

Industriefunkuhren



Additional
Technical Manual

**for Signal Converter
FG4800AC-84/BB and FG4800DC-84/BB
(Output IRIG-B / IEEE1344 / AFNOR)**

ENGLISH

Version: 01.01 - 03.08.2010

Base Description

4800xx-yy Signal Converter

Version: 01.01

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Homepage: <http://www.hopf.com>

E-mail: info@hopf.com

Symbols and Characters



Operational Reliability

Disregard may cause damages to persons or material.



Functionality

Disregard may impact function of system/device.



Information

Notes and Information.



Safety regulations

The safety regulations and observance of the technical data serve to ensure trouble-free operation of the device and protection of persons and material. It is therefore of utmost importance to observe and compliance with these regulations.

If these are not complied with, then no claims may be made under the terms of the warranty. No liability will be assumed for any ensuing damage.



Safety of the device

This device has been manufactured in accordance with the latest technological standards and approved safety regulations

The device should only be put into operation by trained and qualified staff. Care must be taken that all cable connections are laid and fixed in position correctly. The device should only be operated with the voltage supply indicated on the identification label.

The device should only be operated by qualified staff or employees who have received specific instruction.

If a device must be opened for repair, this should only be carried out by employees with appropriate qualifications or by *hopf* Elektronik GmbH.

Before a device is opened or a fuse is changed all power supplies must be disconnected.

If there are reasons to believe that the operational safety can no longer be guaranteed the device must be taken out of service and labelled accordingly.

The safety may be impaired when the device does not operate properly or if it is obviously damaged.

CE-Conformity



This device fulfils the requirements of the EU directive 89/336/EWG "Electromagnetic compatibility" and 73/23/EWG "Low voltage equipment".

Therefore the device bears the CE identification marking (CE = Communautés Européennes = European communities)

The CE indicates to the controlling bodies that the product complies with the requirements of the EU directive - especially with regard to protection of health and safety for the operator and the user - and may be released for sale within the common markets.

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1 General Information about Signal Converter

This expansion of documentation is based on the technical manual of Signal Converter series 4800xx-yy. It describes the function of Signal Converter 4800AC-84/BB und 4800DC-84/BB (called 4800xx-84/BB in the following).



Not described connections and functions in this manual are described in the basic manual.

A synchronisation signal received via the FO input is used for generating IRIG-B / IEEE1344 / AFNOR signals.

The output of this signals is done potential free via the two BNC connectors in the front panel.

Numerous status LEDs in the front panel simplify diagnosis in the event of a fault.

The signal output is configured via DIP switch and jumper of the board 7628 in the signal converter.

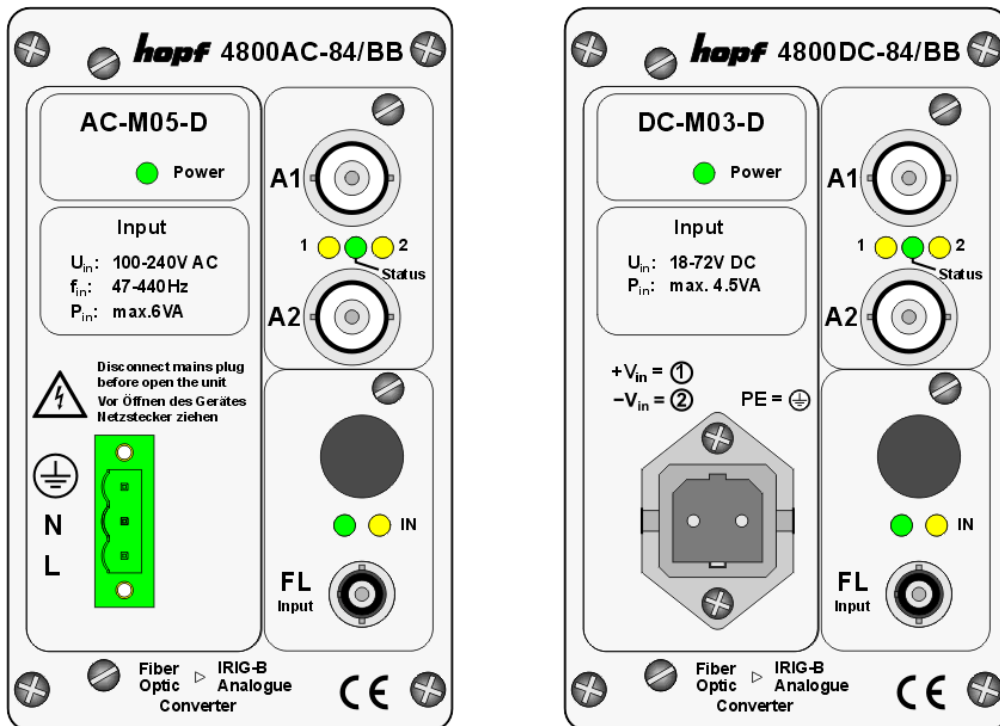
2 Connection Elements of the Converter 4800xx-84/BB

Connection

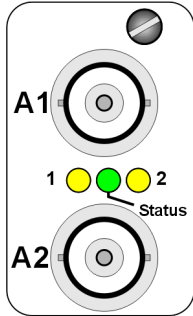
- The optical fiber receiver (FL Input) are of the ST design.
- The IRIG-B / IEEE1344 / AFNOR signals are available on BNC connector A1/A2.

