Interface and Supply module

IPC 3x0i / PSC 3x0 i

DMT 03 ATEX E 027

Revision 8.1

Year of manufacture: see type plate

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The mounting/dismantling, installation, operation and maintenance may only be carried out by qualified personnel in the sense of the automation industry, taken the respective regulations and the operating instructions of the PSC 3x0i / IPC 3x0i.

During installation, the technical data and connection values must always be heeded.

Technical data and connected load values must on all accounts be observed during installation. The housing must not be opened, otherwise adherence to electrical specifications will not be ensured and the guarantee will be annulled.

Validity of the assembly and operating manual

- This assembly and operating manual applies to all PSC 3x0i / IPC 3x0i interface and supply modules.
- Information on the current version and extensions can be obtained from your IBS sales centre.
- The manufacturer cannot be held liable for damage resulting from improper or unauthorized handling. The device must not be converted or modified, otherwise the certification for use and the guarantee will be annulled.

Operational safety

- The devices are manufactured at our plant certified in accordance with ISO 9001 / ATEX and therefore fulfil the associated requirements.
- The PSC 3x0i / IPC 3x0i supply or interface modules fulfil the requirements of the IP20 protective system.
- The device might pose hazards if handled in an improper or unauthorized manner. Observe all instructions rigorously.

Technical advancement

- The manufacturer reserves the right to adapt technical data to the prevailing state-of-the-art without special announcement.

Repairs

Devices must only be repaired by **IBS BatchControl GmbH**; otherwise their intrinsic safety is endangered.

Any device sent to **IBS BatchControl GmbH** for the purpose of repair must be accompanied by a note describing the fault.

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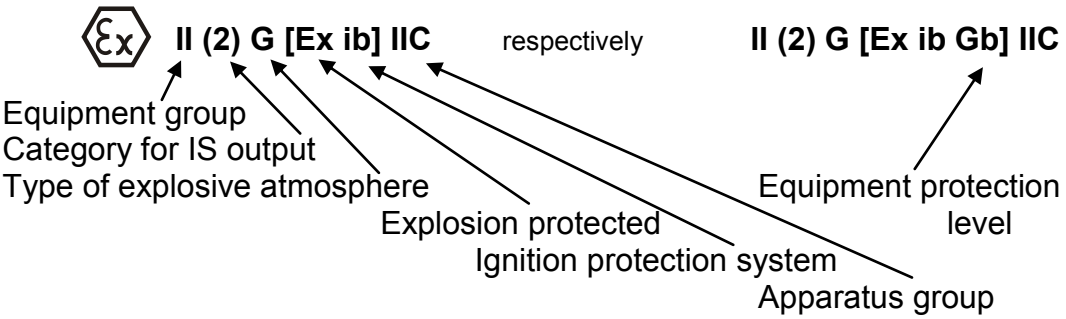
2 System description

The supply and interface assembly IPC 3x0i or PSC 3x0i is used for the dc-insulated supply and interface connection of intrinsically safe operating equipment in a potential explosive atmosphere. The PSC 3x0i is equipped with up to two dc-insulated intrinsically safe supply circuits, whereas the IPC 3x0i has an intrinsically safe current loop interface with dc-insulation instead of the 2nd supply circuit for the CTR, BGI and Batching Master. However, it can also be used to supply other intrinsically safe devices such as valves. Observe the safety data of the connected assemblies.

The input and the outputs are galvanically isolated from each other.

2.1 Identification



2.2 Safety instructions

If the device no longer appears to operate reliably or safely, it must be deactivated and safeguarded against inadvertent activation. Reasons for this type of situation include:

- Visible damage to the device
- Electrical malfunction
- Extended storage at temperatures over 85°C
- High stress during transport

Before the device is put into operation again, it is absolutely necessary to carry out a proper unit test in accordance with IEC 61010, Part 1. To ensure safety and adherence to guarantee terms, this test must be performed by the manufacturer.

2.3 Intended use

The assembly PSC 3x0i with up to two supply circuits is used to supply intrinsically safe operating equipment.

The assembly IPC 3x0i with one supply circuit and one TxD/RxD interface circuit is used for the supply and interface of one piece of intrinsically safe operating equipment.

Only the supply circuit 1 (terminals 1 + 2) supply circuit 2 (PSC 3x0i terminals 6 + 8) and the interface circuit (IPC 3x0i terminals 5, 6 + 7) comply with the ignition protection system designated "Intrinsic safety" of category "ib".

The maximum permissible ambient temperature range of -20°C to +70°C must not be exceeded.

