

# CERTIFICATE

## (1) EU-Type Examination

(2) **Equipment or protective systems intended for use in potentially explosive atmospheres - Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number: **DEKRA 16ATEX0014 X** Issue Number: **2**

(4) Product: **Ultrasonic Flowmeter type UIM Series Flowmeter**

(5) Manufacturer: **Transus Instruments BV**

(6) Address: **Bloesemlaan 4, 3897 LN Zeewolde, The Netherlands**

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) DEKRA Certification B.V., Notified Body number 0344 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential test report number NL/DEK/ExTR16.0010/02.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

**EN IEC 60079-0 : 2018**

**EN 60079-11 : 2012**

except in respect of those requirements listed at item 18 of the Schedule.

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:



**II 1 G Ex ia IIC T4 Ga**

Date of certification: 26 August 2020

DEKRA Certification B.V.



R. Schuller  
Certification Manager

(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate DEKRA 16ATEX0014 X**

Issue No. 2

(15) **Description**

The UIM Series Flowmeter consists of an Electronic Unit and a flowmeter body. The electronic unit consists of a main electronic board, various optional I/O boards, an LC display and keypad, and is housed in an aluminium or stainless steel enclosure. The electronic unit connects to up to eight ultrasonic transducers and an optional pressure and/or temperature sensor that may be mounted in the flowmeter body.

Ambient temperature range -40 °C to +60 °C.

Process temperature range -40 °C to +80 °C. Or higher than 80 °C, provided that the Electronics Unit is mounted at sufficient distance from the process pipe to negate the influence of heating from the process. The transducers may be connected by cabling of up to 3 meter length.

The maximum temperature process temperature for each temperature class shall then be limited per the table below.

Temperature class	Maximum process temperature
T1	445 °C
T2	295 °C
T3	195 °C
T4	130 °C

**Nomenclature**

UIM Electronics assembly model number		
UIME-AB-C-DEFGH		
A	x	Number of paths (1 to 4)
B	x	Application type
C	x	Meter size
D - SLOT1	0	Not installed
	1	RS485 Option board (01-0020)
	2	RS485 IO 4..20mA option board (01-0202)
	3	Dual RS485 IO option board (01-0251)
E - SLOT2	0	Not installed
	1	P/T option board (01-0022)
	2	4..20mA HART option board (01-0203)
	3	Dual RS485 IO option board (01-0251)
F – LCD	0	Not installed
	1	Installed
	2	SS316 enclosure with display/keypad
G	1	M20 cable gland entries
	2	1/2" NPT cable gland entries
H	x	options, not affecting explosion safety

(13) **SCHEDULE**

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Issue No. 2

**Electrical data**

For connection details and electrical data, refer to the control drawing 01\_0198 (see attachment).

**Installation instructions**

The instruction manual and the control drawing 01\_0198 shall be followed in detail to assure proper and safe operation.

(16) **Report Number**

No. NL/DEK/ExTR16.0010/02.

(17) **Specific conditions of use**

The transducer must be installed in an enclosure that protects the front face of the transducer against impact. This additional enclosure may be the process pipe.

Precautions shall be taken to minimize the risk from electrostatic discharge of painted parts.

For Flowmeter electronic enclosures made of aluminium only:

If it is mounted in an area where the use of EPL Ga equipment is required, it must be installed such, that, even in the event of rare incidents, ignition sources due to impact and friction sparks are excluded.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at item (9).

(19) **Test documentation**

As listed in Report No. NL/DEK/ExTR16.0010/02.

(20) **Certificate history**

Issue 0 - 219033000	initial certificate
Issue 1 - 222055800	some constructional changes, Ui changed and manufacturer address
Issue 2 - 224254600	evaluation to EN IEC 60079-0 : 2018, Dual RS485 Option Board added, constructional changes and optional remote installation

