

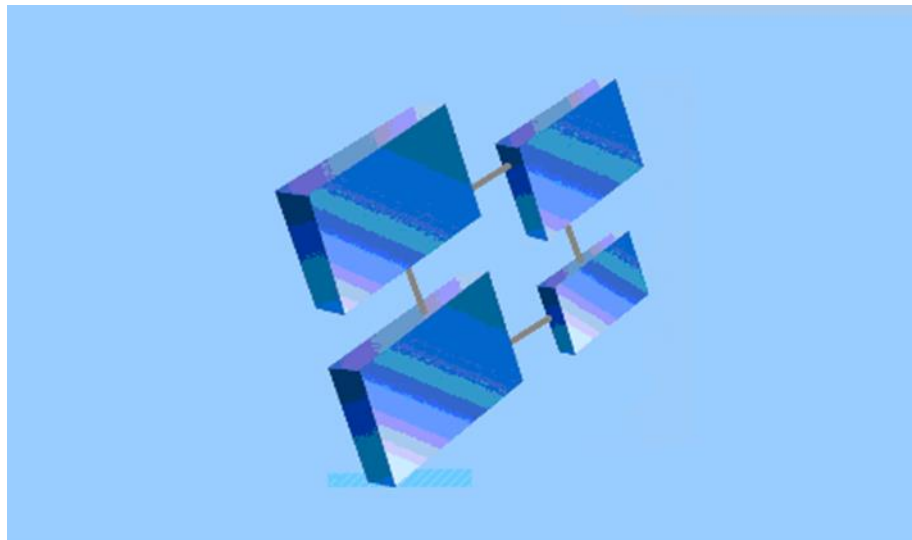
CX300

CX-MON300 Software OPERATOR Manual



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CX-300 AUTOMATIC DATA COLLECTOR CX-MON300© Software Operator Manual



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CX-MON300© - Operator Manual

A. GENERAL DESCRIPTION

1. Introduction

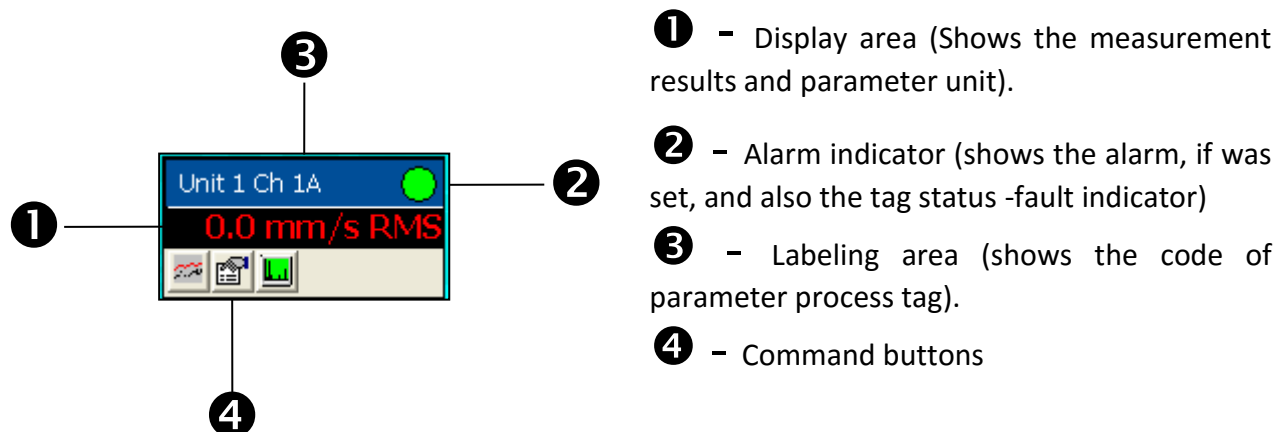
CX-MON300© software is an easy-to-use application, dedicated to display measurements coming from **CX-300 Automatic Data Collector**. Up to 10 units can be used in a single application, for a total of 40 vibration and 40 temperature measurements.

The **CX-300 Automatic Data Collectors** (named *modules* or *units* in this document) can be connected with a various range of transducers placed onto the rotating machinery.

The **CX-MON300©** software reads the measurements from all CX-300 modules connected to the computer and displays the measurement results in *tags*.

