[1] # TYPE EXAMINATION CERTIFICATE

[2] **Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

[3] Type Examination Certificate Number: **UL 22 ATEX 2481X Rev. 0**

[4] Product: **VisuNet FLX System – Models RM-320S**-*A-****-*-*******-***, **PC-320S**-*A-****-*-*******-***, **DM-320S**-*A-****-*-*******-***

[5] Manufacturer: **Pepperl+Fuchs SE**

[6] Address: **Lilienthalstrasse 200, 68307 Mannheim, Germany**

[7] This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] UL International Demko A/S 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 Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014.

The examination and test results are recorded in confidential report no. **DK/ULD/ExTR22.0020/00.**

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 **EN IEC 60079-7:2015/A1:2018**
EN 60079-11:2012 **EN 60079-31:2014**

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 Type examination certificate relates only to the design of the specified product, and not to specific items of product subsequently manufactured.

[12] The marking of the product shall include the following:

II 3 G Ex ec [ic Gc] IIC T4 Gc (when fitted with Panel RM/PC-320P: RM-320S, PC-320S)

II 3 D Ex tc [ic Dc] IIIC T85°C Dc (when fitted with Panel RM/PC-320P: RM-320S, PC-320S)

II 3 G Ex ec IIC T4 Gc (when fitted with Panel DM-320P: DM-320S)

II 3 D Ex tc IIIC T85°C Dc (when fitted with Panel DM-320P: DM-320S)

Certification Manager
Jan-Erik Storgaard

This is to certify that the sample(s) of the Product described herein ("Certified Product") has been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the ATEX Product Certification Program Requirements. This certificate and test results obtained apply only to the product sample(s) submitted by the Manufacturer. UL did not select the sample(s) or determine whether the sample(s) provided were representative of other manufactured product. UL has not established Follow-Up Service or other surveillance of the product. The Manufacturer is solely and fully responsible for conformity of all product to all applicable Standards, specifications, requirements or Directives. The test results may not be used, in whole or in part, in any other document without UL's prior written approval.

Date of issue: 2022-08-18

Certification Body UL International Demko A/S, Borupvang 5A, 2750 Ballerup, Denmark
Tel. +45 44 85 65 65, info.dk@ul.com, www.ul.com

[13] [14]

Schedule
TYPE EXAMINATION CERTIFICATE No.
UL 22 ATEX 2481X Rev. 0

[15] Description of Product:

The VisuNet FLX System RM-320S*/PC-320S*/DM-320S* is a modular HMI system comprised of a choice of VisuNet FLX Panels RM-320P*/PC-320P*/DM-320P* which are panel mounted into a final enclosure that can be mounted on the wall, floor, and ceiling.

Customer specific solutions can contain control elements such as push buttons, emergency stops or switches. The control elements are allowed to be operated in hazardous area since they are intrinsically safe when installed in a suitably protected circuit. Only exception is the non-I.S. USB port where the installer has to check if the area is non-hazardous respectively has to de-energize the whole system prior to usage and installation. The control elements must utilize an intrinsic safe barrier that matches the entity parameters for these control elements (verification of intrinsic safety). For example, switches can be operated via KCD2-SOT-Ex2.SP and buzzers via KCD0-SD-Ex1.1245.SP from company Pepperl+Fuchs.

Intrinsically Safe USB interfaces: The intrinsically safe USB interfaces allow the connection of separately certified input devices such as USB thumb drive or periphery such as the EXTA keyboard with pointing devices (e.g., touchpad) from company Pepperl+Fuchs.

Standard Configurations available are:

- Direct Monitor System (DM-320S-) Based on the DM-320P (certified under UL 22 ATEX 2479X + IECEx ULD 22.0017X for use in Gas atmospheres and UL 22 ATEX 2480U + IECEx ULD 22.0018U for use in Dust atmospheres).
- Remote Monitor System (RM-320S-) Based on the RM-320P (certified under UL 22 ATEX 2479X + IECEx ULD 22.0017X for use in Gas atmospheres and UL 22 ATEX 2480U + IECEx ULD 22.0018U for use in Dust atmospheres) for connection to a thin client (Ethernet) network and a host.
- PC System (PC-320S-) Based on the PC-320P (certified under UL 22 ATEX 2479X + IECEx ULD 22.0017X for use in Gas atmospheres and UL 22 ATEX 2480U + IECEx ULD 22.0018U for use in Dust atmospheres) for connection to an Ethernet network and a host PC.

