



System Description: Exicom Operator Interfaces Falcon NEC



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R. STAHL HMI SYSTEMS GMBH

Im Gewerbegebiet Pesch 14
D-50767 Cologne
<http://www.sae-stahl.de>
E-mail: office@stahl-hmi.de

Tel.: +49/(0)221/59808-200

Fax: +49/(0)221/59808-260

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Contact Information for North America

R.Stahl Inc.,
9001 Knight Road
Houston TX 77054

Tel: 800-782-4357

Fax: 713-792-9301

E-Mail: sales@rstahl.com

Web: rstahl.com

Company background:

Founded in 1998 under the name SAE-STAHL, R. STAHL HMI Systems GmbH today is a wholly owned subsidiary of the R. STAHL technology group and part of its explosion protection division. We specialise in the development and production of operating and monitoring systems both for standard industrial application and for use in hazardous areas. At present, STAHL HMI is the only company worldwide that offers the full range of both types of application. Our clients benefit from product lines with clearly outlined areas of application, separate device performance classes and a personal service. We operate on a global basis, and thus local representatives are available to customers worldwide to provide competent service and support.

System description

General information

In all areas of industry, reliable operating and monitoring systems are becoming increasingly important. In the field of operator interfaces and visualization systems, R. STAHL HMI SYSTEMS GMBH in Cologne is the only supplier capable of offering the complete range of applications for both industrial and hazardous areas. Devices for use in hazardous areas are called "Exicom", those for general purpose applications "ProVicom". The product range contains:

- Operator Interfaces – integrated hardware and software products
- Open HMI – systems with open operating systems like Windows XP embedded
- Remote HMI – modern remote PC terminals
- Mobile HMI – portable devices



Operator Interfaces Exicom Falcon

With a wide variety of functions, these devices provide optimum visualization. Their active communication concept in combination with integrated functionality reduces the workload of the automation system.

Exicom Falcon highlights

Installation in hazardous areas worldwide

International certificates for installation in hazardous areas are available, in particular ATEX (zone 1, 2 and 22) and NEC (class I, div.1 and div.2).

Backlit displays

Due to the ongoing development of display technology, STAHL HMI is able to offer displays with additional lighting features even for intrinsically safe devices.

- monochrome transfective LC displays
- Wide display angles and font sizes of up to 1.2", 30 mm
- Optimum contrast due to black/white display
- Perfect readability outside (transfective) as well as in unlit rooms (white LED backlighting)
- Increased temperature range
- Font size of up to 1.2", 30 mm for improved readability from great distances

Function key LEDs (ET-65 and ET-125)

Increased temperature range

Developed for installation in rough industrial environments, some with marine certification, increased temperature ranges and in combination with field housings made by R.STAHL, the operator interfaces can be installed almost anywhere.

- -4°F...+140°F (T4), -20°C...+60°C (T4)
- -4°F...+158°F (T3), -20°C...+70°C (T3)
- Field housings available with breather gland and heater (-22/40°F..., -30/40°C...)

Compatibility with older systems

With regard to installation, software and functionality, the new systems are compatible with the old ET-4A, ET-9752 and ET-6 systems. Please note, however, the statutory requirements concerning new installations, replacements and repairs on the basis of NEC installations and ATEX 100a and ATEX 137 (installation).

Engineering with SPSPPlus WIN

All Operator Interfaces use the SPSPPlus WIN for the project design. This tool enables fast, efficient and cost-effective project design. Changing from one device to another is very simple.

Connectivity with most automation systems

A particular advantage of our systems is their seamless connectivity to most major automation systems. Generally, there is free access to all objects within an automation system with no limitation to arrays. For an up-to-date list of available systems, please refer to our homepage: www.STAHL-HMI.de

New software features and enhancements

- Increased number of alarms from 240 to 512 with 32 alarms simultaneously active
- Dynamic histogram protocol with up to 1,000 messages (previously 170)
- 25 dynamic elements per page (variables, bar charts,...) (previously 15)
- Improved input style (calculator style)
 - Display of floating point (real) numerals important for control circuit images
- Control of backlight via automation device
- Indexing for optimum visualization of similar structures (reduces the number of process images)

Products

Exicom ET-65

Product details

Intrinsically safe operator interface for installation in Zone 1, Zone 22 (ATEX), class 1, zone 1 and class 1 div. 1 (NEC).

