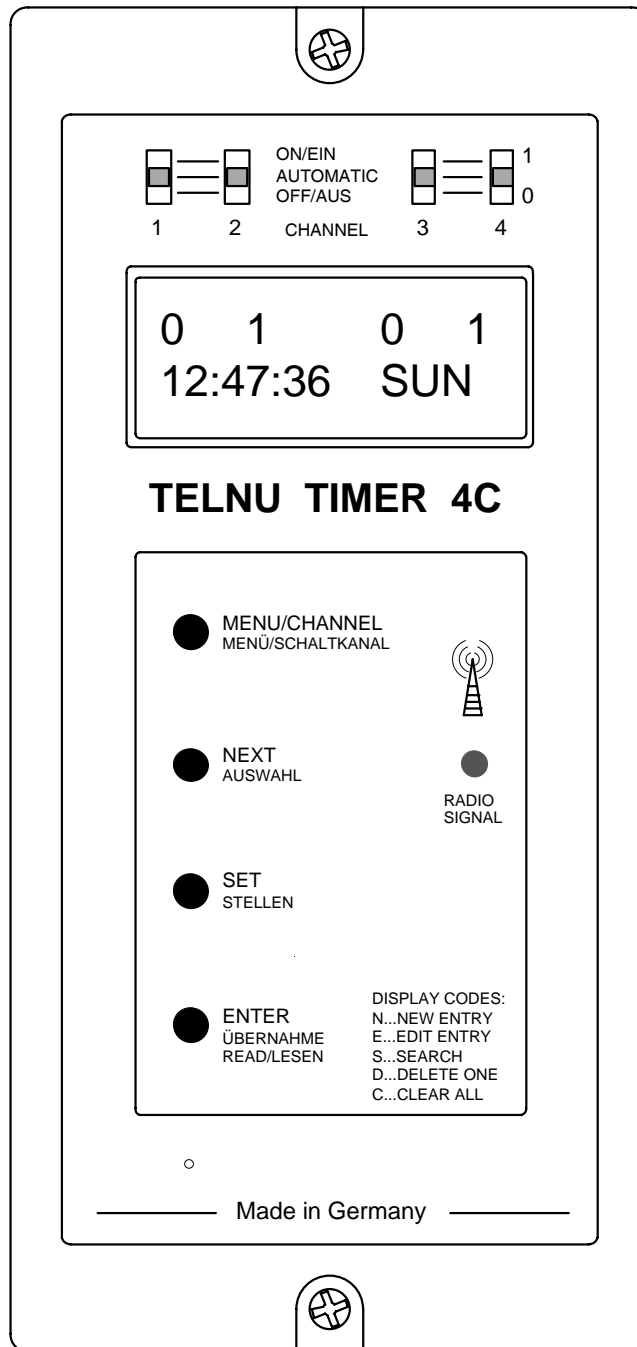


# TELNU TIMER 4C

4 Channel Slave Switch Computer  
for DCF77 Radio or Telnu Operation

## Operating Manual



## **INTRODUCTION**

The Telnu Timer 4C is a software based program unit for daily or weekly programs. After connection to the 230VAC mains supply and the DCF77/Telnu time code the unit is ready for operation. Synchronisation to the external time source takes approx. 4 min.. As soon as the timer has accepted the external time and date the unit is ready for relay programming. Four relays are available, channel 1 & 2 with a floating contact pair, normally open and normally closed, and channel 3 & 4 with a floating single normally open contact.

The timer requires an external time source and can not operate in 'stand alone' mode. It can be controlled by a DCF77 radio receiver (available in Europe only), a telnu master clock or a GPS receiver (available world wide).

For convenience each channel can be manually turned on, off or set to automatic mode. For this purpose a group of four mini switches are placed above the display. Manual settings override software settings. The manual switch settings are not indicated in the display.

## **INSTALLATION**

The timer case consists of two parts: the base with the terminal strip and the top housing the microprocessor and power supply. Separate the base from the top. Mount the base with two screws to the wall or using the DIN rail mounting clip mount the base onto a DIN rail.

Referring to the diagram in the base terminate the mains cable, DCF data cable and switching cables at the terminal block in the base.

Plug the top into the base and secure it with the two mounting screws with a phillips head screw driver. Now connect the timer to mains (230/240VAC 50Hz)

## **ENVIRONMENTAL CONCERNS**

The high quality electronic circuit board is to a large degree protected from external interference. However in situations with very strong magnetic or radio interference the unit may malfunction. To reduce the chances for problems caused by external sources we provide you with following recommendations:

1. Please do not install the Telnu Timer 4C near interference sources like, switchboards, high current, high voltage cables, electro magnetic valves, lighting controls, large electric motors, switch mode power supplies, etc
2. Protect the base with all the terminals from humidity and dripping water
3. Mount the Timer to enable comfortable data entry and service
4. If an optional GPS receiver is being used, install the antenna correctly for maximum reception

## **MICROPROCESSOR RESET**

Should the microprocessor lock up due to interference it need to be reset by pushing the hidden button through the hole beneath the 'enter' key with an unfolded paper clip. Once the software restarts the message 'waiting for DCF' (waiting for external DCF signal) will appear in the display. The reset operation does not alter or erase the switching program. After approx. 3-4 minutes of DCF/Telnu reception the display changes to the time of day and relay conditions display.