VisuNet FLX System

I		II		III	IV		V		VI		VII		VIII	IX
DM-	320	S	-	X	A	-	22GT	-	A	-	1NNNNB1	-	X	XX

I -	**Technology**	
	DM-:	Direct Monitor
	PC-:	PC
	RM-:	Remote Monitor
II –	**Type**	
	S:	System
III –	**Approvals**	
	L:	ATEX/IECEx Zone 2/22, cULus CL I, II, III, DIV 2
	N:	General purpose
	P:	ATEX/IECEx Zone 2/22
IV –	**Operating Temperature range**	
	A:	Ambient Temperature: 0…40°C
V –	**Display Unit**	
	22GT:	21.5 inch, Full-HD, capacitive touch
	22FC:	same as 22GT, optical bonding
VI –	**Supply**	
	A:	115/230Vac, 50-60Hz
	D:	24Vdc (+/-20%), SELV/PELV, Class 2
VII –	**Configurations**	
	various, identified by any alphanumeric character, e.g., Computing platform	
	1N:	Intel Celeron 3965U
	2N:	Intel Core i5-7300U
	VN	Direct Monitor Unit

Schedule
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UL 22 ATEX 2481X Rev. 0

	RAM	
	N:	None
	A:	1x4GB
	B:	1x8GB
	C:	1x16GB
	Storage	
	N:	None
	A:	32GB
	B:	64GB
	C:	128GB
	D:	256GB
	E:	512GB
	Operating System & Software (not safety-relevant)	
	X	Can be an alphanumeric character, representing another Operating System & Software
	1	Win10
	2	P+F RM Shell
	Housing	
	B1	Stainless steel such as 304A or 316L, diff. finishes
	B2	Stainless steel such as 304A or 316L, diff. finishes
	H1	Stainless steel such as 304A or 316L, diff. finishes
	P1	Stainless steel such as 304A or 316L, diff. finishes
	XX	Can be an alphanumeric character, representing different surface finishes and hole pattern positions
VIII –	**Special Accessories**	
	X:	Can be an alphanumeric character
	N:	None
IX –	Options	
	X:	Can be one or two alphanumeric characters
	N0:	Standard, No options

The optical radiation output of the product with respect to explosion protection, according to Annex II clause 1.3.1 of the Directive 2014/34/EU is covered in this certificate based on Exception 1) to the scope of EN 60079-28:2015.

Temperature range:
The ambient temperature range is 0°C to +40°C

Electrical data

RM-320S, PC-320S, A.C. version
115/230Vac (100Vac…240Vac) 50-60HZ, Max. 0.7A, Max. 120VA, Max. 70W
Power connection: Um = 250 V AC
Interfaces: Um = 30 V DC

RM-320S, PC-320S, D.C. version
24Vdc (20Vdc…28Vdc), (SELV/PELV) or Class 2, Max. 2.8A, Max. 56W
Power connection: Um = 30 V DC
Interfaces: Um = 30 V DC

DM-320S, A.C. version
115/230Vac (100Vac…240Vac) 50-60Hz, Max. 0.4A, Max. 120VA, Max. 40W

DM-320S, D.C. version
24Vdc (20Vdc…28Vdc) (SELV/PELV) or Class 2 Max. 1.5A, Max. 30W

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[14]

Schedule
TYPE EXAMINATION CERTIFICATE No.
UL 22 ATEX 2481X Rev. 0

Non-intrinsically safe interface ports
1 x DisplayPort (only RM* and PC*)
1 x mini DisplayPort (only RM* and PC*)
1 x Audio Line-out (only RM* and PC*)
2 x USB 3.1 (type A) (only RM* and PC*)
1 x USB 2.0 (type A) (only RM* and PC*)
2 x LAN ports (RJ45) (only RM* and PC*)
1 x HDMI (only DM*)
1 x DVI-I (only DM*)
1 x VGA (only DM*)
1 x USB (type B) (only DM*)
Only for connection to SELV/PELV circuits
Maximum input voltage Um = 30 V DC

Non-intrinsically safe interface ports (only RM* and PC*)
2 x RS232/422/485 (1 x DB9 male + 1 x RJ45)
Only for connection to SELV/PELV circuits
Maximum input voltage Um = 30 V DC

Intrinsically safe specifications:

Ex i USB ports - for the connection by the end-user of e.g., an external USB memory stick or passive keyboard according to the relevant certificate

Uo: ≤ 5.3 V
Io: ≤ 240 mA
Po: ≤ 1.27 W
Li: negligible
Ci: ≤ 11 µF
Output characteristic: rectangular

For group IIC:
Co = 989µF
Lo = 50µH
Following values of Lo and Co can be applied combined. (Ci already subtracted)

Co (uF)	6	15	32	129	989
Lo (uH)	20	10	5	2	1

For group IIB/IIIC:
Co = 989µF
Lo =1400µH
Following values of Lo and Co can be applied combined. (Ci already subtracted)

Co (uF)	5	32	76	329	989
Lo (uH)	1000	200	50	10	4

For group IIA:
Co = 989µF
Lo = 5500µH
Following values of Lo and Co can be applied combined. (Ci already subtracted)

Co (uF)	14	28	75	239	989
Lo (uH)	1000	500	100	20	4

Ex i Remote Power (connector for external switch)
Uo: ≤ 5 V
Io: ≤ 10 mA
Po: ≤ 50 mW
Li: negligible
Ci: ≤ 1 µF

For group IIC:
Co = 999 µF
Lo = 100 mH
Following values of Lo and Co can be applied combined. (Ci already subtracted)

Co [µF]	2.1	3.8	11	31	189
Lo [µH]	100000	5000	100	10	2

[13] [14]

Schedule
TYPE EXAMINATION CERTIFICATE No.
UL 22 ATEX 2481X Rev. 0

Control Elements
The VisuNet FLX System may be provided with Control Elements specified as part of the ordering code. The Control Elements listed below were evaluated as part of the enclosure of the VisuNet FLX System.

