

# APV CU4\*plus\* 24V Direct Connect Control Unit



SAFETY AGAINST EXPLOSION - FOR IECEx ZONE 2 GAS APPLICATIONS

FORM NO.: H345316 REVISION: GB-2

READ AND UNDERSTAND THIS MANUAL PRIOR TO OPERATING OR SERVICING THIS PRODUCT.





We,

**DESIGN CENTER:**

SPX Flow Technology Germany GmbH  
Gottlieb-Daimler-Str. 13, D-59439 Holzwickede

**MANUFACTURER:**

SPX Flow Technology Poland sp. z o.o.  
Rolbieskiego 2, 85-862 Bydgoszcz, Poland

**AUTHORIZED REPRESENTATIVE:**  
(for UKCA)

SPX Flow, Inc.  
Alexander House, 4 Station Road  
Cheadle Hulme, Cheadle SK3 5AE UK

declare under our sole responsibility that the

**SPX FLOW APV brand Control Units** of the series  
CU4 Direct Connect and AS-interface Control Unit  
CU4plus Direct Connect, AS-interface and IO-Link Control Units  
CU4 110V Module (\*)

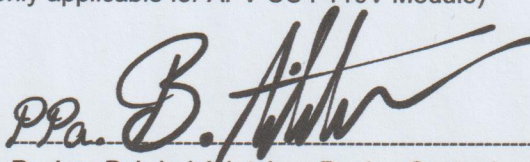
meet the requirements of the

**Electromagnetic Compatibility Directive 2014/30/EU**

& protection class IP 67 EN 60529, EN 61000-6-2, EN 61000-6-4, EN 60068-2-6

**RoHS Directive 2011/65/EU**

**Low Voltage Directive 2014/35/EU** (\*only applicable for APV CU4 110V Module)



Holzwickede, December 2024

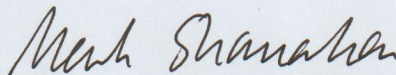
Dr.-Ing. Behdad Ariatabar, Design Center Lead - Valves

meet the requirements of the

**Electromagnetic Compatibility Regulations 2016 No. 1091** & BS harmonized standards

**Restriction of Use of Certain Hazardous Substances in Electrical and Electronic Equipment  
Regulation 2012 No. 3032**

**Electrical Equipment (Safety) Regulations 2016 No. 1101** (\*only applicable for APV CU4 110V  
Module)



Manchester, December 2024

Mark Shanahan, VP Finance N6H Solutions



	<b>Content</b>	<b>Page</b>
<b>0.</b>	<b>IECEX Specific Instructions</b>	<b>6</b>
0.1.	General Information	
0.2.	IECEX Specific Symbol	
0.3.	Authorized Use	
0.4.	Specific Safety Instructions	
0.5.	Identification of CU4** resp. CU4*plus* Control Units for use in IECEX ATEX environment	
0.6.	Responsibilities	
<b>1.</b>	<b>Abbreviations and Definitions</b>	<b>10</b>
<b>2.</b>	<b>Safety Instructions</b>	<b>10</b>
2.1.	Sentinels	
2.2.	Intended use	
2.3.	General regulations for careful handling	
2.4.	Welding instructions	
2.5.	Persons	
2.6.	Warranty	
<b>3.</b>	<b>General Terms</b>	<b>13</b>
3.1.	Purpose of use	
3.2.	Design of CU4plus Direct Connect	
3.3.	Function of the individual components	
<b>4.</b>	<b>Mechanics and Pneumatics</b>	<b>16</b>
4.1.	Air connections seat valves and double seat mix proof valves	
4.2.	Pressure relief valve	
4.3.	Functional description - block diagrams	
4.4.	Technical data / Standards	
4.5.	Solenoid valves	
4.6.	Throttling function	
<b>5.</b>	<b>Adapter</b>	<b>21</b>
<b>6.</b>	<b>Electronic Module</b>	<b>22</b>
6.1.	Function/block diagram	
6.2.	Functional description of connections	
6.3.	Technical data	
6.4.	Connections	
6.5.	LED indication / Indicator lights	
6.6.	Adjustment of valve profiles	
6.7.	Data signals	
6.8.	Service and Maintenance Software CU4plus Toolbox	
6.9.	Seat Pulsation - Efficiency in Cleaning	
<b>7.</b>	<b>Valve Position Indication</b>	<b>33</b>
7.1.	Continuously measuring valve position measuring system	
7.2.	Tolerance band of the valve position measuring system	
7.3.	Adjustment of valve position indication / Teach-in	
7.4.	Use of external sensors	
<b>8.</b>	<b>CU Assembly and Startup</b>	<b>36</b>
8.1.	Double seat mix proof valves D4, D4 SL	
<b>9.</b>	<b>Accessories and Tools</b>	<b>39</b>
<b>10.</b>	<b>Service</b>	<b>40</b>
10.1.	Dismantling	
<b>11.</b>	<b>Trouble Shooting</b>	<b>41</b>
<b>12.</b>	<b>IECEX / CCC Certificate of Conformity</b>	<b>43</b>
<b>13.</b>	<b>Spare Parts Lists</b>	<b>43</b>



## 0. IECEx Specific Instructions

### 0.1. General Information

These **IECEx** Specific Safety Instructions apply for **CU4\*\*** resp. **CU4\*plus\* Control Units** used in Potentially Explosive Atmospheres **Zone 2, Gas** applications. The equipment was assessed according to IEC 60079-0:2017, Edition 7.0 and IEC 60079-7:2017, Edition 5.1.

Notified body: TÜV NORD CERT GmbH, Hanover-Office  
 Am TÜV 1, 30519 Hanover, Germany  
 Notified Body number: 0044

These instructions shall be read carefully by the competent operating and maintenance personnel.

We point out that we will not accept any liability for damage or malfunctions resulting from the non-compliance with these instructions.

### 0.2. IECEx Specific Symbol



#### **DANGER! WARNING! CAUTION!**

This symbol draws your attention to important directions which have to be observed for the operation in explosive areas.

Failure to observe the warning may result in fatal or serious injury as well as damage to property!

### 0.3. Authorized Use

The Control unit type CU4\*\* resp. CU4\*plus\* is designed to be mounted to pneumatic actuators of process valves for the control of media as used in the food and beverage industries as well as in pharmaceutical and chemical applications.

The control unit is installed on a pneumatic actuator of a process valve. The process valve and the actuator must have at least the IECEx ATEX approval of the control unit.

SPX FLOW will be held responsible only for the control units supplied and selected according to the operating conditions indicated by the customer or end user and as stated in the order confirmation. If in doubt, contact your local supplier.

Observe the admissible data, operating conditions and conditions of use as specified in the contract documents, instruction manuals and on the type label.

The control unit must only be used with SPX FLOW valves and components recommended and authorized by SPX FLOW.

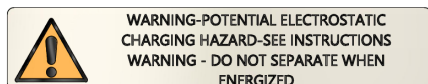
Adequate transport, storage and installation, careful handling and maintenance are essential for a faultless and reliable function of the control unit.

Observe the intended use of the control unit.

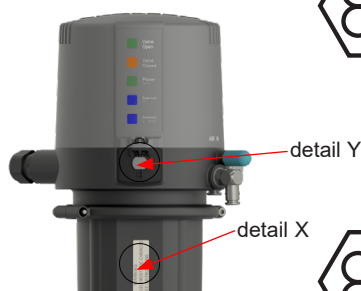
## 0. IECEx Specific Instructions



### 0.4. Specific Safety Instructions



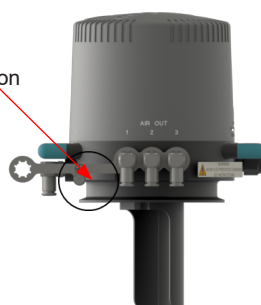
lead seal



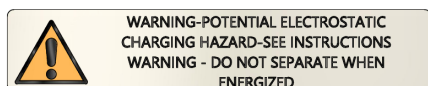
detail X



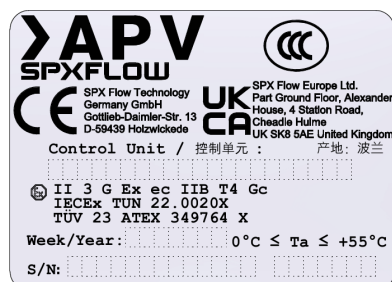
earthing screw connection



**detail X:** electrostatic risk label  
CU4 D4 IECEx Z2



**detail Y:** type label  
control unit



#### Connecting/Disconnecting pluggable electric circuits

- The connecting and disconnecting of the pluggable electrical circuits including field wirings is only permitted in the absence of explosive atmosphere.

#### Opening the device

- Do not open the control unit in the presence of explosive atmosphere.
- Do not install and set the proximity switches in the presence of explosive atmosphere.
- Before startup, secure the cover with the enclosed lead seal. Opening the cover without tools must be prevented.

#### Electrostatic discharge

- The control unit has to be installed and used in such a way, that electrostatic charging from operation, maintenance and cleaning is excluded.
- Connect the earthing screw in order to integrate the control unit in the local potential equalization system.
- In case of sudden discharge from electrostatically charged devices or individuals, risk of explosion in the explosive area exists.
- Prevent the occurrence of electrostatic discharges by suitable measures.
- Clean the control unit surface by gently wiping it with a damp or antistatic cloth, only.

#### In order to prevent the emergence of explosion risks observe the safety instructions of the instruction manual and adhere to the following:

- Observe information on temperature classes, ambient temperatures, degree of protection and voltage on the approval ID label.
- Do not use control units in areas subject to gas with lower ignition temperatures than indicated on the approval ID label.
- Installation, operation and maintenance may only be performed by qualified personnel.
- Observe the applicable international and national safety regulations as well as the general rules of technology for construction and operation.
- Do not repair the control unit yourself. Replace it by an equivalent device.
- Repairs may only be performed by the manufacturer.
- Do not expose the control unit to mechanical and/or thermal loads which may exceed the limits described in the instruction manual.
- Only use cable and/or line entry points approved for the respective application area and which are screwed in place according to the respective installation instructions.
- The cable glands may be used for fixed installations, only.
- Close all unnecessary cable glands with locking screws approved for the explosive area.

## 0. IECEx Specific Instructions

### 0.4. Specific Safety Instructions



**In order to prevent the emergence of explosion risks observe the safety instructions of the instruction manual and adhere to the following:**

- The required degree of protection (IP64) is guaranteed only in connection with suitable adaption sets. All pneumatic and electrical connections must be equipped with suitable connectors.
- Install the control unit in such a way that it is protected from UV-radiation.
- The control unit has to be installed in such a way that a pollution degree 2 or better, according to IEC 60664-1, is achieved.
- Externally to the control unit, measures have to be taken to provide a transient protection which ensures that the rated voltage, connected to the power supply terminals, is not exceeded by more than 40 %.
- Ambient temperature range:  $0^{\circ}\text{C} \leq T_{\text{amb}} \leq +55^{\circ}\text{C}$



- 安全使用条件:
- 使用环境温度:  $0^{\circ}\text{C} \sim +55^{\circ}\text{C}$
- 控制单元CU4\*\*和CU4\*plus\*在安装和使用时, 避免在操作, 维护和清洁时产生静电
- 控制单元CU4\*\*和CU4\*plus\*在安装时必须防止紫外线照射
- 在爆炸性危险场所严禁连接和断开电路
- 根据GB/T 16935.1, 该设备只应在污染程度不低于2级的区域使用
- 控制单元CU4\*\*和CU4\*plus\*的瞬态保护应提供不超过设备的供电端子额定峰值电压值140%的保护

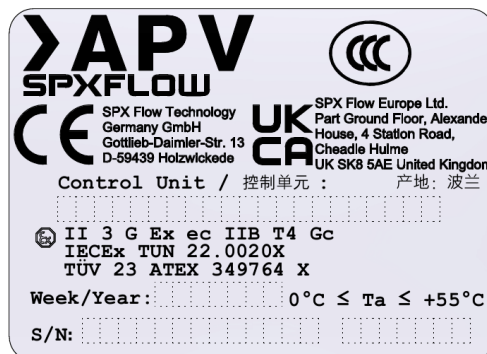


## 0. IECEx Specific Instructions

### 0.5. Identification of CU4\*\* resp. CU4\*plus\* Control Units for use in IECEx ATEX environment



IECEx / ATEX - identification:



Equipment group II

Explosion subcategory

Ex ec IIB T4 Gc



Ambient temperature

0 °C ≤ T<sub>amb</sub> ≤ +55 °C

### 0.6. Responsibilities

It is within the operator's responsibility to ensure that the specified product temperatures are not exceeded and that regular inspections and maintenance are carried out to provide for proper function of the control unit and valve.

The following pages show the operating instructions for the standard control unit for non - IECEx ATEX applications.

## 1. Abbreviations and Definitions

A	Exhaust air
AWG	American Wire Gauge
CE	Communauté Européenne
CU	Control Unit
DI	Digital Input
DO	Digital Output
EMC	Electromagnetic Compatibility
EU	European Union
GND	Ground/mass potential
IP	International Protection
LED	Light Emitting Diode
N	Pneumatic Air Connection NOT element
NEMA	National Electrical Manufacturers Association
P	Supply Air Connection
PELV	Protected Extra-Low Voltage
PWM	Pulse-width modulation
Y	Pneumatic Air Connection
SLD	Seat Lift Detection / Seat Lift Gathering

## 2. Safety Instructions

### 2.1. Sentinels

Meaning:



**Danger!**

Direct danger which can lead to severe bodily harm or to death!



**Caution!**

Dangerous situation which can lead to bodily harm and/or material damage.



**Attention!**

Risk as a result of electric current.



**Note!**

Important technical information or recommendation.

**These special safety instructions point directly to the respective handling instructions. They are accentuated by the corresponding symbol. Carefully read the instructions to which the sentinels refer. Continue handling the control unit only after having read these instructions.**

## 2. Safety Instructions

### 2.2. Intended use

The CU4plus Direct Connect control unit is only intended for use as described in chapter 3.1. Use beyond that described in chapter 3.1. do not comply with the regulations and SPX FLOW shall not be responsible for any damage resulting from this non-observance. The operator bears the full risk. Prerequisites for proper and safe operation of the control unit are the appropriate transport and storing as well as the professional assembly. Intended use also means the observance of operating, service and maintenance conditions.

