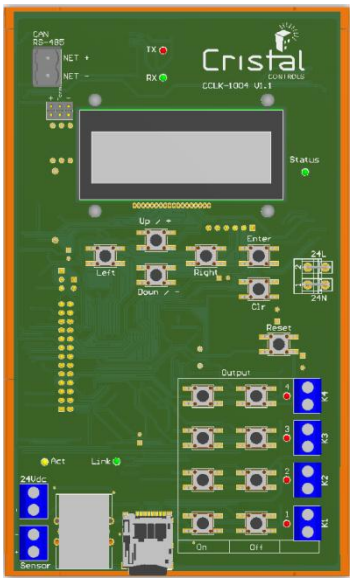
CRISTAL

CCLK-1004 3.0.0



Final product may be different than the picture

2014-08-12

Martin Labbé

Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

Index

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

List of Figures

CRISTAL

Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

1. General description

The CCLK-1004 manages 4 relays using schedules and a photocell input.

A 0-10V analog photocell can be connected on the input "Sensor". Each relay is activated base on an activation setpoint and a de-activation setpoint assisted by a time setpoint.

Schedule and photocell can be used on the same relay. Actions are performed when event occurs; the photocell controls are performed during the transitions with a setpoint regardless of whether a command has arrived before a time or programmed after.

The CCLK-1004 uses the BACnet communication protocol. The BACnet protocol is used to read and change the status of relays, read the value of the light sensor and the 0-10V input.

1.1. Software algorithm

The CCLK-1004 software use the value read by the "Sensor" input for the light level calculation read by the "Sensor". The maximum brightness read by the sensor (when the sensor signal is 10V) is configured to allow the calculation of the brightness level. Each relays as it own ON and OFF setpoint and a time out value.

On power up, the CCLK-1004 detect the status of each relay and launch the control sequence. The relays haves a latching contact type so their status does not change on power lost. When a relay is activated (closed contact), the CCLK-1004 check the deactivation condition. When the relay is deactivated (open contact), the CCLK 1004 check the activation condition.

When a relay is verified for activation condition, the CCLK-1004 checks if the light level drops below the setpoint "ON" and stays there for a time equal to the set timeout value. When these conditions are met, the relay is energized (relay contact) and the CCLK-1004 starts the verification conditions for the relay off.

When a relay is verified for off condition, the CCLK-1004 checks if the light level rises above setpoint "OFF" and stays there for a time equal to the set timeout value. When these conditions are met, the relay is deactivated (open relay) and the controller will verify the conditions for activation relay.

The relays commands are shown into BACnet objects for the 4 relays. It is possible to set priority at which commands are passed to the BACnet objects using "BACnet Browser" software.

Refer to section 3.8 to 3.10 for photocell setting and section 2.2 for the installation.

1.2. Schedules operation

Any of the 4 relays can have its own weekly schedule. Every day of the week can contain up to 4 commands to apply to a relay. These 4 commands can be set at a fixed time or set according to the sunrise or sunset time.

The seven days of the week can be programmed differently. The interface let a week day to reuse the same events from another day without having to copy the contents. An eight day name "Special" is added to the week days. This eighth day is use for exceptions of some calendar dates. The CCLK-1004 already defines several known dates and two custom date ranges can be added. It is possible to decide for each relay if the calendar dates apply or not. Example, a schedule can control the outdoor lighting

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

regardless of the calendar while another schedule controls indoor lighting using calendar dates.

Refer to section 3.4 to 3.5 for schedule settings.

CRISTAL

Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

2. Installation

The CCLK-1004 is supply with a 35 mm (1/4") DIN-Rail enclosure.

2.1. Connections

Screw type terminals are use for connections.

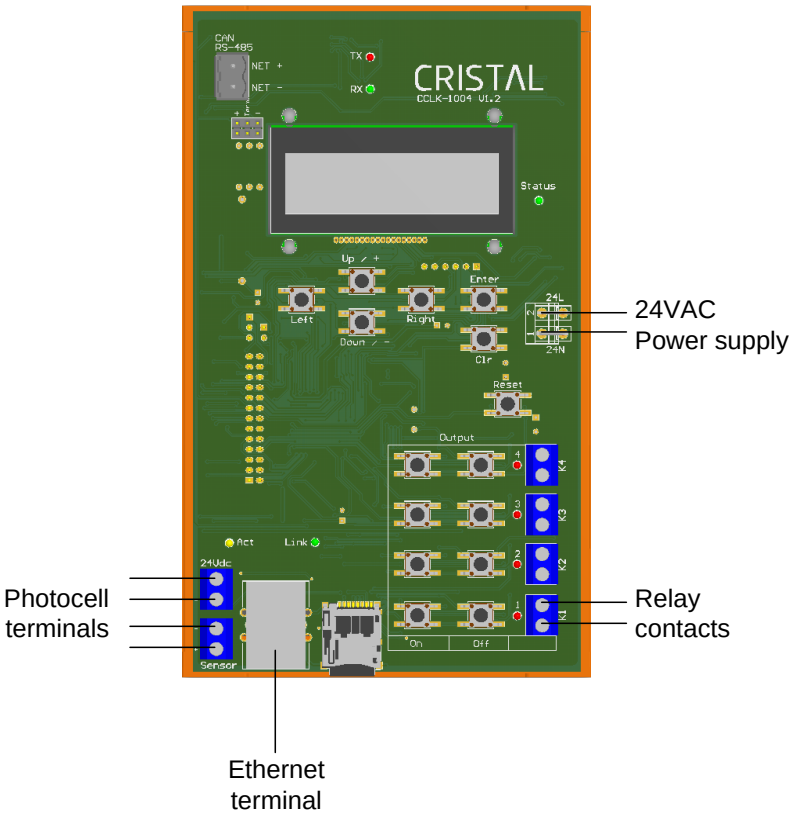


Figure 1 – Connections

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

	WARNING: ELECTRICAL RISK Turn off the power supply before the beginning of the installation. Otherwise it can cause electrical shocks and damage the equipment.