Intrinsically Safe operated Control Elements
To permit use of these elements in a hazardous location the end-user must provide ensure they are connected to intrinsically safe circuits via suitably selected associated apparatus located outside of the VisuNet FLX System. Installation and wiring of these must be in accordance with IEC 60079-14.

These Intrinsically Safe operated control elements are classed as simple apparatus or intrinsically safe devices.

- Switch Emergency Stop FRVK* (Georg Schlegel GmbH & Co. KG) - Switch Emergency Stop can be protected against unintentional activation by means of protective shroud RRSK.
- Push Button Switch SVATLR* (Georg Schlegel GmbH & Co. KG)
- Ex Buzzer Werma 71800055 (DMT98 ATEX E 005X) (WERMA Signaltechnik GmbH + Co. KG)
- Illuminated selector SVAST* / SWAV* (Georg Schlegel GmbH & Co. KG)
- Key operated switch SVASSA* (Georg Schlegel GmbH & Co. KG)

Non-Intrinsically Safe Control Element
Shall only be operated when no hazardous atmosphere is present.

- USB connector RRJVA_USB* with combination with SDAL22RR (Georg Schlegel GmbH & Co. KG)
- Card interfaces - 1 x PCIe and 1 x mPCIe card (only RM* and PC*)
- Bluetooth interface - USB 2.0 interface port can be used to provide a Bluetooth interface by using a Bluetooth module that complies with the requirements of EN 60079-0, e.g.: LM506.

Routine tests:
None

[16] Descriptive Documents
The scheduled drawings are listed in the report no. provided under item no. [8] on page 1 of this Type Examination Certificate.

[17] Special Conditions of Use:
- The device has to be mounted in an area with a lower risk of mechanical impact.
- Impacts from heavy or sharp-edged objects on the device have to be avoided. The maximum impact energy for the housing parts is 4 J, the maximum impact energy for light transmitting parts is 2 J.
- Connection to non-intrinsically safe interface Audio Jack is not allowed in hazardous areas.
- Connection to non-intrinsically safe card interfaces e.g., PCIe is not allowed in hazardous areas.
- Non-intrinsically safe Control Element USB connector RRJVA_USB* must remain closed by protective cap SDAL22RR during operation in hazardous atmosphere.
- Mount the device in such a way that it is protected from direct sunlight, unless it is equipped with UV protection
- The intrinsically safe control elements are required to be installed by the end-user in a suitably protected circuit in accordance with EN 60079-14.

[18] Essential Health and Safety Requirements
The Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9.

Additional information
The VisuNet FLX System has in addition passed the tests for Ingress Protection to IP 66 in accordance with EN60529:1991+A1:2000+A2:2013.

The trademark PEPPERL+FUCHS will be used as the company identifier on the marking label.

[1] # TYPE EXAMINATION CERTIFICATE

[2] **Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

[3] Type Examination Certificate Number: **UL 22 ATEX 2481X Rev. 1**

[4] Product: **VisuNet FLX System – Models RM-320S**-*A-****-*-*******-***, **PC-320S**-*A-****-*-*******-***, **DM-320S**-*A-****-*-*******-***

[5] Manufacturer: **Pepperl+Fuchs SE**

[6] Address: **Lilienthalstrasse 200, 68307 Mannheim, Germany**

[7] This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] UL International Demko A/S 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 Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014.

The examination and test results are recorded in confidential report no. **DK/ULD/ExTR22.0020/01.**

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 **EN IEC 60079-7:2015/A1:2018**
EN 60079-11:2012 **EN 60079-31:2014**

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 Type examination certificate relates only to the design of the specified product, and not to specific items of product subsequently manufactured.

[12] The marking of the product shall include the following:

II 3 G Ex ec [ic Gc] IIC T4 Gc (when fitted with Panel RM/PC-320P: RM-320S, PC-320S)

II 3 D Ex tc [ic Dc] IIIC T85°C Dc (when fitted with Panel RM/PC-320P: RM-320S, PC-320S)

II 3 G Ex ec IIC T4 Gc (when fitted with Panel DM-320P: DM-320S)

II 3 D Ex tc IIIC T85°C Dc (when fitted with Panel DM-320P: DM-320S)

Certification Manager
Thomas Wilson

This is to certify that the sample(s) of the Product described herein ("Certified Product") has been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the ATEX Product Certification Program Requirements. This certificate and test results obtained apply only to the product sample(s) submitted by the Manufacturer. UL did not select the sample(s) or determine whether the sample(s) provided were representative of other manufactured product. UL has not established Follow-Up Service or other surveillance of the product. The Manufacturer is solely and fully responsible for conformity of all product to all applicable Standards, specifications, requirements or Directives. The test results may not be used, in whole or in part, in any other document without UL's prior written approval.