- TEXT performance class
- Power supply via 9381/10 or 9143/10
- Serial data transfer via fieldbus isolator 9185/11-45-10
- Connections via screw terminals
- Operating system software, engineering with SPSPPlusWIN



Technical details

Display and keyboard

Display	LCD monochrome transfective
Cover	Transparent foil
Lighting	LED backlight with additional power supply 9381/10
Display size	5.3" x 1.6", 134mm x 40.4mm
Resolution	240 x 64 pixels
Font size	variable 0.2"-1.2" 5-30 mm
Memory configuration	
Main memory	128 Kbyte
Data memory	448 Kbyte
Keyboard	Polyester membrane on FR4 material > 1 million actions
Function keys	16
Alpha and system keys	23
Soft keys	4
Key / system LEDs	16 / 4

Interfaces

Interfaces ET-65	
Communication	RS-422
Readers	Options: Barcode scanner, Wiegand reader, Proximity reader
Input:	8 binary inputs 3.3 V / 2 mA
Auxiliary power Nominal values	8 – 12.5 V 180 mA
Interfaces Signal isolator	
Serial	RS-232, RS-422/485
Fieldbus	Profibus with 9185/11-46-10 MPI with MPI-Box SSW7-RK512-RS-232
Ethernet	TCP/IP, UDP with SK-Cobox

Ambient conditions

Ambient temperature	
Operation:	-4°F - +158°F (140°F at T4) -20°C - +70°C(+60° at T4)
Storage	-22°F - +176°F -30°C - +80°C
Humidity	90% at 104°F, 40°C, without condensation
Vibration	10...55Hz (1 min.): 1.5 mm, XYZ (per 2 h)
Shock	50 G, 11 ms

