



CX300 MODULE

CONFIGURATION AND SETTINGS

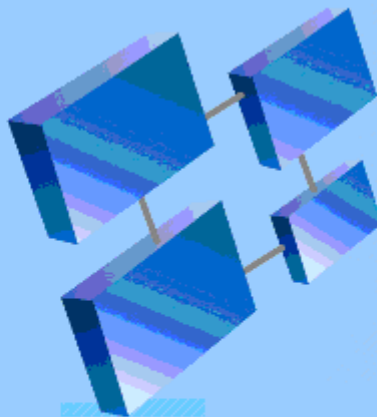


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CX300 MODULE Configuration and settings



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CX300 Configuration and settings

1. Before starting the CX300CONFIG application

- Connect the USB Cable from PC to the module and set correctly the virtual COM port, emulated by the USB hub.
- Be sure that the CX300 module is running.
- Start the CX300CONFIG application.

NOTE: For more details read *CX300 User Manual*.

The screenshot shows the CX300Configuration application window. The 'General' tab is selected, displaying 'GENERAL MODULE SETTINGS'. The settings are organized into several sections:

ModuleType	CX200			
Module No	20			
Module Name	CX200 Module			
Board Version	0			
Serial Number	10239			
IP Address	196	168	100	220

Below the table, there are input fields for 'Max.Freq.Range' (3200 Hz) and 'Resolution' (0.5 Hz). The 'Relay settings' section includes 'Relay settings' (Normal), 'Start-up multiplier' (X 2.0), and 'Start-up time' (10 sec.). A yellow warning icon is present next to the 'Start-up time' field.

A legend on the right side explains the icons: a yellow exclamation mark for 'Only for CX300', a green box for 'Editable fields', and a pink box for 'Wrong Entry'. Buttons for 'Update', 'Read Settings', and 'Write Settings' are also visible.

At the bottom, there is a 'Connect' button and a status bar showing '(No connection to port COM 3)' and '(Default)'. Other buttons at the bottom include 'Set port' and 'Exit'.

2. General configuration

- ❶ - Set properly the serial communication port.
- ❷ - Press the "**Connect**" button to establish the communication with the module.
- ❸ - Press the "**Read Settings**" button to upload the exiting module configuration.

The following information will appear:

- ✓ Module Serial No. This is set in production and cannot be changed by the user.
 - ✓ Module Type. Can be CX200 or CX300. This is set in production and cannot be changed by the user.
 - ✓ The existing *Board version*. This is set in production and cannot be changed by the user.
- ❹ - Configure the module IP Address. The module IP must be unique in the accessible network.
- For more information regarding the module IP Address, just read *ADDENDUM A* in this document.
- ❺ - Give a number to the module. The module number must be between 1 and 10. Give a "name" to the module, just for reference. The name must be maximum 10 characters length.
- ❻ - Set general configuration for the module:
- ✓ *Max. Freq. Range*. - This can be 3200 Hz or 6400 Hz. For normal machines (pumps, fans etc.) select 3200 Hz. This will speed-up the calculation time of the vibration parameters.
 - ✓ *Resolution* - This is shown only for information and cannot be edited by the user.
 - ✓ *Relay settings*. The relay can be set in two ways:
 - Normal - If the assigned measurement(s) is below the alarm limit, the relay will be de-energized.
 - Fail-safe - If the assigned measurement(s) is below the alarm limit, the relay will be energized.
 - ✓ *Start-up multiplier* - If the Start-up digital input is used, when the machine starts, the set alarm limits for vibration will be multiplied by this multiplier.
 - ✓ *Start-up time*. This parameter sets the time (from the start-up detection), when the alarm multiplier is used (1 to 255 seconds).
- ❼ - Press the "**Write settings**" button to save the configuration into the module permanent memory.

3. Vibration channel settings

Each CX300 module has four vibration input channels. Each one of them must be properly set, according to user's requirements.

Press the "**Vibration**" tab to get the channels configuration panel for vibration measurements:

- Press the "**Read Config**" button to download the setting of all the existing channels of the module

Or

- Press the "**Load button**" to open a previously saved configuration file

Or

- Directly edit every single channel.

To browse between channels, to copy and to paste the contents from one channel to another, just use the left-side buttons.

