Gönnheimer
Elektronic GmbH

Ex PC / HMI and Workstations
Ex Automation Technology
Ex p-Pressurized Enclosures

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Gönnheimer - Your Partner in Explosion Protection

Product overview

- Ex p-Pressurized Enclosures
- Ex HMI / Visualization concepts
- Ex HMI Accessories
- Ex Field Indicators
- Ex Measurement and Control Devices

Many thanks in advance for forwarding this document to interested colleagues. Of course we will assist you with all your questions. Please feel free to contact us at any time.

Your Gönnheimer Team

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Ex p – Pressurized enclosure: System family and components

For each Ex application and each Ex-Zone, there is a compatible pressurized enclosure with suitable purge controller and peripheral components.



- Gönnheimer offers complete Ex p-systems for Ex-Zones 1/21 and 2/22, ATEX and IECEx, as well as a purge controller for Class1/ Div1 for the American market

- Various combination possibilities allow us to realize our customer‘s wishes and demands with a suitable Ex p-solution

- Ultra compact disconnector units are available to ensure a safe disconnection of all active signal and supply lines that are not intrinsically-safe

- Each pressurized enclosure is individually designed for the customer to ensure the best technical solution with highest long-time availability of the application

- Gönnheimer offers special OEM cabinets that are qualified for Ex p-applications to eliminate extra costs by choosing unqualified housings

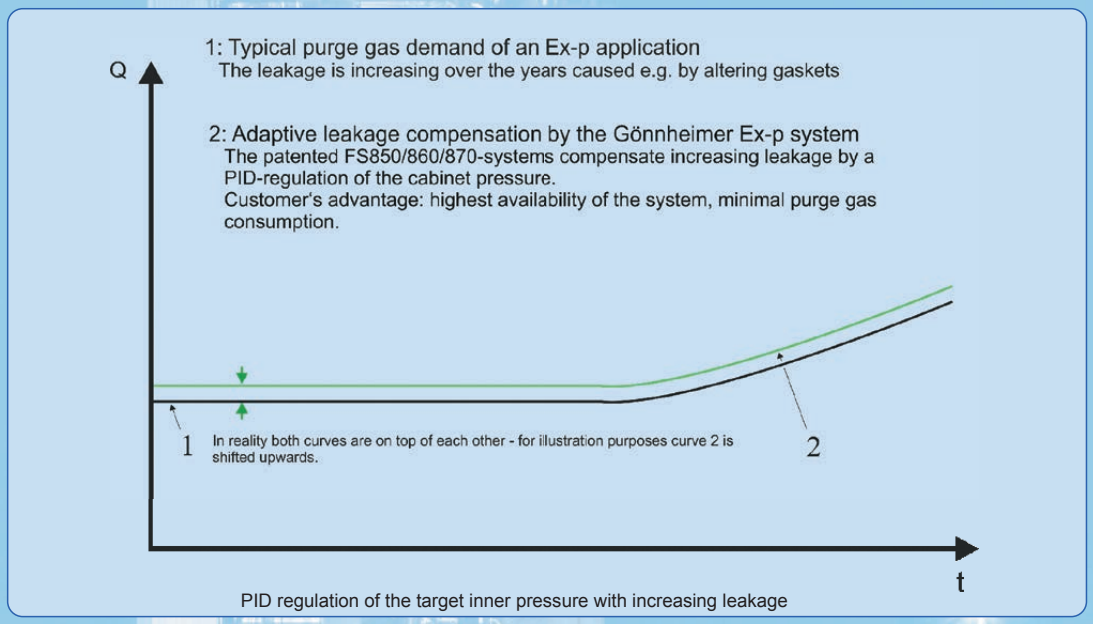
- Gönnheimer offers the ATEX-certification as well as the IECEx-certification for Ex-Zones 1/21 or 2/22 based on a EC type-examination certificate of a notified body
  → Norm compliant certification in a short time at low costs

Advantages of a Gönnheimer pressurized enclosure:

Patented pressure regulation with proportional valve technology:

The PID-regulation of the inner pressure of the cabinet during the purging and the normal operating phase protects sensitive components e.g. front foils of HMI's at the best, as unexpected pressure peaks are prevented and the inner pressure of the cabinet is always as low as possible.

Increasing leak rates of the cabinet resulting e.g. from the aging process of the gaskets are automatically equalized by the purge controller by increasing supply of purge air. This prevents an unexpected shut down of the device caused by pressure drop below the minimum pressure, and increases the availability of the system.



PID regulation of the target inner pressure with increasing leakage

Integrating purging procedure:

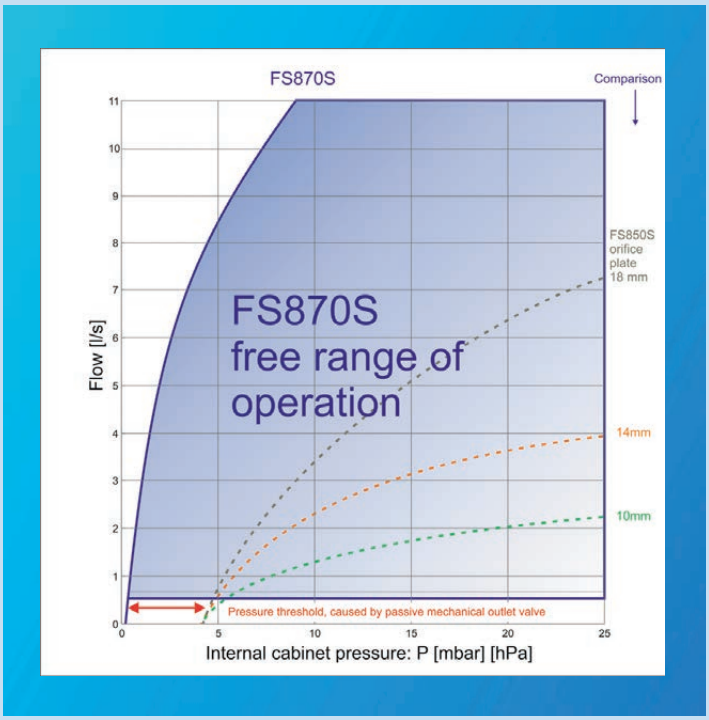
During the integrated purging procedure the actual air flow at the outlet of the Ex-p cabinet is measured and integrated by a proportional sensor. Only the specified purge volume is flushed during the purging phase and wastage of purge gas is prevented. Therefore the purging phase can be finished earlier as with the time-based purging. In addition to that, the minimum flow rate is controlled all the time during the purging phase, a decrease below the pre-set value would immediately stop the integration to guarantee a safe and adequate purging. An increasing flow rate would consequently lead to a reduction of the needed time.