Status Display

- The optical fiber receiver has a status LED (IN - yellow), which displays the current operating status of the optical fiber component.
- The BNC connectors have a common status LED 1-2 (Out - Gelb) available, which displays the current operating status of the respective transmission line.
- The status LED (green) displays the actually synchronisation status and additionally serves for diagnosis of the synchronisation status.

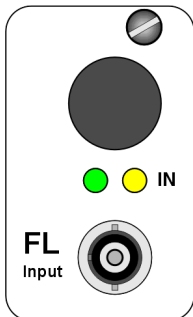


2.1.1 Connection BNC Connector / Status LED



A1/A2 – BNC Connector		
LED	Meaning	
status	LED green - synchronisation status	
	LED	Function
	on	time output is synchronous
	on/off 900/100 msec	SyncOFF Timer is active
	on/off 100/900 msec	time output in crystal mode
	on/off approx. 2 Hz	System in test mode
	flashing	time is invalid
	off	board defect / no voltage
1	LED yellow (on) - transmission BNC connector A1	
2	LED yellow (on) - transmission BNC connector A2	
BNC	Signal	
A1	BNC connector for output IRIG-B / IEEE1344 / AFNOR	
A2	BNC connector for output IRIG-B / IEEE1344 / AFNOR	

2.1.2 Connection FL (Fiber Optic Line) / Status LED



FL1 input - FO Design ST	
LED	Meaning
IN	LED yellow (on) - Reception of pulses at FL Input
---	LED green - n.c.
FO Component	
FL Input	Fiber optic receiver

3 Configuration of converter 4800xx-84/BB

The used synchronisation signal and the signal output on the BNC-outputs have to be configured accordingly.



ESD The signal converter 4800xx-84/BB contains components at risk from ESD, i.e. protective measures against ESD are to be taken when coming into contact with these components.

3.1 Opening and Closing the Device

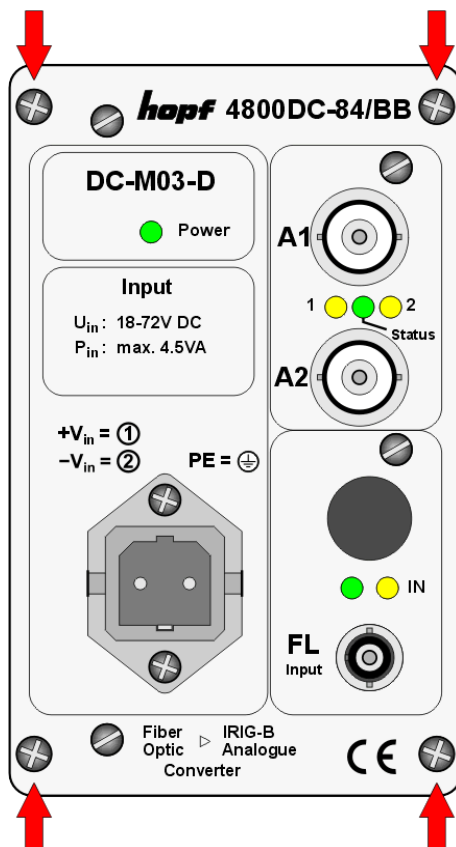
In order to configure the FO-module it must be removed from the housing. To do this the following steps are to be carried out:

1. Switch off the power to the device.



Warning: Never work on live equipment! Danger to life!

2. Loosen the 4 corner screws (Phillips type) on the front panel.



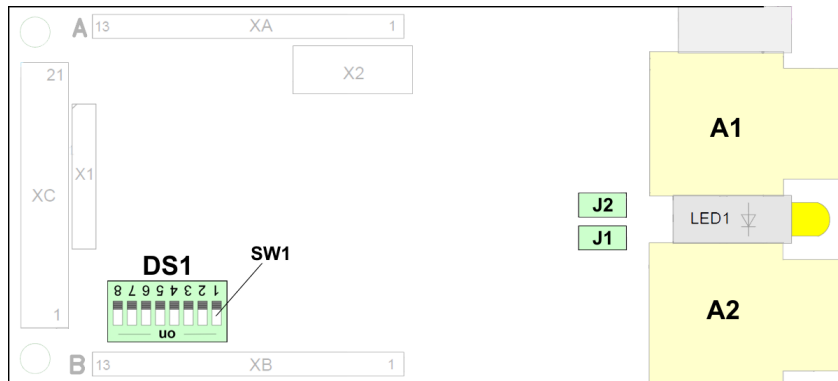
3. Carefully pull the module out of the housing. In doing so, care is to be taken to ensure that the internal cable connections are not damaged or torn off.
4. Configure the module via DIP switch and jumper.
5. Next carefully push the module back into the housing taking care with the connection cable.
6. Fasten the front panel with the 4 corner screws (Phillips type).

