait for temperatures to stabilize ■ printing not possible 	<ul style="list-style-type: none"> ▶ Wait about 10 minutes ▶ If printer not ready after 10 minutes switch off and on Gamma again ▶ Check if Liquid Cooling system is ready

Tab. 14: Power System Errors

5.3 Dataprocessing and System Errors (3000-3999)

Nr.	Error Message	Description	Actions
320C	HARDWARETEST_NOT_ACTIVE	<ul style="list-style-type: none"> ■ 	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→ SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.

Nr.	Error Message	Description	Actions
3217	START_SPITTING	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
3403	SET_ENDLESSMODE	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
3405	SETTING_TILENUMBER_T O_PRINT	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
340A	TILEPROCESSING_FROM_ RTC	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
340C	SOFTWARE_SYSTEMTEST_ NOT_ACTIVE	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.

Nr.	Error Message	Description	Actions
340D	CORRECTION_NUMBER_OF_PRINTED_TILES	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
3421	EPSS_OPERATIONMODE_SELECTION	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
3422	EPSS_SIMULATED_BELTSP EED_OUT_OF_RANGE	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
3424	SETTING_SIMULATED_TILE_LENGTH_OUT_OF_RANGE	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
3426	SETTING_SIMULATED_TILE_SPACING_OUT_OF_RANGE	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.

Nr.	Error Message	Description	Actions
3501	HARDWARE_SYSTEMTEST _NOT_ACTIVE	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
3504	SETTING_GRAY_SCALE_M ODE	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
3505	NUMBER_OF_COLORS	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
3506	CREATING_STOP_TASK	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
3507	STOP_TASK_EXIST	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.

Nr.	Error Message	Description	Actions
3508	STOP_TASK_TCB_ALLOCATION	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
3509	CREATING_SETTOTRANSITMODE_TASK	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
350A	SETTOTRANSITMODE_TASK_EXIST	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
350B	SETTOTRANSITMODE_TCB_ALLOCATION	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
350C	CREATING_GOTOPURGEPOSITION_TASK	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.

Nr.	Error Message	Description	Actions
350D	GOTOPURGEPOSITION_TA SK_EXIST	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
350E	GOTOPURGEPOSITION_TC B_ALLOCATION	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
3513	CREATING_VACUUM_TASK	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
3514	VACUUM_TASK_EXIST	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.
3515	VACUUM_TCB_ALLOCATIO N	■	<ul style="list-style-type: none"> ▶ Restart Printjob ▶ SW reset ISPPE (→SW Resetting ISSPE) ▶ HW reset ISPPE (→ HW Resetting ISSPE) ▶ Press the RESET AND INITIALIZE button, to reset the system.

Nr.	Error Message	Description	Actions
3600	LOADING DATA FROM WORKSTATION	■	<ul style="list-style-type: none"> ▶ reduce printing speed if possible ▶ check workstation performance and hard disk status
3720	PRINTED_COLOR_SEQUENCE	■	<ul style="list-style-type: none"> ▶ Check job configuration: minimal tile length, minimal tile to tile distance ▶ Check belt status and thickness

Tab. 15: Dataprocessing and System Errors

5.4 General Settings Errors (4000-4999)

Nr.	Error Message	Description	Actions
4101	SET_GAMMATYPE	■	▶ Check printer configuration in service software. Resend Feature Data, Resend Config Data.
4103	SETTING_FEATURE_DATA	■	▶ Check printer configuration in service software. Resend Feature Data, Resend Config Data.
4104	SELECTED_COLORCHANNEL	■	▶ Check printer configuration in service software. Resend Feature Data, Resend Config Data.
4105	MODULE_NR_FOR_MODULE_TEMP_SETPOINT	■	▶ Check printer configuration in service software. Resend Feature Data, Resend Config Data.
4106	COLOR_NR_FOR_MODULE_TEMP_SETPOINT	■	▶ Check printer configuration in service software. Resend Feature Data, Resend Config Data.
410B	MODULE_TEMP_SETPOINT_OUT_OF_RANGE	■ accepted values are: 100 < setpoint < 740	▶ Check database value or wrong parameter
410C	MODULE_TEMP_TOLERANCE_OUT_OF_RANGE	■ accepted values : 0 < ToleranceRange < 61	▶ Check database value or wrong parameter


Tab. 16: General Settings Errors

5.5 Module Temperature Errors (6000-6999)

Nr.	Error Message	Description	Actions
6100	TEMPERATURE_MODULE	<ul style="list-style-type: none"> ■ E-module temperature out of tolerance 	<ul style="list-style-type: none"> ▶ wait for temperatures to stabilize ▶ check ink temperature setpoint and range ▶ check temperature sensor on module and eventually replace module
6200	MODULE_HEATSINK_TEMPERATURE	<ul style="list-style-type: none"> ■ E-module Heatsink temperature out of tolerance, exceeds 60°C 	<ul style="list-style-type: none"> ▶ Check the circulation of the cooling liquid ▶ Check the temperature configuration and circulation of the cooling liquid in detail ▶ Check temperature sensor on module and eventually replace E-module

