Interface Description

I/O Interface I/O 24V25-1

Edition: 05/2020 · **Part No.** 9003557

Function

The I/O interface is designed to connect the printer to a superordinated control.

The interface I/O 24V25-1 is intended for printers of the SQUIX series and already integrated in the peel versions of the printer. The basic versions can be upgraded with the I/O 24V25-1.

	I/O 24V25-1
Part No.	5551312
Operating Voltage	24 V
External Interface	25 pin SUB-D connector
Interface to the CPU	SPI
Application	SQUIX

Table 1 Technical Data

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Niedermodern
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The interface has a 25 pin SUB-D connector.

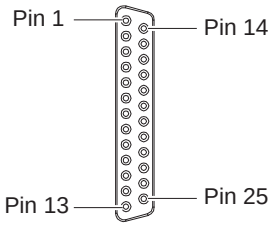


Figure 1 I/O interface

Note!

The function of the outputs on the pins 4, 9 10 and 21 can be re-defined temporarily by direct programming e.g. to control external devices with the user bits 0 to 3 ▷ Programming Manual.

Pin	Signal	Name	Description	Activation / Active State
1	←	FSTLBL	∗ with applicator for *Cycle sequence = Apply-Print* Print first label	+24 V between Pin 1 and Pin 25
2	-			
3	→	ENDPOS	∗ with applicator Applicator is in the position of transferring the label onto the product.	+24 V on Pin 3
4	→	FEEDON	Media transport ON Labels are fed by the printer	+24 V on Pin 4
		Bit 0	User Bit 0 is set	
5	→	HOMEPOS	∗ with applicator Applicator is in the position where the label can be taken from the printer.	+24 V on Pin 5
6		GND_INT	Ground (0 V) for sensors or trigger switches	
7	-			
8	-			
9	→	JOBRDY	Print job ready Print jobs are stored in the print module.	+24 V on Pin 9
		Bit 1	User Bit 1 is set	
10	→	READY	Printer respectively printer and applicator are ready	+24 V on Pin 10
		Bit 2	User Bit 2 is set	
11	-			
12	←	REPRINT	The last printed label will be repeated.	+24 V between Pin 12 and Pin 25
13	←	START	∗ with applicator Print and labelling start signal ∗ without applicator for *Print on demand = On* Print start signal	+24 V between Pin 13 and Pin 25
14	←	PAUSE	Pause ON/OFF	Pause ON when +24 V between Pin 14 and Pin 25
15	→	RIBWARN	Warning end of ribbon The ribbon supply roll diameter has undershot a predefined level	0 V on Pin 15
16	←	LBLREM	∗ in peel-off mode without applicator Label removed For peel-off mode only. Confirmation of the superior control that the label has been taken from the peel-off position. Required for the validity of a new start signal.	Switch on +24 V between Pin 16 and Pin 25
17	←	JOBDEL	Cancel print job Depending on the setting of the parameter *JOBDEL mode* only the current print job is canceled and deleted from the print buffer or all jobs in buffer are canceled.	Switch on +24 V between Pin 17 and Pin 25

1 Pin Assignment

Pin	Signal	Name	Description	Activation / Active State
18		RSTERR	Reset Error state of the printer will be reset.	Switch on +24 V between Pin 18 and Pin 25
19		P24_INT	Internal operating voltage +24 V, Si T 100mA for external consumers e.g. sensors, trigger switches	
20		P24_EXT	External operating voltage +24 V	
21		PEELPOS	∗ in peel-off mode A label is in peel-off position.	+24 V on Pin 21
		Bit 3	User Bit 3 is set	
22		ERROR	General error message The operation will be stopped and the error type will be displayed.	0 V on Pin 22
23		STOP	Stop signal to interrupt the operation	Switch on +24 V between Pin 23 and Pin 25
24	-			
25		GND_EXT	Ground of the external 24 V	

Table 2 Pin assignment of the I/O interface

▶ Start menu.

Select  *Setup* >  *Interfaces* >  *I/O*.

