



**/i dataLink**

# USER GUIDE

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This user guide is based on  
the Software Versions 3.5.6/1.0.6

Technical specifications are  
subject to change without notice

## Introduction: Using the User's Manual

**Note:** Notes are used to indicate important user information with regard to the respective section of this user guide.

**Warning:** Warnings are used to indicate important user information with regard to the respective section of this user guide; they also point out potential setup errors or risks of damage.

### Cables

When a cable is referred to in this user's guide it will be referred as in the following example: (FI 12p, LE 7p). Cables are referred to in reference to their connectors. Cmotion cables are manufactured by W.W. Fischer, Lemo or Hirose, which will be referred to as FI, LE and HI respectively. The cable identification begins with the connector that is connected to the cmotion unit, a comma follows, followed by the connector that is connected to non-cmotion units; each connector takes reference to the number of pins it has, e.g. the cable (FI 12p, LE 7p) cable is the cmotion Scorpio motor cable. The FI 12p connector is connected to the *camin* and the LE 7p connector is connected to the Scorpio motor.

Cables may also be referred to by their commonly used names, e.g. CBUS (FI 7p, FI 7p) and RS (FI 3p, FI 3p) cables, the cable for the CBUS interface and the cable for the RS interface, respectively.

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# SAFETY WARNINGS

## Warnings

### Notice:

**Danger of operational error!**

**Danger of injury!**

**Damage to equipment possible!**

### General Safety Guidelines:

- In order to ensure optimal performance, read this user guide.
- Only users already familiar with the equipment should carry out assembly and initial operation.
- Make sure all components are securely mounted.
- All necessary repairs should be carried out by authorized service centers only.
- Use original motion replacement parts only.
- When using in wet weather, routine safety precautions for handling electrical equipment in wet weather should be observed.
- Do not remove the warranty seal.
- Motion and Cooke assume no liability for any damage caused during component usage.

### Important

If you have questions or want to order parts, please have the component's model and serial number ready.

# 1 COMPONENT DESCRIPTION

## 1.1 Overview

### */i dataLink unit*



Fig. 2. 1

The */i DataLink* unit stores Cooke S4/i lens data and camera information for each frame, together with the LTC time code on a customary SD-card. Stored data can then be uploaded to a PC for postproduction. In addition to various interfaces for different film cameras and the S4/i lens, the */i dataLink* also provides a video interface. Video signals can be looped through the */i dataLink*, so that lens and camera data is read out on a video stream in real time. In addition, the unit comes with an integrated Trigger interface, which allows for data recording to be automatically switched on/off via external signal. The following data can be stored on the SD card:

- Time stamp (LTC time code)
- Lens serial number
- Actual focus, iris and zoom value
- Focus near & focus far
- Horizontal field of view
- Entrance pupil position
- Normalise zoom value
- Camera status (fps, shutter angle, etc.)
- ....

Recording time depends on SD card capacity; for instance, a 1 GB card provides approx. 117 hours recording time.

## 1.2 Detailed Component Description

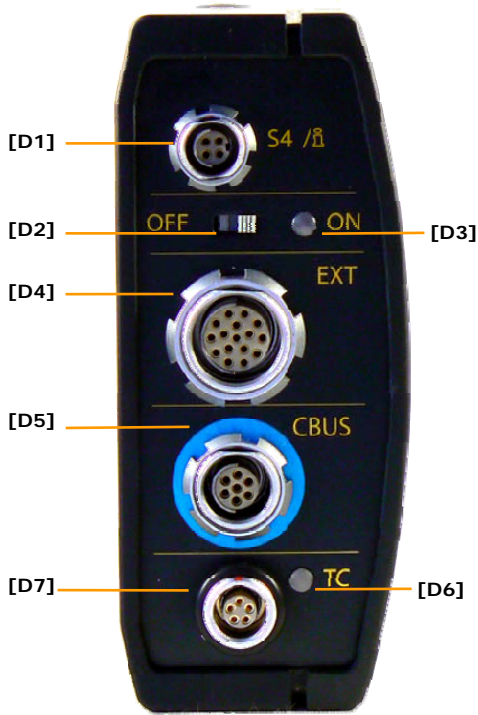


Fig. 2. 2

<b>D 1</b>	S4/i connector	Connector for S4/i lenses	
<b>D 2</b>	ON/OFF switch	/i dataLink power switch	
<b>D 3</b>	RDY LED	Off	/i dataLink has no power
		Green	System is ready
		Red blinking	Low supply voltage
<b>D 4</b>	EXT connector	Connector for camera communication, synchronizations, power supply and ENG lenses.	
<b>D 5</b>	CBUS connector	cmotion intra-system interface	
<b>D 6</b>	TimeCode LED	Off	No time code signal available
		Green	Time code is loaded and running
		Green blinking	Time coding gets asynchronous in approx. 2 hours time
		Red	Time code status lost
<b>D 7</b>	TimeCode connector	Interface for SMPTE LTC Time code generator	

