

# TYPE EXAMINATION CERTIFICATE



## Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

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

Product: **VisuNet FLX System – Models RM-320S-\*A-\*\*\*\*-\*\_\*\*\*\*\*\_\*\*\*, PC-320S-\*A-\*\*\*\*-\*\_\*\*\*\*\*\_\*\*\*, DM-320S-\*A-\*\*\*\*-\*\_\*\*\*\*\*\_\*\*\***

Manufacturer: **Pepperl+Fuchs SE**

Address: **Lilienthalstrasse 200, 68307 Mannheim, Germany**

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

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.**

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**

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

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.

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

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

**Certification Body**

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

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# Schedule

## TYPE EXAMINATION CERTIFICATE No.

### UL 22 ATEX 2481X Rev. 0

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

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|        |                                                   |                                                                                                      |
|--------|---------------------------------------------------|------------------------------------------------------------------------------------------------------|
|        | 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 – | <b>Special Accessories</b>                        |                                                                                                      |
|        | 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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### 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  $U_m = 30 \text{ V DC}$

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  $U_m = 30 \text{ V DC}$

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

$U_o: \leq 5.3 \text{ V}$   
 $I_o: \leq 240 \text{ mA}$   
 $P_o: \leq 1.27 \text{ W}$   
 $L_i: \text{negligible}$   
 $C_i: \leq 11 \mu\text{F}$   
 Output characteristic: rectangular

For group IIC:  
 $C_o = 989 \mu\text{F}$   
 $L_o = 50 \mu\text{H}$   
 Following values of  $L_o$  and  $C_o$  can be applied combined. ( $C_i$  already subtracted)

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

For group IIB/IIIC:  
 $C_o = 989 \mu\text{F}$   
 $L_o = 1400 \mu\text{H}$   
 Following values of  $L_o$  and  $C_o$  can be applied combined. ( $C_i$  already subtracted)

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

For group IIA:  
 $C_o = 989 \mu\text{F}$   
 $L_o = 5500 \mu\text{H}$   
 Following values of  $L_o$  and  $C_o$  can be applied combined. ( $C_i$  already subtracted)

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

Ex i Remote Power (connector for external switch)

$U_o: \leq 5 \text{ V}$   
 $I_o: \leq 10 \text{ mA}$   
 $P_o: \leq 50 \text{ mW}$   
 $L_i: \text{negligible}$   
 $C_i: \leq 1 \mu\text{F}$

For group IIC:  
 $C_o = 999 \mu\text{F}$   
 $L_o = 100 \text{ mH}$   
 Following values of  $L_o$  and  $C_o$  can be applied combined. ( $C_i$  already subtracted)

|         |        |      |     |    |     |
|---------|--------|------|-----|----|-----|
| Co [uF] | 2.1    | 3.8  | 11  | 31 | 189 |
| Lo [uH] | 100000 | 5000 | 100 | 10 | 2   |

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### 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

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#### Descriptive Documents

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

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#### 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.

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#### 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.

# TYPE EXAMINATION CERTIFICATE



## Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

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

Product: **VisuNet FLX System – Models RM-320S-\*A-\*\*\*\*-\*\_\*\*\*\*\*\_\*\*\*, PC-320S-\*A-\*\*\*\*-\*\_\*\*\*\*\*\_\*\*\*, DM-320S-\*A-\*\*\*\*-\*\_\*\*\*\*\*\_\*\*\***

Manufacturer: **Pepperl+Fuchs SE**

Address: **Lilienthalstrasse 200, 68307 Mannheim, Germany**

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

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**.

