



# **Hopf 7001RC HMC Driver**

## **User's Manual**

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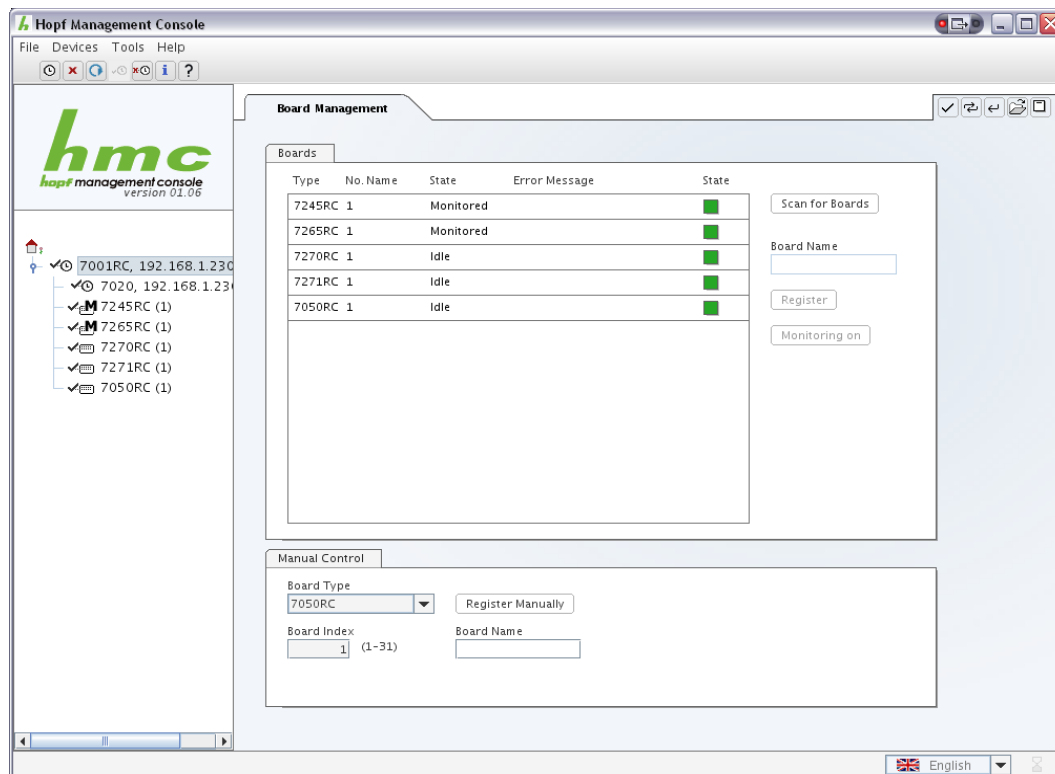
## The 7001RC in the device tree

Connection is made to a 7001RC through a 7020RC or 7050RC control / management board. From a technical point of view, there is no physical 7001RC device internally represented in the HMC. But for convenience and to follow the relationship of the “clock” which is perceived to be identical to the rack mounted frame, and its “subdevices” - the inserted boards, one of which is the 7020RC / 7050RC, there is a virtual device present in the device tree, named “7001RC”

The virtual 7001RC device's node in the tree is used for board management, partly due to concerns of available space, but also because it is believed that this organization follows the intuitive way to handle the 7001RC and its boards. All boards, the first of which will always be the 7020RC / 7050RC in charge, are visualized as subdevices of the (virtual) 7001RC in the device tree.

## Board Management

All boards, except the 7020RC / 7050RC main board, which is always represented as the first subdevice of the 7001RC, are configurable via the board management panel which resides in the configuration area of the virtual 7001RC device. Only those boards registered with the main board are shown in the device tree. The following image shows six subdevices of the 7001RC virtual device: The main board, three registered boards in idle mode, and two registered boards in monitored mode, signified by the “M” symbol and by the text “Monitored” in the board management panel in the virtual 7001RC device's configuration area.

