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Revision history

Current revision of this document is the uppermost in the table below.
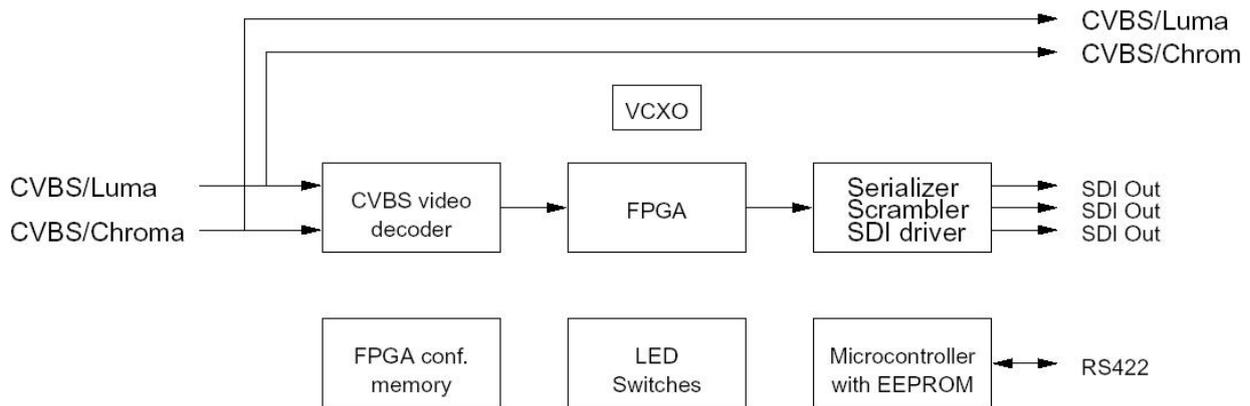
Rev.	Repl.	Date	Sign	Change description
6	5	2008-07-14	AS	Added Declaration of Conformity.
5	4	2007-10-23	AS	New front page.
4	3	2007-10-09	AS	Added Materials Declaration and EFUP
3	2	2007-06-26	TØ	Corrected value for Return loss to '> 35 dB' under specifications. Applied new document template, cleaned up document structure, added *Appendix A Materials declaration and recycling information*.
2	1	2005-07-07		New functionality added to DIP switch 9 (software release ≥ 7).
1	0	2005-03-03		Specification updated, and changed ConQuer to Flashlink.
0	C	2004-01-20		Updated with info about luma/chroma separation filter.
C	B	2003-01-28		Updated to ConQuer (software release 2).
B	A	2002-02-07		Changed section numbering.
A	-	2001-12-01		LED descriptions, and Flashlink commands. Preliminary revision for PIC software revision 0.1.2

Contents

1 Product overview

Figure 1: Simplified block diagram of the ADC-SDI card

The Flashlink ADC-SDI is a high-quality 10-bit NTSC/PAL composite 4:2:2 to digital video converter.

ADC-SDI user parameters can be changed via switches on the unit, or via the GYDA control interface.

To aid digital to analogue conversion of the digital output the ADC-SDI may generate a white pulse to mark first field of an 8-field-PAL/4-field-NTSC signal. If the digital to analogue converter is able to detect this, it will synchronize to the correct field (8-field-PAL/4-field-NTSC) when synchronizing to an external Black & Burst-generator. The Flashlink DAC-SDI is able to do this.

1.1 Quick Start Guides for ADC-SDI

1.1.1 Without GYDA controller
1. Attach Analogue input (CVBS or S-Video) and SDI-output to the backplane module (see Figure 2).
2. Set DIP-switch 1 on (towards backplane), switches 2 and 3 according to the Input Channel search-mode you want (see Table 3).
3. Insert ADC-SDI into a slot in the sub-rack.
4. Power on. After some seconds the ADC-SDI should be running, and the input should be detected. No LED should be red and the SDI output should be active. If this is not the case, please see section 5.1.

1.1.2 With GYDA controller
1. Attach Analogue input (CVBS or S-Video) and SDI-output to the backplane module (see Figure 2).
2. Insert ADC-SDI into a slot in the sub-rack.
3. Power on. After some seconds the ADC-SDI should be running, and the input should be detected. No LED should be red and the SDI output should be active. The card settings should be as the previous time power was applied.
4. Communication with the card is described in section 5.3.