FUNCTION	TERMINALS	U <sub>i</sub> V	I <sub>i</sub> mA	P <sub>i</sub> mW	C <sub>i</sub> μF	L <sub>i</sub> mH	U <sub>o</sub> V	I <sub>o</sub> mA	P <sub>o</sub> mW	C <sub>o</sub> μF	L <sub>o</sub> mH
<b>STANDARD I/O</b>											
LOOP POWER SUPPLY	PWR0+ PWR0-	29	100	670	0.03	0.3	---	---	---	---	---
FREQUENCY/PULSE OUTPUT	D0A D0B	29	100	670	0.03	0.3	---	---	---	---	---
<b>SLOT 1, RS485 Option board (01-0020)</b>											
POWER SUPPLY	PWR1+ PWR1-	28	100	670	0.03	0.3	---	---	---	---	---
RS485 COMMUNICATION	D1A D1B	4.2	250	250	20	neg	4.12	150	150	---	---
FREQUENCY/PULSE OUTPUT	D2A D2B	15	100	250	0.03	0.02	---	---	---	---	---
FREQUENCY/PULSE OUTPUT	D3A D3B	15	100	250	0.03	0.02	---	---	---	---	---
<b>SLOT 1, RS485 IO 4..20mA option board (01-0202)</b>											
LOOP POWER SUPPLY /4..20mA	PWR1+ PWR1-	29	100	670	0.03	0.3	---	---	---	---	---
RS485 COMMUNICATION	D1A D1B	4.2	250	250	20	neg	4.12	150	150	---	---
FREQUENCY/PULSE OUTPUT	D2A D2B	15.5	100	250	0.03	0.02	---	---	---	---	---
FREQUENCY/PULSE OUTPUT	D3A D3B	15.5	100	250	0.03	0.02	---	---	---	---	---
<b>SLOT 1, Dual RS485 IO option board (01-0251)</b>											
LOOP POWER SUPPLY /4..20mA	PWR1+ PWR1-	29	100	670	0.03	0.3	---	---	---	---	---
RS485 COMMUNICATION - PORT 1	D1A D1B	4.2	250	250	20	neg	4.12	150	150	---	---
FREQUENCY/PULSE OUTPUT	D2A D2B	15.5	100	250	0.03	0.02	---	---	---	---	---
FREQUENCY/PULSE OUTPUT	D3A D3B	15.5	100	250	0.03	0.02	---	---	---	---	---
RS485 COMMUNICATION - PORT 2	D4A D4B	4.2	250	250	20	neg	4.12	150	150	---	---
PRESSURE / TEMPERATURE	PRESS TEMP	REFER TO SAFETY INSTRUCTIONS FOR INTERCONNECTION TO APPROVED EQUIPMENT CABLE LENGTH NOT TO EXCEED 2 meter (6.7ft)									
<b>SLOT 2, P/T option board (01-0022)</b>											
PRESSURE	PRESS1 PRESS2 PRESS3 PRESS4	REFER TO SAFETY INSTRUCTIONS FOR INTERCONNECTION TO APPROVED EQUIPMENT CABLE LENGTH NOT TO EXCEED 2 meter (6.7ft)									
TEMPERATURE	TEMP1 TEMP2 TEMP3 TEMP4	REFER TO SAFETY INSTRUCTIONS FOR INTERCONNECTION TO APPROVED EQUIPMENT CABLE LENGTH NOT TO EXCEED 2 meter (6.7ft)									
<b>SLOT 2, 4..20mA HART option board (01-0203)</b>											
POWER SUPPLY	LPWR2+ LPWR2-	29	100	670	0.03	0.3	---	---	---	---	---

UIM Electronics assembly model number	
UIME-AB-C-DEFGH	
A	x Number of paths (1 to 4)
B	x Application type
C	x Meter size
D - SLOT 1	0 Not installed 1 RS485 Option board (01-0020) 2 RS485 IO 4..20mA option board (01-0202) 3 Dual RS485 IO option board (01-0251)
E - SLOT 2	0 Not installed 1 P/T option board (01-0022) 2 4..20mA HART option board (01-0203) 3 Dual RS485 IO option board (01-0251)
F - LCD	0 Not installed 1 Installed 2 SS316 enclosure with display/keypad
G	1 M20 cable gland entries 2 1/2" NPT cable gland entries
H	x options, not affecting explosion safety

**LOCATE THE UIM MODEL NUMBER ON THE NAMEPLATE OF THE ENCLOSURE AND REFER TO TABLE FOR SPECIFIC INTRINSIC SAFETY PARAMETERS**