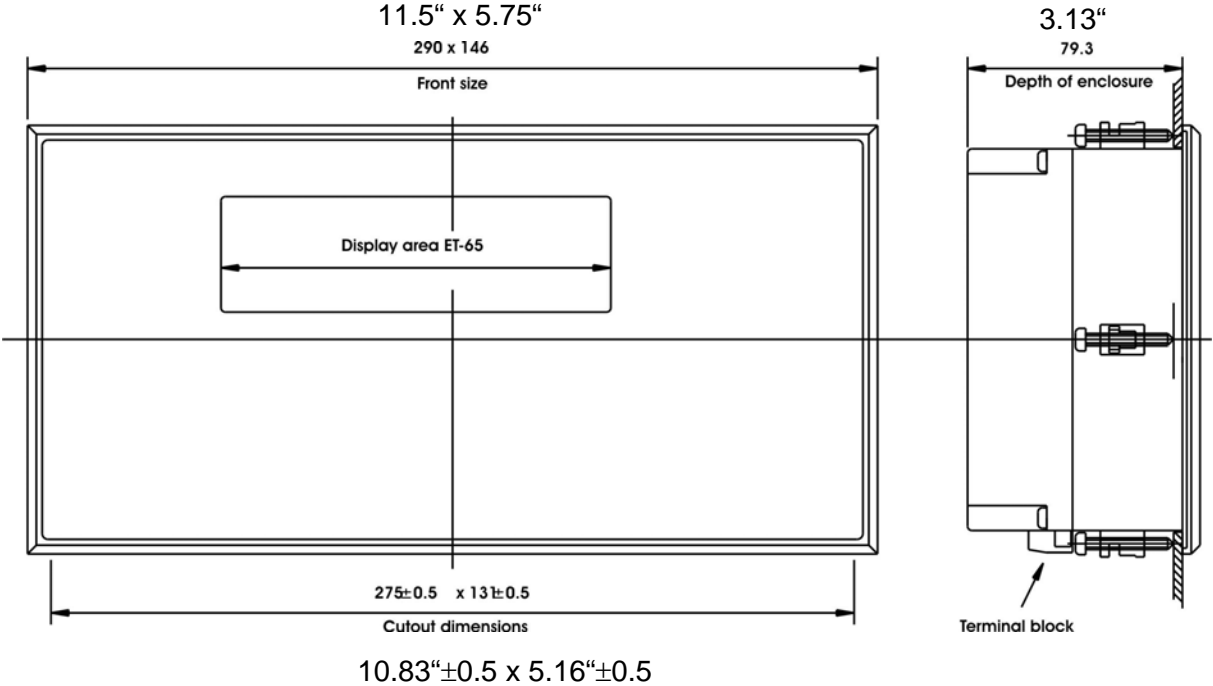
Dimensions

Front (W x H)	11.5" x 5.75" 290 x 146mm ²
Cut-out (W x H x D)	10.83" x 5.16" x 2.95" 275 x 131 x 75mm ³

Explosion protection

ATEX With power supply 9143/10	Ⓢ II 2G EEx ia IIC T4, T _a = -20°C ... +60 °C Ⓢ II 2G EEx ia IIC T3, T _a = -20°C ... +70 °C Ⓢ II 3 D IP65 T125°C
FM With power supply 9381/10	Class I, Zone 1, AEx ia IIC T4 Class I, II, III, Division 1, Groups ABCDEFG; T4

Mounting diagram:



Exicom ET-75

Product details

Intrinsically safe operator interface for installation in Zone 1, Zone 22 (ATEX), class 1, zone 1 and class 1 div. 1 (NEC).

- GRAPHIC performance class
- Power supply via 9381/10 or 9143/10
- Serial data transfer via fieldbus isolator 9185/11-45-10
- Connections via screw terminals
- Operating system software, engineering with SPSPPlusWIN
- System compatibility with Exicom ET-9752



Technical details

Display and keyboard

Display	LCD monochrome transfective
Cover	Transparent foil
Lighting	LED backlight with additional power supply 9381/10
Display size	4.5" x 2.5", 114mm x 64mm
Resolution	240 x 128 pixels
Font size	variable 0.2"-1.2", 5-30 mm
Memory configuration	
Main memory	128 Kbyte
Data memory	448 Kbyte
Keyboard	Polyester membrane on FR4 material > 1 million actions
Function keys	8
Alpha and system keys	23
Soft keys	-
Key / system LEDs	- / 4 + 4

Interfaces

Interfaces ET-75	
Communication	RS-422
Readers	Options: Barcode scanner, Wiegand reader, Proximity reader
Input:	8 binary inputs 3.3 V / 2 mA
Auxiliary power Nominal values	8 – 12.5 V 180 mA
Interfaces Signal isolator	
Serial	RS-232, RS-422/485
Fieldbus	Profibus with 9185/11-46-10 MPI with MPI-Box SSW7-RK512-RS-232
Ethernet	TCP/IP, UDP with SK-Cobox

Ambient conditions

Ambient temperature	
Operation:	-4°F - +158°F (140°F at T4) -20°C - +70°C (+60° for T4)
Storage	-22°F - +176°F -30°C - +80°C
Humidity	90% at 104°F, 40°C, without condensation
Vibration	10...55Hz (1 min.): 1.5 mm, XYZ (per 2 h)
Shock	50 G, 11 ms

