

SyncXtension



WordClock module

Quick reference (English)

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CE declaration

We:

TerraTec Electronic GmbH, Herrenpfad 38, D-41334 Nettetal, Germany

hereby declare that the product:

Sync Xtension EWS ClockWork

to which this declaration refers complies with the following standards or standardizing documents:

1. EN 55022

2. EN 50082-1

The following are the stipulated operating and environmental conditions for the said compliance:

Residential, business and commercial environments and small-company environments.

This declaration is based on:

test report (s) of the EMC testing laboratory



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## ***PREFACE***

Great, that you have expanded your TerraTec AudioSystem with the capacity to process Word-Clock and SuperClock Signals. The EWS ClockWork not only allows you to externally synchronise an EWS with EWS®-Connect connection, it can also function as the central clock for your entire digital studio. Moreover, the EWS ClockWork can be adjusted to a wide variety of demands. How to adjust the special settings of this module and how all other components are to be connected will become clear from the following chapters.

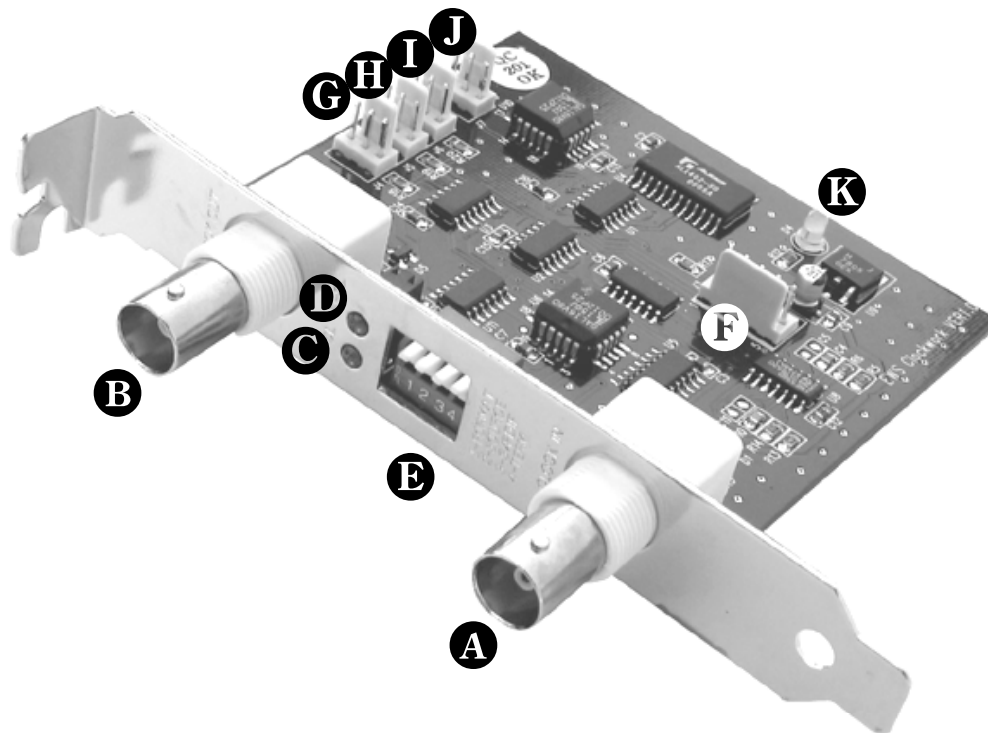
## ***SCOPE OF DELIVERY***

The kit is comprised of

- the EWS ClockWork Module
- 5-pole connection cable □ 5-pole
- 3-pole connection cable □ 3-pole
- Registration documents
- Service information

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## ***THE DESIGN OF THE EWS CLOCKWORK***



- A** WordClock / SuperClock IN
- B** WordClock / SuperClock OUT
- C** LED, Input Status - WordClock
- D** LED, Input Status - SuperClock
- E** DIP switches
- F** Jumper 3 (J3), connection for EWS88 Master Sync IN
- G** Jumper 4 (J4), connection for EWS88 Slave 1 Sync IN
- H** Jumper 5 (J5), connection for EWS88 Slave 2 Sync IN
- I** Jumper 6 (J6), connection for EWS88 Slave 3 Sync IN
- J** Jumper 7 (J7), connection for EWS88 Master Sync OUT
- K** LED, EWS ClockWork operation mode

