USER MANUAL

A3800 – RELAYS, LOOPS module

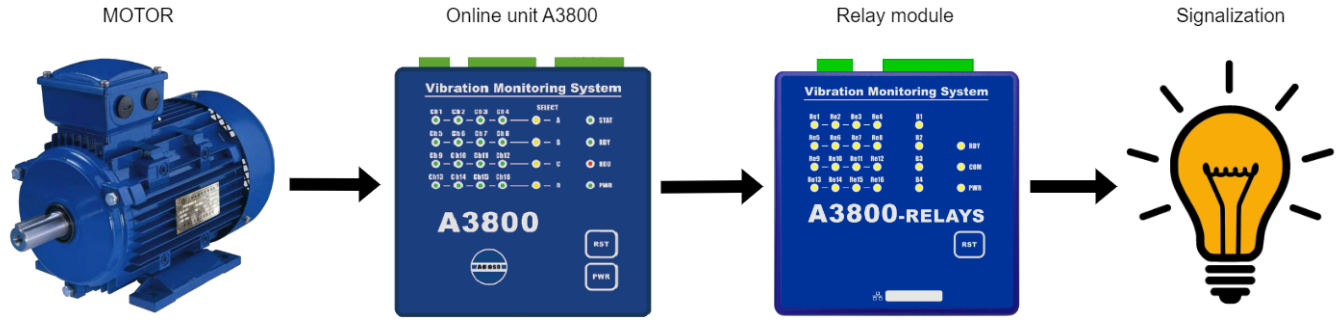
Updated: 2025

Content:

Introduction

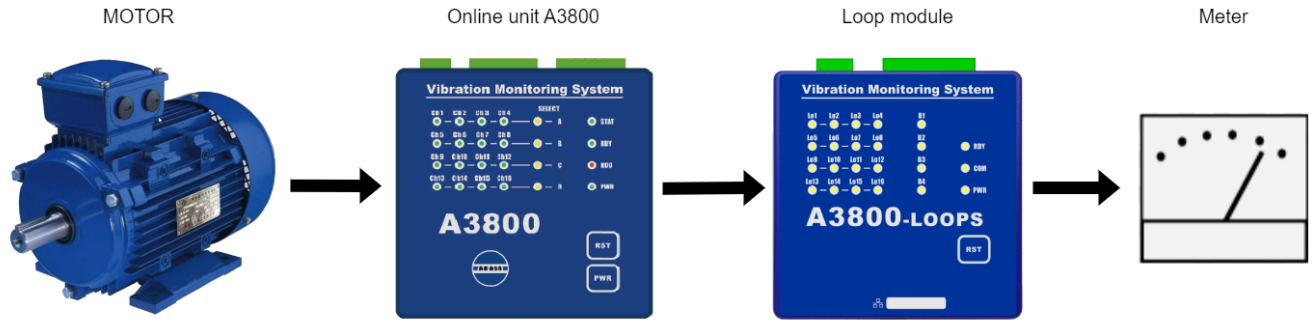
Adash also offers relay and loop modules. This manual is used for description of these modules and their specifications.

Relay module is mostly used for signalization in practice. Just to imagine how it can work in practice, see simple scheme below.



Let's explain this scheme. We have connected all components (motor, online unit, relay module and some bulb) together. In this example, imagine, that value 5 mm/s is value of vibration which we would like to know that it is exceeded. For such a situation we can use relay module. We get 5 mm/s value on motor. Online unit will measure this value. This value is in this moment also known to relays – relay is closed. The bulb is lightened up. In that moment we know, that value on the motor exceeded the value we set – 5 mm/s.

Loop module takes advantage of the excellent property of the current - it is well transferred over long distances; therefore, it is possible to "lead" the current out of the high-interference environment. Then it is great to use loop module to identify error states. Every measured value is linearly converted to a 4-20 mA current loop value. Values shown outside of this range are good indicators for error states.