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

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EN 60079-11:2012**

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

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

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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

**Certification Body**

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

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

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**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 -   | <b>Technology</b>                                                           |                                                                                    |
|       | DM-:                                                                        | Direct Monitor                                                                     |
|       | PC-:                                                                        | PC                                                                                 |
|       | RM-:                                                                        | Remote Monitor                                                                     |
| II -  | <b>Type</b>                                                                 |                                                                                    |
|       | S:                                                                          | System                                                                             |
| III - | <b>Approvals</b>                                                            |                                                                                    |
|       | L:                                                                          | ATEX/IECEx Zone 2/22, cULus CL I, II, III, DIV 2                                   |
|       | N:                                                                          | General purpose                                                                    |
|       | P:                                                                          | ATEX/IECEx Zone 2/22                                                               |
| IV -  | <b>Operating Temperature range</b>                                          |                                                                                    |
|       | A:                                                                          | Ambient Temperature: 0...40°C                                                      |
| V -   | <b>Display Unit</b>                                                         |                                                                                    |
|       | 22GT:                                                                       | 21.5 inch, Full-HD, capacitive touch                                               |
|       | 22FC:                                                                       | same as 22GT, optical bonding                                                      |
| VI -  | <b>Supply</b>                                                               |                                                                                    |
|       | A:                                                                          | 115/230Vac, 50-60Hz                                                                |
|       | D:                                                                          | 24Vdc (+/-20%), SELV/PELV, Class 2                                                 |
|       | <b>Configurations</b>                                                       |                                                                                    |
| VII - | 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                                                                              |
|       | <b>Operating System &amp; Software (not safety-relevant)</b>                |                                                                                    |
|       | X                                                                           | Can be an alphanumeric character, representing another Operating System & Software |
|       | 1                                                                           | Win10                                                                              |
|       | 2                                                                           | P+F RM Shell                                                                       |



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### UL 22 ATEX 2481X Rev. 1

|        |                            |                                                                                                      |
|--------|----------------------------|------------------------------------------------------------------------------------------------------|
|        | 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 – | <b>Special Accessories</b> |                                                                                                      |
|        | 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

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# 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

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#### Descriptive Documents

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

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

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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.

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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.

# TYPE EXAMINATION CERTIFICATE



## Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

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

Product: **VisuNet FLX System – Models RM-320S-\*A/B-\*\*\*\*-\*\_\*\*\*\*\*\_\*\*\*, PC-320S-\*A/B-\*\*\*\*-\*\_\*\*\*\*\*\_\*\*\*, DM-320S-\*A/B-\*\*\*\*-\*\_\*\*\*\*\*\_\*\*\***

Manufacturer: **Pepperl+Fuchs SE**

Address: **Lilienthalstrasse 200, 68307 Mannheim, Germany**

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

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.**

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.

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.

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

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](mailto:info.dk@ul.com), [www.ul.com](http://www.ul.com)

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# Schedule

## TYPE EXAMINATION CERTIFICATE No.

### UL 22 ATEX 2481X Rev. 2

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**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**

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

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

## TYPE EXAMINATION CERTIFICATE No.

### UL 22 ATEX 2481X Rev. 2

|        |                                                   |                                                                                                      |
|--------|---------------------------------------------------|------------------------------------------------------------------------------------------------------|
|        | 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 – | <b>Special Accessories</b>                        |                                                                                                      |
|        | 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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[14]

# Schedule

## TYPE EXAMINATION CERTIFICATE No.

### UL 22 ATEX 2481X Rev. 2

#### 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:  $\leq 5.3$  V  
 Io:  $\leq 240$  mA  
 Po:  $\leq 1.27$  W  
 Li: negligible  
 Ci:  $\leq 11$   $\mu$ F  
 Output characteristic: rectangular

For group IIC:  
 Co = 989  $\mu$ F  
 Lo = 50  $\mu$ H  
 Following values of Lo and Co can be applied combined. (Ci already subtracted)

|               |    |    |    |     |     |
|---------------|----|----|----|-----|-----|
| Co ( $\mu$ F) | 6  | 15 | 32 | 129 | 989 |
| Lo ( $\mu$ H) | 20 | 10 | 5  | 2   | 1   |

For group IIB/IIIC:  
 Co = 989  $\mu$ F  
 Lo = 1400  $\mu$ H  
 Following values of Lo and Co can be applied combined. (Ci already subtracted)

|               |      |     |    |     |     |
|---------------|------|-----|----|-----|-----|
| Co ( $\mu$ F) | 5    | 32  | 76 | 329 | 989 |
| Lo ( $\mu$ H) | 1000 | 200 | 50 | 10  | 4   |