### 2.3. General regulations for careful handling

To ensure a faultless function of the unit and a long service life, the information given in this instruction manual as well as the operating conditions and permissible data specified in the data sheets of the control unit for process valves should be strictly adhered to.

- The operator is committed to operating the control unit in faultless condition, only.
- Observe the general technical rules while using and operating the unit.
- Observe the relevant accident prevention regulations, the national rules of the user country as well as your company-internal operating and safety regulations during operation and maintenance of the unit.
- Switch off the electrical power supply before carrying out any work on the system!
- Note that piping or valves that are under pressure must not be removed from a system!
- Take suitable measures to prevent unintentional operation or impermissible impairment.
- Following an interruption of the electrical or pneumatic supply, ensure a defined and controlled re-start of the process!
- If these instructions are not observed, we will not accept any liability. Warranties on units, devices and accessories will expire!

## 2. Safety Instructions

### 2.4. Welding instructions



It is generally recommended to avoid welding work in process installation in which control units are installed and connected. If welding is nonetheless required, earthing of the electrical devices in the welding area is a necessity.

### 2.5. Persons



- Installation and maintenance work may only be carried out by qualified personnel and by means of appropriate tools.
- Qualified personnel must get a special training with regard to possible risks and must know and observe the safety instructions indicated in the instruction manual.
- Work at the electrical installation may only be carried out by personnel specialized in electrics!

### 2.6. Warranty

This document does not contain any warranty acceptance. We refer to our general terms of sale and delivery. Prerequisite for a guarantee is the correct use of the unit in compliance with the specified conditions of application.



#### Note!

This warranty only applies to the Control Unit. No liability will be accepted for consequential damage of any kind arising from failure or malfunction of the device.

## 3. General Terms

fig. 3.2.

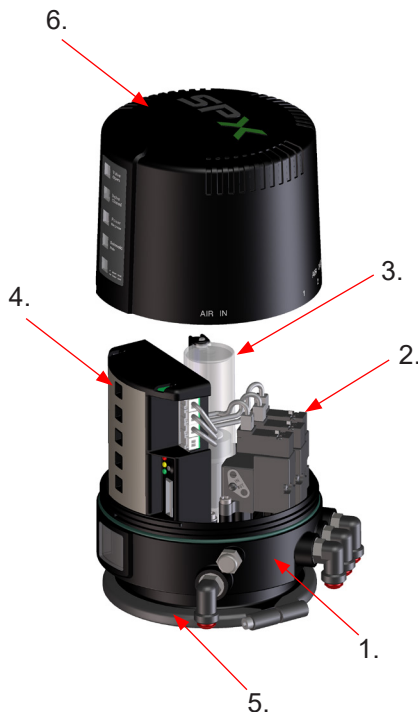
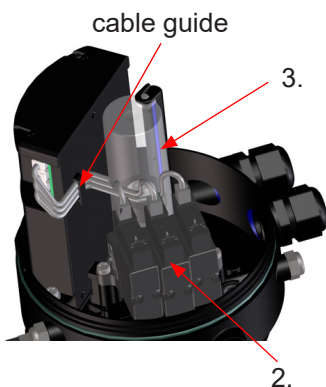


fig. 3.2.1



### 3.1. Purpose of use

The control unit CU4plus Direct Connect has been developed for the control of process valves in food processing industry as well as related industries.

The CU4plus Direct Connect control unit operates as interface between process control and process valve and controls the electric and pneumatic signals.

The pneumatic control of valves is undertaken via the solenoid valves. The control unit controls the valve positions, **open** and **closed**, via sensors. The electronic module undertakes the task to process the switching signal from the control and to control the corresponding solenoid valves. The electronic module also provides for potential-free contacts. The corresponding light signals in the control unit provide for an external indication of the valve positions.

### 3.2. Design of CU4plus Direct Connect (fig. 3.2.)

The CU4plus Direct Connect control unit consist of the following components:

1. The Control Unit base with integrated air channels and electric and pneumatic connections as well as viewing windows with type label.
2. 1 or 3 solenoid valves for the control of the valve actuators and for the seat lifting of double seat valves.
  - 1 solenoid valve with 1 logic NOT element for the control of the valve actuators.
3. Sensor module with integrated position measuring system for the detection of the valve position.
4. Electronic module for the electric supply, for the Direct Connect communication with the PLC, evaluation of feedback signals and control of solenoid valves as well as valve position indication through LED.
5. Clamp ring to fasten the CU4plus on the adapter.
6. Cover with LED optics.



The cable/s by means of which the solenoid valves are connected with the electronic module must be guided through the cable guide at the rear side of the electronic module. (fig. 3.2.1).



## 3. General Terms

### 3.3. Function of the individual components

The installation of the control unit is undertaken by special adapters which are available for the different valves types, see **chapter 5**. Adapter. The snap connectors for supply air and pneumatic air to the individual cylinders at the valves are located at the outside of the control unit. At the control units for valves with turning actuator, the pneumatic air is transferred internally to the actuator. The air supply of the control unit is equipped with an exchangeable air filter. Observance of the required compressed air quality is imperative. Please also see **chapter 4.5** Technical Data.

The number of the solenoid valves installed in the CU4plus depends on the valve actuators to be controlled. Single seat and butterfly valves and double seat valves without seat lift function require 1 solenoid valve.

Control units for double seat valves equipped with 3 solenoid valves. For the manual actuation, the solenoid valves are provided with a safe handle which is easy to operate.

The electronic module installed in the control unit fulfils the task to process the electric signals from the control, to control the solenoid valves and to evaluate the feedback signals from the feedback unit. Moreover, the signalling and indication of the valve positions as well as additional diagnostic functions are undertaken via the electronic module.

The electronic module is the interface between control actuators or sensors. Communication is undertaken via Direct Connect wiring with single parallel cables.

Valve position detection is realized via linear sensors which are integrated in the sensor module.

Control is effected via the solenoid switch cam mounted to the valve actuator rod. The measuring range of the linear sensor detects the complete valve stroke. By means of the Teach-in function, the corresponding position for closed and open valve position are detected and seat lift positions are permanently saved in the electronic module if required. (see **chapter 7.3** Teach-in function)

For DA3+ double seat valves with active seat lift detection (SLD) additionally to the linear sensor integrated in the CU, two external proximity switches installed at the valve actuator are required. The corresponding signals of the linear sensor as well as external proximity switches are evaluated in an internal logic circuit and, thus, the corresponding valve position indications are generated. (see **chapter 6.7**. Data signals, PLC communication)

For the D4 valve generation, additionally to the linear sensor integrated in the control unit, an additional sensor is installed in the lower part of the sensor tower.

---

## 3. General Terms

---

### 3.3. Function of the individual components

The luminous diodes are located on the front side of the electronic module. Their signals are visibly indicated to the outside by an optical window in the cover the control unit. Beside the open and closed valve position, the existence of the operating voltage as well as different diagnostic information are indicated. **Chapter 6.6.** LED indicators provides more details.

The complete control unit has been designed on the building block principle. By exchange of the electronic module, the control type can be changed, e.g. from direct control (Direct Connect) to communication with AS-Interface.

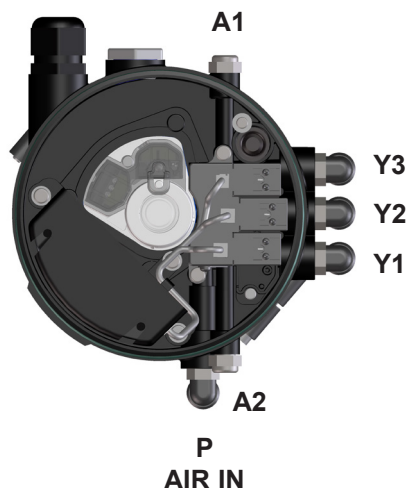


**Note!** Wiring must be changed!

## 4. Mechanics and Pneumatics

### 4.1. Air connections seat valves and double seat mix proof valves

#### 4.1.1. Function



#### CU41plus-D4

**design for D4 double seat mix proof valves  
without seat lift function**

- P** air supply with integrated particle filter
- Y1** control air connection for main actuator
- A1** exhaust air, with exhaust silencer

#### CU43plus-D4

**design for D4 SL double seat mix proof valves with seat lift  
function**

- P** air supply with integrated particle filter
- Y1** control air connection for main actuator
- Y2** pneumatic air connection for seat lift actuator of upper seat lifting
- Y3** pneumatic air connection for seat lift actuator of lower seat lifting
- A1/A2** exhaust air, with exhaust silencer

### 4.2. Pressure relief valve

The base of the control unit is equipped with a pressure relief valve which prevents an inadmissible pressure build-up in the inner control unit.

If required, the pressure relief valve vents into the clearance between the base and the adapter of the control unit.

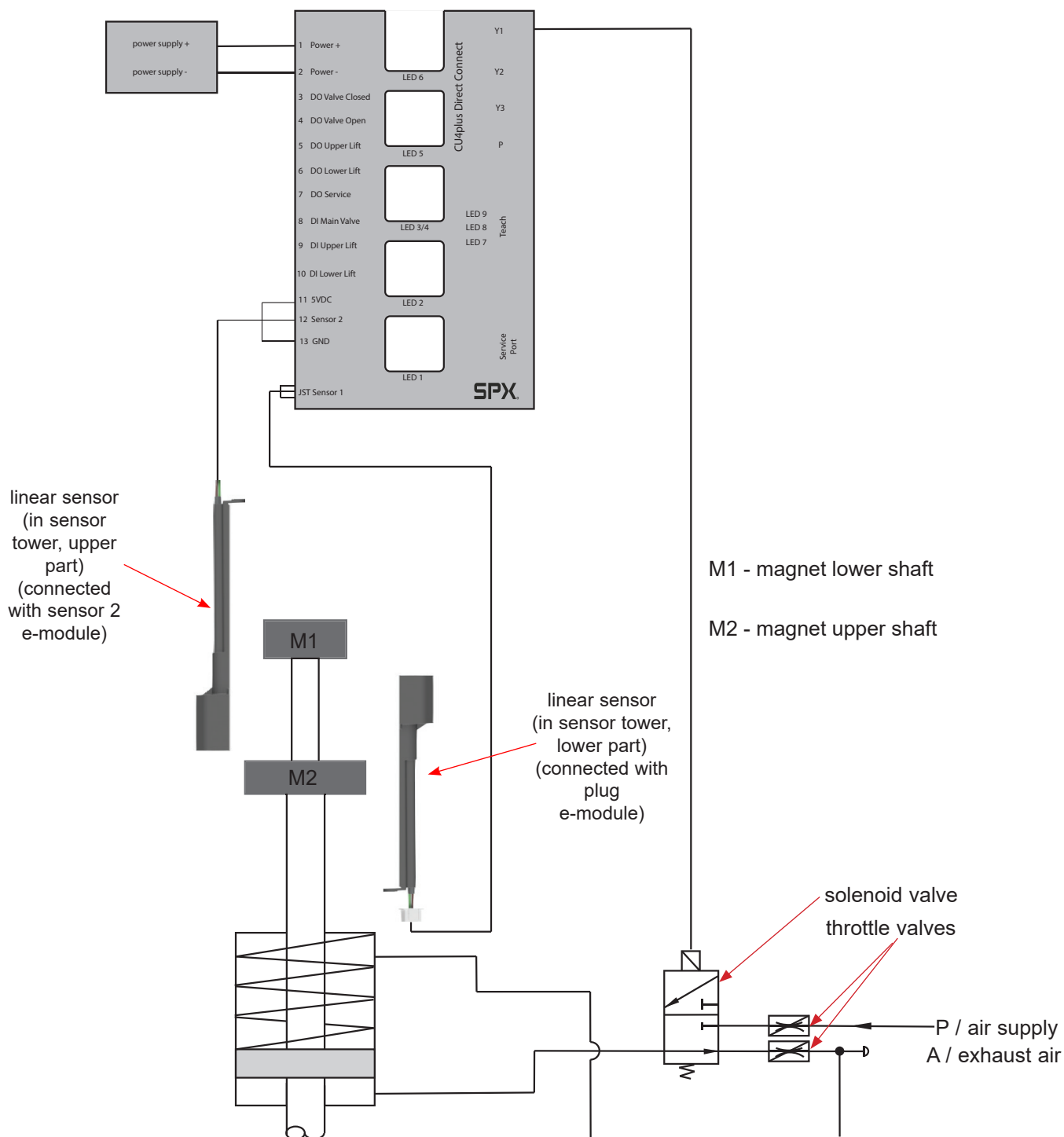
**The pressure relief valve must not be mechanically blocked under any circumstances.**