Terminals Designation

K 1-4	Relay contact.
Sensor	0-10 Volts photocell input.
24L	Positive supply terminal.
24N	Negative supply terminal.

2.2. Sensor input (photocell)

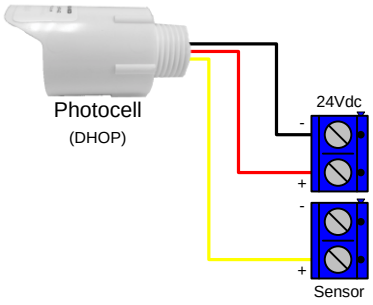


Figure 2 – Input

Non-isolated 0-10 Vdc input with a 30K Ω impedance. Use to connect the Lux sensor.

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

2.3. Relays (4x)

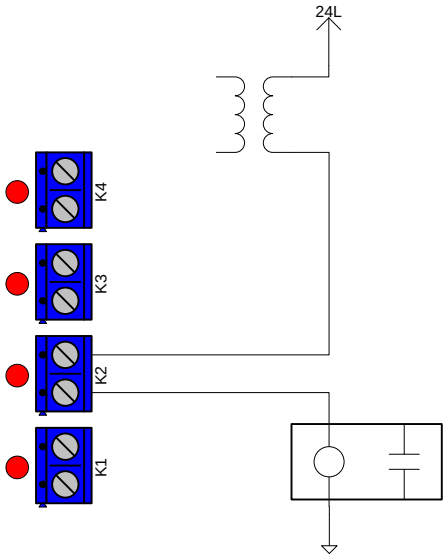


Figure 3 – Outputs

The 4 outputs are 30 Volts DC maintain contact, (1 A) low consumption. The buttons located on the left side of each relay are for relay manual operation.

2.4. Communication

BACnet IP is the communication protocol use by the CCLK-1004. This protocol allows writing and reading the 4 relays status, read the photocell value, read the 0-10 V input and set different options.

Ethernet IEEE 802.3

For BACnet-IP, the CCLK-1004 uses a standard CAT-5 unshielded twisted pair cable with an RJ-45 type connector. This is a dual speed network card with auto negotiation capability for any 10BASE-T (10 MBits) or 100BASE-T (100 MBits) connections.

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

The auto negotiation procedure does not mix well on 1000BASE-T (1000 MBits) connections. In this case, the speed of the CCLK-1004 communication card, of the Network Interface Card when directly connected to a PC, or to an Ethernet switch needs to be forced at 100 MBits or at 10 MBits to operate properly or the Ethernet will not "link" and communication will fail.

Cable length should not exceed 100m (328 ft). If longer distances are needed, refer to a specialized network company to convert the network to alternative media such as optic fiber, DSL, or wireless.

CRISTAL

Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

3. Setting

The settings of the CCLK 1004 can be done using the main screen or with the Cristal Controls software name "BACnet Browser". The "BACnet Browser" software is available at:

http://www.cristalcontrols.com/download/category.php?id=application.

The main adjustable parameters are: setting the lux reading, setpoints or when ON and OFF will be activated. More parameters can also be set for the operation or the network communication.

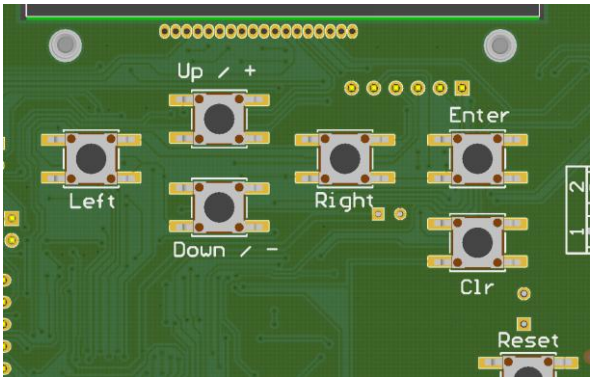


Figure 4 – Buttons

Here is how to navigate through the screen using the 6 buttons below it.

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

Up / +	Up in the menu selection. Increase display value. Maintain the button to scroll faster.
Down / -	Down in the menu selection. Decrease display value. Maintain the button to scroll faster.
Left	Exit a menu and return to the previous menu.
Right	Enter in the menu.
Enter	Confirmation of the new value.
Clr	Cancel the action being taken.

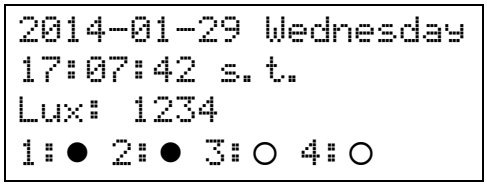
3.1. Version display

On power up the CCLK-1004 version is displayed for 3 seconds then the display switch to the main screen.

The version can be seen at any time using the main screen.

