ATEX IIC T6 Explosion Proof Stations

INSTALLATION, OPERATION & MAINTENANCE PROCEDURES

STENTOFON

TECHNICAL MANUAL

A100K10938

About this Document

Document Scope

This document describes the operation, installation and maintenance procedures for the ATEX IIC T6 Explosion Proof Master Station and Substation.

Product	Item Number
ATEX IIC T6 Explosion Proof Master Station	1007095000
ATEX IIC T6 Explosion Proof Substation	1007095300

Publication Log

Rev.	Date	Author	Status
1.0	28.5.2013	HKL	Published

Related Documentation

For further information, refer to the following documentation:

Doc. ID	Documentation
A100K10805	AlphaCom XE Installation & Configuration Manual
GHG 660 7003 P0004	Operating instructions - Explosion-protected flameproof enclosures and distributions
EXKO735200X0001	Parts List / Bill of Materials - Master Station
EXKO735200X0000	Parts List / Bill of Materials - Substation
PTB 99 ATEX 1057	EC Type Examination Certificate
PTB 99 ATEX 3132 U	EC Type Examination Certificate

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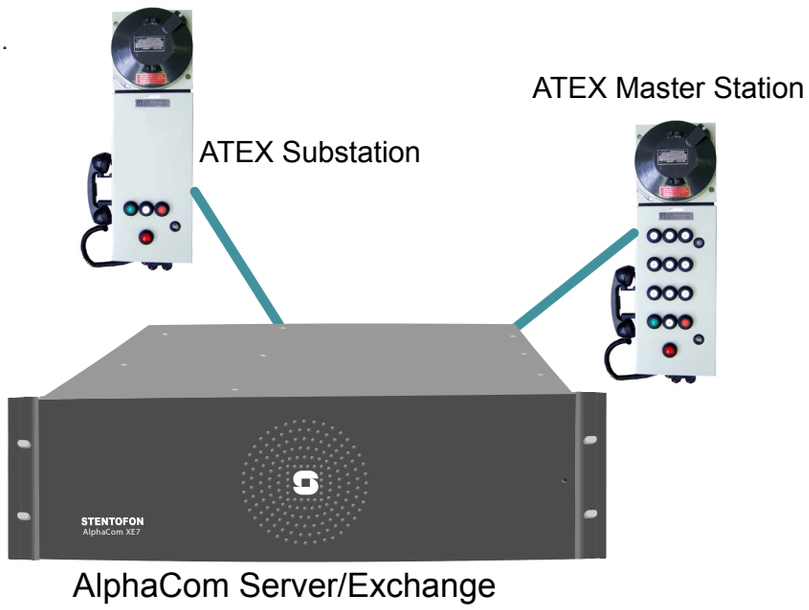


Figure 1 ATEX Stations System Configuration

1.1 ATEX IIC T6 Master Station

- Item no. 1007095000

This heavy duty industrial ATEX master station has the following features:

- Designed for the STENTOFON AlphaCom exchange
- Robust buttons for:
  - Call buttons (0-9)
  - Push-To-Talk for optional simplex conversation (M)
  - Cancel (C)
- Rugged weatherproof cabinet of lacquered steel
- Handset for soft speaking conversation
- Requires an Ex external loudspeaker
- Advanced supervision functions
- Relay output for control of optional Ex signal units
  - Maximum current: 3A
  - Maximum switching voltage: 250 VAC
  - Only intrinsically safe equipment should be connected

To provide maximum availability the station comes with line supervision functions. The station line test will detect if there are any faults in the network or station electronics. The status of the stations is reported to AlphaWeb on AlphaCom, as well as to 3rd-party management systems using SNMP, Syslog, OPC or the STENTOFON Software Development Kit (SDK).

The station is designed to satisfy ATEX regulations and carries the following certification: II 2G Ex de [ia] IIC T6.

1.2 ATEX IIC T6 Substation

- Item no. 1007095300

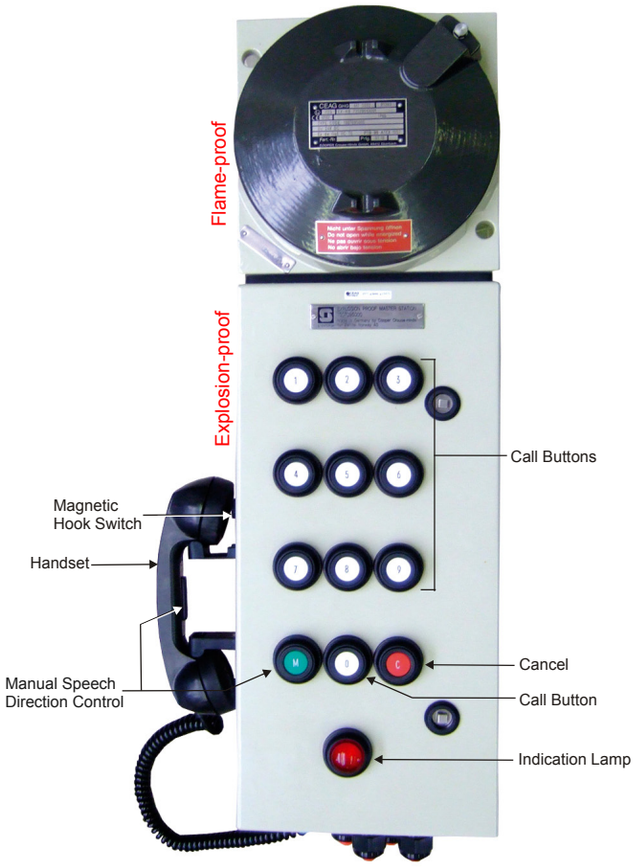
This heavy duty industrial ATEX Substation has the following features:

- Designed for the STENTOFON AlphaCom exchange
- Can make calls to pre-programmed stations
- Robust buttons for:
  - Call button
  - Push-To-Talk for optional simplex conversation (M)
  - Cancel (C)
- Rugged weatherproof cabinet of lacquered steel
- Handset for soft speaking conversation
- Requires an external Ex loudspeaker
- Relay output for control of optional Ex signal units

The station is designed to satisfy ATEX regulations and carries the following certification: Ex de [ia] IIC T6.

2 Station Operation

2.1 ATEX Master station



Power

The station must be powered by 24-30 VDC. The power supply must be located in a safe area.

For cable length, see technical specifications at the end of this document.

Power is needed for the internal 10 W amplifier to drive an 8 Ohm or 20 Ohm speaker. The station is connected to the exchange using a 2-pair cable, and uses a 1-pair cable for power supply.