The tags are placed into five display *pages*.

A tag is a visual connection with a measurement. Each tag has a display area, an alarm indicator, a labeling area and command buttons:



The following command buttons are available:

- Show graph windows (Trend, archive trend, spectrum and waveform)
- Show property windows
- Send measurements to a **CXSpectra©** database.

In the display area, instead of measurement results, can also appear some fault messages, as shown below:



The Alarm indicator is colored in magenta.

No.	Message	Remarks
1	HDW Err	Indicates the defective analogical input board
2	Err Set	The tag selection does not fit to the correspondent analogical input. Ex: A velocity sensor associated with a BE tag.
3	DISABLED	The input channel is disabled (in Module settings)

4	Err Comm	The application cannot read measurement from CX-300 unit. This error appears for ALL tags assigned to the Module. The reason might be: - CX-300 Module is shut-off - Ethernet link with the Module is defective - Module is defective
5	Tx Failure	Transducer bias is out of TransducerLO and TransducerHI limits. This message indicates a transducer fault.
6	Wait	This message appears during the application start-up. Measurement is not available, yet. After a few seconds, the message should disappear.

If there is no alarm set for the correspondent channel, the indicator will be colored in black.

2. Tag types

The following type of tags can be added in a **CX-MON300©** project:

- *Vibration* tag, associated with all type of vibration transducers (acceleration, velocity or displacement).
- *Bearing Energy (BE)* tag, associated only with acceleration transducers.
- *Temperature* tag, associated with an PT100 RTD
- *Speed* tag, associated with a speed sensor.

Each type of tag has its own properties. Most of the properties must be set with **CX300Config** software, before creating a new project under **CX-MON300©**. The properties can be shown pressing the tag “**Properties**” button. In the *Addendum A* are detailed described all tag properties.

3. Tag command buttons

The following command buttons are available:

- Show **Graph** windows (Trend, archive trend, spectrum and waveform)
- Show “**Properties**” window
- Send measurement to a **CXSpectra©** database.

3.1. Show Graphs



In the **Graph** windows can be shown a series of graphs (plots):

- Current trend plot (for the last eight hours)
- Archive trend plot (for the last five days)
- Spectrum plot
- Waveform plot

When the **Graph** windows are activated (pressing **Graphs** button of any tag), as default, the current trend is shown.

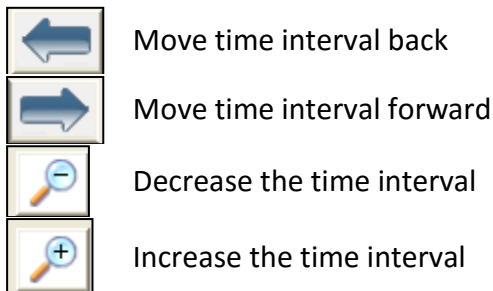
Pressing one of the buttons from the right, also other plot can be shown.

Not all the plots are available for all type of measurements.

For temperature, speed and BE measurements only trends are enabled.

3.1.1. Trend and Archive graphs

Trend plots are available for the current measurements (last 8 hours) or for archived measurements (last 5 days). Current trend is live and is automatically updated at every 5 seconds. Archive trend plot is static. The following buttons are available to change the displayed interval:

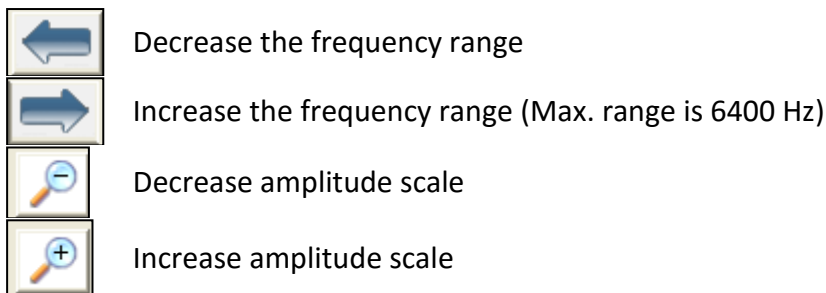


A cursor is also available, showing the value of the measurement at the cursor position.

3.1.2. Spectrum graphs

Spectrum graph is shown for the selected tag.

