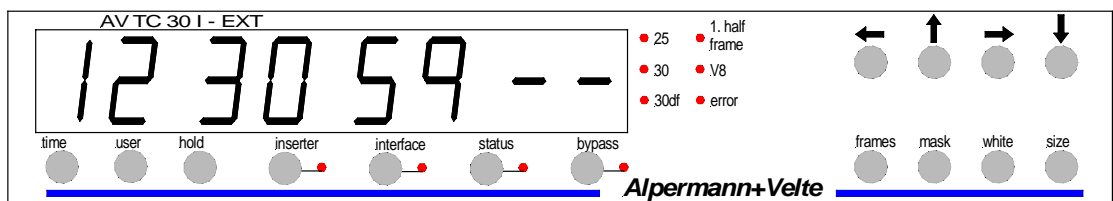


# TC 30 I - EXT

## Daytime Inserter





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## A1 Revision History

No.	Date	Subject
3.0	April 21, 2004	Completely revised.

## A2 Copyright

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## A3 Warranty

Alpermann+Velte warrants that their products will be free from defects in materials and workmanship for a period of two years from the date of shipment. If this product proves defective during the warranty period, Alpermann+Velte, at its option, will repair or replace the defective product without charge, provided this product are returned to Alpermann+Velte freight prepaid.

In order to obtain service under this warranty, Customer must notify Alpermann+Velte of the defect before expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to Alpermann+Velte, please notice the Shipping Information given below.

This warranty shall not apply to any defect, failure or damage caused by abuse, misuse, improper use, negligence, accident, modification, alteration, or improper or inadequate maintenance and care.

This warranty is given by Alpermann+Velte with respect to this product in lieu of any other warranties, express or implied. Alpermann+Velte and its vendors disclaim any implied warranties of merchantability or fitness for a particular purpose. Alpermann+Velte's responsibility to repair or replace defective products is the sole and exclusive remedy provided to the customer for breach of this warranty. Alpermann+Velte and its vendors will not be liable for any indirect, special, incidental, or consequential damages irrespective of whether Alpermann+Velte or the vendor has advance notice of the possibility of such damages.

## A4 Unpacking/Shipping/Repackaging Information

This product has been carefully inspected, tested and calibrated before shipment to ensure years of stable and trouble-free service.

The shipping carton and pads provide protection for the product during transit. Retain the shipping cartons in case subsequent shipment becomes necessary.

Carefully unpack the product from its transit material and carefully check the product for signs of damage. In the event that the product has been damaged during transit, contact the carrier and your Alpermann+Velte dealer.

Please confirm that all items listed on the packing list have been received. Check the items against your original order to ensure that you have received the correct parts. If any item is missing, please contact your Alpermann+Velte dealer.

Ensure that all packaging material is removed from the product and its associated components before installing the unit.

Products returned to Alpermann+Velte for servicing or repair should have a tag attached showing:

- Name and complete address of the owner and the name of the person that can be contacted.
- Units serial number and a description of the service required or failure detected.

Products returned should be shipped prepaid in the original packaging material if possible. If the original packaging is not available or is unfit for use, supply an adequate packaging which should meet the following criteria:

- Packaging must be able to withstand the product weight.
- Product must be held rigid within the packaging.
- Allow at least two inches of space between the product and the container.
- The corners of the product must be protected.
- Seal the carton with shipping tape or an industrial stapler.

If the product is still within the warranty period, the product will be returned by prepaid shipment after servicing.

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## A5 Safety Instructions

The general safety information in this part is for both operating and service personnel. Alpermann+Velte products are only to be used as directed. Specific warnings and cautions will be found throughout the manual where they apply.

Review the following safety instructions to avoid injury and prevent damage to this product or any products connected to it.

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.

### Safety Terms and Symbols

Terms and Symbols in this manual:



**CAUTION:** Caution statements identify conditions or practices that could result in damage to this product or other property.

Terms and Symbols which may be found on the product:



**ATTENTION:** Refer to the manual.



Observe precautions for handling electrostatic-sensitive devices.



Signal Ground.

### Product Damage Precautions

#### PREVENT OVERHEATING



To prevent product overheating, position the unit only where sufficient air circulation can be maintained. Good air circulation is essential to prevent internal heat build-up, do not block any ventilation openings. Do not expose the unit to direct sun light or any other strong lights. Keep the unit away from heat sources.