Operation

- Operating buttons are:
  - Call buttons (0-9)
  - Push-To-Talk for optional simplex conversation (**M**)
  - Cancel (**C**)
- The handset microphone is always connected, thereby permitting direct answer back when receiving a call. When using the handset during conversation, the external loudspeaker is turned off.
- An optionally connected call warning device will also turn off when the handset is lifted for conversation.
- The conversation is terminated by placing the handset back on hook or by pressing the **C** button.
- The station uses duplex mode by default but can be set to simplex mode by pressing the **M** button on the station or the talk button on the handset.

2.2 ATEX Substation

Power

Power is needed for the internal 10 W amplifier to drive an 8 Ohm or 20 Ohm speaker. The station is connected to the exchange using a 2-pair cable, and uses a 1-pair cable for power supply.

Operation

- Operating buttons are:
  - Call button
  - Push-To-Talk for optional simplex conversation (**M**)
  - Cancel (**C**)
- The handset microphone is always connected, thereby permitting direct answer back when receiving a call. When using the handset during conversation, the external loudspeaker is turned off.
- An optionally connected call warning device will also turn off when the handset is lifted for conversation.
- The conversation is terminated by placing the handset back on hook or by pressing the **C** button.
- The station uses duplex mode by default but can be set to simplex mode by pressing the **M** button on the station or the talk button on the handset.
- The call request button can be programmed to call any number in the exchange.

3 Explosion-Protected Flameproof Enclosures & Distributions

3.1 Safety instructions

ⓘ **Warning: These operating instructions may only be used in conjunction with the instructions in the document** *GHG 660 7003 P0004 Operating instructions - Explosion-protected flameproof enclosures and distributions***.**

The explosion-protected ATEX stations are not suited for use in Zone 0 and Zone 20.

The apparatus shall not be used in dust layers > 50mm according to the EN 60079-31 standard.

The electrical connection of ATEX stations may only be carried out according to the EN 60079-14 standard.

The temperature class and explosion group stated on the apparatus and distributions shall be observed.

Modifications or design changes to the apparatus and distributions that affect the explosion protection are not permitted.

Only original Zenitel parts in the ATEX station may be used as replacements and for repairs.

Repairs that affect the explosion protection may only be carried out by Zenitel or by a qualified electrician in compliance with the respective national regulations.

Prior to being put into operation, the boxes shall be checked in accordance with the instructions as per the installation instructions.

Distributions mounted on a floor frame shall be safeguarded against falling over.

Before initial operation, any foreign matter shall be removed from the apparatus.

ⓘ ***The national safety rules and regulations for the prevention of accidents, as well as the safety instructions included in these operating instructions shall be observed!***

3.2 Conformity with standards

The explosion-protected ATEX stations meet the requirements of EN 60079-0, EN 60079-1, EN 60079-7, EN 60079-11, EN 60079-15 (comparable international standards IEC 60079-0, IEC 60079-1, IEC 60079-7, IEC 60079-11, IEC 60079-15).

94/9 EC: Equipment and protective systems intended for use in potentially explosive atmospheres.

The ATEX station fulfils further requirements, such as the EC directive on electromagnetic compatibility (89/336/EEC) and the EC directive for electrical apparatus for use within given voltage limits (72/23/EEC).

They have been designed, manufactured and tested according to the state of the art and to ISO 9001.

3.3 Field of application

The ATEX stations are intended for use in potentially explosive atmospheres in zones 1, 2 and 21, 22 in accordance with EN 60079-14 or IEC 60079-10.

The enclosure materials used, including any external metal parts, are high quality materials that ensure corrosion resistance and resistance to chemical substances according to the requirements for use in a ”normal industrial atmosphere”:

- sheet steel and plastic powder coating
- stainless steel AISI 316 L
- aluminium alloy pressure casting
- galvanized steel
- ambient temperature range = -40 °C to +55 °C

