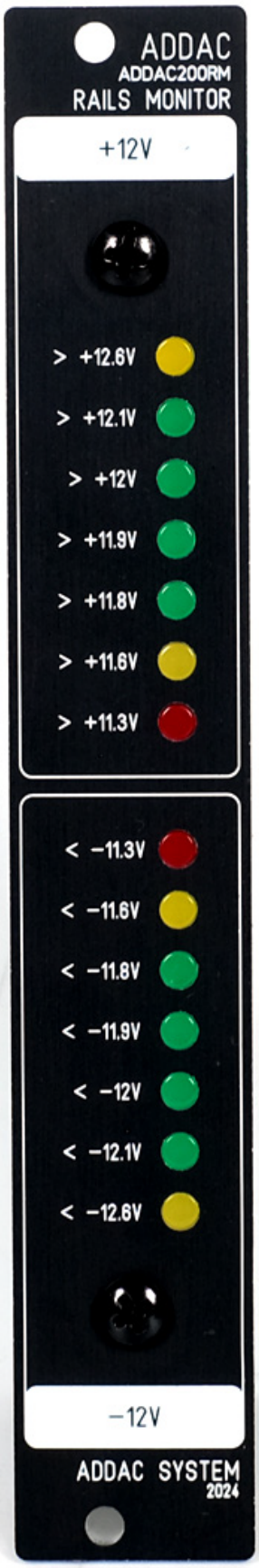
ADDAC System
Instruments for Sonic Expression
Est.2009



INTRODUCING
ADDAC200RM RAILS MONITOR

USER'S GUIDE . REV01
June.2024

ADDAC System

From Portugal with Love!

Welcome to:
ADDAC200RM RAILS MONITOR USER'S GUIDE

Revision.01 June.2024

DESCRIPTION

ADDAC200RM allows a simple and straight forward way to monitor the voltage of your system. A 0.1% precision analog voltage meter shows the status of both +12V and -12V rail.

EURORACK ±12V POWER RAILS

Although we all refer to Eurorack PSU voltages as +12V and -12V this is hardly ever the case, although most systems operate at close proximity to this ideal reference, there are situations where the drop from the ideal voltage is large enough to influence the performance of your system.

PSU CURRENT RATINGS

Running a PSU too close to it's limits will always cause more stress to the PSU, a good practice it to use only about 75% of your PSU maximum ratings, this will greatly extend the PSU life.

