Application Note

FESTO

Power supply concept CPX with OVEM

System integration with regard to the power supply concept for the CPX interlinking block and the OVEM are illustrated by several examples in this document.

CPX;
OVEM

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Table of contents

Table of contents

1 Components/Software used

Type/Name	Version Software/Firmware	Date of manufacture
CPX-FB36	--	--
OVEM-...-2P	--	--
CPX-16DE	--	--
CPX-4DA	--	--
DUO-cable	--	--

Table 1.1: 1 Components/Software used

1.1 Initial Situation

In the automotive industry, various modules and components are connected to a master controller, which results in a high degree of flexibility with regard to the selection of components for integration into control systems (including choice of manufacturer).

Despite this variety, attention must be paid during system integration to the requirements of the various systems, components and applications involved.

The chapters which follow use a number of examples to describe system integration with regard to the power supply concept between the CPX interlinking block and the OVEM.

2 System supply

2.1 Power supply concept with one power supply unit

In this example, a CPX interlinking block and the OVEM are both supplied from a common power supply unit. The system supply is fed via a 4-pin M18 or 7/8“ plug, a 5-pin 7/8“ plug or a 5-pin push/pull plug. For details of pin allocation and further details regarding the CPX power supply, see user documentation .

In the case of a combination of CPX ‹-› OVEM, the OVEM is connected to a CPX input module (digital) and a CPX output module (digital). The power supply for the OVEM is fed from the CPX input module (see Suggested application 1).

A single-pole EMERGENCY STOP breaker for the **24V$_{Valves}$/24V$_{El./Sen.}$** power supply in this suggested application isolates the entire interlinking block and thus also the OVEM from the mains supply.

➔ **Note**

In this application, while the OVEM is isolated from the power supply in the case of an EMERGENCY STOP, it is still possible for gripped workpieces to fall down after a certain delay due to leakage.

2.2 Power supply concept with two power supply units

2.2.1 Common 0V between 0VValves and 0VEl./Sen.

In this example, a CPX interlinking block and the OVEM are supplied from two power supply units. Potential equalization is achieved by means of a jumper fitted between **0V$_{Valves}$** and **0V$_{El./Sen.}$**. The system supply is fed via a 5-pin 7/8“ plug or a 5-pin push/pull plug. For details of pin allocation and further details regarding the CPX power supply, see user documentation Terminal CPX and additional documentation Interlinking block with system supply.

In the case of a combination of CPX ‹-› OVEM, the OVEM is connected to a CPX input module (digital) and to a CPX output module (digital) which is connected separately via a Interlinking block with additional power supply for outputs. The power supply for the OVEM is taken from the CPX input module (see Suggested application 2).

A single-pole EMERGENCY STOP breaker for the **24V$_{Valves}$** in this suggested application isolates the valves from the mains supply. The OVEM continues to be supplied with power from the **24V$_{El./Sen.}$** power supply.

In the case of a single-pole EMERGENCY STOP switch-off of the **24V$_{El./Sen.}$**, please note Chapter 2.1 .

➔ **Note**

In this application, the OVEM is not affected by the EMERGENCY STOP switch-off of the **24V$_{Valves}$**, while the valves are isolated from the main supply. However, since the compressed air supply for the OVEM ceases, it is still possible for gripped workpieces to fall down after a certain delay due to leakage.

A possible solution would be to use OE valves (normally open) if possible.

2.2.2 Electrical isolation between $0V_{Valves}$ and $0V_{El./Sen.}$

In this example, a CPX interlinking block and the OVEM are supplied from two power supply units. In this suggested application, the electrical isolation of the electrical potentials must not exceed the maximum permissible limits (see specification).. The system power supply is fed via a 5-pin 7/8“ plug or as 5-pin push/pull plug. For details of pin allocation and further details regarding the CPX power supply, see user documentation Terminal CPX and additional documentation Interlinking block with system supply.

In the case of a combination of CPX ‹-› OVEM, the OVEM is connected to a CPX input module (digital) and to a Interlinking block with additional power supply for outputs which is connected separately via a CPX output module (digital). The power supply for the OVEM is taken from the CPX input module (see Suggested application 3).