Date of issue: 2022-08-18
Re-issued: 2023-03-09

Certification Body
UL International Demko A/S, Borupvang 5A, 2750 Ballerup, Denmark
Tel. +45 44 85 65 65, info.dk@ul.com, www.ul.com

[13] [14]

Schedule
TYPE EXAMINATION CERTIFICATE No.
UL 22 ATEX 2481X Rev. 1

[15] Description of Product:

The VisuNet FLX System RM-320S*/PC-320S*/DM-320S* is a modular HMI system comprised of a choice of VisuNet FLX Panels RM-320P*/PC-320P*/DM-320P* which are panel mounted into a final enclosure that can be mounted on the wall, floor, and ceiling.

Customer specific solutions can contain control elements such as push buttons, emergency stops or switches. The control elements are allowed to be operated in hazardous area since they are intrinsically safe when installed in a suitably protected circuit. Only exception is the non-I.S. USB port where the installer has to check if the area is non-hazardous respectively has to de-energize the whole system prior to usage and installation. The control elements must utilize an intrinsic safe barrier that matches the entity parameters for these control elements (verification of intrinsic safety). For example, switches can be operated via KCD2-SOT-Ex2.SP and buzzers via KCD0-SD-Ex1.1245.SP from company Pepperl+Fuchs.

Intrinsically Safe USB interfaces: The intrinsically safe USB interfaces allow the connection of separately certified input devices such as USB thumb drive or periphery such as the EXTA keyboard with pointing devices (e.g., touchpad) from company Pepperl+Fuchs.

Standard Configurations available are:

- Direct Monitor System (DM-320S-) Based on the DM-320P (certified under UL 22 ATEX 2479X + IECEx ULD 22.0017X for use in Gas atmospheres and UL 22 ATEX 2480U + IECEx ULD 22.0018U for use in Dust atmospheres).
- Remote Monitor System (RM-320S-) Based on the RM-320P (certified under UL 22 ATEX 2479X + IECEx ULD 22.0017X for use in Gas atmospheres and UL 22 ATEX 2480U + IECEx ULD 22.0018U for use in Dust atmospheres) for connection to a thin client (Ethernet) network and a host.
- PC System (PC-320S-) Based on the PC-320P (certified under UL 22 ATEX 2479X + IECEx ULD 22.0017X for use in Gas atmospheres and UL 22 ATEX 2480U + IECEx ULD 22.0018U for use in Dust atmospheres) for connection to an Ethernet network and a host PC.

VisuNet FLX System

I		II		III	IV		V		VI		VII		VIII	IX
DM-	320	S	-	X	A	-	22GT	-	A	-	1NNNNB1	-	X	XX

I -	**Technology**	
	DM-:	Direct Monitor
	PC-:	PC
	RM-:	Remote Monitor
II –	**Type**	
	S:	System
III –	**Approvals**	
	L:	ATEX/IECEx Zone 2/22, cULus CL I, II, III, DIV 2
	N:	General purpose
	P:	ATEX/IECEx Zone 2/22
IV –	**Operating Temperature range**	
	A:	Ambient Temperature: 0…40°C
V –	**Display Unit**	
	22GT:	21.5 inch, Full-HD, capacitive touch
	22FC:	same as 22GT, optical bonding
VI –	**Supply**	
	A:	115/230Vac, 50-60Hz
	D:	24Vdc (+/-20%), SELV/PELV, Class 2
VII –	**Configurations**	
	various, identified by any alphanumeric character, e.g., Computing platform	
	1N:	Intel Celeron 3965U
	2N:	Intel Core i5-7300U
	VN	Direct Monitor Unit
	RAM	
	N:	None
	A:	1x4GB
	B:	1x8GB
	C:	1x16GB
	Storage	
	N:	None
	A:	32GB
	B:	64GB
	C:	128GB
	D:	256GB
	E:	512GB
	Operating System & Software (not safety-relevant)	
	X	Can be an alphanumeric character, representing another Operating System & Software
	1	Win10
	2	P+F RM Shell

Schedule
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	Housing	
	B1	Stainless steel such as 304A or 316L, diff. finishes
	B2	Stainless steel such as 304A or 316L, diff. finishes
	H1	Stainless steel such as 304A or 316L, diff. finishes
	P1	Stainless steel such as 304A or 316L, diff. finishes
	XX	Can be an alphanumeric character, representing different surface finishes and hole pattern positions
VIII –	**Special Accessories**	
	X:	Can be an alphanumeric character
	N:	None
IX –	Options	
	X:	Can be one or two alphanumeric characters
	N0:	Standard, No options

The optical radiation output of the product with respect to explosion protection, according to Annex II clause 1.3.1 of the Directive 2014/34/EU is covered in this certificate based on Exception 1) to the scope of EN 60079-28:2015.

Temperature range:
The ambient temperature range is 0°C to +40°C.