4 Installation

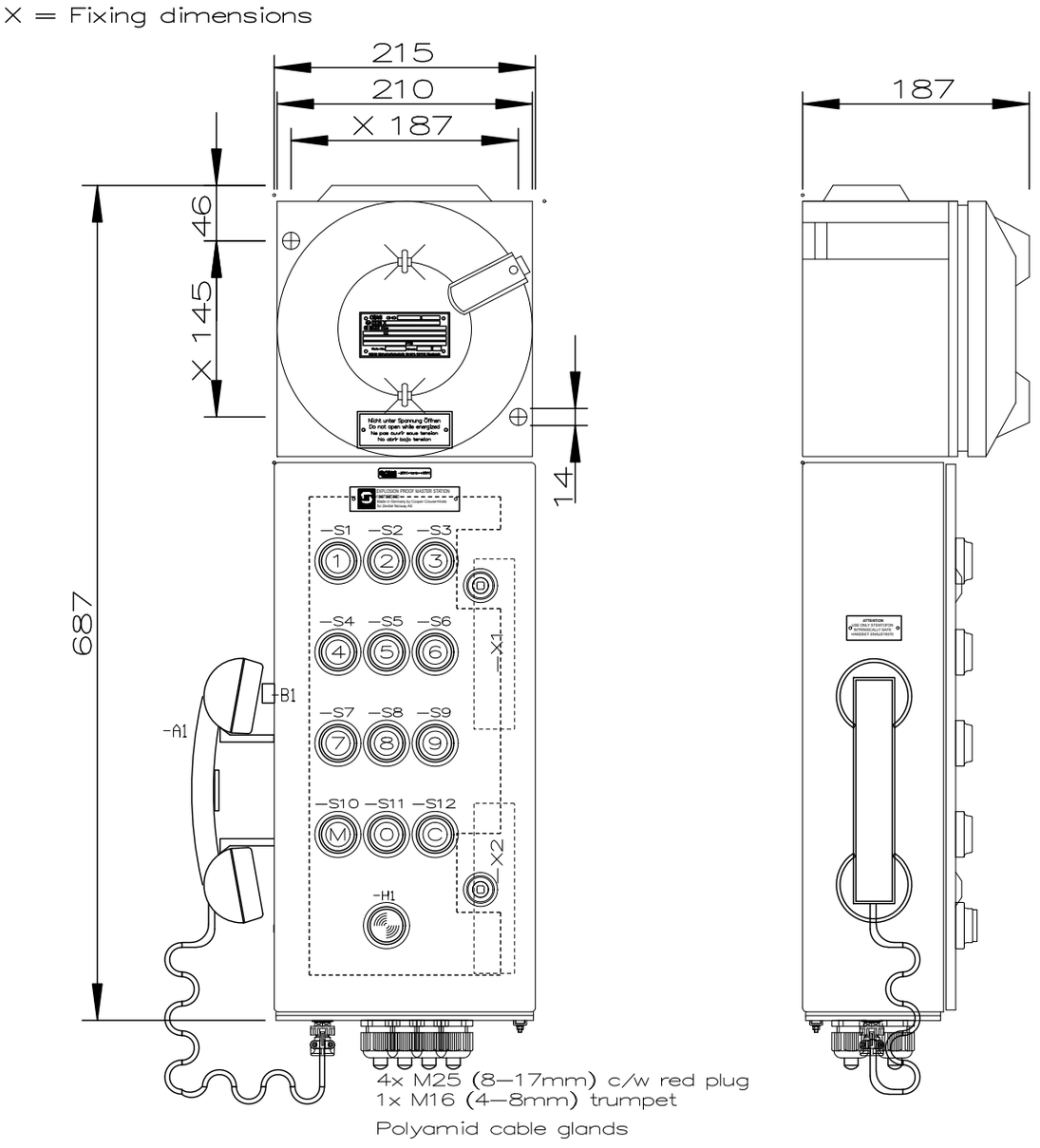


Figure 2 ATEX Master Station Fixing Dimensions

ⓘ **The improper installation and operation of the ATEX station can result in the invalidation of the guarantee. Installation prodedures are the same for both the master station and substation.**

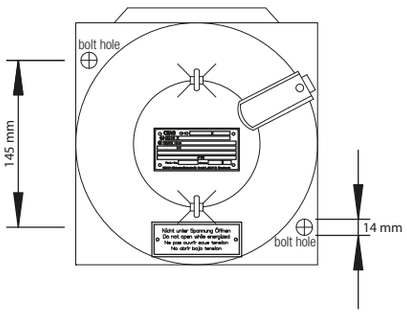
The station comprises two enclosures.

The upper enclosure includes all active parts such as amplifier, zener barriers, etc.

ⓘ ***Caution: The upper enclosure should NOT be opened during installation and operation.***

ⓘ **In the event of ATEX stations in the same size, the covers of the flameproof enclosures shall not be interchanged. Which flameproof enclosure cover belongs to which enclosure base can be determined by identical production numbers on the inside of the enclosure cover and the front of the enclosure base.**

4.1 Mounting



When the ATEX station is mounted directly onto the wall or onto wall or floor frames, it shall rest evenly only on the fastening points provided for this purpose.

To mount the station:

- Fix the station to the wall or column with two bolts that fit the two bolt holes (14 mm diameter) located diagonally from each other on the upper enclosure for this purpose.

4.2 Opening the Lower Enclosure / Electrical Connection

ⓘ **Before opening the lower enclosure, it is necessary to ensure that there is no voltage and to take appropriate protective measures.**

ⓘ **The connection of explosion-protected ATEX stations may only be carried out by specialists.**

The lower enclosure includes push buttons, indication lamp, handset and screw terminals for cable connections.

To open the lower enclosure:

- Loosen the two screws at the front and swing the cover open.

At the bottom of the lower enclosure there are inlet cable glands for the following cables:

- One blue cable gland for the handset cable (intrinsically safe), which is already installed
- One cable gland for the 2-pair installation cable, connecting the loudspeaker and microphone line to the exchange
- One cable gland for an external 10 watts Ex loudspeaker
  - An external loudspeaker is required and the recommended type is DSP-15EXmN Ex Speaker (item no. 2340020010)
- One cable gland for an optional call warning signal such as an Ex rotary light, siren, etc. Recommeded items:
  - BEX-24Y Ex beacon (item no. 2350200006)
  - BEX-24G Ex beacon (item no. 2350200007)
  - BEX-24C Ex beacon (item no. 2350200008)
  - DHW2 Ex Signal Bell (item no. 3006102029)
- One cable gland for power supply

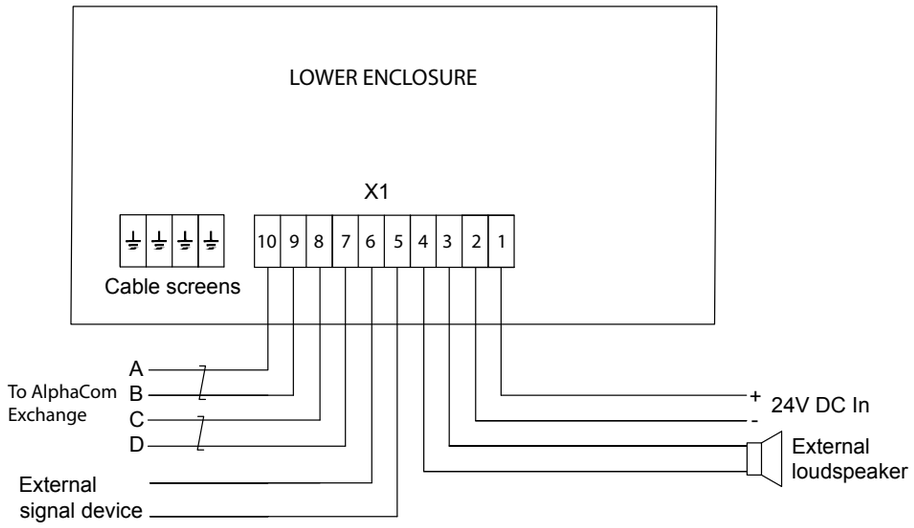


Figure 3 ATEX Station External Connections

ⓘ **A proper connection must be made from the terminal with a ground symbol in the lower-right corner of the lower enclosure to the installation ground. This has to be done in order to ensure proper operation of the protecting Zener barriers for the handset.**

4.3 Grounding

ⓘ ***Warning: To establish explosion proof protection, it is vital that the grounding of the station is done according to the instructions below.***

4.3.1 Zener barrier ground

On the terminal blocks, the ground connections are labeled:

- PA: Ground for zener barrieres
- PE: Installation ground

Before commissioning, a bridge must be connected between terminals PA and PE. The bridge is included with the station. See Wire Assembly Drawings in sections 7.3 and 7.4.

4.3.2 Installation ground

A proper connection must be made from the ground terminal located next to the cable glands at the bottom of the lower enclosure to the installation ground. See Wire Assembly Drawings in sections 7.3 and 7.4.

4.4 Ex-e cable entries (KLE) / Ex-e blanking plugs

ⓘ **Generally, only certified cable entries and blanking plugs may be used.**

ⓘ **The relevant mounting directives for the built-in cables entries shall be observed.**

ⓘ **When using cable entries with a degree of protection that is lower than the IP protection of the apparatus (see Technical Specifications), the degree of IP protection for the complete unit is reduced.**

When fitting cable entries, care has to be taken that the sealing inserts are suitable for the cable diameter.