Parameter	Meaning	Default
 *START mode*	Configuration of the I/O signal START *Edge*: A label will be printed by switching on 24V between START and GND_EXT. *Level*: In **Rewind mode** labels are printed as long as 24V are switched on between START and GND_EXT. In **Peel-off mode** a label will be printed after receiving the signal LBLREM as long as 24V are switched on between START and GND_EXT.	*Edge*
 *REPRINT mode*	Configuration of the I/O signal REPRINT *Edge*: A label will be repeated by switching on 24V between REPRINT and GND_EXT. *Level*: A label will be repeated as long as 24V are switched on between REPRINT and GND_EXT. *START/REPRINT select*: A label will be repeated when 24V are switched on between REPEAT and GND_EXT and the START signal will be activated additionally.	*Edge*
 *JOBDEL mode*	Configuration of the I/O signal JOBDEL *Cancel print job:* The current print job is canceled and deleted from the print buffer. *Cancel all:* All jobs in buffer are canceled.	*Cancel print job*
 *Start delay*	Delay (max. 2,5 s) between start signal and the start of an labelling cycle.	*0 ms*
 *Lock time*	All start signals coming in following the first start signal are ignored when they arrive within the lock time (max. 2,5 s).	*0 ms*
 *Automatic LBLREM*	∗ for peel-off mode without present sensor and *START mode = Level* Simulation of the I/O signal LBLREM *On:* With the signal START the removing of the previous label also will be confirmed. *Off:* To confirm the label removing the signal LBLREM must be activated.	*Off*
 *Legacy I/O*	Inversion of the positions signals HOMEPOS (old: XSOE) and ENDPOS (old: XSUE) for using the applicator S1000 in systems, which were previously operated with an applicator A1000.	*Off*

Table 3 Parameters of the *Setup* > *Interfaces* > *I/O* menu

3 Circuit Diagram of Inputs and Outputs

Digital inputs

- Conform to IEC/EN 61131-2 (Type 3)
- Operating voltage: 24 V DC (9,6..35 V)
- Switching logic: PNP switching
- Logic level „0“: < 7 V DC
- Logic level „1“: > 11 V DC
- Input current per channel: 1,5..2,5 mA (at 24 V DC)
- Reverse polarity protection: yes
- ESD protection: conform to IEC/EN 6100-4-4

Digital outputs

- Conform to IEC/EN 61131-2
- Operating voltage: 24 V DC (11..35 V)
- Switching logic: PNP switching
- Output current per channel: 625 mA (overload protection)
- Short-circuit protection: yes
- Reverse polarity protection: yes
- ESD protection: conform to IEC/EN 6100-4-4