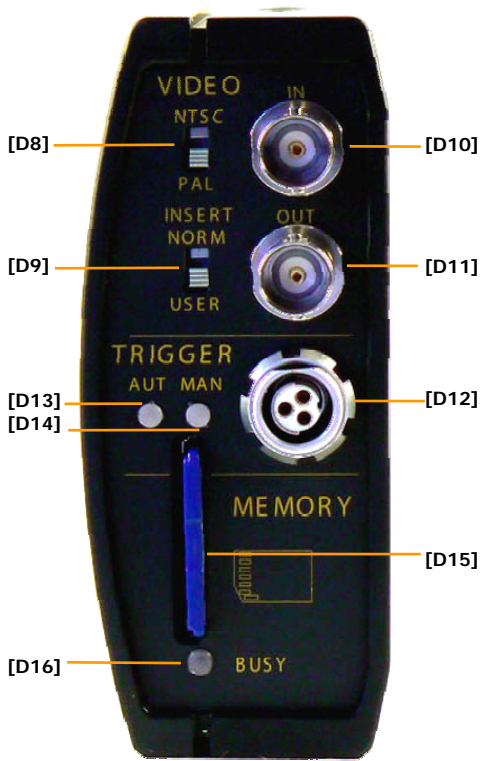


Fig. 2. 3

<b>D 8</b>	NTSC/PAL switch	PAL or NTSC video source selector switch	
<b>D 9</b>	Insert NORM/USER switch	NORM	Layer for video image
		USER	No function
<b>D 10</b>	VIDEO IN connector	Composite video-in connector	
<b>D 11</b>	VIDEO OUT connector	Composite video-out connector	
<b>D 12</b>	TRIGGER connector	Interface for record control	
<b>D 13</b>	LED AUTO	LED MAN	
	Off	Off	No recording
<b>D 14</b>	Green	Off	Recording upon detection of Camera Run
	Off	Green	Constant recording (default function)
<b>D 14</b>	Green	Green	Constant recording
	Green	Green	Constant recording
<b>D 15</b>	MEMORY CARD	Memory Card slot	
<b>D 16</b>	BUSY LED	Off	No memory card inserted
		Green	Memory card ready
		Red	<ul style="list-style-type: none"> <li>Memory card full</li> <li>Memory card writing error</li> <li>Memory card initialization error</li> </ul>
		Red blinking	Missing S4/i lens

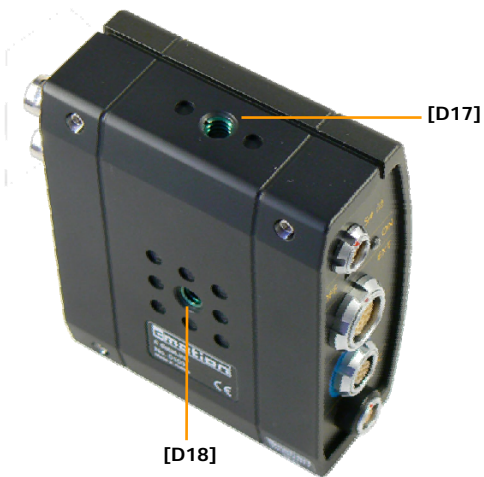


Fig. 2. 4

<b>D 17</b>	1/4" screw	Attachment screw holes
<b>D 18</b>	holes	

## 2 /i DATALINK USER INTERFACE

In the following, the */i datalink* interfaces and corresponding technical data are described in detail.

### 2.1 Power On & Ready

The */i dataLink* unit comes with a slide switch for switching on the box. With the slide switch in position OFF, the unit is switched off.

The ON LED informs about the general Ready status of the unit.

ON LED	Function
Off	No power supply
Green	Unit is ready
Red blinking	Check supply voltage

If the ON LED is blinking red, the supply voltage is below 8V or above 34V.

**Warning: A supply voltage above 35 V can destroy or damage the */i dataLink* unit.**

## 2.2 S4/i Interface - Connection to S4/i lenses

The S4/i interface provides for communication with Cooke S4/i lenses. The lens data is automatically read in and processed.