2 Specifications

2.1 Digital Serial Output

Output format	270 Mb/s scrambled NRZI
Output level	800 mV nominal
Return loss	> 15 dB

2.2 Analogue input, both PAL (625/50) and NTSC (525/60)

Input formats	CVBS
	S-Video
Input level	1000 mV nominal ± 10 mV
Return loss	> 35 dB

2.3 Processing performance

Signal path	10 bits
Video processing delay	2 video lines

2.4 Electrical

Input Voltage	DC 5 V
	DC −15 V
Power Consumption	< 2.6 W

3 Configuration

3.1 Data path

The Analogue input is identified, the synchronization information in the analogue signal is detected, and the analogue signal is digitized to a 10-bit parallel signal in a dedicated chip. A FPGA adds EDH-information and Field 1 marking. Finally a chip serializes and scrambles the signal, and drives the resulting 270 Mb/s SDI-signal onto three output connectors.

3.2 EEPROM

The ADC-SDI card actually has two EEPROM's. A small EEPROM is included in the microcontroller, while a larger external EEPROM holds the configuration memory of the FPGA and the input video chip.

3.2.1 Internal EEPROM

State variables are written to EEPROM in the microcontroller each time a configuration change is made. Basically, the card remembers it's setting between power-downs.

3.2.2 External EEPROM

The configuration memory of the FPGA and the input video chip is upgradeable. This is, however, a task for qualified maintenance personnel.

3.3 Power-up sequence

At power-up, the card performs a self-check, and initiation. The manual mode switch is then sampled. If manual mode is enabled, the other switch settings are read and the state of the card set accordingly. If manual mode is disabled, the state the card held the previous time it was used is read from EEPROM. The interplay between the EEPROM, the switches and the GYDA (or other) controller adheres to the following simple rules:

- If a GYDA controller is present in a system, it can always override manual settings.
- If the manual mode is used together with a GYDA controller, the ADC-SDI will initiate as determined by the switches, and may then be overridden by the controller.
- If the manual mode is not used, the ADC-SDI will initiate as determined by the state of the EEPROM. It is subsequently controlled by the GYDA controller.
- At any time, when a state change is done, whether it be by switches or GYDA, the state is stored in the EEPROM as soon as it is detected.

3.4 Channel search modes

ADC-SDI will search for an input-signal, try to identify it and hopefully find a signal it can lock to.

ADC-SDI has 2 input channels with 3 types of input:

- CVBS Channel 1
- CVBS Channel 2
- S-Video: Luma Channel 1, Chroma Channel 2.

To search for input ADC-SDI has 4 channel search modes:

- Automatic   ADC-SDI searches for any possible input signal type. When a signal is detected, it tries to lock to it, and stops searching.

- CVBS Ch. 1   ADC-SDI searches for CVBS input on channel 1, and ignores other input types. When a signal is detected, it tries to lock to it, and stops searching.

- CVBS Ch. 2   ADC-SDI searches for CVBS input on channel 2, and ignores other input types. When a signal is detected, it tries to lock to it, and stops searching.

- S-Video   ADC-SDI searches for S-Video input, Luma on channel 1, chroma on channel 2, and ignores other input types. When a signal is detected, it tries to lock to it, and stops searching.

If the input type is changed while the card is running, or the signal is missing or lost, the card will start searching for the type of signal defined by the channel search mode. Channel search mode settings are described in sections 6 and 7.3.

3.5 Luma / chroma separation filters

The ADC-SDI module has 4 different luma / chroma separation filters to select between.

3.5.1 Comb filter - adaptive between 3-line (½, 0, ½) and no comb filter

This filter will adaptively select between 3-line (½, 0, ½) comb filter and no comb filter.

Adaptive comb filter is available for both luminance and chrominance. The adaptive comb filter algorithm computes the vertical and horizontal contours of colour based on a block of 3x3 pixels. If there is a sharp colour transition, comb filtering is applied to the two lines that have fewer colour changes. If there is no colour transition, 3-line comb filtering is used with filter coefficients (½, 0, ½).

The comb filter can be selectively bypassed in luma or chroma path. If the comb filter is bypassed in the luma path, then chroma trap filters are used which has a characteristic according to CCIR601.

