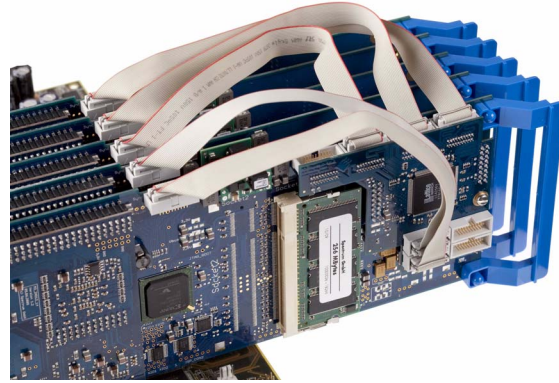


## **M3i Synchronization Star-Hub**

- **For all M3i.xxxx and M3i.xxxx-exp boards available**
- **No clock delay between channels**
- **Supports up to 8 boards in one system**
- **Clock and trigger synchronization**
- **Piggyback module for M3i boards**
- **All cables included**
- **Easy-to-program software interface**
- **Later synchronization of already delivered cards as slaves possible**
- **Later extension of systems possible**



### **General Information**

The Star-Hub modules allow the synchronization of up to eight M3i boards in one system. The synchronization option was designed for system

setup with no phase delay between channels.

The connection of the boards is automatically recognized and checked by the driver at load time. The programming of the Star-Hub is included in the standard board interface and consists of only a few additional commands.

### **Synchronization in one system**

Two versions of the Star-Hub are available: a 4 card version (Star-Hub 4) and a 8 card version (Star-Hub 8). The 4 card version doesn't need an additional system slot while the 8 card version, as shown in the picture, occupies the adjacent system slot.

It is possible to synchronize boards of the same type with each other. The module acts as a Star-Hub for clock and trigger. Each board is connected with a small cable of the same length, even the master board. That minimises the clock skew between the different boards. The Star-Hub carrier board is the clock master. All clock sources of this board can be used, be it internal clock, reference clock or external clock. Synchronized cards all run with the same sampling rate.

Any one or even several boards can be used as trigger sources for the complete system. The trigger source of all boards can be combined with logical OR. All trigger modes that are available on the master boards are also available if the synchronization Star-Hub is used.

### **Technical Details**

	<b>Star-Hub 4</b>	<b>Star-Hub 8</b>
Max sync cards in system	4	8
Additional space needed	-	1 slot (space only)
internal sync cables included	4	8
Clock master	Star-Hub carrier card	Star-Hub carrier card
Divided clock on cards	not possible	not possible
Trigger master	Any card in system	Any card in system
Trigger OR conjunction	possible	possible
Differing memory setup	possible	possible
Minimum sampling rate	no additional limits	no additional limits

### **Maximum number of channels**

	<b>Card type in example</b>	<b>Sampling rate per channel</b>	<b>Star-Hub 4</b>	<b>Star-Hub 8</b>
Max number of cards in total			4 cards	8 cards
8 bit A/D channels	M3i.2132	1 GS/s	4 channels	8 channels
8 bit A/D channels	M3i.2132	500 MS/s	8 channels	16 channels
12 bit A/D channels	M3i.3242	500 MS/s	4 channels	8 channels
12 bit A/D channels	M3i.3242	250 MS/s	8 channels	16 channels
14 bit A/D channels	M3i.4142	400 MS/s	4 channels	8 channels
14 bit A/D channels	M3i.4142	250 MS/s	8 channels	16 channels

### **Order Information**

<b>Order no.</b>	<b>Option</b>
M3i.xxxx-SH4	Synchronization Star-Hub for up to 4 M3i cards, only 1 slot width
M3i.xxxx-SH8	Synchronization Star-Hub for up to 8 M3i cards, 2 slots width
M3i-upgrade	Upgrade for M3i.xxxx: later installation of option -SH4 or -SH8