Use the following cable for communication between */i dataLink* unit and Cooke S4/i lenses:

Cable	Description	Length
CIL-1	Connection cable between <i>/i dataLink</i> unit and Cooke S4/i lenses	0,8m / 2.63ft

The following lens data is available on the memory card:

Name	Description
Focus_Actual_Value	Actual focus value
Focus_Near	Actual focus near value
Focus_Far	Actual focus far value
Zoom_Actual_Value	Actual zoom value
Iris_Actual_Value	Actual iris value
Horizontal Angel of View	In preparation
Entrance Pupil Position	In preparation
Normalise Zoom Value	In preparation
Lens Serial Number	Lens serial number

The S4/i interface has the following connector pin assignment:

Pin	Function
1	Data from lens
2	Data to lens
3	Supply and signal GND
4	Power supply for S4/i lens

The connector type is:  
W.W. FISCHER  
DBP 102 A 053 - 130 (4 pin)

## 2.3 EXT Interface - Connection to Cameras

The EXT interface provides for detection of and communication with film cameras. There is also provision of an additional power supply interface.

The */i dataLink box* can be connected with various film and video cameras. The camera is automatically detected via its connecting cable. Depending on the camera and cable that are used, the

1. camera run is detected
2. frame rate is detected
3. electronic shutter is detected
4. camera status is detected

As a consequence, the information available on the memory card can be as follows:

Function	Name on memory card	Description
Detect run	C_Run	Camera running or standby
Detect FPS	C_FPS	Actual camera speed
Detect shutter	C_Shutter	Actual electronic shutter value
Detect status	C_DIR	Camera forward or reverse mode
	C_Ready	Camera is ready or in error mode
	Unit	Dimension unit at camera meter or feet
	C_Perf	3 perf or 4 perf film transport
	C_Inching	Camera in inching mode

Below please find a list of cameras and connection cables as required for the specified functions. For data collection, cameras require different cables, since almost every single camera type comes with distinctive connectors.

Camera	Cable to detect run	Cable to measure FPS	Cable to detect shutter	Cable to detect status
Aaton 35III	RAI-1	RAI-1		
Aaton minima				
Aaton XTR	RAI-1	RAI-1		
Arri 16SR3	RRS-x or RCC-1	RRS-x or RCC-1		RCC-1
Arri 235	RRS-x	RRS-x		u.c.
Arri 35 III	RCI-1	RCI-1		
Arri 416	RRS-x	RRS-x		u.c.
Arri 435	RRS-x or RCC-1	RRS-x or RCC-1	RCC-1	RCC-1
Arri 535A, A/B	RRS-x or RCC-1	RRS-x or RCC-1		RCC-1
Arri 535B	RRS-x or RCC-1	RRS-x or RCC-1	RCC-1	RCC-1
Arri 765	RRS-x	RRS-x		
Arri BL4	RCI-1	RCI-1		
Arri BL I,II, 4s	RCI-1	RCI-1		
Arricam Lite	RRS-x	RRS-x	u.c.	u.c.
Arricam Studio	RRS-x	RRS-x	u.c.	u.c.
Dalsa Origin	u.c.	u.c.	u.c.	u.c.
Moviemcam Superamerika				
Moviemcam Compact	RMI-1 & RMP-1	RMI-1 & RMP-1		
Moviemcam SL				
Panavision Millenium	RPI-1	RPI-1		
Panavision Millenium XL	RPI-1 or RPR-1 & RPP-1	RPI-1 or RPR-1 & RPP-1	RPP-1	RPP-1
Video Cameras prov. with Hirose 12p	*)			

u.c. -> under construction (will be updated as soon as it is ready for the cmotion LCS)

\*) Run/Stop for video cameras can be detected with a 12p Hirose cable only if Run/Stop is signalled by an external control unit and the signal can be processed by the */i dataLink*.

The EXT interface has the following connector pin assignment:

Pin	Function
1	Supply and signal ground
2	Serial interface (RS232) from camera
3	Serial interface (RS232) to camera
4	Serial interface (RS232) from S4/i lens
5	Serial interface (RS232) to S4/i lens
6	Camera selection
7	
8	Power supply (+8V- +34V/0,5A) from camera
9	
10	Camera start signal – high
11	Camera start signal - low
12	Time code input
13	
14	
15	Detection of camera run impulse
16	Camera Run/Stop and status signal for Arri cameras (RS signal)

The connector type is:  
W.W. FISCHER  
DBP 104 A 086 - 130 (16 pin)

## 2.4 Interface CBUS

The CBUS interface provides for expansion; it functions as interface to other motion equipment and is used for updating the unit.