The adaptive comb filter algorithm reduces artefacts such as hanging dots at colour boundary and detects and properly handles false colour in high frequency luminance images such as a multi burst pattern or circle pattern.

3.5.2 Comb filter - adaptive between 3-line (¼, ½, ¼) and no comb filter

This filter will adaptively select between 3-line (¼, ½, ¼) comb filter and no comb filter, same functionality as the above, but with different filter coefficients.

3.5.3 Fixed 2-line comb filter

This is a fixed 2-line comb filter with no adaptive selection.

3.5.4 No comb filter

This filter has no comb filter enabled. The luma signal will be filtered with a chroma trap, and the chroma signal will be filtered with a low pass filter.

3.6 Selection of luma/chroma separation filter

Filter type	Luma Bandwidth	Limitations	Applications
No comb filter *(filter 3)*	PAL ~= 4MHz NTSC ~= 3MHz	Limited bandwidth. Cross colour artefacts visible in luma	VHS, Umatic and other sources with lower bandwidth
Fixed 2-line comb filter *(filter 2)*	Full bandwidth available	Cross chroma errors at vertical transitions. For PAL: Some cross colour artefacts in luma	Full bandwidth processing. Not suitable for graphics or material with high saturation levels.
Adaptive 3-line comb filter with filter coefficients (½,0,½) *(filter 0 for PAL)* *(filter 1 for NTSC)*	Full bandwidth available	Some cross colour artefacts at vertical transition. Graphics material with high saturation may produce artefacts at vertical edges.	Best suited for PAL signal sources. Very good for most PAL applications.
Adaptive 3-line comb filter with filter coefficients (¼, ½, ¼) *(filter 0 for NTSC)* *(filter 1 for PAL)*	Full bandwidth available	Graphics material with high saturation may produce artefacts at vertical edges. Some Cross colour artefacts visible in luma for PAL signal sources.	Best suited for NTSC signal sources. Very good for most NTSC applications. Also a good alternative for PAL sources if artefacts in (½, 0, ½) are unacceptable.

Table 1: Selection of luma /chroma separation filter.

The factory default filter setting is: Adaptive 3-line comb filter with filter coefficients (½,0,½).

4 Connections

The ADC-SDI has its own connector module: ADC-SDI-C1, mounted at the rear of the sub-rack.
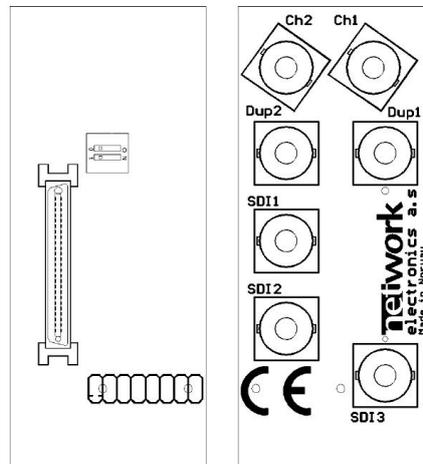
Figure 2: ADC-SDI-C1 connector module.

4.1 Mounting the connector module

If the connector module is purchased separately, it should be mounted as described in the user manual for the sub-rack frame FR-2RU-10-2. This manual is also available from our web site: http://www.network-electronics.com/

4.2 Correspondence of connectors and signals

The ADC-SDI-C1 connector module has 7 BNC's:

Ch1	Analog input: CVBS or S-Video Luma
Ch2	Analog input: CVBS or S-Video Chroma
Dup1	Passive loop through Ch1.
Dup2	Passive loop through Ch2.
SDI1	Digital SDI output
SDI2	Digital SDI output
SDI3	Digital SDI output

The analogue input BNC's can be used with CVBS, one at a time, or together with S-Video Luma on Ch1 and Chroma on Ch2. SDI1, SDI2 and SDI3 are equivalent SDI outputs.

The backplane has a DIP-switch with two individual switches, as shown in Figure 2. Switch 1 is used to turn on/off 75 ohm termination on input channel 1, and switch 2 is used to turn on/off 75 ohm termination on input channel 2.

> The analogue input must be terminated somewhere to enable the video decoder chip.

Figure 3: ADC-SDI simplified silkscreen (figure not to scale).

