

(1) EU-TYPE EXAMINATION CERTIFICATE



- (2) Equipment and Protective Systems intended for use in Potentially Explosive Atmosphere - **Directive 2014/34/EU**
- (3) EU-Type Examination Certificate Number

TÜV 18 ATEX 8226 X

Issue: 00

- (4) Equipment: **K-Factor Display**
- (5) Manufacturer: **Compac Industries Ltd**
- (6) Address: **52 Walls Road, Penrose Auckland
New Zealand**
- (7) This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- (8) The TÜV Rheinland Zertifizierungsstelle für Explosionsschutz of TÜV Rheinland Industrie Service GmbH, Notified Body No. 0035 in accordance with Article 21 of the Council Directive 2014/34/EU of 26th February 2014, certifies this product which has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmosphere, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report 557/Ex8226.00/18
- (9) Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule of this certificate, has been assessed by reference to:

EN 60079-0:2012/A11:2013 EN 60079-11:2012
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- (11) This EU-Type Examination Certificate relates only to the design and specification for construction of the equipment or protective system. It does not cover the process for actual manufacture or supply of the equipment or protective system, for which further requirements of the directive are applicable.
- (12) The marking of the equipment shall include the following:



II 2 G

Ex ib IIA T4 (-40°C ≤ Ta ≤ +70°C)

TÜV Rheinland Zertifizierungsstelle für Explosionsschutz

Cologne, 2018-06-29

Dip.-Ing. Klauspeter Graffi

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This EU-Type Examination Certificate may be circulated only without alteration. Extracts or alterations are subject to approval by the TÜV Rheinland Industrie Service GmbH TÜV Rheinland Group Am Grauen Stein 51105 Köln
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(13) Annex

(14) **EU Type Examination Certificate**
TÜV 18 ATEX 8226 X Issue: 00

(15) Description of equipment

15.1 Equipment and type:

K-Factor Display

15.2 Description / Details of Change

General product information

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

Technical Data

Nominal input voltage 5V and 9V

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(16) Test-Report No. 557 / Ex 8226.00/18

(17) Special Conditions for safe use

- 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) <small>see Note 1</small>	
5V & RS485	Pins 1, 2 & 6 w.r.t. Pins 3, 4, 5 & 7
U _i	6 V
I _i	235 mA <small>see Note 2</small>
P _i	1.05 W <small>see Note 2</small>
L _i	100 µH <small>see Note 2</small>
C _i	310 µF <small>see Note 2</small>
I _o	5 mA <small>see Note 3</small>
P _o	7 mW <small>see Note 3</small>
9V	Pin 8 w.r.t. Pins 3, 4, 5 & 7
U _i	10 V
I _i	1 A
P _i	10 W
L _i	0
C _i	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 I_o and C_o for J10, J20 have been allocated the values of 50µH and 300µF, and these have been reflected in the L_i and C_i 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

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applied U_i but is limited by internal resistance to provide the I_o and P_o shown in this table. This needs to be accounted for when connecting in a system.

Connectors J10 and J20	
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)
U_o	6 V <small>see Note 2 above</small>
I_o	235 mA <small>see Note 2 above</small>
P_o	1.05 W <small>see Note 2 above</small>
L_o	50 μ H <small>see Note 2 above</small>
C_o	300 μ F <small>see Note 2 above</small>

Connectors J11, J12, J13, J14, J21, J22, J23, J24	
Typically for connection of simple apparatus (switches)	
5V Output	Pin 1 w.r.t. Pin 2 (all connectors considered in parallel)
U_o	6 V
I_o	5.2 mA
P_o	8 mW
L_o	100 μ H
C_o	1 μ F

(18) Basic Safety and Health Requirements

Covered by afore mentioned standard

TÜV Rheinland Zertifizierungsstelle für Explosionsschutz

Cologne, 2018-06-29

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