Use the following cable for communication between the */i dataLink* unit and other motion equipment:

Cable	Description	Length
RCB-1	Connection cable for motion equipment with CBUS interface	0,8m / 2.63ft
RCB-2	Connection cable for motion equipment with CBUS interface	6m / 19.7ft
RCB-3	Connection cable for motion equipment with CBUS interface	15m / 49ft
RCB-4	Connection cable for motion equipment with CBUS interface	individual
RCB-8	Connection cable for motion equipment with CBUS interface – helix cable type	Helix 0.8m / 2.63ft
RPC-3	Connection cable for motion equipment with CBUS interface for update and programming	2m / 6.6ft

The CBUS interface has the following connector pin assignment:

Pin	Function
1	Supply and signal ground
2	Serial interface (RS232) from camera
3	Serial interface (RS232) to camera
4	CAN interface (RS485)
5	CAN interface (RS485)
6	
7	Power supply (+10V- +34V/0,5A)

The connector type is:  
W.W. FISCHER  
DBP 103 A 057 - 130 (7 pin)

## 2.5 Timecode Interface

The Timecode (TC) interface provides for the connection to a time code generator. The SMPTE longitudinal time code LTC standard is supported.

The Timecode (TC) interface comes with a status LED; the status which is displayed can be one of the following:

TC LED	Status
Off	No functionality, no time code loaded
Green	TC is loaded
Green blinking	TC gets lost in a short time (2 hours)
Red	TC is lost

After switching on, the TC LED does not show any status (Off). All data packets are written to the memory card in a 10 ms interval.

When the */i dataLink* unit detects a time code signal coming from an external time code generator, the TC LED status changes to green. Now writing of data packets to the memory card is synchronized with the pulse (frame) set by the time code signal. When the TC LED is green, the time code generator can be disconnected.

**Note:** Procession can only take place for time code signals ranging from 8 fps to 100 fps.

**Note:** If the */i datalink* unit is switched off and on again, it will retain the internal time code for approximately 40 minutes.

After 240 minutes, the TC LED starts to blink green. This indicates that the internal pulse signal will become asynchronous from the time code generator source signal in 120 minutes at the latest.

When the TC LED changes to red, the internal pulse signal and the source signal are no longer synchronous; data will still be written to the memory card in accordance with the internal pulse signal. This applies until an external time code generator is replugged or the */i dataLink* unit is switched off and on again.

The following time code signal information is available on the memory card:

Name	Description
TimeCode_Valid	Indicating valid time code signal
Frame_Counter	Counter for frames (between pulses)
Date_Year	Value for year
Date_MM	Value for month
Date_DD	Value for day
Time_HH	Value for hour
Time_MM	Value for minute
Time_SS	Value for second
Time_CLK	Time counter for 10ms

The interface has the following connector pin assignment:

Pin	Function
1	Signal ground
2	Time code input
3	
4	
5	Reserved signal

The connector type is:  
LEMO  
ENG.0B.305.CLL (5p)

## 2.6 Video interface

The video interface provides for the display of data overlaying a video image.

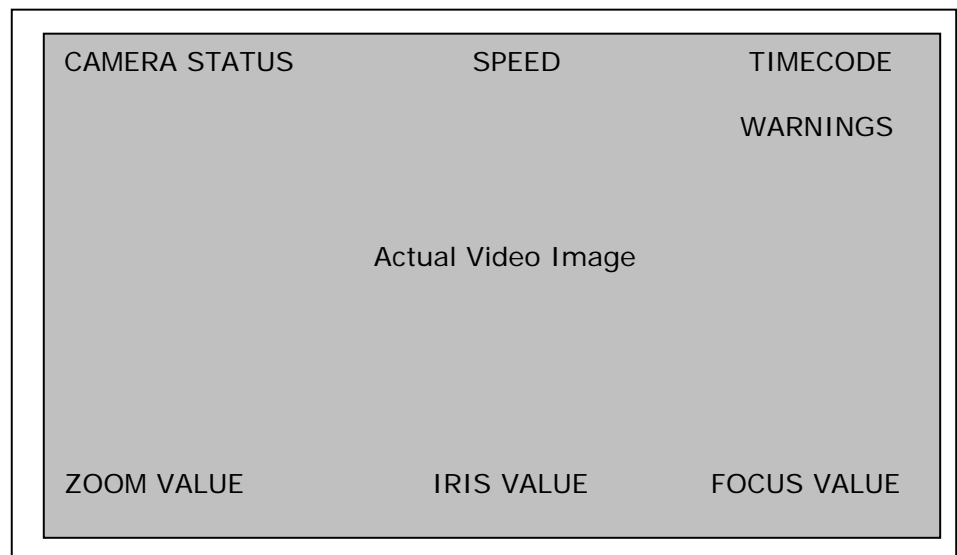
A video signal from the VIDEO IN interface is looped through to the VIDEO OUT interface. The video source is connected to VIDEO IN, VIDEO OUT is connected to a monitor or video processing device.

For both VIDEO IN and VIDEO OUT, BNC connectors are used.

**Note:** Processed are composite video signals, which also form the output; the video signal is completed with 75Ohm.

With the PAL/NTSC slide switch, you can choose between a PAL or NTSC video signal.