Essential advantages at a glance:

- Considerably lower air/inert gas consumption as with a time-based purging with digital valve
- Higher availability of the system; an increasing leakage e.g. through aging process of the gasket is compensated by the purge controller
- Flow noises are minimized
- The PID regulation is during the purging phase and the normal operating phase available
- A defined inner pressure protects pressure sensitive parts inside the Ex p-cabinet e.g. foil keyboards or touch panels

Ex p- The reference class of Ex-Zone 1/21 purge controllers





Features:

- Flow measurement without orifice plate, low back pressure
- Wide range flow measurement with high dynamic range of 1:50 in comparison to orifice plate with 1:5
- Simultaneous PID-control of cabinet pressure and flow rate, values programmable
- Pre purging phase with the same low pressure level as in operating phase but high flow rates
- Ethernet interface for connection to supervisory control system
- No external pressure- and flow sensor needed
- Internal log file

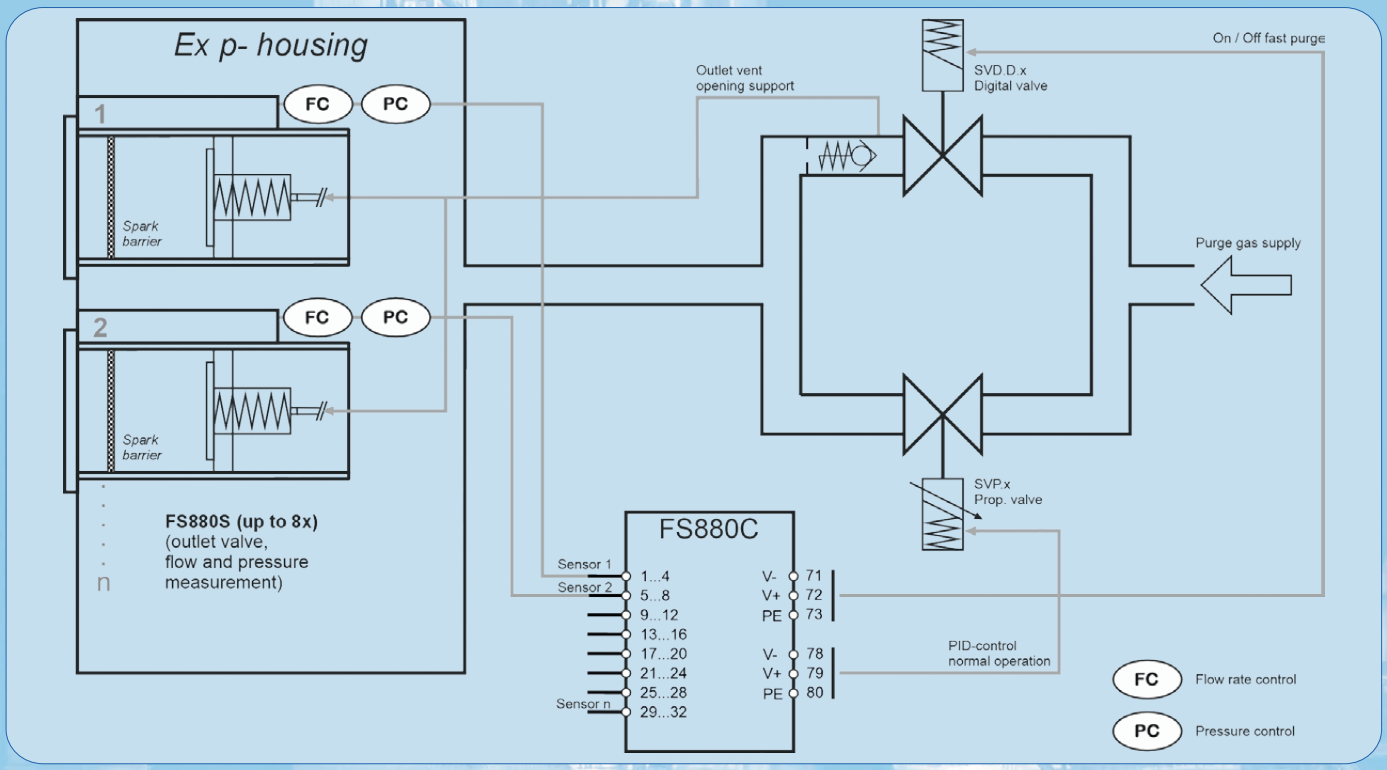
NEW: Pressurized enclosure system for large volumes and maximum flow rates



FS880C



FS880S



Features:

- Scalable architecture with 1 - 8 outlet vents for enclosures of virtually any size and purge flow rates of up to 20,000 l/min
- Actively controlled outlet vents for minimal back pressure and efficient purging
- PID-controlled enclosure pressure for minimal purge gas consumption during operation and maximum availability
- Flexible distribution of multiple outlet vents to prevent gas concentration pockets and dead zones, ensuring a homogeneous purging process even in large and complex enclosures
- Communication between the control unit and peripheral field components via an intrinsi cally safe bus system with eight inputs for outlet vents, temperature sensors or other digital devices
- External communication via integrated Ethernet interface
- Safe, fast and reproducible commissioning using customer-specific configuration modules

Ex p – Ex-Zone 2/22 purge controllers

For Ex-Zone 2/22 the compact purge controllers from Gönnheimer offer easy and flexible solutions for nearly all demands.



- The compact Ex-p systems FS830 and FS840 for Ex-Zone 2/22 are flexible to install. They consist of the purge controller, a purge air inlet valve and one or more air outlet vents

- When using more than one air outlet, the flushing time for bigger cabinets reduces significant, as a higher volume flow can be realised

- Additionally Gönnheimer offers special housings, that are suitable for Ex-p applications to eliminate extra costs by choosing unqualified housings

- Gönnheimer offers the ATEX-certification as well as the IECEx-certification based on a EC type-examination certificate of a notified body

Features:

- Additional external alarm input for the connection of e.g. a thermal fuse, a float switch, a key switch, etc.