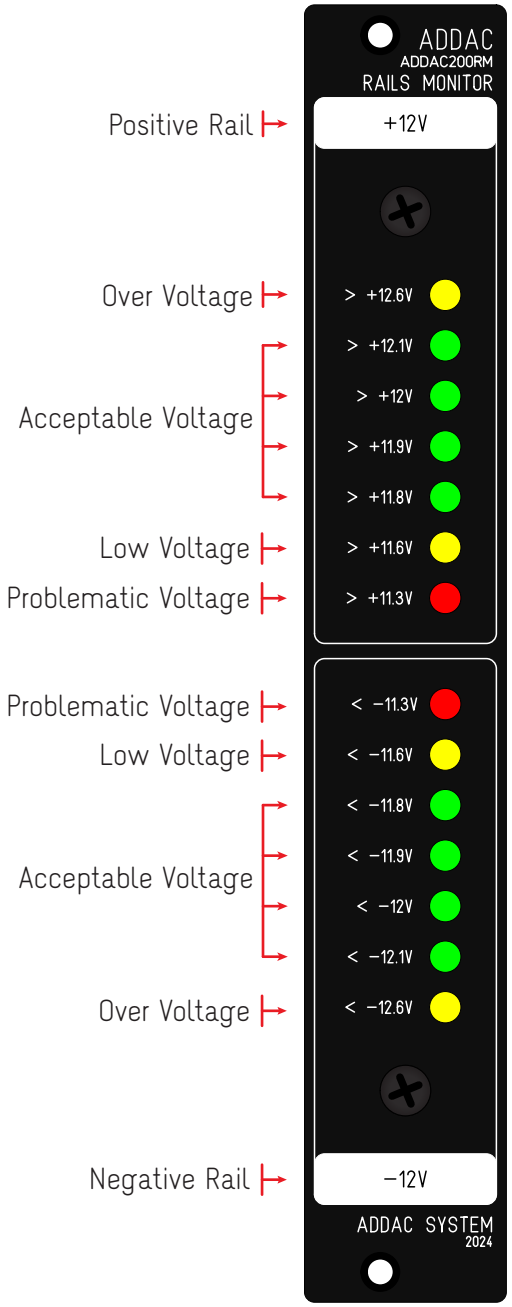
PSU VOLTAGE DROPS

PSUs will show a small voltage drop as current increases which will drastically increase when pushed closed to it's limits. Heat will also influence this drop, heat is related to the current drawn, as more current is being drawn more heat will build up on the PSU, heat conditions will reduce the maximum ammount of current that can be dellivered by the PSU. While the current consumption drop is somewhat stable and immediate (as you turn the frame on the current consumption will stabilize in a few seconds) the heat drop will take some time to occurr, heat will build up over time until it stabilizes and only if it has "headroom" to stabilize. If heat dissipation is not effectice than the drop will continue until it reaches a balance point which can be several volts below our 12V reference. At this point your PSU will be under great stress and the heat generated is prone to leave some permanent scars.

Heat will start to have an impact at about an ambient temperature of 50 degrees celsius, at 70 degrees the maximum current rating will drop by 50%. If your PSU is rated at 2A maximum and it's running at 70 degrees then it will only be able to delliver 1A maximum.

For the PSU this is a complex balancing act as current influences heat and heat influences the maximum ammount of current available which all together influences the voltage drop.

This is why it's so important to keep the PSU load at a sensible level.



Tech Specs:
4HP
3,5 cm deep
60mA +12V
60mA -12V

DESCRIPTION

PSU PROTECTIONS

Some PSUs feature over voltage, over current and overheating protection and will turn off when the operating conditions trigger any of the protection threshold levels.
At this point it's typical that the PSU will enter a Hiccup mode, where it turns on checks the current conditions and quickly turns off if they haven't changed, leaving it in an intermitent limbo where it powers on and off at some regular frequency.
If the conditions change enough to drop below the protection threshold levels then the PSU will automatically recover and stay on.

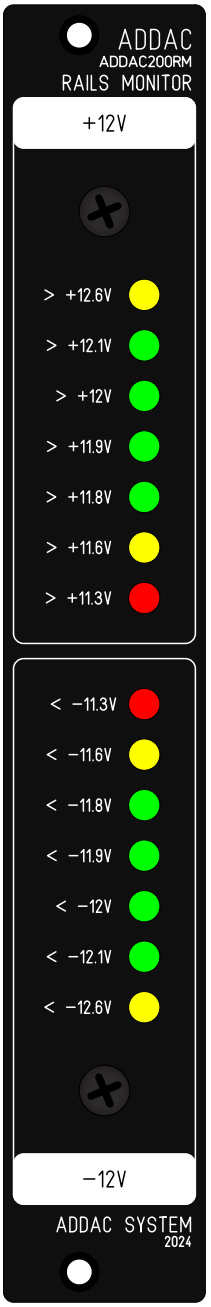
PSU STRESS

Different situations can be responsible for causing stress that can damage the PSU,
It's possible to reverse a ribbon power cable enough times or leaving it connected long enough to partly damage the PSU.
Another situation is having a module that due to some partial previous damage may be drawing more current than specified which will not be accounted for when calculating your system current consumption.
Stress can cause permanent damage to the PSU, however some damages can be only partial leaving you with a PSU that no longer features the specs described by the manufacturer but with no apparent misbehaviour. The led monitors on busboards will be on but in reality it will be underperforming at an unkonwn percentage of the original specs. These situations can be quite hard to debug without the proper tools to evaluate the cause of the problem.

PSU IMPACT ON MODULES

Some modules are more susceptible to PSU changes than others, modules that feature internal regulators will be less susceptible to PSU voltage, modules that use internal +5v, ±9v, ±10v regulators will have more tolerance than modules that use the PSU voltages directly like it is for most cases.
Also modules that use voltage reverse protection will already have a 0.3v to 0.8v drop inherent to the protection circuit.
While many digital modules can withstand lower voltages some others will be more dependent on the reference voltage
and may show stange behaviours.

This module can help preventing all these situations, it won't fix any problem but can help on the day to day monitoring of your system and in keeping your PSU in healthy conditions.



For feedback, comments or problems please contact us at:
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