Tab. 17: Module Temperature Errors

5.6 Module State Errors (7000-7999)

Nr.	Error Message	Description	Actions
7000	MODULE_MISSING	<ul style="list-style-type: none"> ■ E-module does not respond ■ no status data update from modules ■ printing not possible <p> Can rarely happen when printing is stopped with output line OFF.</p>	<ul style="list-style-type: none"> ▶ Restart printing ▶ Check E-module and eventually replace E-module
7001	WAVEFORM_VIOLATION	<ul style="list-style-type: none"> ■ Waveform violation 	<ul style="list-style-type: none"> ▶ Reduce belt speed ▶ Check encoder signal ▶ Check encoder head position, encoder lineal state ▶ Check transport belt tracking and general condition of transport system

Nr.	Error Message	Description	Actions
7002	PRINT_HEAD_COMMUNICATION	■ Print head communication failure	<ul style="list-style-type: none"> ▶ Restart printing ▶ Check fiber optic connection to E-modules
7003	PRINT_HEAD_DRIVER_ELECTRONICS	■ Print head driver electronic failure	<ul style="list-style-type: none"> ▶ Restart printing ▶ Check E-module, end if necessary replace E-module ▶ Check 144V power supply
7004	PRINT_HEAD_FIREPULSE_MISSING	■ E-Module 144V missing	<ul style="list-style-type: none"> ▶ Restart printing ▶ Check 144V fuse on power distribution clamp, advise user to replace ▶ Check 144V control LED on E-Module, if OFF replace fuse on E-Module ▶ Check 144V power supply tower and wiring
7005	PRINT_HEAD_BIST	■ E-Module BIST(Built In Self Test) error	<ul style="list-style-type: none"> ▶ Restart printing ▶ Check printing result and replace defective M-Module
7100	MODULE_STATE_REGISTER1	■ E-module has detected some error	<ul style="list-style-type: none"> ▶ See following detail descriptions: <ul style="list-style-type: none"> – 7001 – 7005
7101	MODULE_STATE_REGISTER2	■ E-module has detected some error, see ERROR_MODULE_STATE_REGISTER1 for content details	<ul style="list-style-type: none"> ▶ See following detail descriptions: <ul style="list-style-type: none"> – 7100

Tab. 18: Module State Errors

5.7 Print Head Fire Pulse Shape Errors (8000-8999)

Nr.	Error Message	Description	Actions
8000	PRINT_HEAD_WAVEFORM_PARAMETER	<ul style="list-style-type: none"> ■ Printhead Waveform parameter not compatible with belt speed resolution and actual timing ■ Check is done on .10SR and .10SBS command 	<ul style="list-style-type: none"> ▶ Use proposed belt speed ▶ Check waveform to be conform to belt speed, resolution, waveform timing

Nr.	Error Message	Description	Actions
8100	PRINT_HEAD_VOLTAGE_OUT_OF_RANGE	■	<ul style="list-style-type: none"> ▶ Use proposed belt speed ▶ Reload WF ▶ Resend Head Voltage
8200	PRINT_HEAD_RISING_SLEWRATE_OUT_OF_RANGE	■	<ul style="list-style-type: none"> ▶ Use proposed belt speed ▶ Reload WF ▶ Resend Head Voltage
8300	PRINT_HEAD_FALLING_SLEWRATE_OUT_OF_RANGE	■	<ul style="list-style-type: none"> ▶ Use proposed belt speed ▶ Reload WF ▶ Resend Head Voltage
8400	PRINT_HEAD_TIMING_OUT_OF_RANGE	■	<ul style="list-style-type: none"> ▶ Use proposed belt speed ▶ Reload WF ▶ Resend Head Voltage
8500	PRINT_HEAD_OFFSET_OUT_OF_RANGE	■	<ul style="list-style-type: none"> ▶ Use proposed belt speed ▶ Reload WF ▶ Resend Head Voltage
8600	PRINT_HEAD_REGISTER_OUT_OF_RANGE	■	<ul style="list-style-type: none"> ▶ Use proposed belt speed ▶ Reload WF ▶ Resend Head Voltage

Tab. 19: Print Head Fire Pulse Shape Errors

5.8 Liquid Cooling Control (LCC) Errors (9000-9099)

Nr.	Error Message	Description	Actions
9000	LIQUID_COOLING_PCB	■	<ul style="list-style-type: none"> ▶ Execute S-Reset ▶ Check power supply on PCB
9001	LIQUID_COOLING_TANK_LEVEL	■	<ul style="list-style-type: none"> ▶ Check liquid cooling level
9002	LIQUID_COOLING_PARAMETER_STATUS	■	<ul style="list-style-type: none"> ▶ Execute S-Reset
9003	LIQUID_COOLING_PROCESS_PARAMETER	■	<ul style="list-style-type: none"> ▶ Execute S-Reset
9004	LIQUID_COOLING_VALVE_STATUS	■	<ul style="list-style-type: none"> ▶ Execute S-Reset
9005	LIQUID_COOLING_VENTILATION_FAN	■	<ul style="list-style-type: none"> ▶ Check fan wiring and general state of ventilation fan

