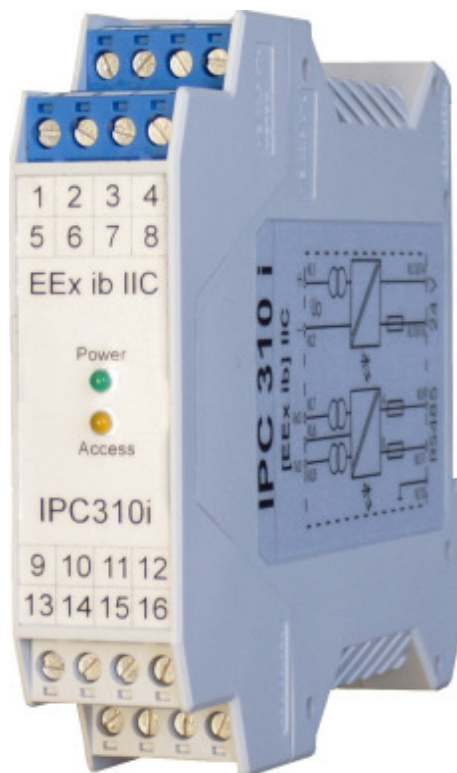


Interface and supply module

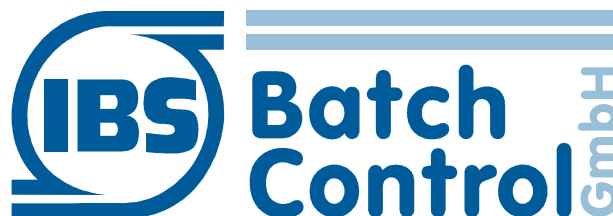
IPC 310 i



DMT 03 ATEX E 027

Revision 5.1

Year of manufacture: see type plate



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Attention!

Assembly, disassembly, installation, operation and maintenance must only be performed by personnel qualified according to the automation industry requirements and acting in compliance with applicable regulations and the operating manual for the IPC 310i.

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 IPC 310i 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 IPC 310i supply module fulfils 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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1. System description

The IPC 310i is an interface and supply module developed 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.

1.1. Identification in accordance with guideline 94/9/EG

CE 0158  **II (2) G**

Device group

Related equipment with external circuits for connection to devices of category 2

For explosive mixtures of air and flammable gases, vapours or mist

Identification of the ignition protection system: **[EEx ib] IIC**

Related equipment in compliance with European standard

Ignition protection system

1.2. 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 DIN EN 61010, Part 1. To ensure safety and adherence to guarantee terms, this test must be performed by the manufacturer.

1.3. Intended use

The IPC 310i module is intended to supply intrinsically safe equipment and reliably isolate the serial interface.

The circuits (terminals 1 + 2 and 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 $+70^{\circ}\text{C}$ must not be transgressed.

Only the supply circuit and intrinsically safe interface circuit may be routed into explosive areas. These two circuits must only be connected to certified, intrinsically safe circuits.

Before start-up, it is necessary to verify the intrinsic safety of connections - including lines - between the circuits and equipment.

The EC prototype test certificate and regulations of EN60079-14: 1996 contd. are to be observed.