Electrical data
RM-320S, PC-320S, A.C. version
115/230Vac (100Vac…240Vac) 50-60HZ, Max. 0.7A, Max. 120VA, Max. 70W
Power connection: Um = 250 V AC

RM-320S, PC-320S, D.C. version
24Vdc (20Vdc…28Vdc), (SELV/PELV) or Class 2, Max. 2.8A, Max. 56W
Power connection: Um = 30 V DC

DM-320S, A.C. version
115/230Vac (100Vac…240Vac) 50-60Hz, Max. 0.4A, Max. 120VA, Max. 40W
Power connection: Um = 250 V AC

DM-320S, D.C. version
24Vdc (20Vdc…28Vdc) (SELV/PELV) or Class 2 Max. 1.5A, Max. 30W
Power connection: Um = 30 V DC

Non-intrinsically safe interface ports
1 x DisplayPort (only RM* and PC*)
1 x mini DisplayPort (only RM* and PC*)
1 x Audio Line-out (only RM* and PC*)
2 x USB 3.1 (type A) (only RM* and PC*)
1 x USB 2.0 (type A) (only RM* and PC*)
(USB 2.0 interface port can be used to provide a Bluetooth interface by using a Bluetooth module that complies with the requirements of EN IEC 60079-0, e.g.: LM506.)
2 x LAN ports (RJ45) (only RM* and PC*)
Card interfaces - 1 x PCIe and 1 x mPCIe card (only RM* and PC*)
1 x HDMI (only DM*)
1 x DVI-I (only DM*)
1 x VGA (only DM*)
1 x USB (type B) (only DM*)
Only for connection to SELV/PELV circuits
Maximum input voltage Um = 30 V DC

Non-intrinsically safe interface ports (only RM* and PC*)
2 x RS232/422/485 (1 x DB9 male + 1 x RJ45)
Only for connection to SELV/PELV circuits
Maximum input voltage Um = 30 V DC

Intrinsically safe specifications:

Ex i USB ports - for the connection by the end-user of e.g., an external USB memory stick or passive keyboard according to the relevant certificate

Uo: ≤ 5.3 V
Io: ≤ 240 mA
Po: ≤ 1.27 W
Li: negligible
Ci: ≤ 11 µF
Output characteristic: rectangular

[13] [14]

Schedule
TYPE EXAMINATION CERTIFICATE No.
UL 22 ATEX 2481X Rev. 1

For group IIC:
Co = 989µF
Lo = 50µH
Following values of Lo and Co can be applied combined. (Ci already subtracted)

Co (uF)	6	15	32	129	989
Lo (uH)	20	10	5	2	1

For group IIB/IIIC:
Co = 989µF
Lo =1400µH
Following values of Lo and Co can be applied combined. (Ci already subtracted)

Co (uF)	5	32	76	329	989
Lo (uH)	1000	200	50	10	4

For group IIA:
Co = 989µF
Lo = 5500µH
Following values of Lo and Co can be applied combined. (Ci already subtracted)

Co (uF)	14	28	75	239	989
Lo (uH)	1000	500	100	20	4

Ex i Remote Power (connector for external switch)
Uo: ≤ 5 V
Io: ≤ 10 mA
Po: ≤ 50 mW
Li: negligible
Ci: ≤ 1 µF

For group IIC:
Co = 999 µF
Lo = 100 mH
Following values of Lo and Co can be applied combined. (Ci already subtracted)

Co [µF]	2.1	3.8	11	31	189
Lo [µH]	100000	5000	100	10	2

Control Elements
The VisuNet FLX System may be provided with Control Elements specified as part of the ordering code. The Control Elements listed below were evaluated as part of the enclosure of the VisuNet FLX System.

Intrinsically Safe operated Control Elements
To permit use of these elements in a hazardous location the end-user must provide ensure they are connected to intrinsically safe circuits via suitably selected associated apparatus located outside of the VisuNet FLX System. Installation and wiring of these must be in accordance with EN 60079-14.

These Intrinsically Safe operated control elements are classed as simple apparatus or intrinsically safe devices:
- Switch Emergency Stop FRVK* (Georg Schlegel GmbH & Co. KG) - Switch Emergency Stop can be protected against unintentional activation by means of protective shroud RRSK;
- Emergency stop QRUV 687 (Georg Schlegel GmbH & Co. KG);
- Push Button Switch SVATLR* (Georg Schlegel GmbH & Co. KG);
- Push Button Switch RRJVATLR (Georg Schlegel GmbH & Co. KG);
- Ex Buzzer Werma 71800055 (DMT98 ATEX E 005X) (WERMA Signaltechnik GmbH + Co. KG); and
- Illuminated selector SVAST* / SWAV* (Georg Schlegel GmbH & Co. KG).

Non-Intrinsically Safe Control Element
- USB connector RRJVA_USB* with combination with SDAL22RR (Georg Schlegel GmbH & Co. KG)
- Blind plug BVSVA for push buttons and switches (Georg Schlegel GmbH & Co. KG)

Routine tests:
None

[16] Descriptive Documents
The scheduled drawings are listed in the report no. provided under item no. [8] on page 1 of this Type Examination Certificate.

