

# Application Note



Notes on using either the HST or RST

Reset input on F<sup>2</sup>MC16L Microcontrollers

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## History

	RGe	V1.0	started
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MB90670/675 is currently one of the most successful 16-bit microcontroller of the 16L Family from Fujitsu. In some designs from customers we found some reset layout, which might cause problems under certain circumstances. This article we will focus on this feature, which is related with the external bus interface and the use of the reset logic. This feature can occur with all 16-bit Microcontroller designs, that are using the external bus interface.

## 1. Introduction

In the past microcontroller applications in most cases used internal ROM only. Now, with code sizes getting bigger all the time, the external bus interface is used very often in designs.

In the manual you will find some information about the specification of the 'Ready' and the 'Reset' signal. If one does not fully understand the meaning of this information, one can run into problems very fast.

## 2. Handling of Reset and Ready

In the manual you will find 2 pins, one called RST and the other one HST. From these two pins, commonly a hardware designer will choose the RST-pin to connect to his external reset circuitry. However, in the manual one can read, that the RST-signal will only reset the microcontroller after the currently executed instruction is finished.

On the other hand the 'Ready'-signal will hold the currently executed instruction until the external device is ready. If the 'Ready'-signal will be drawn to the state 'not ready' by an external device, this causes a state, where an instruction hangs and the applied reset is not detected by the controller. Therefore, the reset sequence might not start.

This problem can be overcome very easily. In the manual you can read the functionality of the HST-pin. This hardware standby pin can bring the microcontroller into a stop mode, from which, after releasing, a power-on reset will be initiated. This does not depend on the state of the 'Ready'-signal. Therefore, only connect your reset circuitry to the HST-pin and you will not have any problem. (You can simply connect the RST-pin to Vcc).

**Note**, that if you do not use the 'Ready'-signal, you can also use the RST-pin to connect to your external reset-circuitry. However, we still recommend to use the HST-pin. This is due to the possibility, that a crashed program might set the Ready-Enable-bit by accident. (Watchdog will reset the system, even if not 'Ready'!)

## 5. Conclusion

When using the external bus interface of our 16-bit microcontroller, we recommend to connect the Hardware Standby-pin (HST) with your reset circuitry. (In this case, RST can be connected to Vcc). This will ensure that the microcontroller can be reset by your external reset circuitry, even when an external device does not provide a proper ready signal or your software crashes.