For group IIA:  
 Co = 989  $\mu$ F  
 Lo = 5500  $\mu$ H  
 Following values of Lo and Co can be applied combined. (Ci already subtracted)

|               |      |     |     |     |     |
|---------------|------|-----|-----|-----|-----|
| Co ( $\mu$ F) | 14   | 28  | 75  | 239 | 989 |
| Lo ( $\mu$ H) | 1000 | 500 | 100 | 20  | 4   |

#### Ex i Remote Power (connector for external switch)

Uo:  $\leq 5$  V  
 Io:  $\leq 10$  mA  
 Po:  $\leq 50$  mW  
 Li: negligible  
 Ci:  $\leq 1$   $\mu$ F

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

|               |        |      |     |    |     |
|---------------|--------|------|-----|----|-----|
| Co [ $\mu$ F] | 2.1    | 3.8  | 11  | 31 | 189 |
| Lo [ $\mu$ H] | 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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## Schedule TYPE EXAMINATION CERTIFICATE No. UL 22 ATEX 2481X Rev. 2

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.

# TYPE EXAMINATION CERTIFICATE



## Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

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

Product: **VisuNet FLX System – Models RM-320S-\*A/B-\*\*\*\*-\*\_\*\*\*\*\*\_\*\*\*, PC-320S-\*A/B-\*\*\*\*-\*\_\*\*\*\*\*\_\*\*\*, DM-320S-\*A/B-\*\*\*\*-\*\_\*\*\*\*\*\_\*\*\***

Manufacturer: **Pepperl+Fuchs SE**

Address: **Lilienthalstrasse 200, 68307 Mannheim, Germany**

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

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/ExTR22.0020/03**.

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

**EN IEC 60079-0:2018  
EN 60079-11:2012**

**EN 60079-7:2015  
EN 60079-31:2014**

**EN IEC 60079-7:2015/A1:2018  
EN IEC 60079-31:2024**

Where additional criteria beyond those given here have been used, they are listed at item 18 in the Schedule.

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.

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

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:** 2025-06-09

**Certification Body**

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# Schedule

## TYPE EXAMINATION CERTIFICATE No.

### UL 22 ATEX 2481X Rev. 3

#### 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

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

|       |                                                                             |                                                                                                  |
|-------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| I -   | <b>Technology</b>                                                           |                                                                                                  |
|       | DM-:                                                                        | Direct Monitor                                                                                   |
|       | PC-:                                                                        | PC                                                                                               |
|       | RM-:                                                                        | Remote Monitor                                                                                   |
| II -  | <b>Type</b>                                                                 |                                                                                                  |
|       | S:                                                                          | System                                                                                           |
| III - | <b>Approvals</b>                                                            |                                                                                                  |
|       | L:                                                                          | ATEX/IECEx Zone 2/22, cULus CL I, II, III, DIV 2                                                 |
|       | N:                                                                          | General purpose                                                                                  |
|       | P:                                                                          | ATEX/IECEx Zone 2/22                                                                             |
| IV -  | <b>Operating Temperature range</b>                                          |                                                                                                  |
|       | A:                                                                          | Ambient Temperature: 0...40°C                                                                    |
|       | B:                                                                          | Ambient Temperature: -20...50°C                                                                  |
| V -   | <b>Display Unit</b>                                                         |                                                                                                  |
|       | 22GT:                                                                       | 21.5 inch, Full-HD, capacitive touch                                                             |
|       | 22KT:                                                                       |                                                                                                  |
|       | 22FC:                                                                       | same as 22GT and 22KT, optical bonding                                                           |
| VI -  | <b>Supply</b>                                                               |                                                                                                  |
|       | A:                                                                          | 115/230Vac, 50-60Hz                                                                              |
|       | D:                                                                          | 24Vdc (+/-20%), SELV/PELV, Class 2                                                               |
| VII - | <b>Configurations</b>                                                       |                                                                                                  |
|       | various, identified by any alphanumeric character, e.g., Computing platform |                                                                                                  |
|       | 1N:                                                                         | Intel Celeron 3965U                                                                              |
|       | 2N:                                                                         | Intel Core i5-7300U                                                                              |
|       | VN                                                                          | Direct Monitor Unit                                                                              |
|       | RAM                                                                         |                                                                                                  |
|       | X:                                                                          | Can be an alphanumeric character representing the storage within the permitted temperature range |
|       | 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                                                                     |                                                                                                  |
|       | X:                                                                          | Can be an alphanumeric character representing the storage within the permitted temperature range |
|       | N:                                                                          | None                                                                                             |
|       | A:                                                                          | 32GB                                                                                             |
|       | B:                                                                          | 64GB                                                                                             |