The meaning of each setting is explained into the *Info* label.

If a wrong setting was done, the associated label will be highlighted in red color.

You cannot save the settings in the module if any of them was improperly set.

For example, if you will improperly set the *TransducerLO* limits, the associated labels will be shown in red:

Transducer LO	24	Vdc
Transducer HI	24	Vdc

When the channel editing procedure was completed, just press the "**Save Config**" button to save the settings in module's permanent memory.

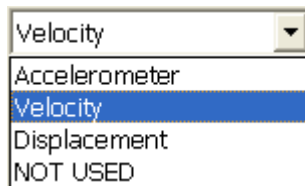
Just for the record, you can save all the settings by pressing the "**Save as**" button.

NOTE: General settings will be not saved in the configuration file.

IMPORTANT NOTE

When module setting is completed, just press the "**Reset**" button or switch off and on again the module.

3.1. Transducer's type



The selection can be:

- Accelerometer
- Velocity
- Displacement

If the channel will be not used, just select NOT USED from the above list.

NOTE: If Accelerometer is selected, the power to transducer must be hardware activated with the correspondent switch placed on CX300 Mother Board. For more details read the CX300 User Manual.

NOTE: The CX300 module not provide power for Displacement sensors. These must be supplied externally.

3.2. Sensitivity

The sensitivity is expressed in [mV/unit], where the correct unit is:

- "g" for accelerometers
- "mm/s" for velocity sensors
- "μm" for displacement sensors.

3.3. Show unit

This parameter determines how the measurement result will be calculated and shown. Depending on transducer's type, the integration or derivation will be automatically done.

3.4. Show Detection

Detection can be RMS, Peak or Peak-Peak.

3.5. Scale

This is the graph scale in the trend (used by CX300-MON application). Select a scale above the Warning and Danger limits.

3.6. Transducer LO and Transducer HI

A bias value exceeding these limits indicates a "TX Failure" condition.

The recommended limits for an accelerometer are +4 and +18 V.

These parameters must be set in accordance to the technical specification of transducer.

3.7. Spectrum LPF

This parameter can be selected from the list. The spectrum lines below this limit will be filtered-out.

3.8. Use measured speed

When this parameter is set to *Enabled*, the speed will be transferred together with the spectrum into CXSpectra database.

3.9. Total HPF and Total LPF

These parameters are used to calculate *Total value*, by determining the frequency range. The parameters can be selected from the list.

3.10. Alarm vibration

If this is set to *Enabled*, the set alarm level will trigger the alarm flags. For CX300 module will also act the relay.

3.11. Warning Vib and Danger Vib

For each vibration, two levels of alarms can be set. To have effect, the *Alarm vibration* must be set on *Enabled*. The alarm is expressed in *Show Unit*.

3.12. Alarm BE

The *AlarmBE* can be *Enabled* or *Disabled*.

3.13. Warning BE and Danger BE

If *Alarm BE* is *Enabled*, the set alarm level for BE will trigger the alarm flags. For CX300 module will also act the relay.

3.14. Delay RLY

This parameter triggers the alarms (if there are), when the Delay time was set. The setting can be done from a list. If the alarm disappears before the Delay time, the alarm will not trigger the relay.

3.15. Map alarms

Each individual alarm can be mapped to one of the existing relays (RLY1, RLY2, RLY3 or RLY4).

If this parameter is set to (none), the alarm will not trigger any relay.

This setting is valid only for CX module having on board relays.

For more details see Chapter 6.

