Organismo de Certificação

Eletrobras Cepel

Centro de Pesquisas de Energia Elétrica

CENTRO DE PESQUISAS DE ENERGIA ELÉTRICA

Organismo de Certificação Acreditado pelo INMETRO

Certificação de Produto

OCP 0007

Certificado de Conformidade

Certificate of Conformity / Certificado de Conformidad

Número: Number / Número	CEPEL 08.1718	Emissão: Issue / Expedición	18/05/2012	Validade: Validity / Validez	17/05/2015

Produto: **INTRINSIC SAFE COIL WITH CIRCUIT and LOW POWER INTRINSIC SAFE COIL**
Product / Producto

Tipo/Modelo: **62, 63, 64, 62-CO, 63-CO e 64-CO – (INTRINSIC SAFE COIL WITH CIRCUIT)**
Type – Model / Tipo – Modelo **71-0, 72-0, 73-0, 66-CR, 67-CR, 68-CR, 65-CR - (LOW POWER INTRINSIC SAFE COIL)**

Número de Série: ---
Serial Number / Número de Serie

Solicitante/Endereço: **ROTEX AUTOMATION LIMITED**
Requester – Address / Solicitante – Dirección
987/11, GIDC – Makapura
Vadodora 390010
Índia

Fabricante/Endereço: **The same.**
Manufacturer – Address / Fabricante – Dirección

Norma(s) Aplicáveis:
Suitable Standard(s) / Norma(s) de Aplicación

ABNT NBR IEC 60079-0:2008	Explosive Atmospheres – Part 0: Equipments – General Requirements;
ABNT NBR IEC 60079-1:2009	Explosive Atmospheres – Part 1: Equipment protection by flameproof enclosures "d";
ABNT NBR IEC 60079-11:2009	Explosive Atmospheres – Part 11: Equipment protection by intrinsic safety "i";
ABNT NBR IEC 60529:2009	Degree of protection for enclosures of electrical equipments (IP code).

Laboratório de Ensaio: CEPEL – Centro de Pesquisas de Energia Elétrica
Testing Laboratory / Laboratório de Ensayo
Laboratório de Acionamentos e Segurança em Equipamentos Eletroeletrônicos – AP4

Número do Relatório: **RAV-CERT-EX-1659/09 and RAV-EX-4605/13.**
Report Number / Número del Informe

Marcação: **Ex ia IIC T6 Gb IP67, Ex d ia IIC T6 Gb IP67 and Ex d ia IIC T6 Gb IP65**
Marking / Marcado

Condições de Emissão: According to INMETRO Directive 179 dated May 18th, 2010. Model with Evaluation of the Quality System of the Manufacturer and tests on the product. Process approved on 128th Meeting of the Certification on January, 2009 to be ratified in the 173ª CCEX in February 21st, 2013.
Conditions of Issue / Condiciones de Expedición
- The letters "X" or "U" after the conformity certificate's reference, mean that there is a special condition that must be analysed at the momento of installation (see remarks field).

1ª via - CLIENTE

Número da Emissão: **01** Emissão original: **19/01/2009**
Issue number / Numero de la Expedición *Original Issue / Expedición Original*

Carlos Azevedo Sanchedo
SIGNATÁRIO AUTORIZADO
Authorized Signatory
Persona Autorizada

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The devices solenoids with name: **INTRINSIC SAFE COIL WITH CIRCUIT and LOW POWER INTRINSIC SAFE COIL**, manufactured by **ROTEX AUTOMATION LIMITED**, are bellow qualified in terms of their specifications, analysis and tests performed.

Specifications:

1- Intrinsically Safe Coil is used for operating a plunger. The solenoid has a metal housing and the circuit is hermetically sealed. The circuit draws a small current which has the function of the charging a capacitor. When the capacitor stores enough energy to pull the plunger, a sensor triggers, allowing current to the winding resulting in the movement of the plunger. When the plunger is moved, the current charging of the capacitor is cut and is fed to the winding which is sufficient to keep the plunger in the energized position. The intrinsic safe coil with circuit is designed in accordance with category "ia", is housed in an enclosure and encapsulated by Epoxy. The enclosure may be of Aluminium alloy LM6 or Stainless Steel.

2- Low Power Intrinsic Safe Coil is used for operating the valve plunger through solenoid and is designed in accordance to type of protection intrinsic safe, category "ia". Low Power Intrinsic Safe Coil is housed in an enclosure "Ex d", terminal box or Plug in type enclosure.