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

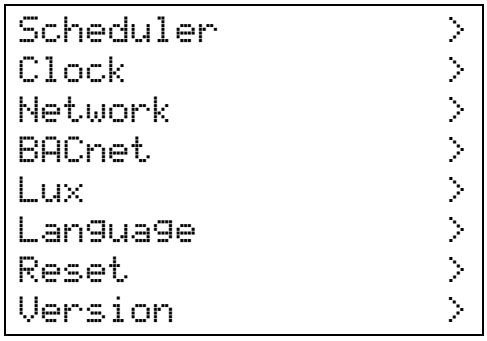
3.2. Main screen



Main screen displays current time, actual Lux and relays status.

For setting modifications push on any of the 6 buttons located below the screen.

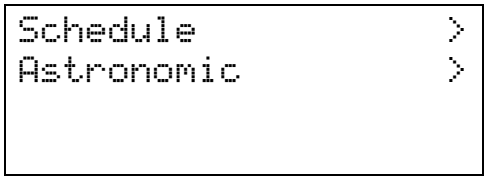
3.3. Main Menu



The main menu gives access to all sub menus. The arrow on the right ">" indicates this selection will lead to a sub-menu. Below are details of each menu.

The "Left" button sends you back to the main menu and display the CCLK-1004 actual state.

3.4. Menu "Schedules"



CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

The menu "Schedules" is to set events, special dates and geographical coordinates for astronomical events.

3.4.1. Menu "Schedule"

The hourly menu is to set schedules events and special dates to enable/disable the outputs.

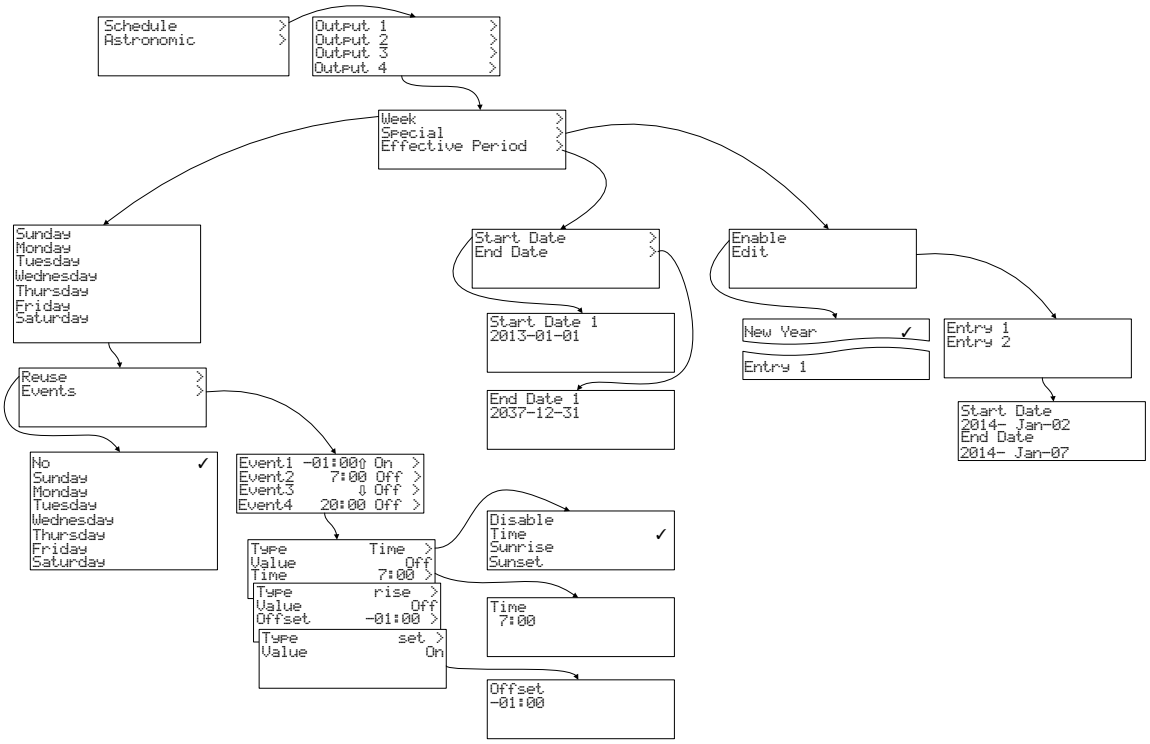
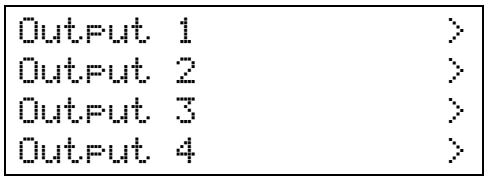


Figure 5 – Overview of the Schedule menu

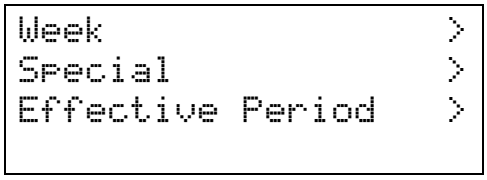
CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

Output selection



This menu allows you to select the output to be configured; the next menu will affect the selected output.

Output #



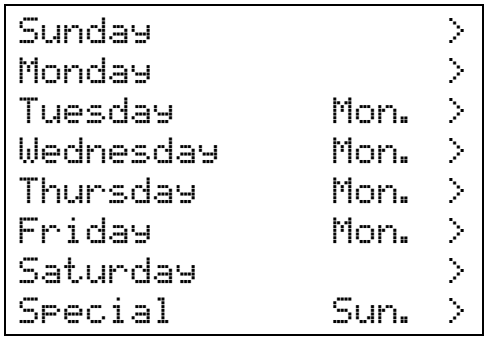
"Week" is to set events for the selected output. "Special" is to set special days.