3.16. mA Output

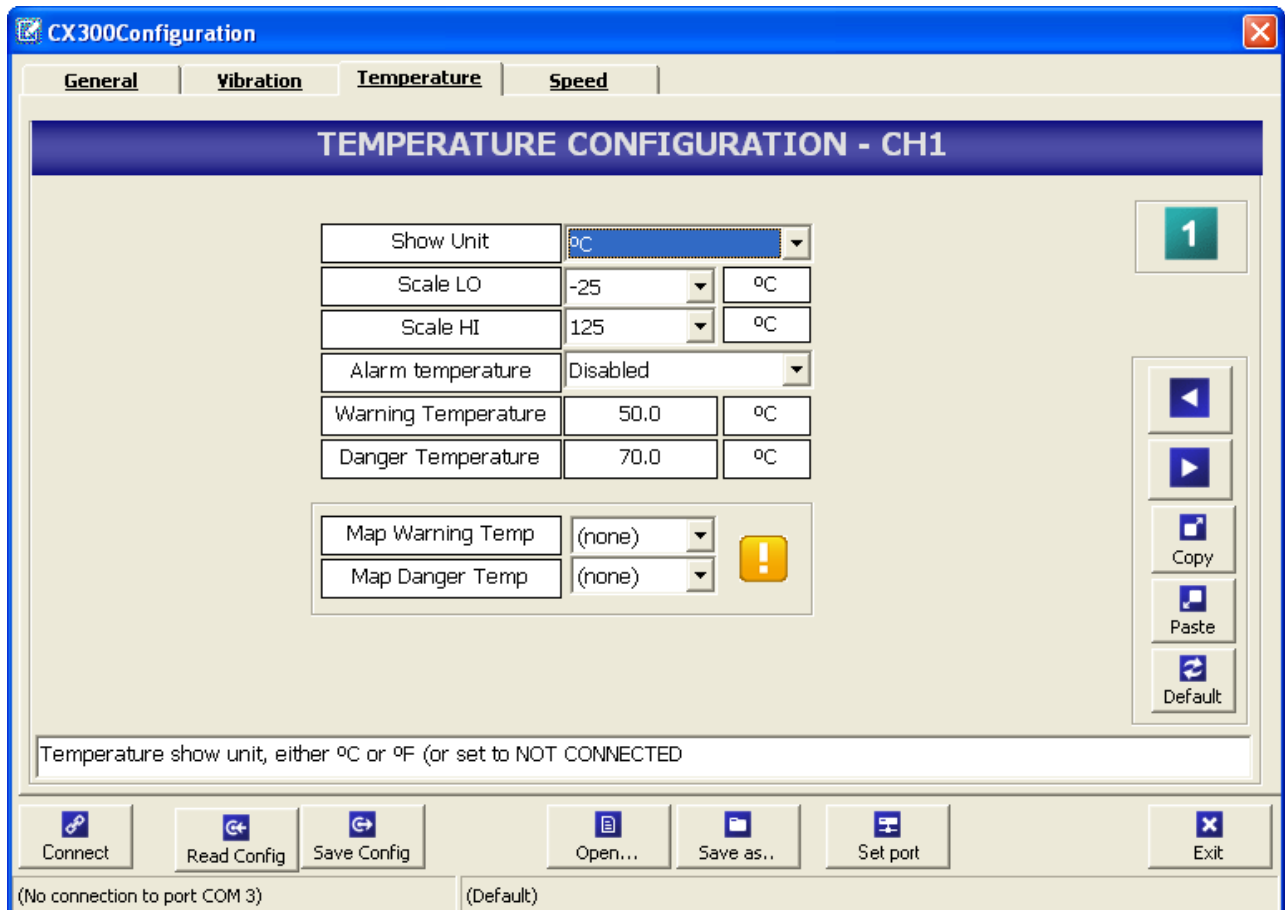
If this is set to *Enabled*, the *Total value* of the vibration will be send, as a 4÷20 mA analogical output, to CX300 module. The range depends on *Scale* setting.

4. Temperature channel settings

Each CX300 module has four temperature input channels. Each one of them must be properly set, according to user's requirements.

The procedure is very similar with the *Vibration settings*, but the parameter is different.

Press the "**Temperature**" tab to get channel configuration panel for temperature measurements:



- Press the "**Read Config**" button to download the setting of all the existing channels
- Or
- Press the "**Load button**" to open a previously saved configuration file
- Or
- Directly edit every single channel.

To browse between channels, to copy and to paste the contents from one channel to another, just use the left-side buttons.

The meaning of each setting is explained into the *Info* label.

If a wrong setting was done, the associated label will be highlighted in red color.

You cannot save the settings in the module if any of them was improperly set.

When the channel editing procedure was completed, just press the "**Save Config**" button to save the settings in module's permanent memory.

Just for the record, you can save all the settings by pressing the "**Save as**" button.

NOTE: General settings will be not saved in the configuration file.