- Two-line display (2x16 digits) for better readability of the system information

- Wide range power supply unit 100-230V AC

- A future-proof micro controller ensures a long term availability of the device

- Temperature control: an external thermostat can be connected to the external alarm input. At a pre-set temperature value the device can start an air flushing to reduce the inner temperature of the cabinet

Information: The cooling process with purge gas of Ex-p systems at normal flow rates is physically limited to small cooling powers up to max. 100W only, as the heat storage capacity of the air is low.

Ex p – Pressurized enclosure: HMI / IPC for Ex-Zone 1/21

Integration of Ex-Zone 2 approved HMI / IPC devices of common manufacturers (e.g. Siemens, Beijer) also in Ex-Zone 1/21 possible.



HMI application



HMI application with additional operating buttons

- Integration of nearly all impact-tested HMI / IPC devices of common manufacturers possible (passing of impact test e.g. visible from the Ex-Zone 2 approval of panel)

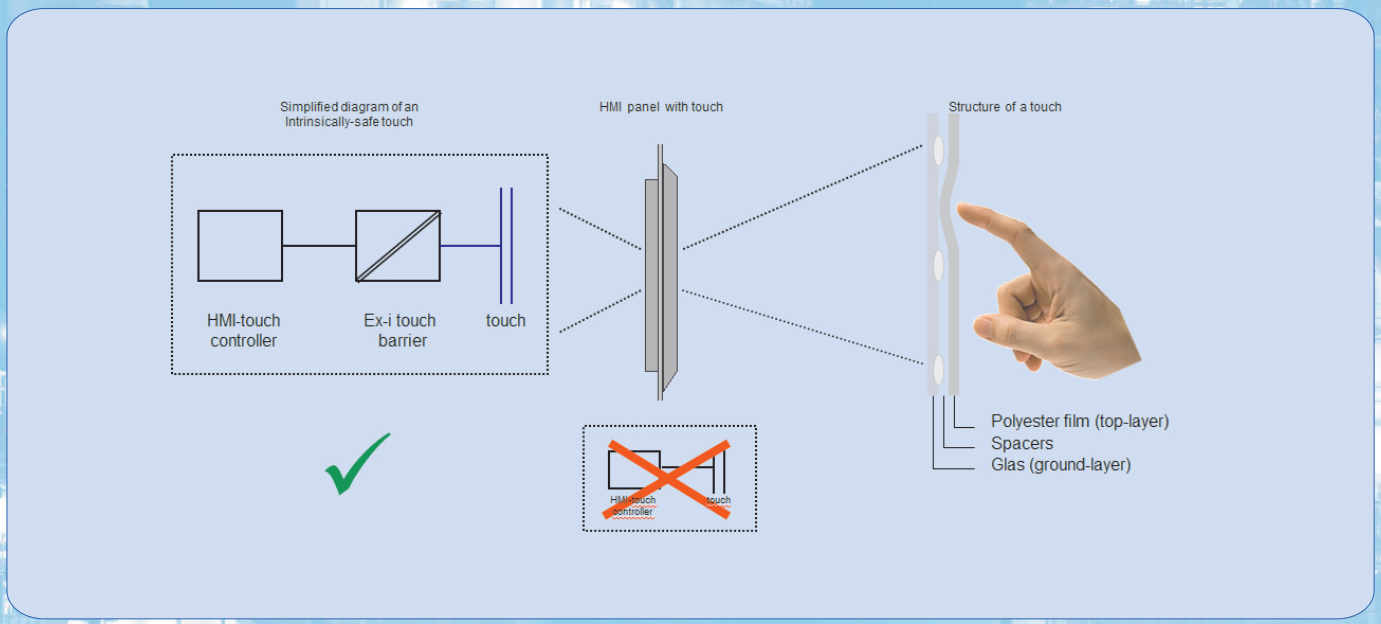
- Integration of the HMI / IPC and additional operating buttons or control components possible

- Ex-protection realized by integration of all components into a pressurized enclosure with automatically power and signal disconnection (size and geometry of the Ex p cabinet can be realized customer specific)

- Intrinsically-safe touchscreen: the touchscreen (which cannot be protected by the protection class Ex p) is made intrinsically-safe by use of Ex-i barriers to ensure a safe operation in Ex-Zone 1/21

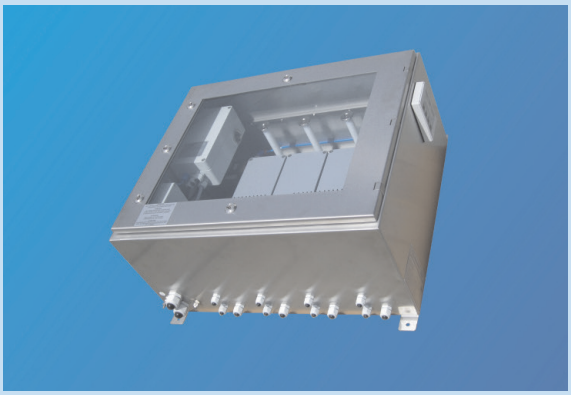
- Gönnheimer offers the ATEX-certification as well as the IECEx-certification based on a type-examination certificate of a notified body

- Application-oriented solution for operating panel or machine control with the technology of the common-system-manufacturers



Pressurized enclosures - customized applications with patented technology

Examples for complete Ex-p systems:



Control cabinet for wall mounting



Mobile Analyzer



Analyzer in compact 19" rack housing



Large scale switch cabinet with a volume of several m³



Measuring system in a compact housing



Label printer housing



Control cabinet with different operating buttons



Cascaded and separated housings

Ex p- Pressurized enclosure: Large display

Visualization solutions for multiple demands in Ex Zones 1/21 & 2/22







Features:

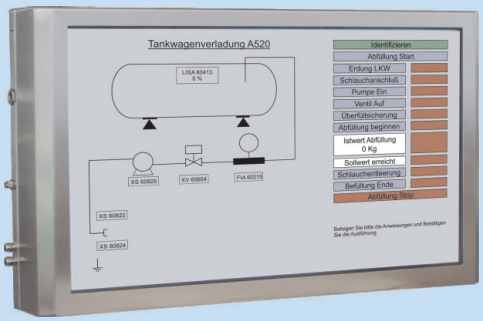
- LED- Large display with 7-Segment- or Matrix-technology
- Indication of simple process variables or of complex graphical multicolour presentations
- Customer specific display size in OEM stainless steel designer housings with IP65/IP66
- Multiple interface solutions: Ethernet, serial, digital Inputs, 4-20mA, etc.
- Always the optimal visualization solution for every task and environment

