

ABB MEASUREMENT & ANALYTICS | COMMISSIONING INSTRUCTION | CI/C1900/REC-EN REV. C

Commander C1900 Circular chart recorder



Measurement made easy

C1900 Circular chart recorder

For more information

Further publications for the C1900 recorder are available for free download from:

www.abb.com/measurement

or by scanning this code:



To access the IAMA help & support portal please scan the following code:



Links and reference numbers for the recorder's publications are also shown below:

	Search for or click on
Data Sheet C1900 Circular chart recorder	DS/C1900R-EN
Quick Reference Guide C1900 Circular chart recorder	<u>IM/C1900-QR</u>
Operating Guide C1900 Circular chart recorder	IM/C1900-OGR
Programming Guide C1900 Circular chart recorder	<u>IM/C1900-PGR</u>
Installation Guide C1900 Circular chart recorder and recorder/controller	IM/C1900-INS
Operating Instructions C1900 Circular chart recorder and recorder/controller	<u>IM/C1900-MOD</u>
User Guide (Pasteurizer Version Suppleme C1900 Circular chart recorder and recorder/controller	ent) <u>IM/C1900-PAS</u>
User Guide C1900 Circular chart recorder and recorder/controller	IM/C1900-ADV

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1 Health & Safety

Document symbols

Symbols that appear in this document are explained below:

🗥 WARNING

The signal word '**WARNING**' indicates an imminent danger. Failure to observe this information may result in death or severe injury.

NOTICE

The signal word '**NOTICE**' indicates potential material damage.

Note

'Note' indicates useful or important information about the product.

Safety precautions

Be sure to read, understand and follow the instructions contained within this publication before and during use of the equipment. Failure to do so could result in bodily harm or damage to the equipment.

WARNING

Installation and maintenance of this equipment must be performed only by personnel authorized to work on electrical installations and in accordance with relevant local regulations

Potential safety hazards

Electrical

A WARNING

To ensure safe use when operating this equipment, the following points must be observed:

- Up to 240 V AC may be present. Be sure to isolate the supply before removing the terminal cover.
- Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and/or temperature.

Safety advice concerning the use of the equipment described in this publication or any relevant Material Safety Data Sheets (where applicable) can be obtained from the Company, together with servicing and spares information.

Safety standards

This product has been designed to satisfy the requirements of IEC61010-1:2010 3rd edition 'Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use' and complies with US NEC 500, NIST and OSHA.

EC Directive 89/336/EEC

Electrical – In order to meet the requirements of the EC Directive 89/336/EEC for EMC regulations, this product must be used in an industrial environment.

End-of-life disposal

X

The recorder controller contains a small lithium battery that must be removed and disposed of responsibly in accordance with local environmental regulations.

The remainder of the recorder does not contain any substance that causes undue harm to the environment and must be disposed of in accordance with the Directive on Waste Electrical and Electronic Equipment (WEEE). It must not be disposed of in Municipal Waste Collection.

ABB is committed to ensuring that the risk of any environmental damage or pollution caused by any of its products is minimized as far as possible. The European Waste Electrical and Electronic Equipment (WEEE) Directive that initially came into force on 13 August 2005 aims to reduce the waste arising from electrical and electronic equipment; and improve the environmental performance of all those involved in the life cycle of electrical and electronic equipment.

In conformity with European local and national regulations, electrical equipment marked with the above symbol may not be disposed of in European public disposal systems after 12th August 2005

Cleaning

The recorder can be hosed down if it has been installed to IP66/ NEMA 4X standards. Warm water and a mild detergent can be used.

...1 Health & Safety

Symbols

One or more of the following symbols may appear on the equipment labelling:

\land	Warning – refer to the manual for instructions
Â	Caution – risk of electric shock
	Protective earth (ground) terminal
<u> </u>	Earth (ground) terminal
	Direct current supply only
\sim	Alternating current supply only
$\overline{}$	Both direct and alternating current supply
	The equipment is protected through double insulation

Restriction of Hazardous Substances (RoHS)



The European Union RoHS Directive and subsequent regulations introduced in member states and other countries limits the use of six hazardous substances used in the manufacturing of electrical and electronic equipment. Currently, monitoring and control instruments do not fall within the scope of the RoHS Directive, however ABB has taken the decision to adopt the recommendations in the Directive as the target for all future product design and component purchasing.

2 Specification

Mechanical data

Protection IP66/ NEMA 4X Dimensions Height – 368.8 mm (15.23 in) Width – 382 mm (15.04 in) Depth behind panel – 141.5 mm (5.57 in) Materials of construction Case – Glass fiber-filled polycarbonate Window – Polycarbonate Weight Approx. 6.6 kg (14.55 lb) Electrical Power supply range

100 to 240 V AC ±10 % (90 V min. to 264 V AC max.) 50/60 Hz

Power consumption

<30 VA (typical for full specification unit)

Inputs/outputs

Universal analog inputs

- Up to 4 standard (C1901 1 only)
- Up to 2 optional
- Analog outputs
 - Up to 4 standard (not applicable to C1901)
 - Range 4 to 20 mA, maximum load 750 Ω

Relay outputs

- Up to 4 standard (not applicable to C1901)
- Up to 8 optional (2 × 4-relay module)
- Fully programmable contacts rated at 5 A @ 240 V

Digital inputs (not applicable to C1901)

- 2 standard per input module, 8 per option module.
- Minimum pulse duration 250 ms
- Volt-free
- TTL

Digital outputs (not applicable to C1901)

- 5 V TTL
- 5 mA per output

Environmental data

Ambient operating temperature

0 to 55 °C (32 to 130 °F)

Ambient operating humidity

- 5 to 95 % RH (non-condensing)
- 5 to 80 % (chart only)

Approvals, certification & general safety

- CSA general safety
- UL general safety
- CSA/FM Class 1 Div 2

Emissions and Immunity

- EN 50081-2
- EN 50082-2
- IEC 61326 for an industrial environment
- CE Mark

3 Installation

Location

Locate the recorder in a position where its temperature and humidity specification will not be exceeded and ensure it is suitably protected from direct sunlight, rain, snow and hail.

Select a location away from strong electrical and magnetic fields. If this is not possible, particularly in applications where mobile communications equipment is expected to be used, screened cables within flexible, earthed metal conduit must be used.



Figure 1 General installation requirements



Within temperature limits



Use screened cable

Figure 2 Environmental installation requirements

...3 Installation

Mounting

The C1900 is designed for panel-, wall- or pipe-mounting. To achieve the NEMA4X hose-down rating, the instrument must be installed in accordance with the procedures in Figure 3, Figure 4 and Figure 5.

Dimensions in mm (in)



Figure 3 Wall-mounting (optional)



Optional gasket (see Note 2 below)

4 Electrical connections

- The recorder is not fitted with a switch therefore a disconnecting device such as a switch or circuit breaker conforming to local safety standards must be fitted to the final installation. It must be fitted in close proximity to the device, within easy reach of the operator and must be marked clearly as the disconnection for the device. A fuse must be fitted in accordance with figure (*).
- Remove all power from the supply, relay and any powered control circuits and high common mode voltages before accessing or making any connections.
- Use cable appropriate for the current loads: 3-core cable rated 3A and 90°C (194°F) minimum, that conforms to either IEC 60227 or IEC 60245. The terminals accept cables from 0.8 to 2.5 mm2 (18 to 14 AWG).
- The device conforms to installation category II of IEC 61010.
- All connections to secondary circuits must have basic insulation.
- After installation there must be no access to live parts, for example, terminals.
- Terminals for external circuits are for use only with equipment with no accessible live parts.
- If the indicator is used in a manner not specified by the company, the protection provided by the equipment may be impaired.
- All equipment connected to the device's terminals must comply with local safety standards (IEC 60950, EN601010-1).

NOTICE

- Always route signal leads and power cables separately, preferably in earthed (grounded) metal conduit.
- Use screened cable for signal inputs and relay connections.
- Replacement of the internal battery (type Varta CR2032 3V lithium cell) must only be carried out by an approved technician.



