
*User's
Manual*

CC1-30klb/50klb



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1. Product Description

The type CC1 is a stainless-steel compression type load cell with complete hermetic sealing, commonly used as a POC/polished rod load cell within the oil pumping industry. CC1 designed to withstand harsh industrial environments with various cable connector options to meet industry requirement. The range services capacity at 30 klb & 50 klb

Key Features

- Glass to metal hermetic seal
- IP-68 water ingress protection
- Stainless steel construction
- Multiple connector options including Molex and Amphenol
- Various capacities available
- Traceable calibration in accordance with NIST
- UL (Underwriters Laboratory) certification for use in the oil and gas industry
- CE marked for European use

Accessories (Sold separately):

- P/N 53-003004 - OD-73mm [2-7/8"], ID-39.7mm [1-9/16"], H-14mm [0.56"] Stainless Steel Spherical Washers
- P/N 53-003301 - OD-73mm [2-7/8"], ID-39.7mm [1-9/16"], H-14mm [0.56"] Black oxide Spherical Washers
- P/N 52-0091955 - OD-88.6mm [3.49"] and ID-42.4mm [1.67"], H-19mm [3/4"] Nickel Plated Load Spacer

2. Mounting Instructions

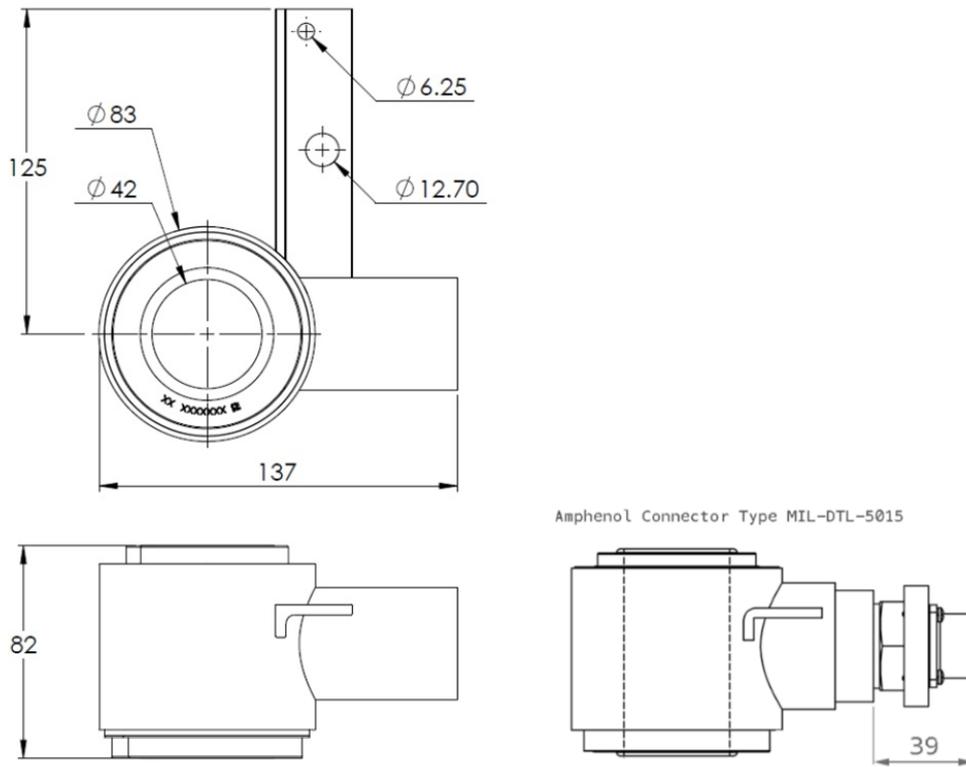
IMPORTANT

The employees responsible for the equipment installation and verification must take into consideration all the actions concerning this subject specified in IEC 60079-14:2013 ed. 5.0 (Electrical installations design, selection and erection) standard. In addition to general specifications associated with any system installed in hazardous locations, special attention should be paid for specific requirements regarding intrinsic safety.

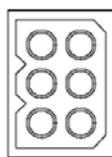
The model CC1 is installed on a metal rod (polished rod) through the center hole and make metal to metal contact. The metal rod is connected to the frame of the apparatus which should be connected to earth ground.

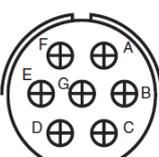


2.1 Installation Dimensions



Dimensions are in millimetres.

LOAD CELL			CABLE
 <p>Molex # 1261</p>	CONNECTOR PIN (MOLEX Style)	FUNCTION	CABLE COLOR CODE
	A	EXCITATION +	RED
	F	NOT CONNECTED	
	B	SIGNAL +	GREEN
	D	EXCITATION -	BLACK
	E	SHIELD	YELLOW
	C	SIGNAL -	WHITE

LOAD CELL			CABLE
 <p>MIL-DTL-5015</p>	CONNECTOR PIN (MS Style)	FUNCTION	CABLE COLOR CODE
	A	EXCITATION -	BLACK
	B	SHIELD	YELLOW
	C	EXCITATION +	RED
	D	SIGNAL +	GREEN
	E	NOT CONNECTED	
	F	SIGNAL -	WHITE
	G	NOT CONNECTED	

2.2 General Guideline

- All electrical and mechanical connections should be compatible with the model specifications and control drawing 0061571.
- Installation should only be performed when the electrical supply power is off and when there is no mechanical force applied.