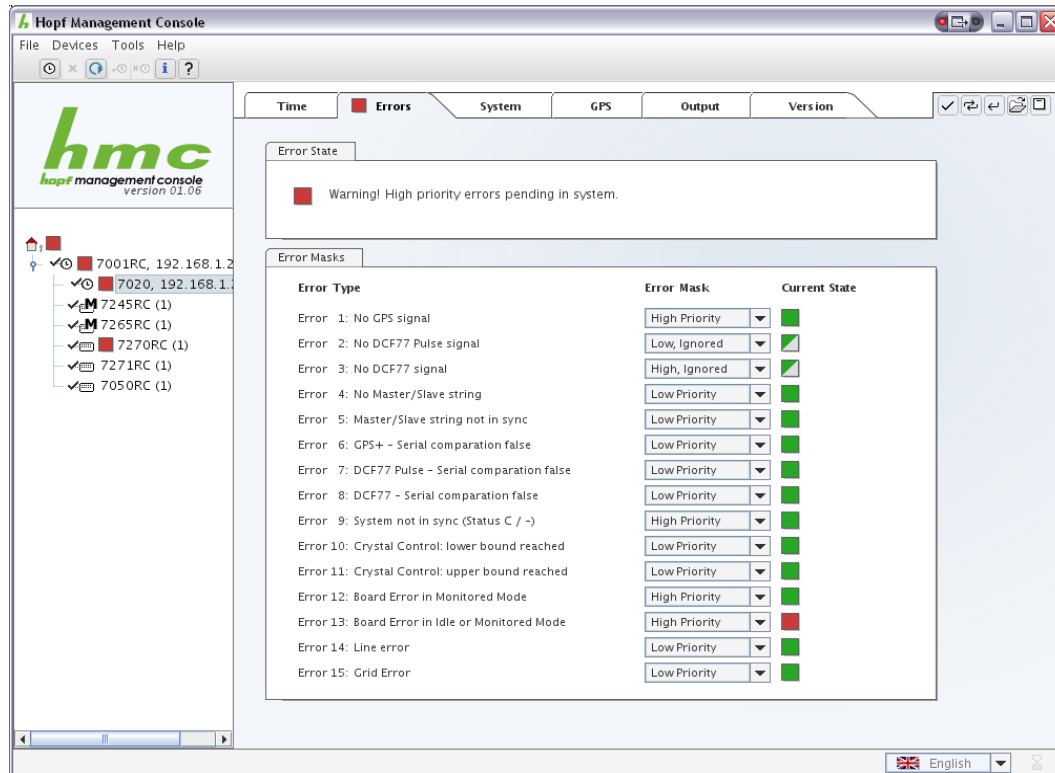


In the board management panel, there are two areas: a larger one on top that shows all registered as well as previously probed unregistered boards. In order to probe boards present in the system but not registered and not shown in this area, the button *Scan for Boards* is to be used. It opens a dialog window with a cancel button. It may take a couple of seconds for an unregistered board to report in this dialog. Pressing the cancel button will not cause the probing dialog to lose gathered information. It will cause all unregistered boards found until that time to be appended to the list of boards in the top area.

The *Register / Unregister* button will register the selected unregistered board or unregister the selected registered board from the list. The *Monitoring on / off* button will turn monitoring on / off for the selected registered board in the list. See the subchapter *Monitoring* in the section *Error Management*.

The bottom area allows to register a board manually, whether it is physically present in the system or not. Successful registration of a combination of board type and board index does not imply the presence of such a board, as no communication with the board whatsoever is necessary in order to perform registration. Only an error state that is not necessarily visualized in the device tree will indicate that a board does not respond. See *Error Management*.

## Error Management



In the 7020RC / 7050RC's configuration area there is a tab *Errors* which allows the definition of filters for all possible error states of the 7001RC system. For every error, there are four priority settings: *High*, *Low*, *High Ignored*, *Low Ignored*.

Ignored errors do not add to the overall error state of a device, and high priority errors always overrule low priority errors. The 7001RC reflects the main board's error state which will always be at least as high as the highest non-ignored state of a registered subdevice. This rule is enforced by both the HMC itself and the main board's logic.

The main board and virtual 7001RC device's error state visualized in the HMC, apart from a delay of about 2 seconds that is possible, will always be identical to the physical error output of the main board so that consistency is achievable as long as the error output differentiates between high and low priority errors.

*Low priority errors are often referred to as warnings when it comes to physical error output.*

## Monitoring boards

Registered boards in monitored mode differ in two aspects from those in idle (default) mode.

First, their error status is separately filtered. In a typical setup, errors in *monitored* mode boards will be set to high priority, whereas errors in *idle or monitored* mode boards will be set to low priority, or even ignored.

Second, many boards that perform output of any kind, will do so only in monitored mode.

Every board is a possible source of the board error “*Board does not respond*”. Some boards additionally can cause other errors, mainly caused by missing or wrongly, or not at all, connected output devices, e.g. line clocks, or similar electrical input / output problems. All of these errors are filtered only according to the main board's filter settings for boards errors, so it isn't possible to define different priorities for monitored boards that simply don't respond and those that report an electrical problem.

*Idle mode boards will not generate any errors except “Board does not respond”.*

## Error Status Symbols

 high priority	 high priority, ignored
 low priority	 low priority, ignored
 no error	 no error, ignored
 unknown	 unknown, ignored