Accessing the terminal connections

Analog input type(s) selection

Plug-in links are used to select the input type:

Channel 1	PL1 and PL8 on the main board – see Figure 6
Channels 2 to 4	PL1 and PL3 on the module board – see Figure 7



Figure 6 Input type selection (main board)



Figure 7 Input type selection (I/O modules)

Electrical connections4

Channel connections



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 \square

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Current

(non 2-wire transmitters) *

Connection summary

3

4









Thermocouple





2-wire RTD and resistance

Recommended diode: Diode forward voltage >0.8 V @ 20 mA or use 2 × 1N4001 general purpose diodes in series

4-relay module connections

0

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0

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Voltage

 \square



8-digital inputs or outputs connections



3

6

5 Fitting chart and pen capsules



Figure 9 Fitting the pen capsules

6 Faceplate keys and displays

Front panel keys

Operation is performed using the keypad below the display on the faceplate(s) fitted to the front panel. There is a dedicated faceplate for each control loop but main programming of recorder is performed using the keypad on the left-hand faceplate.

The function of each of the keypad keys is described below:



(A) Side scroll key

Enables the operator to advance to the next menu page

(B) Down scroll key

Enables the operator to move between parameters in any page

C Up/Down keys Enables adjustment of any parameter value

(D) Programmable soft key

By default, configured as home key but can be configured to perform other functions (for example, alarm acknowledge, etc.)

(E) Pen lift key

Enables the operator to lift/lower the pen(s)

Displays

A display is located on the faceplate(s) fitted to the recorder's front panel. The displayed character set is as follows:

А	R		L	L	
В	Ь		М	-	
С	٢	or د	Ν	П	or n
D	d		0	0	or ø
Е	Ε		Р	Ρ	
F	F		Q	С.	
G	G		R	r	
Н	Н	or h	S	5	
I	1		Т	٤	
J	J		U	U	
Κ	Ρ.		V	U.	
			Y	ч	

7 Operator level menus



The operator level menus are used to acknowledge alarms and start, stop and reset totalizers (If enabled). The operator level also provides access to the configuration level.

To access the operator menus:

- 1 From the operating page, press the 🗭 key to scroll through the available menu pages.
- 2 Use the 1 key to scroll through each page and its available parameters.
- 3 Use the \square and \blacksquare keys to select the required parameters.

RCKALG RLRr_5	Enables the operator to acknowledge any currently active alarms
EOERLS PRGE	Enables the operator to display totalizer values, their current state and manually reset any totalizers
SECOde	Enables the operator to enter the configuration level security password

The following menus are available only on the C1950 pasteurizer variant:



d IUErt PRGE Enables the operator to view all the divert parameters without entering the configuration menu

8 Configuration level menus



The 2 configuration level menus (Basic and Advanced) are accessed via the operator level menu.

To access the configuration level menus:

- 1 From the normal operator view press the 🗊 key until the *OPrEOr LEUEL* page is displayed.
- 2 Use the \blacksquare and \blacksquare keys to scroll to the required menu.
- 3 Press the 💷 key to scroll through the available settings.
- bRSIC CONFIGEnables the operator to configure all inputs
and outputs, alarms, security passwords,
pens and chart settings.
- RAUNCA CONFIG Enables the operator to configure function keys, logic equations, pen function and pen assignment.

Basic configuration



...8 Configuration level menus

Advanced configuration



9 Security options

Passwords are set and changed in the Access page in the **Basic** Configuration level.

Passwords can be set to secure access to the configuration levels and to pen adjustment.

10 Diagnostics and error codes

Upon power up the recorder performs a series of self-tests to ensure that the recorder and fitted modules are working correctly.

If any of the power-up tests fail, error codes are displayed to identify the fault. Refer to Figure 10 for error code interpretations



Figure 10 Power up error codes

The recorder also displays preprogrammed errors in the event of an input failure during normal operation:

Message	Reason	Action
Ra.FR IL	Internal analog to digital converter system hardware has failed.	 Check the input/output board is located correctly in its socket. Power down and up. If the <i>Rd.FR IL</i> message is still present, contact the local Service Organisation
F- INPE	Process variable input is above or below fault detection level. Process variable input exceeds the limits for the linearizer selected.	 Check input source for possible broken sensor Check input connections Check input link position Check input configuration in the Set Up Input page

Notes

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Service



Software



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