Interface Description

Print Module

PX

Made in Germany

Interface Description - Translation of the Original Version for the following products

2

Family	Type
Print Module PX	PX4L
	PX4R
	PX4.3L
	PX4.3R
	PX6L
	PX6R

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1 Introduction

1.1 Instructions

Important information and instructions in this documentation are designated as follows:

Danger!
Draws your attention to an exceptionally grave, impending danger to your health or life.

Warning!
Indicates a hazardous situation that could lead to injuries or material damage.

Attention!
Draws attention to possible dangers, material damage or loss of quality.

Notice!
Gives you tips. They make a working sequence easier or draw attention to important working processes.

Environment!
Gives you tips on protecting the environment.

▶ Handling instruction

▷ Reference to section, position, illustration number or document.

∗ Option (accessories, peripheral equipment, special fittings).

`Time` Information in the display.

1.2 Content of the Documentation

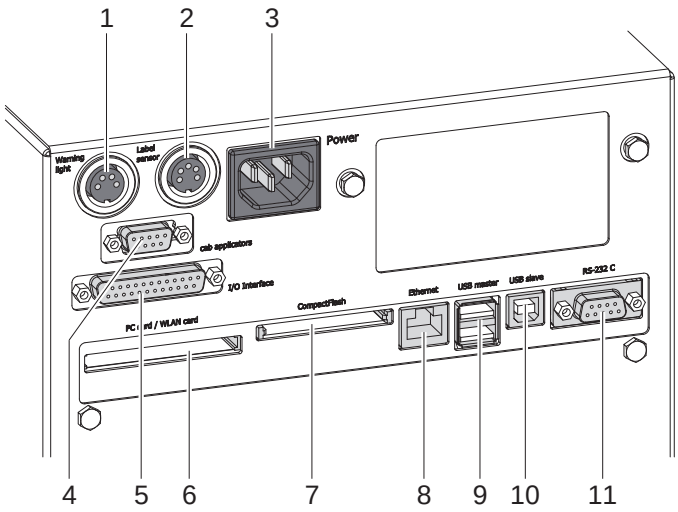
The documentation contains the description of the following interfaces, which are especially defined for the PX module :

- cab-I/O interface (5)
- OEM-I/O interface (12)
- Connector Warning Light (1)
- Connector Warning Sensor Label End (2)

The RS-232 interface (11) is uniformly defined for all cab label printers ▷ Configuration Manual.

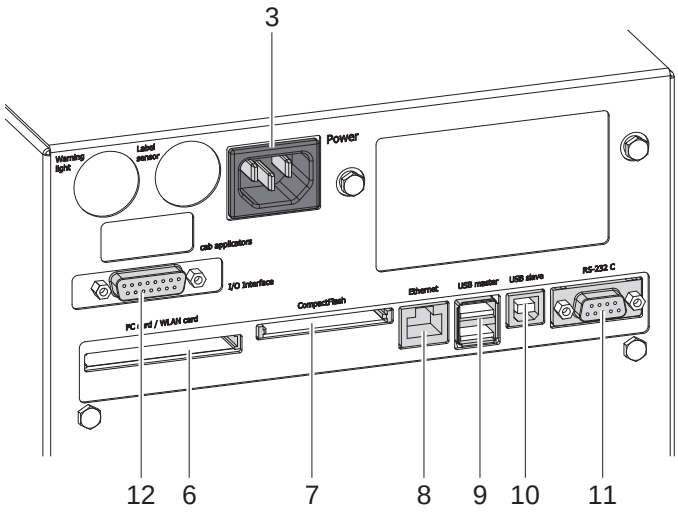
The interface for cab Applicators (4) is an USB interface for data transfer between cab modules only. Therefore there is no further description in this manual.

All other interfaces are standardized and therefore no matter of this documentation.



1 Connector warning light
2 Connector warning sensor labels
3 Power connection jack
4 Interface for cab applicators
5 I/O interface
6 Slot for PC Card Type II or WLAN card
7 Slot for CompactFlash memory card
8 Ethernet 10/100 Base-T
9 2 USB master ports for keyboard, scanner or service key
10 USB high-speed slave port
11 Serial RS-232 C port

Fig. 1 Connections - Version with cab-I/O interface



3 Power connection jack
6 Slot for PC Card Type II or WLAN card
7 Slot for CompactFlash memory card
8 Ethernet 10/100 Base-T
9 2 USB master ports for keyboard, scanner or service key
10 USB high-speed slave port
11 Serial RS-232 C port
12 OEM-I/O interface

Fig. 2 Connections - Version with OEM-I/O interface

2 cab-I/O Interface

2.1 Pin Assignment

The interface has a 25 pin SUB-D connector.