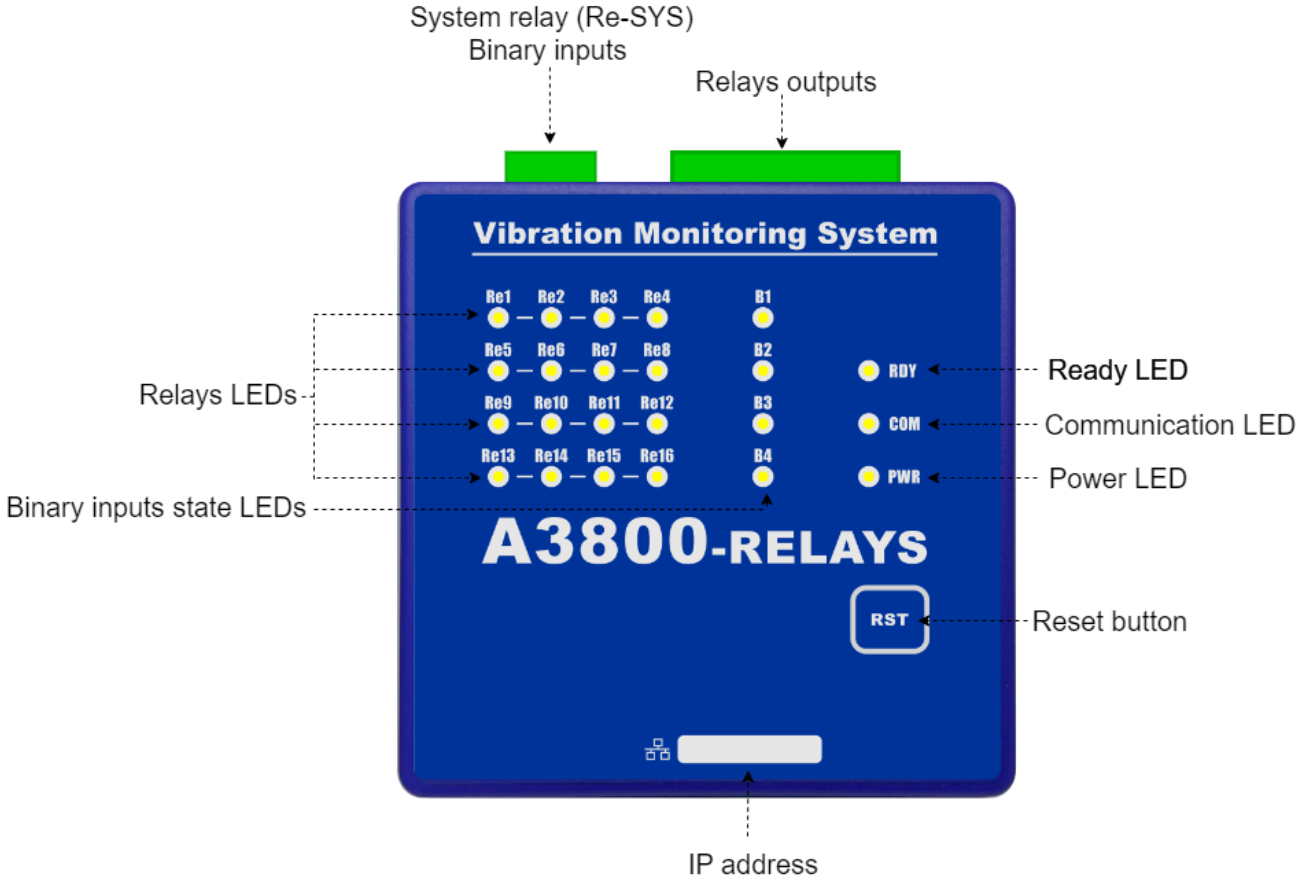


More specifications and descriptions of modules is shown in next chapters.
If you are interested in more information about Adash online units (A3800), you can find them in the manual for online monitoring systems – www.adash.com.

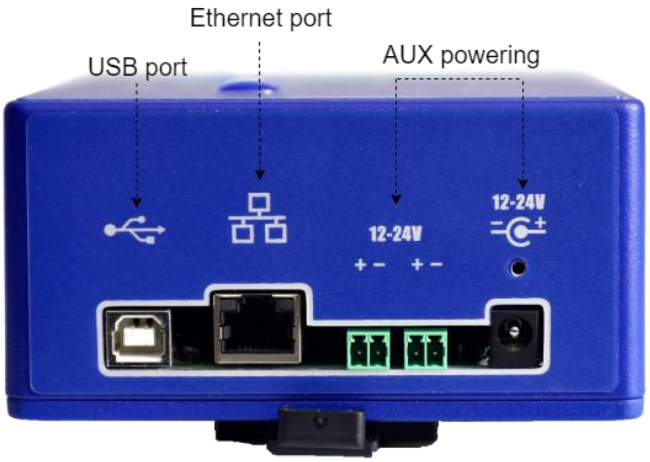
Description – relay module

Relay module is described in this chapter. Relay module specification is in chapter: **Technical specifications** .

Front panel of the module



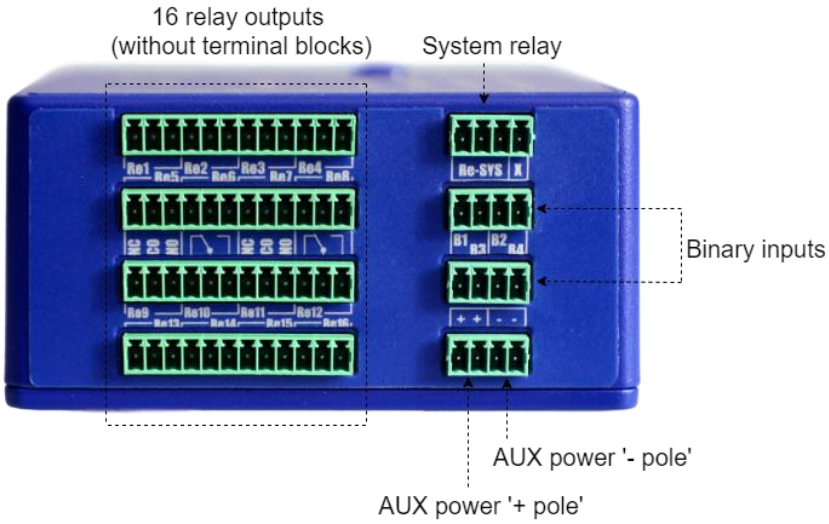
Bottom panel of the module



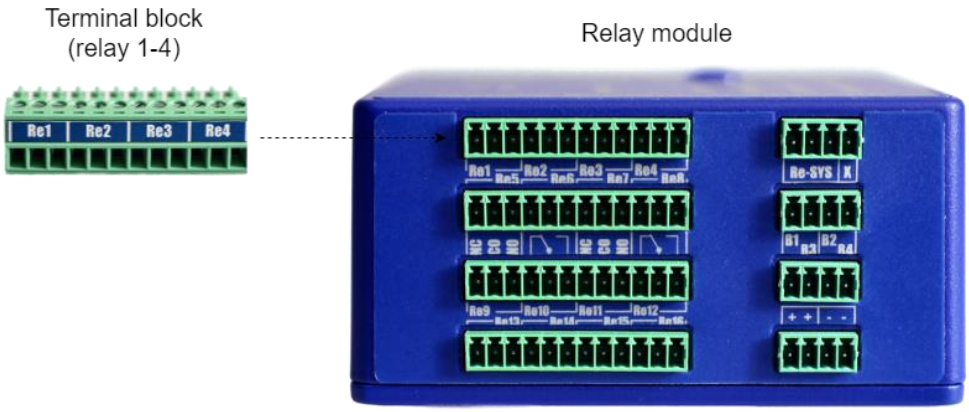
Note:
AUX power is not needed for USB connection. It is needed only for Ethernet connection.

Top panel of the module

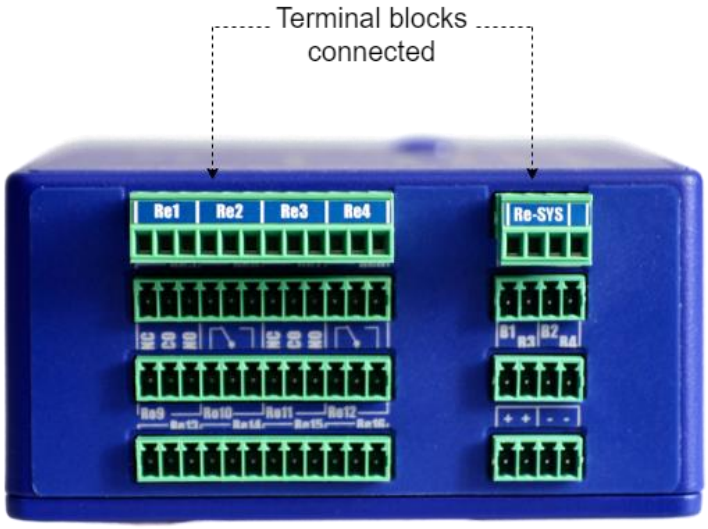
Top panel of the relay module is shown in the picture below.



Terminal blocks are used to connect supply wire or to connect several wires together in electrical engineering. Where to connect these terminal blocks and how they look like is shown in the following picture. We connect terminal block for relay 1 – 4.



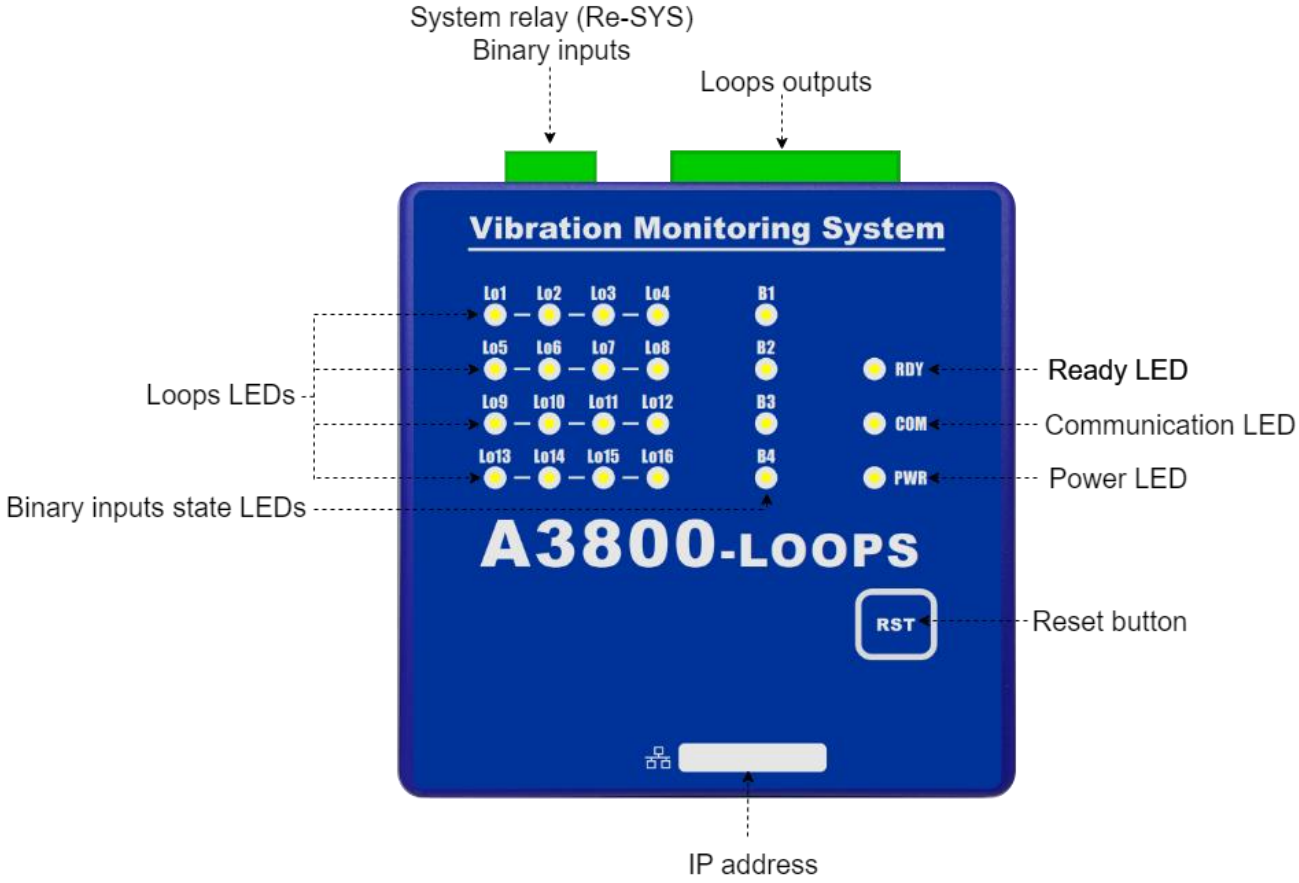
You can see top panel of relay module with terminal blocks connected in the following picture.



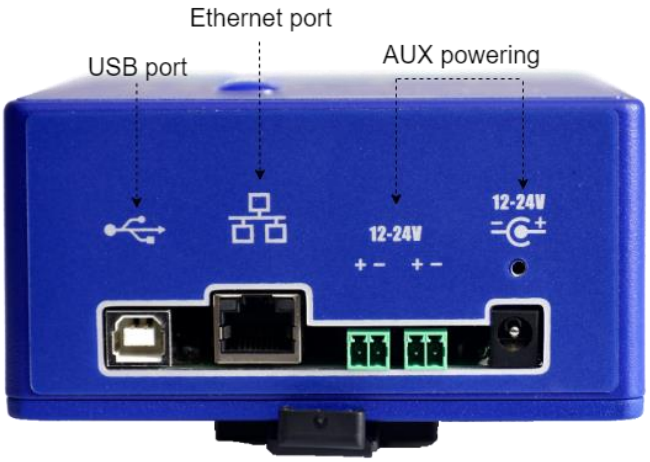
Description – loop module

Loop module is described in this chapter. Relay module specification is in chapter: **Technical specifications**.

Front panel of the module

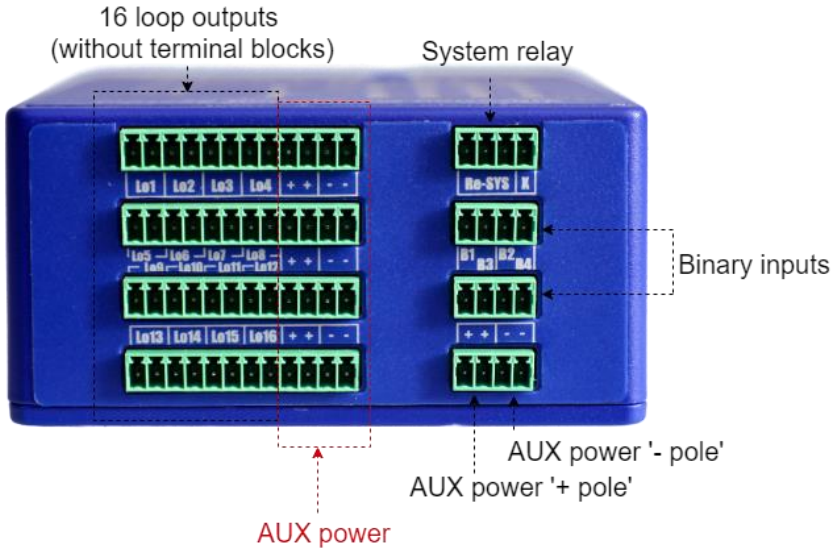


Bottom panel of the module

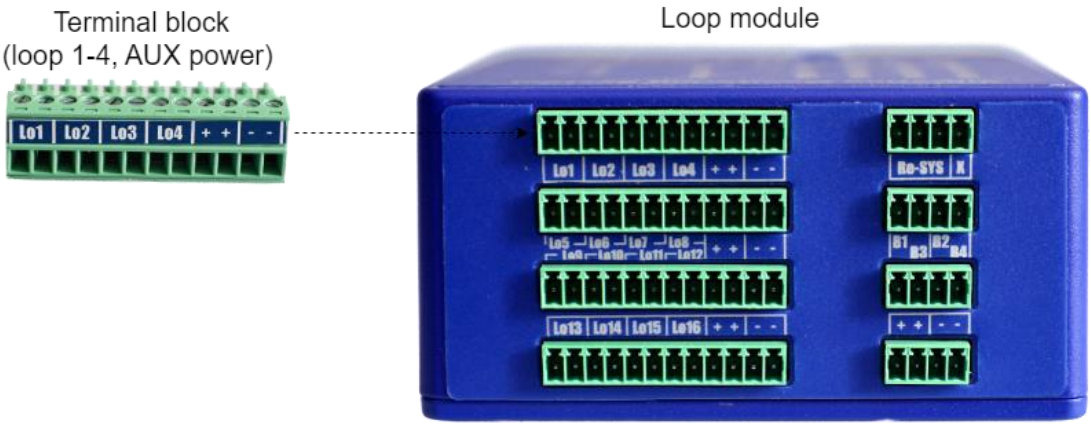


Note:
AUX power is not needed for USB connection. It is needed only for Ethernet connection.

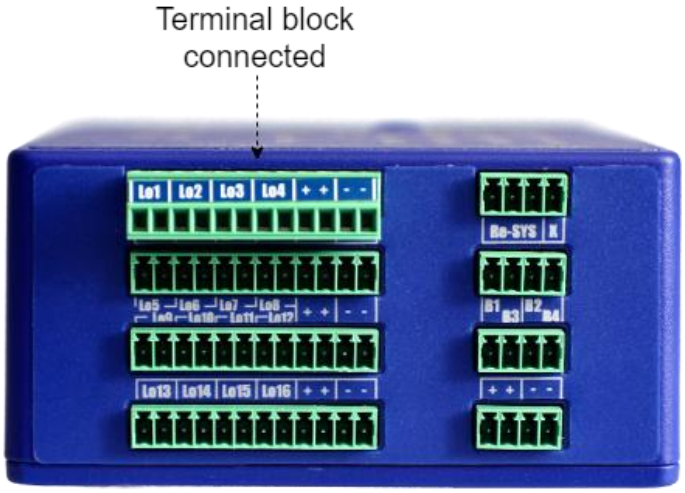
Top panel of the module



Terminal blocks are used to connect supply wire or to connect several wires together in electrical engineering. Where to connect these terminal blocks and how they look like is shown in the following picture. We connect terminal block for loop 1 – 4 and their powering.



You can see top panel of loop module with terminal block connected in the following picture.



How to make module and A3800 communicate

Firstly, you need to connect module to online unit A3800. You do this with USB cable.
USB port (module):

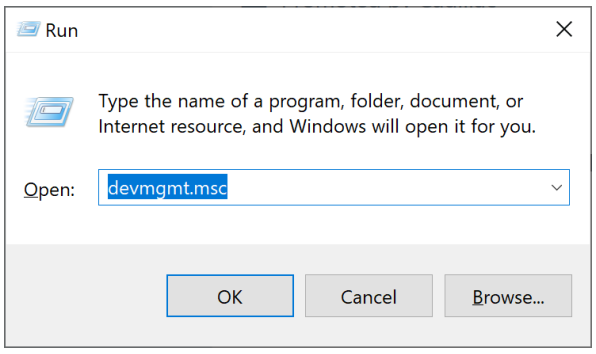
USB port (online unit A3800):

***Next steps described below are for modules which were not set by Adash**. Modules and online units A3800 are configured by Adash in production when you order them together.*

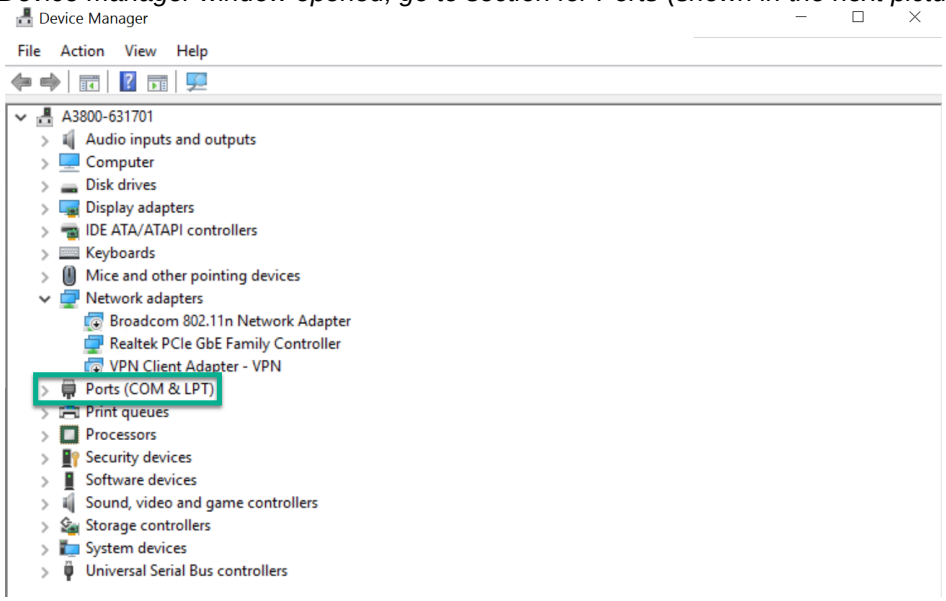
When module is ordered separately and you already have A3800, you need to configure it by yourself. See following steps to proceed with it further.

Connect to online unit with remote desktop connection. Once you are connected you need to open device manager to configure communication ports (between online unit and module).
There is a different guide how to open device manager based on version of operating system in your online unit.

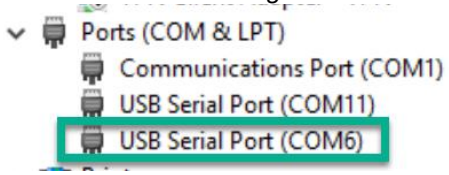
***OS – Windows 10/11:** click to Windows start button with right mouse button and go to Device manager.*
***OS – Windows 7**: press Win + R and fill in **devmgmt.msc** command (see screenshot below). Confirm with OK and device manager opens.*



Once you have Device manager window opened, go to section for Ports (shown in the next picture).

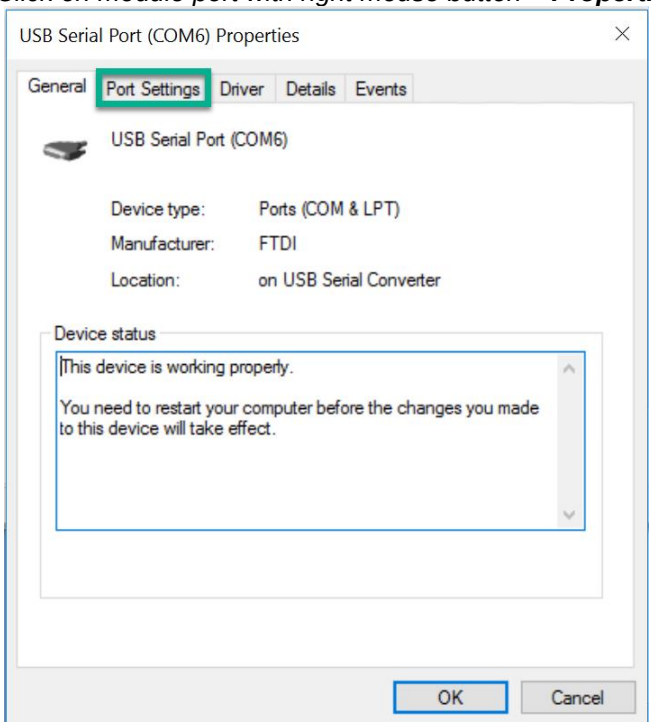


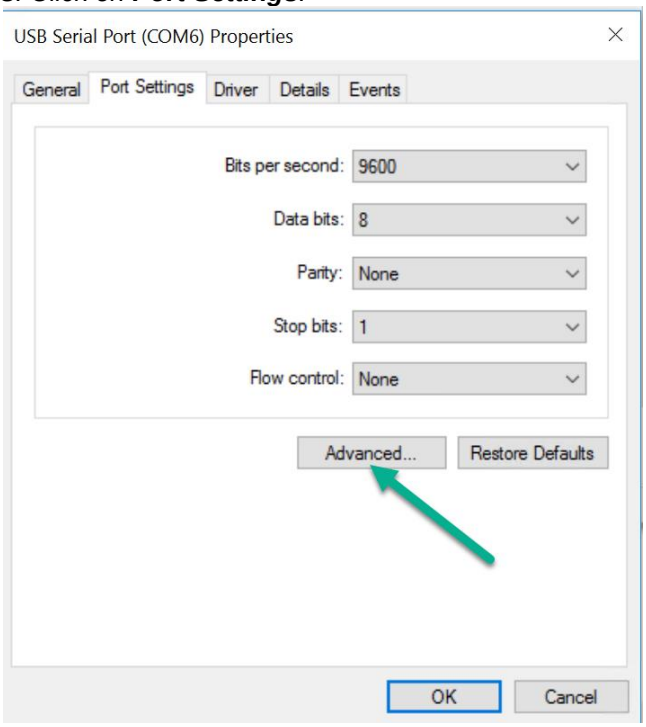
Find the port where your relay/loop module is connected (in our case it is port COM6). ***On which port your module is connected?*** *Open Ports tab in device manager as shown in the following picture.*



Then disconnect the module from online unit. You can see which COM port number is shown/hidden when you connect/disconnect your module.