In the case of sealing inserts that are cut out, it is necessary to ensure that the insert is properly adapted to the cable diameter.

In order to ensure the required minimum degree of protection, the cable entries shall be tightened down securely.

Overtightening can impair the degree of protection.

ⓘ ***Warning: When tightening the cap nut of the metal cable entry (e.g. type E1WF/e), a suitable tool shall be used to prevent the gland from twisting.***

4.5 Putting into operation

Before putting the ATEX station into operation:

- the national regulations concerning such apparatus shall be followed
- an inspection according to the IEC 60079-17 standard should be performed.

ⓘ ***Warning: Only certified ATEX stations may be put into operation.***

ⓘ ***Warning: The Explosion-protected flameproof ATEX station can only be operated in the temperature range -20 to +50 °C.***

5 Maintenance / Servicing

The valid national regulations for the servicing/maintenance of electrical apparatus for use in potentially explosive atmospheres shall be observed.

Prior to opening the lower enclosure, it is necessary to ensure that the voltage supply has been isolated or to take suitable protective measures. The necessary intervals between servicing depend upon the specific application and shall be stipulated by the operator according to the respective operating conditions.

During servicing, explosion protection dependent parts shall be tested to ensure their correct state, e.g.:

Flameproof enclosures

- Visual inspection of the cover thread.
- The thread shall not be treated or varnished!
- Any damaged parts shall be replaced immediately using original parts or the damaged parts shall be repaired by the manufacturer.

Connection and terminal boxes

- Check all seals for efficiency and intactness.
- Replace older or damaged seals with new seals.
- Check that connection terminals and cable entries fit securely.

ⓘ **No other parts can be used as replacements without approval from Zenitel.**

ⓘ **The threads for the circular cover of the ATEX station is tooled in the same process as the threads for the enclosure. A tag with matching serial numbers is fixed to both the cover and the enclosure. This is to ensure that parts from different stations will not be mixed.**

5.1 Repair / Overhaul / Modifications

ⓘ **Only original Zenitel parts shall be used for carrying out repairs that concern explosion protection.**

In the event of damage to the flameproof enclosures, replacement of these components is mandatory. In case of doubt, the respective apparatus shall be sent to Zenitel for repair.

Reconstruction or modifications to apparatus are only possible within the scope of the approvals and shall be certified afterwards.

Moreover, additional terminals within the scope of the apparatus approvals and cables entries according to the details given by the manufacturer may only be fitted when approved by Zenitel.

5.2 Service Parts

Item no.	Description
2340020010	DSP-15EXmN with SST bracket Ex speaker 20 ohm 15W, 2x glands ATEX IP67
2350200006	BEX-24Y Ex beacon 24Vdc IP67 yellow ATEX 1x cable gland
2350200007	BEX-24G Ex beacon 24Vdc IP67 green ATEX 1x cable gland
2350200008	BEX-24C Ex beacon 24Vdc IP67 clear ATEX 1x cable gland
3006102029	DHW2 Ex Signal Bell 24 Vdc IP66 II 2 G EEx de IIC T6
	Zener Barrier
	Apparatus PCB
	Interface PCB
	Cable Glands

6 Technical Specifications

6.1 ATEX Master Station

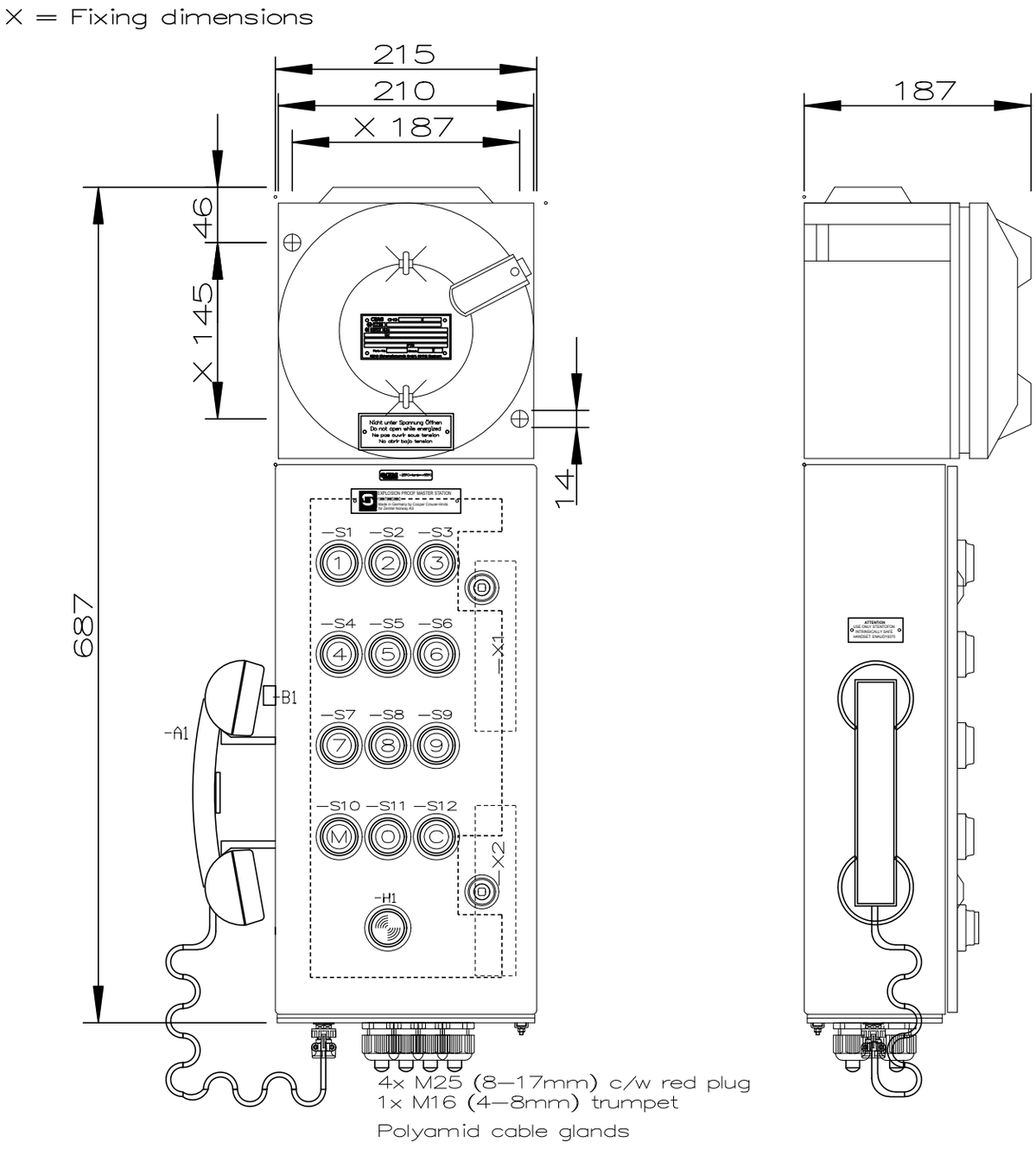
Dimensions (WxHxD)	215 x 687 x 187 mm
Protection	II 2G Ex de [ia] IIC T6
IP Rating	Cabinet IP-65
Handset	Intrinsically safe, via zener barriers inside the Ex enclosure
Weight	23 kg
Temperature	-20°C to +50°C
Internal power amplifier	10 W
Relative humidity	0% - 95%
Power amp operating voltage	24-30 VDC
Power consumption	10 W 20 ohm LS, 20 W 8 ohm LS
Loudspeaker	External 8 or 20 ohms loudspeaker must be installed
Material	Cabinet is in laquered steel, light beige
Keypad	12 buttons: 0-9, M and C
Cable requirements	2-pair for audio plus 1-pair for 24-30 VDC to power amplifier
Maximum loudspeaker output	5 W with 20 ohms loudspeaker 10 W with 8 ohms loudspeaker
Distance to exchange for audio	4.0 km (18 AWG - 1 mm) 3.4 km (20 AWG - 0.8 mm) 2.0 km (22 AWG - 0.6 mm)
Distance to power supply	8 ohms loudspeaker, 24 VDC 0.6 mm: 70 m 0.8 mm: 100 m 1 mm: 200 m 8 ohms loudspeaker, 30 VDC 0.6 mm: 150 m 0.8 mm: 250 m 1 mm: 450 m 20 ohms loudspeaker, 24 VDC 0.6 mm: 150 m 0.8 mm: 250 m 1 mm: 400 m 20 ohms loudspeaker, 30 VDC 0.6 mm: 350 m 0.8 mm: 650 m 1 mm: 1000 m
Control of external call device	Potential free relay contact (3A, 30 VDC)
Connector type	Screw terminals
Compliance	CE, FCC Part 15