## 4. Mechanics and Pneumatics

### 4.3. Functional description - block diagrams

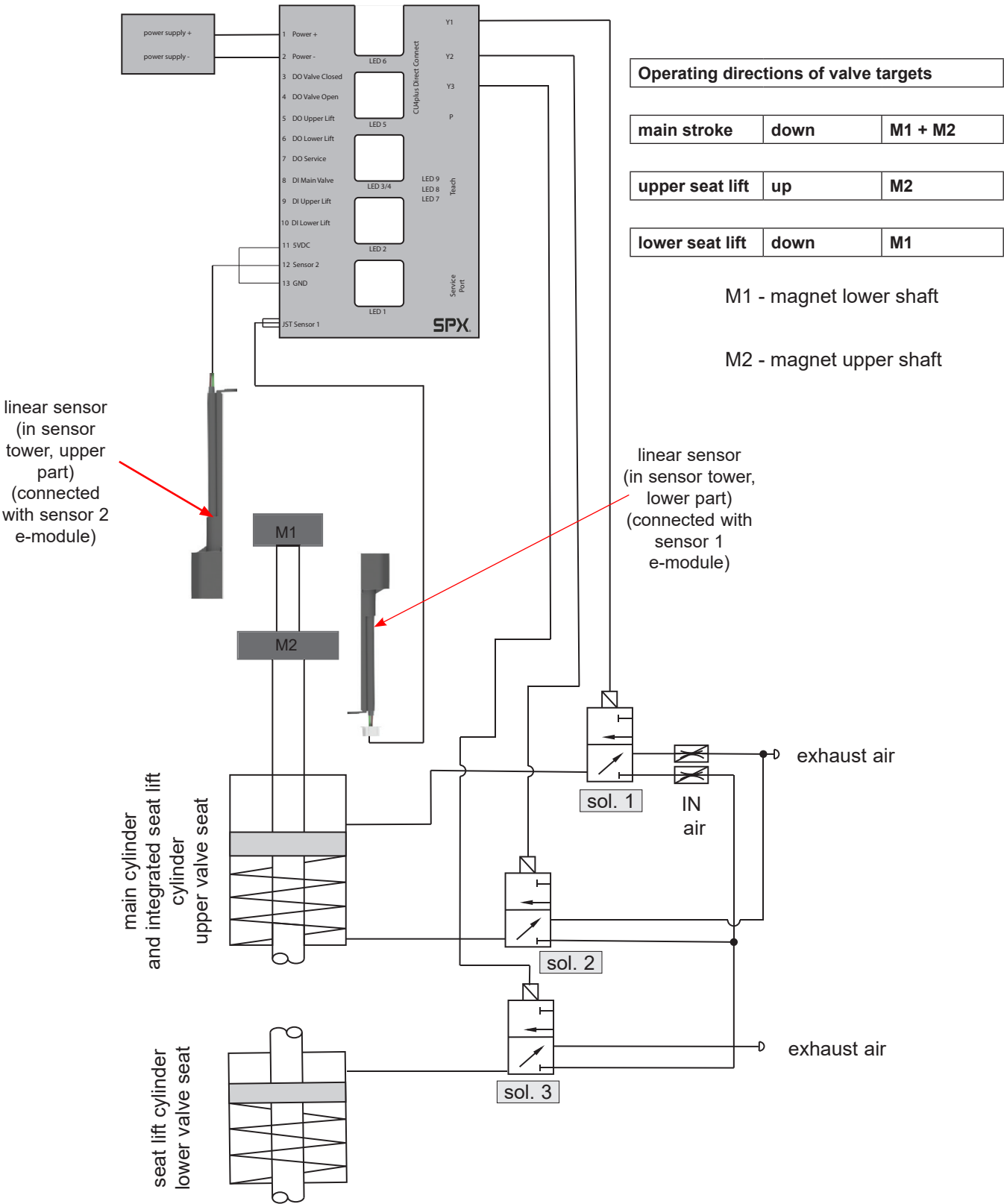
#### 4.3.1. CU41plus-D4 for D4 double seat mix proof valves



4. Mechanics and Pneumatics

4.3. Functional description - block diagrams

4.3.2. CU43plus-D4 for D4 SL double seat mix proof valves





## 4. Mechanics and Pneumatics

### 4.4. Technical data / Standards

**Material:** PA6.6/PA12

**Ambient temperature:** -20 to +70 °C, -4 to +158 °F

**EU:** EMC 2014/30/EU (89/336/EEC)

**Standards and environmental audits:**

protective class IP 64 EN 60529/  
complies with NEMA 6

EMC

DIN EN 55011

DIN EN 6100-4-2,3,4,5,6

vibration/oscillation EN60068-2-6

safety of machinery DIN EN ISO  
13849-1,2

**Air hose:** 6 mm / ¼" OD

**Pressure range:** 6–8 bar

**Compressed air quality:** quality class acc. to DIN ISO 8573-1

- **content of solid particles:** quality class 3,  
max. size of solid particles per m<sup>3</sup>  
10000 of 0,5 µm < d < 1,0 µm  
500 of 1,0 µm < d < 5,0 µm
- **content of water:** quality class 3,  
max. dew point temperature -20 °C  
For installations at lower temperatures  
or at higher altitudes, additional  
measures must be considered to reduce  
the pressure dew point accordingly.
- **content of oil:** quality class 1,  
max. 0,01 mg/m<sup>3</sup>

**The oil applied must be compatible with Polyurethane elastomer materials.**

## 4. Mechanics and Pneumatics

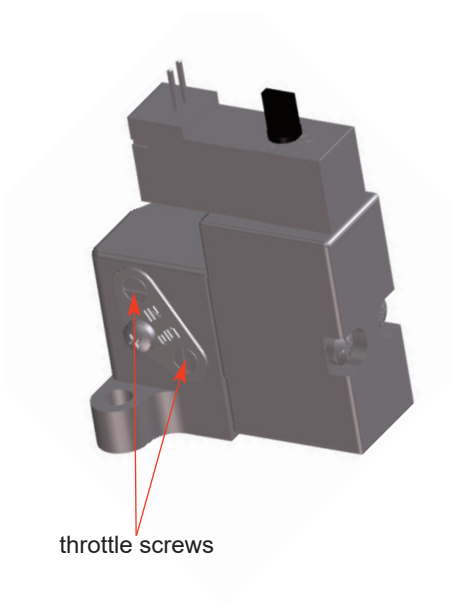
### 4.5. Solenoid valves

In the base of the control unit max. 3 solenoid valves are installed. The 3/2-way solenoid valves are connected with the electronic module by moulded cables and plug connector.

<b>control:</b>	PWM signal
<b>handle:</b>	rotary switch at valve

### 4.6. Throttling function

The operating speed of the valve actuator can be varied or reduced. This may be necessary to slacken the actuation of the valve in order to prevent pressure hammers in the piping installation. For this purpose, the supply and exhaust air of the **first solenoid valve** can be adjusted via the throttling screws respectively allocated in the interface of the solenoid valve. By turning the screws in anticlockwise direction, the inlet or outlet air is throttled.



---

## 5. Adapter

---

Double seat mix proof valves D4, D4 SL



---

## 6. Electronic Module

---

### 6.1. Function/block diagram

The electronic module of the SPX FLOW CU4plus Direct Connect control unit is designed to be part of the PLC Input/Output system. It should be supplied with the same protected power supply as the other I/O devices. This power supply should not be used for other kinds of loads. The unit is reverse polarity and short cut protected. The power supply must meet EN 61131-2.

For mix proof valves of the D4 family the electronic module works with 2 SPX linear sensor systems.

Make sure that only SPX feedback sensors are used with the CU4plus DC electronic module.

PNP/NPD polarity

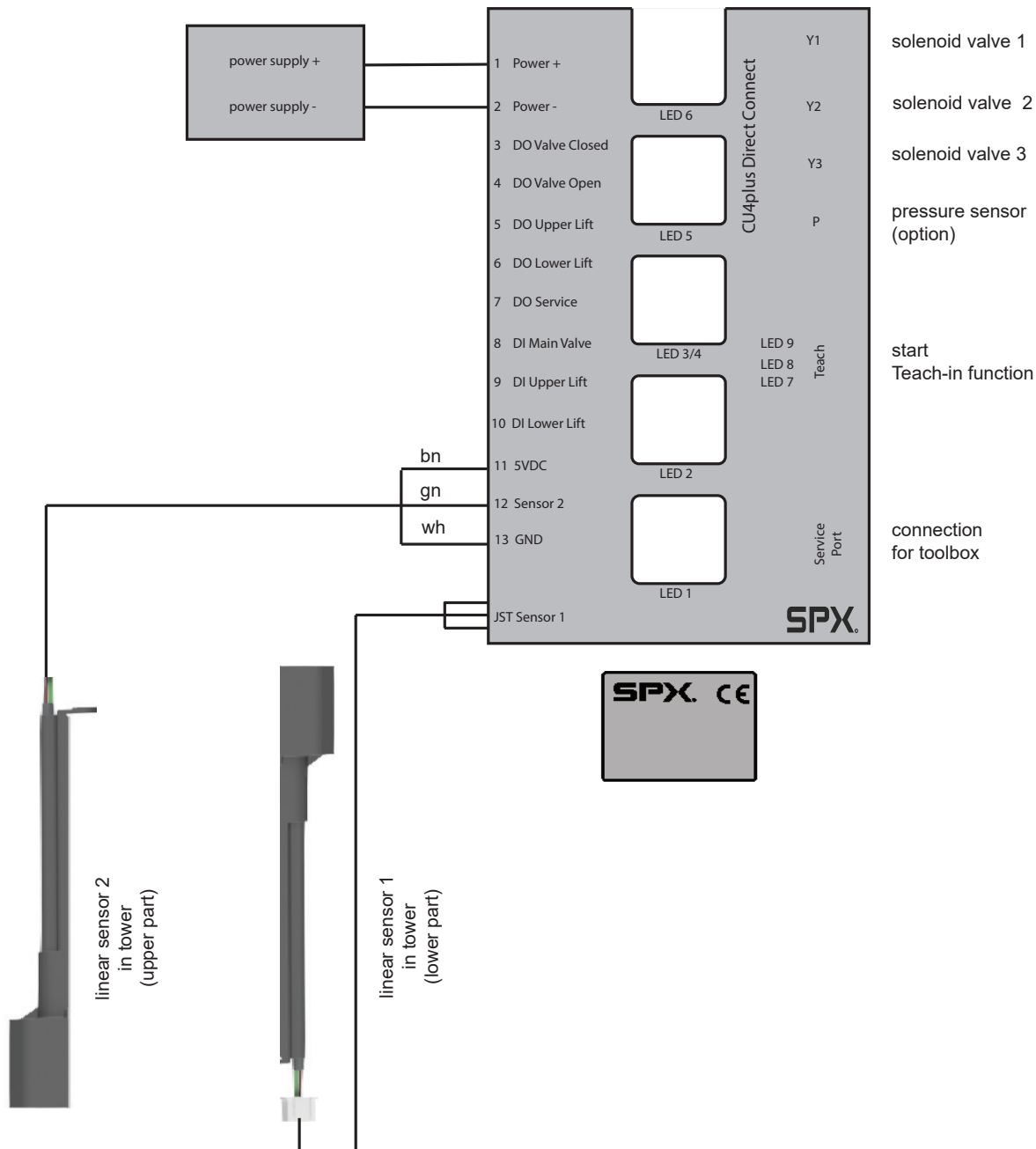
PNP (sourcing) or NPN (sinking) function can be selected with PC software Toolbox. Delivery default is PNP.

Please refer to chapter 6. Electronic module / Technical Data.

## 6. Electronic Module

### 6.1. Function/block diagram

#### 6.1.1. CU41plus-D4 CU43plus-D4





## 6. Electronic Module

### 6.2. Functional description of connections

Terminal	Designation	Functional Description
1	Power+	power supply 24VDC+
2	Power-	power supply 24VDC-
3	O0 Digital Output	PLC input valve status / closed
4	O1 Digital Output	PLC input valve status / open
5	O2 Digital Output	PLC input valve status / upper seat lift
6	O3 Digital Output	PLC input valve status / lower seat lift
7	SV Digital Output	PLC input service request
8	I0 Digital Input	PLC output to activate solenoid 1 / main valve
9	I1 Digital Input	PLC output to activate solenoid 2 / upper seat lift
10	I2 Digital Input	PLC output to activate solenoid 2 / lower seat lift
11	+5VDC	supply voltage for SPX prox. sensor / linear sensor
12	S	signal SPX prox. sensor
13	0V	potential for SPX prox. sensor / linear sensor
linear sensor		
Y1	PWM Output	solenoid valve 1 (main valve)
Y2	PWM Output	solenoid valve 2 (upper seat lift)
Y3	PWM Output	solenoid valve 3 (lower seat lift)
service port		connection serial/USB converter for CU4plus toolbox

## 6. Electronic Module

### 6.3. Technical data

Power supply: 24 VDC +/- 20%

Typical power consumption:

No solenoid active, 1 feedback active 75 mA

1 solenoid active, 1 feedback active 85 mA

Signal voltage inputs max. 30 VDC

Input impedance 6 kOhm, linear (ohmic characteristic curve)

#### PNP input

switching threshold ON  $\geq 12 \text{ V} / \geq 2 \text{ mA}$   
 switching threshold OFF  $\leq 10 \text{ V} / \leq 1,6 \text{ mA}$   
 voltage output ON  $\geq U_+ - 2\text{V}$   
 output current  $\leq 100 \text{ mA}$

Current is limited by overload protection. In case of overload, the service request is set.

#### NPN input

switching threshold ON  $\leq 12 \text{ V} / \geq 1,8 \text{ mA}$   
 switching threshold OFF  $\geq 14 \text{ V} / \leq 1,4 \text{ mA}$   
 voltage output ON  $\leq 2 \text{ V}$   
 output current  $\leq 100 \text{ mA}$

Current is limited by overload protection. In case of overload, the service request is set.

Supply of solenoids PWM controlling signal from electronic module

Supply of sensors 5 VDC, 4,75...5,25V (sum of all currents < 40mA)



#### **Caution!**

The sensor inputs and the peripheral supply must not be connected with installation-GND.