An all-pole EMERGENCY STOP switch-off of the **$24V_{Valves}$** and **$0V_{Valves}$**. In this suggested application, the valves are isolated from the power supply. However, the OVEM continues to be supplied with power from the **$24V_{El./Sen.}$** power supply.

In the case of an all-pole EMERGENCY STOP switch-off of the $_{24VEl./Sen}$. power supply, please note Chapter2.1 .

➔ **Note**

In this application, the OVEM is not affected by the EMERGENCY STOP switch-off of the **$24V_{Valves}$**, while the valves are isolated from the main supply. However, since the compressed air supply for the OVEM ceases, it is still possible for gripped workpieces to fall down after a certain delay due to leakage.

A possible solution would be to use OE valves (normally open) if possible.

2.3 An application to avoid with two power supply units

2.3.1 A "bad" example

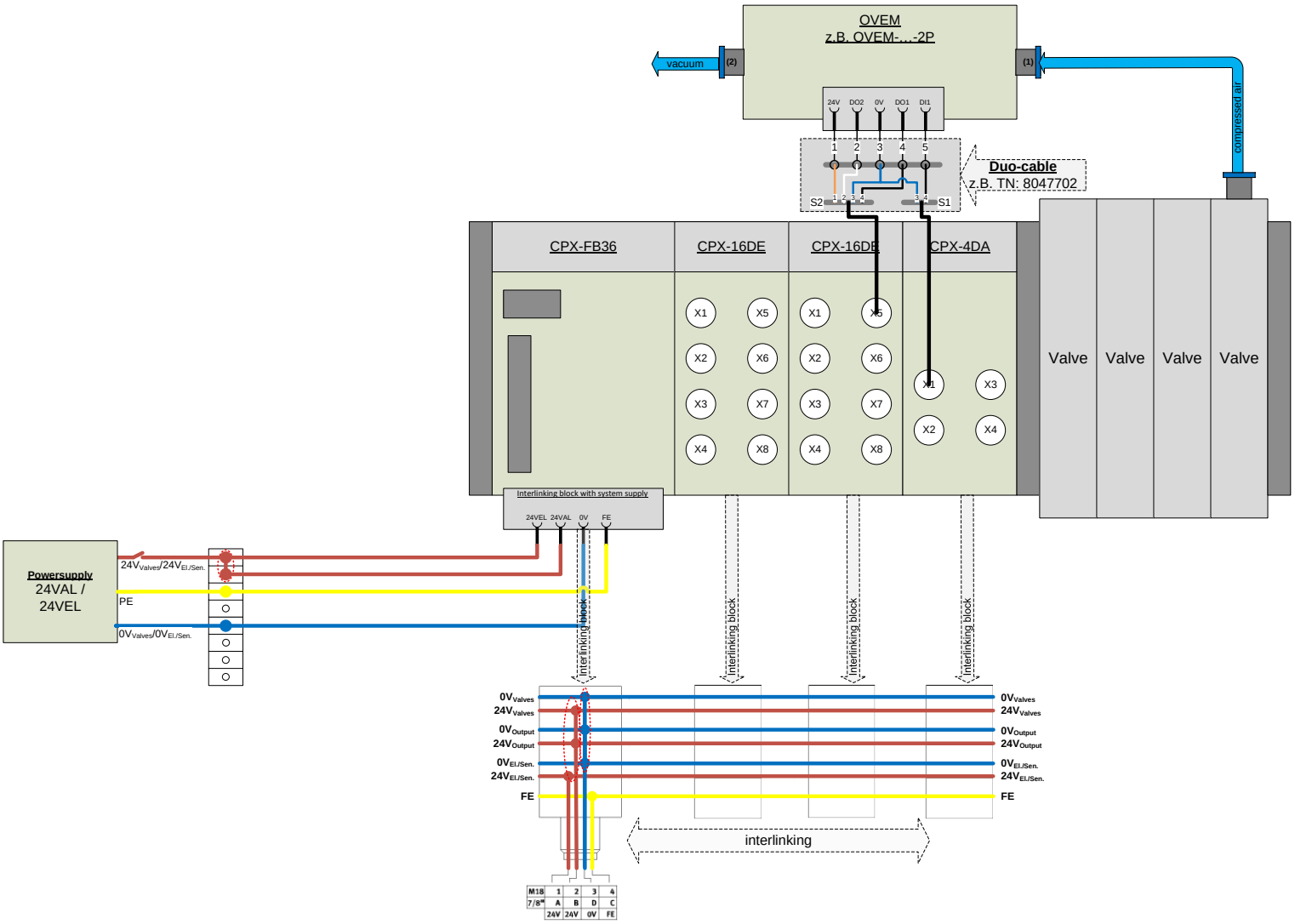
In this example, a CPX interlinking block and the OVEM are supplied from two power supply units. Potential equalization is achieved by means of a jumper fitted between **$0V_{Valves}$** and **$0V_{El./Sen.}$**. The system supply is fed via a 5-pin 7/8“ plug or a 5-pin push/pull plug. For details of pin allocation and further details regarding the CPX power supply, see user documentation Terminal CPX and additional documentation Interlinking block with system supply.