The following buttons are available to change the displayed ranges:

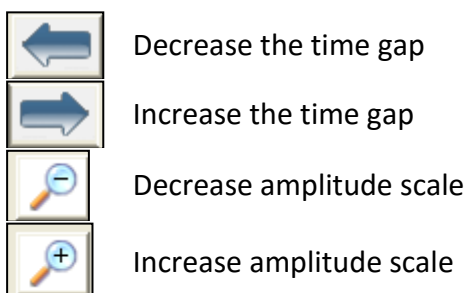


A cursor is also available, showing the value of the peak at the cursor position.

3.1.3. Waveform graphs

Waveform graph is shown for the selected tag.

The following buttons are available to change the displayed ranges:



A cursor is also available, showing the value of the waveform amplitude at its position.

3.2. “Properties” window

Properties - Module 1 Channel CH3		
Parameter	Value	Unit
TAG		
Tag ID	3	
Name	Unit 1 VIB CH3	
Description	Vibration #3	
Type	Vibration	
CX-MON300		
Module type	CX200	
Address	192.168.1.241	
Name	CX-300 UNIT	
Software ver.	1	
Serial no.	1605131000	
CHANNEL		
Channel no.	CH3	
Enabled	YES	
Transducer type	Accelerometer	
Unit	g	
Sensitivity	100	mV/unit
Transducer LO	-24.0	V
Transducer HI	24.0	V
Show unit	mm/s	
Show average	RMS	
DC Bias	0.73	V
Spectrum - max freq	3200	Hz
Total level - min freq	5	Hz
Total level - max freq	1600	Hz
Range	20	mm/s
Danger	11	mm/s
Warning	4.5	mm/s
Alarm status	Enable	
Measure BC	Enable	
DATABASE LOCATION		
Database name	TEST_ALL	
Department	NewPlant	
Machine	NewMachine	
Point	NewPoint	
Direction	V	
DATABASE TRANSFER SETTINGS		
Scheduled transfer	Yes	
Transfer on DANGER	No	
Conditioned transfer	No	

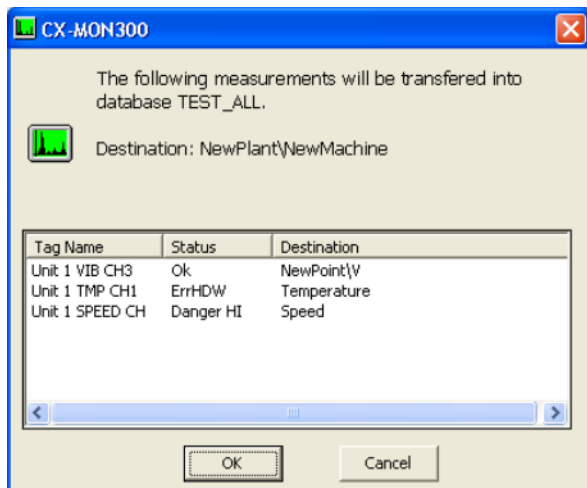
When the module is connected, the “**Properties**” window shows the settings of the correspondent input and some tag settings.

The contents of “**Properties**” window depends on the tag type.

See on the left side an example of the information shown for a vibration tag.

For more details, see the Addendum A.

3.3. Sending measurements to CXSpectra© database

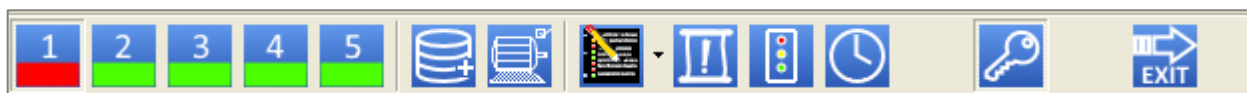


If **CXSpectra©** button is enabled, the operator can send the measurement into a defined application database (See command "Settings-> Database connection" from the **Main Menu**).

All the measurements, having as destination the same machine, will also be transferred.