"Applicable period" is to set to the selected output a start date plus an end date or a schedule.

3.4.1.1. Menu "Week"

This menu is to set the events for the selected output.

Week



This menu is for weekday's selection.

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

A day may reuse the events from another day. When day use events from another day, his name appears at the end of the line. In the example above Tuesday to Friday uses the Monday events and the special day uses the Sunday events.

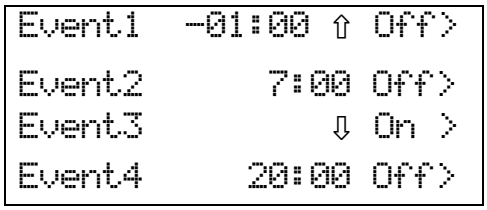
Day

This menu allows you to choose whether the selected day uses the events of another day or set events.

Reuse

This menu allows you to choose to do the same events of another day of the week without having to recopy.

Events



This menu display events and allows you to select one and modify it. Up to 4 events can be set for each of the 4 outputs. A summary of the event set is displayed. 3 types of event can be set: "Time", "Sunrise" and "Sunset".

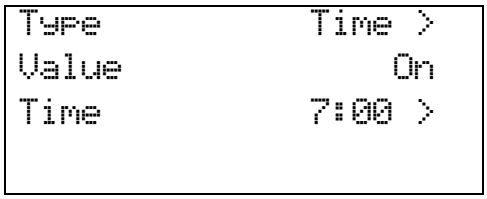
CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

For a "Time" event, the time is display (example "7:00").

An up arrow "⇧" indicate "Sunrise" event. A down arrow "⇩" indicate a "Sunset" event.

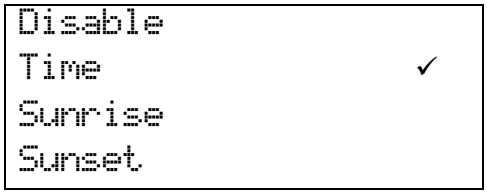
An offset to the "Sunrise" or "Sunset" event can be added (example: -01:00 ⇧) the offset is indicated by an arrow. The ("On" or "Off") value is indicated at the end of the line.

Event edition



This menu allows setting a selected event.

Type



This menu allow to choose the type of event

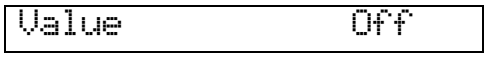
"Disable": is to disable the selected event (when you use less than 4 events).

"Time": event running at a specific time.

"Sunrise": Event running on Sunrise. An offset can be added to Sunrise,

"Sunset": Event running on Sunset. An offset can be added to Sunset.

Value



Value of "On" or "Off" event.

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

Time

Fix Time of the "Time" event.

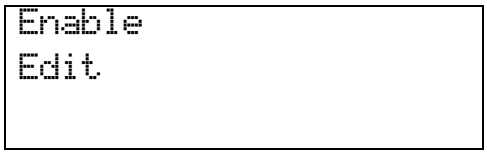
Offset

Time offset apply to "Sunrise" or "Sunset".

3.4.1.2. Menu "Special"

This menu allows you to configure special days for the selected output. A common events calendar of is already programmed into the clock .Two fixed dates can be added.

Special



CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

Enable

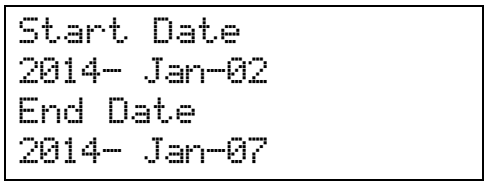
Excepted for "Entry 1" and "Entry 2", these dates can't be modified. This menu enables or disables special days defining when the "Special" weekday will be effective. See section "Special dates" for date setting in Entry 1 and Entry 2.

Edit

This menu allows modifying a selected date.

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

Date Edition

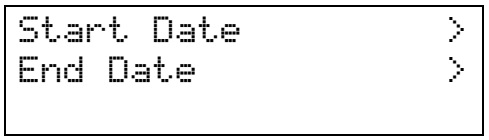


Allows setting a date range.

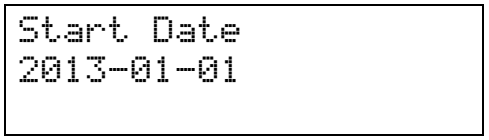
3.4.1.3. Menu "Effective Period"

This menu allows you to configure a start and end date when the schedule for selected output will be effective on relays.

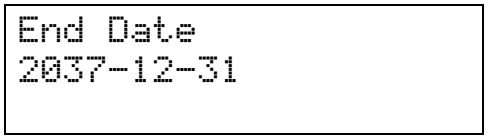
Effective Period



Start Date



End Date

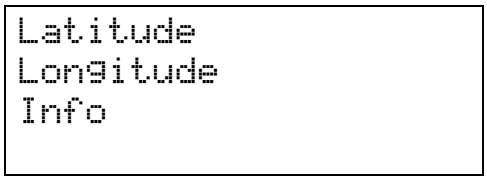


3.4.2. Menu "Astronomic"

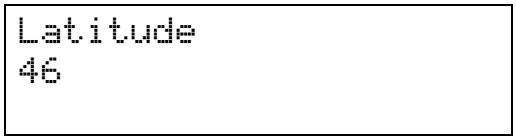
The "Astronomical" menu allows you to configure the geographical location where the clock is installed in order to calculate the times of astronomical events.