Only the intrinsically safe supply circuits and intrinsically safe interface circuit may be routed through the potentially explosive areas. Only certified intrinsically safe circuits may be connected to the two circuits.

Before initial operation, proof of intrinsic safety must be brought for the connection of the circuits with teh operating equipment including the cables.

The EC type approval certificate and the requirements of EN60079-14: 1996 et seq. must be heeded.

3 Types of devices

Type of device	Power Supply 1	Power Supply 2	Interface
PSC300i-1	Ex ib IIC 24V	not available	not available
PSC300i-2	Ex ib IIC 24V	Ex ib IIC 24V	not available
PSC310i-1	Ex ib IIC 19V 50mA	not available	not available
PSC310i-2	Ex ib IIC 19V 50mA	Ex ib IIC 19V 50mA	not available
PSC320i-1	Ex ib IIC 6V	not available	not available
PSC320i-2	Ex ib IIC 6V	Ex ib IIC 6V	not available
PSC330i-2	Ex ib IIC 24V	Ex ib IIC 6V	not available
PSC340i-1	Ex ib IIC 19V 32mA	not available	not available
PSC340i-2	Ex ib IIC 19V 32mA	Ex ib IIC 19V 32mA	not available
IPC300i	Ex ib IIC 24V	not available	Ex ib IIC
IPC310i	Ex ib IIC 19V 50mA	not available	Ex ib IIC
IPC320i	Ex ib IIC 6V	not available	Ex ib IIC

4 Installation and initial operation

4.1 Assembly of the IPC 3x0i / PSC 3x0i

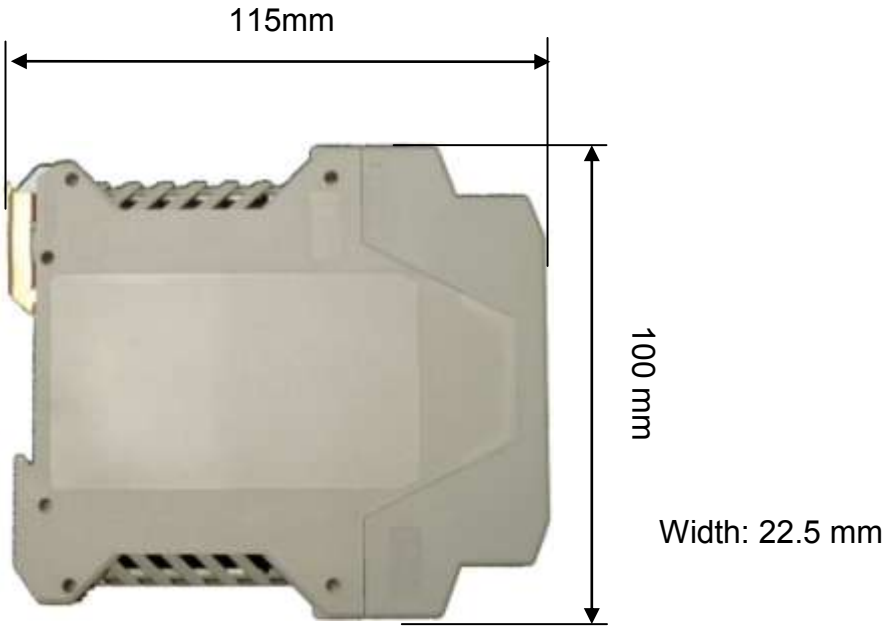
The assemblies IPC 3x0i / PSC 3x0i are respective operating equipment for use outside potentially explosive areas.

4.2 IP20 protective system

The compact top hat DIN rail housing provides the IP20 protective system required in accordance with IEC publication 144.

4.3 Mounting position

The assemblies must be mounted on a horizontal DIN rail.



4.4 Arrangement

Connecting elements for the external, intrinsically safe circuits are to be arranged in compliance with paragraph 6.2.1 of EN 60079-11 so that bare conducting parts are at least 50 mm away from the connecting elements and bare conductors of circuits not intrinsically safe, or isolated from these items by a partitioning wall.