[13] **Schedule**

[14] **TYPE EXAMINATION CERTIFICATE No.**

UL 22 ATEX 2481X Rev. 1

[17] Special Conditions of Use:

- The device has to be mounted in an area with a lower risk of mechanical impact.
- Impacts from heavy or sharp-edged objects on the device have to be avoided. The maximum impact energy for the housing parts is 4 J, the maximum impact energy for light transmitting parts is 2 J.
- Connection to non-intrinsically safe interface Audio Jack is not allowed in hazardous areas.
- Connection to non-intrinsically safe card interfaces e.g., PCIe is not allowed in hazardous areas.
- Non-intrinsically safe Control Element USB connector RRJVA_USB* must remain closed by protective cap SDAL22RR during operation in hazardous atmosphere.
- Connections to non-intrinsically safe circuits must be mechanically secured against self-loosening by suitable means.
- Mount the device in such a way that it is protected from ultraviolet radiation and from direct sunlight.
- The intrinsically safe control elements are required to be installed by the end-user in a suitably protected circuit in accordance with EN 60079-14.

[18] Essential Health and Safety Requirements

The Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9.

Additional information

The VisuNet FLX System has in addition passed the tests for Ingress Protection to IP 66 in accordance with EN60529:1991+A1:2000+A2:2013.

The trademark PEPPERL+FUCHS will be used as the company identifier on the marking label.

[1] # TYPE EXAMINATION CERTIFICATE

[2] **Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU**

[3] Type Examination Certificate Number: **UL 22 ATEX 2481X Rev. 2**

[4] Product: **VisuNet FLX System – Models RM-320S**-*A/B-****-*-*******-***, **PC-320S**-*A/B-****-*-*******-***, **DM-320S**-*A/B-****-*-*******-***

[5] Manufacturer: **Pepperl+Fuchs SE**

[6] Address: **Lilienthalstrasse 200, 68307 Mannheim, Germany**

[7] This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] UL International Demko A/S 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 Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014.

The examination and test results are recorded in confidential report no. **DK/ULD/ExTR22.0020/02.**

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018
EN 60079-11:2012
EN IEC 60079-7:2015/A1:2018
EN 60079-31:2014

Where additional criteria beyond those given here have been used, they are listed at item 18 in 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” listed under item 17 of this certificate.

[11] This Type examination certificate relates only to the design of the specified product, and not to specific items of product subsequently manufactured.

[12] The marking of the product shall include the following (marking is provided in the Schedule as a part of item 15, if applicable):

II 3 G **Ex ec [ic Gc] IIC T4 Gc (when fitted with Panel RM/PC-320P: RM-320S, PC-320S)**

II 3 D **Ex tc [ic Dc] IIIC T85°C Dc (when fitted with Panel RM/PC-320P: RM-320S, PC-320S)**

II 3 G **Ex ec IIC T4 Gc (when fitted with Panel DM-320P: DM-320S)**

II 3 D **Ex tc IIIC T85°C Dc (when fitted with Panel DM-320P: DM-320S)**

Certification Manager
Thomas Wilson

This is to certify that the sample(s) of the Product described herein (“Certified Product”) has been investigated and found in compliance with the Standard(s) indicated on this Certificate, in accordance with the ATEX Product Certification Program Requirements. This certificate and test results obtained apply only to the product sample(s) submitted by the Manufacturer. UL did not select the sample(s) or determine whether the sample(s) provided were representative of other manufactured product. UL has not established Follow-Up Service or other surveillance of the product. The Manufacturer is solely and fully responsible for conformity of all product to all applicable Standards, specifications, requirements or Directives. The test results may not be used, in whole or in part, in any other document without UL’s prior written approval.

Date of issue: 2022-08-18

Re-issued: 2023-10-27

Certification Body UL International Demko A/S, Borupvang 5A, 2750 Ballerup, Denmark
Tel. +45 44 85 65 65, info.dk@ul.com, www.ul.com

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[15] Description of Product:

The VisuNet FLX System RM-320S*/PC-320S*/DM-320S* is a modular HMI system comprised of a choice of VisuNet FLX Panels RM-320P*/PC-320P*/DM-320P* which are panel mounted into a final enclosure that can be mounted on the wall, floor, and ceiling.

Customer specific solutions can contain control elements such as push buttons, emergency stops or switches. The control elements are allowed to be operated in hazardous area since they are intrinsically safe when installed in a suitably protected circuit. Only exception is the non-I.S. USB port where the installer has to check if the area is non-hazardous respectively has to de-energize the whole system prior to usage and installation. The control elements must utilize an intrinsic safe barrier that matches the entity parameters for these control elements (verification of intrinsic safety). For example, switches can be operated via KCD2-SOT-Ex2.SP and buzzers via KCD0-SD-Ex1.1245.SP from company Pepperl+Fuchs.

Intrinsically Safe USB interfaces: The intrinsically safe USB interfaces allow the connection of separately certified input devices such as USB thumb drive or periphery such as the EXTA keyboard with pointing devices (e.g., touchpad) from company Pepperl+Fuchs.

