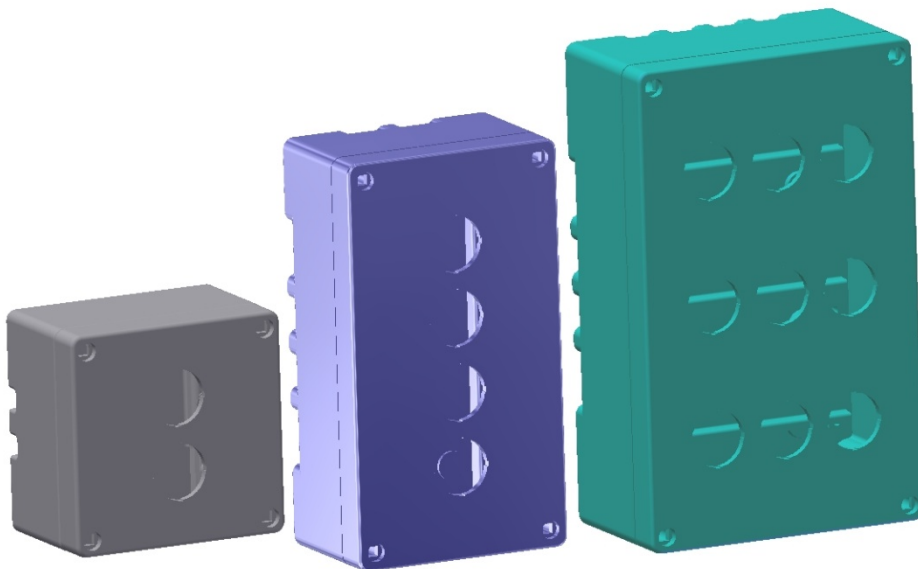




*SHOMAL Engineering & Manufacturing Co.*

**OPERATING INSTRUCTION**

*LCS SERIES OF ALUMINUM CONTROL STATIONS*



**WI-18(PCD-P-01)**



**THIS GUIDE SHOULD BE READ CAREFULLY BEFORE INSTALLATION.  
INCORRECT INSTALLATION AND USE OF THE ENCLOSURES CAN INVALIDATE  
THE GUARANTEE!**

### **GENERAL DESCRIPTION:**

The control unit types, LCS120, 220 and 260, consist of an aluminum enclosure certified to type of protection increased safety “e” and dust protection “t”.

It is designed to accommodate control and signaling elements as well as measuring instruments and terminals for intrinsically safe and non-intrinsically safe circuits. And enclosure covers are designed for maximum two or four or nine control/signal/measuring elements for each size of enclosures.

All installed and attached components have been tested and certified under separate EU/EC certificate of conformity or IECEx CoC.

Connection to enclosures is by means of explosion proof cable and conduit entries (according to enclosure certificate). Several of these enclosures may be connected in series by suitable certified flameproof unions/bushings.

All 3 variants are suitable for permanent/fixed installation inside hazardous area, depending on the type of protection and equipment level of apparatuses installed; it can be operated as category "2" equipment and under appropriate marking stated in this certificate.

### **Technical data:**

- Ambient temperature: -20°C to +40°C / -30°C to +55°C
- Ingress protection: Ingress protection depends on all components are used in the equipment.
- Rated voltage: up to 690 Volts
- Rated current: up to 16A
- Conductor size\*: Up to 10mm<sup>2</sup> - max. 2×2.5 mm<sup>2</sup> per clamping point

\*depending on terminals and components used

- The electrical data for the built in components (Pushbutton, signal lamp, terminal, measuring instrument) shall be gathered from respective EU/EC-Type examination certificates indicated in table 1 of this instruction.

The ratings specified are the maximum values; actual values will be subject to the electrical equipment used from case to case.

The specification given in EU type examination certificates as well as the operating instructions of the built in, separately certified components shall be considered accordingly.

### **IMPORTANT NOTES:**

- 1) This guide should be read carefully before installation.
- 2) Incorrect installation and use of the control stations can invalidate the guarantee.