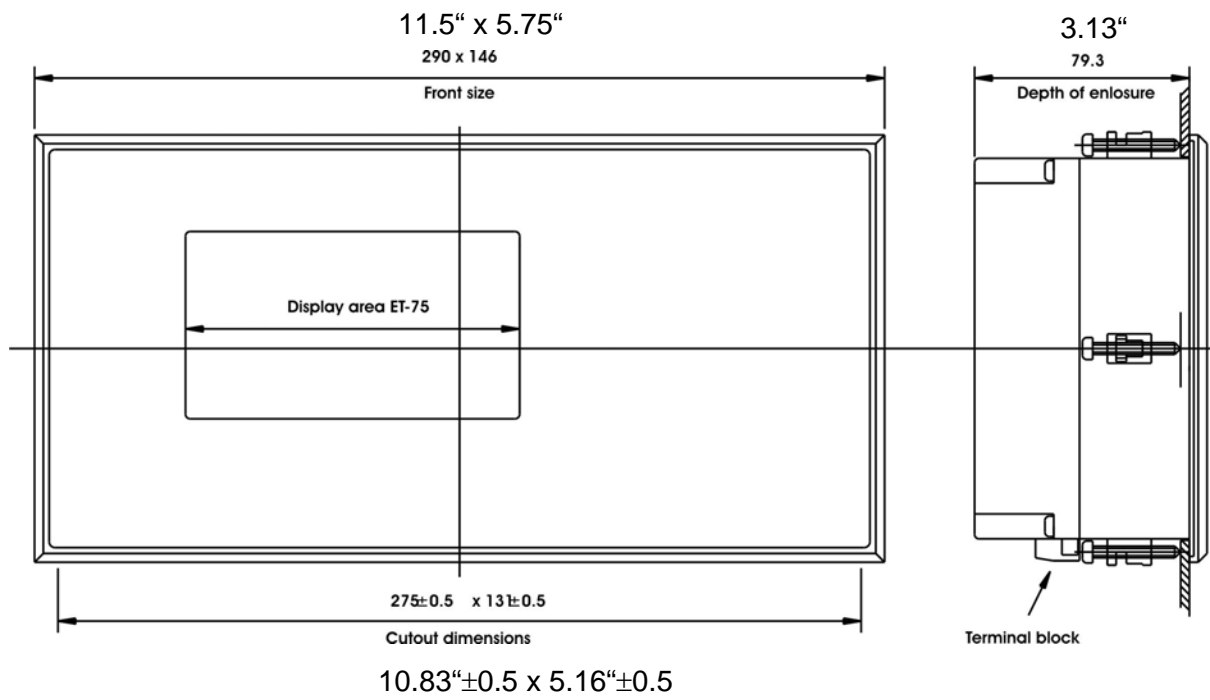
Dimensions

Front (W x H)	11.5" x 5.75" 290 x 146mm ²
Cut-out (W x H x D)	10.83" x 5.16" x 2.95" 275 x 131 x 75mm ³

Explosion protection

ATEX With power supply 9143/10	Ⓢ II 2G EEx ia IIC T4, T _a = -20°C ... +60 °C Ⓢ II 2G EEx ia IIC T3, T _a = -20°C ... +70 °C Ⓢ II 3 D IP65 T125°C
FM With power supply 9381/10	Class I, Zone 1, AEx ia IIC T4 Class I, II, III, Division 1, Groups ABCDEFG; T4

Mounting diagram:



Exicom ET-125

Product details

Intrinsically safe operator interface for installation in Zone 1, Zone 22 (ATEX), class 1, zone 1 and class 1 div. 1 (NEC).

- GRAPHIC performance class
- Power supply via 9381/10 or 9143/10
- Serial data transfer via fieldbus isolator 9185/11-45-10
- Connections via screw terminals
- Operating system software, engineering with SPSPPlusWIN
- System compatible with ET-6



Technical details

Display and keyboard

Display	LCD monochrome transfective
Lighting	LED backlight with additional power supply 9381/10
Display size	4.5" x 2.5" 114mm x 64mm
Resolution	240 x 128 pixels
Font size	variable 0.2"-1.2", 5-30 mm
Memory configuration	
Main memory	128 Kbyte
Data memory	448 Kbyte
Keyboard	Polyester membrane on FR4 material > 1 million actions
Function keys	16
Alpha and system keys	23
Soft keys	8
Key / system LEDs	12 / 4

Interfaces

Interfaces ET-125	
Communication	RS-422
Readers	Options: Barcode scanner, Wiegand reader, Proximity reader
Input:	8 binary inputs 3.3 V / 2 mA
Auxiliary power Nominal values	8 – 12.5 V 180 mA
Interfaces Signal isolator	
Serial	RS-232, RS-422/485
Fieldbus	Profibus with 9185/11-46-10 MPI with MPI-Box SSW7-RK512-RS-232
Ethernet	TCP/IP, UDP with SK-Cobox

Ambient conditions

Ambient temperature	
Operation:	-4°F - +158°F (140°F at T4) -20°C - +70°C (+60° for T4)
Storage	-22°F - +176°F -30°C - +80°C
Humidity	90% at 104°F, 40°C, without condensation
Vibration	10...55Hz (1 min.): 1.5 mm, XYZ (per 2 h)
Shock	50 G, 11 ms