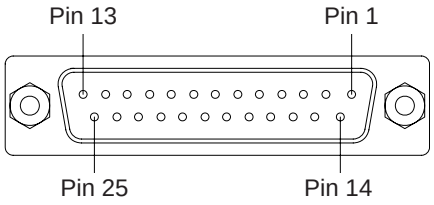


Fig. 3 cab-I/O Interface

Pin	Signal	Name	Description	Activation / Active State
1	-	-	not used	
2	A7 ⊖→	VWE	Warning end of labels This signal reports that there is available only a few amount of media.	Contact between Pin 2 and Pin 20 (RUEL) is open
3	-	-	not used	
4	A10 ⊖→	PTE	Label transport ON Labels are fed by the print module	Contact between Pin 4 and Pin 20 (RUEL) ist closed
5	A1 ⊖→	EDST	Print has been started The print start of a label is signalized by a 20 ms pulse.	Contact between Pin 5 and Pin 20 (RUEL) ist closed
6	A15 ⊖→	GND	Ground (0 V) for sensors or trigger switches	
7	A5 ⊖→	FFE	Error “Out of ribbon” There is no (more) transfer ribbon in the print module. The operation is stopped and the details and type of error can be read from the display. The last label printed while the error occurred will be repeated.	Contact between Pin 7 and Pin 20 (RUEL) is open
8	A6 ⊖→	FEE	Error “Out of paper” There are no (more) labels in the print module. The operation is stopped and the details and type of error can be read from the display. The last label printed while the error occurred will be repeated.	Contact between Pin 8 and Pin 20 (RUEL) is open
9	A3 ⊖→	EDG	Print job available Print jobs are stored in the print module.	Contact between Pin 9 and Pin 20 (RUEL) is closed
10	A4 ⊖→	DNB	Printer ready The print module is in the "Ready" state	Contact between Pin 10 and Pin 20 (RUEL) is closed
11	E2 ←⊖	FEED	Label feed A blank label is forwarded to synchronize the label transport; label feed is proceeded only if no print job is available or an error has occurred	Switch on +24V between Pin 11 and Pin 25
12	E4 ←⊖	WDR	Repeat print The last printed label is repeated, counters are not altered	+24V between Pin 12 and Pin 25
13	E1 ←⊖	START	Print/application start signal	+24V between Pin 13 and Pin 25
14	E6 ←⊖	PSE	Pause ON/OFF	Pause ON when +24V between Pin 14 and Pin 25
15	A9 ⊖→	VWF	Warning end of ribbon This signal reports that there is available only a few amount of transfer ribbon.	Contact between Pin 15 and Pin 20 (RUEL) is open
16	E5 ←⊖	ETE	Label has been taken 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 +24V between Pin 16 and Pin 25
17	E3 ←⊖	DAL	Cancel print job The current print job is cancelled and deleted from the print buffer.	Switch on +24V between Pin 17 and Pin 25
18	-	-	not used	

Pin	Signal	Name	Description	Activation / Active State
19	A16	24P	Internal operating voltage +24V, Si T 100mA for external consumers e.g. sensors, trigger switches	
20	A14	RUEL	Common reverse line for all output signals with reference potential e.g. EXT_24P	
21	A2	ESP	Label in peel-off position	Contact between Pin 21 and Pin 20 (RUEL) is closed
22	A8	DRF	Printer error An error has occurred on the print module. The label print is stopped and the details and type of error can be read from the display	Contact between Pin 22 and Pin 20 (RUEL) is open
23	-	-	not used	
24	-	-	not used	
25	E0	GND_EXT	Ground of the external 24 V	

Table 1 Pin assignment of the cab-I/O interface

2.2 Configuration of the I/O Signals

The I/O signals START and WDR can be operated either edge-controlled or level-controlled. The operation mode can be set in the printer configuration.

Notice!
For detailed instructions for configuration ▷ Configuration Manual of the printer.

For setting the signal parameters select
`Setup` -> `Machine param.` -> `I/O signals`.