Ex ia IIC T4 Ga  
-40°C ≤ Tamb ≤ +60°C  
IECEx DEK16.0007X

**CE 0344**  
 II 1 G Ex ia IIC T4 Ga  
-40°C ≤ Tamb ≤ +60°C  
DEKRA 16ATEX0014 X

UNLESS OTHERWISE SPECIFIED:  
DIMENSIONS ARE IN MILLIMETERS  
SURFACE FINISH: Ra0.8  
TOLERANCES: ACC. TO ISO/DIN 2768-mK

DEBUR AND  
BREAK SHARP  
EDGES

DO NOT SCALE DRAWING REVISION DWG A-08  
REVISION PRT/ASM

			
NAME	SIGNATURE	DATE	MATERIAL:
DRAWN		3-6-2020	
DATE PRINTED: 18-6-2020	WEIGHT:	SCALE:1:1	

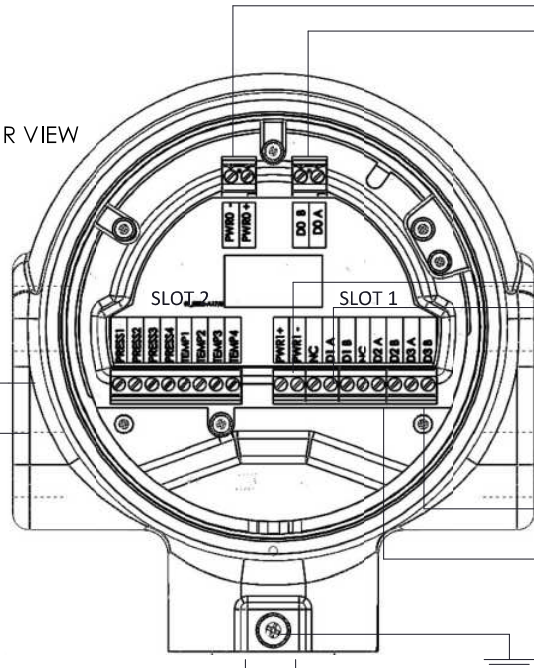
TITLE:  
**Control drawing  
ATEX/IECEx**

DWG NO. **01\_0198** A3

SHEET 1 OF 4

SLOT 1 FITTED WITH RS485 option board (01-0020)  
 SLOT 2 FITTED WITH PT option board (01-0022)

REAR VIEW



Ultrasonic transducers  
 Up to 4 pairs

FLOWBODY

Optional Ex ia  
 Pressure sensor

Optional Ex ia  
 temperature sensor

UIM FLOWMETER

HAZARDOUS  
 AREA

NON-HAZARDOUS  
 AREA

ASSOCIATED EQUIPMENT

STANDARD IO	
$U_i = 29V$ $I_i = 100mA$ $P_i = 670mW$ $L_i = 0.3mH$ $C_i = 0.03\mu F$	LOOP SUPPLY PWR0+ PWR0- isolated
$U_i = 29V$ $I_i = 100mA$ $P_i = 670mW$ $L_i = 0.15mH$ $C_i = 0.03\mu F$	FREQ/PULSE D0 A(+) D0 B(-) non-isolated open drain

RS485 Option board (01-0020)	
$U_i = 28V$ $I_i = 100mA$ $P_i = 670mW$ $L_i = 0.3mH$ $C_i = 0.03\mu F$	OPTION SUPPLY PWR1+ PWR1- isolated
$U_o = 4.12V$ $I_o = 150mA$ $P_o = 150mW$ $L_i = negligible$ $C_i = 20\mu F$ $U_i = 4.2V$ $I_i = 250mA$ $P_i = 250mW$	RS485 D1 A D1 B optically isolated
$U_i = 15V$ $I_i = 100mA$ $P_i = 250mW$ $L_i = 0.02mH$ $C_i = 0.03\mu F$	FREQ/PULSE D2 A(+) D2 B(-) optically isolated open collector
$U_i = 15V$ $I_i = 100mA$ $P_i = 250mW$ $L_i = 0.02mH$ $C_i = 0.03\mu F$	FREQ/PULSE D3 A(+) D3 B(-) optically isolated open collector