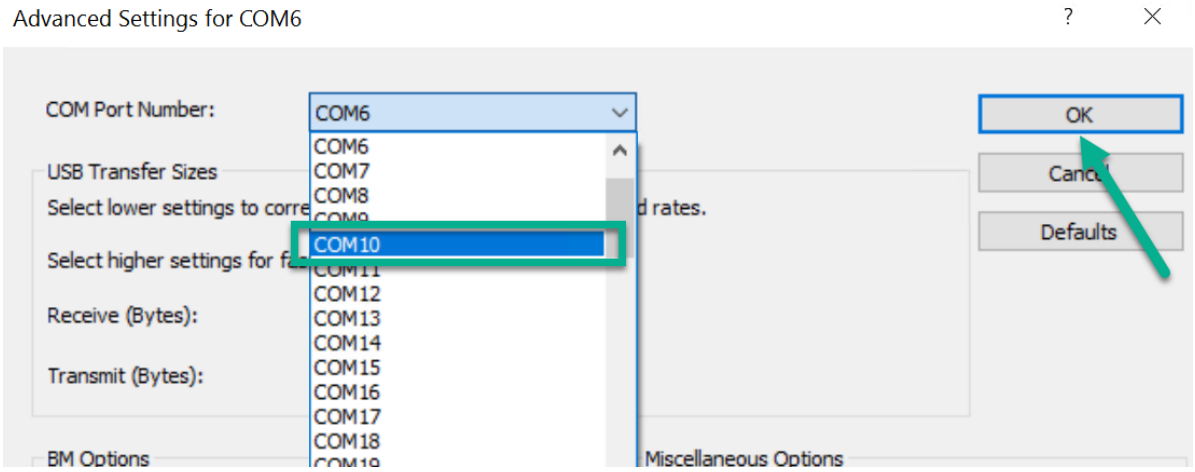
Click on module port with right mouse button – ***Properties****. Click on* ***Port Settings****.*





Click on ***Advanced****.*

***COM Port Number** set to COM10 as below (it is default port set for communication between A3800 and module).*



*Confirm with **OK** button (confirm also the 'Properties' window).*

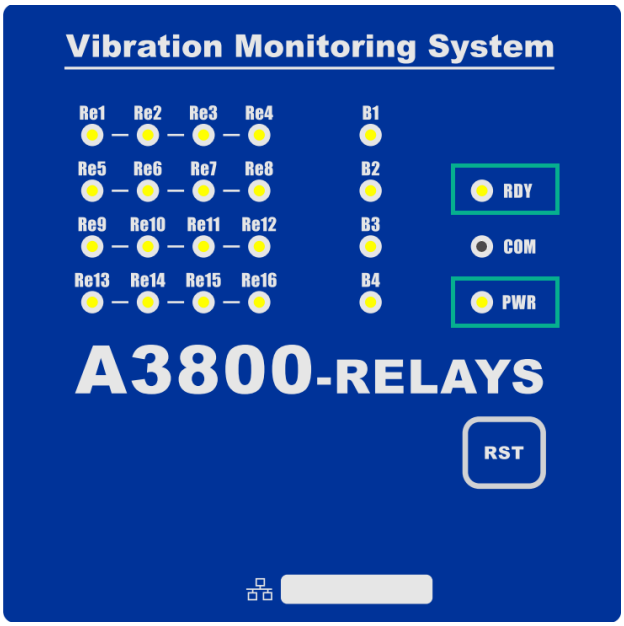
*Now you need to change config file for online unit. You can find it in this location C:\A3716\data. There is config file with name **VA4.cfg**. Open it with notepad. You need to change this part in config file:*

[ONLINE BOARD]
port=-1

Port value set to -1 means that online board is not connected. So, we need to change it like this:
[ONLINE BOARD]
port=10
baud=115200
wdt=10000
keep vals=off
turn off when icp error=1

Once you paste this into config file, save the changes.

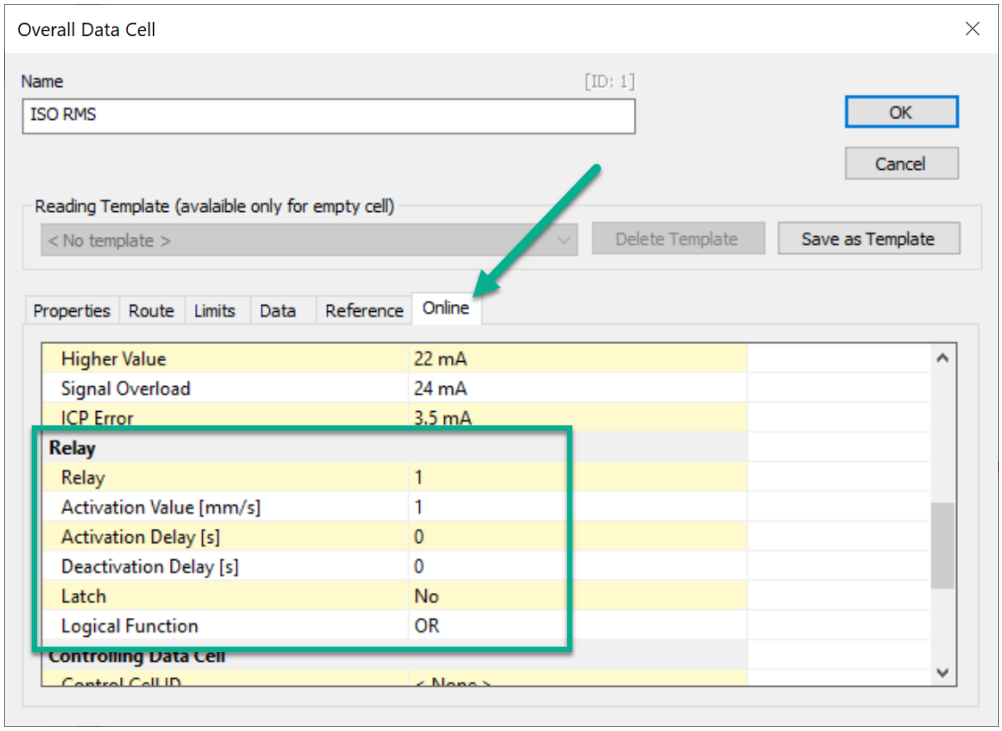
The next step is to create database in DDS and send this project to online unit A3800 (in other words – start data collection – DDS – Online tab – Start) – how to create database in DDS is described in manual for online monitoring systems. It is available on Adash website.
When correct communication between online unit A3800 and module is established you can see LED light on for **RDY** and **PWR**.



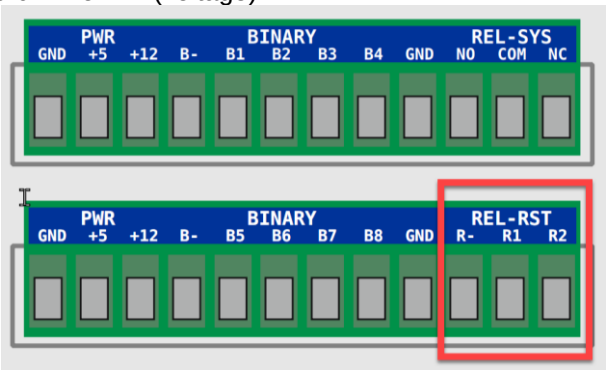
More settings

Relay parameters are set in DDS. Relays can be used only for static (e.g. overall values) measurements. You can find it under 'Online' tab in 'Properties' of data cell window. You need to scroll down to see them.

DDS window for relay setting:



Relay – relay number used
Activation Value – the measured value which switch the relay
Activation/Deactivation Delay [s] – delays for activation and deactivation
Latch – if latch function is used, then deactivation is done only manually. Use REL RST contacts (rear panel) and connect 4-20V to **R-**(ground) and **R1** or **R2** (voltage).



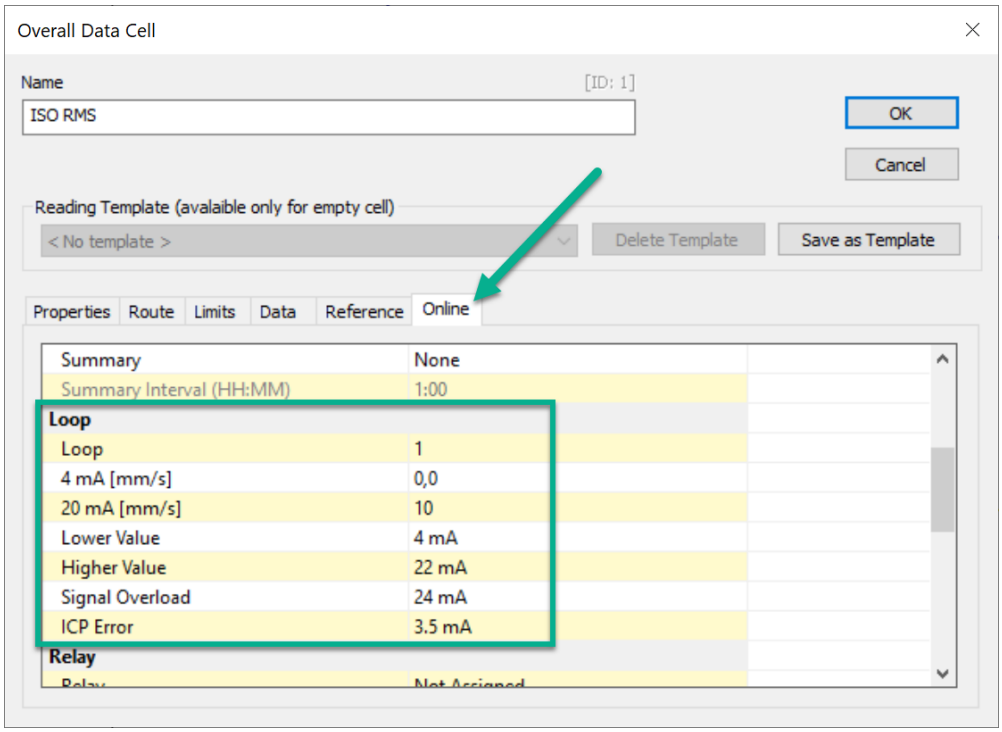
As latch relay can be little bit difficult to understand, **let's describe it on following example:**
The factory initial state of the relay is de-energized (i.e. NC and COM are connected). The ISO RMS (10-1000Hz) value is measured on the machine. When the RMS value will exceed 1 mm/s, then the relay will switch the red light in a control room.
If the Latch = NO (it means do not hold): When the vibration value will decrease under the 1 mm/s, then the relay will switch off the light.
If the Latch = YES, then the relay will not switch off the light when the vibration decreases less than 1 mm/s. The relay keeps the switch ON until it is manually switched off (through the use of REL–RST).