5 Operation

5.1 Module status - Light Emitting Diodes

Summary: Green LEDs are good, red LEDs are bad.

ADC-SDI implements four Light Emitting Diodes (LEDs) that show the state of the card. The LEDs are visible through the front-panel of the rack (see the user manual of FR-2RU-10-2 for details). The LEDs are described top-down, see also Figure 3.

5.1.1 Card State

No Light	No power, fuse F1 blown, LED malfunction or configuration memory lost.
Red	A fundamental, probably electrical, error has been detected. The card is set in a passive state, so that it does not disturb other cards in the rack. While powering on, the CardState LED will light red for approximately 0.5 s while the card undergoes self-test.
Yellow	The startup-sequence is running. The card is not yet ready
Green	ADC-SDI is powered and ready.

5.1.2 State of input channel 1

No Light	Channel 1 is inactive.
Red	ADC-SDI tries to detect input signal on channel 1.
Yellow	Input signal is detected on channel 1, but not yet locked.
Green	Input signal on channel 1 is detected, and properly locked.

5.1.3 State of input channel 2

No Light	Channel 2 is inactive.
Red	ADC-SDI tries to detect input signal on channel 2.
Yellow	Input signal is detected on channel 2, but not yet locked.
Green	Input signal on channel 2 is detected, and properly locked.

5.1.4 SDI output

No Light	Not used.
Red	No SDI output, or SDI output not correct.
Yellow	Not used.
Green	Correct SDI output.

5.2 Switches

Summary: Most users will probably want switches 1, 6 and 10 in on position and the rest in off position. All users should place switch 10 in the on position.

The ADC-SDI card implements a Dual-Inline switch (DIP-switch) that provides 10 individual On/Off switches. The purpose of the switches is to offer you an easy interface to some features of the ADC-SDI card, without the need of a GYDA controller. Table 2 gives the general layout of the switches. The switches are numbered from '1' at the top and downwards to the bottom, see Figure 3. A switch is on when the tap is displaced in direction of the back-plane.

The ADC-SDI card is shipped with all switches, except switch 1, 6 and 10, in the Off-position. Switch number 10 should always be in the On-position. The switches are discussed in logical rather than numerical order.

Switch #	Function	Comment
1	Manual mode on/off	When on, enables switches 2, 3, 4, and 5
2	Input Channel select 1	According to Table 3
3	Input Channel select 2	According to Table 3
4	EDH disable on/off	When on, the EDH will not be inserted into the SDI-output.
5	Mark Field 1 disable on/off	When on, the Mark Field 1-feature is not used.
6	Luma/chroma separation filters	According to Table 4
7	Luma/chroma separation filters	According to Table 4
8	Factory Reset on/off	To restore internal EEPROM only
9	Chroma blanking for Teletext	Chroma blanking for Teletext within vertical blanking area
10	Running mode on/off	For factory use only

Table 2: Summary of the DIP switches. Switch 9 and 10 are mainly for factory use, while switches 1, 2, 3, 4, 5, 6 and 7 will be used when no GYDA controller is available.

5.2.1 Switch 1 - Manual mode
Switch 1 is the manual mode switch. If set to on, the ADC-SDI is primarily assumed to be operated with switches alone. If set to off, the ADC-SDI is assumed to be used with a GYDA controller.

Factory setting is switch 1 in off position.

With switch 1 off

While in automatic mode, switches 2, 3, 4 and 5 are without any effect.

With switch 1 on

In manual mode, the functionality of switches 2, 3, 4 and 5 is as follows:

5.2.2 Switches 2 and 3
These two switches determine the input channel selection. See Table 4.

Factory setting is switch 2 and switch 3 off.

Sw #3	Sw #2	Input Channel Select	Comment
0	0	Automatic	Search for any possible input type.
0	1	CVBS Ch. 1	Only search for CVBS on Ch. 1
1	0	CVBS Ch. 2	Only search for CVBS on Ch. 2
1	1	S-Video	Only search for S-Video; Luma Ch. 1 and Chroma Ch. 2

Table 3: Manual selection of video mode

5.2.3 Switch 4
Switch 4 turns on/off disabling of EDH in the output SDI. With switch 4 off, the EDH is included in the SDI signal, with switch 4 on, EDH is not included.