Standard Configurations available are:

- Direct Monitor System (DM-320S-) Based on the DM-320P (certified under UL 22 ATEX 2479X + IECEx ULD 22.0017X for use in Gas atmospheres and UL 22 ATEX 2480U + IECEx ULD 22.0018U for use in Dust atmospheres).
- Remote Monitor System (RM-320S-) Based on the RM-320P (certified under UL 22 ATEX 2479X + IECEx ULD 22.0017X for use in Gas atmospheres and UL 22 ATEX 2480U + IECEx ULD 22.0018U for use in Dust atmospheres) for connection to a thin client (Ethernet) network and a host.
- PC System (PC-320S-) Based on the PC-320P (certified under UL 22 ATEX 2479X + IECEx ULD 22.0017X for use in Gas atmospheres and UL 22 ATEX 2480U + IECEx ULD 22.0018U for use in Dust atmospheres) for connection to an Ethernet network and a host PC.

VisuNet FLX System

I		II		III	IV		V		VI		VII		VIII	IX
DM-	320	S	-	X	A	-	22GT	-	A	-	1NNNNB1	-	X	XX

I -	**Technology**	
	DM-:	Direct Monitor
	PC-:	PC
	RM-:	Remote Monitor
II –	**Type**	
	S:	System
III –	**Approvals**	
	L:	ATEX/IECEx Zone 2/22, cULus CL I, II, III, DIV 2
	N:	General purpose
	P:	ATEX/IECEx Zone 2/22
IV –	**Operating Temperature range**	
	A:	Ambient Temperature: 0…40°C
	B:	Ambient Temperature: -20…50°C
V –	**Display Unit**	
	22GT:	21.5 inch, Full-HD, capacitive touch
	22FC:	same as 22GT, optical bonding
VI –	**Supply**	
	A:	115/230Vac, 50-60Hz
	D:	24Vdc (+/-20%), SELV/PELV, Class 2
VII –	**Configurations**	
	various, identified by any alphanumeric character, e.g., Computing platform	
	1N:	Intel Celeron 3965U
	2N:	Intel Core i5-7300U
	VN	Direct Monitor Unit
	RAM	
	N:	None
	A:	1x4GB
	B:	1x8GB
	C:	1x16GB
	K:	1x4GB (ambient temperature range: B)
	L:	1x8GB (ambient temperature range: B)
	M:	1x16GB (ambient temperature range: B)
	Storage	
	N:	None
	A:	32GB
	B:	64GB
	C:	128GB
	D:	256GB
	E:	512GB
	K:	32GB (ambient temperature range: B)
	L:	64GB (ambient temperature range: B)

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	M:	128GB (ambient temperature range: B)
	P:	256GB (ambient temperature range: B)
	Q:	512GB (ambient temperature range: B)
	Operating System & Software (not safety-relevant)	
	X	Can be an alphanumeric character, representing another Operating System & Software
	1	Win10
	2	P+F RM Shell
	Housing	
	B1	Stainless steel such as 304A or 316L, diff. finishes
	B2	Stainless steel such as 304A or 316L, diff. finishes
	H1	Stainless steel such as 304A or 316L, diff. finishes
	P1	Stainless steel such as 304A or 316L, diff. finishes
	A1	Aluminium such as EN AW-5754
	XX	Can be an alphanumeric character, representing different surface finishes and hole pattern positions
VIII –	**Special Accessories**	
	X:	Can be an alphanumeric character
	N:	None
IX –	Options	
	X:	Can be one or two alphanumeric characters
	N0:	Standard, No options

The optical radiation output of the product with respect to explosion protection, according to Annex II clause 1.3.1 of the Directive 2014/34/EU is covered in this certificate based on Exception 1) to the scope of EN 60079-28:2015.

Temperature range:
The ambient temperature range is 0°C to +40°C with model no. RM/PC/DM-320S-*A-****-*-*****B1/B2/H1/P1-***
The ambient temperature range is -25°C to +50°C with model no. RM/PC/DM-320S-*B-****-*-*****A1-***

Electrical data
RM-320S, PC-320S, A.C. version
115/230Vac (100Vac…240Vac) 50-60HZ, Max. 0.7A, Max. 120VA, Max. 70W
Power connection: Um = 250 V AC

RM-320S, PC-320S, D.C. version
24Vdc (20Vdc…28Vdc), (SELV/PELV) or Class 2, Max. 2.8A, Max. 56W
Power connection: Um = 30 V DC

DM-320S, A.C. version
115/230Vac (100Vac…240Vac) 50-60Hz, Max. 0.4A, Max. 120VA, Max. 40W
Power connection: Um = 250 V AC

DM-320S, D.C. version
24Vdc (20Vdc…28Vdc) (SELV/PELV) or Class 2 Max. 1.5A, Max. 30W
Power connection: Um = 30 V DC