Parameter	Meaning	Default
`I/O signals`	Configuration of the input signals of the I/O interface	
`> Mode START`	Configuration of the START signal `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 ETE as long as 24V are switched on between START and GND_EXT.	`Edge`
`> Mode WDR`	Configuration of the WDR signal `Edge` : A label will be repeated by switching on 24V between WDR and GND_EXT. `Level` : A label will be repeated as long as 24V are switched on between WDR and GND_EXT. `New/repeat` : A label will be repeated when 24V are switched on between WDR and GND_EXT and the START signal will be activated additionally.	`Edge`

Table 2 Configuration of the cab-I/O signals

2.3 Circuit Diagram of Inputs and Outputs

The **inputs** are optocouplers with a current limiting resistor of 2.2 kΩ for a voltage of 24 V in the input circuit. All input have the common reverse line GND_EXT :

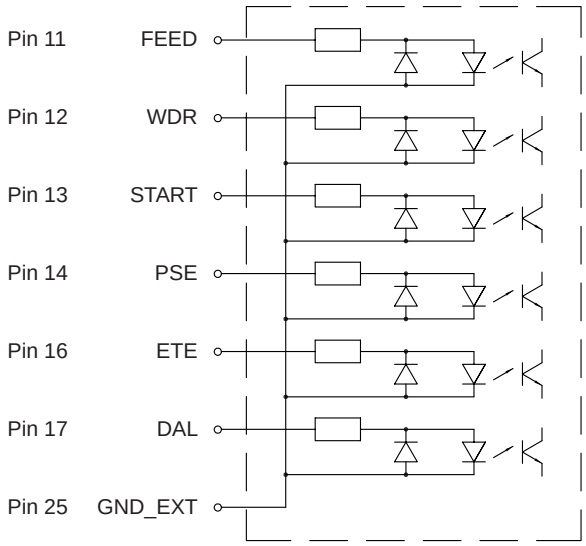


Fig. 4 Circuit of the inputs of the cab-I/O interface

All **outputs** are realized through solid state relays which outputs are connected with one another one-sided. The joint line is lead to the plug connector as RUEL signal.

The switch function of the outputs is to open or close the contact between the joint line RUEL and the respective output.

Electrical requirements : U_{max} = 42V
I_{max} = 100mA

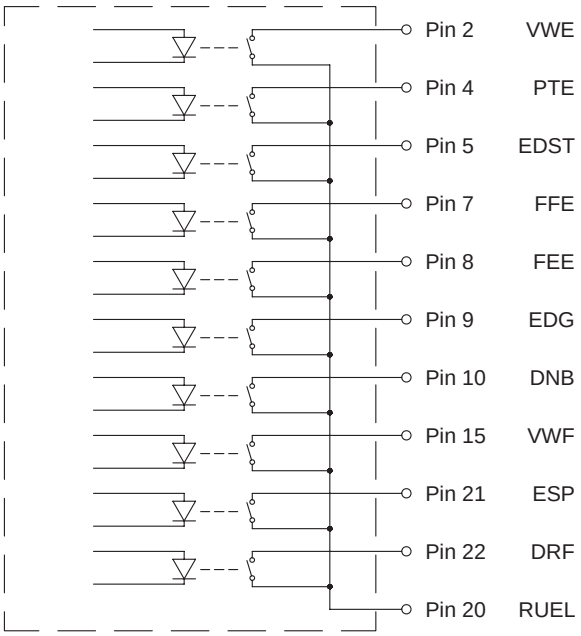


Fig. 5 Circuit of the outputs of the cab-I/O interface

2.4 External Minimum Circuit

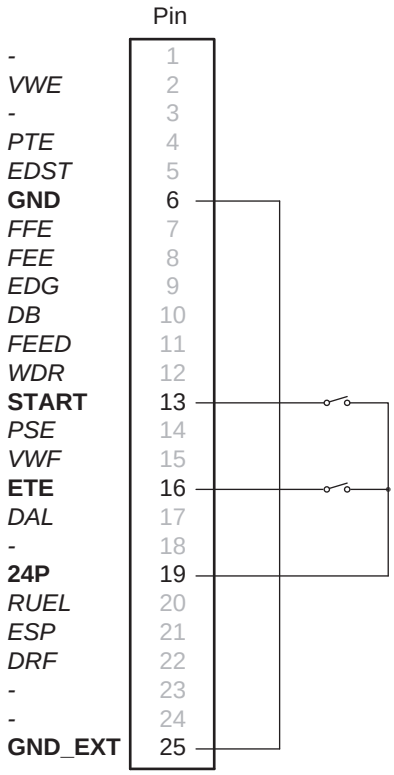


Fig. 6 External minimum circuit of the cab-I/O interface using the internal voltage 24P