#### PROVIDE PROPER ENVIRONMENT



Dust, humidity, shocks and strong electromagnetic fields must be avoided. Do not expose this apparatus to dripping or splashing water. Ensure that no objects filled with liquid are placed on the apparatus.

## OBSERVE EMC REGULATIONS



The EMC regulations are observed only under the following condition: use high quality shielded cables at data inputs and outputs.

## SUSPECTED FAILURES



Whenever it is likely that safe operation is impaired, the apparatus must be made inoperative and secured against unintended operation. The appropriate service authority must then be informed. Do not operate with suspected failures. Servicing is required when the apparatus has been damaged in any way, such as power-supply is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

## PREVENTIVE MAINTENANCE: CLEANING



Qualified Service Personnel Only: The apparatus should be cleaned often enough to prevent dust or dirt from accumulating. Dust accumulating in the apparatus acts as an insulating blanket, preventing proper cooling, and possibly causing overheating and component breakdown. Under high humidity conditions, accumulated dust can also provide an electrical conduction path. Remove accumulated dust with a soft cloth or small paint brush. Remove hardened dirt with a soft cloth, dampened in a mild detergent and water solution. Do not use polish or abrasive cleaners or any other chemical cleaning agents.

## PREVENTIVE MAINTENANCE: VISUAL INSPECTION



Qualified Service Personnel Only: Visually inspect the apparatus for signs of damage, scorched components, and loose or disconnected pin connectors. If you discover heat damaged parts, try to determine the cause of the overheating before replacing the damaged parts; otherwise, the damage may repeat.

## ATTENTION:



Observe precautions for handling electrostatic-sensitive devices. See "Electro Static Discharge (ESD) Precautions" below for details.

## Electro Static Discharge (ESD) Precautions



All semiconductor devices are sensitive to ESD. To prevent any damage or degradation on components of the product caused by ESD, observe these precautions when directed to do so (installing, removing sensitive components):

1. Use a Ground Strap. Wear a grounded anti-static wrist or heel strap to discharge the static voltage from your body.
2. Use a Safe Work Area. Avoid handling components in areas that have a floor or work surface covering capable of generating a static charge. Also nothing capable of generating or holding a static charge should be allowed in the work area.
3. Handle ESD sensitive components carefully. Do not slide components over any surface. Do not touch exposed connector pins. Pick-up components by the body, never by the leads.
4. Transport and store sensitive components or assemblies in a static-protected bag or container.

## A6 Certifications & Compliances

### CE-Declaration:

We,

**Alpermann+Velte**  
Electronic Engineering GmbH  
Otto-Hahn-Str. 42  
D-42103 Wuppertal

herewith declare under our sole responsibility that the

### **TC 30 I - EXT**

meets the intent of the following directives, standards and specifications:

89/336/EEC Electromagnetic Compatibility

EN 50081-1 Emissions

- EN 55022
- EN 55103-1

EN 50082-1 Immunity

- EN 55024
- EN 55103-2

## 1 Introducing the TC 30 I - EXT

### 1.1 Functions Overview

**TC 30 I - EXT** is a character inserter. Time and date data are received from a source (normally an external DCF77 or GPS receiver or a PC) via a serial interface. Time and date can be displayed at the front and are visibly inserted into an composite analogue video signal (PAL 625/50, NTSC 525/60).

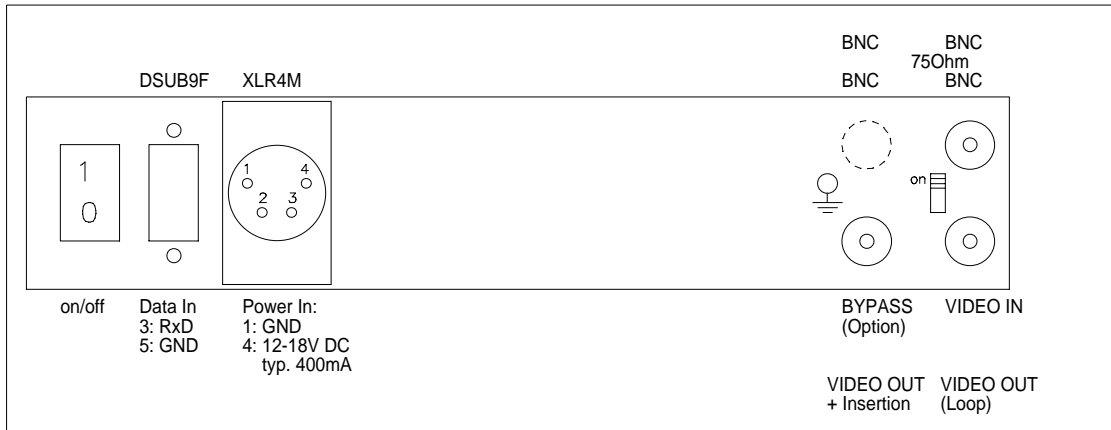
**TC 30 I - EXT** has no built-in clock, i.e. without data reception at seconds interval the indication of the last value freezes.