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

Astronomic

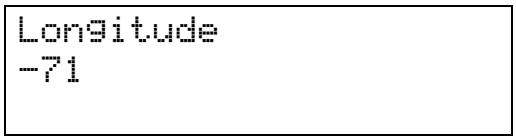


Latitude



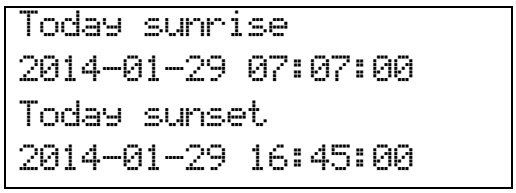
Latitude configuration: A negative value indicates the South.

Longitude



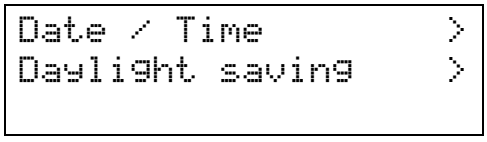
Longitude configuration: A negative value indicates the West.

Info



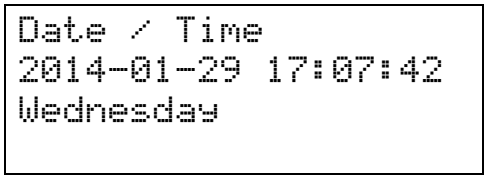
This screen display Sunrise and Sunset time for that day.

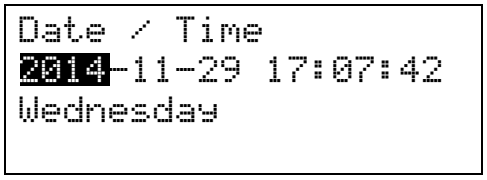
3.5. Clock Menu



CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

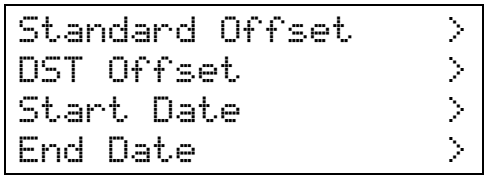
3.5.1. *Menu "Date / Time"*





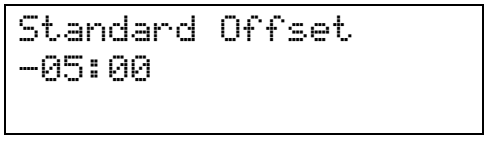
Clock time is displayed; using the "Right" or "Enter" buttons it highlights the number ready for modification. All these values can be replaced one by one and on confirmation a validation will be done.

3.5.2. *Menu "Daylight saving"*



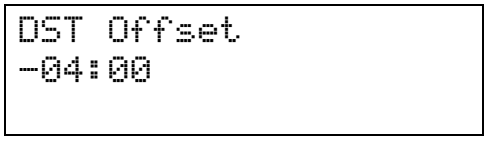
The "Time zones" section contains Canadian and US time zones input values.

Standard Offset



This screen configures the offset from UTC to standard time.

DST Offset



This screen configures the offset from UTC to daylight saving time.

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

Start Date

```
Start Date
Month: March (3)
Week: 2nd (2)
Day: Sunday (0)
```

This screen sets the start date used to start applying daylight saving time calculation. In the example the start date is the second Sunday of March.

End Date

```
End Date
Month: November (11)
Week: 1st (1)
Day: Sunday (0)
```

This screen sets the end date used to return to normal time. In the example the end date is the first Sunday of November.

3.6. Network Menu

```
DHCP                Off
IP                    >
Netmask               >
Gateway               >
Speed                 >
MAC                   >
```

The "Network" menu is to set the IP network parameters. Skip this menu if the CCLK-1004 is not connected to an IP network.

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

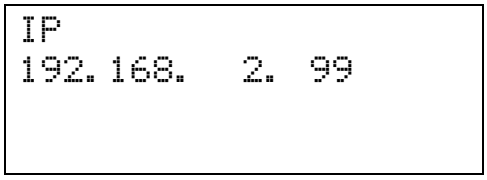
DHCP / automatic IP address

The network will automatically assign using this parameter an IP address. When this option is ON, it can be useful when testing without causing addressing IP address conflict.

The default value is OFF and communications settings are done manually. Manual settings ensure that the communication would be functional in the absence of a DHCP server.

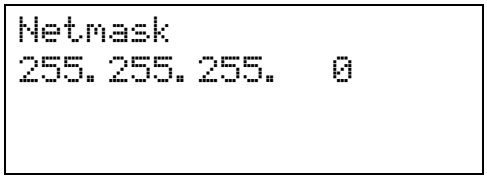
*Network administrator shall confirm network settings.

IP / Address Menu



Current CCLK-1004 IP address is displayed. Use the buttons to replace numbers.

Net mask Menu

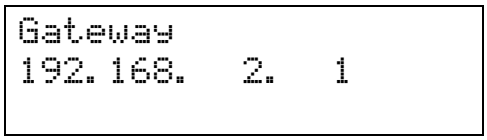


Actual CCLK-1004 communication Net mask is displayed.

Use the buttons to replace numbers.

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

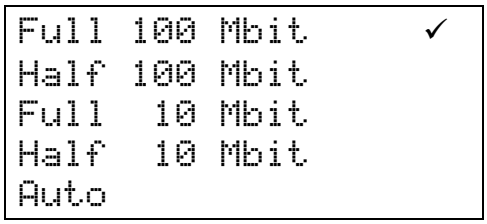
Gateway Menu



CCLK-1004 gateway address. Use the buttons to replace numbers.