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|        |                                                   |                                                                                                      |
|--------|---------------------------------------------------|------------------------------------------------------------------------------------------------------|
|        | C:                                                | 128GB                                                                                                |
|        | D:                                                | 256GB                                                                                                |
|        | E:                                                | 512GB                                                                                                |
|        | K:                                                | 32GB (ambient temperature range: B)                                                                  |
|        | L:                                                | 64GB (ambient temperature range: B)                                                                  |
|        | 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 – | <b>Special Accessories</b>                        |                                                                                                      |
|        | X:                                                | Can be an alphanumeric character                                                                     |
|        | N:                                                | None                                                                                                 |
|        | R                                                 | Integrated RFID Reader Variant 1 Non-Legic                                                           |
|        | F                                                 | Integrated RFID Reader Variant 2 Legic                                                               |
| 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 -20°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

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#### 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  $U_m = 30 \text{ V DC}$

#### 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

$U_o: \leq 5.3 \text{ V}$

$I_o: \leq 240 \text{ mA}$

$P_o: \leq 1.27 \text{ W}$

$L_i$ : negligible

$C_i: \leq 11 \text{ } \mu\text{F}$

Output characteristic: rectangular

For group IIC:

$C_o = 989 \text{ } \mu\text{F}$

$L_o = 50 \text{ } \mu\text{H}$

Following values of  $L_o$  and  $C_o$  can be applied combined. ( $C_i$  already subtracted)

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

For group IIB/IIIC:

$C_o = 989 \text{ } \mu\text{F}$

$L_o = 1400 \text{ } \mu\text{H}$

Following values of  $L_o$  and  $C_o$  can be applied combined. ( $C_i$  already subtracted)

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

For group IIA:

$C_o = 989 \text{ } \mu\text{F}$

$L_o = 5500 \text{ } \mu\text{H}$

Following values of  $L_o$  and  $C_o$  can be applied combined. ( $C_i$  already subtracted)

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

#### Ex i Remote Power (connector for external switch)

$U_o: \leq 5 \text{ V}$

$I_o: \leq 10 \text{ mA}$

$P_o: \leq 50 \text{ mW}$

$L_i$ : negligible

$C_i: \leq 1 \text{ } \mu\text{F}$

For group IIC:

$C_o = 999 \text{ } \mu\text{F}$

$L_o = 100 \text{ mH}$

Following values of  $L_o$  and  $C_o$  can be applied combined. ( $C_i$  already subtracted)

|                      |        |      |     |    |     |
|----------------------|--------|------|-----|----|-----|
| Co [ $\mu\text{F}$ ] | 2.1    | 3.8  | 11  | 31 | 189 |
| Lo [ $\mu\text{H}$ ] | 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.

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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

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Descriptive Documents

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

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Specific 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.

Additionally, when fitted with the RFID20 RFID Reader:

- Avoid electrostatic charges which could result in electrostatic discharges while installing, operating, or maintaining the device.
- Mount the device in a location with low electrostatic charge. Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1.
- The RFID20 RFID Reader contains a Micro USB Connector, a UART Connector and a SAM Slot (SAM Card Holder). These connections have not been evaluated for use in the Hazardous Area and must not be used.

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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.