With the NORM/USER slide switch, you can change the display of information in the video image. If the switch has the position NORM, the following data is layered over the looped video image:



The text displayed describes the following:

Display	Image text	Description
CAMERA STATUS	RUN	Camera running
	STANDBY	
	ERROR	
SPEED	0 FPS – 150 FPS	Frame rate of the camera speed currently measured
	0.000 FPS – 150.000 FPS	Frame rate of the camera speed currently transmitted in the protocol
TIMECODE	HH:MM:SS FF	Time code frames in hours:minutes:seconds and frame counter
WARNING	NO CARD	No memory card inserted or detected
	CARD LOCK	Memory card is locked
	CARD INIT	Problem with initialising of memory card
	C REMOVED	Memory card was removed
	ERROR	Welcher Error
	CARD FULL	Memory Card is full
	NO S4I	No S4/i lens connected or lens not correctly initialised
ZOOM VALUE	Z 0.00 – Z 999	Actual zoom value. If the value is 0, no lens is detected
IRIS VALUE	I 0.0 – I xx.x	Actual iris value. If the value is 0, no lens is detected
FOCUS VALUE	F 00.00 – INF	Actual focus value. If the value is 0, no lens is detected INF stands for the value Infinity

**Note:** Not all film or video cameras provide information about camera status or camera speed. See chapter 3.3 for the information to be retrieved from certain cameras and for cameras which allow communication via protocol.

Sample video image:



**Note:** Without a video input signal it is not possible to have a data layer output.

**Note:** The software version currently available does not support the display of USER data overlaying a video image.

## 2.7 Trigger interface

The Trigger interface determines how and when data is written to the memory card. There are the following options for recording control:

1. No recording
2. Continuous recording
3. Recording upon camera run

For recording control, the Trigger interface provides the two signals MAN and AUTO. By short-circuiting the signals to Ground (GND), the corresponding function is selected. The following table lists the available options:

Signal MAN	Signal AUTO	Function
Open	Open	Default – Recording by power-on of the <i>/i dataLink</i> (continuous recording)
Open	GND	Recording upon detection of camera run
GND	Open	No recording to the memory card
GND	GND	Recording upon detection of camera run

MAN LED and AUTO LED show the current recording status:

AUTO LED	MAN LED	Status
Off	Off	No recording
Green	Off	Recording upon detection of camera run
Off	Green	Constant recording (default)
Green	Green	Constant recording

The Trigger interface has the following connectors:

Pin	Name	Function
1	GND	Supply and signal ground
2	MAN	Control of manual trigger
3	AUTO	Control of automatic trigger

The connector type is:  
W.W. FISCHER  
DBP 103 A 052 - 130 (3 pin)

## 2.8 Memory

The */i dataLink* unit can write data to a standard SD memory card. SD memory cards have the measurements 24 x 32 x 2.1 mm and the memory sizes 256M, 512M, 1G Byte, etc.

The length of the recording depends on the type of memory card, the time code pulse and the trigger that was set. A data packet has a size of 64 Byte. A 1 G Byte memory card provides space for 16.777.216 data packets. In case of a continuous recording rate of 25 fps, this results in a recording time of 116.5 hours.

The BUSY LED indicates the status of the memory card:

BUSY LED	Status
Off	No memory card inserted
Green	Memory card ready
Red	<ul style="list-style-type: none"> <li>• Memory card full</li> <li>• Memory card writing error</li> <li>• Memory card initialization error</li> </ul>
Red blinking	Missing S4/i lens

**Note:** The memory card status is also indicated by the WARNINGS area in the video image.

The structure of the data packet is described in chapter 5.

Via Windows Explorer or a similar program, files can be copied to the PC or deleted from the memory card.

**Warning:** Before deleting data from the memory card, the data has to be stored on the PC; otherwise the data will be lost.

The data stored on the memory card is saved in a binary file format; by using an editor, you can open and edit them. With the conversion program "DataLinkConverterV05.exe", files can be assigned another file format, for instance one readable with Excel ®. For further information on the conversion program, see the Appendix to this User Guide.

The file name of the data file on the memory card is

LENSSERNRBOXAA0000.dat

Example: 8000771\_\_103AC0002.dat

LENSSERNR	Serial number for S4/i lens. (9 characters) If the serial number is shorter than 9 characters there will be blank included
BOX	Serial number of /i dataLink unit (3 characters)
AA	Consecutively numbered file name for every • power on/off of the /i dataLink unit If the card is re-used with the /i <i>dataLink</i> unit, one or more additional files with the name(s) "AA", "AB", "AC" etc. will be stored on the memory card. (2 characters)
0000	Consecutively numbered file name for • every removal of memory card • every camera run if recording upon detection of camera run (see Trigger interface) (4 characters)

### 3 /i DATALINK SET UP

Before you start working with the /i *dataLink* unit, the following steps are required:



Fig. 4. 1

1. Securely mount the /i *dataLink* unit to the camera. The /i *dataLink* unit can be attached to the camera with the help of the attachment tool *cfast-camin* (see Fig 4.1) or the *cfast-camin* & *cfastener* (see Fig 4.2).