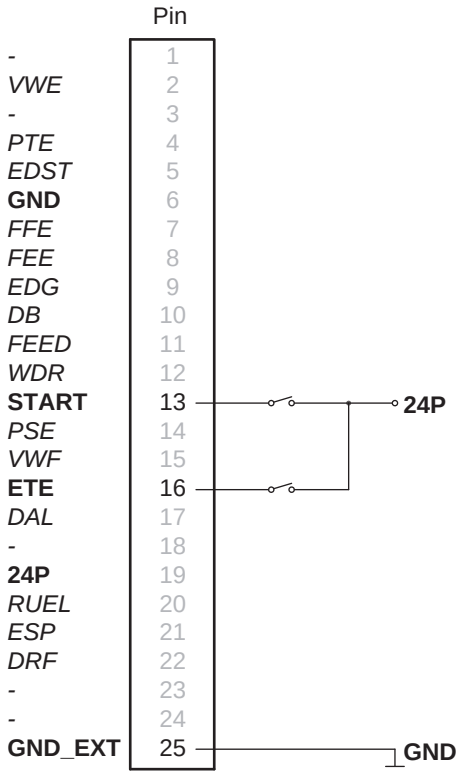


Fig. 7 External minimum circuit of the cab-I/O interface with external voltage supply

2.5 Signal Maps

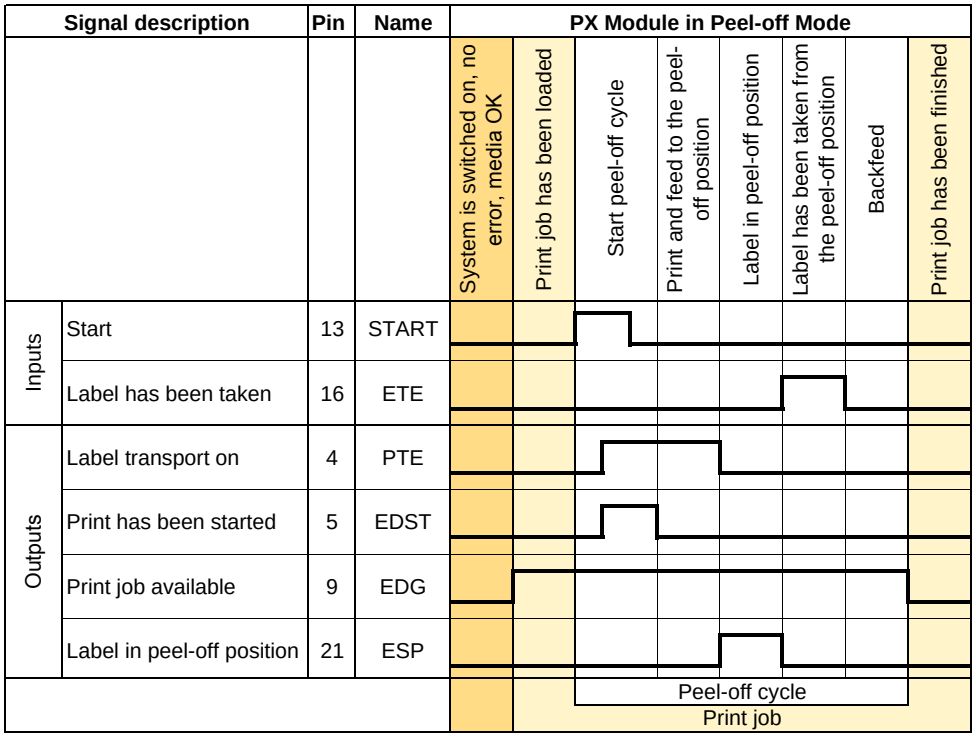


Fig. 8 Signal map PX module with cab-I/O interface in peel-off mode

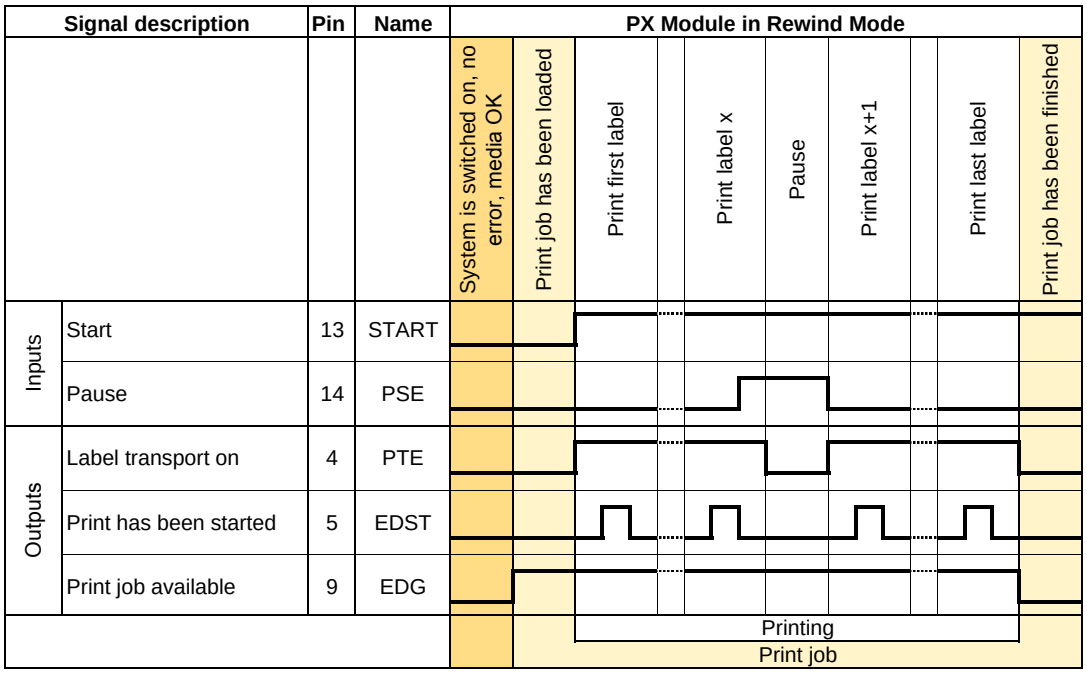


Fig. 9 Signal map PX module with cab-I/O interface in rewind mode

3 OEM-I/O interface

3.1 Pin Assignment

The interface has a 15 pin SUB-D connector.

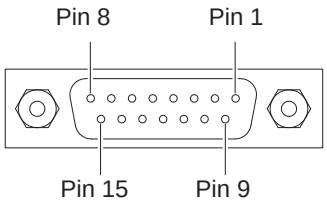


Fig 10 OEM-I/O interface

Pin	Signal	Name	Description	Activation / Active State
1	-	GND_EXT	Ground return for +5V power source JP5 in : Ground return for internal +5V power source is available for remote optocouplers (Default) JP5 out : Ground return for external +5V power source	
2	-	5P_EXT	Power source +5V JP4 in : Internal +5V power source is available for internal and remote optocouplers(Default) JP4 out : External +5V power source must be connected to supply power to internal optocouplers	
3	⊖←	STARTPR	Mode Edge : Starts the printout of a single label.	High to Low transition
			Mode Level : Labels are printed as long as the signal is active.	Assert Low
4	⊖←	FEED	Label feed A blank label is forwarded to synchronize the label transport; label feed is proceeded only if no print job is available or an error has occurred	High to Low transition
5	⊖←	PAUSE	Pause To toggle the current PAUSE state	Assert Low for 200 ms
6	⊖←	REPRINT	Mode Edge : The last label will be repeated one time after every activation.	High to Low transition
			Mode Level : The last label will be repeated as long as the signal is active.	Assert Low