Visualisation concept for Ex-Zones 1/21 & 2/22 - Full HD Widescreen Display up to 55“

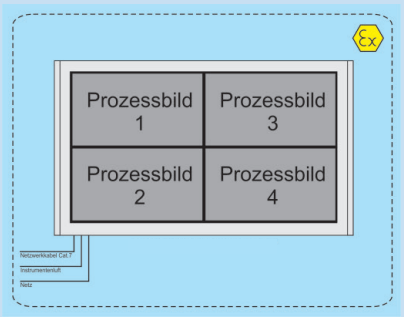
For highest demands on visualisation tasks directly in Ex-Zones 1/21 & 2/22.

Features:

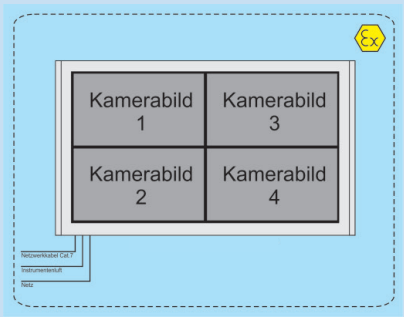
- TFT display with up to 140 cm screen diagonal (55“)
- Full HD resolution1920 x 1080
- Best picture quality through digital data transfer over copper or LWL, available interfaces: DVI, USB, Video, Ethernet, etc.
- Easy integration into existing automation solutions
- Extendable with optional input devices e.g.KB153 Keyboard with integrated touchpad for on-site input
- Application: Displaying information in a large scale to be seen over big distances, like PLC information or camera live pictures
- Various diagonals sizes are available on request



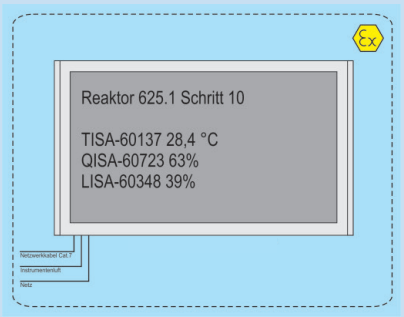
Example of operator information of a tank lorry loading



Example of a split screen - process pictures



Example of a split screen - camera pictures



Example - view step



Widescreen 50" with an optional input device e.g. to enable on-site input or approval

PC100 - the modular Ex-PC from 12,1" - 24", workstation for Ex-Zones 1 & 2/22

The platform-independent PC100 workstation is flexible and pacticular to configure for the operators needs and easy to integrate to the existing process automatization.

IEC IECEx ATEX

Features:

- **New:** KVM over IP technology combines the advantages of the existing KVM extender with the benefits of the Thin Client technology. Easy connection of various server clients with Ex-terminals via IP. No point-to-point connection is needed, just a connection with the existing industrial Ethernet

- Various screen sizes and types like high brightness displays, touch and multitouch from 12,1" to 24" for nearly all applications (e.g. clean room, etc.) available

- 3 possible options: KVM on-site workstation, as Thin Client (Windows/Linux) or as software neutral Embedded CPU (Windows/Linux compatible)

- KVM on-site workstation with digital copper/LWL connection for Single-, Dual- or Quad-Screen applications

- Thin-Client, based on TCP/IP and e.g. RDP

- Software neutral Embedded CPU with stand-alone software

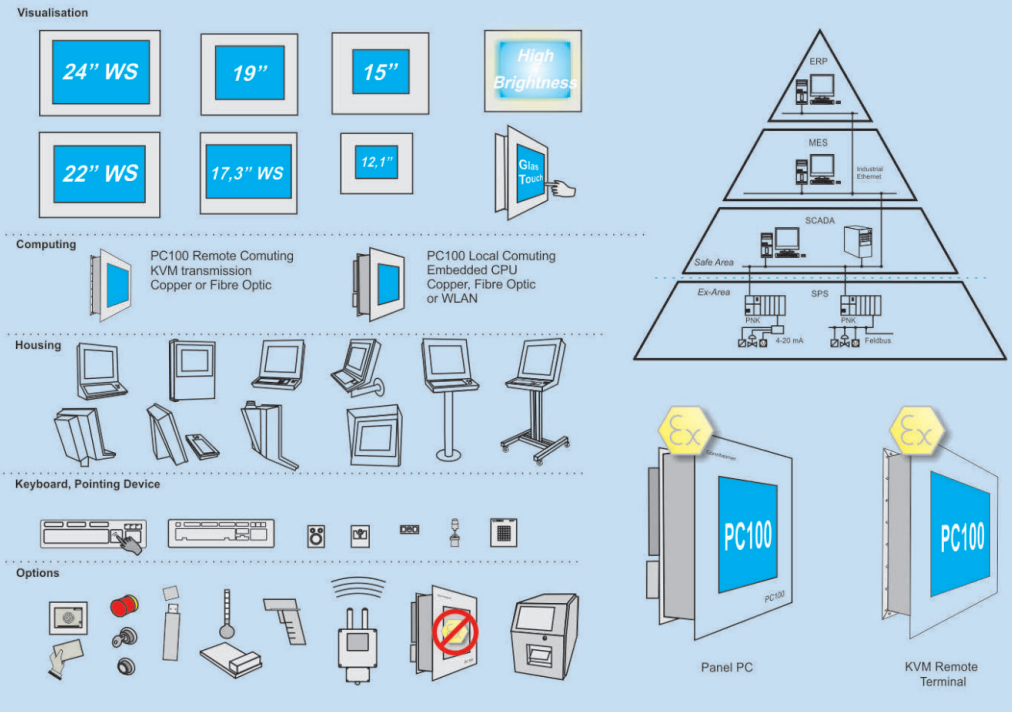
- Customized solutions easily configurable

- Different housings in V2A & V4A available

- Different keyboards, pointing-devices, scanner, RFIDs, etc. integrable

- Replacement of all parts always possible through Gönnheimer e.g. display with exhausted backlight. Therefore the life cycle expands and the operating costs stay low.