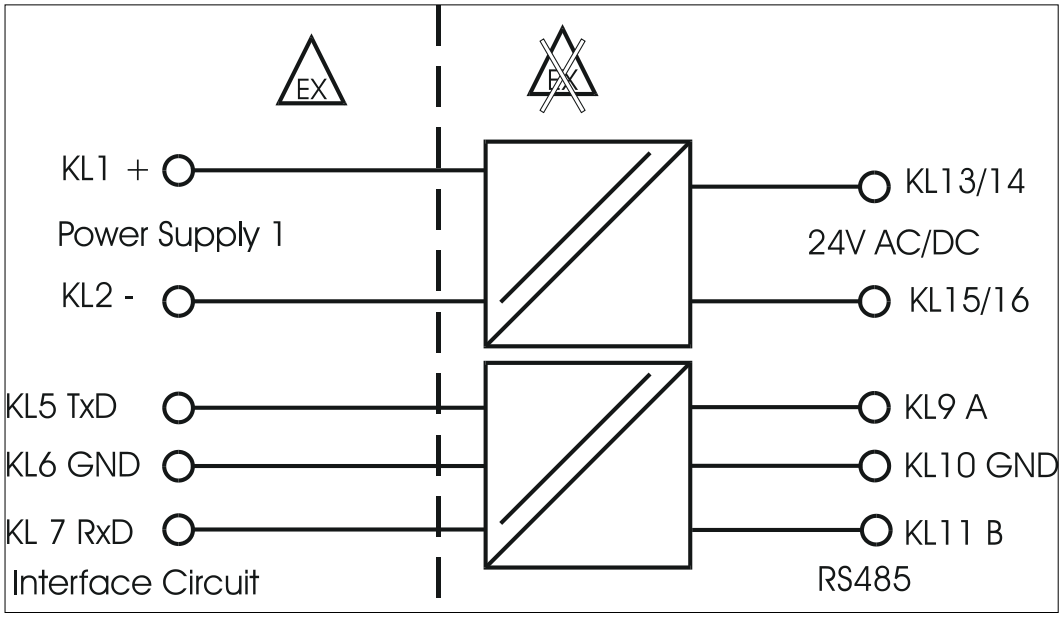
4.5 Terminals

Blue terminals are provided for connecting intrinsically safe circuits. They are clearly marked [Ex ib] IIC on the front plate.

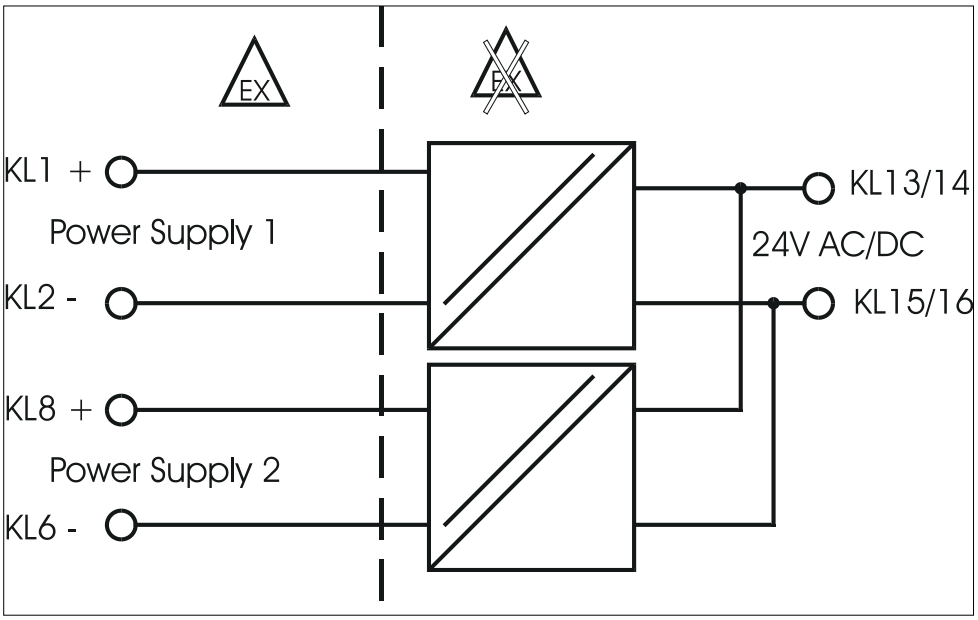
The terminal assignment for the auxiliary power is also clearly identified on the front plate.

The screwable terminals provide wiring space for wire cross-sections of up to 2.5 mm².

4.6 Block diagram IPC 3x0 i



4.7 Block diagram PSC 3x0 i



4.7.1 Non-intrinsically safe power supply circuit

The PSC3x0i and IPC3x0i are supplied with auxiliary power via terminals 13/14 and 15/16.

Terminal 13/14 and Terminal 15/16 The following maximum supply voltages may be applied:		
Nominal voltage:	U =	DC 20 - 32 V AC 18 – 28 V
Maximum voltage for safety reasons:	U_m =	AC 250V
Maximum power consumption:	P_{max} =	3.4 W

4.7.2 Non-intrinsically safe RS485 interface circuit

A supervisor system with RS485 interface is connected via terminals 9 to 11.