			Mode New/Repeat The last label will be repeated when REPRINT is active and STARTPR will be activated additionally	Assert Low + Activation STARTPR
7	-	P24	Internal power source +24V, Si T 500mA for external consumers e.g. sensors, trigger switches	
8	-	GND	Power Ground (0V) for external consumers e.g. sensors, trigger switches	
9	⊖→	RIBBON_LOW	Warning end of ribbon (only if the feature is enabled in the configuration) This signal reports that there is available only a few amount of transfer ribbon.	High
10	⊖→	SRV_REQ	Printer not ready An error has occured.	Low
11	⊖→	ENDPRINT	Mode 1 : Labels are fed by the print module	Low
			Mode 2 : Labels are fed by the print module	High
			Mode 3 : (Default) Label has been completed and positioned in peel position in peel-off mode only	Low pulse of 20 ms
			Mode 4 : Label has been completed and positioned in peel position in peel-off mode only	High pulse of 20 ms
12	⊖→	MEDIA_OUT	Error “Out of paper” There are no (more) labels in the print module.	Low
13	⊖→	RIBBON_OUT	Error “Out of ribbon” There is no (more) transfer ribbon in the print module.	Low

Pin	Signal	Name	Description	Activation / Active State
14		DATA_RDY	Print job available Print jobs are stored in the print module. in PAUSE state the signal if inactive	Low
15		DAL	Cancel print job The current print job is cancelled and deleted from the print buffer.	Low pulse of 20 ms

Table 3 Pin assignment of the OEM-I/O interface

3.2 Configuration of the I/O Signals

Notice!
For detailed instructions for configuration ▷ Configuration Manual of the printer.

