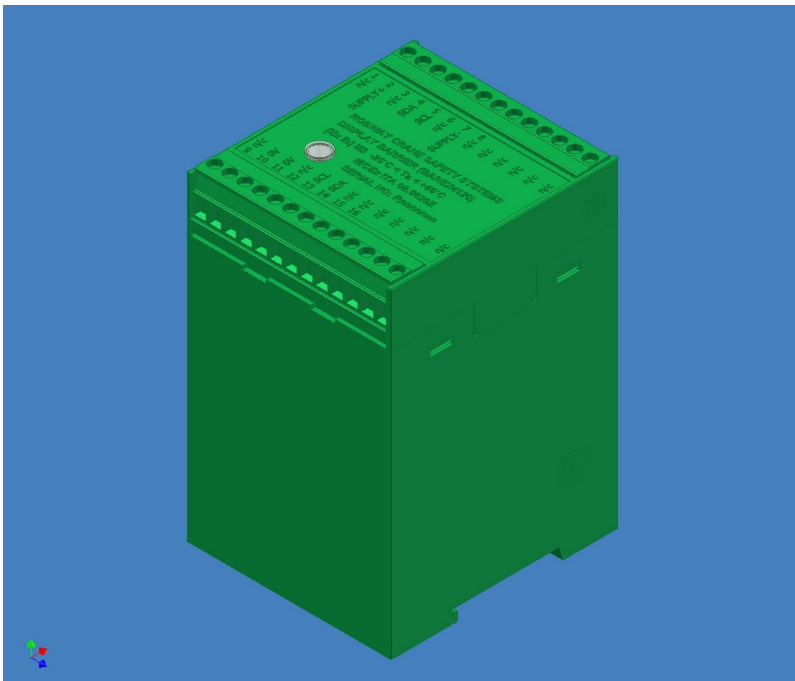


Safety and Installation Instructions

Model 4120 RCI-4100 Display Barrier

MAN1107 REV F



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This installation manual must be read and used by qualified personnel during system design and installation of the RCI-4100 Display and the Model 4120 Isolating Barrier.

 **Warning**

The 4100 Display is a Group IIB Ex ib certified display which may be located in Zone 1 or Zone 2 of a hazardous area.

The 4100 Display must be operated within environmental limitations and must only be connected to certified intrinsic safety barriers meeting the Model 4100 input parameters.

The 4100 Display and the 4120 Display Barrier must only be installed by qualified personnel in accordance with the relevant international installation standards. Particular care must be given to physical control and clear identification of IS cabling.

The 4100 Display may be installed in a Hazardous Area only with proper protection from the weather.

The 4120 Display Barrier must not be connected to equipment that uses or generates more than 250 Vrms with respect to earth ground.

The Model 4120 Barrier must be operated within environmental limitations.

The Model 4120 Barrier is an isolated Intrinsically Safe (IS) apparatus to be installed on a standard EN50022 T35 DIN rail located in a safe area / non-hazardous location.

The Model 4120 Barrier may be installed in a Hazardous Area ONLY if enclosed in an appropriately approved and/or certified “explosion proof” housing conforming to applicable standards.

The 4100 Display and Display Barrier cannot be repaired by the end user thus any units exhibiting a failure must be returned to the manufacturer or its authorized representative.

SAFETY ANALYSIS

In a system safety analysis, always check that the Hazardous Area / Hazardous location devices conform to the relevant standards. The 4100 Display and Barrier system as supplied with its 10 metre cable conforms to the specified product certification but there may be other relevant installation standards which must be met.

Although longer interconnecting cable runs may function satisfactorily Robway does not warrant the system working with a longer interconnecting cable than that supplied. In addition, if the interconnecting cable is to be extended beyond what is supplied the capacitance and inductance values must not exceed the limits given. If a longer cable run is desired please consult the factory.

4100 Display + Cable Parameters	Must be	Model 4120 Hazardous Area Isolating Barrier Group IIB Load Parameters
$C_i + C$ of cable	\leq	C_o
$(L_i \text{ device} + L \text{ cable}) / (R \text{ cable})$	\leq	L_o / R
L of cable	\leq	L_o

OPERATION

The Robway Model 4100 Display is intended to be used with the Model 4120 Display Barrier. The Model 4120 Barrier provides isolated power to the Model 4100 display and also an isolated intrinsic safety barrier for I2C communications from a host data system located in a safe area.

Proper operation of the 4100 Display is indicated by the LCD backlights being illuminated and the alarm sounding. If a data system is connected and functioning properly then digits will also appear on the display according to the relevant system manual. If normal operating conditions are not apparent when 24 VDC nominal is applied to the system then the 4100 display and/or the 4120 Isolating Barrier must be considered faulty and may only be repaired or replaced by qualified personnel after the system fault is determined and rectified.

INSTALLATION

Display

The 4100 Display is a Group IIB Ex ib device is housed in an IP65 style enclosure; however it is only intended to be mounted in a location protected from direct weather and condensing humidity. The 4100 Display is not certified to IP65 protection levels.

A gimbaled mounting arm is provided for securing the 4100 Display to a dash panel or other solid mounting surface. Other mounting methods may be possible however the 4100 Display must be mounted securely and the integrity of the enclosure must be maintained. The 4100 display is not certified for use as a portable device.

The 4100 Display has a captive cable supplied which meets the specified cable parameters. Inside the 4100 Display is a 4-pole terminal block from which the cable may be disconnected for ease of cable routing or shortening of the cable. This cable may only be lengthened after it is determined that the cable parameters do not exceed allowable parameters. Although the 4100 Display and Barrier may function satisfactorily, the 4100 Display and Barrier system is not warranted for operation with longer cable than supplied. Consult factory if longer cable runs are desired.

If the 4100 display cable is to be shortened and re-attached at the display end, the cable conductors must be stripped and terminated in an identical manner as originally supplied. Generally speaking the cable must be installed in a secure manner and protected from physical damage along its entire length. The 4100 Display cable must be segregated from non-IS conductors and wired in accordance with relevant national and international installation standards.

Although the 4100 Display earth strap is not required to meet the intrinsic safety certification it should be connected to a suitable earthing point which is determined to have a reliable path to earth. The earthing strap is required to provide a higher level of noise and transient immunity.

A vinyl dust-cover with transparent window is offered as a factory option however it is not covered under the 4100 Display IECEx Ex ib certification and must be considered to be a static hazard. The dust cover can only be used in accordance with relevant national/international installation standards.

Isolating Barrier

The 4120 Isolating Barrier does not require an earth for its protection. If using the 4120 Isolating Barrier in an "explosion-proof" enclosure the appropriate "explosion-proof" cable gland must be used and manufacturer's instructions followed. The Um of the 4120 Isolating Barrier "Safe" terminals is 250 Vrms. The 4120 Isolating Barrier must not be connected to any equipment which is connected to or can produce a voltage higher than 250 Vrms.



Warning

The 4100 Display provides a minimum IP 20 protection. If the 4100 Display is to be installed outdoors then additional protection is required.

If either the 4100 Display or 4120 Isolating Barrier enclosure needs to be cleaned use a slightly dampened anti-static cloth to avoid static discharge risk. Avoid any penetration of cleaning fluids into either enclosure as this could effectively bypass intrinsic safety protection measures.

4100 Display Power/Data Wiring Detail

4100 DISPLAY TO BARRIER WIRING				
Barrier Description	4120 Isolating Barrier Terminal	Conductor Colour	4100 Display Terminal	Display Description
Supply-	10	Black	1	0V
Supply+.	11	Red	2	6V
SDA	14	Green	3	SDA
SCL	13	White	4	SCL

STARTUP

Before applying power to the system check that all wires are properly connected, particularly supply conductors and their polarity, and serial data wires. Also check that IS conductors and cables are segregated from any other circuits including other IS circuits. Check conductors for exposed wires that could touch each other causing dangerous shorts.

Apply power to the system. The green LED on the top of the Model 4120 Barrier should come on and there should be a nominal 6 volts across the power output terminals. The LCD backlights should come on and the Alarm will sound continuously. There will not be any data displayed if there is no data system connected to the Model 4120 Barrier. If a data system is connected and functioning normally then data will be displayed according to the data system manual.

If these conditions are not observed, promptly remove power from the system and locate and remedy the fault before re-applying power to the system.