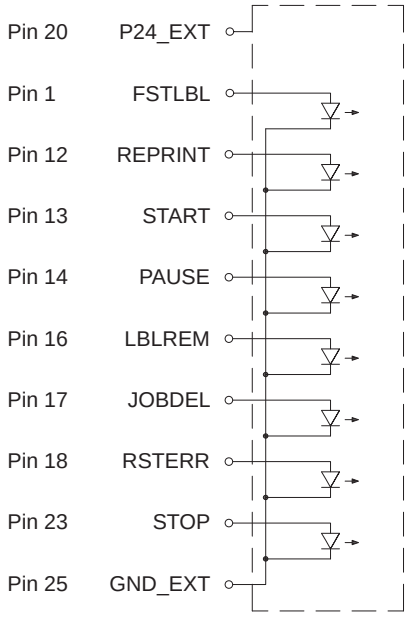


Figure 2 Connecting inputs

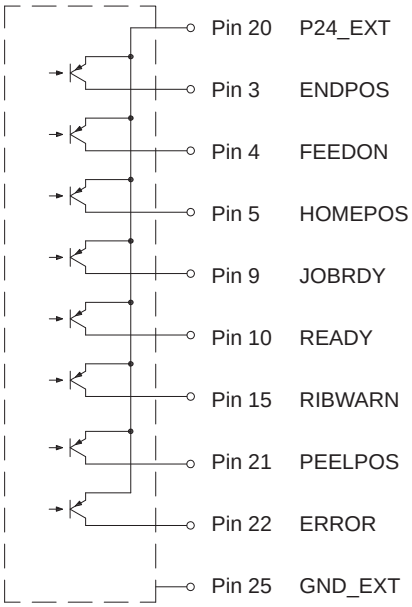


Figure 3 Connecting outputs

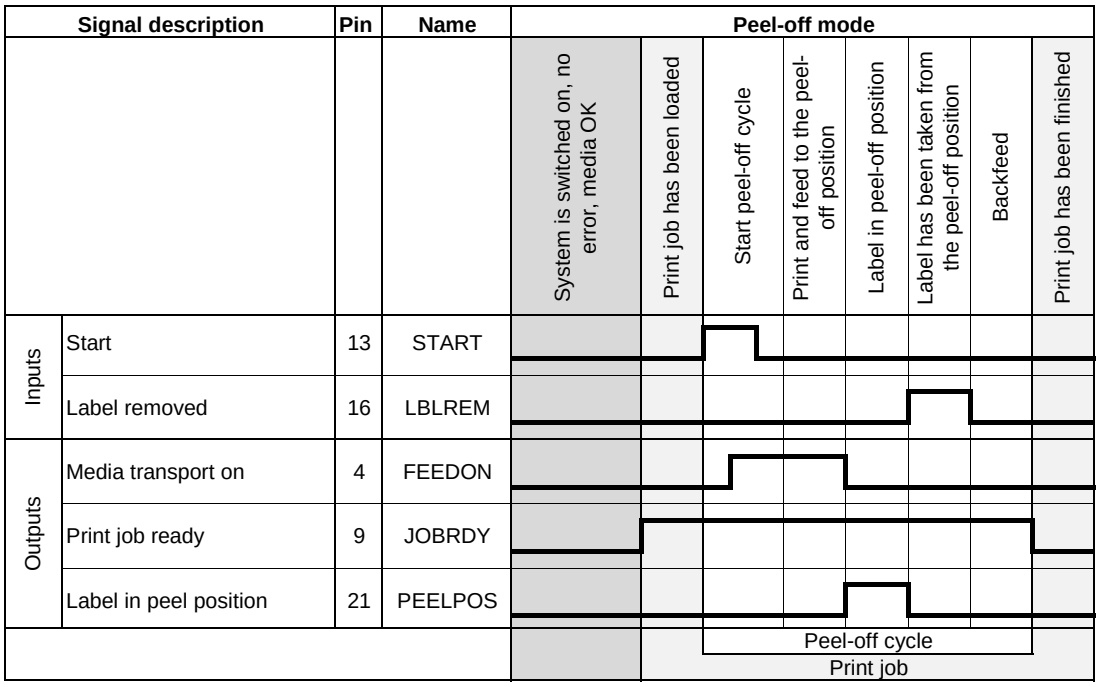


Figure 4 Signal map SQUIX with I/O 24V25-1 in peel-off mode - Printing and confirming label removal with two signals

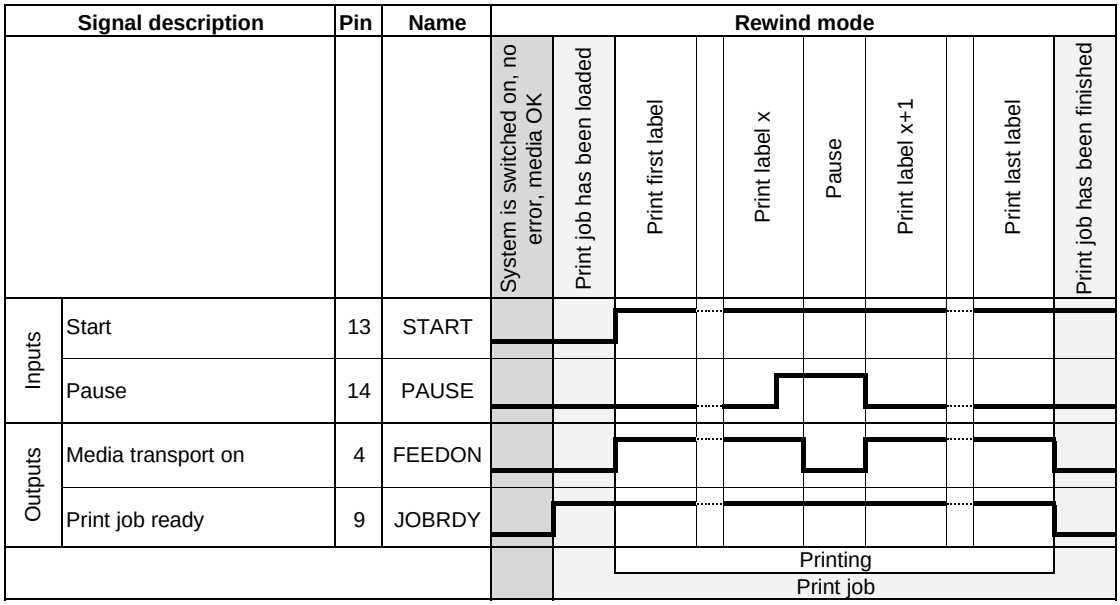


Figure 5 Signal map SQUIX with I/O 24V25-1 in rewind mode

5 Solution Examples

5.1 Peeling-off on Demand with Present Sensor PS800 / PS900 / PS1000

In the standard peel-off mode a label will be printed immediately after the previous label has been taken from the peel position.

Using the I/O interface the print of the next label can be triggered by an external signal.

Requirements:

- SQUIX with Present Sensor PS800, PS900 or PS1000
- External circuit as shown in Figure 6.
- Setting *Printing > Print on Demand = "On".*

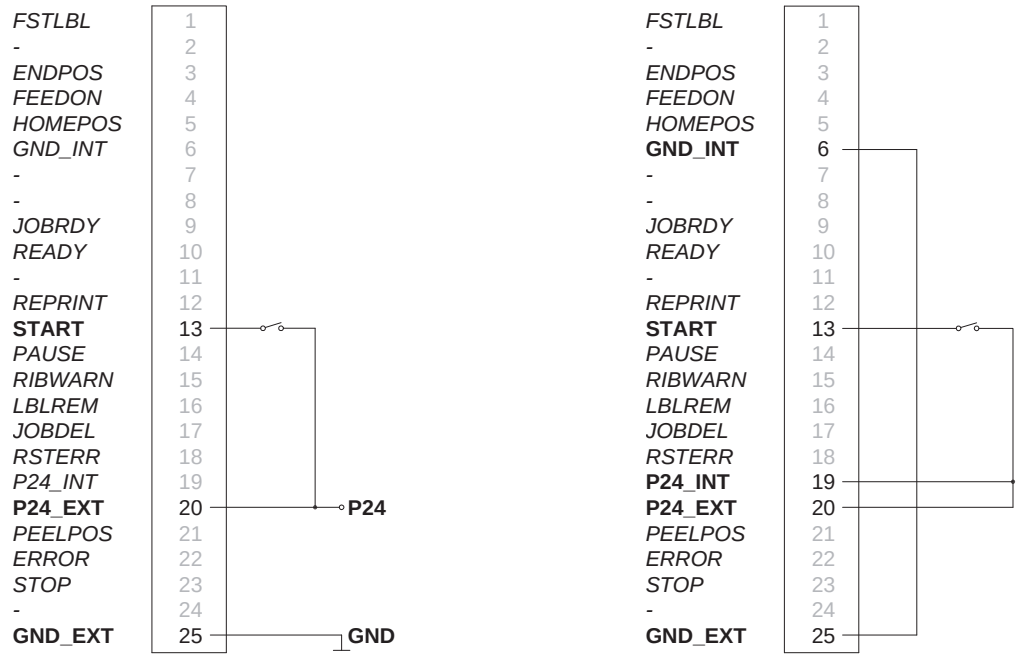
Operation:

▶ Send a print job.

▶ Activate **START**.
The first label will be printed and transported to the peel position.

▶ Remove the label.

▶ Activate **START** to start the next cycle.



Operation with external voltage supply

Operation using the internal voltage

Figure 6 External circuit for peeling-off on demand with Present Sensor PS800 / PS900 / PS1000

5.2 Peeling-off on Demand without Present Sensor

In the peel-off mode with present sensor the label removal from the peel position is detected by an optical sensor.

Using the I/O interface the label removal can be confirmed by the external signal **LBLREM**. That way it is possible to operate the printer in peel-off mode without present sensor.