Logical function – logical function OR/AND which is used. This is used when one relay is assigned to more measurements.
For example, imagine that one relay is assigned to ISO RMS on 4 individual points.

Logical function **OR** is used. The relay is activated when at least ONE data cell activates it.
When logical function **AND** is used, then relay is activated when ALL 4 data cells activate it.

Loops parameters are set in DDS. Current loops can be used only for static (e.g. overall values) measurements. You can find it under 'Online' tab in 'Properties' of data cell window. You need to scroll down to see them.

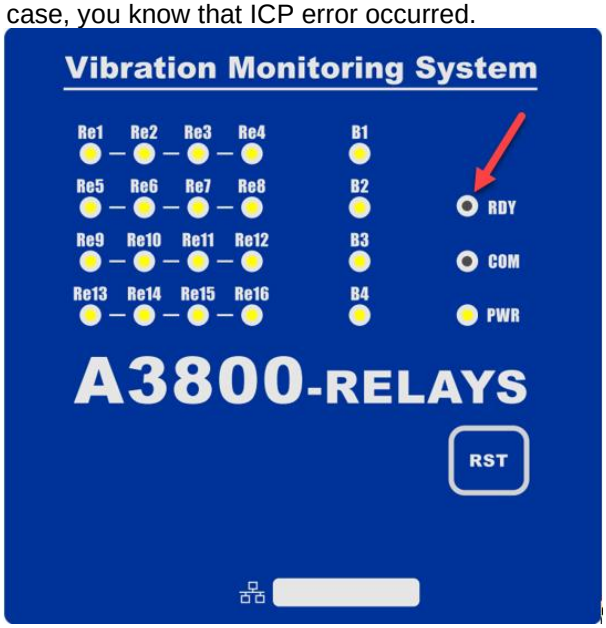
DDS window for loop setting:



Loop – current loop number where measurement is ongoing,
4 mA and 20 mA – the lowest and the highest range for current loops values, the quantity depends of measurement quantity. Based on the example above 0 mm/s is 4 mA on the loop output and 10 mm/s is 20 mA on loop output.
Lower/Higher value – you can set mA values, which are send in case that measured value is under the range or over the range. It means, when measured value is out of the range 0 – 10 mm/s, you define what value is shown on the output. **Example:** we set this range for current loops: 0 mm/s as 4 mA, 10 mm/s is set to 20 mA. Measured value is 12 mm/s. It means that this value is higher than defined range values. Based on the screenshot **Higher Value** is set to **22 mA**. So, in the current loop output is value 22 mA. It works the same way for the parameter Lower Value.
Signal overload – mA value sent when the module input is overloaded.
ICP Error – mA value sent in case of ICP® error.

ICP error signalization

In case of relay module, there is an option to signalize ICP error for sensors. For example, if the cable is corrupted or sensor is not working you can use this option of relay disconnection. What this actually means? When you turn on this function and cable connected to relay is corrupted, the system relay is closed (disconnected). It means that RDY LED turns off. In this case, you know that ICP error occurred.



How to set it correctly in configuration file?
As mentioned in chapters above, it depends if you order module with online unit A3800 or separately. If module is already set from production, this function (to disconnect the relay) is automatically turned on.
If you order module separately, you need to set it according to following steps.

Go to config file – you find it in this location C:\A3716\data – config file is named VA4.cfg.

Find section for online board:
[ONLINE BOARD]
port=-1

This section you need to change.
[ONLINE BOARD]
port=10
baud=115200
wdt=10000
keep vals=off
turn off when icp error=1

Technical specifications

Relay – specifications

OUTPUTS

Outputs**:**	16x relay SPDT
Switch. voltage MAX:	125 VAC, 60 VDC
Switch. current MAX:	1 A
Sys Output:	1x relay SPDT
Switch. voltage MAX:	125 VAC, 60 VDC
Switch. current MAX:	1 A

INPUTS

4x isolated binary – ON (1)/OFF (0) state

In. voltage ON state:	5-24V DC
In. current ON state:	1.5 mA max

POWER

from USB:	5V/0.4A max
from AUX:	12-24V DC/2W
Dimensions (box):	120x130x60 mm
Outline dimensions:	120x145x70 mm

Connections:

Re1 ... Re16	16x relay
Re-SYS	relay System Ready
CO	COM contact (center)
NC	Norm. closed contact
NO	Norm. open contact
X	term. not connected
Bi1 ... Bi4	4x binary inputs
Binary inputs range:	5-24 V 1,4 mA max
++	AUX power „+ pole”
--	AUX power „- pole”
USB	data + power connection
Ethernet	for future use
AUX PWR	AUX power

Note:
All „+ pole” terminals are connected.
All „- pole” terminals are connected.
AUX power is needed only without USB connection.

Loops – specifications

OUTPUTS

Outputs:	16x current loop passive, isolated
Current range:	3.5-22mA
Input voltage:	7V-24V DC
Sys Output:	1x relay SPDT
Switch. voltage MAX:	125 VAC, 60 VDC
Switch. current MAX:	1 A

INPUTS

4x isolated binary – ON (1)/OFF (0) state

In. voltage ON state:	5-24V DC
In. current ON state:	1.5 mA max

POWER

from USB:	5V/0.2A max
from AUX:	12-24V DC/2W
Dimensions (box):	120x130x60 mm
Outline dimensions:	120x145x70 mm

Connections:

Lo1 ... Lo16	16x current loop
Re-SYS	relay System Ready
CO	COM contact (center)
NC	Norm. closed contact
NO	Norm. open contact
X	term. not connected
Bi1 ... Bi4	4x binary inputs
Binary inputs range:	5-24 V 1,4 mA max
++	AUX power „+ pole”
--	AUX power „- pole”
USB	data + power connection
Ethernet	for future use
AUX PWR	AUX power

Note:
All „+ pole” terminals are connected.
All „- pole” terminals are connected.
AUX power is needed only without USB connection.