Before transfer, the operator must confirm this, by pressing the "OK" button in this info window:

4. CX-MON300© toolbar



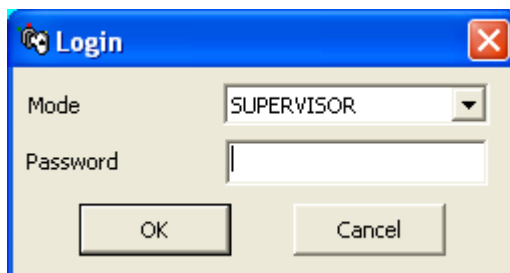
On the top of the program window is placed a toolbar.

First five buttons are dedicated to change the displayed page. The measurements can be shown in up to five separately panels. By clicking these buttons, the active page is changing. The button color can be green, yellow, or red, depending on the alarm condition in the page.

4.1. Login button



This button allows the user to access the **Supervisor mode**. These modes are password protected.



4.2. Show Alarm Log button



When this button is pressed, an *Alarm Log* is displayed. Changes from **Normal** condition to **Warning** or from **Warning** to **Danger** condition are stored into a Log file. This file can also be printed out or periodically cleared.

4.3. Show Event Log button



When this button is pressed, an *Event Log* is displayed.

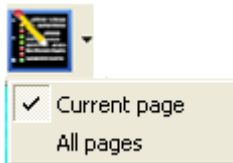
The following events are counted:

- Start and stop the application (program);
- Login and logout;

- Communication errors with CX-300 modules;
- Transducers failure.

This file can also be printed out or cleared.

4.4. Print “Parameters report” button



When this button is pressed, the **Parameters report** is shown. The last measurement values are displayed. The **Alarm status** is also shown. The report can be printed out.

This button has two options:

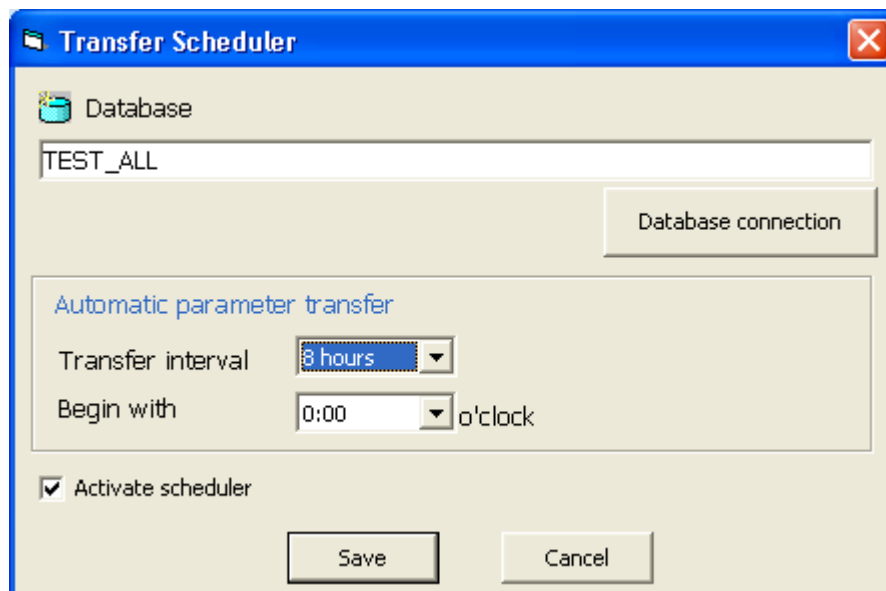
- Showing only the parameters from the active page
- Showing all the parameters from all five pages

This selection can be done with the arrow button, which is located on the right side of the button.

4.5. “Transfer scheduler” button



When this button is pressed, a settings windows will appear:



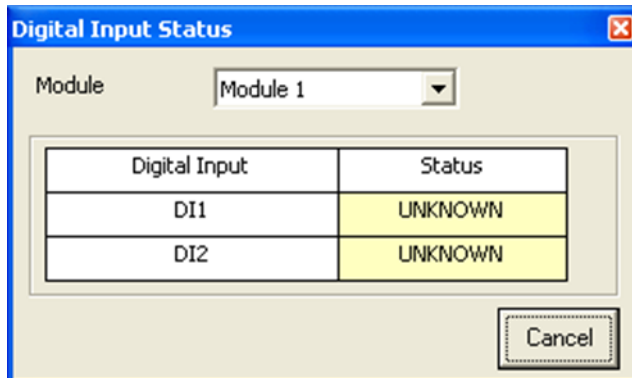
Using this facility, the selected measurements can be transferred automatically in the **CXSpectra©** database. The active **CXSpectra©** database can be selected from the **Main Menu** or alternatively, with “**Database connection**” button from the above window.