Terminals 9, 11 and 10 The following maximum supply voltages may be applied:		
Nominal voltage:	U =	DC 6 V
Nominal current:	I =	100 mA
Maximum voltage for safety reasons:	U_m =	48V DC

The RS485 interface is not terminated. To terminate the interface at the end of an RS485 link, carefully open the housing with a screwdriver. The upper section can then be withdrawn together with its circuit board from the lower section.

If the interface has to be terminated, both jumpers need to be switched over (diagram on the right).

4.7.3 Supply circuit 1

Supply circuit 1 is galvanically isolated.

Terminal 1 (+) and Terminal 2 (-) Ignition protection system Ex ib IIC intrinsic safety: trapezoid output characteristics					
		PSC300i-1 PSC300i-2 PSC330i-2 IPC300i	PSC310i-1 PSC310i-2 IPC310i	PSC340i-1 PSC340i-2	PSC320i-1 PSC320i-2 IPC320i
Voltage **Current** **Power**	U_0 I_0 P_0	DC 24 V 50 mA 1.2 W	DC 19 V 50 mA 1 W	DC 19 V 32 mA 591 mW	DC 6 V 100 mA 600 mW
For group IIC	C_O L_O	125 nF 9 mH	258 nF 9 mH	258 nF 25 mH	40 µF 2 mH
For group IIB	C_O L_O	930 nF 30 mH	1580 nF 30 mH	1580 nF 80 mH	1000 µF 8 mH
Effective internal inductance: Negligible **Effective internal capacitance: Negligible**					

4.7.4 Supply circuit 2

Supply circuit 2 is galvanically isolated.

Terminal 6 (+) and Terminal 8 (-) Ignition protection system Ex ib IIC intrinsic safety: trapezoid output characteristics					
		PSC300i-2	PSC310i-2	PSC340i-2	PSC320i-2 PSC330i-2
Voltage **Current** **Power**	U_0 I_0 P_0	DC 24 V 50 mA 1.2 W	DC 19 V 50 mA 1 W	DC 19 V 32 mA 591 mW	DC 6 V 100 mA 600 mW
For group IIC	C_O L_O	125 nF 9 mH	258 nF 9 mH	258 nF 25 mH	40 µF 2 mH
For group IIB	C_O L_O	930 nF 30 mH	1580 nF 30 mH	1580 nF 80 mH	1000 µF 8 mH
Effective internal inductance: Negligible **Effective internal capacitance: Negligible**					

4.7.5 Interface circuit

The interface circuit is galvanically isolated.

Terminals 5, 6 and 7 Ignition protection system Ex ib IIC intrinsic safety: trapezoid output characteristics			
		IPC3x0i	
Voltage **Current** **Power**	U_0 I_0 P_0	DC 13.4 V 50 mA 474 mW	
For group IIC	C_O L_O	880 nF 9 mH	
For group IIB	C_O L_O	5500 nF 30 mH	
Effective internal inductance: Negligible **Effective internal capacitance: Negligible**			

4.7.6 Potential equalisation

Terminal 12 PE	
Connect PE to terminal 12.	Connect the standard DIN EN 50022 rail snapped on the housing to the potential equalisation terminal, as well.

5 Declaration of Conformity

Konformitätserklärung
Declaration of Conformity

IBS BatchControl GmbH
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erklärt in alleiniger Verantwortung, dass das Produkt
assumes sole responsibiliy in stating that the product

IPC 3x0i / PSC 3x0i

EG-Baumusterprüfbescheinigung Nummer:
EC-Type Examination Certificate Number: **DMT 03 ATEX E 027**

mit den Vorschriften folgender europäischer Richtlinien übereinstimmt:
conform with the prescription of following european directives:

EMV-Richtlinie / *EMC-Directive* 2004/108/EG
Ex-Richtlinie / *Ex-Directive* 94/9/EG

Die Übereinstimmung wird nachgewiesen durch die Einhaltung folgender Normen oder normativer Dokumente:
The conformity are verified under observance of following standards or standard documents:

EN 60079-0: 2009
EN 60079-11: 2007
EN 61000-6-2:1999
EN 61000-4-2:2001
EN 61000-4-3:2001
EN 61000-4-4:2001
EN 61000-4-5:2001
EN 61000-4-6:2001
EN 55011:1998 + A1:1999 + A2:2002

	Benannte Stelle *Notified body*	Kenn-Nummer: *Identification Number:*
94/9/EG	EXAM	0158
ISO 9001:2008	DEKRA	

Kerpen, 15.02.2011

Entwicklung / Development
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