$U_o/V_{oc} \leq 29V$ $I_o/I_{max} \leq 100mA$ $P_o \leq 670mW$ $L_o \geq 0.3mH + L(cable)$ $C_o \geq 0.03\mu F + C(cable)$
$U_o/V_{oc} \leq 29V$ $I_o/I_{max} \leq 100mA$ $P_o \leq 670mW$ $L_o \geq 0.15mH + L(cable)$ $C_o \geq 0.03\mu F + C(cable)$

$U_o/V_{oc} \leq 28V$ $I_o/I_{max} \leq 100mA$ $P_o \leq 670mW$ $L_o \geq 0.3mH + L(cable)$ $C_o \geq 0.03\mu F + C(cable)$
$U_i \geq 4.12V$ $I_i \geq 150mA$ $P_i \geq 150mW$ $L_o \geq L(cable)$ $C_o \geq 20\mu F + C(cable)$ $U_o \leq 4.2V$ $I_o \leq 250mA$ $P_o \leq 250mW$
$U_o/V_{oc} \leq 15V$ $I_o \leq 100mA$ $P_o \leq 250mW$ $L_o \geq 0.02mH + L(cable)$ $C_i \geq 0.03\mu F + C(cable)$
$U_o/V_{oc} \leq 15V$ $I_o \leq 100mA$ $P_o \leq 250mW$ $L_o \geq 0.02mH + L(cable)$ $C_i \geq 0.03\mu F + C(cable)$



**Warning!**  
 EXPLOSION HAZARD  
 SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY

Only for interconnection with Exi or [Exi] Associated equipment.

Comply with EU directive 2014/34/EU  
 And EN/IEC 60075-0 EN/IEC60079-11

INSTALL PER IEC 60079-14

UNLESS OTHERWISE SPECIFIED:  
 DIMENSIONS ARE IN MILLIMETERS  
 SURFACE FINISH: Ra0.8  
 TOLERANCES: ACC. TO ISO/DIN 2768-mK

DEBUR AND  
 BREAK SHARP  
 EDGES

DO NOT SCALE DRAWING

REVISION DWG A-08

REVISION PRT/ASM



TITLE:  
**Control drawing  
 ATEX/IECEx**

NAME	SIGNATURE	DATE	MATERIAL:
DRAWN		3-6-2020	AI5I 304

DWG NO. **01\_0198** A3

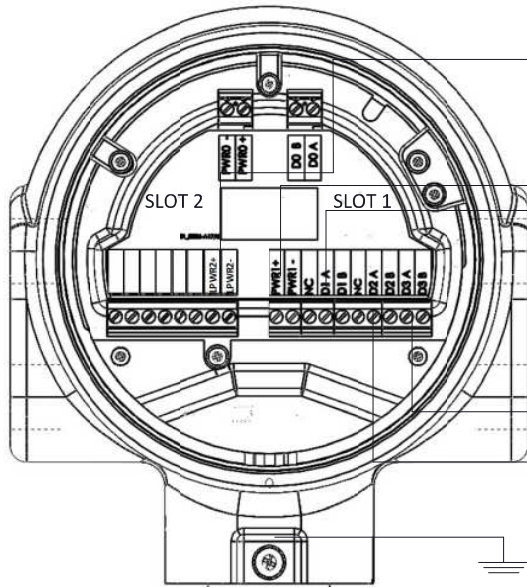
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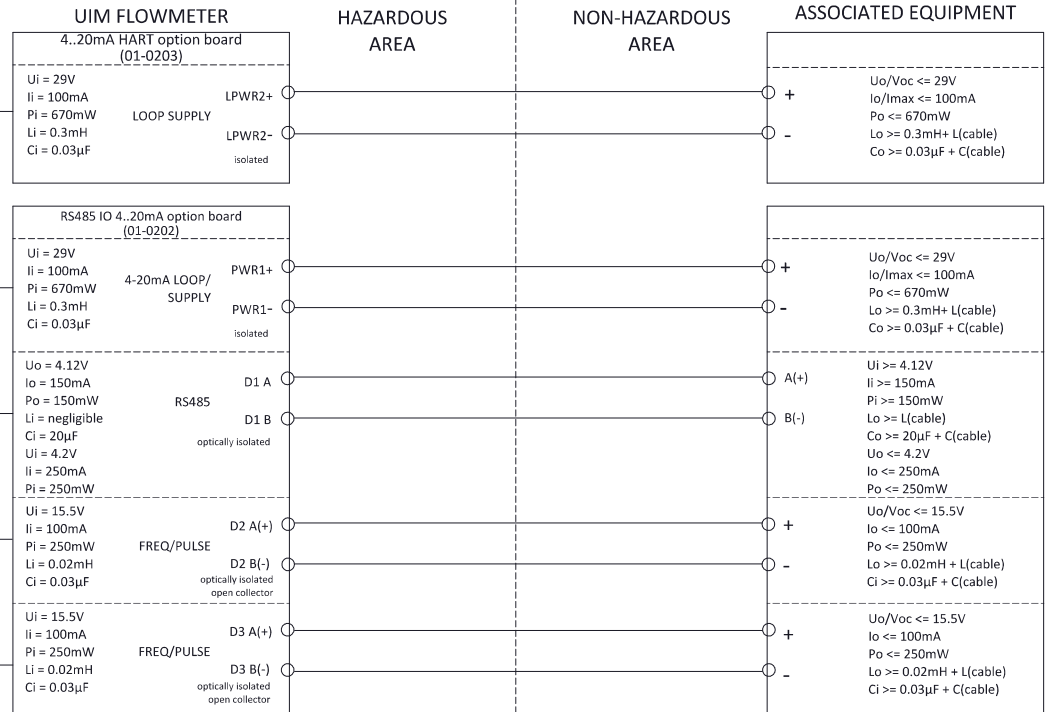
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SHEET 2 OF 4