For setting the signal parameters select

`Setup` -> `Machine param.` -> `I/O signals` .

Parameter	Meaning	Default
`I/O signals`	Configuration of the input signals of the I/O interface	
`> Mode START`	Configuration of the STARTPR signal `Edge` : Starts the printout of a single label. `Level` : Labels are printed as long as the signal is active.	`Edge`
`> Mode WDR`	Configuration of the REPRINT signal `Edge` : The last label will be repeated one time after every activation. `Level` : The last label will be repeated as long as the signal is active. `New/Repeat` : The last label will be repeated when REPRINT is active and STARTPR will be activated additionally	`Edge`
`> Mode EP`	Selection of the ENDPRINT mode	3

Table 4 Configuration of the OEM-I/O signals

3.3 Definition of the Waiting Position

The J-Script command **O W** allows to adjust the waiting position after the end of a print job respectively before label backfeed in peel-off mode :

O Wn ... immediate backfeed, waiting position at the front edge of the next label
O Wi[x] ... waiting position x mm after the end of normal label feed, backfeed at the start of the next label

Example : O Wi5 defines a waiting position 5 mm after the end of the normal label feed.

3.4 Circuit Diagram of Inputs and Outputs

The **inputs** are optocouplers with a current limiting resistor of 330 Ω in the input circuit. All input have the common connector for a +5V power source.

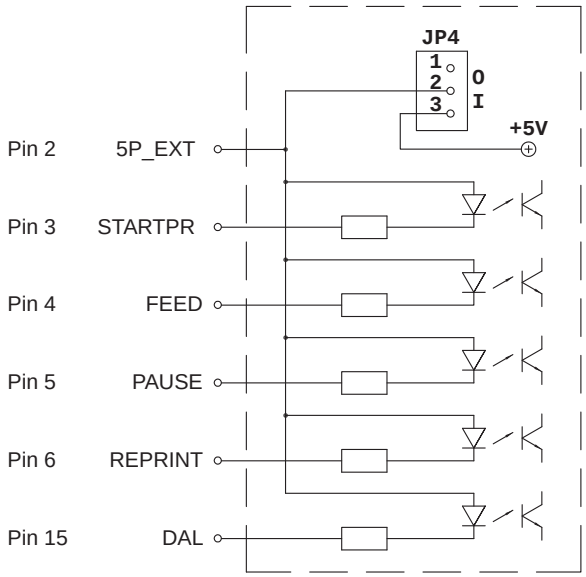


Fig. 11 Circuit of the inputs of the OEM-I/O interface

JP4 in position **0** :

External power source must be connected to pin 2.
Pin is isolated from internal +5V power source.

JP4 in position **I** (Default) :
Internal power source is connected to pin 2.

All **outputs** are realized through solid state relays which outputs are connected with one another one-sided. The joint line is connected to the ground return of a +5V power supply.

The switch function of the outputs is to open or close the contact between the joint line and the respective output.

Electrical requirements : U_{max} = 5 V I_{max} = 20 mA

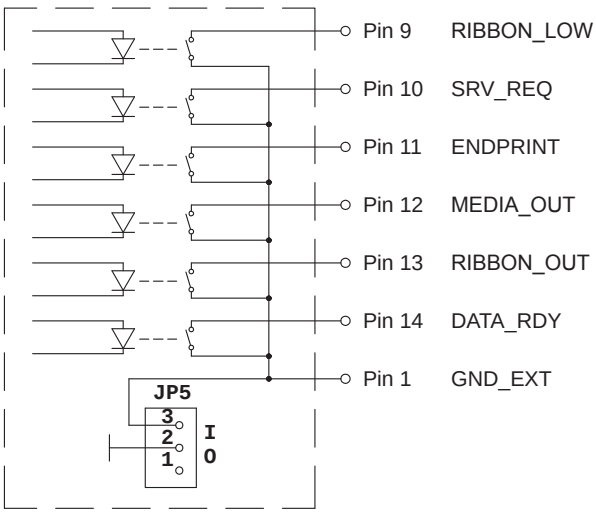


Fig. 12 Circuit of the outputs of the OEM-I/O interface

JP5 in position **0** :

Ground return of an external power source must be connected to pin 1.
Pin is isolated from internal signal ground.

JP5 in position **I** (Default) :
Ground return of the internal +5V power source is connected to pin 1.