With this combination of CPX ‹-› OVEM, the OVEM is connected to a CPX input module (digital) and a CPX output module (digital). The power supply for the OVEM is taken from the CPX input module, see An application to avoid.

A single-pole EMERGENCY STOP breaker for the **$24V_{Valves}$** in this suggested application isolates the valves from the mains supply. The OVEM continues to be supplied from the **$24V_{El./Sen.}$** while the output module CPX-4DA is isolated from the mains supply. This results in a status change at the OVEM input DI1. This status change ensures that, in the case of an EMERGENCY STOP, any gripped workpiece will be ejected.

3 Suggested application 1

Using **one** power supply unit and a single-pole switch-off

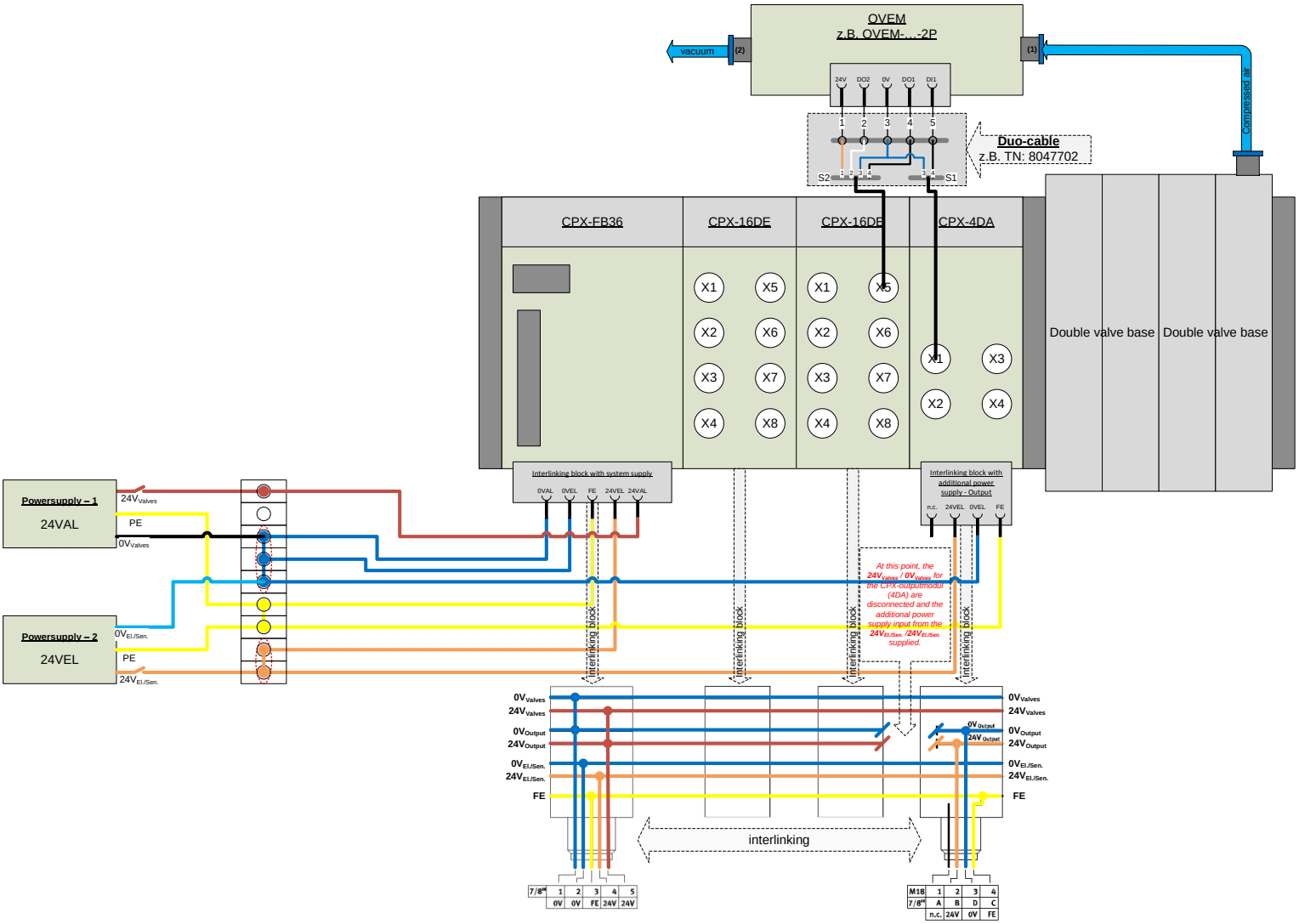


Note

In this example, the entire CPX interlinking block is supplied from a common **$24V_{Valves}$ / $24V_{El./Sen.}$** power supply. The OVEM is therefore at **$24V_{Valves}$ /$24V_{El./Sen.}$** potential. If on the occasion of an EMERGENCY STOP switch-off, the **$24V_{Valves}$/$24V_{El./Sen.}$** supply is interrupted (single-pole), the entire CPX interlinking block is powered down. The OVEM will **not** generate an ejector pulse as the result of the switch-off of the **$24V_{Valves}$/$24V_{El./Sen.}$** power supply.