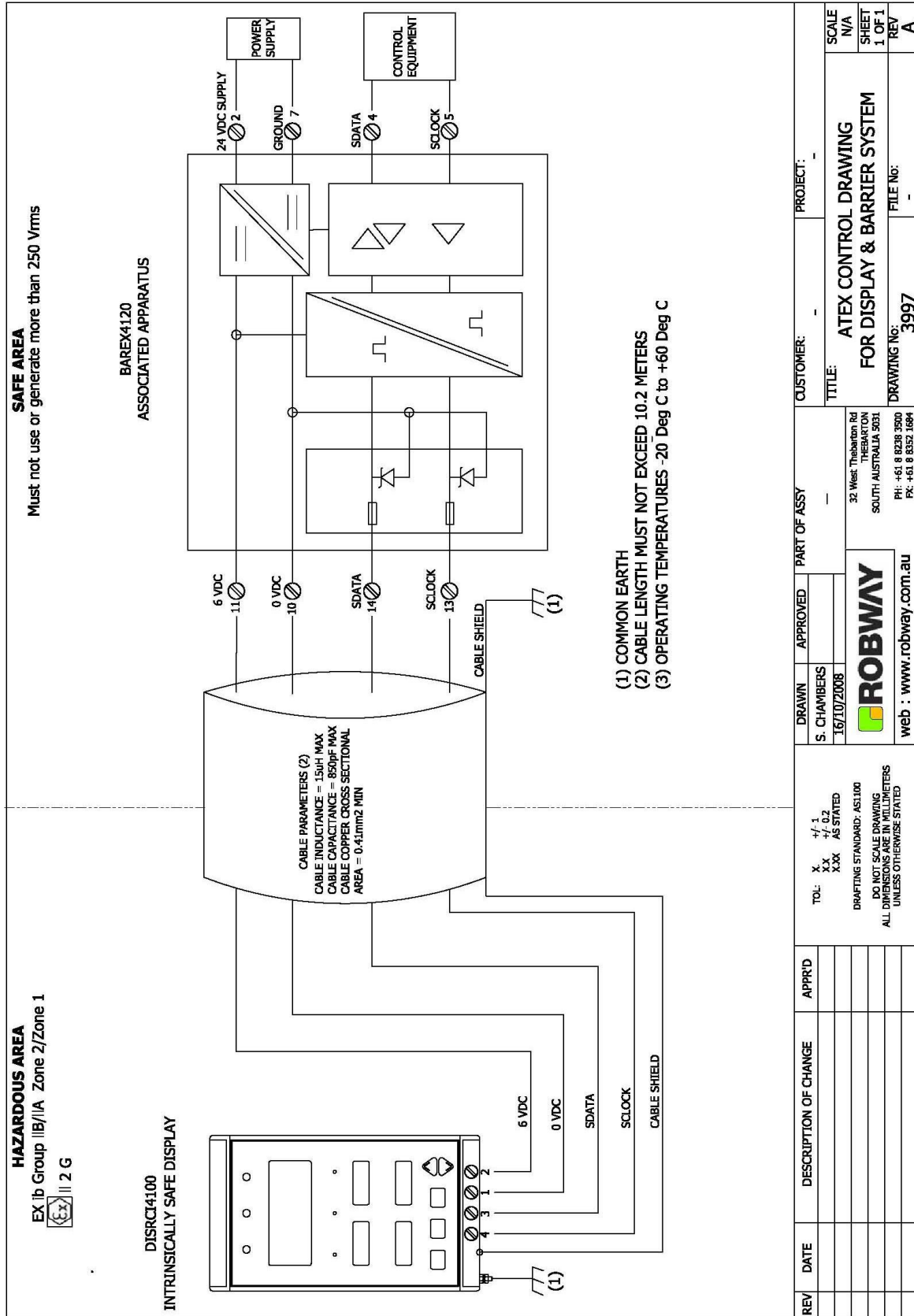
STORAGE

The ambient temperature may exceed the operating temperature limits of -20°C to +60°C for limited periods of time such as experienced during air transport.



DISPOSAL

The 4100 Display and 4120 Isolating Barrier are compliant with the Directive 2002/95/EC of The European Parliament on the Restriction of the use of certain Hazardous Substances (RoHS). Neither the 4100 Display nor the 4120 Isolating Barrier has any on-board batteries. Please separate and dispose of electronic goods responsibly and follow guidelines and regulations for your region.



INSTALLATION CONTROL DRAWING



4100 Display

Compliance	IECEX Certificate Number	ITA 08.0021X Ex ib, Group IIB
	ATEX Certificate Number	NEMKO 08 ATEX 1433X
	Temperature Classification	T4, -20°C ≤ Tamb ≤ +60°C
	RoHS	Yes
Product Markings	ATEX	Ex ib IIB/IIA T4 -20°C ≤ Ta ≤ +60°C NEMKO08ATEX1433X  II 2 G 
	IECEX	Ex ib IIB T4 -20°C ≤ Ta ≤ +60°C IECEX ITA 08.0021X
Intrinsic Safety Parameters	Ui	8 VDC
	Ii	3 A
	Ci	7.7 μF
	Li	15 μH (includes mated cable)
LED Indicators	Safe Working Load	Green
	Approach to Overload	Yellow
	Overload	Red
	Main Hook in Use	Red
	Aux Hook in Use	Red
	ATB Condition	Red
LCD Indicators	Alphanumeric	4 x 16 characters
	7-Segment Numeric	4
Power Supply	Voltage	6 VDC nominal
	Current	30 milliamps
Physical	Dimensions (excluding mount)	60 x 150 x 280mm(h x w x d)
	Weight (excluding cable)	1.8 kg
	Cable Length	10 m
	Cable Diameter	10.5 mm
	Cable Capacitance	85 pF/m core-to-core
	Cable Construction	4-core, 20 AWG, UV-stable PVC sheath Tinned Copper Braid-shield
	IP Rating	20
Environmental	Operating Temperature	-20°C to 60°C
	Humidity	0 to 95%, non-condensing