Fig. 4. 2

**Note:** The *cfastener* can be attached to rods with a 15-28 mm diameter, e.g. camera carrying handles. The *cfast-camin* consists of a six-sided insert piece (located on the /i *dataLink*) and an interlocking mechanism with a steel release clip (located on the camera or the *cfastener*, see Fig. 4.2).

#### To attach the *cfast-camin*:

- i. Use a 4mm Allen key to attach the six-sided insert piece to the /i *dataLink*
- ii. Use a 4mm Allan key attach the *cfast-camin* to any 3/8" or 1/4" screw hole (e.g. the camera carrying handle) or to the *cfastener*
- iii. Attach the *cfastener* to any rod with a 15-28 mm diameter. Make sure to fasten securely!
- iv. Place the insert piece into the interlocking mechanism at an angle (see Fig. 4.3)
- v. Press the insert piece gently into the interlocking mechanism until you hear an audible click.



Fig. 4. 3



Fig. 4. 4

### Releasing the *cfast-camin*

- i. Pull the steel release clip towards the *camin*
- ii. Tilt the insert piece out of the interlocking mechanism while still pulling the release clip (see Fig. 4.4)



Fig. 4. 5

2. Use the cable CIL-1 (FI 4p, LE 4p) to connect the */i dataLink* unit to the S4/i lens.

3. Use the cable that connects to the camera to supply the */i dataLink* unit and to detect camera signals (see chapter 3.3).

**Note:** You can also connect a dedicated supply cable to the EXT plug (or, alternatively, to the RS interface), if a supply via camera is not possible or desired.

4. If a video signal is to be used, a video source (e.g. via camera video assist) has to be connected to the VIDEO IN interface. The monitor (or a video processing device) is connected to the VIDEO OUT interface. Use the selector to choose between a PAL or NTSC video source.
5. If a recording is to be controlled via TRIGGER interface, the appropriate cable has to be used (see chapter 3.7).



Fig. 4. 6

6. Insert a SD memory card into the MEMORY slot until it snaps in. Please make sure that the card is inserted in the right direction and that the card and its contacts take the correct position (see Fig. 4.5).

**Note:** If the card is not properly inserted, it will not be correctly initialized. In this case, the */i dataLink* unit has to be switched off and then switched on again.

#### Releasing the memory card:

- i. Press the memory card in slightly; it will pop out
7. Switch on the */i dataLink* unit.
  8. Check ON LED and BUSY LED.
  9. If a time code signal is required, a time code generator has to be connected. As soon as the time code signal is sufficiently loaded, the TC LED turns green, and the time code generator can be removed.

**Note:** For any information about the time code generator and its time code signal output see the generator user guide.

## 4 DATA FORMAT ON MEMORY CARD

Data is written to the memory card as determined by time code pulse (or every 10 ms if no time code is available) and in accordance with the following parameters:

Corresponding syntax for MSB and LSB:

X:Y

X... Location of byte

Y... Location of bit

L ... Length in bit

### 4.1 Init Header and Software revision

After every start-up, the following ASCII string is written to the memory card:

"/i\_dataLink\_Format\_VXX"

XX is the revision code of the /i dataLink software.

The remaining packet size up to 64 bytes is filled with 0x00.

Software revision	Description
V01	Original revision Normalized Zoom Value in X.XX
V02	Normalized Zoom Value in XXXX

## 4.2 Header

The Header is the start string. It is written during power-up of the */i dataLink* box and during camera start (run detection). For identification, it is given the designated data packet number "0x000".

MSB	LSB	L	Name	Value	Note
<b>63:7</b>	<b>61:0</b>	<b>24</b>	<b>Data packet number</b>		<b>Data packet consecutive numbering</b>
3 :0	0 :0	24	Data_Number	0x000 0x001- 0xFFE 0xFFF	Identification for header Consecutive numbering for standard data Frame (see chapter 4.3) Invalid value
<b>60:7</b>	<b>54:0</b>	<b>56</b>	<b>Camera name</b>		<b>Name of camera</b>
		40		0xFF..FF	7 byte ASCII string Invalid value
<b>53:7</b>	<b>52:0</b>	<b>16</b>	<b>Camera serial number</b>		<b>Serial number of film camera</b>
		16		0d – 65534d 0xFFFF	Decimal value Invalid value
<b>51:7</b>	<b>36:0</b>	<b>128</b>	<b>Lens name</b>		<b>Name of lens</b>
		128		0xFF..FF	16 byte ASCII string Invalid Value
<b>35:7</b>	<b>20:0</b>	<b>128</b>	<b>Lens serial number</b>		<b>Serial number of lens</b>
		128		0xFF..FF	16 byte ASCII string Invalid value
<b>19:7</b>	<b>19:0</b>	<b>8</b>	<b>Reel number</b>		
		8	Reel_number	0-254d 255d	Number of reel Invalid value
<b>18:7</b>	<b>0:0</b>	<b>152</b>			
		152	RFU		RFU (reserved for future use)