In the OPERATOR MODE this windows is read-only.

4.6. Digital input status



When this button is pressed, a setting window will appear:



The status of the digital input of the selected module is shown. These inputs can be used for conditioned transfer in the **CXSpectra®** database.

For each tag, one of digital input can be associated. For details, see tags "**Configure**" menu.

4.7. Archive database status



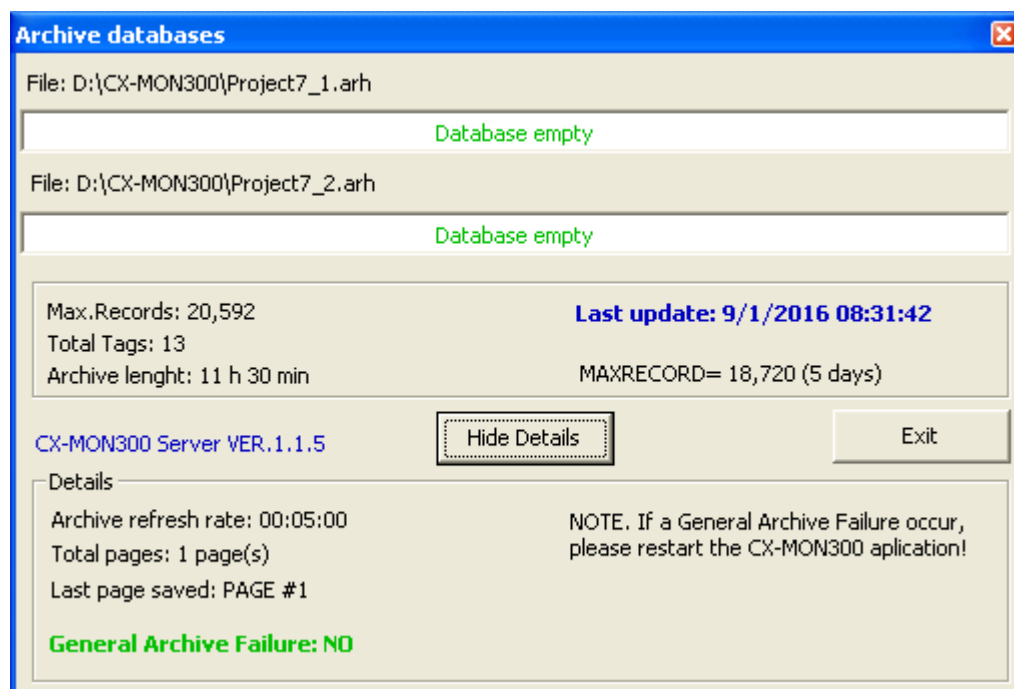
Long term archive status

Long-term archive (for 5 days) is creating in a ping-pong mode.

Two archive databases are used: one database is the current archive and the second one is spare. When the current database has more than 5 days history, the alternate database file is deleted. When the current database reaches the limit (around 7 days history), the alternate database is created and becomes the current database.

Thus, the disk space will not increase unexpectedly and the archiving time is less than 2 seconds for a page.

The archive status is shown as below:



5. Operation Mode

CX-MON300© can run in the following operation mode:

- **DESIGN** mode (password protected)
- **SUPERVISOR** mode (password protected)
- Normal run or **OPERATOR** mode.

5.1. Design mode

In this mode, the user has full access to all software facilities. This mode must be used to build or to modify a project (CX-MON300©). In the **Design Mode**, a tag can be added and configured.

5.2. Supervisor mode

Comparing with the **Operator Mode**, the **Supervisor** one has the following supplementary rights:

- Can open a new project (application) file;
- Can set a **CXSpectra©** database to the application;
- Can set the destination address in **CXSpectra©** database for each tag.
- Can clear the *Alarm* and *Event Log* files.

5.3. Normal run

This mode is not password protected and it is the default mode of how **CX-MON300©** runs. The user can select the active page for display and can activate the graph windows.