Connecting terminals: conductor cross section 0.5 – 1,0 mm<sup>2</sup> (with conductor sleeve) complying with AWG 20-17 (max. 11 mm)

6. Electronic Module

6.4. Connections

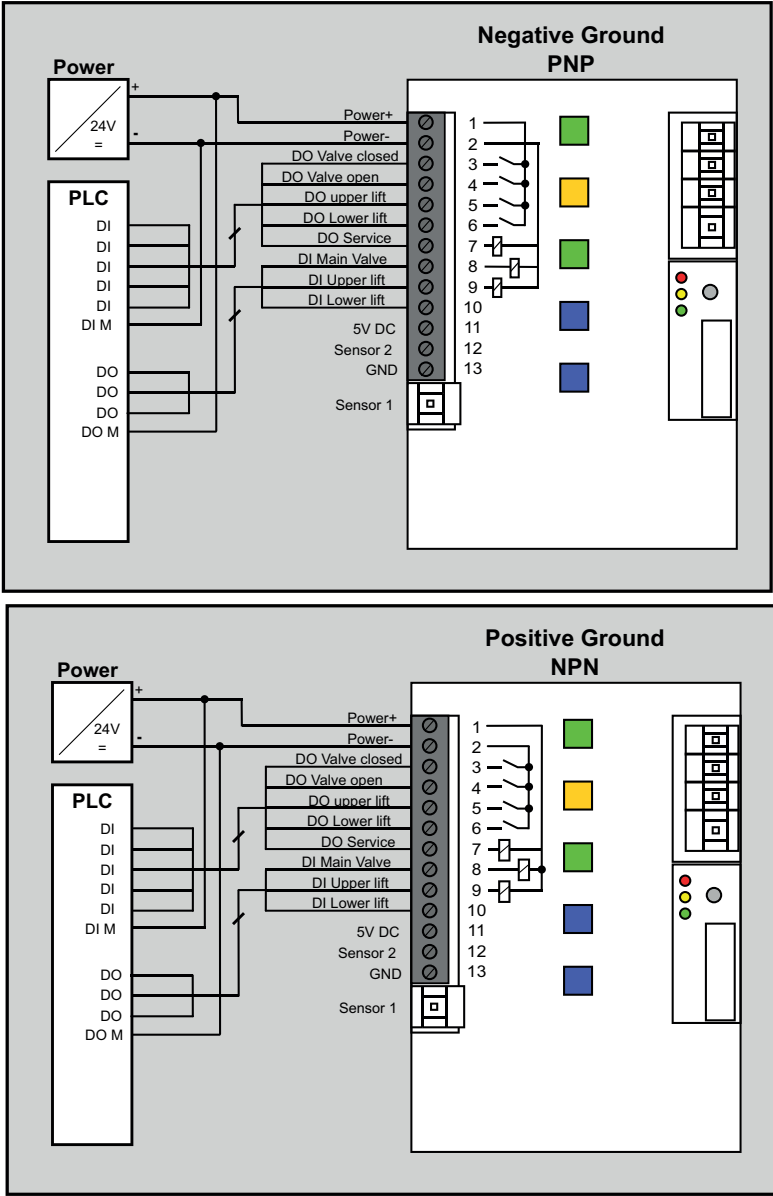
Sensors for valve position detection:

- Internal sensors:














internal linear sensor SPX FLOW type  
switching distance acc. to SPX FLOW  
specification
- Internal hall sensors:

"magnetic hall sensor"  
SPX FLOW UB 4.75 - 5.25 VDC  
switching distance acc. to SPX FLOW  
specification
- External sensors:

inductive proximity switch  
SPX FLOW UB 4.75-5.25 VDC  
switching distance acc. to SPX FLOW  
specification



## 6. Electronic Module

6.5. LED indication / Indicator lights				
LED 1	solenoid valve 2 / upper seat lift	blue, 1 blink		solenoid valve 2 controlled upper seat * <b>lifted</b>
	solenoid valve 3 / lower seat lift	blue, 2 blinks		solenoid valve 3 controlled lower seat * <b>lifted</b>
LED 2	sol. valve 1 /main valve	blue, 2 blinks		main valve controlled
LED 3/4	power and diagnosis	green, permanent light		operating voltage ok, no failure
LED 3/4	power and diagnosis	green / red alternate blink		Teach required
together with				
LED 5/6	valve open / closed	green / orange blink		
LED 3/4	power and diagnosis	green / red alternate blink		service request caused by: solenoid valve wiring open loop or short circuit
together with				
LED 8	service request	yellow, permanent light		
LED 5	valve closed	orange, permanent light		valve closed
LED 6	valve open	green, permanent light		valve open
LED 7	pressure signal (option)			
LED 8	service request	yellow, permanent light		imminent service request
LED 9	Teach-in	red, permanent light blink		Teach-in is running Teach-in required
LED Y1	solenoid valve 1	permanent light		controlled
LED Y2	solenoid valve 1	permanent light		controlled
LED Y3	solenoid valve 1	permanent light		controlled

\* Depending on the adjusted mode!

## 6. Electronic Module

### 6.6. Adjustment of valve profiles

The adjustment of valve profiles is carried out with the Service Software CU4plus Toolbox (see CU4plus Toolbox manual).  
For the different process valves different logic profiles exist. These differ in view of the detection of the feedback and the logic profile of the valve.

#### Valve profile:

Type	Valve profile	Valve position measuring system	Tolerance band	Valve basic position NO/NC	Invert - valve position indication	Number of solenoids
1	Mix proof valve D4	2 internal linear sensors	fixed +/- 1 mm	NC only	possible	always 1
2	Mix proof valve D4 SL	2 internal linear sensors	fixed +/- 1 mm	NC only	possible	always 3

Valve basic position: Depending on the valve type, the basic position can be adjusted.

Tolerance band: Selection according to valve type.  
**(see chapter 7.2)**

Valve position indication: LED can be inverted, e.g. for adaption of valve type

Delivery status: Mix proof valve DA4 profile is adjusted.

Adjusted valve characteristics: logic profile 1, for DA3+ with SLD

Teach-in: CU waits for Teach-in with valve, LED 3-6 blink

Adjustment / change of valve profile is realized via ToolBox software (see Toolbox manual).



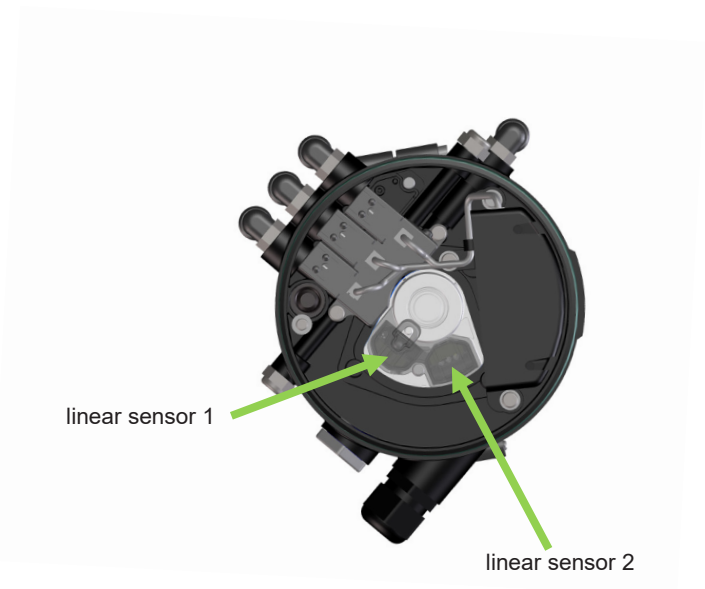
## 6. Electronic Module

### 6.7. Data signals

#### 6.7.1. Mix proof valve D4



operating	main stroke downwards		
main stroke	valve operating direction: downwards		
lower shaft	signal S3 signal S4	linear sensor 1	valve target M1
upper shaft	signal S2 signal S1	linear sensor 2	valve target M2



Output signals	valve status	linear sensor 2 / (Teach data)		linear sensor 1 / (Teach data)		tolerance band
		sensor signal S1	sensor signal S2	sensor signal S3	sensor signal S4	
O0	closed	1	0	not used	0	+1 mm, -1 mm
O1	open	0	0	not used	1	+1 mm, -1 mm
DI2						
DI3						

Input signal	solenoid 1 Main	solenoid 1 upper seat lift	solenoid 1 lower seat lift
I0	1	0	0
I1			
I2			

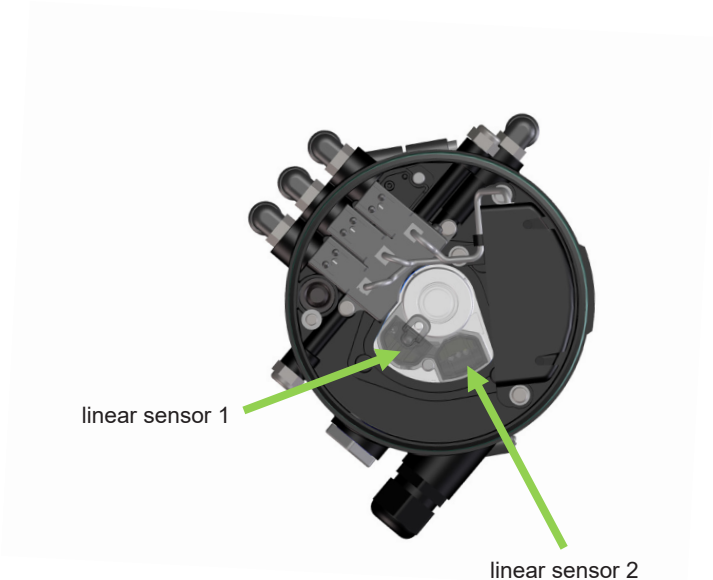
6. Electronic Module

6.7. Data signals

6.7.2. Mix proof valve D4 SL



operating	main stroke downwards upper seat lift upwards lower seat lift downwards		
main stroke	valve operating direction: downwards		
lower shaft	signal S3 signal S4	linear sensor 1	valve target M1
upper shaft	signal S2 signal S1	linear sensor 2	valve target M2



Output signals	valve status	linear sensor 2 / (Teach data)		linear sensor 1 / (Teach data)		tolerance band
		sensor signal S1	sensor signal S2	sensor signal S3	sensor signal S4	
O0	closed	1	0	1	0	+1 mm, -1 mm
O1	open	0	0	0	1	+1 mm, -1 mm
O2	upper seat lift	0	1	1	0	+1 mm, -1 mm
O3	lower seat lift	1	0	0	0	+1 mm, -1 mm

Input signal	solenoid 1 Main	solenoid 2 upper seat lift	solenoid 3 lower seat lift
I0	1	0	0
I1	0	1	0
I2	0	0	1

## 6. Electronic Module

### 6.7. Data signals

#### 6.7.3. Parameter data / status / diagnosis

not relevant because of Direct Connect



### 6.8. Service and Maintenance Software CU4plus Toolbox

For the parameterization of the CU4plus DC the CU4plus Toolbox Software is available.

The Toolbox kit with appropriate USB/serial cable can be purchased from SPX Flow using the article number H333470.

The latest version of the Toolbox Software is always available from the SPX Flow F&B Sharepoint. Please contact your SPX Flow Sales representative.

This software is designed for PC system software Windows 7, Windows 8.1, Windows 10.

After installation of the CU4plus Toolbox the corresponding control unit is connected with the PC by means of an adapter cable.

The individual functions are described in the CU4plus Toolbox manual.



---

## 6. Electronic Module

---

### 6.9. Seat Pulsation - Efficiency in Cleaning

For increasing seat cleaning efficiency there is a function called "Pulsation". With this function, the seat lifts can be operated in pulsation mode if the PLC signal activates the seat lift.

For the pulsation the ON and OFF time can be adjusted with the CU4plus Toolbox.

The selection of the pulsation times must be done in accordance with the process situation and the appropriate valve size. The selected times must ensure complete opening and closing of the seats. We recommend to adjust pulsing times which are not shorter than 30 seconds.

During pulsation, the feedback for the appropriate seat lift will always be active!

## 7. Valve Position Indication

### 7.1. Continuously measuring valve position measuring system

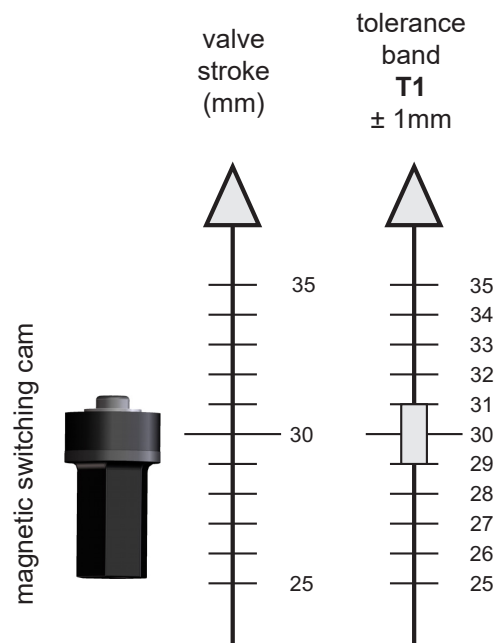
For the internal detection of the valve position indication, a contact-free operating linear sensor is used which is actuated via the magnetic switching cam installed at the valve rod. The nominal measuring range of the measuring system amounts to 0 - 72 mm, relative repetitive accuracy < 0.1 mm.

Within this measuring range, the corresponding positions for closed and open valve position as well as seat lift positions are generated via the Teach-in function and permanently saved in the electronic.

### 7.2. Tolerance band of the valve position measuring system

The tolerance band of the valve position measuring system describes the active measuring range in which the corresponding feedback information, closed or open valve position, is registered. For different process valves also different tolerance bands exist. The adjustment is realized via the ToolBox software.

Tolerance band	Output of feedback signals in range	Recommendation for valve type
T1	+/- 1 mm	e.g. D4, D4 SL

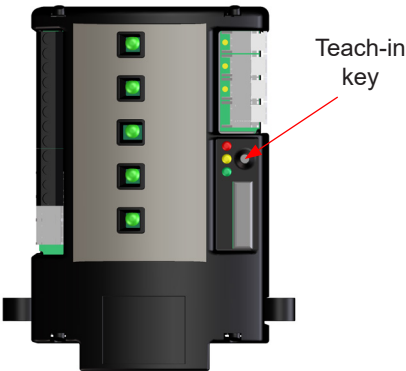


7. Valve Position Indication

7.3. Adjustment of valve position indication / Teach-in

The continuously measuring valve position measuring system is taught via a reference valve movement. The respective positions for the closed and open valve position as well as for further valve positions, e.g. seat lifting, are travelled to and the corresponding position of the sensor system is permanently stored in the memory of the electronic module. This process is called Teach-in.

The Teach-in is started by pressing the Teach-in key at the electronic module. The key must be pressed permanently for 3 seconds. After the start of the Teach-in the LED 9 lights up and the valve travels into the corresponding final positions and back into the basic position. The positions of the corresponding valve positions are stored.



Indication	Status	Action
LED 3-6,9 blink	Delivery status Waiting for Teach-in	Start Teach-in press Teach-in for at least 3 seconds
LED 9 OFF LED 3/4 blink	Teach-in active	Wait Do not control valve via PLC.
LED 9 OFF	Successful Teach-in	Valve can be controlled by PLC.
LED 9 ON	Valve Teach carried out	Wait for Teach result
LED 9 blink	Teach-in not successful, repetition required.  Possible reasons for Teach-in failure:  Compressed air is missing. Supply voltage missing. Switching logic does not fit to valve.	Start Teach-in / press Teach-in key for 3 sec.

## 7. Valve Position Indication

### 7.3.1. To be observed before Teach-in:

- Corresponding switching cam is mounted to the valve guide rod.