### 4.3 Data Frame

MSB	LSB	L	Name	Value	Note
<b>63:7</b>	<b>61:0</b>	<b>24</b>	<b>Data packet number</b>		<b>Data packet consecutive numbering</b>
3 : 0	0 : 0	24	Data_Number	0x001-0xFEf 0x000 0xFF0 0xFF1-0xFFE 0xFFFF	Consecutive numbering  Identification for header Identification of last packet Identification for additional data packets  Not available / invalid number
<b>60:7</b>	<b>52:0</b>	<b>72</b>	<b>Time stamp</b>		<b>Consecutive timestamp since box has been switched on</b>
8:7		1	TimeCode_Valid	1b 0b	Time code is valid Time code invalid; timestamp is generated in /i dataLink box
8:6	8:0	7	Frame_Counter	0d – 128d	Counter for frames between pulses
7:7	7:0	8	User_Bit		RFU
6:7	5:4	12	Date_Year	0d-4095d	Year
5:3	5:0	4	Date_MM	0d-12d	Month
4:7	4:0	8	Date_DD	0d – 31d	Day
3 : 7	3 : 0	8	Time_HH	0d – 64d	Hours
2 : 7	2 : 0	8	Time_MM	0d - 59d	Minutes
1 : 7	1 : 0	8	Time_SS	0d – 59d	Seconds
0:7		1	RFU		RFU
0:6	0 : 0	7	Time_CLK	0d – 100d	10 ms steps
<b>51 : 7</b>	<b>51:0</b>	<b>32</b>	<b>Software revision</b>		
0:7	0:0	8	Revision_number	FFh FEh	Software revision V01 (see chapter 5.1) Software revision V02
<b>50 : 7</b>	<b>48:0</b>	<b>24</b>			
		24	RFU		RFU (reserved for future use)

47:7	46:0	16	Focus_Actual_Value		
					<b>Camera_Status:</b> Unit = 0 (Meter)
1:7	1:6	2	F_Multiplier	00 b 01 b 10 b 11 b	Indicates the decimal place Value = x.xxx Value = xx.xx Value = xxx.x Value = xxxx
1:5	0:0	14	F_Value	0x0001 – 0x3FFE 0x0000 0x3FFF	Value Error Invalid value
					<b>Camera_Status:</b> Unit = 1 (Feet)
1:7	0:0	16	F_Value	0x0001- 0xFFFE 0x0000 0xFFFF	Value in ¼ inch steps Error Invalid value

45:7	44:0	16	Focus_Near		
					<b>Camera_Status:</b> Unit = 0 (Meter)
1:7	1:6	2	F_Multiplier	00 b 01 b 10 b 11 b	Indicates the decimal place Value = x.xxx Value = xx.xx Value = xxx.x Value = xxxx
1:5	0:0	14	F_Value	0x0001 – 0x3FFE 0x0000 0x3FFF	Value Error Invalid value
					<b>Camera_Status:</b> Unit = 1 (Feet)
1:7	0:0	16	F_Value	0x0001- 0xFFFE 0x0000 0xFFFF	Value in ¼ inch steps Error Invalid value

43:7	42:0	16	Focus_Far		
					<b>Camera_Status:</b> Unit = 0 (Meter)
1:7	1:6	2	F_Multiplier	00 b 01 b 10 b 11 b	Indicates the decimal place Value = x.xxx Value = xx.xx Value = xxx.x Value = xxxx
1:5	0:0	14	F_Value	0x0001 – 0x3FFE 0x3FFE 0x0000 0x3FFF	Value Infinity Error Invalid value
					<b>Camera_Status:</b> Unit = 1 (Feet)
1:7	0:0	16	F_Value	0x0001- 0xFFFE 0xFFFE 0x0000 0xFFFF	Value in ¼ inch steps Infinity Error Invalid value

41:7	40:0	16	Zoom_Actual Value		
1:7		2	Z_Multiplier	00 b 01 b 10 b 11 b	Indicates the decimal place Value = x.xxx Value = xx.xx Value = xxx.x Value = xxxx
1:5	0:0	14	Z_Value	0x0001 – 0x3FFE 0x0000 0x3FFF	Value Error Invalid value