Notice!
Setting jumpers JP4 and JP5 ▷ Service manual of the printer.

3.5 External Minimum Circuit

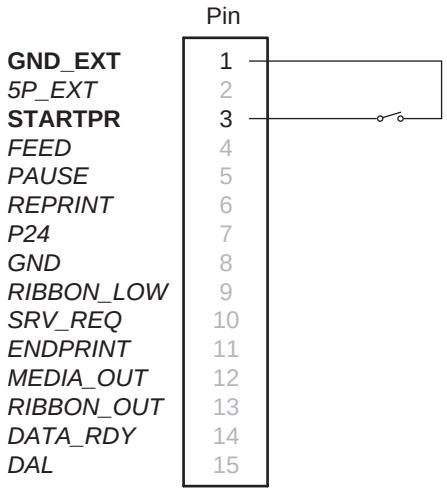


Fig. 13 External minimum circuit of the OEM-I/O interface using the internal voltage 5P
JP4 in position **I**

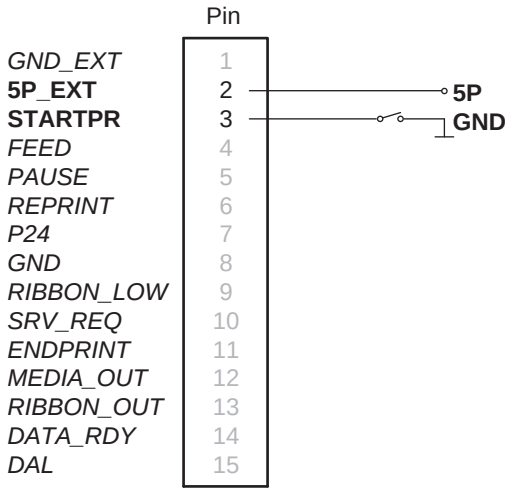


Fig. 14 External minimum circuit of the OEM-I/O interface with external voltage supply
JP4 in position **0**