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## ***WORDCLOCK OR SUPERCLOCK?***

The serial transfer of digital audio data was already standardised by the AES (Audio Engineering Society) in the mid-eighties and dictates as such a 64 bit basic word width per stereo sample. Irrespective of the original word width (e.g. 16 bit) 32 bit is to be transferred for each mono sample. A WordClock Generator produces per stereo sample, a cycle whose frequency corresponds exactly with the actual sample frequency. A SuperClock Generator transmits the signal in a 256 times higher clock frequency (256 FS). The question of which clock is the most suited one has been under frantic discussion for some time now, but one must keep in mind that a SuperClock can be a maximum of over 24MHz (256 x 96KHz) and may distort other equipment in the studio. In addition, modern digital equipment also features high-quality error correction components by means of which any disadvantage of a slower WordClock can be compensated.

The connections can be made by means of ordinary coaxial 75 Ohm antenna cable, or alternatively you can buy ready-made standard cables in the specialised music stores. In particular for use in the "gig scene" you are advised to use highly flexible and technically robust cables.

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## ***VERSATILE RANGE OF APPLICATIONS***

If you wish to synchronise your digital studio by means of a central clock, you must first designate one device as master. This may be any EWS card in the PC fitted with an EWS<sup>®</sup>-Connect connection, but also an external digital device such as e.g. a digital mix pannel.

You may decide which one will be given the master, but there are some things that should be taken into account:

Should the audio files when played by means of a software application, e.g. a sequencer program (Emagic Logic, Steinberg Cubase VST, etc.), often have various sample rates then the EWS-Master Card in the PC should be designated as Clock-Master. Your entire digital system (including all external equipment) will be set to the appropriate frequency each time you switch to play mode. Some devices may, however, cause problems and will consequently refuse audio processing if there is no external clock connected, e.g. when the PC with the Master-EWS has not been switched on. In this case the external device is to be designated master and the sample rate is to be set.

A further feature of the EWS ClockWork is the possibility to include external devices which have no BNC connections for a Word / SuperClock Signal in the synchronisation.

Should a DAT recording for instance be transferred to the PC where the DAT recorder does not have a Word or SuperClock connection, the S/PDIF source may be designated master. If the EWS-Master Card is an EWS88 D then this also holds for the ADAT<sup>™</sup> signal.

**Dip switch settings**



Switch	Format	Source	S/PDIF	Term.
OFF	WordClock	External	W./S.-Clock	Termination Off
ON	SuperClock	Internal	S/PDIF	Termination On

EWS88 CONTROL PANEL SETTING

<p>MASTER: WORDCLOCK-/SUPERCLOCK- IN EWS CLOCKWORK IS INCLUDED IN THE EXTERNAL CHAIN</p>					<p><b>Master Clock</b></p> <p>Internal 48.000 kHz <input type="checkbox"/></p> <p>External 44.100 kHz <input checked="" type="checkbox"/></p>
OFF	don't care	X	X	X	
ON	don't care				
<p>MASTER: WORDCLOCK-/SUPERCLOCK- IN EWS CLOCKWORK IS LAST DEVICE IN THE EXTERNAL CHAIN</p>					<p><b>Master Clock</b></p> <p>Internal 48.000 kHz <input type="checkbox"/></p> <p>External 44.100 kHz <input checked="" type="checkbox"/></p>
OFF	don't care	X	X		
ON	don't care			X	
<p>MASTER: EWS MASTER CARD</p>					<p><b>Master Clock</b></p> <p>Internal 48.000 kHz <input checked="" type="checkbox"/></p> <p>External No Signal <input type="checkbox"/></p>
OFF	X		don't care	X	
ON	(X)	X	don't care		
<p>MASTER: S/PDIF INTERFACE ON EWS MASTER CARD</p>					<p><b>Master Clock</b></p> <p>Internal 48.000 kHz <input type="checkbox"/></p> <p>External 44.100 kHz <input checked="" type="checkbox"/></p>
OFF	X	X		X	
ON	(X)		X		