The user can print reports or can transfer measurements in a **CXSpectra©** database.

A. ADDENDUM A

A.1. Parameters for a Vibration tag

Parameter	Description	Comments
TAG		
TAG ID	TAG identification number	Unique number to identify the tag
Name	Tag identification code	Max. 12 char
Description	Tag short description	Max. 40 char
Type	Vibration	
CX-MON300®		
Module type	General information regarding module	
Address		
Name		
Software ver.		
Serial no.		
CHANNEL		
Channel no.	From CH1 to CH4	
Enabled	Yes or No.	Indicates an enabled/ disabled channel
Transducer type	Velocity, Acceleration, Displacement, Disabled	
Unit	m/s ² , g, mm/s, m/s, in/s, µm, mm, mils	Unit to define transducer sensitivity
Sensitivity	(number) in mV/unit	According with the transducer data sheet
Transducer LO	(number) in Volts	Minimum bias value in normal operation condition
Transducer HI	(number) in Volts	Maximum bias value in normal operation condition
Show unit	m/s ² , g, mm/s, m/s, in/s, µm, mm, mils, thou	Rough measurements will be transformed in this unit.
Show detection	RMS, peak or peak-peak	Rough measurements will be transformed in this average.
DC Bias	Actual bias value, in Volts	Is updated live
Spectrum – max. freq.	200 to 6400 Hz	Selectable from a list
Total level – min. freq.	(none), 5 or 10 Hz	Normal value: 5 Hz (Selectable from a list)
Total level – max. freq.	Higher limit for total level measurement; (200 ÷ 6400 Hz)	Normal value: 3200 Hz (Selectable from a list)
Range	Range for trend, in Show unit	
Danger	(number), in Show unit	If Alarm Status is set to Disabled, this setting is ignored.
Warning	(number), in Show unit	If Alarm Status is set to Disabled, this setting is ignored.
Alarm status	Enabled or Disabled	If this was set to Disabled, no alarm indicator will be shown in the tag.
Measure BE	YES or NO	If this is set to YES, Bearing Energy value will also be measured. This setting is ignored for all type of vibration transducers, excepting accelerometers.

Database location

Database name	An alias name of the CXSpectra© database connected to CX-MON300©	The database can be selected by SUPERVISOR .
Department	Destination in the selected CXSpectra© database	The destination must be unique.
Machine		
Point		
Direction		

Database transfer settings

Scheduled transfer	YES or NO	If set to YES, allows scheduled transfer in CXSpectra© database
Transfer on DANGER	YES or NO	If set to YES, automatically transfers channel measurements to CXSpectra© database, when a DANGER alarm occurs.
Conditioned transfer	YES or NO	Overall settings for data transferring in CXSpectra© database; If it is set to YES, the transfer is conditioned by digital input DI1.

A.2. Parameters for a Bearing Energy tag

Parameter	Description	Comments
TAG		
TAG ID	TAG identification number	Unique number to identify the tag
Name	Tag identification code	Max. 12 char
Description	Tag short description	Max. 40 char
Type	BE	
CX-MON300©		
Module type	General information regarding module	
Address		
Name		
Software ver.		
Serial no.		
CHANNEL		
Channel no.	From CH1 to CH4	
Enabled	Yes or No	Indicates an enabled/ disabled channel
Transducer type	Acceleration	Mandatory For another type of vibration transducer BE can't be measured.
Unit	g	Unit to define transducer sensitivity
Sensitivity	(number) in mV/unit	According with transducer data sheet
Transducer LO	(number) in Volts	Minimum bias value in normal operation condition
Transducer HI	(number) in Volts	Maximum bias value in normal operation condition
DC Bias	Actual bias value, in Volts	It is updated live.
Scale	10g / 20g	Fixed range for BE
Danger	(number), in “g” unit	If Alarm Status is set to Disabled this setting is ignored.
Warning	(number), in “g” unit	If Alarm Status is set to Disabled this setting is ignored.
Alarm status	Enabled or Disabled	If is set to Disabled, no alarm indicator will be shown in the tag.
Database location		
Database name	An alias name of the CXSpectra© database connected to CX-MON300©	The database can be selected by SUPERVISOR.
Department	Destination in the selected CXSpectra© database	The destination must be unique.
Machine		
Point		
Direction		
Database transfer settings		
Scheduled transfer	YES or NO	If set to YES, allows scheduled transfer in CXSpectra© database
Transfer on DANGER	YES or NO	If set to YES, automatically transfers channel measurements to CXSpectra© database, when a DANGER alarm occurs.
Conditioned transfer	YES or NO	Overall settings for data transferring in CXSpectra© database; If it is set to YES, the transfer is conditioned by digital input DI1.