Identification:

- Intrinsic Safe Coil with Circuit:

Table 1

Type	Description	Cable Entrance
62	Intrinsically Safe Coil with Circuit, enclosure Exd-AL.	¾" ET(F)
63		½" NPT(F)
64		M20x1,5(F)
62-CO	Intrinsically Safe Coil with Circuit, enclosure Exd-SS.	¾" ET(F)
63-CO		½" NPT(F)
64-CO		M20x1,5(F)

- Low Power Intrinsic Safe Coil:

Table 2

Type	Description	Cable Entrance
71-0	Low Power Intrinsic Safe Coil, enclosure Exd-AL.	¾" ET(F)
72-0		½" NPT(F)
73-0		M20x1,5(F)
66-CR	Low Power Intrinsic Safe Coil, enclosure TB.	¾" ET(F)
67-CR		½" NPT(F)
68-CR		M20x1,5(F)
65-CR	Low Power Intrinsic Safe Coil, enclosure Plug in.	Pg 9

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Electrical Characteristics

- Entrance parameter of the Intrinsic Safe Coil with Circuit:

Table 3

Parameter	Value
Open circuit voltage (Ui)	≤ 32 V
Short circuit current (Ii)	≤ 80 mA (IIC), ≤ 200 mA (IIA, IIB)
Power (Pi)	1,2 W
Inductance (Li)	0
Capacitance (Ci)	40 pF

- Entrance parameter of the Low Power Intrinsic Safe Coil:

Table 4

Parameter	Value
Open circuit voltage (Ui)	≤ 32 V
Short circuit current (Ii)	≤ 75 mA
Power (Pi)	0,75 W
Inductance (Li)	0
Capacitance (Ci)	0

Analysis and tests performed:

Product assessment following the requirements of the Standards IEC 60079-0:00, IEC 60079-1:01, IEC 60079-11:99 IEC 60529:01. . Results recorded in Report RAV-CERT-EX-1659/09 and RAV-EX-4605/13.

Descriptive documentation of the equipment (filed together to the equipment process - confidential):

Code	Description	Revision	Date
11-INMETRO-10403	Name Plate for IS Exd with Circuit	01	10/09/2012
11-INMETRO-30504	Name Plate for LOW POWER IS Exd Enclosure	01	10/09/2012
11-DNV-30701	Low Power IS Coil Enclosure: Plug In	00	27/03/2005
11-DNV-30601-1	Low Power IS Coil Enclosure: TB	00	13/09/2006
11-DNV-30503	Low Power IS Coil	00	27/03/2005
11-DNV-30501-1	Low Power IS Coil Enclosure: Exd	00	13/09/2006
11-DNV-30502	Technical Data for Low Power IS Coil Enclosure: Exd	00	27/03/2005
11-DNV-30602	Technical Data for Low Power IS Coil Enclosure: TB	00	27/03/2005
11-DNV-30702	Technical Data for Low Power IS Coil Enclosure: Plug In	00	27/03/2005
11-DNV-31001	Intrinsically safe Coil Driver Circuit Diagram	00	27/03/2005
11-DNV-31101	PCB Layout for Intrinsically safe coil	00	27/03/2005
11-DNV-30901	BOM for AB-PCB-199	00	27/03/2005
11-DNV-31301	MGF, Process & Sequence for intrinsically Safe Coil	00	27/03/2005
11-DNV-10401	IS Coil with Circuit Enclosure: Ex d	00	27/03/2005
11-DNV-10402	Technical data for IS Coil With Circuit Enclosure: Ex d	00	27/03/2005

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Marking:

The marking of the **INTRINSIC SAFE COIL WITH CIRCUIT and LOW POWER INTRINSIC SAFE COIL**, shall contain the followings information:

Intrinsic Safe Coil with Circuit
Table 5

Type	Description	Marking
62 63 64	Intrinsically Safe Coil with Circuit, enclosure Exd-AL.	**Ex ia IIC T6 Gb IP67** **-40 °C ≤ Ta ≤ 70 °C** **Wiring parameters:** **See table 3**
62-CO 63-CO 64-CO	Intrinsically Safe Coil with Circuit, enclosure Exd-SS.	

Low Power Intrinsic safe Coil
Table 6

Type	Description	Marking
71-0 72-0 73-0	Low Power Intrinsic Safe Coil, enclosure Exd-AL.	**Ex d ia IIC T6 Gb IP67** **-40 ° C≤ Ta ≤ 70 °C** **Wiring parameters:** **See table 4**
66-CR 67-CR 68-CR	Low Power Intrinsic Safe Coil, enclosure TB.	**Ex d ia IIC T6 Gb IP65** **-40 °C ≤ Ta ≤ 70 °C** **Wiring parameters:** **See table 4**
65-CR	Low Power Intrinsic Safe Coil, enclosure Plug in.	**Ex d ia IIC T6 Gb IP67** **-40 °C ≤ Ta ≤ 70 °C** **Wiring parameters:** **See table 4**

Remarks:

1. This Certificate is only valid to the Coils effectively tested. Any modification in the design or using of the different material those defined by descriptive documentation of the equipment without CEPEL's authorization, will invalid this Certificate;

2. The activity of installation, inspection, maintenance, repair, revision and, recovery of the solenoids are responsibility of the users and shall be performed in accordance with the requirements of valid technical Standards and in accordance with the manufacturer recommendation;

3. The marking shall be done in accordance with the Standard ABNT NBR IEC 60079-0:2008 and with the Requirment for assessment of the conformity for electrical equipment for Explosive Atmospheres compound by gas and flammable steams and shall be fixed in the external surface of the equipment in a visible local. This marking shall be clear and durable considering possible chemical corrosion.

Nova Iguaçu-RJ, Februart 26th, 2013.

Carlos Azevedo Sanguedo
Responsable of Certification

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Validity of the Certificate: 17/05/2015

Control of issue:

Date	Issue	Description
18/05/2012	01	First issue in accordance with Directive 179 issued in 18/05/2010.

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