3.6 Signal Maps

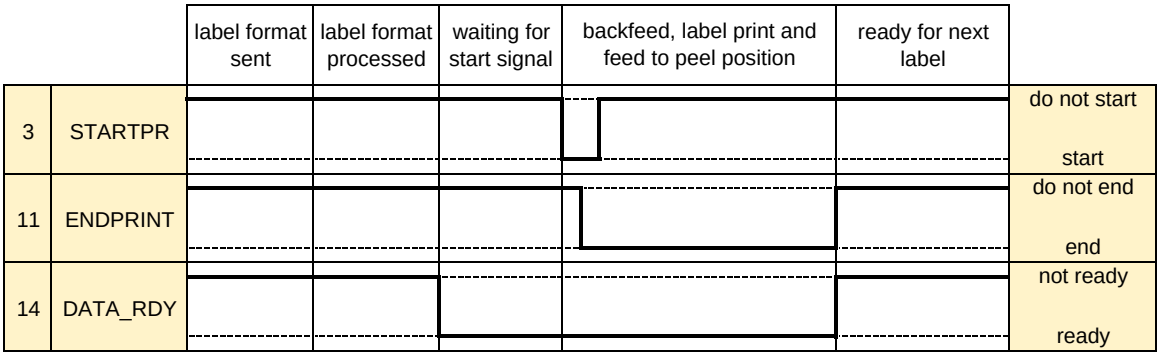


Fig. 15 Signal map PX module with OEM-I/O interface in ENDPRINT mode 1

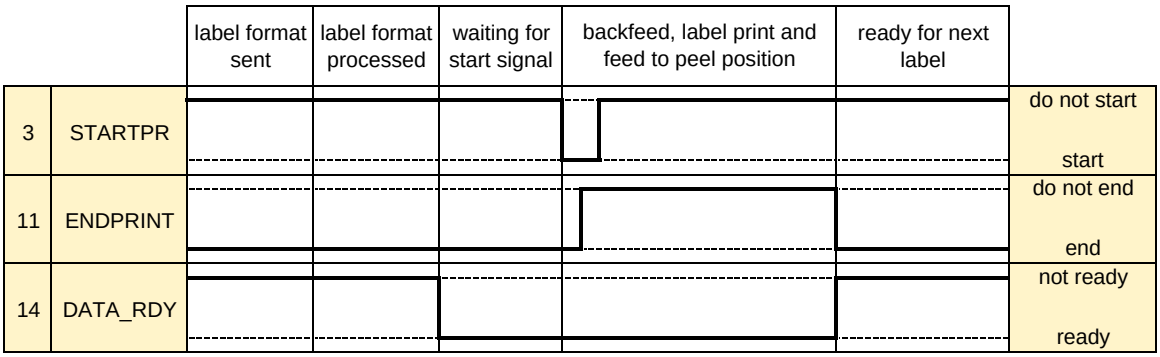


Fig. 16 Signal map PX module with OEM-I/O interface in ENDPRINT mode 2

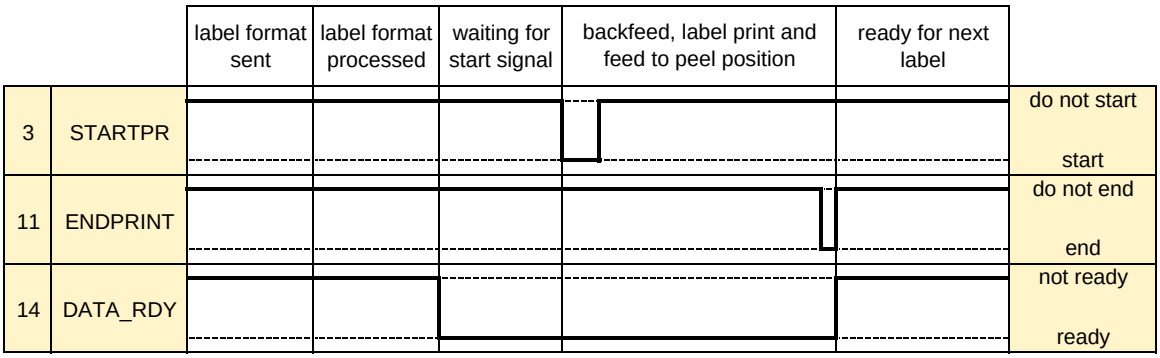


Fig. 17 Signal map PX module with OEM-I/O interface in ENDPRINT mode 3 (Default)

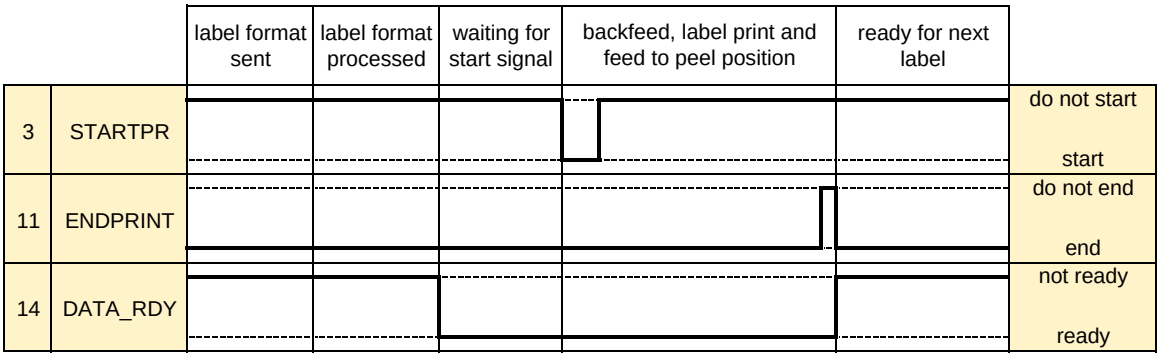


Fig. 18 Signal map PX module with OEM-I/O interface in ENDPRINT mode 4

4 Connector Warning Light

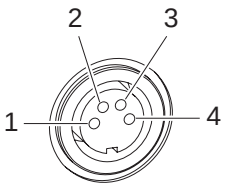


Fig 19 Connector warning light

Pin	Direction	Name	Description	Active State
1	→	24V	Internal operating voltage 24 V	
2	→	/SGR	Device is switched on	low
3	→	/SGE	Warning ribbon end or label end is active	low
4	→	/SRT	Error	low

Table 5 Pin assignment connector warning light

5 Connector Warning Sensor Labels

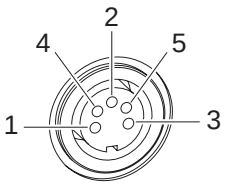


Fig. 20 Connector warning sensor labels

Pin	Direction	Name	Description	Active State
1	→	24V	Internal operating voltage 24 V	
2	-	-	not used	
3	←	SVW	Warning label end	24V
4	←	SSA	Sensor connected Pin 4 and Pin 5 must be connected to each other	0V
5	→	GND	Ground (0V)	

Table 6 Pin assignment connector warning sensor labels