39:7	38:0	16	Iris_Actual_Value		
					Invalid value: 0xFFFF
1:7		1	Unit	0 b 1 b	Dimension unit for focus Meter Feet
1:6	1:4	3			RFU
1:3	1:0	4	Iris_Index	0001 b 0010 b 0011 b ... 1100 b 1101 b	Full iris value Iris 1.0 Iris 1.4 Iris 2.0 ... Iris 64.0 Iris Close
0:7	0:0	8	Iris Sub	0x00 - 0xFF	Interim value between full iris value in 1/256 steps

37 :7	36:0	16			
		16	RFU		RFU (reserved for future use)

35:7	34:0	16	Horizontal Angle of View		
1:7	0:0	16	Horizontal Angle of View	0d- 3600d 0xFFFF	Value in xxx.x degrees Invalid value

33:7	32:0	16	Entrance Pupil Position		
1:7	0:0	16	Entrance Pupil Position	0d-99d 128d- 227d 0xFFFF	Value in +XX mm Value in –XX mm Invalid number

31:7	30:0	16	Normalise Zoom Value		
1:7	0:0	16	Normalise Zoom Value	0d – 100d 0d – 9999d 0xFFFF	Value in X.XX (software revision V01) or Value in XXXX (software revision V02) Invalid number

<b>29:7</b>	<b>18:0</b>	<b>96</b>			
		96	RFU		RFU (reserved for future use)

<b>17:7</b>	<b>17:0</b>	<b>8</b>	<b>Camera_Status</b>		
0:7		1	C_Standby *)	0 b	Camera in standby mode
			C_Run *)	1 b	Camera running
0:6		1	C_Available	1 b	Camera has been detected
0:5		1	C_Ready *)	0 b	Camera ready
			C_Error *)	1 b	Camera error
0:4		1	C_Inching	1 b	Camera in inching mode (1fps)
0:3		1			RFU
0:2		1	Record_enable	1b	Record enable at memory
0:1		1	C_Perf	0 b 1 b	4 perf transport 3 perf transport
0:0		1	Unit	0 b 1 b	Dimension Unit Meter Feet

\*) This status information is also available on the video screen.

<b>16:7</b>	<b>14:0</b>	<b>24</b>	<b>Camera_Speed_Control</b>		
2:7		1		0 b 1 b	Camera in forward mode Camera in reverse mode
2:6	2:4	3			RFU
2:3	0:0	20	C_FPS	0d – 1048576d	Actual camera speed in 0,001 fps steps

<b>13:7</b>	<b>12:0</b>	<b>16</b>	<b>Camera_Shutter</b>		
1:7		1			RFU
1:6	0:0	15	C_Shutter	1000d– 18000d	Actual shutter position in 0,01 ° steps

<b>11:7</b>	<b>0:0</b>	<b>96</b>	<b>Camera_Position</b>		
11:7	9:0	24	PAN_Position	0x000000– 0xFFFFFE 0xFFFFF	Encoder value for PAN Invalid value
8:7	6:0	24	Tilt_Position	0x000000– 0xFFFFFE 0xFFFFF	Encoder value for TILT Invalid value
5:7	3:0	24	Dolly_Position	0x000000– 0xFFFFFE 0xFFFFF	Encoder value for Dolly Invalid value

## A ATTACHMENT

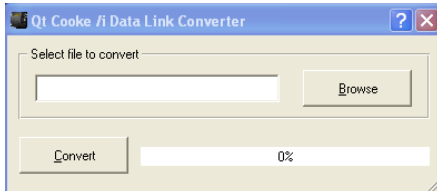
### A.1 Software update

If required, a software update for the */i dataLink* can be executed on every PC via the serial RS232 update cable RPC-3. If the PC does not have a RS232 interface, an adapter USB to RS232 can be used.

Updating the software on the PC involves various programs; if required, these programs are provided by cmotion.

### A.2 Conversion program "dataLinkConverter"

The program "dataLinkConverterV05.exe" converts the binary data file "LENSERNRBOXAA0000.dat" into a CSV file. A CSV file is a text file for the storage and exchange of simply structured data. CSV files can be read in software programs like Excel ®. The file length is limited to 65,000 lines.



1. Start the program "dataLinkConverterV05.exe" by double-clicking it. This opens the program window.
2. With BROWSE you can select the data file you want to convert.
3. Click CONVERT to convert the file.
4. This opens the window "Save as". Here you can select the name of the converted file and a folder. Click SAVE to save the file.

### A.3 Technical Data

Temperature range: -10 to +50 °C

Supply voltage: 8 to 34 V – max 200 mA

**Notes:**

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