3. Equipment Maintenance

No maintenance is required or permitted for this product.

This manual must be read and carefully kept, and always at the operator's disposal if needed.

Loadcell must be protected from mechanical damage. Rough usage or external damage should be verified periodically according to a routine maintenance.

If failure occurs the unit should be returned to the factory for diagnosis and repair.

For repair or calibration, send load cell to:

Repair Department
Flintec Inc.
18 Kane Industrial Drive
Hudson, MA 01749
USA

4. Technical Specification

Maximum capacity (E_{max})	klb	30	50
Metric equivalents (1 klb=0.45359 t)	t	13.6	22.7
Packed weight	Kg	2.45	2.54
Temperature effect on zero output (TC_0)	%*RO/°C	$\leq \pm 0.027$ ($\leq \pm 0.0015$ %*RO/°F)	
Temperature effect on sensitivity (TC_{RO})	%*RO/°C	$\leq \pm 0.036$ ($\leq \pm 0.002$ %*RO/°F)	
Combined error	%*RO	$\leq \pm 0.5$	
Repeatability	%*RO	$\leq \pm 0.02$	
Insulation resistance (100 V DC)	M Ω	≥ 500	
Zero balance	%*RO	$\leq \pm 1$	
Input resistance (R_{iC})	Ω	800 ± 50	
Output resistance (R_{out})	Ω	$700 \pm 0.5\%$	
Safe load limit (E_{lim})	%* E_{max}	200	
Compensated temperature range	°C	-25...+65 (-14...+150 °F)	
Operating temperature range	°C	-55...+80 (-70...+175 °F)	
Load cell material		Stainless steel 17-4 PH (1.4548)	
Sealing		Complete hermetic sealing; cable entry sealed by glass to metal header	
Protection according EN 60 529		IP68 (up to 2 m water depth) / IP69K	
Rated output (RO)	mV/V	$2 \pm 0.5\%$	
Excitation voltage	V	5...15	

5. Marking

 <p>MODEL: CC1-xxklb S/N: xxxxxxxx FSO: x.xxxxx mV/V Rated supply: 5-15 VDC Intrinsically safe when installed with control drawing No. 0061571 DOM: YYYY-MM Made in Sri Lanka</p>	<p>PO Box 24, Spur Rd 2, Phase 1, KEPZ, Katunayake, Sri Lanka. IECEx UL 20.0073X DEMKO 20 ATEX 2322X II 1 G Ex ia IIC T4 Ga -55° ≤ Ta ≤ +80°C CLASS I, ZONE 0, AEx ia IIC T4 Ga CLASS I, DIV 1, GROUPS A,B,C,D; T4 CLASS II, DIV 1, GROUPS E,F,G CLASS III</p> <p>WARNING: POTENTIAL ELECTROSTATIC CHARGING HAZARD - SEE INSTRUCTIONS Avertissement : Risque potentiel de charge électrostatique - voir les instructions Intrinsically Safe and sécurité intrinsèque and Exia</p> <div style="display: flex; justify-content: space-around; align-items: center;">     </div> <p style="font-size: small; text-align: right;">Proc. Cont. Eq. for Use in Haz. Loc.</p>
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Typical ATEX & IECEx Marking										
CE	0359	Ex	II	2	G	Ex	db	IIC	T4	Gb
↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
Complies with European Directive*	Notified Body Number*	Specific Marking for Explosion Protection*	Equipment Group*	Equipment Category*	Environment*	Explosion Protection	Protection Type	Atmosphere Group	Temperature Class	Equipment Protection Level (EPL)
*ATEX only (ATEX 2014/34/EU)										

<p><i>Equipment Group</i></p> <p><i>Equipment Category and Environment</i></p> <p><i>Explosion Protection</i></p> <p><i>Protection Type</i></p> <p><i>Temperature Class</i></p> <p><i>Equipment Protection Level (EPL)</i></p>	<p>II - All areas except Mines</p> <p>1 G - Gas, Vapor, Mist</p> <p>Ex - Conformity with some of the IECs protection modes</p> <p>ia - Intrinsic security “ia” protection mode than mines. Gases Groups</p> <p>T4 - Max surface temp 135°C (275°F)</p> <p>Ga - Gas Atmospheres. Very high level of protection</p>
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Ordinary Location Markings

- Maximum Operating Temperature: 80°C accordingly.
- Maximum Humidity: 95 % without moisture condensation.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- Maximum Altitude: 2000 Meters

6. Safety Information



Intended Usage

A maximum temperature on the device enclosure must not reach temperatures higher than 80°C or lower than -55°C. This condition must be guaranteed permanently in order to be compliant with the intrinsic safety certification.