The insertion of time and/or date into the video signal may be positioned all over the entire screen. Different formats of character representation are selectable. All selections set for the video insertion will be stored and will be available again after switching on the unit.

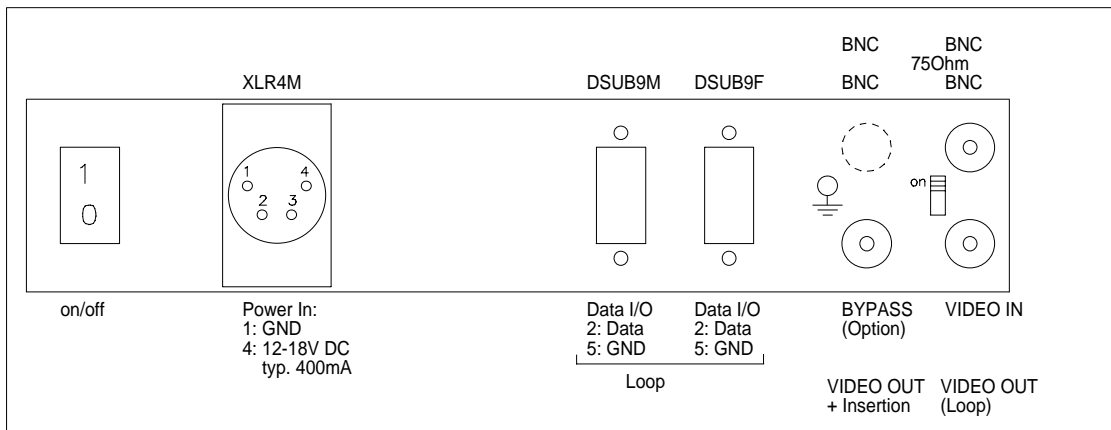
## 1.2 Various Types and Connections at the Rear

The source of the time, date and status data can be an external unit or a built-in DCF77 or GPS receiver. In all cases there is a serial interface connection between the source and TC 30 I - EXT.

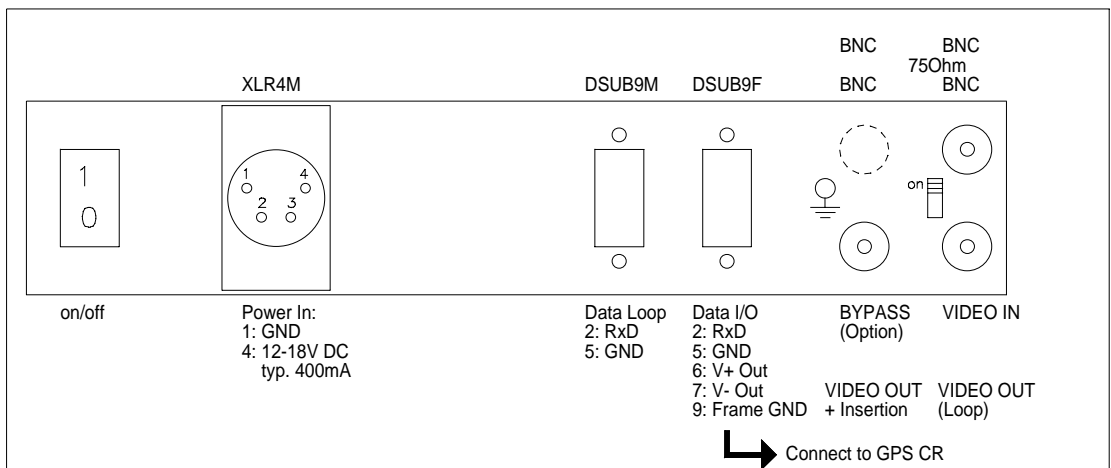
External source, 1 x serial data input, RS232