Nr.	Error Message	Description	Actions
9006	LIQUID_COOLING_MEDIUM_TO_LOW	■	▶ Refill cooling liquid to reach level 12
9007	LIQUID_COOLING_MEDIUM_TO_HIGH	■	▶ Check Liquid Cooling level and in case dump some liquid to reach level 12
9010	LIQUID_COOLING_PCB_COMMUNICATION	■	▶ Can occur temporarily in some circumstances (machine switch off, lost power...) ▶ check bus components and wiring, after update check function of PCB
9011	LIQUID_COOLING_FILLING_LEVEL	■	▶ Check LCC level
9012	LIQUID_COOLING_FILLED_LEVEL	■	▶ Check LCC level
9013	LIQUID_COOLING_LEVEL_LOW	■	▶ Check LCC level ▶ Refill LCC liquid
9014	LIQUID_COOLING_LEVEL_SENSOR	■	▶ Check Sensor wiring ▶ Reset PCB
9021	LIQUID_COOLING_MEDIUM_LEAKAGE	■ Liquid Cooling medium leakage	▶ Check for leaking cooling system ▶ Error could occur when level sensor is pulled out of the tank ▶ Error could occur when tank is moved in or out too fast
9022	LIQUID_COOLING_DURING_FILLING	■	▶
9023	LIQUID_COOLING_DURING_EMPTYING	■	▶
9024	LIQUID_COOLING_LEAKAGE_CHECK	■	▶
9025	LIQUID_COOLING_CIRCULATION_PRESSURE	■	▶
9026	LIQUID_COOLING_OK_LEVEL_STABILITY	■	▶

Nr.	Error Message	Description	Actions
9031	LIQUID_COOLING_TEMPERATURE	■	<ul style="list-style-type: none"> ▶ Check cooling fan filter, and ventilation fan not blocked ▶ Check temperature sensor and wiring on cooling unit
9032	LIQUID_COOLING_PRESSURE	■	▶
9033	LIQUID_COOLING_FILLING_TANK_LEVEL	■	▶
9034	LIQUID_COOLING_LECKAGE_CHECK_START_PRESSURE	■	▶
9035	LIQUID_COOLING_OK_TANK_LEVEL_TO_HIGH	■	▶
9036	LIQUID_COOLING_OK_TANK_LEVEL_TO_LOW	■	▶
9041	LIQUID_COOLING_INLET_VALVE	■	▶
9042	LIQUID_COOLING_OUTLET_VALVE	■	▶
9043	LIQUID_COOLING_PRESSURE_VALVE	■	▶
9051	LIQUID_COOLING_FAN_NOT_RUNNING	■	▶ check fan wiring and general state of ventilation fan

Tab. 20: Liquid Cooling Control (LCC) Errors

5.9 Meniscus Control Errors (9100-9199)

Nr.	Error Message	Description	Actions
9101	MENCTRL_PCB_COMMUNICATION	■	<ul style="list-style-type: none"> ▶ Check PCB basic function and power supply ▶ Check patch cable to all bus components
9102	MENCTRL_PCB_MAIN_PRESSURE	■	▶ Check input air pressure to be in range
9103	MENCTRL_PCB_CIRCULATION_PRESSURE	■	▶ Check for leakage of circulation pressure circuit

Nr.	Error Message	Description	Actions
9104	MENCTRL_PCB_CIRCULATION_PRESSURE_REDUCED	■	<ul style="list-style-type: none"> ▶ Check lung safety reservoir drain valve to be closed ▶ Check for leakage of lung pressure circuit ▶ If no obvious leakage is visible, check valve status and activity on meniscus PCB ▶ Check main pressure or compressor activity ▶ Check venturi nozzle efficiency
910A	MENCTRL_PCB_LUNG_VACUUM	■	<ul style="list-style-type: none"> ▶ Check lung safety reservoir drain valve to be closed ▶ Check for leakage of lung pressure circuit ▶ If no obvious leakage is visible, check valve status and activity on meniscus PCB ▶ Check main pressure or compressor activity ▶ Check venturi nozzle efficiency
910B	MENCTRL_PCB_LUNG_BREAK	■	<ul style="list-style-type: none"> ▶ Drain lung safety reservoir and check liquid to be colorless ▶ If liquid contains ink, replace corresponding lung filter ▶ Check repeat interval for vacuum cleaning cycle
9110	MENCTRL_PCB_MENISCUS	■	<ul style="list-style-type: none"> ▶ Check for leakage of meniscus pressure circuit ▶ Check ink level and refill of corresponding color to be active ▶ If no obvious leakage is visible, check valve status and activity on meniscus PCB

Tab. 21: Meniscus Control Errors

5.10 Headertank Control Errors (9200-9299)

Nr.	Error Message	Description	Actions
9216	HEADERTANK_REFILL	<ul style="list-style-type: none"> ■ refill valve ON for more than 20 seconds 	<ul style="list-style-type: none"> ▶ Check and if needed replace primary circuit ink filter ▶ Check primary ink circuit for correct circulation ▶ Error is normal to occur during initial filling of secondary circuit
9240	HEADERTANK_FEED	<ul style="list-style-type: none"> ■ not enough flow into feed tank ■ status_tank_flow == STATUS_TANK_ERROR_EMPTY 	<ul style="list-style-type: none"> ▶ Check and eventually change secondary circulation ink filter ▶ Check and eventually change lung filter ▶ Check and eventually change pump
9270	HEADERTANK_CIRCULATION	<ul style="list-style-type: none"> ■ header circulation pump exceeds PUMP_LOAD_OVERFLOW_LIMIT = 95% for more than PUMP_LOAD_TIMEOUT = 20 seconds 	<ul style="list-style-type: none"> ▶ Check and eventually change secondary circulation ink filter ▶ Check and eventually change lung filter ▶ Check and eventually change pump
9274	HEADERTANK_CLR	<ul style="list-style-type: none"> ■ During last CLR process the CLR valve was newer switched ON ■ Can happen if circulation or meniscus pressure is differing from reference value. ■ Problems should be analyzed if warning comes after 2 or more subsequent CLR processes. 	<ul style="list-style-type: none"> ▶ Monitor the system for 10 CLR cycles and check how often it dose happen.

Nr.	Error Message	Description	Actions
9275	HEADERTANK_OPERATING_MODE	<ul style="list-style-type: none"> Header tank circulation is deactivated due to system error or manually. Warning is generated if header circulation is working, but refill is disabled Detection is deactivated during execution of any process and for next 5 seconds After a switching valve MeniscusPurge. 	<ul style="list-style-type: none"> Check system to find out why circulation is switched off. Restart circulation
927C	HEADERTANK_LEVEL	<ul style="list-style-type: none"> header ink level in feed or in return tank too high 	<ul style="list-style-type: none"> Execute manual purge on affected color channel Empty safety overflow reservoir Check meniscus and circulation circuit to be not filled with ink
927D	HEADERTANK_LEVEL_OVERFLOW	<ul style="list-style-type: none"> header ink level in feed or in return tank overflow 	<ul style="list-style-type: none"> User: Check refill from main tank Error is normal to occur during initial filling of secondary circuit Error can occur if refill is manually deactivated, or manual purge is executed
9282	HEADERTANK_REFILL_SUPPLY	<ul style="list-style-type: none"> header tank return is empty status_tank_return == STATUS_TANK_ERROR_OR_EMPTY 	<ul style="list-style-type: none"> Check refill from main tank Error is normal to occur during initial filling of secondary circuit Error can occur if refill is manually deactivated, or manual purge is executed

Nr.	Error Message	Description	Actions
9290	HEADERTANK_TEMPERATURE	■ header tank temperature out of range	<ul style="list-style-type: none"> ▶ Wait for 10 minutes to get temperature stable ▶ Check header tank temperature settings in database ▶ Check header tank temperature sensor ▶ Error can occur if value in database differs from default value more than ink temperature range
92A0	HEADERTANK_VOLTAGE	■ header tank circulation: wrong input data	<ul style="list-style-type: none"> ▶ wrong input data (must be percentage value 0..99)
92C0	PRINT_HEAD_VOLTAGE_24V_NOK	■ E-Module 24V NOK	<ul style="list-style-type: none"> ▶ User: execute printer initialization(HRESET) ▶ Check 24V fuse on power distribution clamp, advise user to replace ▶ Check 24V power supply tower and wiring
92C1	PRINT_HEAD_VOLTAGE_36V_NOK	■ E-Module 36V NOK	<ul style="list-style-type: none"> ▶ User: execute printer initialization(HRESET) ▶ Check 36V fuse on power distribution clamp, advise user to replace ▶ Check 36V power supply tower and wiring
92C2	PRINT_HEAD_VOLTAGE_144V_NOK	■ E-Module 144V NOK	<ul style="list-style-type: none"> ▶ User: execute printer initialization(HRESET) ▶ Check 144V fuse on power distribution clamp, advise user to replace ▶ Check 144V control LED on E-Module, if OFF replace fuse on E-Module ▶ Check 144V power supply tower and wiring

Tab. 22: Headertank Control Errors

5.11 Maintank Control Errors (9300-9399)

Nr.	Error Message	Description	Actions
9301	TANK_CONTROL_PCB_COMMUNICATION	■	<ul style="list-style-type: none"> ▶ Check PCB basic function and power supply ▶ Check patch cable to all bus components
9302	TANK_CONTROL_PCB_ANSWER	■	<ul style="list-style-type: none"> ▶ Check correct firmware version
9303	SETTING_OUTPUT_ON_TANK_CONTROL_PCB	■	<ul style="list-style-type: none"> ▶ Check correct and complete wiring ▶ Check connected device on output pin for short circuit and correct connection
9304	SELECTED_PRESSURE_LIMIT_NOT_EXISTENT	■	<ul style="list-style-type: none"> ▶
9306	SELECTED_COLORCHANNEL_ON_TC_PCB	■	<ul style="list-style-type: none"> ▶
9310	MAIN_TANK_LEVEL	■ Main tank level out of tolerance	<ul style="list-style-type: none"> ▶ 0% refill ink ▶ If refill not successful, check primary circuit refill filter and filter connectors ▶ Check alignment of main tank level sensor ▶ Check refill pump
9340	MAIN_TANK_LEVEL_SENSOR_NEW	■ Main tank level sensor not connected or defective	<ul style="list-style-type: none"> ▶ Check sensor and eventually clean or replace
9360	MAIN_TANK_TEMPERATURE	■ Main tank temperature is effectively LCC temperature	<ul style="list-style-type: none"> ▶ Check liquid Cooling unit or wait for warming up ▶ Check database value
9370	MAIN_TANK_TEMPERATURE_FRAME	■ Main Frame temperature is out of tolerance	<ul style="list-style-type: none"> ▶ Is actually deactivated in firmware
9380	MAIN_TANK_TEMPERATURE_FRAME_VALUE_OUT_OF_RANGE	■ Main Frame temperature: wrong input data	<ul style="list-style-type: none"> ▶ wrong input data