***SAFETY INSTRUCTIONS:***

The control stations are not suitable for zone 0 and zone 20 hazardous areas.

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

Modifications to the control stations or changes of their design are not permitted. They shall be used for intended purpose and in perfect and clean condition.

For replacement and repair, only genuine *SEMC* spare parts shall be used.

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

Prior to taking the control stations into operation, they shall be checked in accordance with the "taking into operation" of this manual.

Before the initial operation, any foreign object shall be removed from the junction boxes.

Observe the national safety rules and regulations for prevention of accidents as well as safety instructions included in this operating instruction.

***FIELD OF APPLICATION:***

CAT II 2G for use in zone 1 or zone 2. Area as defined in *IEC/EN 60079-14*.

CAT II 2D for use in zone 21 or 22. Area as defined in *IEC/EN 60079-14*. (If all components are used in the equipment have been suitable for zone 21 and 22)

***CONFORMITY WITH STANDARDS:***

The control units LCS series meet the requirements of the following standards:

EN 60079-0: 2012, IEC 60079-0: 2011

EN 60079-1: 2014, IEC 60079-1: 2014

EN 60079-7: 2007, IEC 60079-7: 2006

EN 60079-11: 2012, IEC 60079-11: 2011

EN 60079-18: 2009, IEC 60079-18: 2009

EN 60079-31: 2014, IEC 60079-31: 2013

EN 60529: 2013, IEC 60529: 1989 AMD1: 1999, AMD2: 2013

*And directive 2014/34/EU: equipment and protective systems intended for use in potentially explosive atmospheres.*

The control stations have been designed, manufactured and tested according to the *ISO 9001:2008*.

***Application / Properties***

The control units LCS series are designed for the local control of electrical installations in explosive atmospheres.

***AMBIENT TEMPERATURE:***

-30°C TO +55°C

***PERMANENT STORAGE TEMPERATURE IN ORIGINAL PACKAGE***

-20°C TO +80°C

**MARKING:**

ATEX Marking	IECEX Marking
<p>⊕ II 2 GD** C ***                      Ex <b>B*</b> IIC T6 Gb                      Ex tb IIIC T80 °C Db **                      Certificate No.: TÜV 16 ATEX 7844 X</p>	<p>Ex <b>B*</b> IIC T6 Gb                      Ex tb IIIC T80 °C Db **                      C ***                      Certificate No.: IECEX TUR 16.0020 X</p>

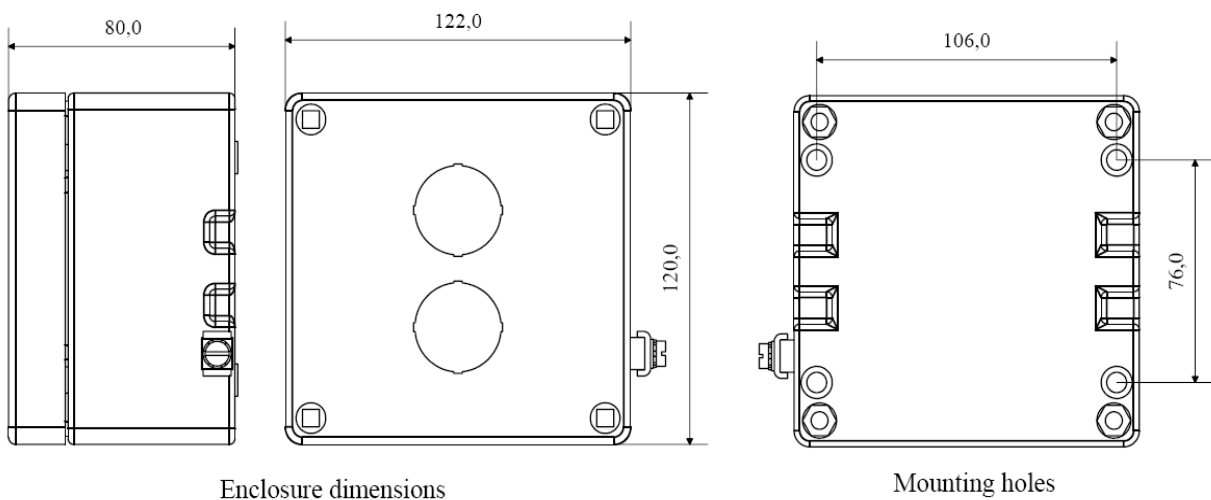
\* "**B**" depends on installed components in the enclosure and can be as follow:

- Enclosure fitted with moving iron ammeter and/or terminals: *e mb*
- Enclosure fitted with moving iron ammeter and/or terminals/signal elements/control elements (pushbuttons...): *d e mb*
- Enclosure fitted with moving coil ammeter and/or terminals: *e ib*
- Enclosure fitted with moving coil ammeter and/or terminals/signal elements/control elements (pushbuttons...): *d e ib*

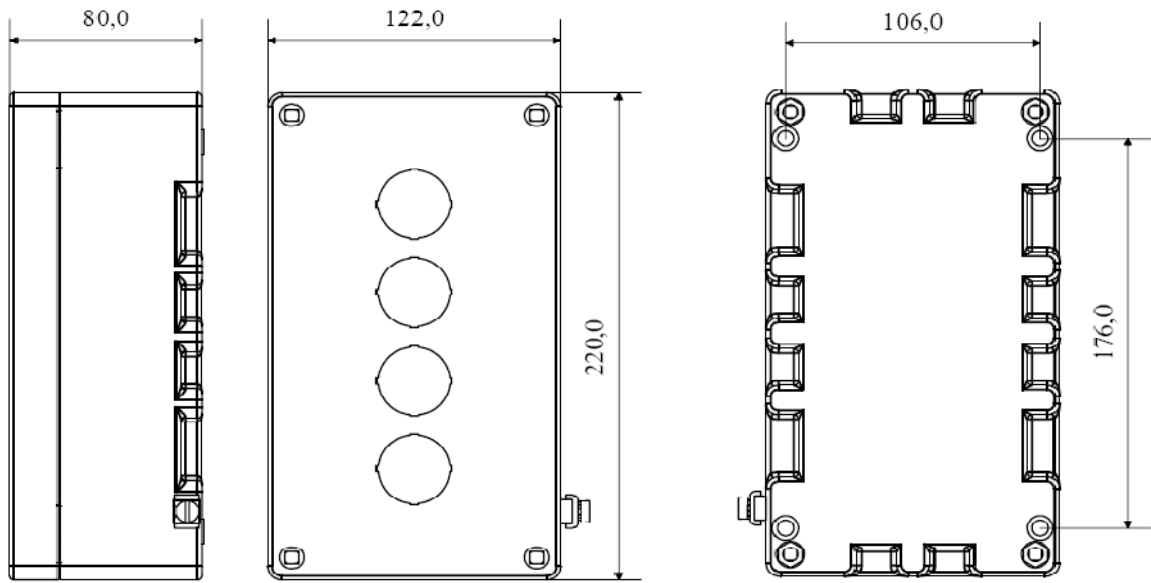
\*\* When equipment is marked as "Ex tb IIIC T80 °C Db" (according to IECEX) or "D" (according to ATEX), all components are used shall comply with this type of protection.

\*\*\* "C" indicates the Ingress protection that depends on all components are used in the equipment.

**DIMENTIONAL DRAWINGS AND MOUNTING AREAS:**



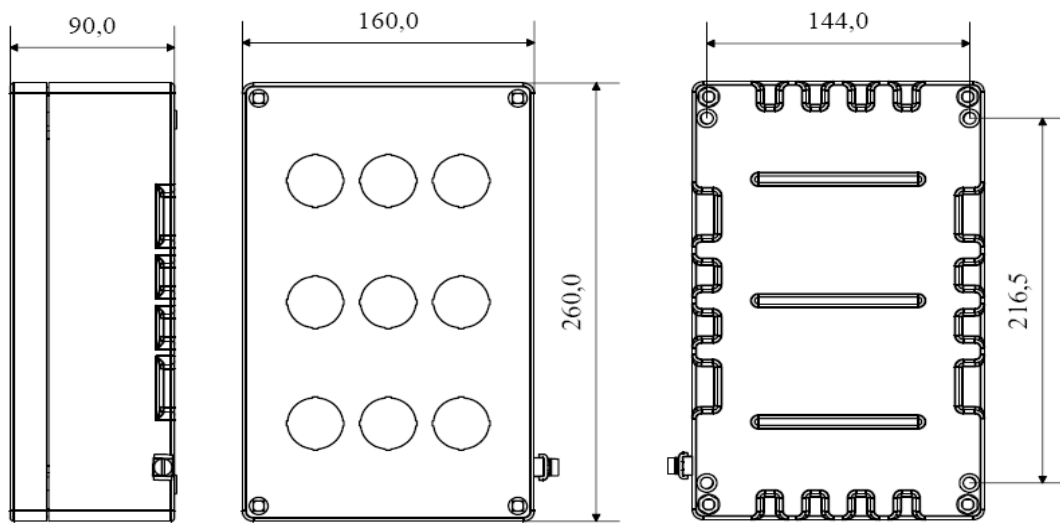
*Figure1: LCS 120*



Enclosure dimensions

Mounting holes

Figure2: LCS 220



Enclosure dimensions

Mounting holes

Figure3: LCS 260

**Components may be used in LCS series: (see note 2 in enclosure installation for safe use)**

<b>Component type</b>	<b>ATEX Certificate number</b>	<b>IECEX Certificate number</b>
<i>Made by EATON</i>		
Push button & Double push button	IBExU14ATEX1030U	IECEX IBE 14.0005U
Key operated pushbutton SLT	IBExU14ATEX1030U	IECEX IBE 14.0005U
Key Switch SLS	IBExU14ATEX1030U	IECEX IBE 14.0005U
Mushroom-head pushbutton SGT&SGTE	IBExU14ATEX1030U	IECEX IBE 14.0005U
Small control switch SCT	IBExU14ATEX1030U	IECEX IBE 14.0005U
Potentiometer	IBExU14ATEX1030U	IECEX IBE 14.0005U
Signal lamp	IBExU12ATEX1047U	IECEX IBE 13.0031U
Measuring instrument AM 72/AM 45	BVS14ATEX-E125U	IECEX BVS 14.0082U
Control switch GHG 23	BVS13ATEX-E107U	IECEX BVS 13.0108U
Control switch GHG 29	BVS14ATEX E119U	IECEX BVS 14.0076U
<i>Made by BARTEC</i>		
Actuating Elements	CML 13ATEX3010U	IECEX CML 14.0005U
Switch Module	PTB 99 ATEX 1043 U	IECEX PTB 07.0046U
Illuminated Button	PTB 97 ATEX 1064 U	IECEX PTB 10.0014U
Lamp Module	PTB 97 ATEX 1064 U	IECEX PTB 10.0014U
Potentiometer	PTB 05 ATEX 1064 U	IECEX PTB 10.0017U
Control switch	PTB 99 ATEX 1043 U	IECEX PTB 07.0046U
<i>Made by WEIDMULLER</i>		
WDU 1.5/ZZ	KEMA 98ATEX1685 U	IECEX ULD 14.0005U
WDU 2.5 /1.5/ZR	KEMA 98ATEX1685 U	IECEX ULD 14.0005U
WDU 2.5	DEMKO14ATEX1338 U	IECEX ULD 14.0005U
WDU 2.5N	KEMA 98ATEX1683 U	IECEX ULD 14.0005U
WDU 4	DEMKO14ATEX1338 U	IECEX ULD 14.0005U
WDU 6	DEMKO14ATEX1338 U	IECEX ULD 14.0005U
WDK 2.5	KEMA 98ATEX1687 U	IECEX ULD 05.0008U
SAK 2.5	KEMA 97ATEX1798 U	IECEX KEM 06.0014U
SAK 4	KEMA 97ATEX1798 U	IECEX KEM 06.0014U
SAK 6N	KEMA 97ATEX1798 U	IECEX KEM 06.0014U
ZDU 2.5	KEMA 97ATEX2521 U	IECEX ULD 05.0009U
ZDU2.5/3AN	KEMA 97ATEX2521 U	IECEX ULD 05.0009U
ZDU2.5/4AN	KEMA 97ATEX2521 U	IECEX ULD 05.0009U
ZDU2.5/2X2AN	KEMA 97ATEX2521 U	IECEX ULD 05.0009U
ZDU 4	KEMA 97ATEX2521 U	IECEX ULD 05.0009U
ZDU 6	KEMA 97ATEX2521 U	IECEX ULD 05.0009U
ZDK2.5/1.5	KEMA 97ATEX4677 U	IECEX ULD 05.0009U
WPE 1.5/ZZ	KEMA 98ATEX1685 U	IECEX ULD 14.0005U
WPE 2.5/1.5/ZR	KEMA 98ATEX1685 U	IECEX ULD 14.0005U
WPE 2.5	DEMKO14ATEX1338 U	IECEX ULD 14.0005U
WPE 2.5N	KEMA 98ATEX1683 U	IECEX ULD 14.0005U
WPE 4	DEMKO14ATEX1338 U	IECEX ULD 14.0005U
WPE 4/ZZ	KEMA 08ATEX0014 U	IECEX ULD 14.0005U
WPE 4/ZR	KEMA 08ATEX0014 U	IECEX ULD 14.0005U
WPE 4N	TÜV 04ATEX2630 U	IECEX ULD 14.0005U
WPE 6	DEMKO14ATEX1338 U	IECEX ULD 14.0005U
WDK 2.5 PE	KEMA 98ATEX1687 U	IECEX ULD 05.0008U
WDK 2.5N PE	KEMA 00ATEX2061 U	IECEX ULD 05.0008U
WDK 4N PE	KEMA 00ATEX2061 U	IECEX ULD 05.0008U

<i>Made by PHOENIX</i>		
UK 1.5N	KEMA 98ATEX1651 U	IECEX KEM 06.0034U
UK 2.5N	KEMA 98ATEX1651 U	IECEX KEM 06.0034U
UK 3N	KEMA 98ATEX1651 U	IECEX KEM 06.0034U
UK 5N	KEMA 98ATEX1651 U	IECEX KEM 06.0034U
UK 6N	KEMA 98ATEX1651 U	IECEX KEM 06.0034U
<i>Made by RAAD</i>		
RTP 2.5	KEMA 04ATEX2285 U	N/A
RTP 4	KEMA 04ATEX2265 U	N/A
RTP 6	KEMA 04ATEX2265 U	N/A

*Table 1*

***ENCLOSURE INSTALLATION FOR SAFE USE:***

1. The IP rating of the enclosure must be maintained for the area of use, by the use of correct arrangement of Cable /gland /sealing arrangements and in accordance with the installation codes as detailed in EN/IEC 60079-14, EN/IEC 60079-31, and this operating instruction.
2. Where other certified components are part of assembly, the user must take in to account any limitations listed on relevant certificates.
3. If an optional Breather/Drain as listed in the enclosure certificate is fitted, the enclosure must be suited such that the Breather/Drain is pointing vertically downwards from its bottom. The operating temperature range of the enclosure is limited to that of the breather / drain device fitted.
4. The IP rating of the Breather Drain should match with the IP rating of the enclosure.
5. Unused entry holes shall be fitted with certified stopping plugs.
6. When used under dust layers the maximum depth shall be no greater than 50 mm.
7. The enclosure has Metric clearance/plain entry holes as standard. Alternative clearance holes are available. Plain entry holes must maintain the following:
  - a) The plain hole shall be no larger than 0.7mm above the major diameter of the entry thread.
  - b) Glands or stopping plugs shall be secured internally by suitable locknuts, such that they will not be dislodged by a 7Nm impact.
  - c) The enclosure shall be maintained at IP 66/65 by a suitable sealing washer under the shoulder of the cable gland and or entry devices.(Cable glands and or entry devices must be certified).