Maintenance Safety

There must be a competent person with enough skills and knowledge supervising all works performed. Experienced and trained personnel must follow the industrial standard safety protocol when authorized maintenance activities are carried out on the equipment.



X Mark Conditions

The model CC1 does not provide dielectric isolation according to EN 60079-11 clause 6.3.13 between intrinsically safe circuits and earth/enclosure.

In order to reduce the RISK OF STATIC DISCHARGE from CC1 enclosure and associated parts, recommended to use electrostatic cloths, gloves and in general insulating object when the equipment is required to be manipulated. For cleaning tasks use always a dump cloth. Electrostatic charges can accumulate on the non-metallic parts especially at low humidity and in dry conditions, so special care must be taken to avoid places or areas where airflows occur.

7. CC1 Control Drawing 0061571

<p>1</p> <p>APPROVED FOR CLASS I, DIVISION 1, GROUPS A, B, C AND D, CLASS II, GROUPS E, F AND G, AND CLASS III HAZARDOUS LOCATIONS</p> <p style="text-align: center;">HAZARDOUS AREA</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%;"> <p style="text-align: center;">CC1 / CC3 LEAD CELL</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">A - EXCITATION +</td> <td style="width: 50%;"></td> </tr> <tr> <td>B - SIGNAL +</td> <td></td> </tr> <tr> <td>E - SHIELD (N/A FOR CC3)</td> <td></td> </tr> <tr> <td>D - EXCITATION -</td> <td></td> </tr> <tr> <td>C - SIGNAL -</td> <td></td> </tr> </table> </div> <p style="text-align: center;">NON-HAZARDOUS AREA</p> <p style="text-align: right;"> $U_i = 28 \text{ V,}$ $C_i = 0 \text{ nF,}$ $L_i = 0 \text{ mH}$ $P_i = 0.7 \text{ W}$ </p>	A - EXCITATION +		B - SIGNAL +		E - SHIELD (N/A FOR CC3)		D - EXCITATION -		C - SIGNAL -		<p>2</p> <p>HAZARDOUS AREA</p> <p style="text-align: center;">NON-HAZARDOUS AREA</p>	<p>3</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REVISION</th> <th>CHANGE DESCRIPTION</th> <th>CR No.</th> <th>DRAWN</th> <th>APPROVED</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>02</td> <td>Removed IT from notes</td> <td>0096688</td> <td>AIK</td> <td>AGR</td> <td>04-Mar-20</td> </tr> <tr> <td>01</td> <td>First Production Issue</td> <td>0075508</td> <td>JCS</td> <td>FG</td> <td>16-Dec-14</td> </tr> <tr> <td>B</td> <td>Add Class II & III</td> <td></td> <td>JCS</td> <td>FG</td> <td>16-Dec-14</td> </tr> <tr> <td>A</td> <td>Add Notes to Comply with UL Requirements</td> <td></td> <td>JCS</td> <td>MJS</td> <td>22-Sep-14</td> </tr> </tbody> </table>	REVISION	CHANGE DESCRIPTION	CR No.	DRAWN	APPROVED	DATE	02	Removed IT from notes	0096688	AIK	AGR	04-Mar-20	01	First Production Issue	0075508	JCS	FG	16-Dec-14	B	Add Class II & III		JCS	FG	16-Dec-14	A	Add Notes to Comply with UL Requirements		JCS	MJS	22-Sep-14	<p>4</p> <p style="text-align: center;">NON-HAZARDOUS AREA</p>	<p>5</p> <p style="text-align: center;">NON-HAZARDOUS AREA</p>	<p>6</p> <p style="text-align: center;">NON-HAZARDOUS AREA</p>
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<p>NOTES:</p> <ol style="list-style-type: none"> APPARATUS CONNECTED TO THE SYSTEM SHALL NOT USE OR GENERATE VOLTAGE GREATER THAN 250 V. Repair is not permitted / La réparation n'est pas autorisée. THE ASSOCIATED APPARATUS MUST BE COMPLIANCE AGENCY APPROVED NO REVISION TO DRAWING WITHOUT PRIOR AGENCY APPROVAL For Cable and Lead: if the capacitance per foot or the inductance per foot is not known, then the following values shall be used: Cable = 60 pF/ft Lead = 0.2 mH/ft INSTALLATION SHOULD BE IN ACCORDANCE WITH ANS/ISA RP12.06.01 "INSTALLATION OF INTRINSICALLY SAFE SYSTEM FOR HAZARDOUS (CLASSIFIED) LOCATIONS" AND THE NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) AND THE CANADIAN ELECTRICAL CODE The model CC1/CC3 does not provide dielectric isolation according to EN 60079-11 clause 6.3.13 between intrinsically safe circuits and earth/enclosure See User Manual for Markings 																																													
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