Starting Print and Confirming Label Removal with Two Signals

Requirements:

- SQUIX without present sensor.
- External circuit as shown in Figure 7
- Setting *Printing > Print on Demand = "On".*
- Setting *Interfaces > I/O > Automatic LBLREM = "Off"*

Operation:

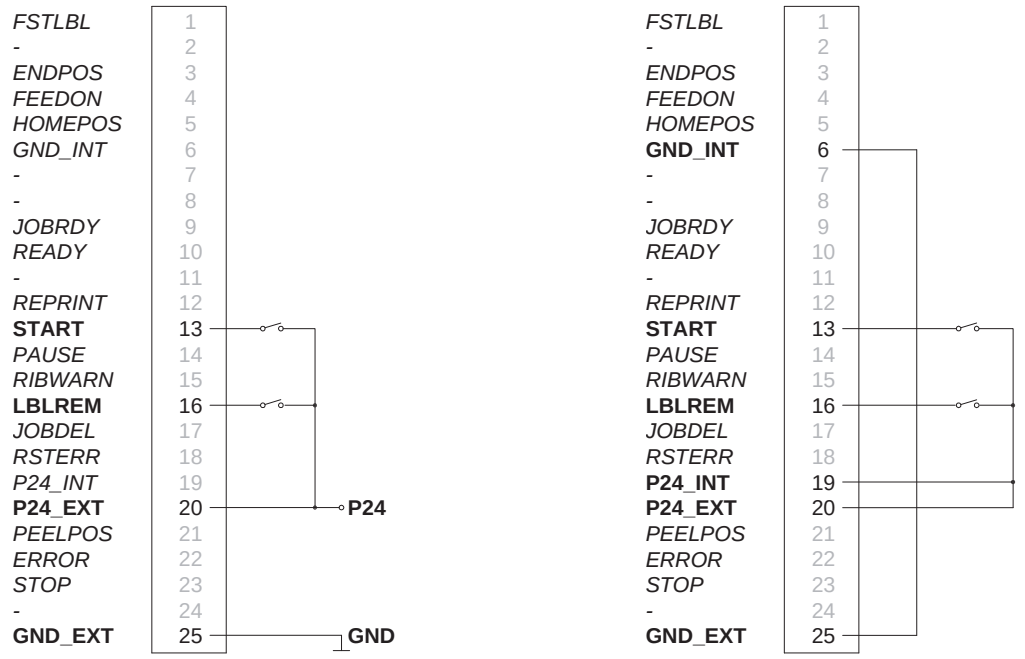
▶ Send a print job.

▶ Activate **START**.
The first label will be printed an transported to the peel position.

▶ Remove the label.

▶ Confirm the label removal with signal **LBLREM**.

▶ Activate **START** to start the next cycle.



Operation with external voltage supply

Operation using the internal voltage

Figure 7 External circuit for peeling-off on demand without present sensor with two signals

Starting Print and Confirming Label Removal with Signal LBLREM

Requirements:

- SQUIX without present sensor.
- External circuit as shown in Figure 8.
- Setting *Printing > Print on Demand = "On".*
- Setting *Interfaces > I/O > START mode = "Level".*
- Setting *Interfaces > I/O > Automatic LBLREM = "Off".*

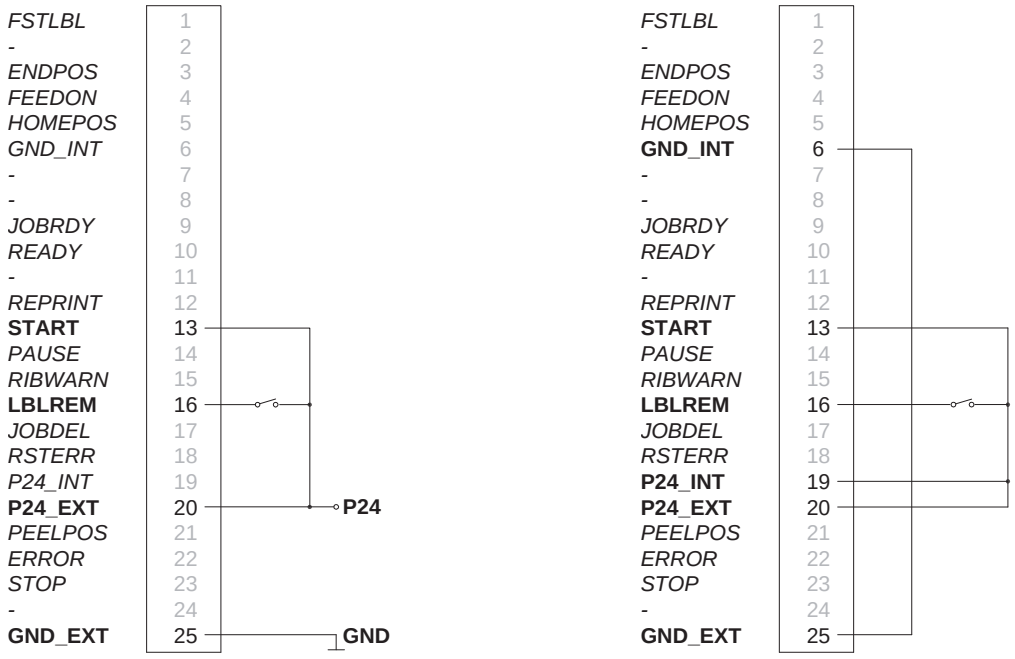
Operation:

▶ Hold signal **START** permanently active.

▶ Send a print job.
The first label will be printed an transported to the peel position.

▶ Remove the label.

▶ Confirm the label removal with signal **LBLREM**.
The next cycle will be started.



Operation with external voltage supply

Operation using the internal voltage

Figure 8 External circuit for peeling-off on demand without present sensor with switching signal LBLREM

Starting Print and Confirming Label Removal with Signal START

Requirements:

- SQUIX without present sensor.
- External circuit as shown in Figure 9
- Setting *Printing > Print on Demand = "On".*
- Setting *Interfaces > I/O > START mode = "Level".*
- Setting *Interfaces > I/O > Automatic LBLREM = "On".*

Operation:

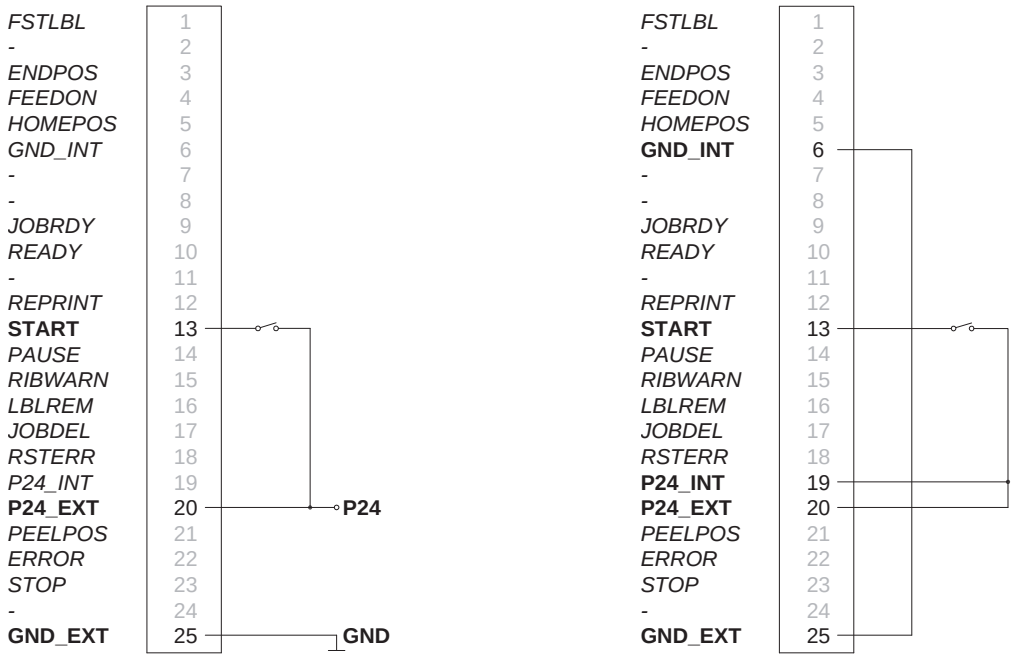
▶ Send a print job.

▶ Activate **START** and hold it active.
The first label will be printed an transported to the peel position.

▶ Remove the label.

▶ Confirm the label removal with deactivation of **START**.

▶ Activate **START** again to start the next cycle.



Operation with external voltage supply

Operation using the internal voltage

Figure 9 External circuit for peeling-off on demand without present sensor with switching signal START

5.3 Cutting on Demand with Cutter CU400

In the standard cut mode all labels of a print job will be printed and cut one after another without interruption. Using the I/O interface the print job can be split into single steps with printing and cutting each one label.