PC100 - the modular Ex-PC from 12,1" - 24", workstation for Ex-Zones 1 & 2/22

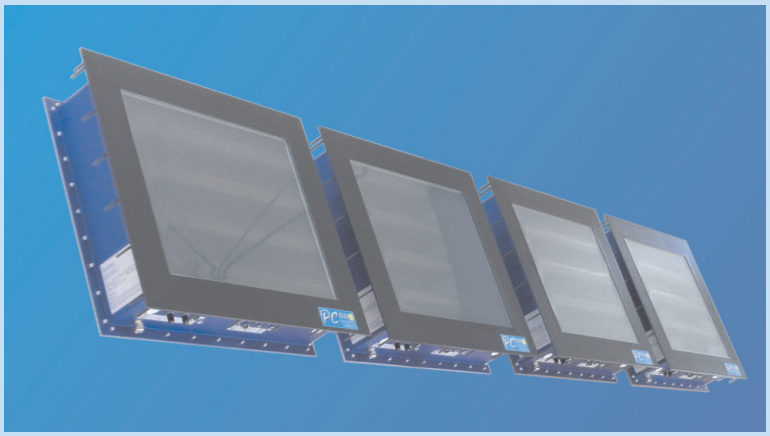
PC100 applications:



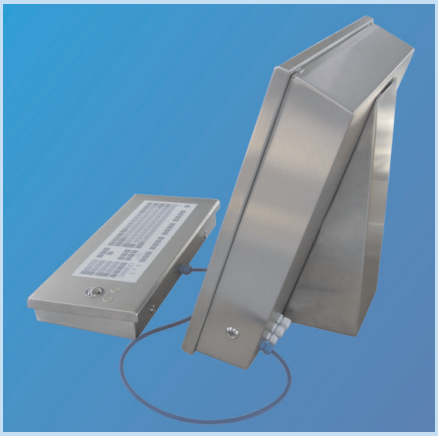
PC100, multitouch



PC100, touch, keyboard with touchpad



PC100 Quadscreen



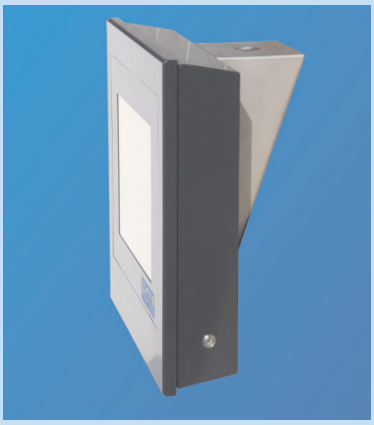
PC100 separated housings



PC100 with compact keyboard



PC100 12", touch, ceiling mounting



PC100 19", touch, ceiling mounting



PC100 floor mounting with 2 axes



PC100, OEM-solution



PC100, moveable

KB153 - Keyboard, KI153 - Keyboard interface

Features:

- Operation of the keyboards in Ex-Zones 1 & 2 possible via keyboard interface
- Various layouts available
- Keyboards available as panel mounting or with housing
- Multiple combinations from keyboards and pointing devices possible



Keyboard interface KI153 with 1 or 2 channels



KB153 touchpad keyboard for panel mounting



KB153 compact keyboard with housing



KB153 keyboard and trackball with housing

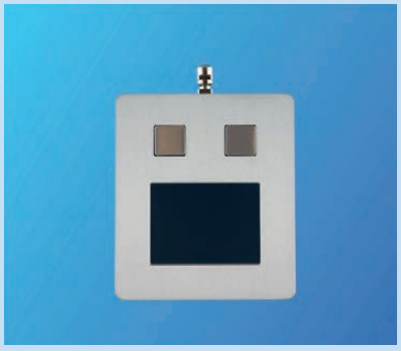
TB153 - Trackball/Joystick

Features:

- Operation of the pointing-devices in Ex-Zones 1 & 2 possible via keyboard interface
- Different types, dimensions and versions as intrinsically-safe pointing-devices available
- USB or PS/2 interface
- Connection to control level via the keyboard interface
- Joysticks with contact-free mechanical pickup (no potentiometer)
- Touchpad: robust, industrial-suited design with two separate push buttons, gesture control possible
- Trackball: easy to clean, optional also available as polyester ball
- All Pointing devices also available in housings