Factory setting is switch 4 in off position.

5.2.4 Switch 5
Switch 5 turns on/off disabling of the Mark Field 1-feature. With switch 5 off the Mark Field 1-feature is enabled, with switch 5 on the Mark Field 1-feature is disabled.

Factory setting is switch 5 in off position.

5.2.5 Switch 6 & 7
These two switches determine which Luma / Chroma separation filter that are in selected, according to Table 5. The factory settings are switch 6 set to on and switch 7 set to off.

Switch #		Function description
6	7	
0	0	Default adaptive 3-line comb filter selection. NTSC adaptive comb with filter coefficients (¼, ½, ¼) PAL adaptive comb with filter coefficients (½, 0, ½)
1	0	Adaptive 3-line comb filter selection with optional filter coefficients NTSC adaptive comb with filter coefficients (½, 0, ½) PAL adaptive comb with filter coefficients (¼, ½, ¼)
0	1	Fixed 2-line comb filter
1	1	No comb filter Luma filtered with chroma trap Chroma low pass filtered

Table 4: Luma / Chroma separation filter.

5.2.6 Switch 8 - Reset to factory default
ADC-SDI contains EEPROM that is affected by your choices. Switch 8 is implemented to reset the EEPROM to factory default. Its use is shown in Table 5.

Action	Comment
Power down	
Turn switch 8 on	
Power up	ADC-SDI enters a special state where the EEPROM is restored to factory default values. This is flagged by the LEDs, they are all yellow.
Power down	
Turn switch 8 off	If you want the DIP switches to be placed in the factory default position, this is the time to do so: Turn switches 1 through 9 to the off position. Switch 10 should, as always, be turned to the on position.
Power up	The card EEPROM is now reset to factory settings.

Table 5: A method to restore the ADC-SDI card to the factory settings. Remember to let some seconds pass by each time you power down, to allow capacitors to be fully discharged.

5.2.7 Switch 9 –Chroma Blanking for Teletext
Switch 9 is enabling Chroma Blanking within the vertical blanking area. When on, the chroma information in lines 1-23 / 313-335 (PAL) or 1-21 / 263-284 (NTSC) will be erased (replaced with 0x200). This is an important setting when using ADC-SDI with teletext information in line 23 (like for PAL+). When switch 9 is off, the vertical blanking area will be optimised for video information.

When using ADC-SDI with S-Video (Y/C), it is recommended to leave switch 9 in off position

Factory setting is switch 9 in off position.

5.2.8 Switch 10 - Programming mode
Switch 10 is purely used for service upgrade of the ADC-SDI card. It should always be in the on position. If switch 10 is in the off position, the CardState LED will light up red, and the ADC-SDI card will enter programming mode. This causes no harm, but the card will not work in this mode.

Factory setting is switch 10 in on position.

5.3 Interface with GYDA or other controllers

ADC-SDI follows the Flashlink-protocol, see the definition of the protocol available from our web site: http://www.network-electronics.com/. ADC-SDI can also be used with any controller or controller system that adheres to the Flashlink-protocol, using the RS422 bus. For more information on the electrical interconnect, see the documentation of RS-2RU-10-2. The available commands are shown in Table 6.

Command	Response	Comment
?	Yes	The "Hello" command.
info	Yes	Gives back the card state.
AutoSearch	"OK"	Set Cannel Search mode to automatic.
CVBSCh1	"OK"	Set Cannel Search mode to CVBS Ch. 1.
CVBSCh2	"OK"	Set Cannel Search mode to CVBS Ch. 2.
SVideo	"OK"	Set Cannel Search mode to S-Video; Luma Ch1, Chroma Ch2.
EDH on	"OK"	Turn on EDH in output SDI.
EDH off	"OK"	Turn off EDH in output SDI.
MarkF1 on	"OK"	Turn on the Mark Field 1-feature.
MarkF1 off	"OK"	Turn off the Mark Field 1-feature.
get [0xHH]	Yes	Get a value from a numbered register.
set [0xHH] [0xHH]	No	Set a value to a numbered register.
filter 0	"OK"	Select luma/ chroma separation filter, see Table 4.
filter 1	"OK"	Select luma/ chroma separation filter, see Table 4.
filter 2	"OK"	Select luma/ chroma separation filter, see Table 4.
filter 3	"OK"	Select luma/ chroma separation filter, see Table 4.