4120 Isolating Barrier

Compliance	IECEX Certificate Number	ITA 08.0020X
	ATEX Certificate Number	Ex ib, Group IIB NEMKO 08 ATEX 1433X [EEEx ib] IIB
	Temperature Classification	T4, -20°C ≤ Tamb ≤ +60°C
	RoHS	Yes
Product Markings	ATEX (Associated Apparatus)	[Ex ib] IIB/IIA -20°C ≤ Ta ≤ +60°C NEMKO08ATEX1433X  II (2) G  CE 0470
	IECEX (Associated Apparatus)	[Ex ib] IIB -20°C ≤ Ta ≤ +60°C IECEX ITA 08.0020X
I/S Parameters Safe Area Terminals	U _m	250 V
I/S Parameters Hazardous Area Terminals	U _o	7.14 V
	I _o	2.81 A
	P _o	1.81 W
	C _i	Negligible
	L _i	Negligible
I/S Parameters, Load, Group IIB (maximum values) -OR-	Capacitance	268 μF
	Inductance	0.018 mH
	L/R Ratio	28.4 μH/Ω
I/S Parameters, Load, Group IIA (maximum values) -OR-	Capacitance	1000 μF
	Inductance	0.036 mH
	L/R Ratio	56.7 μH/Ω
Indicators	Status LED	Green = OK
Input Power Supply	Voltage	22 to 30 VDC
	Current, no load	30-60 milliamps
	Current with 4100 Display	80-110 milliamps
Output I/S Power Supply	Voltage	6 VDC nominal
	Current	90 milliamps
Physical	Dimensions	75 x 67 x 105 mm (l x w x h)
	Weight	0.5 kg
	IP Rating	20
	DIN rail	EN50022 T35
Environmental	Operating Temperature	-20°C to 60°C
	Humidity	0 to 95%, non-condensing

System, Isolating Barrier and Display

EMC	61000-6-2, Immunity, Industrial 61000-6-4, Emissions, Industrial
Product Quality Assurance Notification	Nemko 09ATEX4069Q

Ordering Information

DISRCI4100	LCD Operator Display, Group IIB, Ex ib Operator console with 4x16 alphanumeric display and four 7 segment displays
BAREX4120	Power and I2C Isolating Barrier

EU Declaration of Conformity

LSI Robway Pty Limited

of

32 West Thebarton Road, Thebarton, SA 5031, Australia

under our sole responsibility as the manufacturer,

declare that the Associated Apparatus Models:

BAREX4120 Isolating Barrier

RCI-4100 IS Display

are in conformity with the requirements of the following European Directives:

2014/34/EU	Equipment and protective systems intended for use in potentially explosive atmospheres (ATEX)
2011/65/EU	Restriction of the Use of Certain Hazardous Substances in Electrical And Electronic Equipment

and have been designed and manufactured according to the following standards:

IEC 61000-6-4:2001	EMC Emission Standard for Industrial Environments
IEC 61000-6-2:2001	EMC Immunity Standard for Industrial Environments
IEC 60079-0	Electrical apparatus for explosive gas atmospheres. Part 0: General Requirements
IEC 60079-11	Explosive atmospheres. Part 11: Equipment protection by intrinsic safety 'i'
ISO 9001:2008	Quality Management System

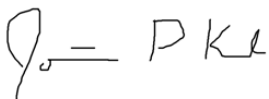
and in accordance with the conformity assessment procedures are covered by:

NEMKO 08 ATEX 1433 X	ATEX Type Examination Certificate for Hazardous Areas – NEMKO (NB 0471)
NEMKO 09 ATEX 4069 Q	Product Quality Assurance Notification – NEMKO (NB 0471)

and additionally by:

IECEX ITA 08.0020X	IECEX Certificate of Conformity for Barrier Module Type BAREX4120
IECEX ITA 08.0021X	IECEX Certificate of Conformity for Display Module Type RCI-4100 IS

Thebarton, April 20th 2016



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Revision History

Rev	Description	Approved
A	Initial Release	J. Koval
B	Added Revision History Corrected Display I/S Parameters Corrected Isolating Barrier Um = 250V Added "Declaration of Conformity Statement" Added markings information Added control drawing	J. Koval
C	Group IIA barrier load inductance corrected to 0.036 mH Note added clarifying that the DISRCI4100 display Li includes cable inductance. Added CE 0470 to markings.	J. Koval
D	Company Name Updated	J. Koval
E	EU Declaration of Conformity	J. Koval
F	Power supply specifications revised	J. Koval