CERTIFICATE OF COMPLIANCE
(ISO TYPE 3 CERTIFICATION SYSTEM)

Issued to	KROHNE Messtechnik GmbH
Address	Ludwig-Krohne-strasse 5 47058 Duisburg Germany
Project Number	LR1322-11
Product	Flowmeter
Model Number	DK3X series (for details see annex below)
Ratings	See annex below
Applicable Standards	See annex below
Factory/Manufacturing Location	Same as Applicant

Statement of Compliance: The product(s) identified in this Certificate and described in the Report covered under the above referenced project number have been investigated and found to be in compliance with the relevant requirements of the above referenced standard(s). As such, they are eligible to bear the QPS Certification Mark shown below, in accordance with the provisions of QPS's Service Agreement.

Issued By: Dave Adams, P.Eng.
Manager, Hazardous Locations [Ex Equipment] Department

Signature: 

Date: July 28, 2020

Annex

Model:

Nomenclature
DK3. / .. / .. / . / .. / .. - Ex
1 / 2 / 3 / 4 / 5 / 6 – Ex

Number referred above	Variants			
1 =Series	DK32 = Measuring unit with valve and horizontal connections DK34 = Measuring unit without valve and vertical connections			
2=Optional pressure regulator	RE = Inlet pressure regulator RA = Outlet pressure regulator			
3=Type of signal indicator		IS, ia	nA, non-incendive	Db, Tb, Explosion-Proof and Dust-Ignition-Proof
	ESK = Current output	X	X	X
	K1 = One limit switch	X	X	-
	K2 = Two limit switches (min. and max.)			
	R1 = Reed switch	X	-	-
4=Type of connection	L = Cable assembly S = Connection plug			
5=Optional HT	HT = High temperature version (only in combination with reed switch (3 = R1) and cable assembly (4 = L)			
6=designation not relevant for Ex	-			
Note: Non indicated designations can be skipped				

Nominal Ratings

IS versions
IS/CI,II,III/D1/ABCDEFG/T6...T3
CI/Z1/AEx ia/Ex ia/IIC/T6...T3 Gb
Z21/AEx ia/Ex ia/IIIC/T85°C...T140°C Db
NEMA TYPE 4X/6
PER CONTROL DRAWING APPR GD 821182-15

Non- incendive versions
NI/CI/D2/ABCD/T6...T3
CI/Z2/AEx nA/Ex n/IIC/T6...T3 Gc
NEMA TYPE 4X/6
PER CONTROL DRAWING APPR GD 821182-15

Explosion proof versions
XP/DIP/CI,II,III/D1/ABCDEFG/T6...T3
CI/Z1/AEx db/Ex db/IIC/T6...T3 Gb
Z21/AEx tb/Ex tb/IIIC/T85°C...140°C
NEMA TYPE 4X/6
SEAL CONDUIT WITHIN 18 INCHES

Electrical data:

Type DK3. /ESK/ .. / . / .. / .. – Ex Supply and output circuit (terminals +/-)			
Type of protection IS		Type of protection Ex db, Ex nA, Ex tb Non-incendive, Explosion-Proof and Dust-Ignition-Proof	
Ui/Vamx	30V	UN/Vmax	12….32V
Ii/Imax	130mA		
Pi/Pmax	1W	IN/Imax	4…..20mA
Ci	10nF		
Li	0µF		

Type DK3. / K. / . / . / .. / .. – Ex Supply and output circuits (terminals Max+/- and/or Min+/-)			
Type of protection IS		Type of protection, Ex nA Non-incendive,	
Ui/Vamx	16V	UN/Vmax	8VDC(in accordance with IEC 60947-5-6 (NAMUR)
Ii/Imax	25/52mA		
Pi/Pmax	64/169W		
Ci	150nF* or 152nF**		
Li	150 µH		
*fixed cable up to 10 m ** fixed cable from 10 m up to 20 m			

Type DK3. / R1 / .. / . / .. / .. – Ex Supply and output circuit (terminals 1,2,3 or bn,bu,rd)	
Type of protection IS	
Ui/Vamx	30V
Ii/Imax	100mA
Pi/Pmax	1W
Ci	0nF
Li	0µF

Thermal data

The temperature class or surface temperature in relation to the maximum ambient temperature and the maximum process temperature is listed in the following tables:

Type DK3. /ESK/ .. / . / .. / .. – Ex= Current output														
Temperature code	T6			T5			T4				T3..T1			
Ambient temperature °C	40	50	55	50	65	70	40	60	65	70	40	60	65	70
Maximum process temperature [ºC]	85	85	85	100	100*	90*	135*	105*	100*	90*	140*	105*	100*	90*
* Heat-resistance cable and cable entry ≥ 90 °C														