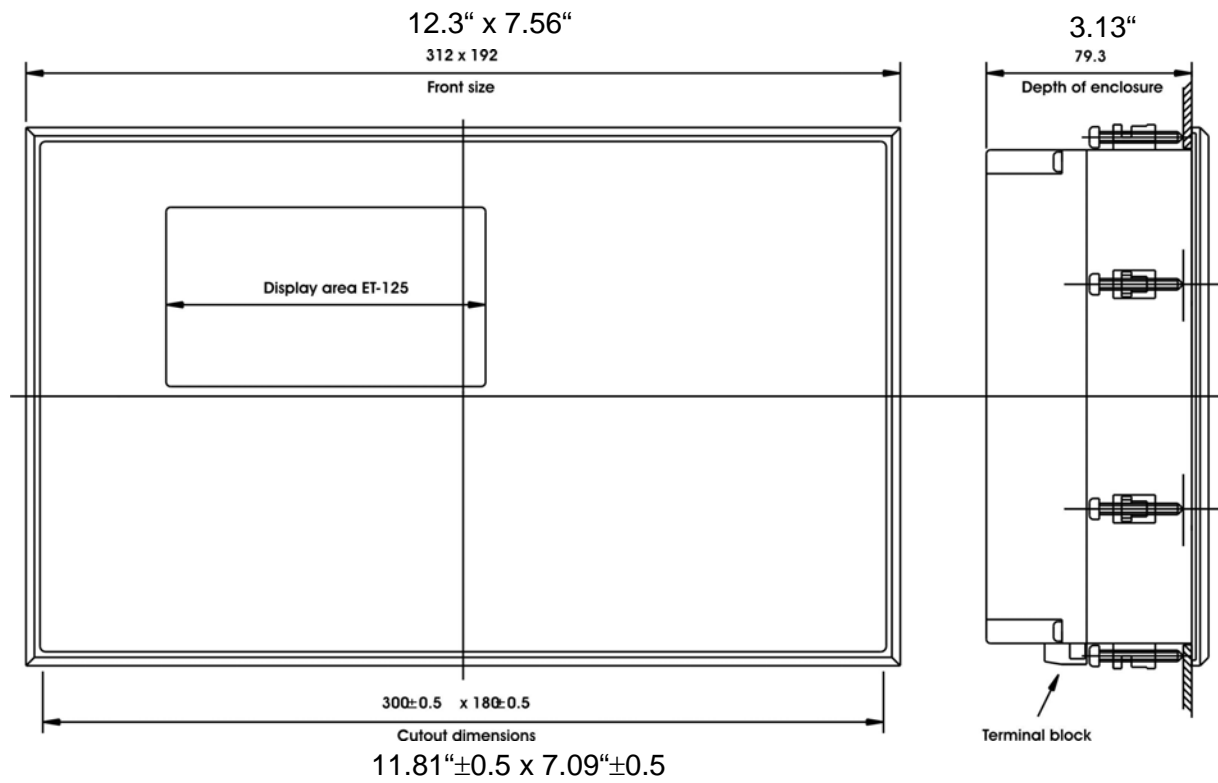
Dimensions

Front (W x H)	12.3" x 7.56" 312 x 192 mm ²
Cut-out (W x H x D)	11.81" x 7.09" x 2.95" 300 x 180 x 75 mm ³

Explosion protection

ATEX With power supply 9143/10	⊕ II 2G EEx ia IIC T4, T _a = -20°C ... +60°C ⊕ II 2G EEx ia IIC T3, T _a = -20°C ... +70°C ⊕ II 3 D IP65 T125°C
FM With power supply 9381/10	Class I, Zone 1, AEx ia IIC T4 Class I, II, III, Division 1, Groups ABCDEFG; T4

Mounting diagram:



Exicom Versions

ET-xxx-RS422 Exicom (ET-65, 75 or 125) with communication interface unit 9185/11

ET-xxx-RS422-RSi Includes an additional intrinsically safe interface for connecting a barcode reader. An additional power supply unit 9381/10 or 9143 / 10 is necessary.

ET-xxx-RS422-CRi Includes an additional intrinsically safe interface for connecting a proximity card reader. An additional power supply unit 9381/10 or 9143 / 10 is necessary.

ET-xxx-RS422-WCR Includes an additional intrinsically safe interface for connecting an intrinsically safe Wiegand card reader. An additional power supply unit 9381/10 or 9143 / 10 is necessary.



Accessories

9185/11-45-10, Fieldbus Isolator



Signal isolator for the intrinsically safe operator terminals ET-65, ET-75 and ET-125

- Intrinsically safe serial connection to the operator terminal
- Connections via Sub-D
- System compatibility with the Exicom ET-9752 and ET-6 as a replacement for the 9373/21. In combination with the 9381/10 power supply it can also replace the ET-SV/3.

Power supply 9381/10-120-200 (NEC Installations)

Power supply for the operation of the intrinsically safe ET-65, ET-75 and ET-125 operator terminals, the backlight and the readers.

- 9381/10-120-200-10 24V DC
- 9381/10-120-200-50 10-230 V AC
- Connections via screw terminals
- System compatibility with Exicom ET-9752, and ET-6. In combination with the 9185/11-45-10 signal isolator it can also replace the ET-SV/3.

This power supply unit is not available for use in an installation according to ATEX.

Power supply 9143/10- (ATEX Installations)



Power supply for the operation of the intrinsically safe ET-65, ET-75 and ET-125 operator terminals, the backlight and the readers.

Operator terminals and backlight:

- 9143/10-114-200-10 24V DC
- 9143/10-114-200-20 10-230 V AC

Readers:

- 9143/10-104-220-10 24V DC
- 9143/10-104-220-20 10-230 V AC

- Connections via screw terminals
- System compatible with the Exicom ET-9752 and ET-6. In combination with the 9185/11-45-10 signal isolator it can also replace the ET-SV/3.

This power supply unit is not available for use in an installation according to NEC.

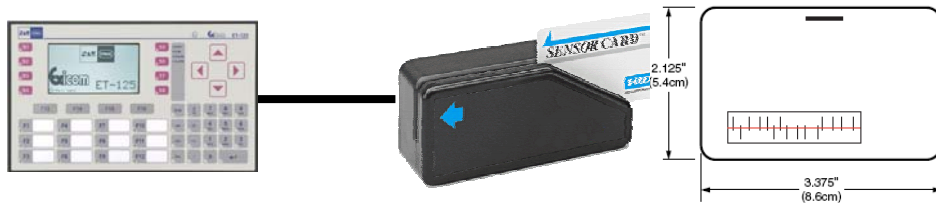
Reader systems

STAHL-HMI offers a wide variety of reader systems. For a more detailed description of these readers, please refer to the “Card Reader System Description”. Below are examples of some applications.

Mifare® Card Reader with Exicom ET-xx-RSi and PCRI-Mifare



Wiegand® Card Reader with Exicom ET-xx-WCR and MCRi-Wiegand



Proximity® Card Reader with Exicom ET-xx-WCR and PCRdi-ProxPro-Wiegand



Interface modules

9185/11-46-10 Fieldbus- Bridge DP



Product details

Fieldbus bridge for ProVicom/Exicom operator interfaces with RS-232 or RS-485 interface to Profibus DP master systems with STAHL-HMI handling blocks. A Fieldbus Isolator 9185/11-45-10 is not necessary.

MPI-Box SSW7-RK512-RS232



Product details

MPI box for ProVicom/Exicom operator interfaces with RS-232 to MPI bus systems. No handling block is required for this.

SK-FB-Cobox



Product details

Fieldbus bridge for ProVicom/Exicom operator interfaces with RS-232 or RS-422 to Ethernet systems (TCP/IP, UDP, Modbus TCP).

SK-PSM-ME TTY - RS-232



Product details

Interface converter for ProVicom/Exicom operator interfaces with RS-232 interfaces to automation systems with TTY interface.

Field housings

We offer tailor made field housings for the operator interfaces, with an optional heater, for installation under extreme ambient conditions (only in stainless steel).



Figure: Application example ET-125 with MCRi-Wiegand

Housing ET-xxx-V4A, Exicom stainless steel housing

- Dimensions (W x H x D): 14.18" x 14.18" x 3.59", 360 x 360 x 91 mm³
- With cover cut-out for "xxx" with ET-65, ET-75 or ET-125

Housing ET-xxx-V4A-B, Exicom stainless steel housing

- Dimensions (W x H x D): 14.18" x 14.18" x 3.59", 360 x 360 x 91 mm³
- With cover cut-out for "xxx" with ET-65, ET-75 or ET-125
- Breather gland for outdoor installation
 - Prevents condensation in the case of a change in temperature
 - Caution: Drastic changes in temperature put too much strain on the breather gland. In this case, the use of a heater is recommended, because condensation may impair the function of the operator interfaces.

Housing ET-xxx-V4A-H, Exicom stainless steel housing

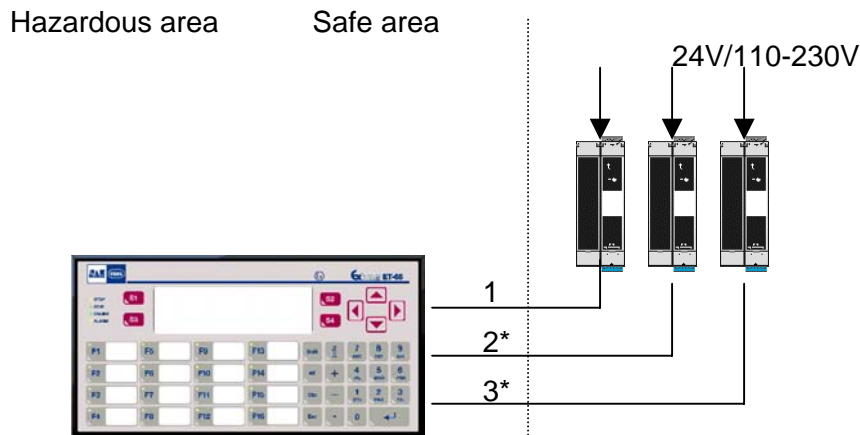
- Dimensions (W x H x D): 14.18" x 14.18", 360 x 360 mm²
- Dimensions (D = 9.1", 230 mm)
- With cover cut-out for "xxx" with ET-65, ET-75 or ET-125
- For installation of operator interfaces in temperatures below -22°F, -30°C. Prevents condensation in the case of a drastic change in temperature.
- Self-limiting Ex heating plate 230VAC / 50W
- Ex thermostat 8435/1-15-1 switching capacity: 110VAC
- Ex junction box 8102

Housing ET-xxx-P, Exicom polyester housing

- Dimensions (W x H x D): 13.39" x 6.7" x 3.59", 340 x 170 x 91 mm³
- With cover cut-out for "xxx" with ET-65, ET-75 or ET-125

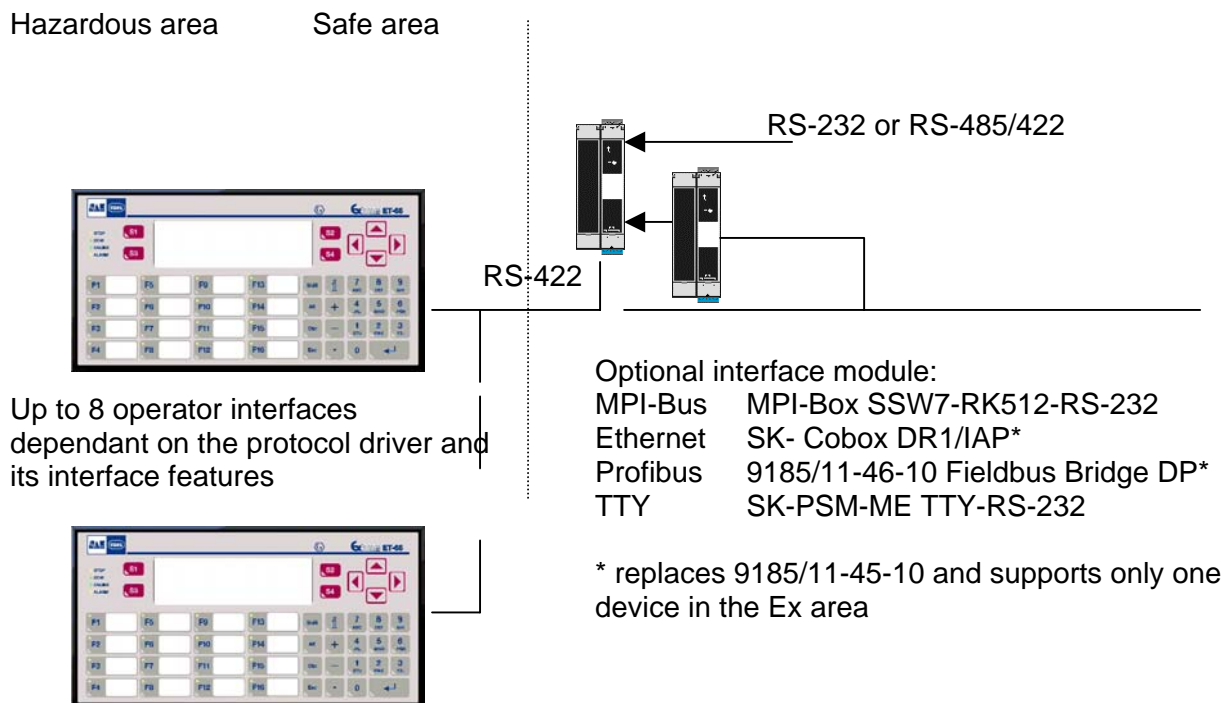
Systems / couplings

Exicom general power supply diagram

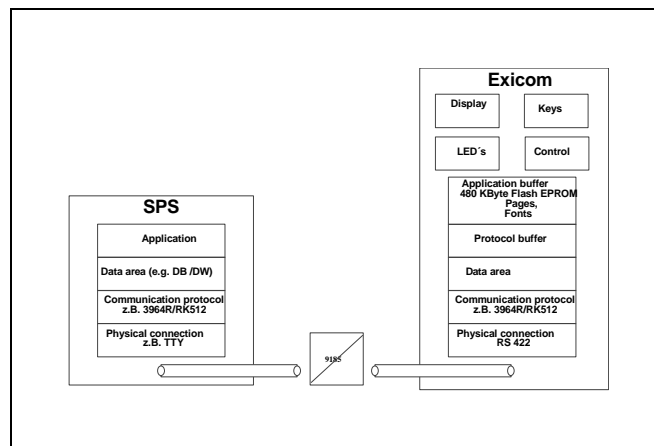


- 1. Power supply 9381/10-120-200
- 2. optional 9381/10-120-200 power supply for backlight
- 3. optional 9381/10-120-200 power supply for readers (scanner, Wiegand effect reader, etc.) for device with appropriate interface (optional)
- 1 and 2. For ATEX installations use the 9143/10-114-200
- 3. For ATEX installations use the 9143/10-104-220

General signal route diagram (coupling)



Software Design



Display

- Graphic displays capable of displaying 3 different sized fonts simultaneously.
- Display of bitmaps (not for ET-65 and MT-65)

Communication

- Transparent active check by the terminal via the control protocol. Communication programming is therefore no longer required.
- Implementation of several protocols within one operator interface (can be switched in the system configuration).

Advancing, Moving, Positioning

Function and cursor keys are transferred directly and quickly to the PLC or DCS.

Displaying, parameter setting, dosing, regulating

- Simple and convenient generation of display and parameter setting menus
- 25 optional process variables, in suitable format, per process diagram
 - ◆ numerical data formats with limits and scaling
 - ◆ bar chart and pointer chart with direct link to process variables (GRAPHIC only)
 - ◆ Bi-directional bar chart with dynamic operating point (GRAPHIC only)
 - ◆ all scaleable values from the automation system
- The read out and data conversion is done automatically in the terminal
- Direct input via barcode (scanner)

Monitoring and Checking

Fault processing per individual bit with representation as new value, first value or priority. Recording functions.

Menu Structures

- Simple generation of menu structures (parameter setting masks, tree structures) without PLC program.
- Direct activation of internal functions via function key.

Programming

- Generation of process diagrams, fault texts etc. by means of PC program for Windows 95/98/NT/2000/XP
- Generation or changing of fonts. Various national alphabets are possible (e.g. Cyrillic, Greek, Japanese...).
- Import of pixel graphics in bitmap format.