IMPORTANT NOTE

When module setting is completed, just press the “**Reset**” button or switch off and on again the module.

4.1. Show Unit

This parameter determines how the measurement result will appear (in °C or in °F).

4.2. Scale LO and Scale HI

This is the graph scale in the trend (used by CX300-MON application).

Select a scale above the Warning and Danger limits.

Scale Lo and HI values can be selected from a list.

The scale is expressed in *Show Unit*.

4.3. Alarm temperature

If this is set to *Enabled*, the set alarm level will trigger the alarm flags. For CX300 module will also act the relay.

4.4. Warning Temperature and Danger Temperature

For each temperature, two levels of alarm can be set. To have effect, the *Alarm temperature* must be set to *Enabled*. The alarm is expressed in *Show Unit*.

4.5. Map alarms

Each individual alarm can be mapped to one of the existing relays (RLY1, RLY2, RLY3 or RLY4).

If this parameter is set to (none), the alarm will not trigger any relay.

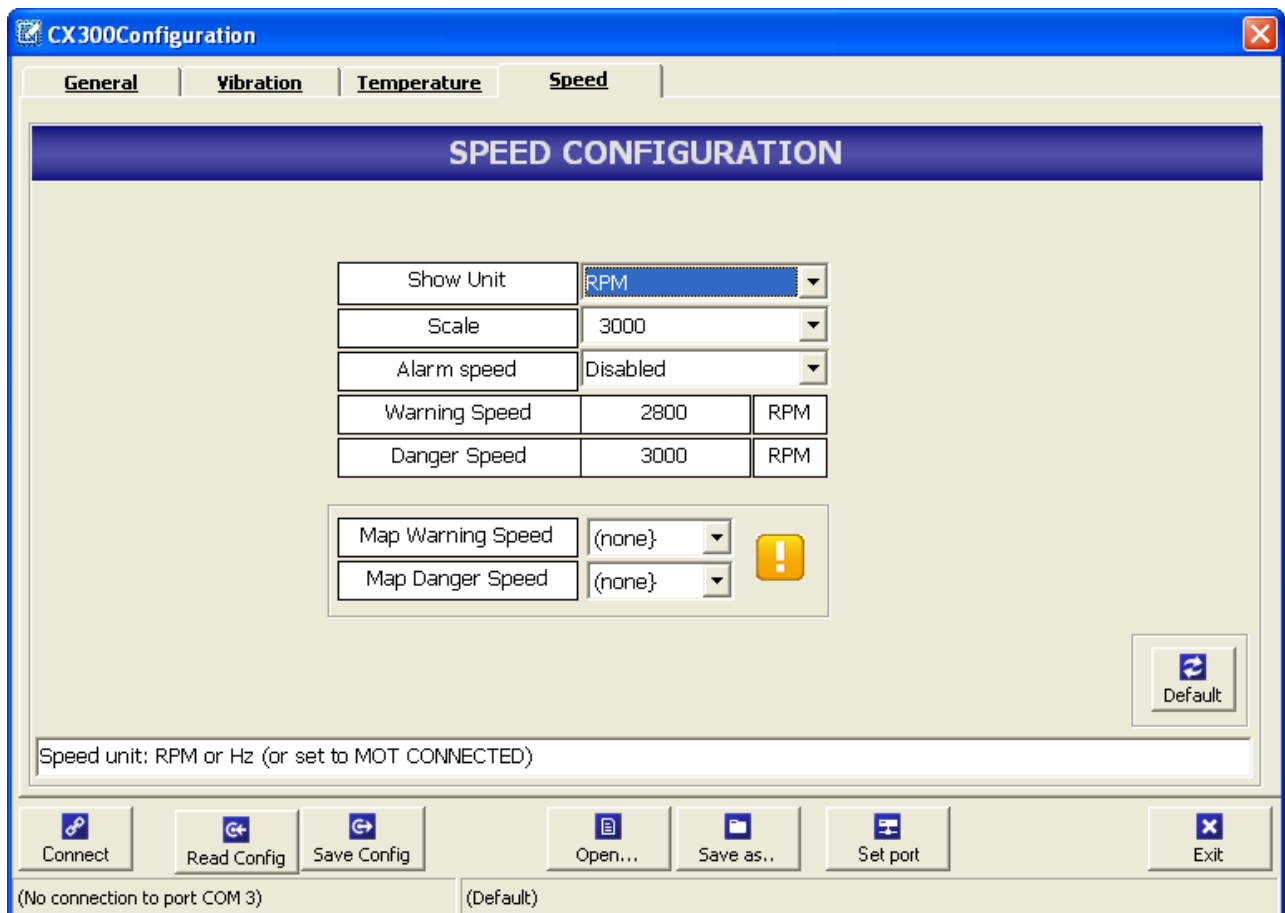
This setting is valid only for CX module having on board relays.

For more details, see Chapter 6.

5. Speed channel settings

Each CX300 module has one speed input channel. The procedure is very similar with *Vibration settings*, but the parameter is different.

Press the "**Speed**" tab to get the channel configuration panel for speed measurements:



- Press the "**Read Config**" button to download the setting of all the existing channels
- Or
- Press the "**Load button**" to open a previously saved configuration file
- Or
- Directly edit every single channel.

The meaning of each setting is explained into the *Info* label.

If a wrong setting was done, the associated label will be highlighted in red color.

You cannot save the settings in the module if any of them was improperly set.

When the channel editing procedure was completed, just press the "**Save Config**" button to save the settings in module's permanent memory.

Just for the record, you can save all the settings by pressing the "**Save as**" button.

NOTE: General settings will be not saved in the configuration file.

IMPORTANT NOTE

When module setting is completed, just press the "**Reset**" button or switch off and on again the module.

5.1. Show Unit

This parameter determines how the measurement result will appear (in Hz or in RPM).

5.2. Scale LO and Scale HI

This is the graph scale in the trend (used by CX300-MON application).

Select a scale above the Warning and Danger limits.

Scale Lo and HI values can be selected from a list.

The scale is expressed in *Show Unit*.

5.3. Alarm speed

If this is set to *Enabled*, the set alarm level will trigger the alarm flags. For CX300 module will also act the relay.

5.4. Warning Speed and Danger Speed

For each speed, two levels of alarm can be set. To have effect, the *Alarm speed* must be set to *Enabled*. The alarm is expressed in *Show Unit*.

5.5. Map alarms

Each individual alarm can be mapped to one of the existing relays (RLY1, RLY2, RLY3 or RLY4).

If this parameter is set to (none), the alarm will not trigger any relay.

This setting is valid only for CX module having on board relays.

For more details, see Chapter 6.

6. Alarm mapping

CX300 has the following alarms:

Vibration	BE	Temperature	Speed
CH1 - Warning	CH1 - Warning	CH1 - Warning	CH1 - Warning
CH1 - Danger	CH1 - Danger	CH1 - Danger	CH1 - Danger
CH2 - Warning	CH2 - Warning	CH2 - Warning	
CH2 - Danger	CH2 - Danger	CH2 - Danger	
CH3 - Warning	CH3 - Warning	CH3 - Warning	
CH3 - Danger	CH3 - Danger	CH3 - Danger	
CH4 - Warning	CH4 - Warning	CH4 - Warning	
CH4 - Danger	CH4 - Danger	CH4 - Danger	

Each of them can be associated with any of the four existing relays.

See below an example of assigning the relays to the CX300 alarms.

Relay	Name	Alarm associate
RLY1	Common Warning Alarm	VIB-CH1 - Warning
		VIB-CH2 - Warning
		VIB-CH3 - Warning
		VIB-CH4 - Warning
		BE-CH1 - Warning
		BE-CH2 - Warning
		BE-CH3 - Warning
		BE-CH4 - Warning
		TMP-CH1 - Warning
		TMP-CH2 - Warning
		TMP-CH3 - Warning
		TMP-CH4 - Warning
RLY2	Common Danger Alarm	VIB-CH1 - Danger
		VIB-CH2 - Danger
		VIB-CH3 - Danger
		VIB-CH4 - Danger
		BE-CH1 - Danger
		BE-CH2 - Danger
		BE-CH3 - Danger
		BE-CH4 - Danger
		TMP-CH1 - Danger
		TMP-CH2 - Danger
		TMP-CH3 - Danger
		TMP-CH4 - Danger
RLY3	Speed Warning Alarm	SPD-CH1 - Warning
RLY4	Speed Danger Alarm	SPD-CH1 - Danger

In the above example, all four relays are used to generate alarms.

Relay 3 and 4 are used only for Speed measurement.

RLY1 is a common alarm relay and acts only if ANY of the listed measurements rises above the warning alarm level.

RLY2 is a common alarm relay and acts only if ANY of listed measurements rises above the danger alarm level.

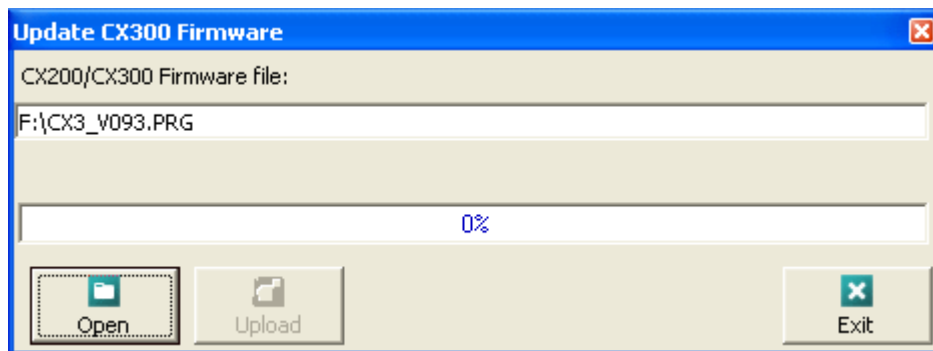
The relays can be used as required, in accordance with the specific application.

7. Update the module software

The user can update the existing software of CX300 module very easy:

- Connect the USB cable from PC to the module and set correctly the virtual COM port, emulated by the USB hub. (To do this press the **"Set port"** button)
- Make sure that CX300 module is running
- Start the CX300CONFIG application
- Press the **"Connect"** button to establish the communication with the module.

Press the **"Update"** button:



- ✓ Press the **"Open"** button and select the new firmware file.
- ✓ Press the **"Upload"** button and the updating process will start. Make sure the module wasn't disconnected before finishing the uploading process.
- ✓ Press the **"Exit"** button.

IMPORTANT NOTE:

After a module software upgrade, do the next steps:

- Shut-off the module (by removing the +24V power connector) or press the **"Reset"** button.
- Disconnect the USB cable from the CX300 module.

ADDENDUM A

Assigning Private Network IP Addresses to the CX300 Modules

Since not all CX300 modules have official Internet assigned addressees, there must be a specific and accepted way to allocate addresses to those modules, without conflicting with anyone else's Internet address.

[RFC 1918](#) is the official document on which IP addresses are to be used in a non-connected or "private" network. There are 3 blocks of numbers set aside specifically for this purpose.

Section 3: Private Address Space

The Internet Assigned Numbers Authority (IANA) has reserved the following three blocks of the IP address space for private networks:

10.0.0.0	-	10.255.255.255
172.16.0.0	-	172.31.255.255
192.168.0.0	-	192.168.255.255

We will refer to the first block as "24-bit block", the second as "20-bit block", and the third as "16-bit" block". Note that the first block is nothing but a single class A network number, while the second block is a set of 16 continuous class B network numbers, and the third block is a set of 255 continuous class C network numbers.

For CX300 Modules use the 192.168.0.0 network with a 255.255.255.0 Class-C subnet mask. Any of the above private networks are valid, but just be SURE to use the correct subnet-mask.

So, if you're using a Class-C network, you should number your TCP/IP enabled Modules as 192.168.1.2, 192.168.3, 192.168.1.4..., 192.168.1.255 and the PC running CX300-MON must have any IP below these (Ex. 192.168.1.1 with 255.255.255.0 subnet-mask).

Documentation Feedback

Any suggestions and comments for improving this Application Notes should be e-mailed at mainttech@live.se

MaintTech Sweden uses feedback for continuous improvement of our documentation and for future **MaintTech** products. We request comments be specific and include the product name and version. We cannot provide personal responses to every message received, but please be assured that all feedback will be given careful consideration for future improvements to the **MaintTech** documentation or software.

Technical Support

Contact Details

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