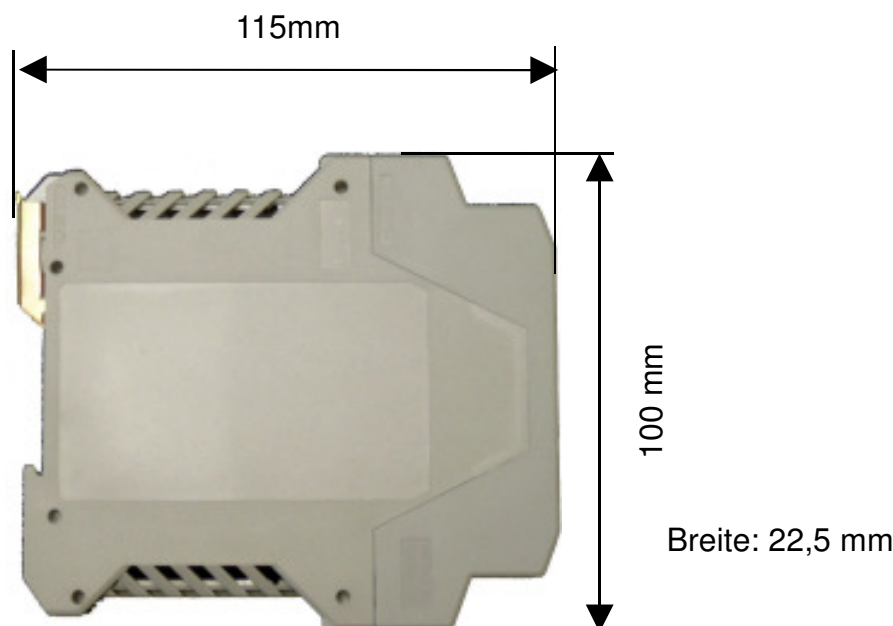
2. Installation and start-up

2.1. Assembly of the IPC 310i

The IPC 310i module comprises related equipment intended for use outside explosive areas.

2.2. IP20 protective system

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



2.3. Arrangement

Connecting elements for the external, intrinsically safe circuits are to be arranged in compliance with para 6.3.1 of EN 50020 so that bare components 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.

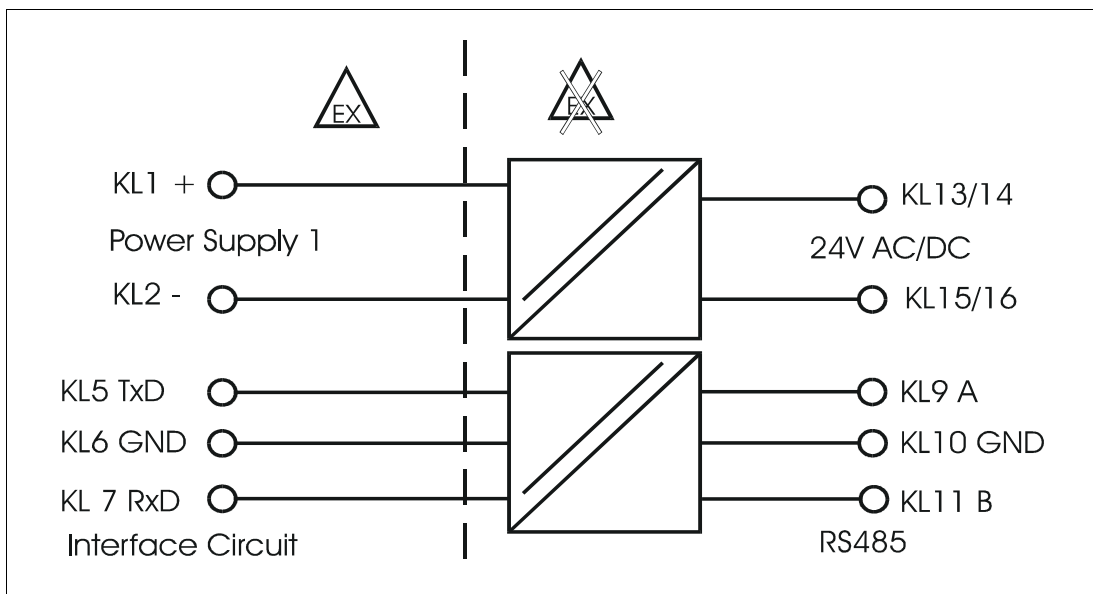
2.4. Terminals

Blue terminals are provided for connecting intrinsically safe circuits. These terminals are clearly identified with [EEx 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.

2.5. Block diagram



2.5.1. Voltage supply

The voltage supply feeds the entire electronic system.