External source, 1 x serial data input + loop output, RS232

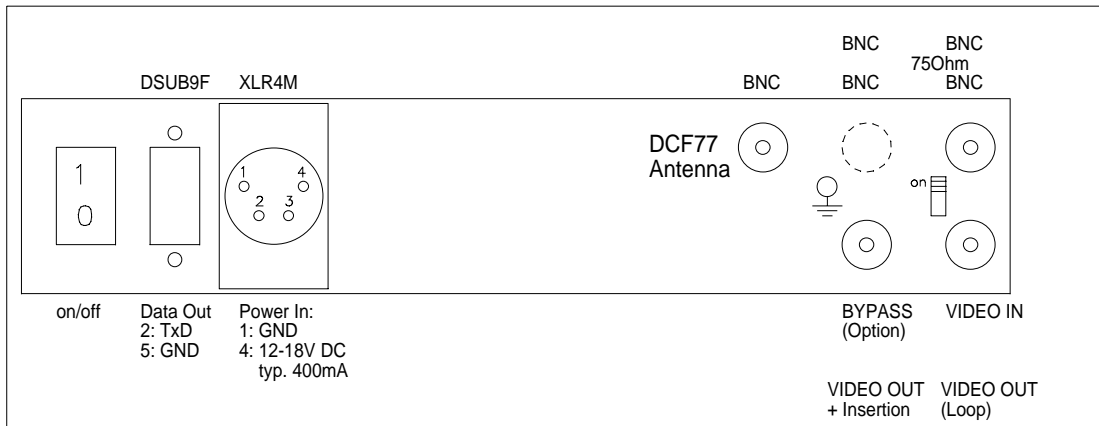


External source = GPS CR, 1 x serial data input + loop output, RS232



# Operation Manual TC 30 I - EXT

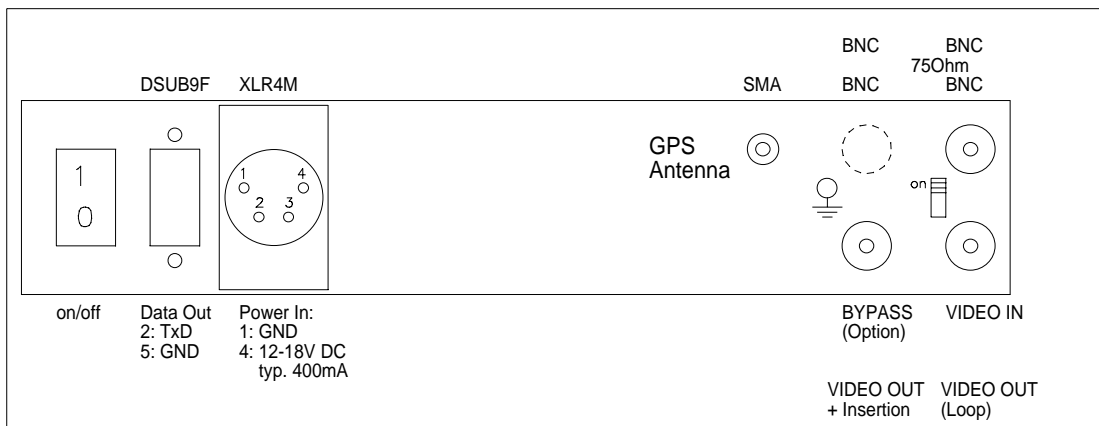
## Built-in DCF77 receiver, serial data output, RS232



This type has three status LEDs at the front:

● free	LED <b>free</b> : Lights up if the built-in receiver stays in a free-running mode. Switches off as soon as the receiver has synchronised to the DCF77 signal.
● mod.	LED <b>mod.</b> : Modulation LED, imitates the radio telegram by a flash every second.
● field	LED <b>field</b> : Indicates the field strength.

## Built-in GPS receiver, serial data output, RS232



This type has three status LEDs at the front:

● free	LED <b>free</b> : Lights up if the built-in receiver stays in a free-running mode. Flashes if there are not enough satellites to synchronise. Goes out if there are enough satellites and the receiver has locked.
● mod.	LED <b>mod.</b> : Modulation LED, flashes with every serial data string transmitted.
● power	LED <b>power</b> : Lights up if the GPS receiver is switched on.