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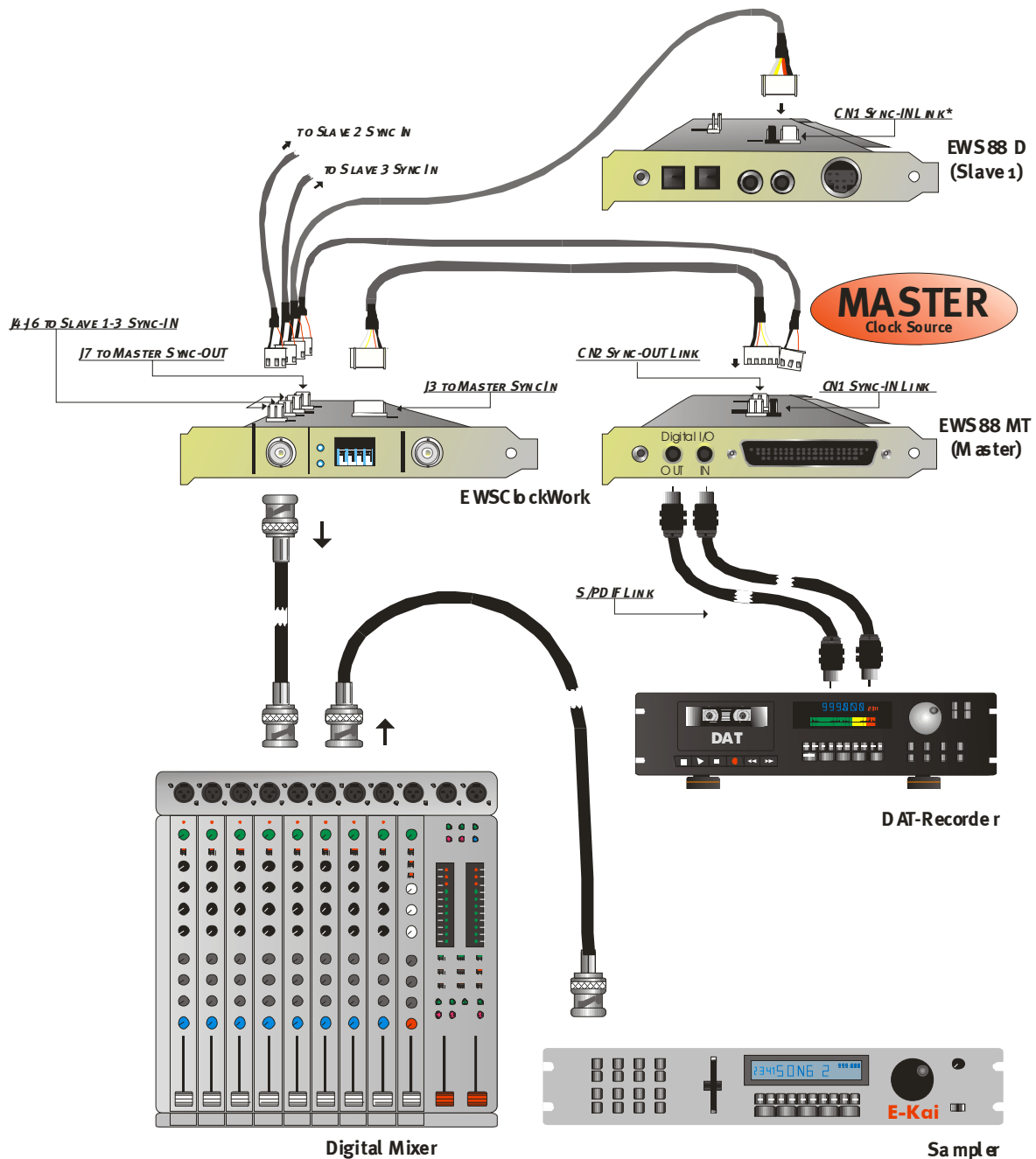
## **1. MASTER: EWS MASTER CARD**

The concept "EWS Master Card" does not prescribe the card as the Clock-Master of the entire internal and external Systems. Only when the Master-Clock is to be generated via an EWS-System, will the EWS-Master card also be the Clock-Master. All other EWS cards with EWS®-Connect connection are basically operated in slave mode. An exception is the "Independent" mode option on the ControlPanel of the EWS-Systems (for further information please refer to the manual of the EWS card).

Should you operate an external device in this operation mode via the S/PDIF Interface of the EWS-Master card, please remember that this device can only be synchronised in record mode. In play back mode, an S/PDIF device without Word / SuperClock connection only functions according to its own internal clock generator. Even if the sample rate of the S/PDIF device corresponds with that of the Clock-Master the sources will nevertheless run unsynchronised which will result in distortions during play back. In such case it is advised to choose the mode "Master: External S/PDIF (ADAT™) IN" described on the following pages.



**Master: EWS Master Card**



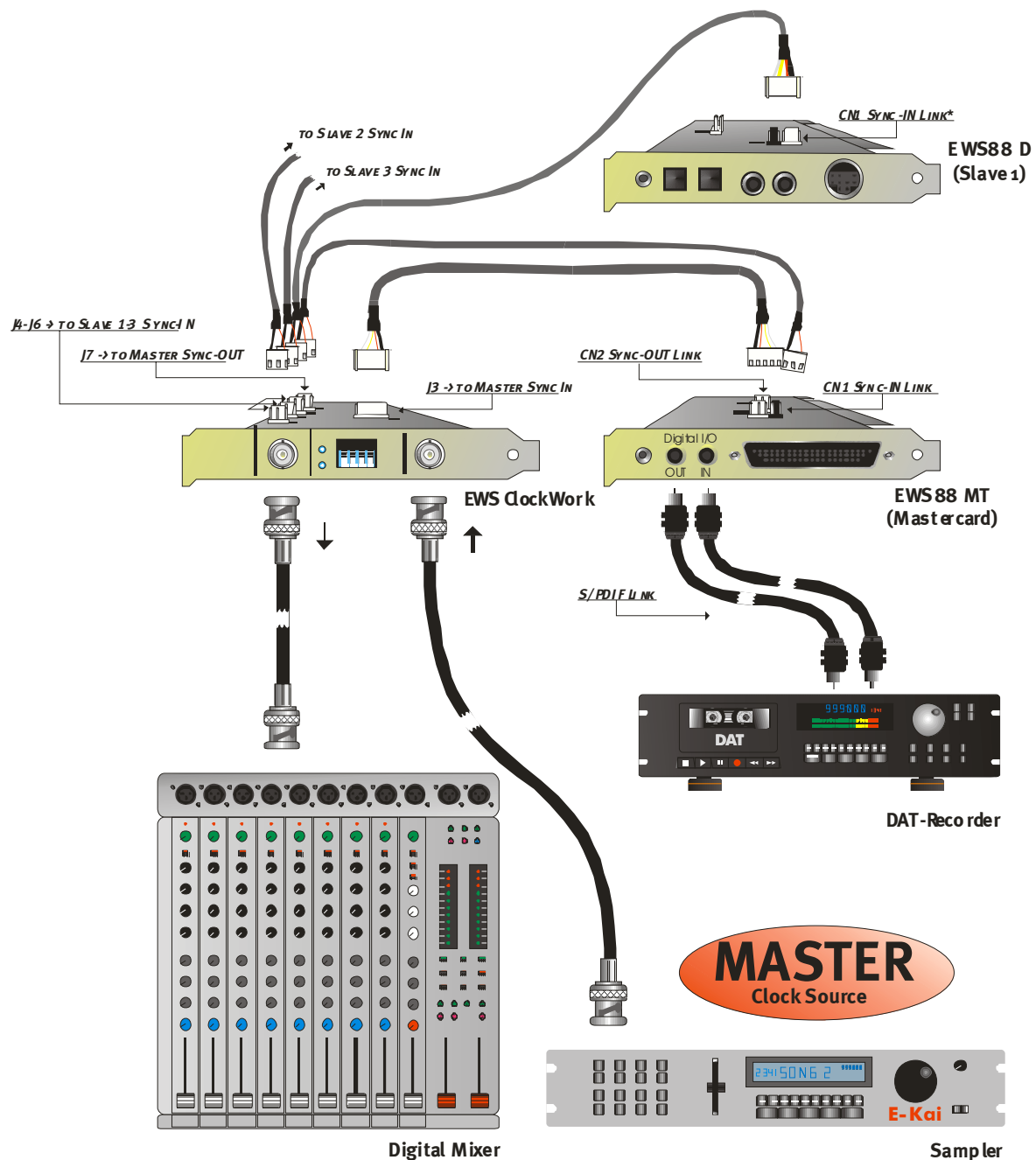
\* Please note: The Hardware-Revision 1.0 of the EWS88 D contains a deviant labelling of the pin strip. Here, the 5-pole Sync IN has been labelled CN2 and the 3-pole Sync OUT CN1. As Hardware-Revision 1.1 of the EWS88 D the labelling of the EWS®-Connect connections to the EWS88 MT has been made correspondent.