This address is usually the same as the Internet router of the network.

Speed Menu

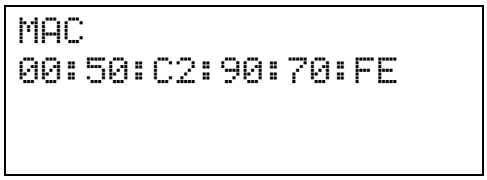


This menu is to set the Ethernet network speed. The "✓" indicate the actual speed. This number shall be the same as the device connected at the other end of the network.

"Full" means "Full duplex", the network can send and receive at the same time. "Half" means "Half duplex", the network cannot send at the same time it receives. The "10" and "100" indicate the communication speed in Megabits per second. The "Auto" mode let the CCLK-1004 choose the communication speed. The "Full 100 Mbit" is suggested since the "Auto" mode is not compatible with devices using 1 Gigabit per second are on the same network.

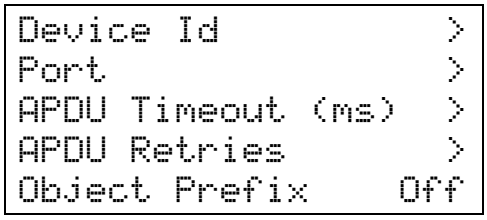
CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

MAC Address Menu



This menu displays the CCLK-1004 MAC address. The MAC address can be replaced on the initial CCLK-1004 setting.

3.7. BACnet Menu

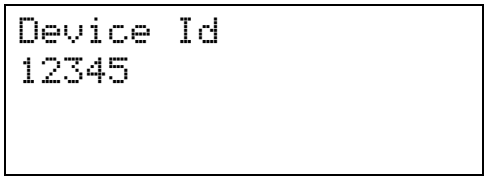


This menu is for the BACnet communication settings.

The BACnet network administrator will indicate the exact values.

Skip this section if the CCLK-1004 does not communicate with other BACnet devices.

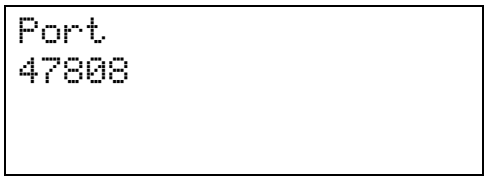
BACnet Device Id Menu



This menu is to set the CCLK-1004 BACnet device Id. This number must be unique on the network and shall be between 0 and 4194302.

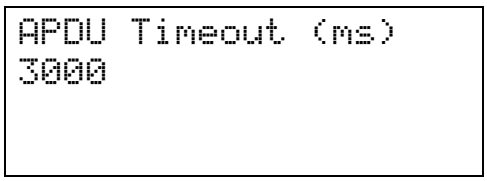
CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

Port / BACnet communication port



This menu is to set the CCLK-1004 BACnet IP communication port. Default value is 47808 or in hexadecimal BAC0.

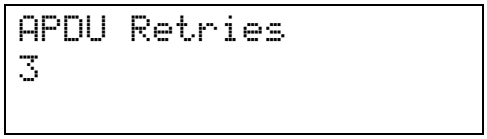
APDU Timeout (ms)



APDU Timeout parameter specifies the time in milliseconds between retransmissions of a message for which no confirmation has been received.

It is suggested that all devices have the same value. Default value is 3000ms.

APDU Retries



APDU Retries parameter specifies the maximum number of times a message must be retransmitted. The default value is 3.

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

Object Prefix

```
Object Prefix     Off
```

Using this configuration "On" or "Off", it enables or disables the use of BACnet "device" object name as prefix to each controller object. The use of a prefix eases the objects identification upon some software. Default value is "Off".

Write priority

```
Write Priority
8
```

Indicates the BACnet priority used to write the output status. Default value is 8.

3.8. Lux Menu

```
Photocell              >
Output 1               >
Output 2               >
Output 3               >
Output 4               >
```

This menu gives access to the "Photocell" and "Output #" sub menus to set Lux functionalities.

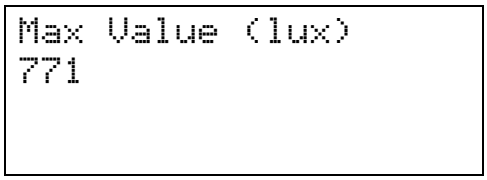
3.9. Photocell Sub menu

```
Max Value (lux)        >
Filter                 >
```

This sub menu is for the Lux sensor settings.

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

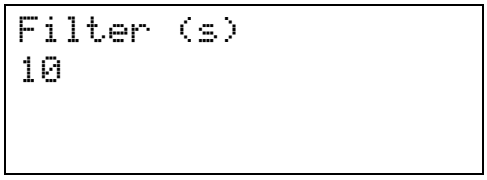
Max Value (lux)



This menu set the Lux read by the Lux sensor. This is the Lux reading given for the full-scale 10 Volts signal.

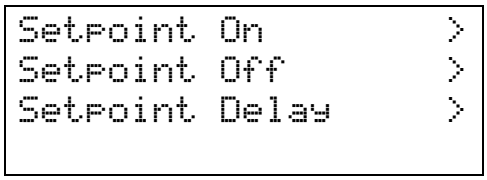
The signal read by the controller CCLK-1004 is linear and proportional to Lux calibration data in this screen.