6.2 ATEX Substation

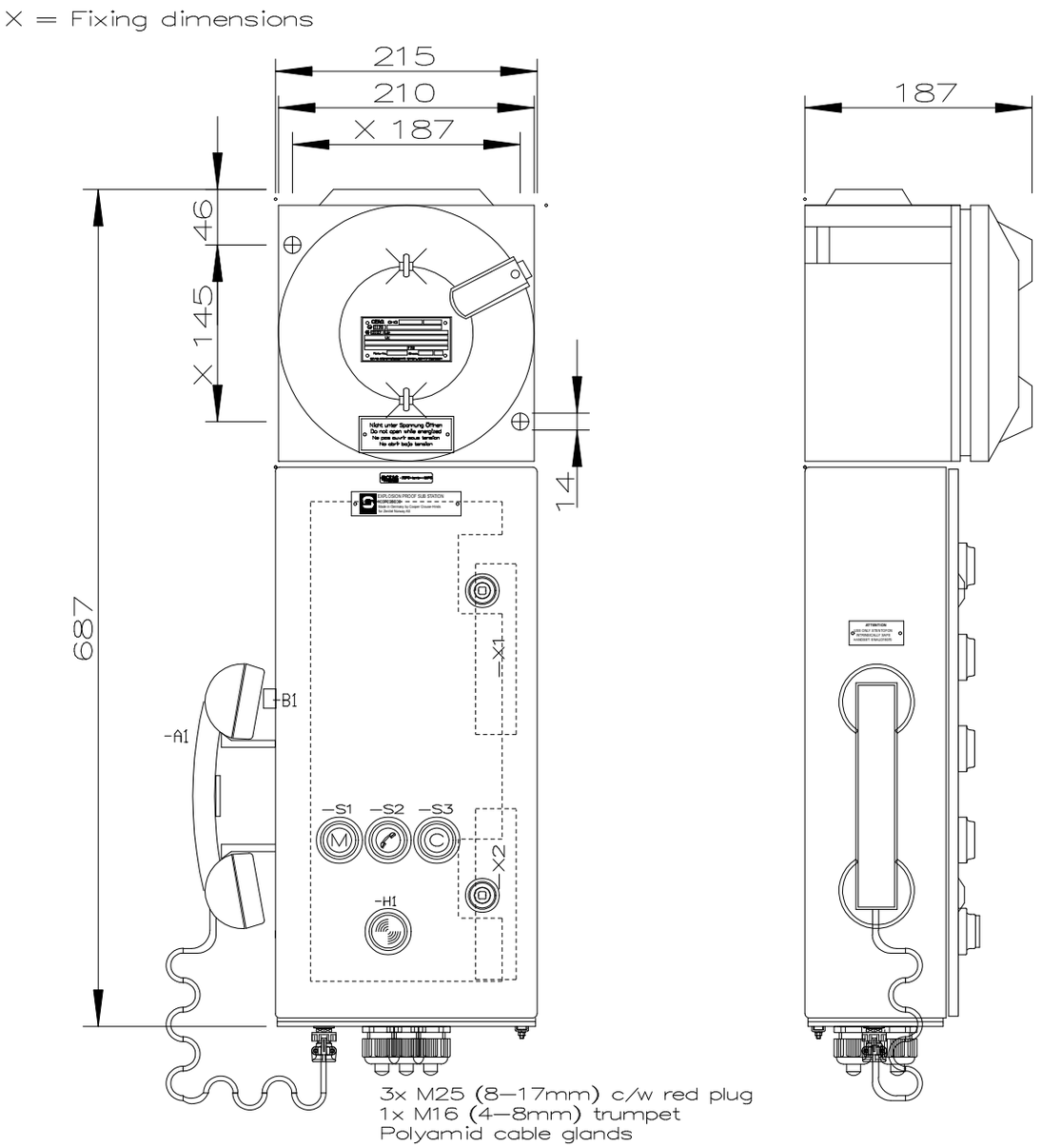
Dimensions (WxHxD)	215 x 687 x 187 mm
Protection	II 2G Ex de [ia] IIC T6
IP Rating	Cabinet IP-65
Handset	Intrinsically safe, via zener barriers inside the Ex enclosure
Weight	23 kg
Temperature	-20°C to +50°C
Relative humidity	0% - 95%
Internal power amplifier	10 W
Power amp operating voltage	24-30 VDC
Power consumption	10 W 20 ohm LS, 20 W 8 ohm LS
Loudspeaker	External 8 or 20 ohms loudspeaker must be installed
Material	Cabinet is in laquered steel, light beige
Keypad	3 x large buttons: M, DAK, C
Cable requirements	2 pairs for audio, 1 pair for 24-30 VDC to power amplifier
Maximum loudspeaker output	5 W with 20 ohms loudspeaker 10 W with 8 ohms loudspeaker
Distance to exchange	4.0 km (18 AWG - 1 mm) 3.4 km (20 AWG - 0.8 mm) 2.0 km (22 AWG - 0.6 mm)
Distance to power supply	8 ohms loudspeaker, 24 VDC 0.6 mm: 70 m 0.8 mm: 100 m 1 mm: 200 m 8 ohms loudspeaker, 30 VDC 0.6 mm: 150 m 0.8 mm: 250 m 1 mm: 450 m 20 ohms loudspeaker, 24 VDC 0.6 mm: 150 m 0.8 mm: 250 m 1 mm: 400 m 20 ohms loudspeaker, 30 VDC 0.6 mm: 350 m 0.8 mm: 650 m 1 mm: 1000m
Control of external call device	Potential free relay contact (3 A, 30 VDC)
Connector type	Screw terminals
Compliance	CE, FCC Part 15