Type DK3. / K. / .. / . / .. / .. – Ex																
Temperature code	T6			T5			T4					T3..T1				
Ambient temperature °C	40	50	55	40	50	55	40	60	65	70	90	40	60	65	70	90
Limit switch input power	Max process temp [ºC]															
SC2-NO 64 mW	80	70	65	100	100	95	135	125	120*	120*	120*	140*	125*	120*	120*	120*

Type DK3. / K. / .. / . / .. / .. – Ex																
Temperature code	T6			T5			T4					T3..T1				
Ambient temperature °C	40	50	55	40	50	55	40	60	65	70	90	40	60	65	70	90
Limit switch input power	Max process temp [ºC]															
SC2-NO 169 mW	-	-	-	55	-	-	90	75	70	-	-	90	75	70	-	-
SJ2-SN 64 mW	80	70	70	100	100	95	135	125	120*	120*	100*	140*	125*	120*	120*	100*
SJ2-SN 169 mW	-	-	-	60	55	-	95	80	75*	70*	-	95	80	75*	70*	-
I7S2002-N 64 mW	85	80	75	100	100	100	135	125	120*	120*	100*	140*	125*	120*	120*	100*
I7S2002-N 169 mW	55	-	-	80	70	70	135	120	115*	110*	95*	135*	120*	115*	110*	95*
* Heat-resistance cable and c55able entry ≥ 90 °C																

DK3./ R1 /.Reed switch with Connection plug (S (not for HT)) or Cable assembly (L)								
Temperature code	T6	T5		T4		T3..T1		
Ambient temperature °C	55	70	85	70	90	100	145	180
Maximum process temperature [ºC]	85	100*	-	135*	-	150*	-	-
* Heat-resistance cable and cable entry ≥ 90 °C								

DK3./ R1 / L / HT Reed switch with Connection plug (S (not for HT)) or Cable assembly (L)								
Temperature code	T6	T5		T4		T3..T1		
Ambient temperature °C	55	70	85	70	90	100	145	180
Maximum process temperature [ºC]	85	-	100	-	135	-	200	180
* Heat-resistance cable and cable entry ≥ 90 °C								

The minimum ambient temperature is -40 ºC; the minimum process temperature is -40 ºC.
The maximum surface temperature T85 ºC is determined for a dust layer thickness of maximum 5 mm and applies for a maximum ambient temperature of 65 ºC and a maximum process temperature of 75 ºC. For a process temperature > 75 ºC, the maximum surface temperature is equal to the process temperature up to a maximum of 140 ºC.

Applicable Standards

Standard Number	Edition	Title
CSA C22.2 No. 60079-0:19	Fourth	Explosive atmospheres — Part 0: Equipment — General requirements
CSA-C22.2 No. 60079-1:16	Third	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures “d”
CSA-C22.2 No. 60079-11:14	Second	Explosive atmospheres — Part 11: Equipment protection by intrinsic safety “i”
CSA-C22.2 No. 60079-15:18	Third	Explosive atmospheres - Part 15: Equipment protection by type of protection “n”
CSA-C22.2 No. 60079-31:15	Second	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
CSA-C22.2 No. 60079-26	First (Nov 2017)	Equipment with Equipment Protection Level (EPL) Ga

Standard Number	Edition	Title
CSA-C22.2 No.94	Second	Standard for Safety Enclosures for Electrical Equipment, Environmental Considerations
UL121201	Ninth (UL121201) Third CSA213	Harmonized CSA Group and UL standard for Safety Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations
CSA-C22.2 No.30	Fourth	Explosion-proof equipment
UL 60079-0	Seventh	UL Standard for Safety Explosive atmospheres – Part 0: Equipment – General requirements
UL 60079-1	Seventh	UL Standard for Safety Explosive Atmospheres – Part 1: Equipment Protection by Flameproof Enclosures “d”
UL 60079-11	Sixth	UL Standard for Safety Explosive Atmospheres – Part 11: Equipment Protection by Intrinsic Safety ″i″
UL 60079-15	Fourth	UL Standard for Safety Explosive atmospheres – Part 15: Equipment protection by type of protection ″n″
UL 60079-31	Second	UL Standard for Safety Explosive Atmospheres – Part 31: Equipment Dust Ignition Protection by Enclosure “t”
UL 60079-26	Third	Equipment with Equipment Protection Level (EPL) Ga
UL 1203	Fifth	UL Standard for Safety Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations
UL50E	Second	UL Standard for Safety Enclosures for Electrical Equipment, Environmental Considerations
UL121201	Ninth	Standard for Safety Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations