# IECEx Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION
## IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx ExTC 18.0011X

Issue No: 0

Status: **Current**



Date of Issue: **2018-06-13**

Applicant: **Compac Industries Ltd**
52 Walls Road
Penrose
Auckland 1061
**New Zealand**

Equipment: **K-Factor Display**

*Optional accessory:*

Type of Protection: **Intrinsic Safety**

Marking:

Ex ib IIA T4 Gb

-40°C ≤ Tamb ≤ +70°C

*Approved for issue on behalf of the IECEx Certification Body:* David Price

*Position:* Certification Authority

*Signature:*
*(for printed version)*

*Date:* 2018-06-13

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

**Ex Testing and Certification Pty Ltd**
**1/30 Kennington Drive**
**Tomago NSW 2322**
**Australia**

TESTING & CERTIFICATION

# IECEx Certificate of Conformity

| | | |
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| Manufacturer: | **Compac Industries Ltd**<br>52 Walls Road<br>Penrose<br>Auckland 1061<br>**New Zealand** | |

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

**STANDARDS:**

The apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

| | |
|---|---|
| **IEC 60079-0 : 2011**<br>Edition:6.0 | Explosive atmospheres - Part 0: General requirements |
| **IEC 60079-11 : 2011**<br>Edition:6.0 | Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i" |

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

**TEST & ASSESSMENT REPORTS:**

*A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in*

Test Report:

AU/EXTC/ExTR17.0011/00

Quality Assessment Report:

AU/TSA/QAR08.0008/06

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Certificate No: IECEx ExTC 18.0011X Issue No: 0

Date of Issue: **2018-06-13** 

**Schedule**

**EQUIPMENT:**

*Equipment and systems covered by this certificate are as follows:*

The K-Factor Display comprises a CI502 K-Factor Board, either a CI252 or CI253 LCD Panel PCB directly mounted to the K-Factor Board and up to two totalisers, all housed in a plastic enclosure with a polycarbonate front cover. A metal bracket used to mount the totaliser is accessible from outside the plastic enclosure.

The K-Factor Display is designed to form part of an intrinsically safe control system and is powered via the BUS-IN connector J1. Connections are provided for 5 V and 9 V IS supplies, common ground and RS485 communications. The K-Factor Display provides three BUS-OUT connectors J2, J3 and J4 which are directly connected to BUS-IN connector J1 (though the pin numbers on J1 for the various circuits are not the same as the pin numbers on J2, J3, J4) for through connected 5 V and 9 V IS supplies, common ground and RS485 communications.

In addition to the BUS-IN and BUS OUT connectors, the K-Factor Board (CI502) provides connectors J10 and J20 for two COM Meters (separately certified, refer IECEx ExTC 17.0009X), connectors J11 to J14 and J21 to J24 for eight simple switches, connector J30 for two totalizers mounted internal to the enclosure and connector J8 for a piezo buzzer mounted on the board itself.

**SPECIFIC CONDITIONS OF USE: YES as shown below:**

Refer to Annexe for details.

**Annex:**

IECEx ExTC 18.0011X Annex.pdf

# IECEx Certificate of Conformity

## Annexe

| Annexe for Certificate No.: | IECEx ExTC 18.0011X | Issue No.: | 0 |
|---|---|---|---|

**Description:**

Refer to certificate.

**Conditions of Certification pertaining to Issue 0 of this Certificate:**

The following input and output parameters were determined for the various connectors to external equipment on the K-Factor Display and must be taken into account during interconnection:

| **Connector J1 (BUS-IN)** see Note 1 | |
|---|---|
| **5V & RS485** | **Pins 1, 2 & 6 w.r.t. Pins 3, 4, 5 & 7** |
| Ui | 6 V |
| Ii | 235 mA see Note 2 |
| Pi | 1.05 W see Note 2 |
| Li | 100 µH see Note 2 |
| Ci | 310 µF see Note 2 |
| Io | 5 mA see Note 3 |
| Po | 7 mW see Note 3 |
| | |
| **9V** | **Pin 8 w.r.t. Pins 3, 4, 5 & 7** |
| Ui | 10 V |
| Ii | 1 A |
| Pi | 10 W |
| Li | 0 |
| Ci | 0 |

Note 1: Connectors J2, J3 and J4 (BUS-OUT) are connected in parallel to J1, and hence have the same parameters, with the pin numbers allocated as follows:

| Circuit reference | J1 Pin # | J2, J3, J4 Pin # |
|---|---|---|
| 9V | 8 | 6 |
| 5V | 2 | 3 |
| A | 6 | 8 |
| B | 1 | 4 |
| Earth, Screen | 3, 4, 5, 7 | 1, 2, 5, 7, 9, 10 |

Note 2: The supply to connectors J10, J20 are directly connected to this J2 pin 2. Hence the load connected at J10, J20 must be accounted for and added to J2 parameters when connecting in a system. Currently the Lo and Co for J10, J20 have been allocated the values of 50µH and 300µF, and these have been reflected in the Li and Ci values of J2 of 100uH and 310uF.

Note 3: The terminals on the 5V circuit may be considered under fault to be connected to an internal source of supply due to a supercapacitor that may charge up to the applied Ui but is limited by internal resistance to provide the Io and Po shown in this table. This needs to be accounted for when connecting in a system.

| **Connectors J10 and J20**<br>Typically for connection of Meters and Encoders | |
|---|---|
| **5V Output** | **Pins 2, 4, 5, 6, 8, 9 & 10 w.r.t. Pins 1 & 3** (combined parameters for J10/J20) |
| Uo | 6 V see Note 2 above |
| Io | 235 mA see Note 2 above |
| Po | 1.05 W see Note 2 above |
| Lo | 50 µH see Note 2 above |
| Co | 300 µF see Note 2 above |

| **Connectors J11, J12, J13, J14, J21, J22, J23, J24**<br>Typically for connection of simple apparatus (switches) | |
|---|---|
| **5V Output** | **Pin 1 w.r.t. Pin 2**<br>(all connectors considered in parallel) |
| Uo | 6 V |
| Io | 5.2 mA |
| Po | 8 mW |
| Lo | 100 µH |
| Co | 1 µF |

**Drawing list pertaining to Issue 0 of this Certificate:**

**Manufacturer's Documents**

| **Technical Documents** | | | | |
|---|---|---|---|---|
| Title: | Drawing No.: | Pages | Rev. Level: | Date: |
| C5000 Displays7 Digit Display Panel Housing Assembly | ASM0143A | 2 | B | 2017-12-15 |
| C5000 Control Unit Labels K-Factor Displays | AP392 | Sheet 4 | B | 2018-06-08 |
| Installation & Safety Data for K-Factor Display | AP397 | 5 | A | 2018-06-08 |

# IECEx Certificate of Conformity

## Annexe

| Annexe for Certificate No.: | IECEx ExTC 18.0011X | Issue No.: | 0 |
|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| ***CI502*** | | | | |
| CI502 C5K K-Factor Board (Schematics) | CI502 | Sheets 1 to 5 of 8 | C | 2018-04-23 |
| C5000 K-Factor Board (Top Overlay) | CI502 | Sheet 6 of 8 | C | 2018-04-23 |
| C5000 K-Factor Board (Top Layer) | CI502 | Sheet 7 of 8 | C | 2018-04-23 |
| C5000 K-Factor Board (Bottom Layer) | CI502 | Sheet 8 of 8 | C | 2018-04-23 |
| CP-C5K-KFACT (BOM) | CI502P | 2 | C | 2018-04-24 |
| ***CI252*** | | | | |
| LCD PANEL LAYOUT1 (Schematic) | CI252 | 1 of 5 | B | 2016-01-27 |
| LCD PANEL LAYOUT1 (Top Overlay) | CI252 | 2 of 5 | B | 2016-01-27 |
| LCD PANEL LAYOUT1 (Top Layer) | CI252 | 3 of 5 | B | 2016-01-27 |
| LCD PANEL LAYOUT1 (Bottom Layer) | CI252 | 4 of 5 | B | 2016-01-27 |
| LCD PANEL LAYOUT1 (Bottom Overlay) | CI252 | 5 of 5 | B | 2016-01-27 |
| CP-DSPLY-7D1 (BOM) | CI252P-B | 1 | - | 2017-11-03 |
| ***CI253*** | | | | |
| LCD PANEL LAYOUT2 (Schematic) | CI253 | 1 of 5 | A | 2015-10-06 |
| LCD PANEL LAYOUT2 (Top Overlay) | CI253 | 2 of 5 | A | 2015-10-07 |
| LCD PANEL LAYOUT2 (Top Layer) | CI253 | 3 of 5 | A | 2015-10-07 |
| LCD PANEL LAYOUT2 (Bottom Layer) | CI253 | 4 of 5 | A | 2015-10-07 |
| LCD PANEL LAYOUT2 (Bottom Overlay) | CI253 | 5 of 5 | A | 2015-10-07 |
| CP-DSPLY-7D2 (BOM) | CI253P-A | 1 | - | 2017-11-03 |