3.2 Parameterization of the Converter 4800xx-84/BB

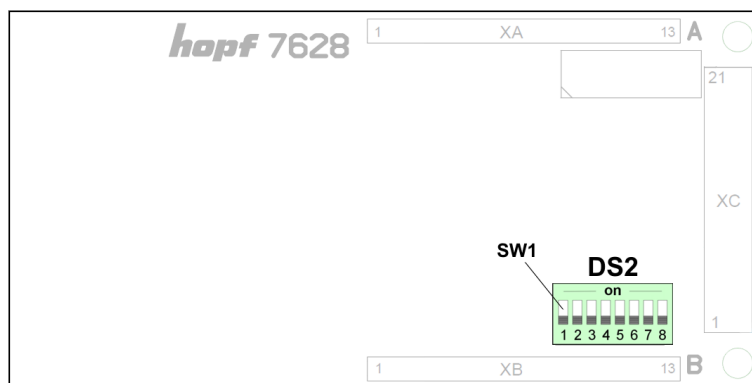
There are different assemblies in the signal converter 4800xx-84/BB e.g. board 7628 for generation of IRIG-B / IEEE1344 / AFNOR signals.

For parameterization there are two DIP switches and two jumper on the board 7628. DIP switch DS1 and Jumper J1/J2 are placed on the component side and DIP switch DS2 is placed on the conductor side.

Component side



Conductor side



3.2.1 Overview DIP-Switch / Jumper

3.2.1.1 DIP Switch DS1

SW8		Step for SyncOFF Timer	
off		10 minutes	
on		1 hour	
SW7	SW6	SW5	Factor for SyncOFF Timer
off	off	off	1 X SW8 (step) ⇒ SyncOFF Timer (10min / 1h)
off	off	on	2 X SW8 (step) ⇒ SyncOFF Timer (20min / 2h)
off	on	off	3 X SW8 (step) ⇒ SyncOFF Timer (30min / 3h)
off	on	on	4 X SW8 (step) ⇒ SyncOFF Timer (40min / 4h)
on	off	off	5 X SW8 (step) ⇒ SyncOFF Timer (50min / 5h)
on	off	on	6 X SW8 (step) ⇒ SyncOFF Timer (60min / 6h)
on	on	off	7 X SW8 (step) ⇒ SyncOFF Timer (70min / 7h)
on	on	on	8 X SW8 (step) ⇒ SyncOFF Timer (80min / 8h)
SW4		Service mode	
off		reserved for <i>hopf</i> Elektronik GmbH, this setting can not be changed! (Should always be set to off)	
SW3	SW2	SW1	Time base for output IRIG-B / IEEE1344 / AFNOR
off	off	off	Without function at present (must always be set to off)

3.2.1.2 DIP-Switch DS2

SW8		Input signal identification via green LED	
off		green LED (in front panel) - normal operating mode	
on		display of the received synchronisation signal at the board 7628	
SW7	SW6	Signal output IRIG-B / IEEE1344 / AFNOR	
off	off	always on plausible time	
off	on	at synchronisation with/without active SyncOFF timer	
on	off	only at synchronisation	
on	on	output of test signal	
SW5	SW4	SW3	Selection of output format IRIG-B / IEEE1344 / AFNOR
off	off	off	IRIG-B /B122 (time)
off	off	on	IRIG-B /B126 (time, year)
off	on	off	IRIG-B /B123 (time, second of day)
off	on	on	IRIG-B /B127 (time, year, second of day)
on	off	off	IEEE1344-1995
on	off	on	AFNOR NFS 87-500
on	on	off	not used (at present IEEE1344)
on	on	on	not used (at present IEEE1344)
SW2	SW1	Selection of synchronisation source	
off	off	DCF77 pulse (1Hz)	
off	on	Master/Slave-String (at present without function)	
on	off	hopf 6021-String (at present without function)	
on	on	IRIG-B digital (at present without function)	



The availability of different output formats is dependent on the selected synchronization source.

3.2.1.3 Jumper J1/J2

The output amplitude of the BNC connector A1/A2 is adjusted by means of Jumper J1/J2 (see **chapter 3.2.4 Parameterization of the Output Amplitude**).