Stainless steel trackball 38mm with 2 buttons



Touchpad with 2 buttons



Joysticks with separated / integrated buttons

FD 153 - Flashdisk



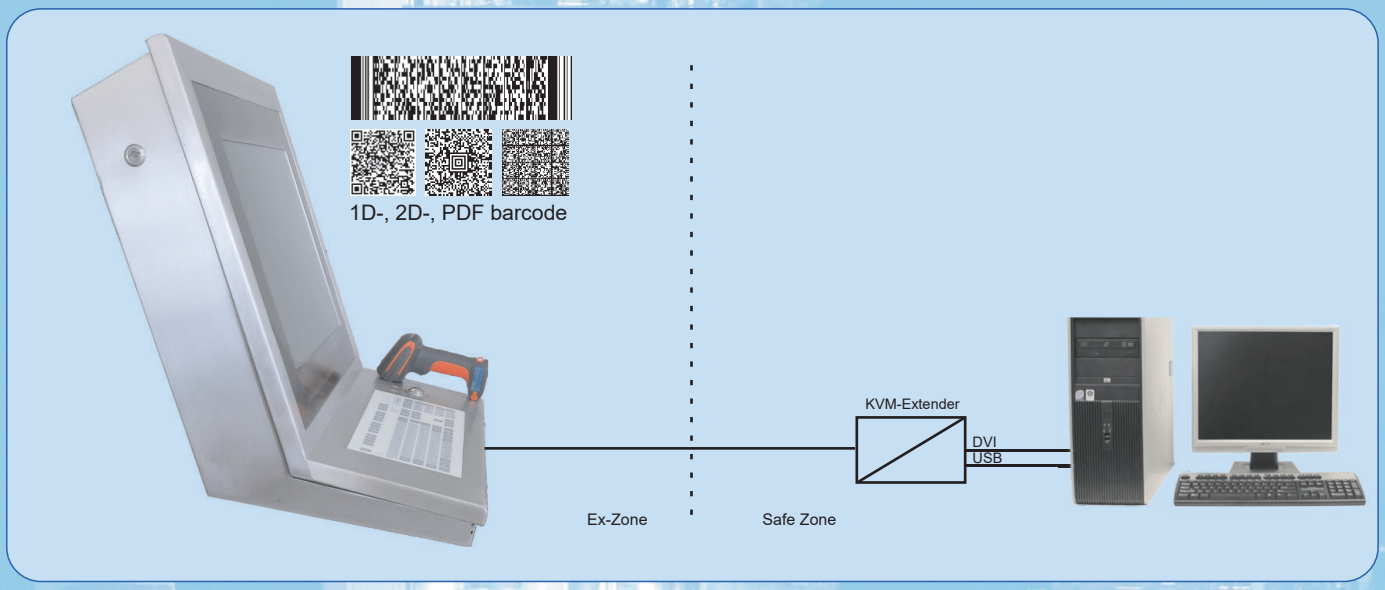
Intrinsically safe USB-Stick away 32GB

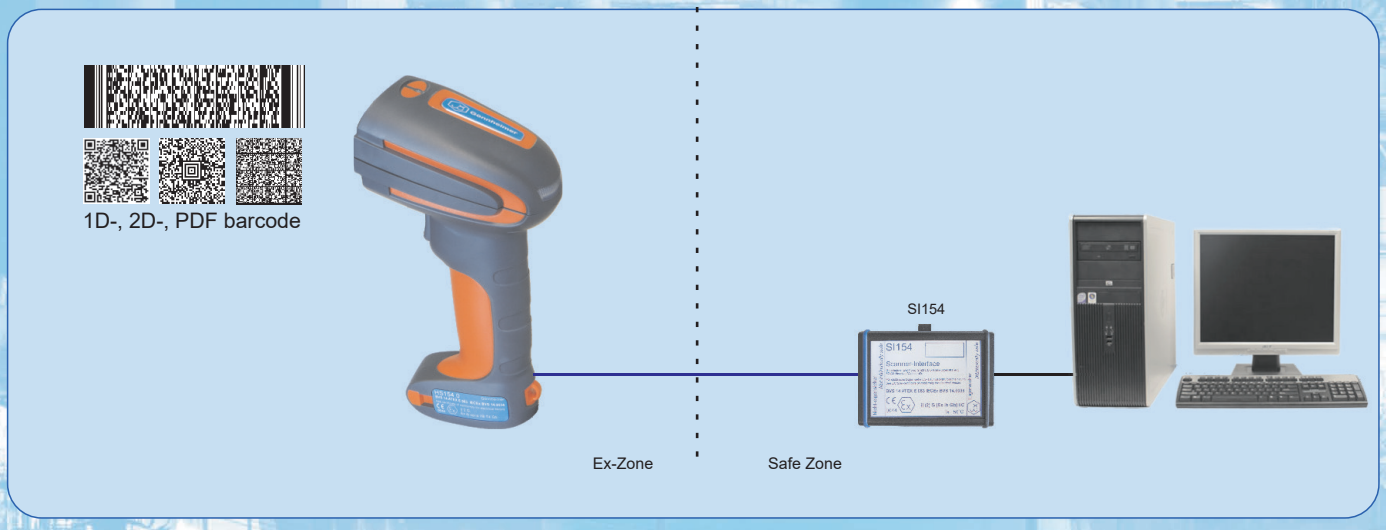
HS154 - Hand held scanner, SI154 - USB interface

The explosion-proof und industrial-suited hand held scanner HS154 was especially developed for the usage in the Ex-Zone and harsh environmental conditions

Features:

- The special scan technology ensures best barcode reading performance with highest precision
- Successful scan process is indicated through bright LEDs and an additional acoustic signal
- Connection via USB 2.0 interface, no additional power supply needed
- Recognises 1D-, 2D-, and PDF barcodes, scan reach (e.g. 20 mil linear barcodes) up to 75 cm
- Ideal for usage in industrial environment in Ex-Zones 1 & 2
- Shock-resistant and splash-proof housing IP65
- Easy scanning with a bright target cross and faded limit lines in the detection zone. Excellent scan performance also with damaged or poor quality barcodes (ca. 20% contrast ratio enough)





ID153 - Identification system

Identification systems with RFID technology for various applications like access control, time recording, log-in into a Windows based system and for discrete login on automatization systems.

Features:

- Applicable as stand-alone device or in combination with PC100 in Ex-Zones 1 & 2
- Various card readers and RFID protocols available (TROVAN, MIFARE, LEGIC, HITAG, etc.)
- Immediate transfer of data to command level possible e.g. time recording or access control
- Available interfaces: USB , RS232, RS485, RS422, Cat5/7 etc.
- A digital switch output is optional



Identification system ID153 on a PC100



Identification system ID153 as stand-alone



Identification system ID153 with Ex-e terminal box

Sample applications:

Identification, access control or time recording

- Access control and time recording is nowadays usually realised with RFID technology at production plants.

Log-in into a Windows based system

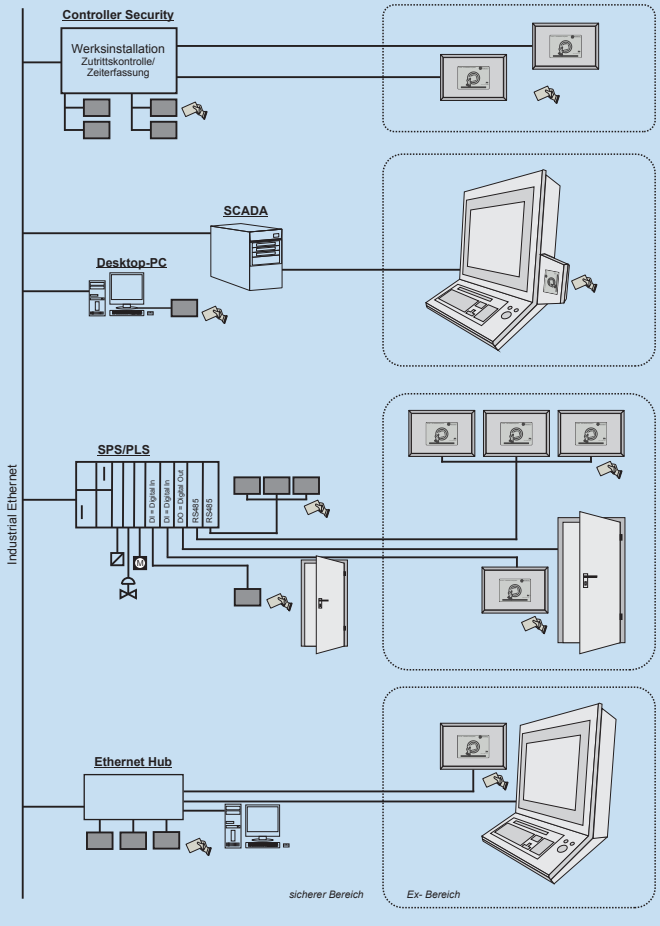
- Identification on operating level of a PLC infrastructure through a combination of PC100 and ID153 in Ex-Zones 1 & 2 possible.