4 Suggested application 2

Using two power supply units with a common 0V and a single-pole switch-off



Note

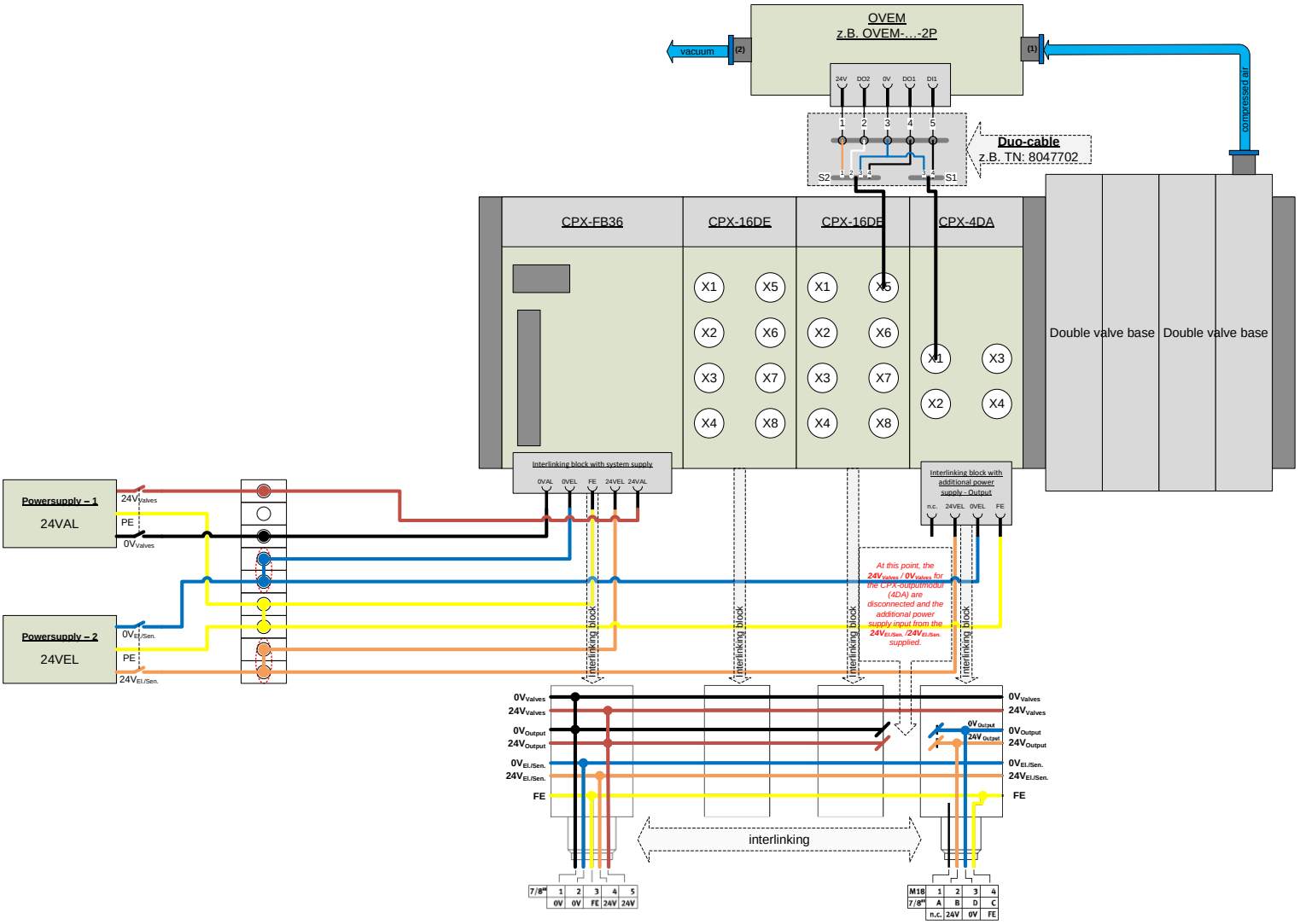
Due to the additional power supply, the power supply for the CPX-4DA module is isolated from the **24V$_{Valves}$** power supply and **must** be connected to the **24 $V_{El./Sen.}$** power supply when a combination OVEM‹->CPX is used. This will ensure that the OVEM is at a "clean" **24 $V_{El./Sen.}$** potential.
In the case of an EMERGENCY STOP switch-off of the 24V$_{Valves}$ supply (single-pole), the OVEM does **not** generate an injector pulse.

information

In this combination, the additional power supply for the CPX-4DA module, which is used to activate the OVEM, must be installed as the last component of the interlinking block.

5 Suggested application 3

Using two power supply units with separate 0V and all-pole switch-off



Note

Due to the additional power supply, the power supply for the CPX-4DA module is isolated from the **24V$_{Valves}$** power supply and