Tab. 23: Maintank Control Errors

5.12 Valve and Pump Errors (9400-9499)

Nr.	Error Message	Description	Actions
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Nr.	Error Message	Description	Actions
940F	VALVE_SELECTION	■ valve selection: wrong input data	<ul style="list-style-type: none"> ▶ wrong input data ▶ Check printer configuration, Gamma type and number of ink channels and database values

Tab. 24: Valve and Pump Errors

5.13 Temperature Control Errors (9500-9599)

Nr.	Error Message	Description	Actions
9501	TEMPERATURE_CONTROL_PCB_COMMUNICATION	■	▶
9502	TEMPERATURE_CONTROL_PCB_ANSWER	■	▶
9503	SELECTED_CHANNEL_ON_TEMP_CTRL_PCB	■	▶
9504	PRINT_ENGINE_TEMP_SETPPOINT_VALUE_OUT_OF_RANGE	■	▶
9510	PRINT_ENGINE_TEMPERATURE	■	▶

Tab. 25: Temperature Control Errors

5.14 Motor Control Errors (9600-9699)

Nr.	Error Message	Description	Actions
9601	MOTOR_CTRL_PCB_COMMUNICATION	■	<ul style="list-style-type: none"> ▶ Check PCB basic function and power supply ▶ Check patch cable to all bus components
9602	MOTOR_CTRL_ENCODER_1	■	▶ Check wiring between motor control and belt motor encoder...

Nr.	Error Message	Description	Actions
9603	MOTOR_CTRL_EXECUTION_STATUS	■	<ul style="list-style-type: none"> ▶ Check for actual firmware and software versions ▶ Check general wiring and reference sensor status of crash, sucking and maintenance ▶ Check other specific errors regarding motor control and step motor control ▶ Check all basic axis movements step by step
9604	MOTOR_CTRL_STATUS_DE TAIL	■ returns detailed Errorstatus (32Bit) from motorcontrol	▶ Check detailed error. To identify the fault
9605	MOTOR_CTRL_VACUUM_T ASK	■ returns detailed Errorstatus (32Bit)	<ul style="list-style-type: none"> ▶ Error can occur on emergency switch, power off and other interrupts of process ▶ Check general wiring and reference sensor status of crash, sucking and maintenance ▶ Check other specific errors regarding motor control and step motor control ▶ Check all basic axis movements step by step
9606	MOTOR_CTRL_MOVETOPU RGE	■ returns detailed Errorstatus (32Bit)	<ul style="list-style-type: none"> ▶ Error can occur on emergency switch, power off and other interrupts of process ▶ Check general wiring and reference sensor status of crash, sucking and maintenance ▶ Check other specific errors regarding motor control and step motor control ▶ Check all basic axis movements step by step

Nr.	Error Message	Description	Actions
9607	MOTOR_CTRL_TRANSIT_M ODE	■ returns detailed Errorstatus (32Bit)	<ul style="list-style-type: none"> ▶ Error can occur on emergency switch, power off and other interrupts of process ▶ Check general wiring and reference sensor status of crash, sucking and maintenance ▶ Check other specific errors regarding motor control and step motor control ▶ Check all basic axis movements step by step
9608	MOTOR_CTRL_REFERENCE ALL	■ returns detailed Errorstatus (32Bit)	<ul style="list-style-type: none"> ▶ Error can occur on emergency switch, power off and other interrupts of process ▶ Check general wiring and reference sensor status of crash, sucking and maintenance ▶ Check other specific errors regarding motor control and step motor control
960A	THICKNESS_SENSOR_OUT _OF_RANGE	■ sensor value out of valid range 0 < value > 450	<ul style="list-style-type: none"> ▶ Check if air knife pressure supply is working and air filtering is correct ▶ Check if thickness sensor overpressure is working and air filtering is correct ▶ Clean transmitter and receiver of thickness sensor ▶ Check reference values and sensor alignment for thickness sensor

Nr.	Error Message	Description	Actions
960B	BELT_MOTOR_ENCODER_NOT_WORKING	■ Encoder signal to motor control is invalid	<ul style="list-style-type: none"> ▶ Check if belt is running smoothly ▶ Check if production lines and printer are running the same belt speed ▶ Check belt motor coupling and belt encoder wiring
960C	MESSAGE_FROM_SERVOD RIVER_BELT	■ General belt servo driver error, including torque error, driver errors and others	<ul style="list-style-type: none"> ▶ Check belt motor for overheating ▶ Check belt motor for vibration or noisy operation ▶ Check error number on servo driver display ▶ Check belt guiding and belt cleaning system ▶ Measure torque and other parameters with CX drive tools ▶ Check belt motor coupling and belt encoder wiring
960D	MESSAGE_FROM_SERVOD RIVER_HEAD	■ General head servo driver error, including torque error, driver errors and others	<ul style="list-style-type: none"> ▶ Check head motor and gearbox for vibration or noisy operation ▶ Check head motor for overheating ▶ Check error number on servo driver display ▶ Check head break if opening ▶ Measure torque and other parameters with CX drive tools ▶ Check head motor coupling and head encoder wiring

Nr.	Error Message	Description	Actions
960E	TILE_TO_LONG	■ Thickness sensor detects tile length corresponding > 1,60 m, only active when belt running and AHTDM on	<ul style="list-style-type: none"> ▶ Check for objects in thickness sensor beam, and remote ▶ Check for smooth tile flow across the tile guiding system ▶ Check belt thickness uniformity specially when printing thin tiles
9610	THICKNESS_SENSOR_VALUE_CALL	■ sensor value out of valid calculation range	<ul style="list-style-type: none"> ▶ Check if air knife pressure supply is working and air filtering is correct ▶ Check if thickness sensor overpressure is working and air filtering is correct ▶ Clean transmitter and receiver of thickness sensor ▶ Check reference values and sensor alignment for thickness sensor

Tab. 26: Motor Control Errors

5.15 Step Control Errors (9800-9899)

Nr.	Error Message	Description	Actions
9801	STEP_CTRL_PCB_COMMUNICATION	■	<ul style="list-style-type: none"> ▶ Check PCB basic function and power supply ▶ Check patch cable to all bus components

Nr.	Error Message	Description	Actions
9803	STEP_CTRL_EXECUTION_STATUS	■	<ul style="list-style-type: none"> ▶ Check for actual firmware and software versions ▶ Check general wiring and reference sensor status of crash, sucking and maintenance ▶ Check other specific errors regarding motor control and step motor control ▶ Check all basic axis movements step by step
9804	STEP_CTRL_STATUS_DETAIL	■ returns detailed Errorstatus (32Bit) from stepcontrol	▶

Tab. 27: Step Control Errors

5.16 DURST Bus Related Errors (A000-A999)

Nr.	Error Message	Description	Actions
A001	SYSTEM_BUS	■	<ul style="list-style-type: none"> ▶ Check PCB basic function and power supply ▶ Check patch cable to all bus components ▶ Error can occur if main breaker F14 is switched OFF while F12 is ON

Tab. 28: DURST Bus Related Errors

5.17 uC OS Related Errors (B000-B999)

Nr.	Error Message	Description	Actions
BC10	RS485_SEMAPHORE_CREATION	■	▶
BC11	RS485_SEMAPHORE_TIMEOUT	■	▶
BC12	EVENT_QUEUE_FULL	■ Firmware performance is low if this error occurs	▶

Tab. 29: uC OS Related Errors

5.18 DURST Bus Highspeed Related Errors (C000-C999)

Nr.	Error Message	Description	Actions
C001	SYSTEM_BUS_HS	■	<ul style="list-style-type: none">▶ Check PCB basic function and power supply▶ Check patch cable to all bus components▶ Error can occur if main breaker F14 is switched OFF while F12 is ON

Tab. 30: DURST Bus Highspeed Related Errors

6 Pilz safety controller

6.1.1 Pin/LED assignment for the program MA3318P

- ✓ ACS controller type PNOZ mm0.1p is used in printer

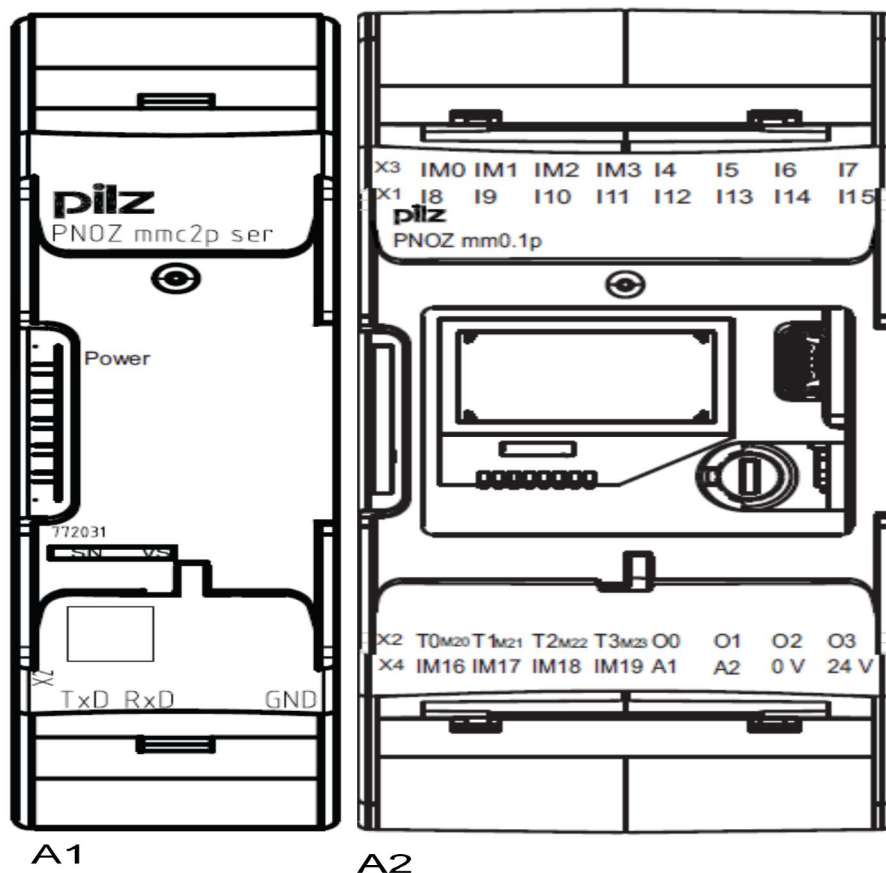


Fig. 1: Overview of the Pilz safety controller

A1	Expansion module PNOZ mmc2p with RS232 interface
A2	Base unit PNOZmulti mm0.1p

Inputs /Outputs of base unit m1p - A2			
X1	I8	Feedback loop main contactor K1	Led ON
	I9	Phase monitoring	Led ON
	I10	Mode Auto	Led ON
	I11	Safety 144VDC right (Sliding cover print sledge)	Led ON
	I12	Crash sensor	Led ON
	I13	Push button green (operator panel)	Led ON
	I14	Push button red (operator panel)	Led ON
X2	I15	Outputline	Led ON
	T0	Test Pulse Output for emergency switches on I4, emergency switches on I15, Door switch left on I6, Door switch right on I7 and safety ramp on I5.	Semiconductor output
	T1	Test Pulse Output not used (cable end is Operator panel)	Semiconductor output
	T2	Test Pulse Output not used (cable end is Operator panel)	Semiconductor output
X3	T3	Test Pulse Output not used (cable end is Operator panel)	Semiconductor output
	IM0	Door left interlocking	Output
	IM1	Head Motor Ready (Omron "Break –" active)	Input
	IM2	Led Stop Red (operator panel)	Output
	IM3	STO status	Input
	I4	Emergency switch Stop	Input
	I5	Safety ramp monitoring (Bumper)	Input
X4	I6	Door switch left	Input
	I7	Door Switch right	Input
	IM16	Led Start Green (operator panel)	
	IM17	Safety 144VDC left (Sliding cover print sledge)	
	IM18	Feedback loop stepper	
	IM19	Door right interlocking	
	A1	Bridged from 24VDC	
	24VDC	Power supply 24VDC	
	A2	Bridget from 0VDC	
	0VDC	Bridged from 0VDC	

Tab. 31: Pilz Input / Output Base unit (mm0.1p)

6.1.2 Meaning of LEDs on the PNOZ mm0.1p

Symbol	Meaning
●	LED off
☀	LED on
◐	LED flashing

Tab. 32: Legends for the LEDs on the PNOZ m1p, mo4p, mi1p

LEDs on the base unit and expansion modules indicate the status of the system. When the supply voltage is switched on, the configuration saved on the chip card will be copied to the PNOZmulti safety system. While this is happening, the LEDs "POWER", "DIAG", "FAULT", "IFAULT" and "OFAULT" on the base unit mm0.1p light up. The system is ready for operation when the LEDs "POWER" and "RUN" lights continuously.

RUN	DIAG	FAULT	IFAULT	OFAULT	
●	◐				The existing user program has been deleted
●	☀				External error on the base unit, e.g. Chip card not inserted
●			☀		External error at the outputs of the base unit, e.g. short across the contacts
●	◐	◐			Internal error on the base unit
●	◐		◐		Internal error on the base unit inputs
●	◐			◐	Internal error on the base unit outputs
	☀				Base unit in STOP- status
☀			◐		External error at the inputs, which does not lead to a safe condition, e.g. defective feedback loop
☀				◐	External error at the outputs, which does not lead to a safe condition, e.g. defective feedback loop
				◐	Fieldbus communication not recognized.

Tab. 33: Legends for the LEDs on the PNOZ mm0.1p

7 Omron G5 warnings / errors

7.1 Warnings

Warning number	Warning name	Warning condition
A0	Overload warning	The load ratio is 85% or more of the protection level.
A1	Excessive regeneration warning	The regeneration load ratio is 85% or more of the protection level.
A2	Battery warning	Battery voltage is 3.2 V or less.
A3	Fan warning	The fan stops for 1 second.
A4	Encoder communications warning	Encoder communications errors occurred in series more than the specified value.
A5	Encoder overheating warning	The encoder temperature exceeded the specified value.
A6	Vibration detection warning	Vibration is detected.
A7	Life expectancy warning	The life expectancy of the capacitor or the fan is shorter than the specified value.
A8	External encoder error warning	The external encoder detected a warning.
A9	External encoder communications warning	The external encoder has more communications errors in series than the specified value.

Tab. 34: Warning table Omron Drive G5

7.2 Errors

Alarm number		Error detection function	Detection details and probable cause
Main	Sub		
11	0	Control power supply undervoltage	The DC voltage of the main circuit fell below the specified value.
12	0	Overvoltage	The DC voltage in the main circuit is abnormally high.
13	0	Main power supply undervoltage (Insufficient voltage between P and N)	The DC voltage of the main circuit is low.
	1	Main power supply undervoltage (AC cut-off detection)	A location was detected where the main circuit AC power supply is cut off.
14	0	Overcurrent	Overcurrent flowed to the IGBT.
	1	IPM error	Motor power line ground fault or short circuit.
15	0	Servo Drive overheat	The temperature of the Servo Drive radiator exceeded the specified value.
16	0	Overload	Operation was performed with torque significantly exceeding the rating for several seconds to several tens of seconds.
18	0	Regeneration overload	The regenerative energy exceeds the processing capacity of the Regeneration Resistor.
	1	Regeneration Tr error	An error was detected in a Servo Drive regeneration drive Tr.
21	0	Encoder communications disconnection error	The encoder wiring is disconnected.
	1	Encoder communications error	An encoder communications error was detected.
23	0	Encoder communications data error	Communications cannot be performed between the encoder and the Servo Drive.
24	0	Error counter overflow	The error counter accumulated pulse exceeds the set value for the Error Counter Overflow Level (Pn014).
	1	Excessive speed error	The difference between the internal position command speed and the actual speed (i.e., the speed error) exceeded the Excessive Speed Error Setting (Pn602).
25	0	Excessive hybrid error	During fully-closed control, difference between position of load from external encoder and position of motor due to encoder was larger than the pulse number set by Excessive Hybrid Error Setting (Pn332).