Machine control / bus connection

- The ID153 has an optional digital switch. With an authorised RFID tag the switch is shifted
- With the RS485 bus connection various ID153 can be operated on an industrial bus e.g. to realize an access control for very protected areas.

Ethernet connection

- The ID153 in TCP/IP version enables an easy extension of existing infrastructure, where a normal extension over a standard PC interface (RS232, USB, etc.) is not possible.



AP170 – Ex-WLAN access point

The AP170 is a WLAN access point for industrial Ethernet networks in the Ex-Zone.

Features:

- WLAN access point for industrial Ethernet networks and wireless DECT telephone systems in Ex-Zones 1/21 & 2/22
- POE - power over Ethernet
- Supports the current standards for Ethernet (IEEE 802.3af) and WLAN (IEEE 802.11n/ac) and is downwards compatible
- Dual band operation possible - 2,4 GHz and 5 GHz band
- Current security standards available (e.g. WPA2)
- Fixed or wired antennas available
- OEM specific hardware standards possible
- Cheap and easy installation of WLAN for multiple devices in the Ex-Zone



AP170 with 2 antennas



AP170 with 4 antennas



AP170 in combination with PC100

TA125 – Text display

The text display TA125 is the ideal solution for automation tasks, where an industrial PC solution is too expensive or the 4-20mA field indicators do not fulfil the requirements.

Features:

- The text display TA125 visualises any message in Ex-Zones 1/21 & 2/22
- Displaying of texts and variables with 15mm digit height in 4 rows with 40 characters each, on a bright reflective display (68 x 244mm) with up to 255 different programmable screens, recall by control centre
- Digits can be perfectly read up to a distance of 5 meters
- Connection to control centre by serial interface or via Profibus DP, Modbus RTU or Modbus TCP protocol and PROFINET or Ethernet
- Activation of different text displays on the same bus possible
- In connection with the keyboard KB125, a bidirectional communication with the control system is possible via 12 digital and intrinsically-safe inputs
- Alarm output available
- Connection to networks via text interface TI125



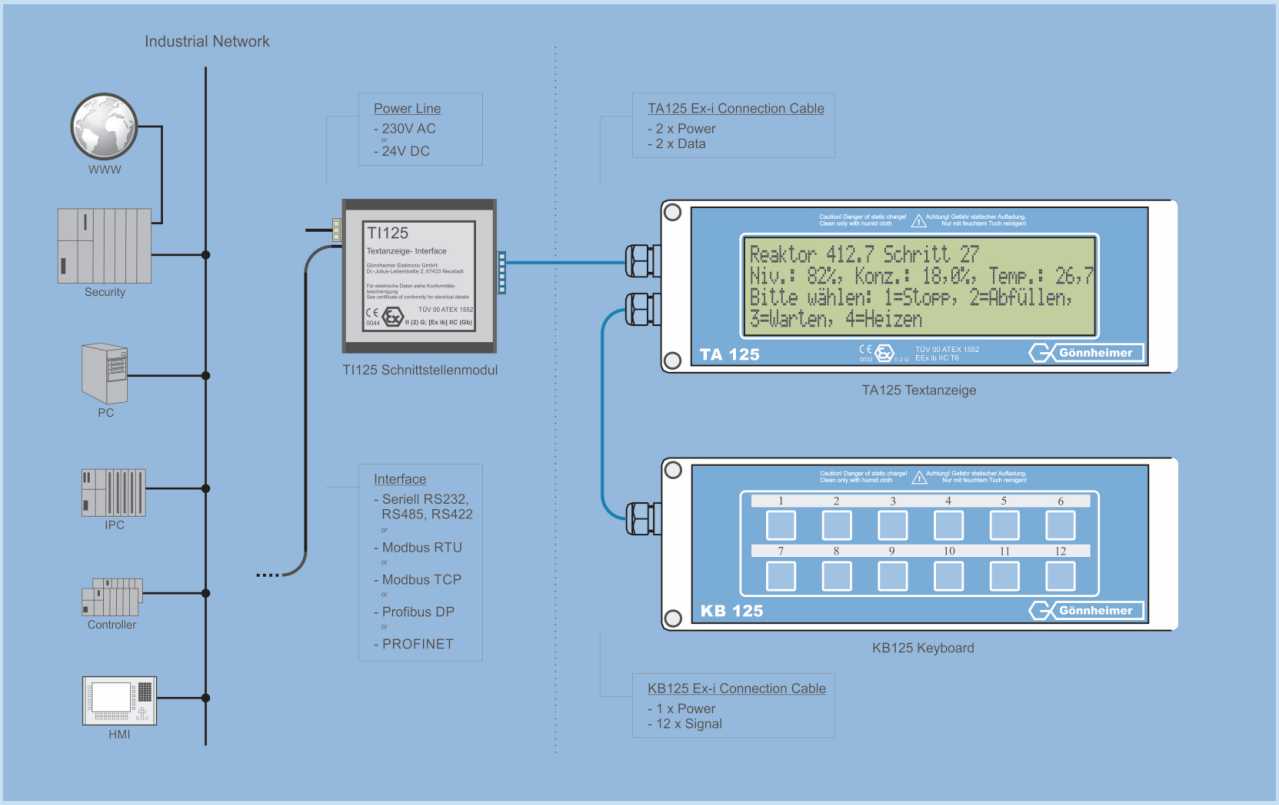
TA125 in installation housing



TA125 in stainless steel panel housing



TA125 in stainless steel installation housing



D122A – 4-20 mA Field indicators

The digital field indicator D122 displays measured values from an intrinsically-safe 4-20 mA electrical circuit in the Ex-Zone.