Requirements:

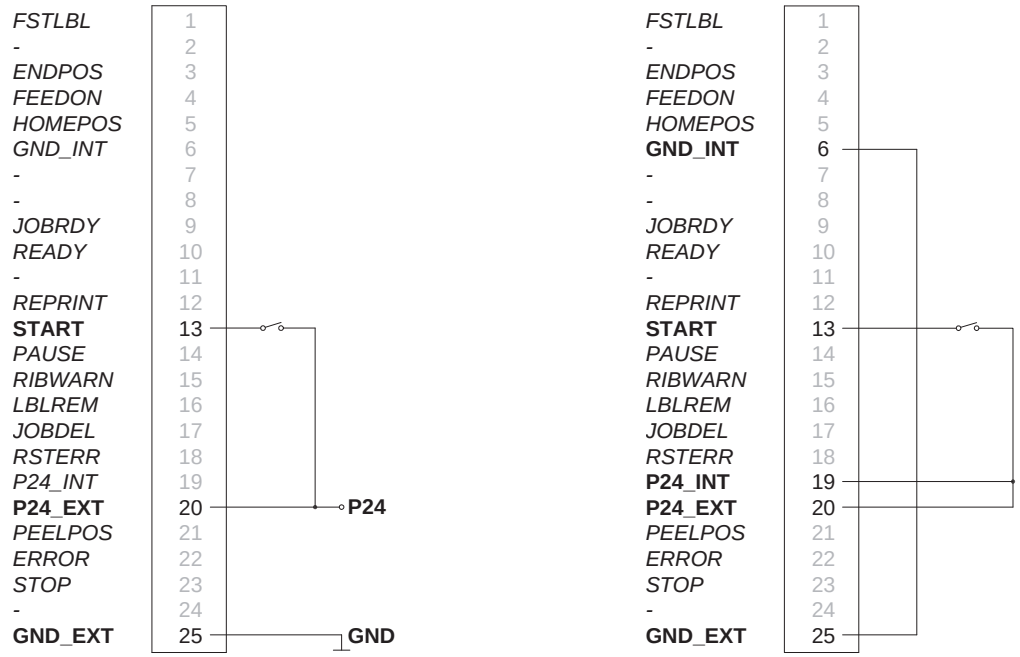
- SQUIX with Cutter CU400.
- External circuit as shown in Figure 10.
- Setting *Printing > Print on Demand = "On"*.

Operation:

▶ Send a print job.

▶ Activate **START**.
The first label will be printed and cut

▶ Activate **START** to start the next cycle.



Operation with external voltage supply

Operation using the internal voltage

Figure 10 External circuit for cutting on demand with Cutter CU400

Notes!

The function of the signal START can be released alternatively by pressing on the touchscreen display.

5.4 Pausing and Continuing a Print Job

In the standard operation without a peripheral device connected all labels of a print job will be printed without interruption.

To adapt the label output of the printer e.g. to an external device with a lower transport speed the print job can be interrupted meanwhile.

Requirements:

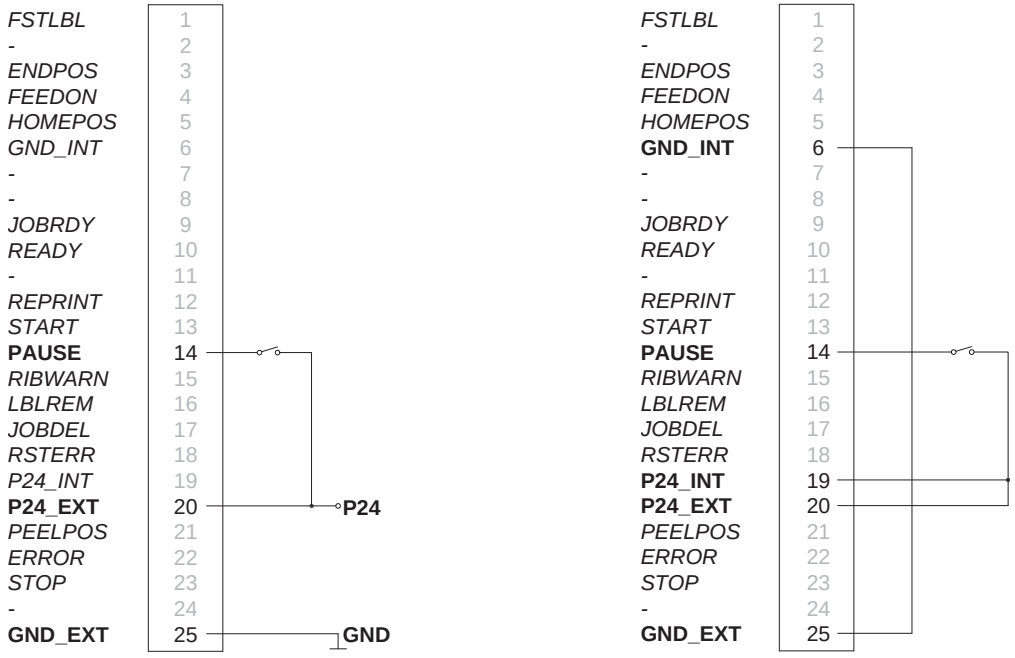
- SQUIX without peripheral device.
- External circuit as shown in Figure 11.
- Setting *Printing > Print on Demand = "Off".*

Operation:

▶ Send a print job.
The labels of the print job will be printed one after the other.

▶ Activate the signal **PAUSE**.
After completion of the current label the print job will be paused.

▶ Deactivate the signal **PAUSE**.
The print job will be continued.



Operation with external voltage supply

Operation using the internal voltage

Figure 11 External circuit for pausing and continuing a print job

5.5 Connecting an Optical Sensor

Optical sensors can be used to switch the input signals.

The example shows the circuit for the signal START.

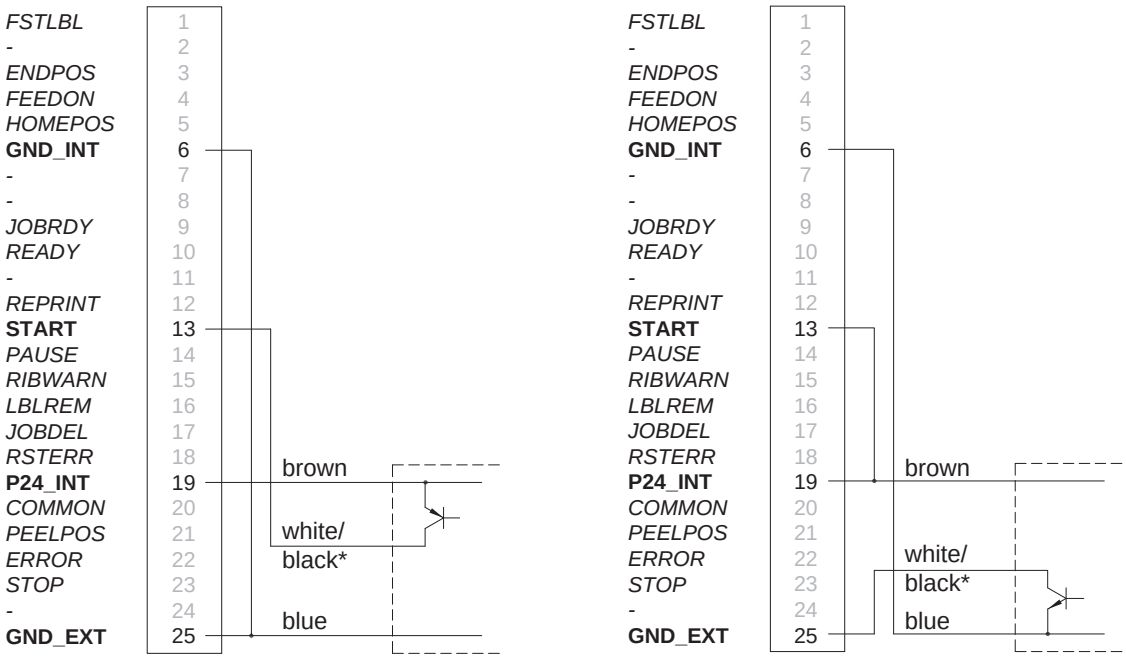


Figure 12 External circuit for releasing the signal START using optical sensors
* depending on sensor type