#### **Note! Caution!**

The switching cam is not identical with the standard CU switching cam!

- CU4plus Direct Connect control unit is not duly installed on the valve.
- Valve is duly installed in the process.
- **Valve is not manually controlled or controlled by PLC.**
- Control air is connected (requirements, see Technical Data, chapter 4.5.).
- Nominal valve stroke is not restricted, e.g. through chunky products in the valve.
- Selected switching logic complies with the installed process valve (adjustment is realized via CU4plus Toolbox software, delivery status is switching logic for DA4).

During the Teach-in function, the valve is controlled and moves independently into all operating positions.



**As a precaution, the Teach-in function is to be repeated after any valve service or maintenance!**

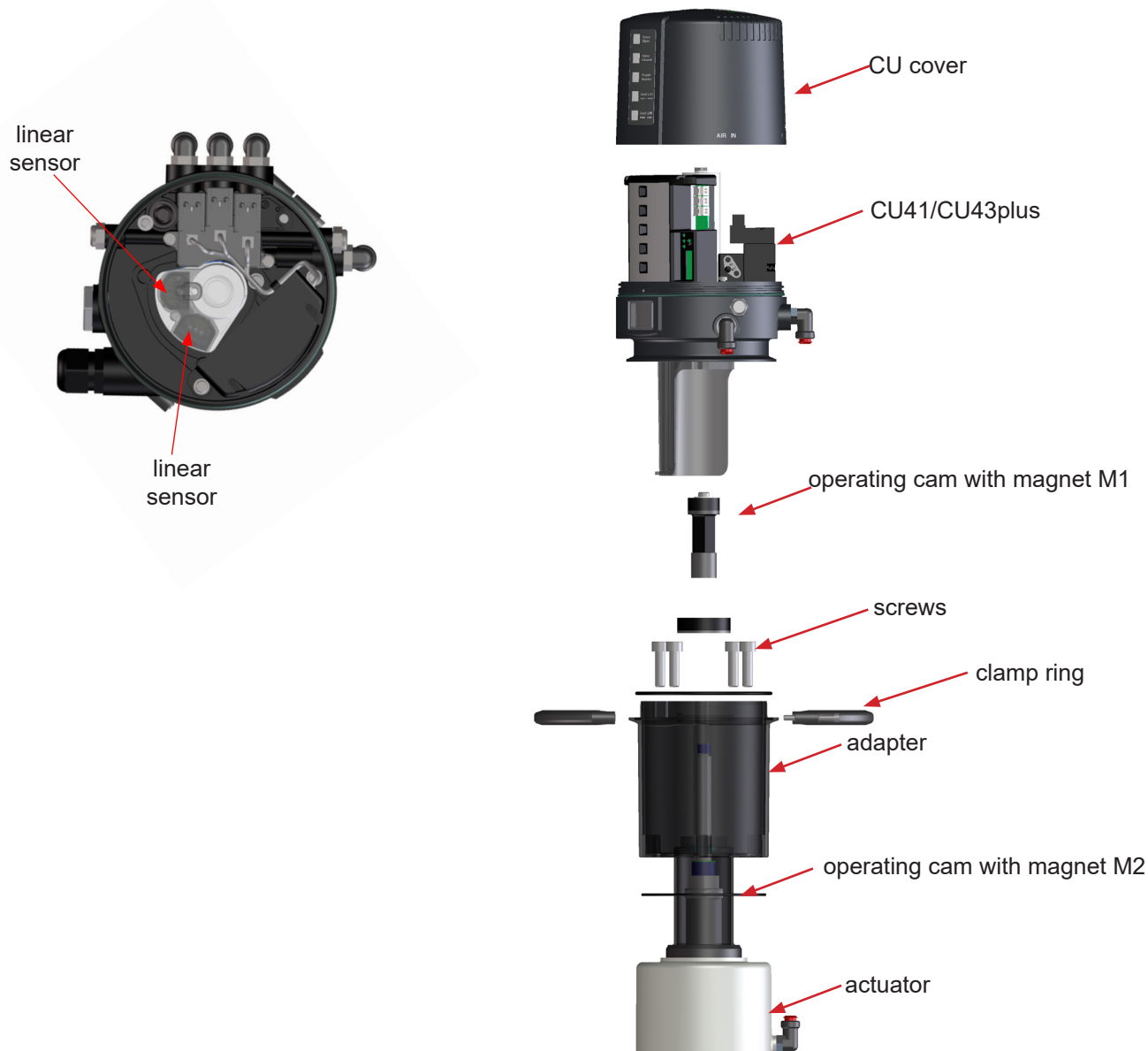
**If these instructions are not observed, process failures, product loss or personal injury may occur!**

### 7.4. Use of external sensors

For double seat valves with active seat lift detection (SLD) 2 additional proximity switches are required which are mounted in the actuator area of the DA3+ valve and connected at the electronic module of the CU4plus Direct Connect.

## 8. CU Assembly and Startup

### 8.1. Double seat mix proof valves D4, D4 SL



#### Assembly of the control unit on the valve

1. Assemble the magnet M2 on the upper shaft under the stop screw.
2. Assemble the adapter with the 4 screws on the double seat valve.
3. Assemble the operating cam M1 with guide rod extension on the guide rod.
4. Place the control unit onto the adapter. Observe alignment!
5. Attach the clamp rings and fasten them with the 2 screws.
6. Align air connections of the control unit to the valve actuator.



## 8. CU Assembly and Startup

### 8.1.1 Pneumatic connection



#### Supply air:

##### Caution!

Shut off the compressed air supply before connecting the air hose!

Make sure that the air hose is professionally cut to length. Use a hose cutter for this purpose.

#### Pneumatic air to valve actuator:

Connect pneumatic air connection **Y1** with the valve actuator. Main actuator

Connect pneumatic air connection **Y2** with the valve actuator. (seat lifting - upper valve seat)

Connect pneumatic air connection **Y3** with the valve actuator. (seat lifting – lower valve seat)

#### Exhaust air:

As a standard, the exhaust air connections **A1** and **A2** are equipped with a silencer. If required, the silencer can be removed and the exhaust air can be hoses separately when it must be led off to the exterior, for example.

### 8.1.2 Electric connection



#### Attention!

Electric connections shall only be carried out by qualified personnel.

Observe the Safety Instructions specified in chapter 2.

## 8. CU Assembly and Startup

### 8.1.3 Connection of external proximity switches

The electric connection of the proximity switches specified by SPX FLOW is undertaken according to the terminal layout described in chapter 6.

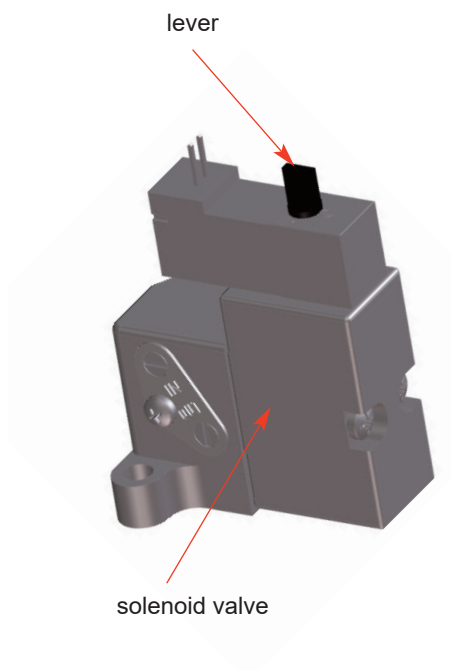
The mechanic assembly of the proximity switches is carried out at the actuator of the corresponding double seat valves.

Observance of the instruction manual for double seat valves is essential!

### 8.1.4 Startup

After proper assembly and installation of the control unit, startup can be undertaken as described below

1. Switch on the air supply
2. Switch on the voltage supply.
3. Check the solenoid valves by turning the lever on the upper side by 90°.
4. For final adjustments of the feedback position switches please use the Teach function.



## 9. Accessories and Tools

### Assembly/disassembly - adapter on valve actuator:

- hexagon socket wrench 6 mm
- screwdriver 4 mm

### Assembly/disassembly – CU on adapter:

- hexagon socket wrench 3 mm

### Assembly/disassembly – electronic module:

- Torx wrench TX20
- screwdriver 3.5 mm

### Assembly/disassembly – feedback unit:

- Torx wrench TX15

### Assembly/disassembly – electronic modules:

- Torx wrench TX20

### Assembly/disassembly – air connections:

- jaw wrench SW13

### Assembly/disassembly – pressure relief valve:

- Torx wrench TX10

Loctite semi-solid

jaw wrench



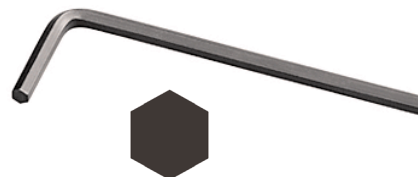
torx wrench



screwdriver



hexagon socket wrench



## 10. Service

### 10.1. Dismantling

Before disassembly, verify the following items:

- The valve must be in safety position and must not be controlled!
- Shut off air supply!
- Cut off current to control unit, i.e. interrupt the supply voltage!

#### **Solenoid valve (4, 5, 6)**

- + Open the CU cover by turning in counterclockwise direction.
- + Release the plug connection at the electronic module for the corresponding solenoid valve.
- + Release and remove the 2 screws (20) TX20.
- + Replace the solenoid valve.
- + Assembly in reverse order. See to a proper fit of the flat seal!

#### **Electronic module (2)**

Before releasing the cable connections make sure that all lines are de-energised!

- + Open the CU cover by turning in counterclockwise direction.
- + Release the plug connection of the solenoid valves.
- + Release the cable from the terminal strip, all terminals 1-8.
- + Release and remove the 3 screws (20) TX20.
- + Replace the electronic module.
- + Assembly in reverse order.

#### **Feedback unit**

Before releasing the cable connections make sure that all lines are de-energised!

- + Open the cover.
- + Release the cable for the linear sensors from the terminal strip, terminals 3-8.
- + Release the clamp ring and lift the CU4 from the adapter.
- + Remove the 4 screws (9) TX15 at the lower side of the CU base (1).
- + Take out the feedback unit to the bottom.

#### **Linear sensor**

The linear sensor can only be replaced at the dismantled feedback unit.

- + Remove the 2 screws (14) TX10.
- + Release the plug connection at the electronic module.
- + Dismantle the linear sensor.
- + Assembly in reverse order.
- + Carry out Teach-in.

## 11. Trouble Shooting

Failure	Remedy
Valve position is not indicated.	Carry out Teach-in.
	Check fastening of magnetic switching cam.
	Check adjusted logic profile and process valve.
Feedback via proximity switches is missing.	Check positioning of proximity switches.
	Check cabling to the electronic module.
LED indication is missing.	Check cabling to the electronic module.
<b>Control Unit CU41 installed on Butterfly valves</b>	
Movement of valve flap is missing with actuated solenoid valve.	Check if right control unit is installed. Check label in type window of control unit: CU41plus-T DC
	Check valve movement with manual at solenoid valve.
	Check cabling between electronic module and solenoid valve.
	Check compressed air (min. 6 bar).
	Bore for transfer of control air to turning actuator must be open.
Air leakage at lower side of adapter.	Check O-rings of adapter.

## 11. Trouble Shooting

Failure	Remedy
<b>Control Unit CU41 installed on Single seat, Double seal and Double seat valves</b>	
Valve position movement is missing with actuated solenoid valve.	Check if right control unit is installed. Check label in type window of control unit: CU41plus-D4-DC
	Check valve movement with manual at solenoid valve.
	Check cabling between electronic module and solenoid valve.
	Check compressed air (min. 6 bar).
	Check control air connection between the CU41 and the valve actuator.
<b>Control Unit CU43 installed on Double seat valves with SLD</b>	
Valve position movement is missing with actuated solenoid valve.	Check if right control unit is installed. Check label in type window of control unit: CU43plus-M DC CU43plus-D4-DC
	Check valve movement with manual at solenoid valve.
	Check cabling between electronic module and solenoid valve.
	Check compressed air (min. 6 bar).
	Check control air connection between the CU43plus and the DA4 / D4 SL actuator.

---

## 12. IECEX / CCC Certificate of Conformity

---

Please see attachment.

---

## 13. Spare Parts Lists

---

The reference numbers of spare parts for the different control unit designs and adapters are included in the attached spare parts drawings with corresponding lists.

When you place an order for spare parts, please indicate the following data:

- number of parts required
- ID number
- reference number
- parts designation

Data are subject to change.







# IECEx Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.:	<b>IECEx TUN 22.0020X</b>	Page 1 of 3	<u>Certificate history:</u>
Status:	<b>Current</b>	Issue No: 0	
Date of Issue:	2023-09-11		
Applicant:	<b>SPX Flow Technology Germany GmbH</b> Gottlieb-Daimler-Str. 13 59439 Holzwickede <b>Germany</b>		
Equipment:	<b>Control unit resp. Double seat valve resp. Assembly</b>		
Optional accessory:	Control unit type CU4** resp. CU4*plus* resp. Double seat valve type D4* resp. Assembly type D4*-CU4**/CU4*plus* 3G		
Type of Protection:	<b>Equipment protection by increased safety "ec"; Non-electrical equipment for explosive atmospheres</b>		
Marking:	Control unit type CU4** resp. CU4*plus*: <b>Ex ec IIB T4 Gc</b> Double seat valve type D4*: <b>Ex h IIB T6...T4 Gb</b> Assembly type D4*-CU4** / D4*-CU4*plus*3G: <b>Ex ec h IIB T4 Gc</b>		

Approved for issue on behalf of the IECEx  
Certification Body:

**Thomas Heinen**

Position:

**Deputy Head of the IECEx Certification Body**

Signature:  
(for printed version)

**TÜVNORD**

Digital unterschrieben  
von Heinen Thomas  
Datum: 2023.09.11  
12:48:33 +02'00'

Date:  
(for printed version)

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting [www.iecex.com](http://www.iecex.com) or use of this QR Code.