Filter



This menu allows setting a numerical filter (in second) to the lux reading. This parameter allows you to reduce the reading fluctuations on the sensor signal.

3.10. Output # Sub menu



This menu allows ON-OFF setting of the relays base on Lux reading. The menu is identical to all relays but the setting could be different for each relays to ease zoning sequences.

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

Setpoint On

```
Setpoint On (lux) 1
20
```

This menu allows setting parameters for an "On" command. When Lux reading is greater than this setting and drop below it, the relay goes "On". If this value is "0" the "On" command is then deactivated for this relay.

Setpoint Off

```
Setpoint Off (lux) 1
200
```

This menu allows setting parameters for an "Off" command. When Lux reading is greater than this setting and increase above it, the relay goes "Off".

If this value is greater than the Lux setting the "Off" command is deactivated for this relay.

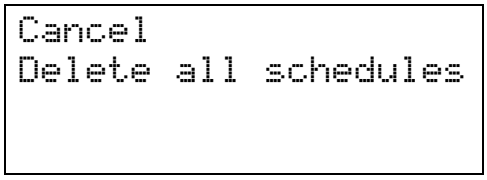
Setpoint Delay

```
Setpoint Delay (s) 1
600
```

This menu allows setting "On" or "Off" transitions time; this sets a delay eliminating temporary transitions when the signal flickers around its setpoint.

Example: With a 600 seconds (10 minutes) time, the ("On" or "Off") transition need to be maintained for 10 minutes before the command is sent to the relay.

3.11. Menu "Reset"



This menu allows you to reset the configurations schedules. Hold down the "Right" or "Enter" button for 5 seconds to clear schedules. Once the configurations are erased, the device restarts.

It is possible to reset all configurations. Press the "Reset" and hold the "Left" and "Right" buttons for 5 seconds.

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

4. Network Objects

The CCLK-1004 has different type of BACnet objects. Details are in the chart below:

Object	Description	Value	Value type	Default value	Object type
CCLK-1004	CCLK-1004 information	-	-	-	Device
PHOTOCELL	Input Value "Sensor"	Unsigned integer	Lux	0	Analog input
IN 0-10V	Input value "In 0-10 V"	0-100%	Percentage	0	Analog input
RELAY CMD N	Relay N (N : 1 à 4)	ON or OFF	Boolean	-	Binary Output
RELAY FB N	Relay N (N : 1 à 4)	ON or OFF	Boolean	Relay state upon the controller	Binary Input
CCLKCfg.bin	Controller settings CCLK-1004	-	-	-	BACnet file
SchedulerCfg.bin	Schedules configuration	-	-	-	BACnet file
SCHEDULE N	Schedule object for relay N	-	-	-	Schedule (1)

Table 6 - BACnet Objects

1 Note for the "Schedule" objects: they are not writable. Only the types of events available in the BACnet protocol are shown. Astronomical events and some special days such as Easter are not visible by this object.

CRISTAL

Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

5. Time Zones

Canadian and US time zones, the summer offset date is the first November Sunday. The end date is second March Sunday.

Name	UTC Offset	UTC summer Offset
Canada/Atlantic	-04:00	-03:00
Canada/Central	-06:00	-05:00
Canada/Eastern	-05:00	-04:00
Canada/Mountain	-07:00	-06:00
Canada/Newfoundland	-03:30	-02:30
Canada/Pacific	-08:00	-07:00
Canada/Saskatchewan	-06:00	-06:00
US/Alaska	-09:00	-08:00
US/Aleutian	-10:00	-09:00
US/Arizona	-07:00	-07:00
US/Central	-06:00	-05:00
US/East-Indiana	-05:00	-04:00
US/Eastern	-05:00	-04:00

US/Hawaii	-10:00	-10:00
US/Indiana-Starke	-06:00	-05:00
US/Michigan	-05:00	-04:00
US/Mountain	-07:00	-06:00
US/Pacific	-08:00	-07:00
US/Samoa	-11:00	-11:00

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

6. Special dates

List of fix specials dates

6.1. Canadian:

Nom	Date
New Year	January 1
January 2	January 2
Family Day BC (British Columbia)	Second Monday in February
Family Day	Third Monday in February
Heritage Day YT (Yukon)	Friday before the last Sunday in February (Friday after February 19) Note: Valid until 2031
Saint-Patrick NL (Newfoundland and Labrador)	Monday closer to Mars 17 (Monday after Mars 13)
Good Friday	Friday before Easter
Easter	Easter
Easter Monday	Monday after Easter
Saint-George	Monday closer to April 23

CRISTAL

Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

	(Monday after April 19)
Victoria Day	Monday before May 25
Aboriginal Day	June 21
Discovery Day NL (Newfoundland and Labrador)	Monday closer to June 24 (Monday after June 20)
St-Jean-Baptiste (Quebec)	June 24
Canada Day	July 1
Nunavut Day	July 9
Orangemen Day	Monday closer to July 12 (Monday after July 8)
Civic Holiday	First Monday of August
Discovery Day YT (Yukon)	Third Monday of August
Gold Cup Parade Day	Third Friday of August
Labour day	First Monday of September
Thanksgiving CA (Canada)	Second Monday of October
Remembrance Day (Same as US Veteran Day)	November 11
Christmas Eve	December 24

CRISTAL
Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

Christmas	December 25
Boxing Day	December 26
December 31	31 December

6.2. United State

Nom	**Date**
Martin Luther King	Third Monday of January
Washington Birthday	Third Monday of February
Memorial Day	Last Monday of May
Independence Day	July 4
Labor Day (see Labour Day above)	First Monday of September
Columbus Day	Second Monday of October
Thanksgiving US	Fourth Thursday of November
Black Friday	Fourth Friday of November