---

## 2 Functions and Operating

### 2.1 Serial Data Protocol

Time, data and possible status information are received via serial interface. The data protocol is not selectable, i.e. **TC 30 I - EXT** is pre-set to a certain protocol, mainly from a DCF77 or GPS sending data information every second. However, it is also possible to implement a customer-made protocol, to be specified with the order.

Status indication is provided for a "synchronised" or "not synchronised" state - if this status data is transmitted via serial interface. For example a DCF77 receiver may indicate, whether it actually runs freely or synchronised to the radio signal. The front display always indicates the current status, the window for time insertion may (selectable) indicate the current status:

"synchronised": The two right-hand digits of the display are blank.  
The video insertion shows the time in 23:59:59 format.

"not synchronised": The two right-hand digits of the display show hyphen.  
The video insertion shows the time in 23:59:59 format, i.e. the character delimiter between minutes and seconds changes to a "centre point".

Without receipt of status information, the condition "not synchronised" is automatically set when no new time data is received for a few seconds.

### 2.2 Indicate Device Status

After power-on the last stored data will be tested. In case of a memory failure, the system will automatically switch to a "reset", that is the factory settings will be set and re-stored again into the non-volatile memory area. "RESET" is displayed during this process.

Then, the display will show 2-step status information, in addition all LED's will be illuminated for testing purposes. The display status is also indicated after pushing the **status** key.

Step 1: indication of type and version of firmware (e.g. "I-E 20").

Step 2: configuration of hard- and firmware.

## 2.3 Time/Date Selection and Adjustment of the Video Window

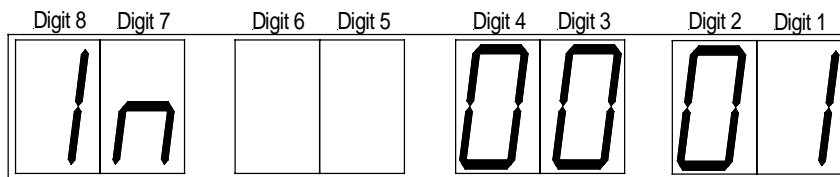
Button	Function															
<b>time</b>	This key either changes display or insertion: <ul style="list-style-type: none"> <li>• If the display shows the date, pushing <b>time</b> will switch the display to time.</li> <li>• If the display already shows the time, each key stroke will switch the time insertion into the video on/off.</li> </ul>															
<b>user</b>	This key either changes display or insertion: <ul style="list-style-type: none"> <li>• If the display shows the time, pushing <b>user</b> will switch the display to date. A decimal point LED on the right side indicates the display of date.</li> <li>• If the display already shows the date, each key stroke will switch the date insertion into the video on/off.</li> </ul>															
<b>frames</b>	Switches between four possible formats of video insertion: Format 1 = time and date side by side: 12:30:59 24.12.04 Format 2 = date and time side by side: 24.12.04 12:30:59 Format 3 = time above date: 12:30:59 24.12.04 Format 4 = date above time: 24.12.04 12:30:59 Please note: Format 1 or 2 can only be adjusted with size = 1 or = 2.															
<b>mask</b>	Cyclical switch of character representation: with border, with background mask, without border/mask.															
<b>white</b>	Five steps of character brightness may be adjusted.															
<b>mask + white</b>	simultaneous pressing of both keys: adjusting the brightness of border or background mask.															
<b>size</b>	Three character sizes are available. Please note: size "3" can only be selected with format = 3 or = 4, see above.															
← ↑ → ↓	Moves inserted data over the screen. Please note: if only time or date information shall be inserted at one of the screens border, the format (see <b>frames</b> button) has to be considered: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>top left</th> <th>top right</th> <th>down left</th> <th>down right</th> </tr> </thead> <tbody> <tr> <td>time only</td> <td>format 1, 3</td> <td>format 2, 3</td> <td>format 1, 4</td> <td>format 2, 4</td> </tr> <tr> <td>date only</td> <td>format 2, 4</td> <td>format 1, 4</td> <td>format 2, 3</td> <td>format 1, 3</td> </tr> </tbody> </table>		top left	top right	down left	down right	time only	format 1, 3	format 2, 3	format 1, 4	format 2, 4	date only	format 2, 4	format 1, 4	format 2, 3	format 1, 3
	top left	top right	down left	down right												
time only	format 1, 3	format 2, 3	format 1, 4	format 2, 4												
date only	format 2, 4	format 1, 4	format 2, 3	format 1, 3												

## 2.4 Special Adjustments of the Video Window

The **inserter** key enables to select

- the data delimiter for time and date insertions,
- the format of date display,
- the indication of the "synchronised" or "not synchronised" state .