Certificate issued by:

**TÜV NORD CERT GmbH**  
Hanover Office  
Am TÜV 1, 30519 Hannover  
Germany





# IECEx Certificate of Conformity

Certificate No.: **IECEx TUN 22.0020X**

Page 2 of 3

Date of issue: 2023-09-11

Issue No: 0

Manufacturer: **SPX Flow Technology Germany GmbH**  
Gottlieb-Daimler-Str. 13  
59439 Holzwickede  
Germany

Manufacturing locations: **SPX Flow Technology Germany GmbH**  
Gottlieb-Daimler-Str. 13  
59439 Holzwickede  
Germany

**SPX Flow Technology Poland Sp. z o.o.**  
Rolbieskiego 2  
Bydgoszcz 85-862  
Poland

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

## STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

[IEC 60079-0:2017](#) Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

[IEC 60079-7:2017](#) Explosive atmospheres - Part 7: Equipment protection by increased safety "e"  
Edition:5.1

[ISO 80079-36:2016](#) Explosive atmospheres - Part 36: Non-electrical equipment for explosive atmospheres - Basic methods and requirements  
Edition:1.0

[ISO 80079-37:2016](#) Explosive atmospheres - Part 37: Non-electrical equipment for explosive atmospheres - Non electrical type of protection constructional safety "c", control of ignition source "b", liquid immersion "k"  
Edition:1.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

## TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[DE/TUN/ExTR22.0018/00](#)

Quality Assessment Report:

[DE/TUN/QAR18.0002/02](#)



# IECEx Certificate of Conformity

Certificate No.: **IECEx TUN 22.0020X**

Page 3 of 3

Date of issue: 2023-09-11

Issue No: 0

## EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

### Description:

The control unit type CU4\*\* resp. CU4\*plus\* is provided for controlling process valves in hazardous areas, it used as an interface between the process control and the process valve and operates the electrical and pneumatic signals.

The double seat valve type D4\* used to process two different fluids efficiently through the valve simultaneously.

The assembly type D4\*-CU4\*\*/CU4\*plus\*3G is consisted of the electrical control unit CU4\*\* resp. CU4\*plus\* and the non-electrical double seat valve type D4\*.

### Type code, electrical and thermal data:

See attachment to IECEx TUN 22.0020X issue No.0

### SPECIFIC CONDITIONS OF USE: YES as shown below:

1. For the control unit type CU4\*\* resp. CU4\*plus\* the permissible ambient temperature range during operation is  $0^{\circ}\text{C} \leq T_a \leq +55^{\circ}\text{C}$

For the double seat valve type D4\* the permissible ambient temperature range depending on the temperature class is the medium or cleaning solution's temperature and is to be taken from the operating instructions.

For the assembly type D4\*-CU4\*\* / D4\*-CU4\*plus\* 3G the permissible ambient temperature range during operation at the control unit type CU4\*\* resp. CU4\*plus\* is  $0^{\circ}\text{C} \leq T_a \leq 55^{\circ}\text{C}$  and on the double seat valve type D4\* is  $0^{\circ}\text{C} \leq T_a \leq +130^{\circ}\text{C}$

2. Metallic process connection parts of the double seat valve type D4\* have to be included in the local potential equalization.

3. The control unit CU4\*\* resp. CU4\*plus\* and the plastic base of the double seat valve type D4\* have to be installed and used in such a way, that electrostatic charging from operation, maintenance and cleaning is excluded.

4. The base of the control unit CU4\*\* resp. CU4\*plus\* has to be installed in such a way that it is protected from UV-radiation.

5. The connecting and disconnecting of the pluggable electrical circuits inclusive the field wirings is only permitted if no explosive atmosphere exists

6. The control unit type CU4\*\* resp. CU4\*plus\* has to be erected in such a way that a pollution degree 2 or better, according to IEC 60664-1, is achieved.

7. Measures have to be taken, external to the control unit type CU4\*\* resp. CU4\*plus\*, to provide a transient protection that ensures that the rated voltage, connected to the power supply terminals, is not exceeded by more than 40%

8. To prevent the breaking of the springs, the actuator has to be replaced after 250,000 cycles.

### Annex:

[Attachment to IECEx TUN 22.0020X issue No.0.pdf](#)

**Page 1 of 5**  
**Attachment to IECEx TUN 22.0020X issue No.: 0**

**General product information:**

**Description:**

The control unit type CU4\*\* resp. CU4\*plus\* is provided for controlling process valves in hazardous areas, it used as an interface between the process control and the process valve and operates the electrical and pneumatic signals.

The double seat valve type D4\* used to process two different fluids efficiently through the valve simultaneously.

The assembly type D4\*-CU4\*\*/CU4\*plus\*3G is consisted of the electrical control unit CU4\*\* resp. CU4\*plus\* and the non-electrical double seat valve type D4\*.

**Type code:**

Control unit type CU4* *		
		AS-interface
		24V Direct Connect
		1: 1 solenoid
		1N: 1 solenoid, 1NOT element
		3: 3 solenoids

Control unit type CU4* plus*		
		AS-interface
		24V Direct Connect
		24V IO-Link
		1: 1 solenoid
		1N: 1 solenoid, 1NOT element
		3: 3 solenoids

Double seat valve type D4*		
		NSL: Non Seat Lift
		SL: Seat Lift

**Marking:**

Control unit type CU4** resp. CU4*plus*	<b>Ex ec IIB T4 Gc</b>
Double seat valve type D4*	<b>Ex h IIB T6...T4 Gb</b>
Assembly type D4*-CU4** / D4*-CU4*plus*3G	<b>Ex ec h IIB T4 Gc</b>

**Page 2 of 5**  
**Attachment to IECEx TUN 22.0020X issue No.: 0**

**Electrical data:**

For the control unit type CU4\* plus AS-interface

Internal / External	Terminal	Designation	Functional description
External	1	AS-i +	Connection AS-i network (26.5 V...31.6 V d.c.)
External	2	AS-i -	Connection AS-i network (GND)
Internal	3	Z +	Bridge Z+ / PELV E+ (in case of energy supply for solenoid valves via AS-i bus)
Internal	4	Z -	Bridge Z- / PELV E- (in case of energy supply for solenoid valves via AS-i bus)
Internal	5	PELV E+	Separate auxiliary energy PELV 24VDC + (for EMERGENCY STOP function, only)
Internal	6	PELV E-	Separate auxiliary energy PELV 24VDC - (for EMERGENCY STOP function, only)
Internal	7	5 VDC	Voltage supply for proximity switches
Internal	8	Sensor 3	Signal sensor 3 (evaluation of logic table for appropriate valve type) for the control unit type CU4* AS-interface V1 resp. CU4* AS-interface V1 plus
		No sensor	For the control unit type CU4* AS-interface V2 resp. CU4* plus AS-interface V2
Internal	9	GND	Mass potential for sensor voltage supply
Internal	10	5 VDC	Voltage supply for proximity switches
Internal	11	Sensor 4	Signal sensor 4 (evaluation of logic table for appropriate valve type)
Internal	12	GND	Mass potential for sensor voltage supply
Internal	Linear sensor		Linear sensor for valve position detection (for suitable SPX FLOW sensor, only!)
Internal	Y1	--	Solenoid valve 1 (main valve)
Internal	Y2	--	Solenoid valve 2 (upper seat lift)
Internal	Y3	--	Solenoid valve 3 (lower seat lift)
Internal	P	--	Optional connection - pressure sensor
External	Service port	--	Connection serial/USB converter for CU4plus toolbox software

**Page 3 of 5**  
**Attachment to IECEx TUN 22.0020X issue No.: 0**

For the control unit type CU4\* plus 24V Direct Connect:

<b>Internal / External</b>	<b>Terminal</b>	<b>Designation</b>	<b>Functional description</b>
External	1	Power+	Power supply 24V d.c. $\pm$ 20%
External	2	Power-	Power supply 24V d.c. (GND)
Internal	3	O0 Digital Output	PLC input valve status / closed
Internal	4	O1 Digital Output	PLC input valve status / open
Internal	5	O2 Digital Output	PLC input valve status / upper seat lift
Internal	6	O3 Digital Output	PLC input valve status / lower seat lift
Internal	7	SV Digital Output	PLC input service request
Internal	8	I0 Digital Input	PLC output to activate solenoid 1 / main valve
Internal	9	I1 Digital Input	PLC output to activate solenoid 2 / upper seat lift
Internal	10	I2 Digital Input	PLC output to activate solenoid 3 / lower seat lift
Internal	11	+5VDC	Supply voltage for SPX prox. sensor / linear sensor
Internal	12	S	Signal SPX prox. sensor
Internal	13	0V	Potential for SPX prox. sensor / linear sensor
Internal	Linear sensor	Linear sensor	--
Internal	Y1	PWM Output	Solenoid valve 1 (main valve)
Internal	Y2	PWM Output	Solenoid valve 2 (upper seat lift)
Internal	Y3	PWM Output	Solenoid valve 3 (lower seat lift)
External	Service port	--	Connection serial/USB converter for CU4plus toolbox software

For the control unit type CU4\*plus 24V IO-Link:

<b>Internal / External</b>	<b>Terminal</b>	<b>Designation</b>	<b>Functional description</b>
External	1	Power+	Operating voltage + (18 V...30 V d.c.)
External	2	Power-	Operating voltage – or Ground
Internal	3	C / Q	IO-Link Signal
Internal	4...10	--	Not in use
Internal	11	5 VDC	Voltage supply for valve sensor or extension module
Internal	12	Sensor 2	Sensor 2 connection or extension module
Internal	13	GND	Mass potential for sensor supply or extension module
Internal	JST	Sensor 1	Linear Sensor 1
Internal	14	Sensor 2	Sensor Signal 2
Internal	15	GND	Mass potential for sensor supply
Internal	Y1	PWM Output	Solenoid valve 1 (main valve)
Internal	Y2	PWM Output	Solenoid valve 2 (upper seat lift)
Internal	Y3	PWM Output	Solenoid valve 3 (lower seat lift)
External	Service port	--	Connection serial/USB converter for CU4plus toolbox software
Internal	P	Pressure sensor	Pressure measurement of main actuator

**Page 4 of 5**  
**Attachment to IECEx TUN 22.0020X issue No.: 0**

For the control unit type CU4\*24V Direct Connect:

Internal / External	Terminal	Designation	Functional description
External	1	Power+	Power supply 24V d.c. $\pm$ 20%
External	2	Power-	Power supply 24V d.c. (GND)
External	3	O0 Digital Output	PLC input valve status / closed
External	4	O1 Digital Output	PLC input valve status / open
External	5	SV Digital Output	Common
External	6	DI0 Digital Input	PLC output to activate solenoid 1 / main valve
External	7	DI1 Digital Input	PLC output to activate solenoid 2 / upper seat lift
External	8	DI2 Digital Input	PLC output to activate solenoid 3 / lower seat lift
External	9	DI common	Common signal
Internal	10	+5VDC	Supply voltage for SPX prox. sensor / linear sensor
Internal	11	Signal	Signal SPX prox. sensor
Internal	12	GND	Potential for SPX prox. sensor / linear sensor
Internal	13	+5VDC	Supply voltage for SPX prox. sensor / linear sensor
Internal	14	Signal	Signal SPX prox. sensor
Internal	15	GND	Potential for SPX prox. sensor / linear sensor

For the control unit type CU4\*AS-interface:

Internal / External	Terminal	Designation	Functional description
External	1	AS-i +	Connection AS-i network (26.5 V...31.6 V d.c.)
External	2	AS-i -	Connection AS-i network (GND)
Internal	3	5 VDC	Voltage supply for proximity switches
Internal	4	Sensor 1	Signal sensor 1 (closed valve position)
Internal	5	GND	Common potential
Internal	6	5 VDC	Voltage supply for proximity switches
Internal	7	Sensor 2	Signal sensor 2 (open valve position)
Internal	8	GND	Common potential
Internal	10	Normal	Bridge for feedback signal
Internal	11	Feedback	Bridge for feedback signal
Internal	12	Reverse	Bridge for feedback signal

**Page 5 of 5**  
**Attachment to IECEx TUN 22.0020X issue No.: 0**

**Thermal data:**

**Control unit type CU4\*\* resp. CU4\*plus\*:**

Permissible ambient temperature range during operation:  $0\text{ °C} \leq T_a \leq +55\text{ °C}$

**Double seat valve type D4\*:**

The permissible ambient temperature range as process temperature (medium or cleaning solutions temperature) depending on the temperature class is shown in the following table:

Temperature of the medium or cleaning solution	Temperature class
0°C...80°C	T6
0°C...95°C	T5
0°C...130°C	T4

**Assembly type D4\*-CU4\*\* / D4\*-CU4\*plus\* 3G** consisted of the control unit CU4\*\* resp. CU4\*plus\* and the valve type D4\*:

**Control unit type CU4\*\* resp. CU4\*plus\*:**

Permissible ambient temperature range during operation:  $0\text{ °C} \leq T_a \leq +55\text{ °C}$

**Double seat valve type D4\*:**

The permissible ambient temperature range as process temperature (medium or cleaning solutions temperature) is  $0\text{ °C} \leq T_a \leq +130\text{ °C}$

The reverse heat flow from the process beyond the permissible ambient temperature of the control unit CU4\*\* resp. CU4\*plus\* is not possible by construction.

**Specific Conditions of Use**

- For the control unit type CU4\*\* resp. CU4\*plus\* the permissible ambient temperature range during operation is  $0\text{ °C} \leq T_a \leq +55\text{ °C}$   
For the double seat valve type D4\* the permissible ambient temperature range depending on the temperature class is the medium or cleaning solution's temperature and is to be taken from the operating instructions.  
For the assembly type D4\*-CU4\*\* / D4\*-CU4\*plus\* 3G the permissible ambient temperature range during operation at the control unit type CU4\*\* resp. CU4\*plus\* is  $0\text{ °C} \leq T_a \leq 55\text{ °C}$  and on the double seat valve type D4\* is  $0\text{ °C} \leq T_a \leq +130\text{ °C}$
- Metallic process connection parts of the double seat valve type D4\* have to be included in the local potential equalization.
- The control unit CU4\*\* resp. CU4\*plus\* and the plastic base of the double seat valve type D4\* have to be installed and used in such a way, that electrostatic charging from operation, maintenance and cleaning is excluded.
- The base of the control unit CU4\*\* resp. CU4\*plus\* has to be installed in such a way that it is protected from UV-radiation.
- The connecting and disconnecting of the pluggable electrical circuits inclusive the field wirings is only permitted if no explosive atmosphere exists.
- The control unit type CU4\*\* resp. CU4\*plus\* has to be erected in such a way that a pollution degree 2 or better, according to IEC 60664-1, is achieved.
- Measures have to be taken, external to the control unit type CU4\*\* resp. CU4\*plus\*, to provide a transient protection that ensures that the rated voltage, connected to the power supply terminals, is not exceeded by more than 40 %.
- To prevent the breaking of the springs, the actuator has to be replaced after 250,000 cycles.









# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

No.: 2023312304001783

<b>Applicant</b>	SPX(Shanghai) Flow Technology Company Limited
<b>Address</b>	No.666, Fengjin Road, Xidu Industry park, Fengxian District, Shanghai China
<b>Manufacturer</b>	SPX Flow Technology Poland Sp. z o.o.
<b>Address</b>	Stanisława Rolbieskiego 2, Bydgoszcz 85-862, Poland
<b>Production Factory</b>	SPX Flow Technology Poland Sp. z o.o.
<b>Production Address</b>	Stanisława Rolbieskiego 2, Bydgoszcz 85-862, Poland
<b>Product</b>	Control unit
<b>Model/Type</b>	CU4**, CU4*plus*
<b>Ex marking</b>	Ex ec IIB T4 Gc
<b>Reference Standards</b>	GB/T 3836.1-2021, GB/T 3836.3-2021

**Certification mode** Type Test + Initial Factory Inspection + Post-Certification Surveillance

The product(s) is verified and certified according to CNCA-C23-01: 2019 *China Compulsory Certification Implementation Rule on Explosion Protected Electrical Product* and CNEX-C2301-2019 *Guideline of China Compulsory Certification Implementation Rule on Explosion Protected Electrical Product*.

See Annex for the detailed product information (8 pages)

Initial issue date: 2023-10-27

Issued date: 2023-10-27

Valid to: 2028-10-26

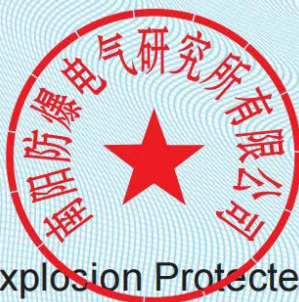
The validity of this certificate is maintained through the regular supervision of the issuing authority during the validity period.

Where any discrepancy arises between the English translation and the original Chinese version, the Chinese version shall prevail.

Director:



Nanyang Explosion Protected Electrical  
Apparatus Research Institute Co.,Ltd.



中国认可  
产品  
PRODUCT  
CNAS C208-P

<http://www.ccc-cnex.com>  
[ccc.china-ex.com](http://ccc.china-ex.com)

Add: No. 20, North Zhongjing Road, Nanyang, Henan, P. R. China P.C.: 473008  
Tel: 0377-63239734 Email: [ccc@cn-ex.com](mailto:ccc@cn-ex.com)

CN0000078DZ





# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION (Annex)

No.: 2023312304001783

Page 1 of 8

## Product information:

1. This certificate covers the following models:

- CU4\*\* , CU4\*plus\*

Nomenclature:

1) CU4\*\*

CU4	*	*
	a	b

a:

- 1: 1 solenoid
- 2: 1 solenoid, 1NOT element
- 3: 3 solenoids

b:

AS-interface  
24V Direct Connect

2) CU4\*plus\*

CU4	*	plus	*
	a		b

a:

- 1: 1 solenoid
- 2: 1 solenoid, 1NOT element
- 3: 3 solenoids

b:

AS-interface  
24V Direct Connect  
24V IO-Link

Electrical data:

Issued date: 2023-10-27

Director:



Nanyang Explosion Protected Electrical  
Apparatus Research Institute Co.,Ltd.



中国认可  
产品  
PRODUCT  
CNAS C208-P





# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

## (Annex)

No.: 2023312304001783

Page 2 of 8

### Control unit type CU4\*AS-interface

Internal / External	Terminal	Designation	Functional description
External	1	AS-i +	Connection AS-i network (26.5 V...31.6 V d.c.)
External	2	AS-i -	Connection AS-i network (GND)
Internal	3	5 VDC	Voltage supply for proximity switches
Internal	4	Sensor 1	Signal sensor 1 (closed valve position)
Internal	5	GND	Common potenzial
Internal	6	5 VDC	Voltage supply for proximity switches
Internal	7	Sensor 2	Signal sensor 2 (open valve position)
Internal	8	GND	Common potenzial
Internal	10	Normal	Bridge for feedback signal
Internal	11	Feedback	Bridge for feedback signal
Internal	12	Reverse	Bridge for feedback signal

### Control unit type CU4\*24V Direct Connect:

Internal / External	Terminal	Designation	Functional description
External	1	Power+	Power supply 24V d.c. $\pm$ 20%
External	2	Power-	Power supply 24V d.c. (GND)
External	3	O0 Digital Output	PLC input valve status / closed
External	4	O1 Digital Output	PLC input valve status / open

Issued date: 2023-10-27

Director:



Nanyang Explosion Protected Electrical  
Apparatus Research Institute Co.,Ltd.



中国认可  
产品  
PRODUCT  
CNAS C208-P





# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

## (Annex)

No.: 2023312304001783

Page 3 of 8

External	5	SV Digital Output	Common
External	6	DI0 Digital Input	PLC output to activate solenoid 1 / main valve
External	7	DI1 Digital Input	PLC output to activate solenoid 2 / upper seat lift
External	8	DI2 Digital Input	PLC output to activate solenoid 3 / lower seat lift
External	9	DI common	Common signal
Internal	10	+5VDC	Supply voltage for SPX prox. sensor / linear sensor
Internal	11	Signal	Signal SPX prox. sensor
Internal	12	GND	Potential for SPX prox. sensor / linear sensor
Internal	13	+5VDC	Supply voltage for SPX prox. sensor / linear sensor
Internal	14	Signal	Signal SPX prox. sensor
Internal	15	GND	Potential for SPX prox. sensor / linear sensor

### Control unit type CU4\* plus AS-interface

Internal / External	Terminal	Designation	Functional description
External	1	AS-i +	Connection AS-i network (26.5 V...31.6 V d.c.)
External	2	AS-i -	Connection AS-i network (GND)

Issued date: 2023-10-27

Director:



Nanyang Explosion Protected Electrical  
Apparatus Research Institute Co.,Ltd.



中国认可  
产品  
PRODUCT  
CNAS C208-P





# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

## (Annex)

No.: 2023312304001783

Page 4 of 8

Internal	3	Z +	Bridge Z+ / PELV E+ (in case of energy supply for solenoid valves via AS-i bus)
Internal	4	Z -	Bridge Z- / PELV E - (in case of energy supply for solenoid valves via AS-i bus)
Internal	5	PELV E+	Separate auxiliary energy PELV 24VDC + (for EMERGENCY STOP function, only)
Internal	6	PELV E-	Separate auxiliary energy PELV 24VDC - (for EMERGENCY STOP function, only)
Internal	7	5 VDC	Voltage supply for proximity switches
Internal	8	Sensor 3	Signal sensor 3 (evaluation of logic table for appropriate valve type) for the control unit type CU4* AS-interface V1 resp. CU4* AS-interface V1 plus
		No sensor	For the control unit type CU4* AS-interface V2 resp. CU4* plus AS-interface V2
Internal	9	GND	Mass potential for sensor voltage supply
Internal	10	5 VDC	Voltage supply for proximity switches
Internal	11	Sensor 4	Signal sensor 4 (evaluation of logic table for appropriate valve type)
Internal	12	GND	Mass potential for sensor voltage supply
Internal	Linear sensor	Linear sensor	Linear sensor for valve position detection (for suitable SPX FLOW sensor, only!)
Internal	Y1	--	Solenoid valve 1 (main valve)
Internal	Y2	--	Solenoid valve 2 (upper seat lift)

Issued date: 2023-10-27

Director:



Nanyang Explosion Protected Electrical  
Apparatus Research Institute Co.,Ltd.







# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

## (Annex)

No.: 2023312304001783

Page 5 of 8

Internal	Y3	--	Solenoid valve 3 (lower seat lift)
Internal	P	--	Optional connection - pressure sensor
External	Service port	--	Connection serial/USB converter for CU4plus toolbox software

### Control unit type CU4\* plus 24V Direct Connect

Internal / External	Terminal	Designation	Functional description
External	1	Power+	Power supply 24V d.c. $\pm$ 20%
External	2	Power-	Power supply 24V d.c. (GND)
Internal	3	O0 Digital Output	PLC input valve status / closed
Internal	4	O1 Digital Output	PLC input valve status / open
Internal	5	O2 Digital Output	PLC input valve status / upper seat lift
Internal	6	O3 Digital Output	PLC input valve status / lower seat lift
Internal	7	SV Digital Output	PLC input service request
Internal	8	I0 Digital Input	PLC output to activate solenoid 1 / main valve
Internal	9	I1 Digital Input	PLC output to activate solenoid 2 / upper seat lift
Internal	10	I2 Digital Input	PLC output to activate solenoid I2 / lower seat lift
Internal	11	+5VDC	Supply voltage for SPX prox. sensor / linear sensor

Issued date: 2023-10-27

Director:



Nanyang Explosion Protected Electrical  
Apparatus Research Institute Co.,Ltd.



中国认可  
产品  
PRODUCT  
CNAS C208-P





# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

## (Annex)

No.: 2023312304001783

Page 6 of 8

Internal	12	S	Signal SPX prox. sensor
Internal	13	0V	Potential for SPX prox. sensor / linear sensor
Internal	Linear sensor	--	--
Internal	Y1	PWM Output	Solenoid valve 1 (main valve)
Internal	Y2	PWM Output	Solenoid valve 2 (upper seat lift)
Internal	Y3	PWM Output	Solenoid valve 3 (lower seat lift)
External	Service port	--	Connection serial/USB converter for CU4plus toolbox software

### Control unit type CU4\*plus 24V IO-Link

Internal / External	Terminal	Designation	Functional description
External	1	Power+	Operating voltage + (18 V...30 V d.c.)
External	2	Power-	Operating voltage – or Ground
Internal	3	C /Q	IO-Link Signal
Internal	4...10	--	Not in use
Internal	11	5 VDC	Voltage supply for valve sensor or extension module
Internal	12	Sensor 2	Sensor 2 connection or extension module
Internal	13	GND	Mass potential for sensor supply or extension module

Issued date: 2023-10-27

Director:



Nanyang Explosion Protected Electrical  
Apparatus Research Institute Co.,Ltd.



<http://www.ccc-cnex.com>  
[ccc.china-ex.com](http://ccc.china-ex.com)

Add: No. 20, North Zhongjing Road, Nanyang, Henan, P. R. China P.C.: 473008  
Tel: 0377-63239734 Email: [ccc@cn-ex.com](mailto:ccc@cn-ex.com)





# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

## (Annex)

No.: 2023312304001783

Page 7 of 8

Internal	JST	Sensor 1	Linear Sensor 1
Internal	14	Sensor 2	Sensor Signal 2
Internal	15	GND	Mass potential for sensor supply
Internal	Y1	PWM Output	Solenoid valve 1 (main valve)
Internal	Y2	PWM Output	Solenoid valve 2 (upper seat lift)
Internal	Y3	PWM Output	Solenoid valve 3 (lower seat lift)
External	Service port	--	Connection serial/USB converter for CU4plus toolbox software
Internal	P	Pressure sensor	Pressure measurement of main actuator

Ex marking: Ex ec IIB T4 Gc

- Producers should organize production in accordance with the technical documents approved by the certification body.

2. Specific conditions of safety use:

- Ambient temperature range: 0°C~+55°C.
- The control unit CU4\*\* resp. CU4\*plus\* have to be installed and used in such a way, that electrostatic charging from operation, maintenance and cleaning is excluded.
- The base of the control unit CU4\*\* resp. CU4\*plus\* has to be installed in such a way that it is protected from UV-radiation.
- The connecting and disconnecting of the pluggable electrical circuits inclusive the field wirings is only permitted if no explosive atmosphere exists.
- The control unit type CU4\*\* resp. CU4\*plus\* has to be erected in such a way that a pollution degree 2 or better, according to GB/T 16935.1, is achieved.

Issued date: 2023-10-27

Director:



Nanyang Explosion Protected Electrical  
Apparatus Research Institute Co.,Ltd.







# CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

## (Annex)

No.: 2023312304001783

Page 8 of 8

- Measures have to be taken, external to the control unit type CU4\*\* resp. CU4\*plus\*, to provide a transient protection that ensures that the rated voltage, connected to the power supply terminals, is not exceeded by more than 40%.

- See instruction for other information.

3. Certificate related report(s):

- Type test report: CQST2309C003

- Factory inspection report: CN2023Q010528

4. Certificate change information: None

Issued date: 2023-10-27

Director:



Nanyang Explosion Protected Electrical  
Apparatus Research Institute Co.,Ltd.