Table 6: All commands available to the user

5.3.1 The '?' command

According to the Flashlink-protocol, no card can use the RS422-bus before the '?' (hello) command is sent the card at least once. The response from ADC-SDI will be:

```
xxxxADC-SDI\
PIC sw rev X.X.X\
FPGA sw rev X\
Protocol ver X.X
```

Here xxxx denotes the source and destination rack and slot coordinates, while X represents a version number. As of primo February 2002, these revisions would be:

```
xxxxADC-SDI\
PIC sw rev 1.1.0\
FPGA sw rev 7\
Protocol ver 1.0
```

5.3.2 The "info" command

This command reports the entire state of the card. An example:

```
xxxxChannel Select: automatic\
Locked PAL CVBS Ch. 1
```

The "info" command is composed by many minor lines, fully specified in Table 7. In general, when a condition is normal, it is not reported. For instance, EDH will normally be enabled. It is only when it is disabled its state is reported.

5.3.3 Channel Search commands
The commands AutoSearch, CVBSCh1, CVBSCh2 and SVideo all determine the channel search mode of the card. The AutoSearch-command will let the ADC-SDI-card search for any possible input type: CVBS Ch. 1, CVBS Ch. 2 or S-Video with Luma on Ch. 1 and Chroma on Ch. 2. The other three commands will force the ADC-SDI-card to search for only one of the three input types.

5.3.4 EDH- and MarkF1-commands
Commands to turn on/off the Mark Field 1-feature or the EDH inclusion in the SDI output are both straightforward text, see Table 6.

5.3.5 Get and Set
These commands are factory internal. The end-user should avoid these commands.

5.3.6 Luma / Croma separation filter.
Commands to select between different luma/chroma separation filters.

Status of	Status string	Comment
Channel Select	Channel Select: Automatic	Search for any legal type of input signal on the 2 input channels.
	Channel Select: Ch. 1 CVBS	Search for CVBS Ch. 1
	Channel Select: Ch. 2 CVBS	Search for CVBS Ch. 2
	Channel Select: S-Video	Search for S-Video, Luma Ch. 1, Chroma Ch. 2
Analog input and SDI output	Searching for input on Ch1 and Ch2	No input signal detected. Searching for any legal type of input (Channel Select: Automatic). No SDI output.
	Searching for CVBS, Ch. 1	No input signal detected. Searching for CVBS, Ch. 1 (Channel Select: Ch. 1 CVBS). No SDI output.
	Searching for CVBS, Ch. 2	No input signal detected. Searching for CVBS, Ch. 2 (Channel Select: Ch. 2 CVBS). No SDI output.
	Searching for S-Video	No input signal detected. Searching for S-Video Channel Select: S-Video). No SDI output.
	Try lock CVBS Ch. 1	CVBS found on Ch. 1, not yet locked. No SDI output.
	Try lock CVBS Ch. 2	CVBS found on Ch. 2, not yet locked. No SDI output.
	Try lock S-Video	S-Video found, not yet locked. No SDI output.
	Locked <video standard> CVBS Ch. 1	Stable locked CVBS on Ch. 1. SDI output is on.
	Locked <video standard> CVBS Ch. 2	Stable locked CVBS on Ch. 2. SDI output is on.
	Locked <video standard> S-Video	Stable locked S-Video input. SDI output is on.
	Valid video standards: NTSC, NTSC 4.43, PAL, (M) PAL and (Combination-N) PAL.	
EDH	EDH off	No EDH information in SDI output.
	(No EDH status string)	EDH information is included in SDI output.
Field 1 marking	Field 1 marking off	The *Mark Field 1*-feature is turned off
	(No *Field 1 marking*-string)	*Mark Field 1*-feature is turned on
Filter 0	No filter status string	Luma / chroma separation *filter 0* selected
Filter 1	Filter mode 1	Luma / chroma separation *filter 1* selected
Filter 2	Filter mode 2	Luma / chroma separation *filter 2* selected
Filter 3	Filter mode 3	Luma / chroma separation *filter 3* selected

Table 7: The info command broken up in components.

General environmental requirements for Network Electronics equipment

1. The equipment will meet the guaranteed performance specification under the following environmental conditions:
    -   Operating room temperature range: 0°C to 40°C
    -   Operating relative humidity range: Up to 90% (non-condensing)

2. The equipment will operate without damage under the following environmental conditions:
    -   Temperature range: -10°C to 50°C
    -   Relative humidity range: Up to 95% (non-condensing)

Product Warranty

The warranty terms and conditions for the product(s) covered by this manual follow the General Sales Conditions by Network Electronics AS. These conditions are available on the company web site of Network Electronics AS:

www.network-electronics.com

Appendix A Materials declaration and recycling information

A.1 Materials declaration

For product sold into China after 1st March 2007, we comply with the "Administrative Measure on the Control of Pollution by Electronic Information Products". In the first stage of this legislation, content of six hazardous materials has to be declared. The table below shows the required information.

組成名稱 Part Name	Toxic or hazardous substances and elements					
	鉛 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr(VI))	多溴联苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
ADC-SDI	X	O	O	O	O	O
O: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006. X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.						

A.2 Environmentally-friendly use period

The manual must include a statement of the "environmentally friendly use period". This is defined as the period of normal use before any hazardous material is released to the environment. The guidance on how the EFUP is to be calculated is not finalised at the time of writing. See http://www.aeanet.org/GovernmentAffairs/qfLeOpAaZXaMxqGjSFbEidSdPNtpT.pdf for an unofficial translation of the draft guidance. For our own products, Network Electronics has chosen to use the *50 year figure* recommended in this draft regulation.

Network Electronics suggests the following statement on An "Environmentally Friendly Use Period" (EFUP) setting out normal use:

EFUP is the time the product can be used in normal service life without leaking the hazardous materials. We expect the normal use environment to be in an equipment room at controlled temperature range (0ºC - 40ºC) with moderate humidity (< 90%, non-condensing) and clean air, not subject to vibration or shock.

Further, a statement on any hazardous material content, for instance, for a product that uses some tin/lead solders:

Where a product contains potentially hazardous materials, this is indicated on the product by the appropriate symbol containing the EFUP. The hazardous material content is limited to lead (Pb) in some solders. This is extremely stable in normal use and the EFUP is taken as 50 years, by comparison with the EFUP given for Digital Exchange/Switching Platform in equipment in Appendix A of "General Rule of Environment-Friendly Use Period of Electronic Information Products". This is indicated by the product marking:

It is assumed that while the product is in normal use, any batteries associated with real-time clocks or battery-backed RAM will be replaced at the regular intervals.

The EFUP relates only to the environmental impact of the product in normal use, it does not imply that the product will continue to be supported for 50 years.

A.3 Recycling information

Network Electronics provides assistance to customers and recyclers through our web site http://www.network-electronics.com. Please contact Network Electronics' Customer Support for assistance with recycling if this site does not show the information you require.

Where it is not possible to return the product to Network Electronics or its agents for recycling, the following general information may be of assistance:

- Before attempting disassembly, ensure the product is completely disconnected from power and signal connections.
- All major parts are marked or labelled to show their material content.
- Depending on the date of manufacture, this product may contain lead in solder.
- Some circuit boards may contain battery-backed memory devices.

EC Declaration of Conformity

network

MANUFACTURER	Network Electronics AS P.B. 1020, N-3204 SANDEFJORD, Norway
AUTHORISED REPRESENTATIVE **(Established within the EEA)**	Not applicable
MODEL NUMBER(S)	ADC-SDI
DESCRIPTION	NTSC/PAL to SDI encoder
DIRECTIVES this equipment complies with	LVD 73/23/EEC EMC 2004/108/EEC
HARMONISED STANDARDS applied in order to verify compliance with Directive(s)	EN 55103-1:1996 EN 55103-2:1996

TEST REPORTS ISSUED BY	**Notified/Competent Body**	**Report no:**
	Nemko	E07379.00

TECHNICAL CONSTRUCTION FILE NO	Not applicable
YEAR WHICH THE CE-MARK WAS AFFIXED	2008
TEST AUTHORIZED SIGNATORY	

MANUFACTURER	**AUTHORISED REPRESENTATIVE** **(Established within EEA)**	**Date of Issue**
		2008-07-14
		Place of Issue
	Not applicable	Sandefjord, Norway

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