REAR VIEW



SLOT 1 FITTED WITH RS485 4..20mA option board  
SLOT 2 FITTED WITH 4..20mA HART option board



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DEBUR AND  
BREAK SHARP  
EDGES

DO NOT SCALE DRAWING

REVISION DWG A-08

REVISION PRT/ASM



TITLE:  
**Control drawing  
ATEX/IECEx**

NAME	SIGNATURE	DATE	MATERIAL:
DRAWN		3-6-2020	ALSI 304

DWG NO. **01\_0198** A3

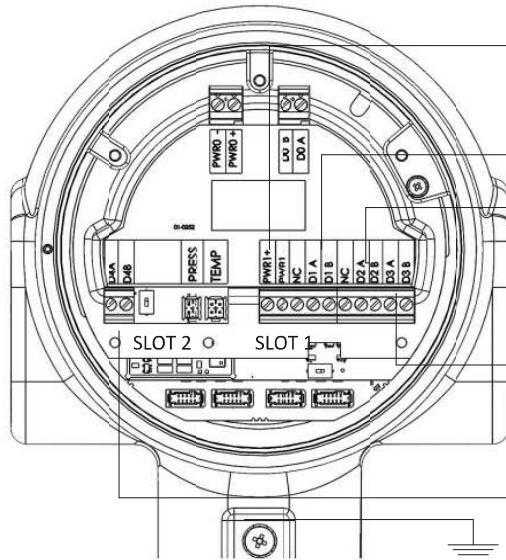
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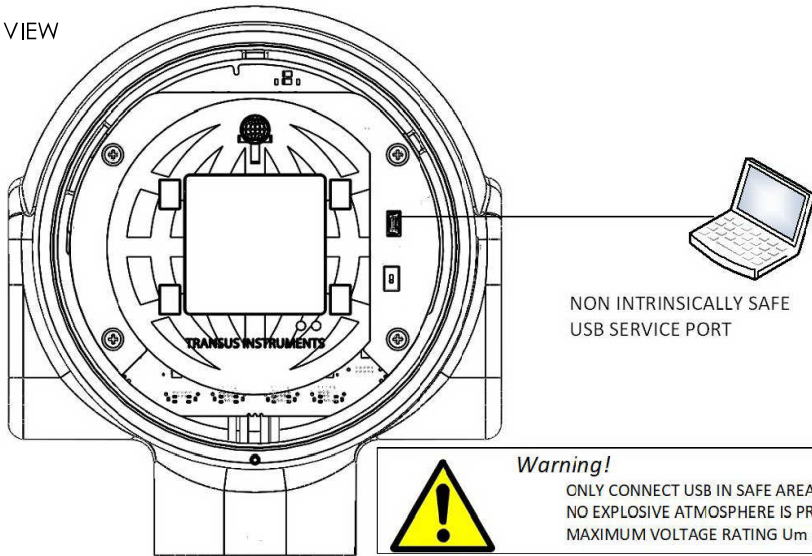
SHEET 3 OF 4