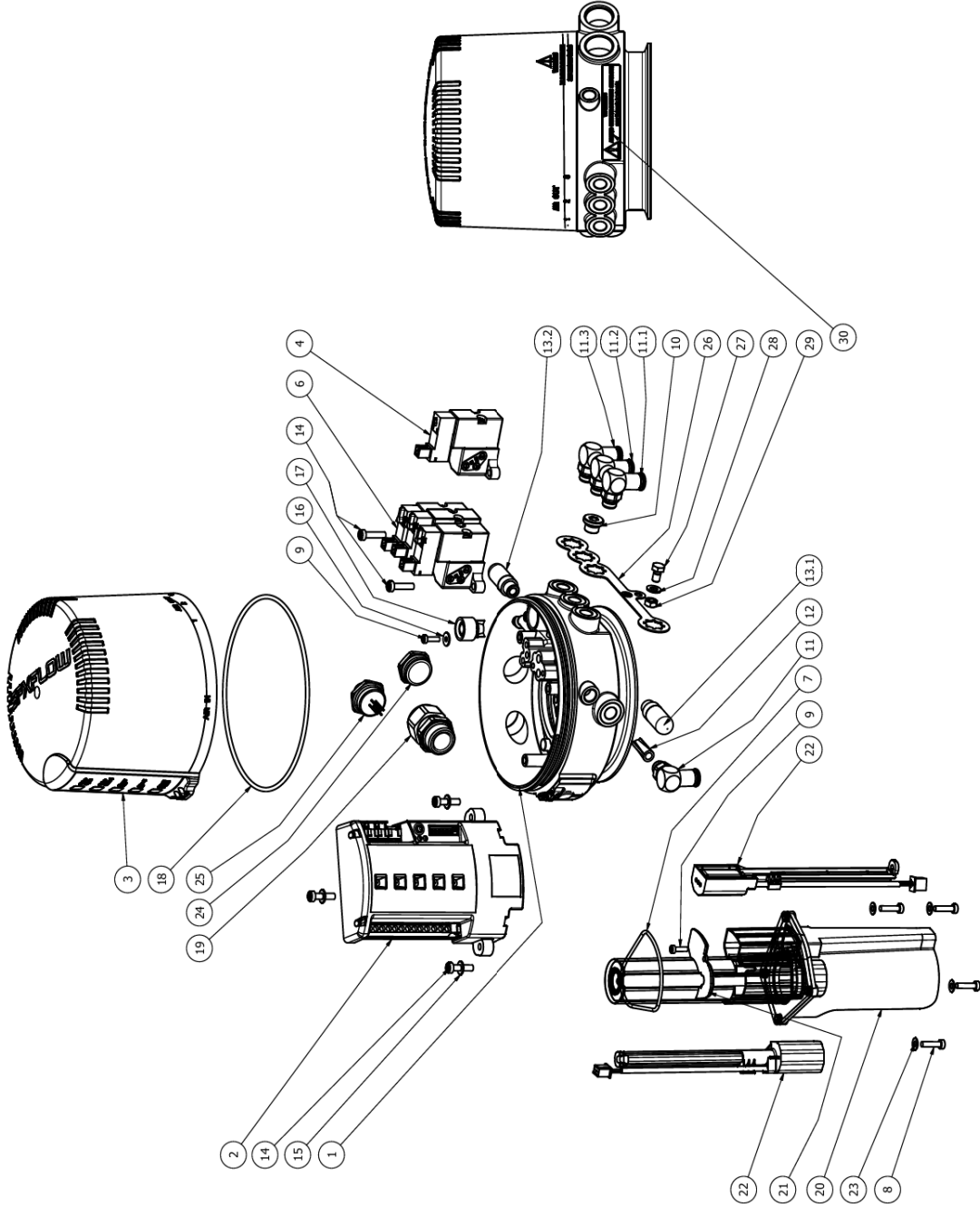
Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc.. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc..

Spare Parts list

CU4plus Direct Connect  
II 3 G Ex ec IIB T4 Gc  
IECEX - Zone 2



Date:	21.06.23	17.01.25	SPX FLOW	
Name:	C.Keil	C.Keil		
Reviewed:	N.Spl	N.Spl		
Date:			Page 1	of 2
Name:			RN ATEX 01.044.7	
Reviewed:				



Information contained in this document is subject to change without notice and does not represent a commitment on the part of SPX FLOW, Inc.. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, for any purpose, without the express written permission of SPX FLOW, Inc..

Spare parts list

CU4plus D4 Direct Connect  
II 3 G Ex ec IIB T4 Gc  
IECEx - Zone 2



Date:	21.06.23	17.01.28		
Name:	C. Keil	C. Keil		
Reviewed:	N. Spl	N. Spl		
Date:				
Name:				
Reviewed:				

SPX FLOW

pos.	Quantity	Description	required in version	Material	Part no.
23	4	Washer A=3,7	CU41+43	A2	H323771
24	1	Blind cap V-Ex M20 x 1,5	CU41+43	PA	H347803
25	1	Female Flange M12x1,5 - 12 Pin	CU41+43-M12	Ms / nickel-plated	H345456
26	1	CU4 equipotential bonding rail	CU41+43	1.4310	H347605
27	1	Hex. screw M5x8	CU41+43	A2	H339700
28	1	Washer l=5,3	CU41+43	A2	H79587
29	1	Hex. Nut M5	CU41+43	A2	H79276
30	1	ATEX CU label - Electrostatic risk	all versions	Tevus	H345151

CU4plus Adapter					
1	CU4plus D4 V2 adapter cpl.	all versions			H341891
Adapter spareparts information to be found in document: RN 01.044.3-1					

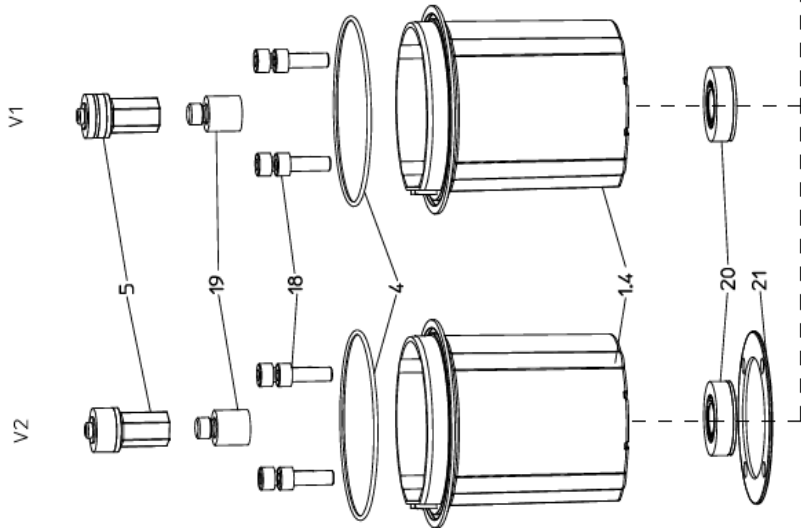
1	CU41 plus D4 DC IECEx Z2	PA6.6 GF30	CU41	PA6.6 GF30 +PA12	H345104
2	CU41 plus D4 DC IECEx Z2 M12	PA6.6 GF30	CU43	PA6.6 GF30 +PA12	H345105
3	CU43 plus D4 DC IECEx Z2	PA6.6 GF30	CU41+43	Zytel 70G33L black	H345100
4	CU43 plus D4 DC IECEx Z2 M12	PA6.6 GF30	CU41+43	Lexan 945AU	H345101
5	CU41 Ex Base M cpl.	PA6.6 GF30 +PA12	CU41	PA6.6 GF30 +PA12	H344231
6	CU43 Ex Base M cpl.	PA6.6 GF30 +PA12	CU43	PA6.6 GF30 +PA12	H344232
7	CU4 plus DC SLD E-Modul	Zytel 70G33L black	CU41+43	Zytel 70G33L black	H343238
8	CU4 cover translucent	Lexan 945AU	CU41+43	Lexan 945AU	H337948
9	Solenoid valve 1 sol.	PPS	CU41	PPS	H319950
10	Solenoid valve 3 sol.	PPS	CU43	PPS	H319952
11	O-ring 45,6 x 2,4	NBR	CU41+43	NBR	H320401
12	Ejot Delta PT screw WN5452 35x14	A2	CU41+43	A2	H320364
13	Ejot Delta PT screw WN5452 30x10	A2	CU41+43	A2	H320363
14	IECEx blind plug CU4	Ms / nickel-plated	CU41	Ms / nickel-plated	H347957
15	Elbow connector G1/8" 6x1	1.4301 / PA	CU41+43	1.4301 / PA	H208825
16	Elbow connector G1/8" 6x1	1.4301 / PA	CU41+43	1.4301 / PA	H208825
17	Elbow connector G1/8" 6x1	1.4301 / PA	CU43	1.4301 / PA	H208825
18	CU4 air filter	PE-porous	CU41+43	PE-porous	H320223
19	Sound reducer	PE-porous	CU41+43	PE-porous	H347802
20	Sound reducer	PE-porous	CU43	PE-porous	H347802
21	Ejot Delta PT screw WN5452 40x16	A2	CU41+43	A2	H320365
22	Washer ø4,3 DIN125	A2	CU41+43	A2	H79576
23	Washer A 3,2 DIN9021	A2	CU41+43	A2	H320404
24	CU4 pressure relief valve	PPS	CU41+43	PPS	H320352
25	O-ring 120,32 x 2,62	NBR	CU41+43	NBR	H320402
26	cable gland M20x1,5 cable ø6-12	PA black	CU41+43	PA black	H344599
27	CU4plus sensortower D4 V2	PET	CU41+43	PET	H339461
28	Cap CU4plus sensor tower	Noryl 731 S	CU41+43	Noryl 731 S	H339432
29	CU4plus Sensor V2	Noryl 731 S	CU41+43	Noryl 731 S	H339463

# Control Unit CU4 plus Adapter

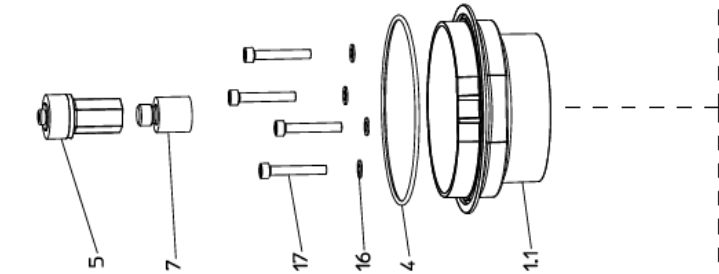
Spare Parts list

Date:	19.04.24	19.12.24	SPX FLOW	
Name:	C.Keil	C.Keil		
Reviewed:	N.Spl	N.Spl		
Date:			Page	1 of 8
Name:			RN 01.044.3-1	
Reviewed:				

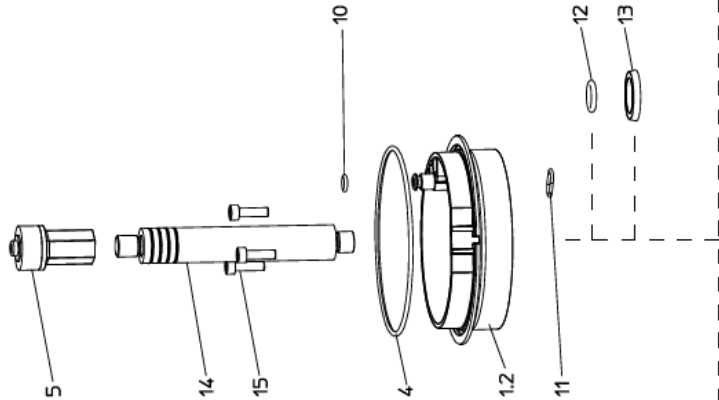
CU4Plus D4 Adapter



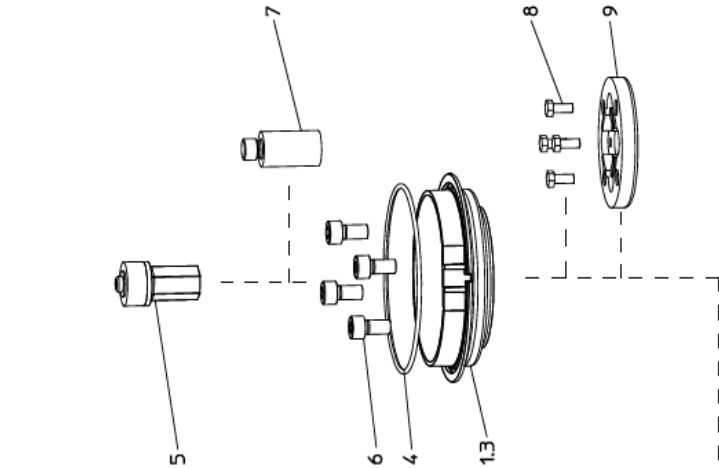
CU4Plus M - Adapter



CU4Plus T - Adapter



CU4Plus S - Adapter



10

Date:	19.04.24		
Name:	C. Keil		
Reviewed:	N. Spl		

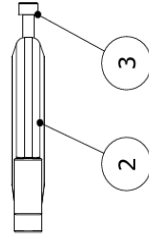
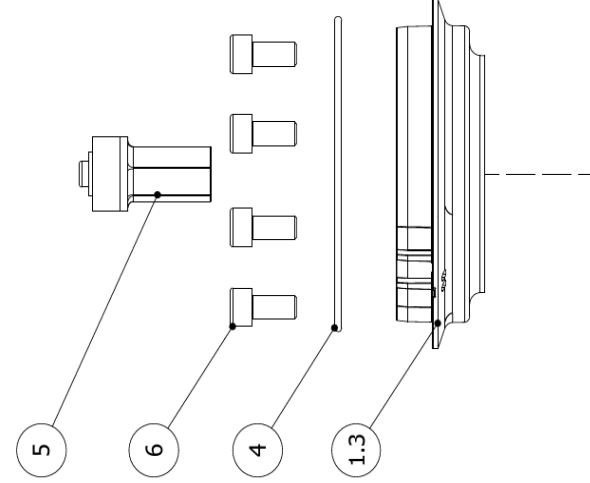
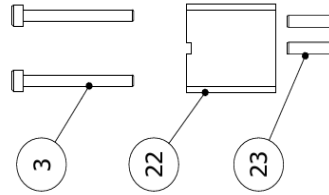
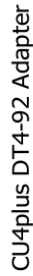
Name:	C.Keil
-------	--------

--	--

# Control Unit CU4 plus Adapter

--	--

**RN 01.044.3-1**





















# APV CU4\*plus\* 24V Direct Connect Control Unit

FOR IECEx ZONE 2 GAS APPLICATIONS

## SPX FLOW

### Design Center / Manufacturer

Gottlieb-Daimler-Straße 13  
D-59439 Holzwickede, Germany  
P: (+49) (0) 2301-9186-0  
F: (+49) (0) 2301-9186-300

## SPX FLOW

### Production

Stanisława Jana Rolbieskiego 2  
PL- Bydgoszcz 85-862, Poland  
P: (+48) 52 566 76 00  
F: (+48) 52 525 99 09

SPX FLOW reserves the right to incorporate the latest design and material changes without notice or obligation.

Design features, materials of construction and dimensional data, as described in this manual, are provided for your information only and should not be relied upon unless confirmed in writing. Please contact your local sales representative for product availability in your region.

For more information visit [www.spxflow.com](http://www.spxflow.com).

ISSUED 06/2023 - Original Manual

COPYRIGHT ©2023 SPX FLOW, Inc.