The apparatus must not be modified without reference to ***SEMC***, as this will invalidate certification.

***Electrical connection***

- 1- The electrical connection of the apparatus may only be carried out by skilled staff. The circuit diagram of the built-in components is either shown on these components or attached to them or shown in the operating instructions. As to wired built-in components, the circuit diagram attached to the device is to be observed.
- 2- In order to maintain the explosion category, the conductors will have to be connected with special care.
- 3- The insulation shall reach up to the terminal. The conductor itself must not be damaged.
- 4- The connectible min. and max. Conductor cross-sections will have to be observed (see technical data).
- 5- All screws and/or nuts of the supply terminals, also of those remaining vacant, shall be tightened down.

- 6- On measuring instruments for CT connection n/1A the interchangeable scales can be changed via a flap arranged on the upper part of the measuring instrument.
- 7- All wiring must be carried out in accordance with the relevant code of practice and/ or instruction e.g. EN/IEC 60079-14.
- 8- All terminals and accessories such as cross-connectors shall be installed in accordance with the terminal manufacturer's instructions.
- 9- All terminal screws used and unused shall be fully tightened down by the end user.

***EARTHING:***

The LCS series have an M6 internal and M5 external earth screw suitable for the largest conductor size used in the box.

***TO OPEN THE LID:***

1. Disconnect power, (Isolate all circuits).
2. Un-tighten all of lid's screws.
3. Carefully open the lid, ensuring the sealing gasket is not damaged or misplaced then disconnect the earth from the lid.

***TO CLOSE THE LID:***

- 1- Any foreign object shall be removed from the apparatus.
- 2- Check that the sealing gasket is secured inside the lid, and undamaged. Make sure that the lid is refitted correctly.
- 3- Locate and tighten the lid screws properly.

**WARNING!!!:** If the screws are over tightened, the apparatus can be damaged!

***TAKING INTO OPERATION:***

Prior to taking the apparatus into operation, the tests specified in the relevant national regulations will have to be carried out.

Apart from that, the correct functioning and installation of the apparatus in accordance with this operating instruction and other applicable regulations will have to be checked.

Prior to taking into operation, the zero point adjustment of the measuring instrument index has to be checked. Where necessary, the measuring instrument index is to be adjusted to the zero point by means of the adjusting screw.

***SPECIAL CONDITIONS FOR SAFE USE:***

- Suitable certified cable glands or blanking elements, that sustain the type of protection and IP66/65, must be used.
- If a breather is equipped, the lower IP rating is used instead.
- The insulation of conductors must match with temperature requirements.

***MAINTENANCE / SERVICING:***

The relevant national regulations which apply to the maintenance/servicing of the electrical apparatus in explosive atmosphere shall be observed.

Before opening the enclosure make sure that the apparatus is disconnected from the supply voltage, or take appropriate protective measures.

The required maintenance intervals depend on the respective application and will therefore have to be determined by the user dependent on the conditions of use.



When servicing the apparatus, particularly those parts that are decisive for the type of protection against explosion, will have to be checked e.g. intactness of enclosure, cable glands, efficiency of the cover gaskets and the functioning of the switch mechanism. If during servicing repairs prove to be necessary, the Repair / Overhaul / Modification of this manual will have to be observed.

***REPAIR / OVERHAUL / MODIFICATION:***

Repairs may only be carried out with genuine **SEMC** spare parts.

Repairs that affect the explosion protection may only be carried out by **SEMC** or a qualified electrician in compliance with the applicable rules.

Modifications to the apparatus or changes of its design are not permitted, except for the mounting of additional cable entries and the installation of supply terminals in accordance with the approval of the apparatus or accordance to instructions of the manufacturer.

**DISPOSAL / RECYCLING**

When the apparatus is disposed of, the respective national regulations on waste disposal will have to be observed.