Terminal 13/14	
Terminal 15/16	

The following maximum supply voltages may be applied:

Rated voltage: $U = 20 - 32 \text{ V DC}$
 $18 - 28 \text{ V AC}$

Maximum voltage for safety reasons: $U_m = 250 \text{ V AC}$

Maximum power consumption: $P_{max} = 3,4 \text{ W}$

2.5.2. Not intrinsically safe interface circuit

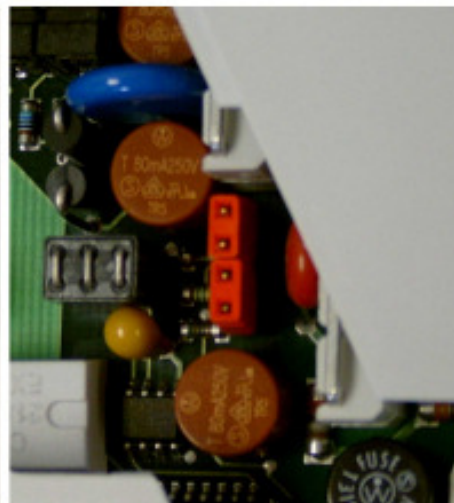
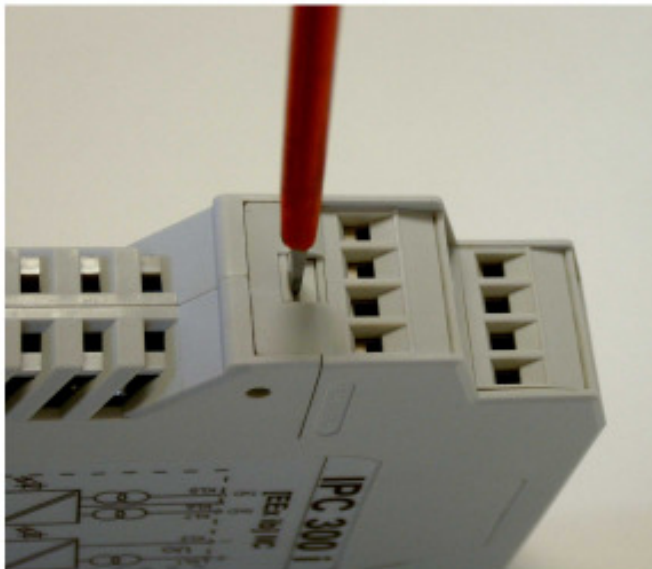
The RS485 interface of the higher-level system is connected at terminals 9 to 11.

Terminal 9	A
Terminal 10	GND
Terminal 11	B

The following maximum supply voltages may be applied:

U	=	6 V DC
U_m	=	48 V DC
I	\leq	100 mA

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).

2.5.3. Supply circuit 1

Supply circuit 1 is galvanically isolated.

Terminal 1	+	Supply circuit 1
Terminal 2	GND	Supply circuit 1

Ignition protection system	
EEx ib IIC intrinsic safety:	
trapeziform output characteristics	
U_0	19 V
I_0	50 mA
P_0	1 W
C_0	258 nF
L_0	9 mH
Effective internal inductance:	
Negligible	
Effective internal capacitance:	
Negligible	

2.5.4. Interface circuit

The interface circuit is galvanically isolated.

Terminal 5	TxD
Terminal 6	GND
Terminal 7	RxD

Ignition protection system	
EEx ib IIC intrinsic safety:	
trapeziform output characteristics	
U_0	13,4 V DC
I_0	49 mA
P_0	472 mW
C_0	880 nF
L_0	9 mH
Effective internal inductance:	
Negligible	
Effective internal capacitance:	
Negligible	

2.5.5. Potential equalisation

Connect PE to terminal 12.

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

3. Declaration of Conformity

Konformitätserklärung Declaration of Conformity

IBS BatchControl GmbH
Marie-Curie-Str. 8
50170 Kerpen



erklärt in alleiniger Verantwortung, dass das Produkt
assumes sole responsibility in stating that the product

IPC 300i / IPC 310i

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

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 50014 : 2000
EN 50020 : 2003

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 <i>Notified body</i>	Kenn-Nummer: <i>Identification Number:</i>
94/9/EG	EXAM	0158
ISO 9001:2000	TÜV NORD	

Kerpen, 29.02.2008


Entwicklung / Development
i. V. Karl Fasen