The display switches to e.g.:



Further operation with arrow keys: ← ↑ → ↓. The flashing digit is changed with keys ↑ and ↓, previous/next digits are selected with ← and → .

Digit 1 = Selection of data delimiters for time:

- 0: data delimiter = '.' (e.g.: 12.30.59).
- 1: data delimiter = ':' (e.g.: 12:30:59).
- 2: data delimiter = '-' (e.g.: 12-30-59).
- 3: data delimiter = '/' (e.g.: 12/30/59).

Digit 2 = Selection of data delimiters for date:

- 0: data delimiter = '.' (e.g.: 24.12.04).
- 1: data delimiter = ':' (e.g.: 24:12:04).
- 2: data delimiter = '-' (e.g.: 24-12-04).
- 3: data delimiter = '/' (e.g.: 24/12/04).

Digit 3 = Format of date display:

- 0: day/month/year.
- 1: month/day/year.
- 2: year/month/day.
- 3: day/year/month.
- 4: month/year/day.
- 5: year/day/month.

Digit 4 = Display "status of synchronisation" on/off (see chapter "Serial Data Protocol"):

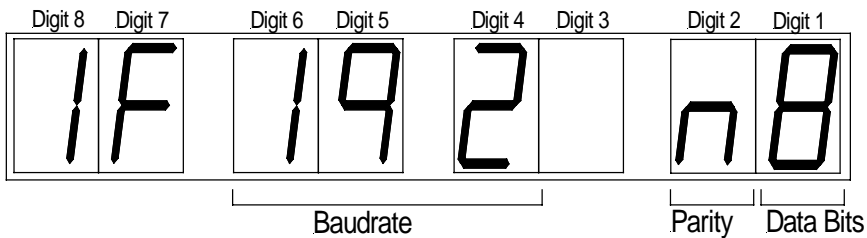
- 0: off.
- 1: on.

The **hold** key stores the new setting and ends the programming mode.

## 2.5 Format of the Serial Interface

Time, date and status data are received via a serial interface. The **interface** key enables to set the serial interface of **TC 30 I - EXT** to the format of the serial interface of the data source. If **TC 30 I - EXT** is equipped with a serial data output, this output has the identical data and format as that of the source.

The display switches to e.g.:



Further operation with arrow keys: ← ↑ → ↓. The flashing digit is changed with keys ↑ and ↓, previous/next digits are selected with ← and →.

Digit 1 = number of data bits:

**7**: 7 data bits.

**8**: 8 data bits.

Digit 2 = parity bit:

**n**: no parity bit.

**o**: odd parity.

**E**: even parity.

**1**: no parity check, parity bit is fixed to 1.

**0**: no parity check, parity bit is fixed to 0.

Digits 4 to 6 = baud rate:

**24**: baud rate 2400.

**48**: baud rate 4800.

**96**: baud rate 9600.

**192**: baud rate 19200.

The **hold** key stores the new setting and ends the programming mode.

## 2.6 Bypass

The **bypass** key switches the video insertion on/off. As an option, this function can also be controlled by an external connection.

LED **bypass** off: insertion on.

LED **bypass** on: function "Bypass", insertion is switched off.

---

## 2.7 Technical Data

Dimensions:	214.5 (W) x 43.5 (H) x 270 (D) mm (½ 19", 1U)
Weight:	1.5kg approx.
Operating Temperature:	5°C to 40°C
Ambient Humidity:	35% to 85%, non-condensing
Input Voltage:	12 - 18 V DC
Current Consumption:	400mA @ 14 V, typical
Video In:	CVBS analogue video signal (PAL 625/50, NTSC 525/60), 75Ω
Signal Level:	1Vpp ± 15 mV
Video Out:	75Ω, gain 1 ± 2%