Alarm number		Error detection function	Detection details and probable cause
Main	Sub		
26	0	Overspeed	The motor rotation speed exceeded the value set on the Overspeed Level set (Pn513).
	1	Overspeed 2	The motor rotation speed exceeded the value set on the Overspeed Level set 2 (Pn615).
27	0	Command pulse frequency error	A command pulse frequency error was detected.
	1	Absolute value cleared	The multi-rotation counter for the absolute encoder was cleared by the CX-Drive.
	2	Command pulse multiplier error	The command pulse divider or multiplier is not suitable.
	4	Command error	The position command variation is higher than the specified value.
28	0	Pulse regeneration error	The pulse regeneration output frequency exceeded the limit.
29	0	Error counter overflow	Error counter value based on the encoder pulse reference exceeded 229 (536,870,912).
	2	Error counter overflow 2	The position error in pulses exceeded the specified value. Alternatively, the position error in command units exceeded the specified value.
30	0	Safety input error	Safety input signal turned OFF.
33	0	Interface input duplicate allocation error 1	A duplicate setting for the interface input signals was detected.
	1	Interface input duplicate allocation error 2	
	2	Interface input function number error 1	
	3	Interface input function number error 2	An undefined number was detected in the interface input signal allocations.
	4	Interface output function number error 1	
	5	Interface output function number error 2	
	6	Counter reset allocation error	The counter reset function was allocated to something other than input signal SI7.
	7	Command pulse prohibition input allocation error	The command pulse prohibition input function was allocated to something other than input signal SI10.
	8	Latch input 1 allocation error	Latch input 1 was allocated to a signal other than input signal SI4, or with contact NC.

Alarm number		Error detection function	Detection details and probable cause
Main	Sub		
34	0	Overrun limit error	The motor exceeded the allowable operating range set in the Overrun Limit Setting (Pn514) with respect to the position command input.
36	0 to 2	Parameter error	Data in the Parameter Save area was corrupted when the power supply was turned ON and data was read from the EEPROM.
37	0 to 2	Parameters destruction	The checksum for the data read from the EEPROM when the power supply was turned ON does not match.
38	0	Drive prohibition input error	The forward drive prohibition and reverse drive prohibition inputs are both turned OFF.
39	0	Excessive analog input 1	A current exceeding the Speed Command/Torque Command Input Overflow Level Setting (Pn424, Pn427 or Pn430) was applied to the analog command input (pin 14).
	1	Excessive analog input 2	
	2	Excessive analog input 3	
40	0	Absolute encoder system down error	The voltage supplied to the absolute encoder is lower than the specified value.
41	0	Absolute encoder counter overflow error	The multi-rotation counter of the absolute encoder exceeds the specified value.
42	0	Absolute encoder overspeed error	The motor rotation speed exceeds the specified value when only the battery power supply of the absolute encoder is used.
43	0	Encoder initialization error	An encoder initialization error was detected.
44	0	Absolute encoder 1-rotation counter error	A 1-turn counter error was detected.
45	0	Absolute encoder multirotation counter error	A multi-rotation counter error or phase-AB signal error was detected.
47	0	Absolute encoder status error	The rotation of the absolute encoder is higher than the specified value.
48	0	Encoder phase-Z error	A serial incremental encoder phase Z pulse irregularity was detected.
49	0	Encoder CS signal error	A logic error was detected in the CS signal for serial incremental encoder.
50	0	External encoder connection error	An error was detected in external encoder connection.
	1	External encoder communications data error	An error was detected in external encoder communications data.

Alarm number		Error detection function	Detection details and probable cause
Main	Sub		
51	0	External encoder status error 0	
	1	External encoder status error 1	
	2	External encoder status error 2	
	3	External encoder status error 3	
	4	External encoder status error 4	
	5	External encoder status error 0	
55	0	Phase-A connection error	An error was detected in the external encoder phase A connection.
	1	Phase-B connection error	An error was detected in the external encoder phase B connection.
	2	Phase-Z connection error	An error was detected in the external encoder phase Z connection.
87	0	Forced alarm input error	The forced alarm input signal was input.
92	0	Encoder data restoration Error	Initialization of internal position data was not processed correctly in semiclosed control mode and absolute value mode.
	1	External encoder data restoration error	Initialization of internal position data was not processed correctly in fullyclosed control mode and absolute value mode.
93	1	Drive Programming data setting error	A setting error was detected in the drive programming setting data and drive programming control data.
	2	Parameter setting error 2	External encoder ratio exceeded the allowable range.
94	0	Drive Programming error	A drive programming was started during a drive programming or while the servo was OFF.
	1	Wrap around error	The position command value or the current position exceeds the C0000001h and 3FFFFFFFh range.
	2	Origin search error	-Drive prohibition input turned ON during an origin search operation, and a reverse direction drive prohibition input turned ON during a reverse operation. -Origin search was executed when an absolute encoder is used. -Relative or absolute travel was executed when origin search has not been completed.
95	0 to 4	Motor non-conformity	The combination of the Servomotor and Servo Drive is not appropriate. The encoder was not connected when the power supply was turned ON.

Tab. 35: Error table Omron Drive G5 errors