7 Dimension & Wire Assembly Drawings

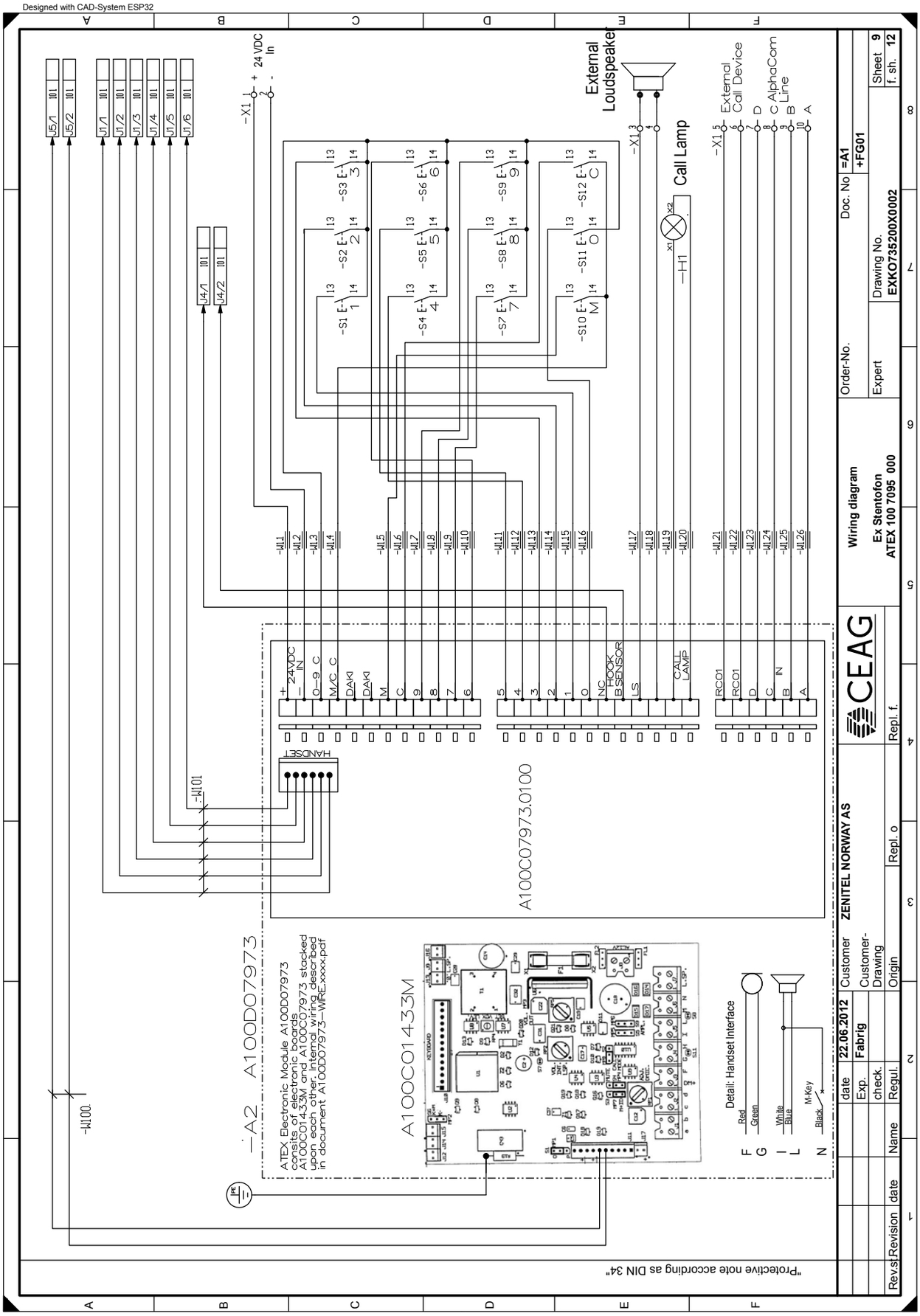
7.1 ATEX Master Station Dimension Drawing