3.2.2 Parameterization of the Synchronisation Source

The synchronisation source is set by the two switches SW1 and SW2 of DS2. Currently there is only one synchronisation source with DCF77 pulse (1Hz) available.



If synchronisation source DCF77 pulse is selected the output format IEEE1344/1995 is not available. Instead the IRIG/B (time, year, second of day) is generated.

3.2.3 Parameterization of the Signal Output

The output of the IRIG-B signal can be parameterized for different applications.

3.2.3.1 Selection of the Output Format of IRIG-B / IEEE1344 / AFNOR

The output of signal type (IRIG-B / IEEE1344 / AFNOR) at the BNC connectors A1/A2 is determined via the three switches SW5-SW3 of DS2 .

3.2.3.2 Signal Output depending on the Synchronisation Signal

The signal output depending on the synchronisation source is set by the two switches SW7 and SW6 of DS2. If no IRIG-B signal output is possible the IRIG-B carrier signal (1kHz) is put out.

Different criteria of outputs can be adjusted:

- **Always signal output when time is plausible**
An internal clock is synchronized via the synchronisation signal that runs independently until the next reset. This time basis is used for the signal output in this mode.
- **Signal output based on Synchronisation with/without active SyncOff-Timer**
In this mode there is only a signal output when a plausible synchronisation signal is available or the adjusted SyncOFF Timer delays the interruption of the signal output after loss of synchronisation.
- **Signal Output only during Synchronisation**
In this mode there is only a signal output when a plausible synchronisation signal is available.
- **Output of Test Signal**
For testing purposes always an "IRIG-B" test signal is put out.

3.2.3.3 Parameterization of the SyncOFF Timer

The duration of output of IRIG-B signal after loss of synchronisation (e.g. interferences) is set by the SyncOFF Timer.

The increment of the timer value is set by the switch SW8 of DS1.

The factor of the increment is set by switches SW7 to SW5 of DS1.

The SyncOFF Timer can be set between 10-80 minutes or rather 1-8 hours by these four switches.

3.2.3.4 Time Basis for Output of IRIG-B / IEEE1344 / AFNOR

The time basis of the output signal and of the synchronisation signal correspond with each other.

Only by synchronisation via Master/Slave-String the time basis for the output can be configured via switches 3-1 of DS1 as all relevant time information for the calculation are included in the Master/Slave-String.

3.2.4 Parameterization of the Output Amplitude

The output amplitude for BNC connector A1/A2 is set by jumper J1/J2. The load-dependent amplitude sizes are defined in **chapter 4 Technical Data**.

Jumper J1 for output at BNC connector A1	
open	small amplitude
closed	large amplitude

Jumper J2 for output at BNC connector A2	
open	small amplitude
closed	large amplitude

3.2.5 Parameterization the Status LED (Green)

For diagnostic this switch configures the status LED (green).

3.2.6 Service Mode reserved for the *hopf* company

A service mode can be activated via the switch SW1 of DS1. This mode is reserved for the *hopf* company. This setting can not be changed!



DIP-Switch SW1 of DS1 must always be set to **off**.

4 Technical Data



hopf reserves the right to modify hardware and software at any time.

Custom-made production:

Modifications can be made to hardware and software in accordance with customer specifications.

Signal Output - BNC connector A1/A2

Potential isolation	
Isolation voltage:	min. 500V DC 1000M Ω

Output voltage A1/A2		
Jumper J1/J2	600 Ω load resistor	50 Ω load resistor
open	6 V _{pp}	4 V _{pp}
closed	3 V _{pp}	2 V _{pp}



IRIG-B output is measured by the IRIG Standard 200-04!

IRIG-B Modulation ratio:	3 : 1
Temperature range	
Operating	0°C to +50°C
Storage	-20°C to +75°C
Humidity	max. 95%, not condensed

4.1 Standard

4.1.1 IRIG Standard 200-04

The IRIG-B output is carried out according to the **IRIG Standard 200-04**.

The IRIG-B Standard 200-04 is an extension of the Standard 200-98. Additional IRIG telegrams with extended information were defined.

For example, the current year is additionally sent in the first control information field. That enables the issue of a complete time/date information.

4.1.2 IEEE 1344-1995

This version of the IRIG Standard is an extension of the IRIG Standard 200-98. The 27 bits of the control information field are occupied with fixed data as year, time offset between UTC and local time, daylight saving time / winter time status etc. It is downward compatible to Standard 200-98 (the IRIG Standard 200-98 is included as a subset).

4.1.3 AFNOR NFS 87-500

This IRIG standard is issued by the French Institute of Engineering Standard and is built up on the Standard IRIG 200-98. 27 bits of the control information field are occupied with fixed data as year, month etc. It is downward compatible to Standard 200-98 (the IRIG Standard 200-98 is included as a subset).