A.3. Parameters for a Temperature tag

Parameter	Description	Comments
TAG		
TAG ID	TAG identification number	Unique number to identify the tag
Name	Tag identification code	Max. 12 char
Description	Tag short description	Max. 40 char
Type	Temperature	
CX-MON300©		
Module type	General information regarding module	
Address		
Name		
Software ver.		
Serial no.		
CHANNEL		
Channel no.	From CH1 to CH4	
Transducer type	PT100	Mandatory
Enabled	Yes or No	Indicates an enabled/ disabled channel
Temperature unit	°C or °F	
Range LO	0, -25 or -50 (in temp. unit)	Selectable from a list
Range HI	100 to 300 (in temp. unit)	Selectable from a list
Danger	(Number), in temp. unit	If Alarm Status HI is set to Disabled this setting is ignored.
Warning	(Number), in temp. unit	If Alarm Status HI is set to Disabled this setting is ignored.
Alarm status	Enabled or Disabled	If is set to Disabled, no alarm indicator will be shown in tag for alarm
Database location		
Database name	An alias name of the CXSpectra© database connected to CX-MON300©	The database can be selected by SUPERVISOR.
Department	Destination in the selected CXSpectra© database	The destination must be unique.
Machine		
Point		
Direction		
Database transfer settings		
Scheduled transfer	YES or NO	If set to YES, allows scheduled transfer in CXSpectra© database
Transfer on DANGER	YES or NO	If set to YES, automatically transfers channel measurements to CXSpectra© database, when a DANGER alarm occurs.
Conditioned transfer	YES or NO	Overall settings for data transferring in CXSpectra© database; If it is set to YES, the transfer is conditioned by digital input DI1.
Alarm status HI	Enabled or Disabled	If this is set to Disabled, no alarm indicator will be shown in tag for HI alarm.

A.4. Parameters for a Speed tag

Parameter	Description	Comments
TAG		
TAG ID	TAG identification number	Unique number to identify the tag
Name	Tag identification code	Max. 12 char
Description	Tag short description	Max. 40 char
Type	Speed	
CX-MON300©		
Module type	General information regarding module	
Address		
Name		
Software ver.		
Serial no.		
CHANNEL		
Channel no.	CH1	
Transducer type	Speed sensor	Mandatory
Enabled	Yes or No	Indicates an enabled/ disabled channel
Speed unit	Hz or RPM	
Scale	200 to 20000 in speed unit	Selectable from a list
Danger	(number), in speed unit	If Alarm Status is set to Disabled, this setting is ignored.
Warning	(number), in speed unit	If Alarm Status is set to Disabled, this setting is ignored.
Alarm status	Enabled or Disabled	If is set to Disabled, no alarm indicator will be shown in tag for alarm.
Database location		
Database name	An alias name of the CXSpectra© database connected to CX-MON300©	The database can be selected by SUPERVISOR.
Department	Destination in the selected CXSpectra© database	The destination must be unique.
Machine		
Point		
Direction		
Database transfer settings		
Scheduled transfer	YES or NO	If set to YES, allows scheduled transfer in CXSpectra© database
Transfer on DANGER	YES or NO	If set to YES, automatically transfers channel measurements to CXSpectra© database, when a DANGER alarm occurs.
Conditioned transfer	YES or NO	Overall settings for data transferring in CXSpectra© database; If it is set to YES, the transfer is conditioned by digital input DI1.

Documentation Feedback

Any suggestions and comments for improving **CX-MON300© Operator Manual** documentation should be e-mailed at mobind@mobilindustrial.ro

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Technical Support

Contact Details

For any problem regarding this application, feel free to contact our support team at mobind@mobilindustrial.ro

To know more about us, visit the following website: <http://www.mobilindustrial.ro/>