7. Dimensions

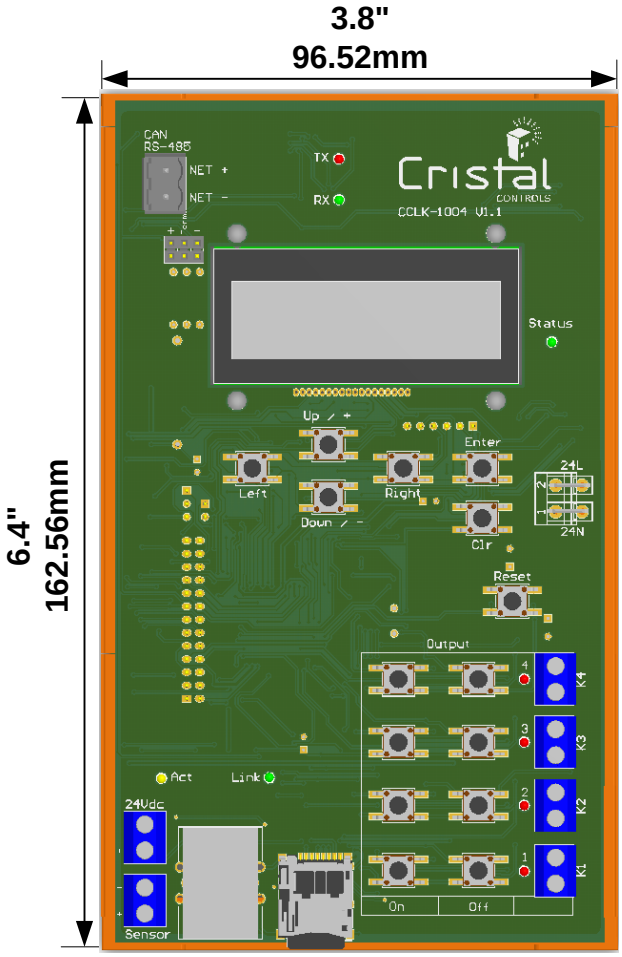


Figure 7 – CCLK-1004 dimensions

8. Material specifications

- Microcontroller : Freescale MCF52235
- Communication: TCP/IP BACnet IP
- Supply Voltage : 18 – 28 Vac "Half Wave"
- Supply Current: 180 mA, 220 mA max
- Operating temperature: 0°C à 50°C (32°F à 122°F)
- Storage temperature: -20°C à 70°C (-4°F à 158°F)
- EEprom memory – recording configuration: 512 bytes, 1 000 000 writing cycle

8.1. Outputs

- 4x Dry contact: 1A @ 24Vac / 30Vdc

8.2. Input

- 1x 0-10Vdc analogic impedance of (30KΩ)

CRISTAL

Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

Legal Disclaimer

Any representation or reproduction, in whole or in part, made without the permission of *Cristal Controls Ltd*, is unlawful. Such unlawful representation or reproduction, made by any means, would be an infringement of copyright punished under the provisions of the copyright law. All products are registered trademarks of their respective companies.

This product uses portions of code source from the projects "BACnet Stack at SourceForge" and "OpenTcp by Viola Systems". The original source code can be provided on demand or downloaded on the projects' web sites at the following addresses: http://bacnet.sourceforge.net and http://sourceforge.net/projects/opentcp/.

CRISTAL

Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com

CRISTAL

2 YEAR LIMITED WARRANTY

CRISTAL CONTROLS warrants to the original user that its products will be free from defects in materials and workmanship for a period of two years after the date CRISTAL CONTROLS shipped such products.

If any of CRISTAL CONTROLS' products is found to be defective in material or workmanship during the applicable warranty period, CRISTAL CONTROLS' liability shall be limited to the repair or replacement of the product, or the refund of the purchase price, at CRISTAL CONTROLS' discretion. CRISTAL CONTROLS shall not be held liable for any costs or expenses, whether direct or indirect, associated with the installation, removal or re-installation of any defective product.

CRISTAL CONTROLS' limited warranty shall not be effective unless there is compliance with all installation and operating instructions furnished by CRISTAL CONTROLS, if the products have been modified or altered without the written consent of CRISTAL CONTROLS, or if such products have been subject to accident, misuse, mishandling, tampering, negligence, or improper maintenance. Any warranty claim must be submitted to CRISTAL CONTROLS in written form within the stated warranty period.

CRISTAL CONTROLS' limited warranty is made in lieu of, and CRISTAL CONTROLS disclaims all other warranties, whether expressed or implied, including but not limited to any implied warranty of the products.

CRISTAL CONTROLS shall not, under any circumstances, be liable for any direct, indirect, accidental, special, or consequential damage (including but not limited to loss of profits, revenues, or business opportunities) or damage or injury to persons or property in any way related to the manufacture or the use of its products. The exclusion applies regardless of whether such damages are sought based on breach of warranty, breach of contract, negligence, strict liability in tort, or any other legal theory, even if CRISTAL CONTROLS was noticed of the possibility of such damages.

By purchasing CRISTAL CONTROLS' products, the purchaser agrees to the terms and conditions of this limited warranty.

Cristal Contrôles Ltée
2025 Lavoisier, Local 135
Québec, (Québec) Canada G1N 4L6
Tél 418-681-9590 Fax 418-681-7393
http://www.cristalcontrols.com