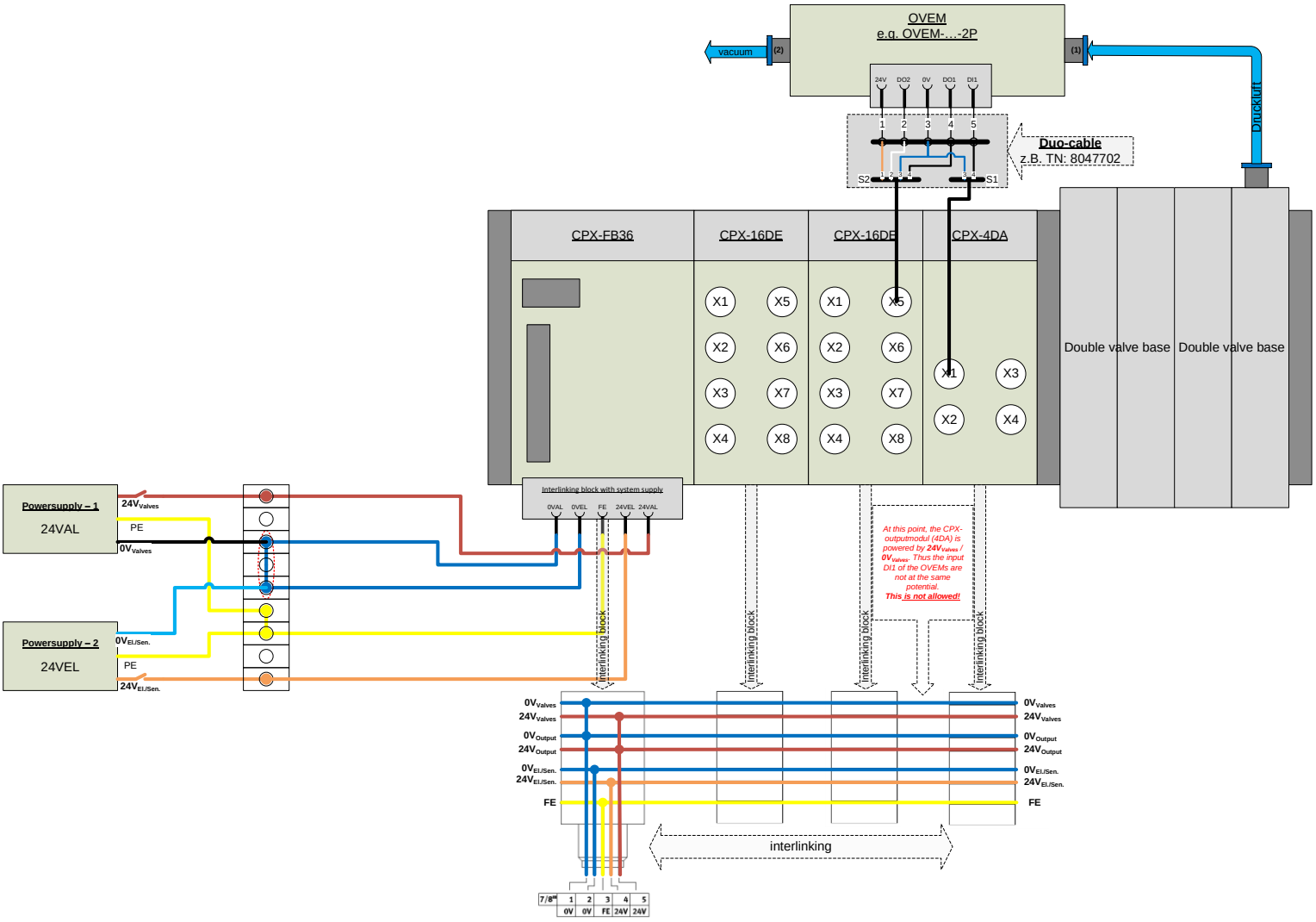
must be connected to the **24V$_{El./Sen.}$** power supply when a combination OVEM‹->CPX is used. This will ensure that the OVEM is at a "clean" **24 V$_{El./Sen.}$** potential.
In the case of an EMERGENCY STOP switch-off of the **24V**$_{Valves}$ supply (all-pole), the OVEM does **not** generate injector pulse.

information

In this combination, the additional power supply for the CPX-4DA module, which is used to activate the OVEM, must be installed as the last component of the interlinking block.

6 An application to avoid

Using two power supply units with a common 0V and a single-pole switch-off



Note

Due to the system power supply at FB36, the CPX-4DA module is fed from the **24V$_{Valves}$** power supply. As the valves and outputs on the interlinking block of bridge, the OVEM is **not** at the common electrical potential. If, on the occasion of an EMERGENCY STOP, the **24V$_{Valves}$** power supply is switched off, the OVEM will generate **one** ejector pulse as the result of the signal change.

This means that if an object is gripped at this time, it will be ejected on the occasion of an EMERGENCY STOP.