IEC IECEx ATEX Ex

Features:

- Approval for Ex-Zones 1/21 & 2/22
- Displaying values from an intrinsically-safe 4-20mA electrical circuit without additional power
- Bar graph for trend observation with 41 segments
- Second bar graph for limit values, which can be scaled separately from the displayed value
- Different housings available
- Switch outputs optional available
- Integrated Ex-i barrier module or integrated 2 wire transmitter optional available
- Also available as totalizer or transmitter



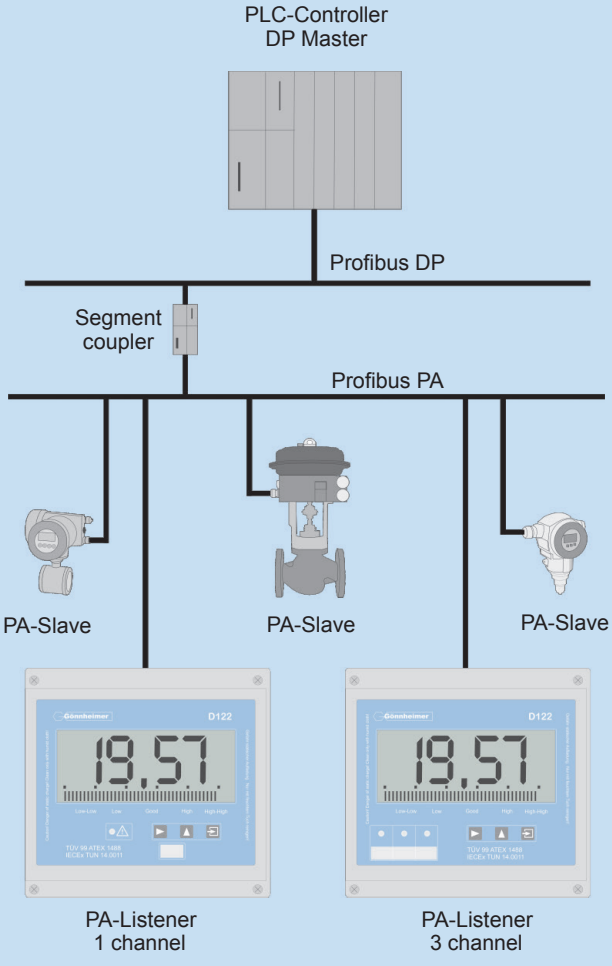
D122A.7 for 4-20mA Ex i-electrical circuits

D122PA/FF – Field indicators for the fieldbus

With the digital fieldbus indicator D122PA/FF process information from a Profibus PA- or Fieldbus Foundation H1-network participant can be displayed in the Ex-Zone.

Features:

- Applicable for a Profibus PA or a Foundation Fieldbus H1 network.
- The D122PA/FF is a listener, it has no impact on the cycle period of the bus system. The listener displays the value of a configured bus address, but is not getting active in the bus.
- The D122PA/FF is for Ex-Zones 1/21 & 2/22 approved. The D122PA/FF has a high industrial protection class of IP66 and a robust aluminium housing.
- There is a 1-channel and a 3-channel version available
- The three measured values will be displayed one after each other. With the respective active green LED the displayed value is linked to the active channel



Application example of a Profibus PA - D122PA

DC155 – Dosing controller

The dosing controller DC155 is an all-purpose dosing control device for gases, liquids or solid products inside the hazardous area.

Features:

- ATEX and IECEx certificate
- Approval for Ex-Zones 1 & 2
- Universal dosing function
- Different inputs available (Namur, digital, analogue, etc.)
- Easy to realize a remote control for the basic functions via external control inputs
- Shocks on the pipe system can be prevented by a rising and falling ramp e.g. by using a proportional solenoid valve
- Comfortable malfunction and disturbance monitoring system to monitor the sensor wiring and the flow
- Optional internal PID flow controller, no need of an external PID controller
- Optional interfaces: TTY and RS485, used protocol: MODBUS
- Analogous output can drive an impedance of more than 600Ω
- backlighted display



Dosing controller DC155

VI156 - Supply and interface module

The supply and interface module VI156 allows the dosing controller DC155 or PID controller PR130 to be directly operated with non-intrinsically-safe signals.

Features:

- Approval for Ex-Zones 1 & 2, mounting in the hazardous area
- Used for intrinsically-safe power and data supply
- No additional terminal box needed, the housing has Ex-e protection class
- All required modules are integrated in the module e.g. isolated barriers, isolating amplifiers, Ex-i power supply and electronic open collector output
- Optional serial interfaces (TTY, RS232) available
- Optional extended Ex-e terminal box (18 terminals)



Supply and interface module VI156

WT158 – Scale terminal

The scale terminal WT158 is a low cost indicator of a scale in hazardous area.

Features:

- Approval for Ex-Zones 1 & 2
- display: 5 digit 7 segments with 30mm digit height
- Protection class IP65
- Direct connection of weight cells up to a resulting load resistance higher than 85Ω
- A digital output is present
- TTY interface or an analogous 0/4 .. 20 mA output optional available



Scale terminal WT158

SG160 - Power supply

The power supply SG160 is intended to supply devices with intrinsically-safe power

Features:

- Approval for Ex-Zones 1/21 & 2/22, mountable in hazardous areas
- Available for different supply voltages
- Different output voltages and output currents available
- Additional Ex-e terminal box is unnecessary, as the housing has the Ex-e protection class
- Available with an additional control port option



Power supply SG160

NOTES

NOTES



OEM-specific products:

- You did not find the suitable product for your request?
- You are still looking for a missing Ex component to realize your installation?
- You need a product, that does not exists nowadays?
- You need your standard hardware also for the hazardous area?
- You have suggestions for new Ex products for us?

Please let us know, we will do our best to help you!

We are constantly extending our product portfolio and it will be a pleasure for us to help you with the realisation of your product demands. With our know-how and years-long experience, we support you as a competent partner during the development process and provide you with the needed products. Please do not hesitate to contact us.

Gönnheimer Elektronic GmbH