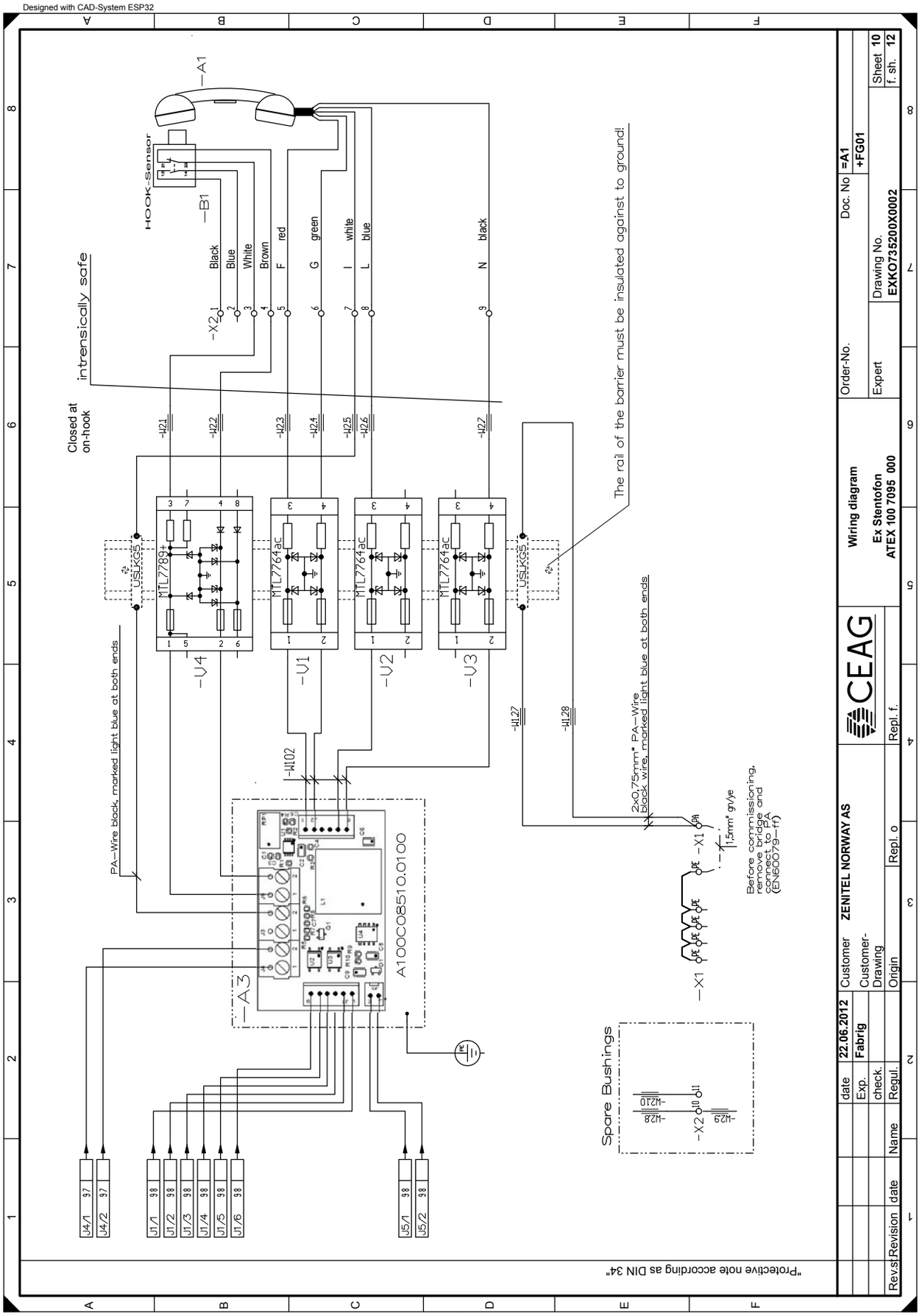


7.2 ATEX Substation Dimension Drawing

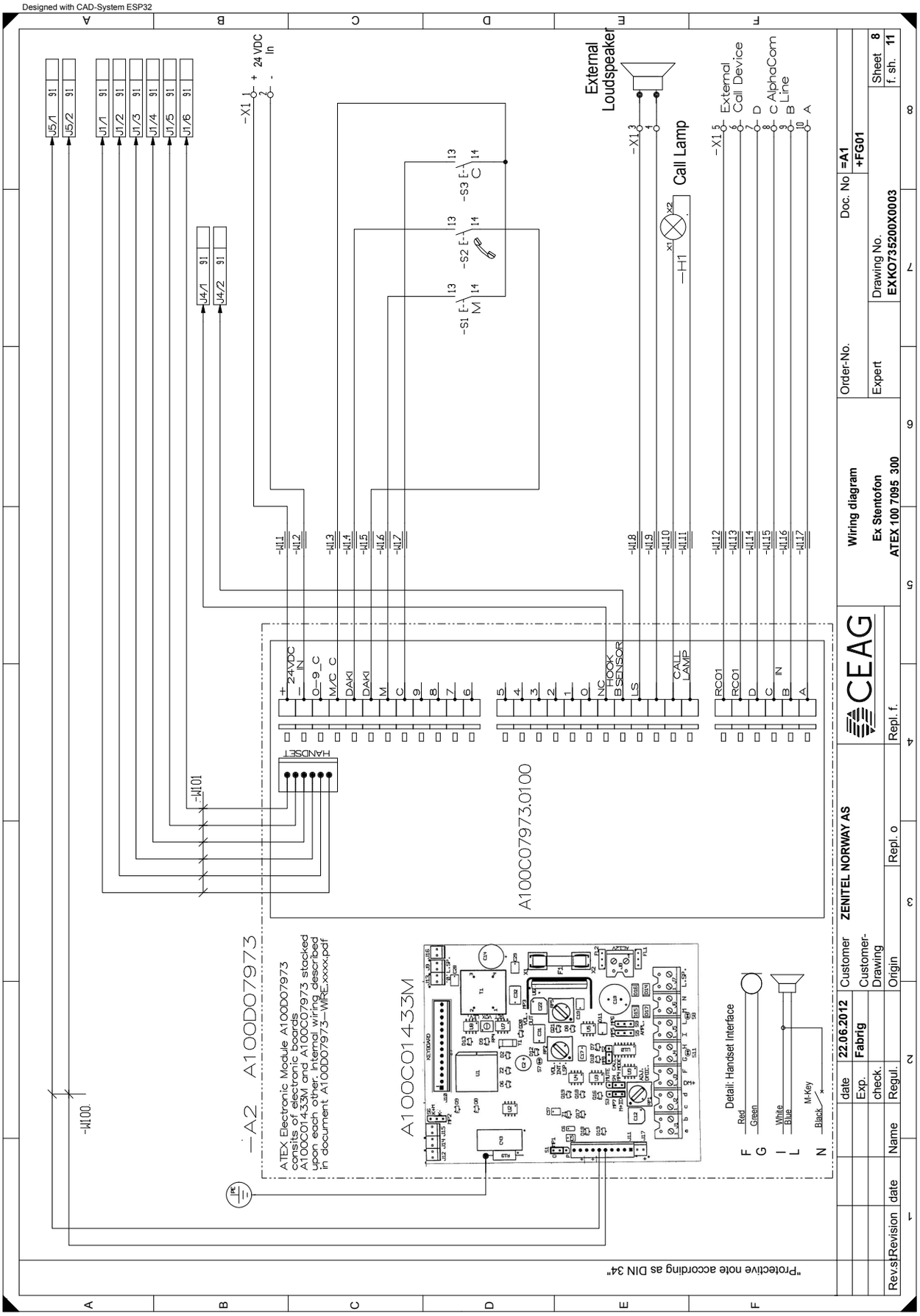


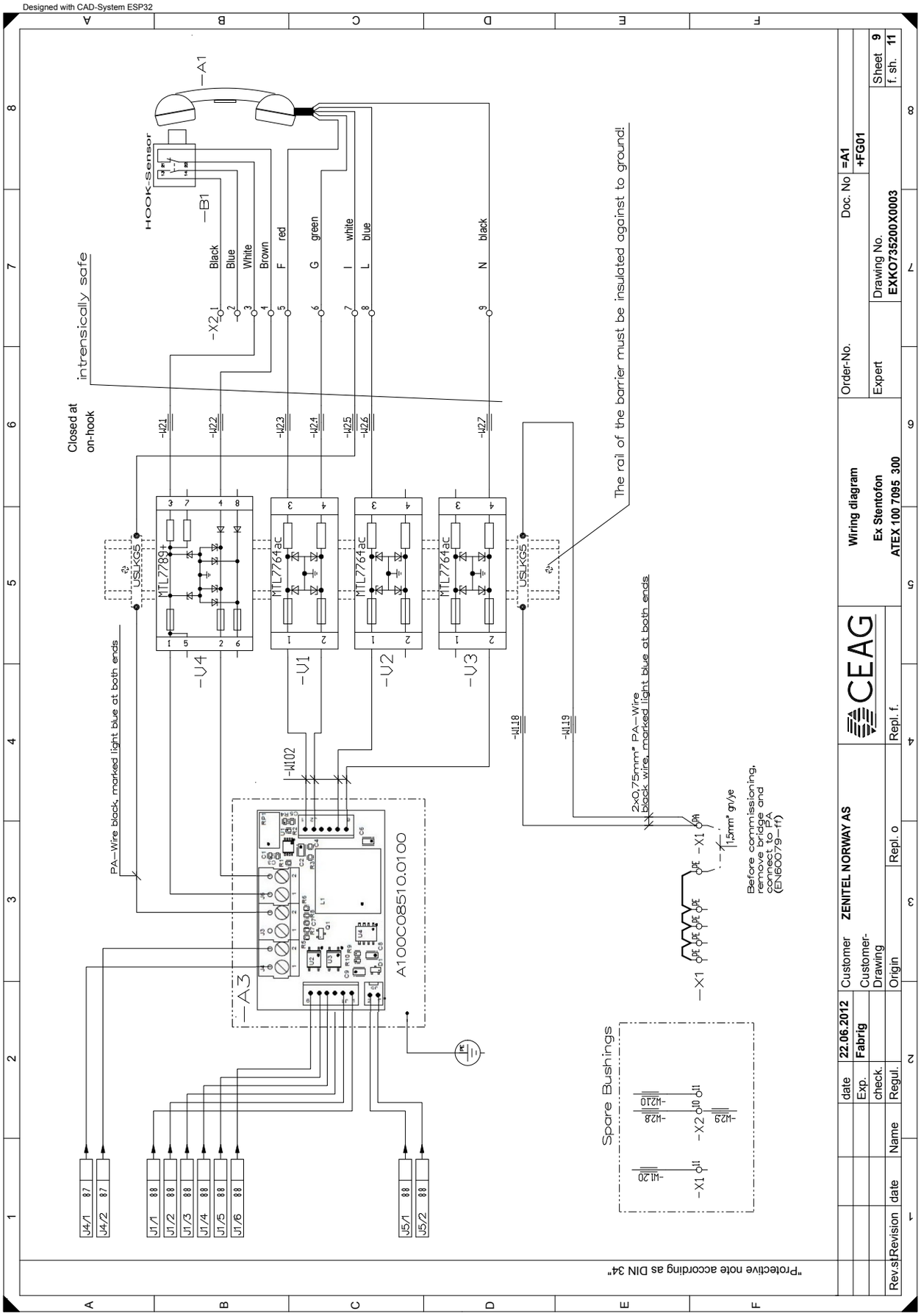
7.3 ATEX Master Station Wire Assembly Drawing




Designed with CAD-System ESP32
HOOK-Sensor
-A1
-B1
-X2
Black
Blue
White
Brown
F red
G green
I white
L blue
N black
intrensically safe
Closed at on-hook
-W21
-W22
-W23
-W24
-W25
-W26
-W27
-W28
-W102
USLKG5
MTL7789+
MTL7764ac
-U4
-U1
-U2
-U3
-A3
A100C0851O.0100
PA-Wire black, marked light blue at both ends
The rail of the barrier must be insulated against to ground!
2x0,75mm² PA-Wire
black wire, marked light blue at both ends
1,5mm² gn/ye
-X1
Before commissioning, remove bridge and connect to PA (EN60079-ff)
Spare Bushings
-X2
-W29
-W210
J4/1 97
J4/2 97
J1/1 98
J1/2 98
J1/3 98
J1/4 98
J1/5 98
J1/6 98
J5/1 98
J5/2 98
"Protective note according as DIN 34"
Rev.st
Revision
date
Name
Regul.
Origin
Repl. o
Repl. f.
date
Exp.
check.
22.06.2012
Fabrig
Customer
Customer-Drawing
ZENITEL NORWAY AS
CEAG
Wiring diagram
Ex Stentofon
ATEX 100 7095 000
Order-No.
Expert
Doc. No
=A1
+FG01
Drawing No.
EXKO735200X0002
Sheet 10