REAR VIEW



SLOT 1 AND SLOT 2 FITTED WITH Dual RS485 option board

FRONT VIEW



NON INTRINSICALLY SAFE  
USB SERVICE PORT



**Warning!**  
ONLY CONNECT USB IN SAFE AREA OR ENSURE  
NO EXPLOSIVE ATMOSPHERE IS PRESENT.  
MAXIMUM VOLTAGE RATING  $U_m = 250$  VAC

UIM FLOWMETER

Dual RS485 IO option board (01-0251)	
$U_i = 29V$ $I_i = 100mA$ $P_i = 670mW$ $L_i = 0.3mH$ $C_i = 0.03\mu F$	4-20mA LOOP/ SUPPLY PWR1+ PWR1- isolated
$U_o = 4.12V$ $I_o = 150mA$ $P_o = 150mW$ $L_i = negligible$ $C_i = 20\mu F$ $U_i = 4.2V$ $I_i = 250mA$ $P_i = 250mW$	RS485 PORT 1 D1 A D1 B optically isolated
$U_i = 15.5V$ $I_i = 100mA$ $P_i = 250mW$ $L_i = 0.02mH$ $C_i = 0.03\mu F$	FREQ/PULSE D2 A(+) D2 B(-) optically isolated open collector
$U_i = 15.5V$ $I_i = 100mA$ $P_i = 250mW$ $L_i = 0.02mH$ $C_i = 0.03\mu F$	FREQ/PULSE D3 A(+) D3 B(-) optically isolated open collector
$U_o = 4.12V$ $I_o = 150mA$ $P_o = 150mW$ $L_i = negligible$ $C_i = 20\mu F$ $U_i = 4.2V$ $I_i = 250mA$ $P_i = 250mW$	RS485 PORT 2 D4 A D4 B optically isolated

HAZARDOUS  
AREA

NON-HAZARDOUS  
AREA

ASSOCIATED EQUIPMENT

$U_o/V_{oc} \leq 29V$ $I_o/I_{max} \leq 100mA$ $P_o \leq 670mW$ $L_o \geq 0.3mH + L(\text{cable})$ $C_o \geq 0.03\mu F + C(\text{cable})$
$U_i \geq 4.12V$ $I_i \geq 150mA$ $P_i \geq 150mW$ $L_o \geq L(\text{cable})$ $C_o \geq 20\mu F + C(\text{cable})$ $U_o \leq 4.2V$ $I_o \leq 250mA$ $P_o \leq 250mW$
$U_o/V_{oc} \leq 15.5V$ $I_o \leq 100mA$ $P_o \leq 250mW$ $L_o \geq 0.02mH + L(\text{cable})$ $C_i \geq 0.03\mu F + C(\text{cable})$
$U_o/V_{oc} \leq 15.5V$ $I_o \leq 100mA$ $P_o \leq 250mW$ $L_o \geq 0.02mH + L(\text{cable})$ $C_i \geq 0.03\mu F + C(\text{cable})$
$U_i \geq 4.12V$ $I_i \geq 150mA$ $P_i \geq 150mW$ $L_o \geq L(\text{cable})$ $C_o \geq 20\mu F + C(\text{cable})$ $U_o \leq 4.2V$ $I_o \leq 250mA$ $P_o \leq 250mW$

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INSTALL PER IEC 60079-14

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: Ra0.8 TOLERANCES: ACC. TO ISO/DIN 2768-mK		DEBUR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING	REVISION DWG	A-08
		TITLE:		Control drawing ATEX/IECEx	
NAME	SIGNATURE	DATE	MATERIAL:	DWG NO.	A3
		3-6-2020	AlSi 304	01_0198	
DATE PRINTED: 18-6-2020		WEIGHT:	SCALE:1:1	SHEET 4 OF 4	