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## **2. MASTER: WORDCLOCK (SUPERCLOCK) IN**

If the Clock IN bus receives a good signal, both blue LEDs in the slot plate will indicate this (each for WordClock or SuperClock). If the EWS ClockWork Modul is last in a Word or SuperClock chain the termination will have to be activated by means of DIP switch 4. Switch 1 (WordClock / SuperClock switch) is idle in this mode since the module adjusts to the external Clock format present.

Should you operate an external device in this operation mode via the S/PDIF Interface of the EWS-Master card, please remember that this device can only be synchronised in record mode. In play back mode, an S/PDIF device without Word-/SuperClock connection only functions according to its own internal clock generator. Even if the sample rate of the S/PDIF device corresponds with that of the Clock-Master the sources will nevertheless run unsynchronised and this will result in distortions during play back. In such case it is advised to choose the mode "Master: External S/PDIF (ADAT™) IN" described on the following pages.



\* Please note: The Hardware-Revision 1.0 of the EWS88 D still contains a deviant labelling of the pin strip. Here, the 5-pole Sync IN has been labelled CN2 and the 3-pole Sync OUT CN1. As of Hardware-Revision 1.1 of the EWS88 D the labelling of the EWS®-Connect connections to the EWS88 MT has been made correspondent.

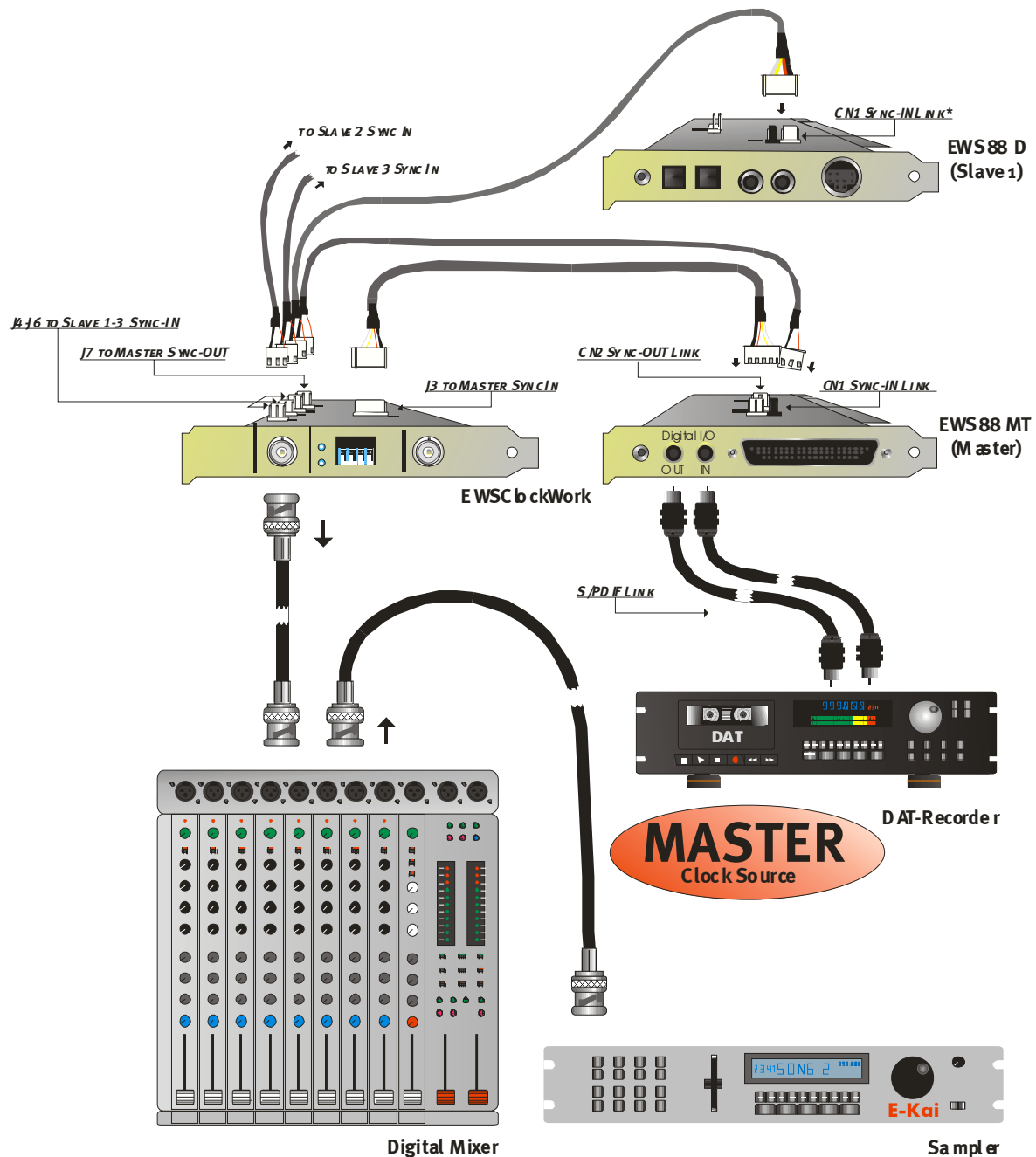
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### **3. MASTER: EXTERNAL S/PDIF (ADAT™) IN**