f. sh. 12

7.4 ATEX Substation Wire Assembly Drawing




Designed with CAD-System ESP32
HOOK-Sensor
-A1
-B1
-X2
Black
Blue
White
Brown
red
green
white
blue
black
intrensically safe
Closed at on-hook
-W21
-W22
-W23
-W24
-W25
-W26
-W27
USLKG5
MTL7789+
MTL7764ac
-U4
-U1
-U2
-U3
-W18
-W19
-W102
The rail of the barrier must be insulated against to ground!
2x0,75mm² PA-Wire
black wire, marked light blue at both ends
PA-Wire black, marked light blue at both ends
-A3
A100C08510.0100
1,5mm² gr/ye
-X1
Before commissioning, remove bridge and connect to PA (EN60079-ff)
Spare Bushings
-W20
-W28
-W210
-W29
U4/1 87
U4/2 87
U1/1 88
U1/2 88
U1/3 88
U1/4 88
U1/5 88
U1/6 88
U5/1 88
U5/2 88
"Protective note according as DIN 34"
Rev.st
Revision
date
Name
Regul.
Repl. o
Repl. f.
Origin
Customer-Drawing
Customer ZENITEL NORWAY AS
22.06.2012
Fabrig
Exp.
check.
CEAG
Wiring diagram
Ex Stentofon
ATEX 100 7095 300
Order-No.
Expert
Drawing No.
EXKO735200X0003
Doc. No =A1
+FG01
Sheet 9
f. sh. 11

www.stentofon.com

Zenitel Norway AS
P.O. Box 4498 Nydalen
NO-0403 OSLO
Norway

DOC NO.
A100K10938

customer.service@stentofon.com
customer.service@vingtor.com