Non-intrinsically safe interface ports
1 x DisplayPort (only RM* and PC*)
1 x mini DisplayPort (only RM* and PC*)
1 x Audio Line-out (only RM* and PC*)
2 x USB 3.1 (type A) (only RM* and PC*)
1 x USB 2.0 (type A) (only RM* and PC*)
(USB 2.0 interface port can be used to provide a Bluetooth interface by using a Bluetooth module that complies with the requirements of EN IEC 60079-0, e.g.: LM506.)
2 x LAN ports (RJ45) (only RM* and PC*)
Card interfaces - 1 x PCIe and 1 x mPCIe card (only RM* and PC*)
1 x HDMI (only DM*)
1 x DVI-I (only DM*)
1 x VGA (only DM*)
1 x USB (type B) (only DM*)
Only for connection to SELV/PELV circuits
Maximum input voltage Um = 30 V DC

Non-intrinsically safe interface ports (only RM* and PC*)
2 x RS232/422/485 (1 x DB9 male + 1 x RJ45)
Only for connection to SELV/PELV circuits
Maximum input voltage Um = 30 V DC

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Intrinsically safe specifications:

Ex i USB ports - for the connection by the end-user of e.g., an external USB memory stick or passive keyboard according to the relevant certificate

Uo: ≤ 5.3 V
Io: ≤ 240 mA
Po: ≤ 1.27 W
Li: negligible
Ci: ≤ 11 µF
Output characteristic: rectangular

For group IIC:
Co = 989µF
Lo = 50µH
Following values of Lo and Co can be applied combined. (Ci already subtracted)

Co (uF)	6	15	32	129	989
Lo (uH)	20	10	5	2	1

For group IIB/IIIC:
Co = 989µF
Lo =1400µH
Following values of Lo and Co can be applied combined. (Ci already subtracted)

Co (uF)	5	32	76	329	989
Lo (uH)	1000	200	50	10	4

For group IIA:
Co = 989µF
Lo = 5500µH
Following values of Lo and Co can be applied combined. (Ci already subtracted)

Co (uF)	14	28	75	239	989
Lo (uH)	1000	500	100	20	4

Ex i Remote Power (connector for external switch)
Uo: ≤ 5 V
Io: ≤ 10 mA
Po: ≤ 50 mW
Li: negligible
Ci: ≤ 1 µF

For group IIC:
Co = 999 µF
Lo = 100 mH
Following values of Lo and Co can be applied combined. (Ci already subtracted)

Co [µF]	2.1	3.8	11	31	189
Lo [µH]	100000	5000	100	10	2

Control Elements
The VisuNet FLX System may be provided with Control Elements specified as part of the ordering code. The Control Elements listed below were evaluated as part of the stainless steel enclosure of the VisuNet FLX System and must not be used with the aluminium enclosure.

Intrinsically Safe operated Control Elements
To permit use of these elements in a hazardous location the end-user must provide ensure they are connected to intrinsically safe circuits via suitably selected associated apparatus located outside of the VisuNet FLX System. Installation and wiring of these must be in accordance with EN 60079-14.

These Intrinsically Safe operated control elements are classed as simple apparatus or intrinsically safe devices:

- Switch Emergency Stop FRVK* (Georg Schlegel GmbH & Co. KG) - Switch Emergency Stop can be protected against unintentional activation by means of protective shroud RRSK;
- Emergency stop QRUV 687 (Georg Schlegel GmbH & Co. KG);
- Push Button Switch SVATLR* (Georg Schlegel GmbH & Co. KG);
- Push Button Switch RRJVATLR (Georg Schlegel GmbH & Co. KG);
- Ex Buzzer Werma 71800055 (DMT98 ATEX E 005X) (WERMA Signaltechnik GmbH + Co. KG); and
- Illuminated selector SVAST* / SWAV* (Georg Schlegel GmbH & Co. KG).

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Non-Intrinsically Safe Control Element
- USB connector RRJVA_USB* with combination with SDAL22RR (Georg Schlegel GmbH & Co. KG)
- Blind plug BVSVA for push buttons and switches (Georg Schlegel GmbH & Co. KG)

Routine tests:
None

[16] Descriptive Documents
The scheduled drawings are listed in the report no. provided under item no. [8] on page 1 of this Type Examination Certificate.

[17] Special Conditions of Use:
- The device has to be mounted in an area with a lower risk of mechanical impact.
- Impacts from heavy or sharp-edged objects on the device have to be avoided. The maximum impact energy for the housing parts is 4 J, the maximum impact energy for light transmitting parts is 2 J.
- Connection to non-intrinsically safe interface Audio Jack is not allowed in hazardous areas.
- Connection to non-intrinsically safe card interfaces e.g., PCIe is not allowed in hazardous areas.
- Non-intrinsically safe Control Element USB connector RRJVA_USB* must remain closed by protective cap SDAL22RR during operation in hazardous atmosphere.
- Connections to non-intrinsically safe circuits must be mechanically secured against self-loosening by suitable means.
- Mount the device in such a way that it is protected from ultraviolet radiation and from direct sunlight.
- The intrinsically safe control elements are required to be installed by the end-user in a suitably protected circuit in accordance with EN 60079-14.

[18] Essential Health and Safety Requirements
The Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9.

Additional information
The VisuNet FLX System has in addition passed the tests for Ingress Protection to IP 66 in accordance with EN60529:1991+A1:2000+A2:2013.

The trademark PEPPERL+FUCHS will be used as the company identifier on the marking label.