The S/PDIF-IN of the EWS-Master card may function as central Clock source. If the EWS-Master Card is an AudioSystem EWS88 D then this also holds for the ADAT™ signal.

In the event that multiple EWS-Systems are connected via the "EWS®-Connect" inside the PC, the external digitale IN of all slave cards will not function as Clock source and the respective button on the EWS ControlPanel will no longer be available.

## Master: External S/PDIF (ADAT™) IN



\* Please note: The Hardware-Revision 1.0 of the EWS88 D still contains a deviant labelling of the pin strip. Here, the 5-pole Sync IN has been labelled CN2 and the 3-pole Sync OUT CN1. As of Hardware-Revision 1.1 of the EWS88 D the labelling of the EWS®-Connect connections to the EWS88 MT has been made correspondent.

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## ***TECHNICAL DATA***

- Clock Modul for EWS cards with EWS<sup>®</sup>-Connect\* connection
- Clock Receiver for up to 4 parallel connect EWS Audio systems
- Clock Transmitter for the Clock Signal of the EWS Audio systems
- Switchable between Standard Wordclock ad Super-Clock ( 256 FS )
- 1 BNC IN and 1 BNC OUT
- Switchable termination
- Jitter below 3 ns by use of high-precision microchips
- LEDs for operation mode and external Clock detection

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\* Audio systems with an EWS-Connect connection can be cascaded and synchronised. Up to four systems can be operated on one single PC with only one driver and one ControlPanel.