## **ELECTRICAL CONNECTION**

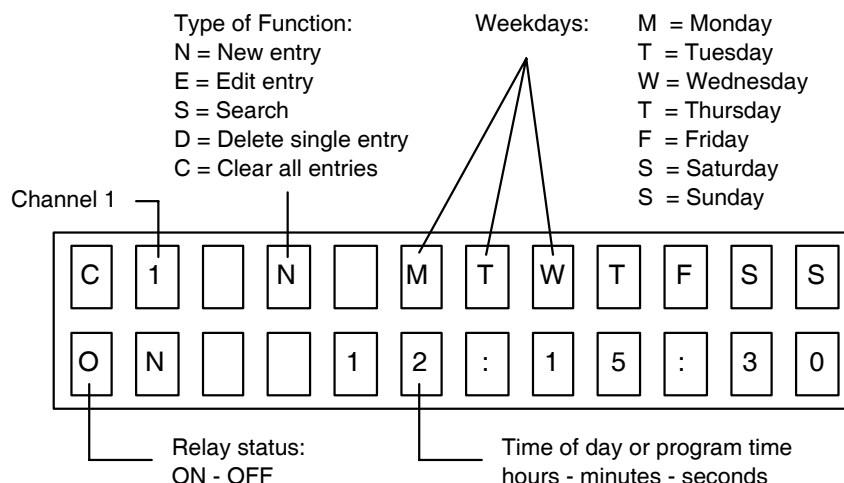
The Telnu-Timer 4C is supplied factory pre-wired and only a few external connections need to be made.

1. First connect the 240VAC 50Hz mains cables to the terminals, L = Active, N = Neutral and PE = Earth.  
**Attention!** Only approved electrical contractors are allowed to make electrical connections!
2. Connect the DCF signal from a receiver or master clock to the DCF input terminals observing the correct polarity.
3. Finally, connect the switching lines to relay channels 1-4. Please note that the maximum current handling capacity of the relay contacts is 3A non inductive ( $\cos \phi = 1$ ).

## **RISK OF ABUSE**

We advise strongly against using the Telnu-Timer 4C for any other purpose than the one intended by the designers to prevent unforeseen risks. In particular, do not open the unit before the power has been disconnected to prevent personal injury and damage to the switch computer.

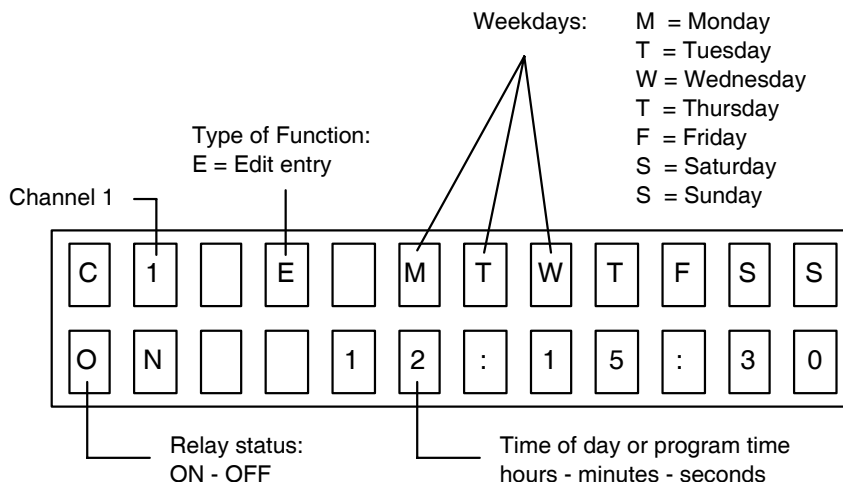
## NEW PROGRAM TIME ENTRIES



1. Push and hold the 'MENU/CHANNEL' button for a brief moment . The display will change to the channel 1 (C1) entry screen. Pushing the same button again moves the display to channel 2 (C2) and so on.
2. With the 'set' button select the function code 'N' = New program time entry.
3. Push the 'NEXT' button to begin the selection of weekdays and select or de-select the required weekdays with the 'SET' key. Any combination of weekdays can be selected. Weekdays are indicated by the first letter of each weekday:  
 M = Monday T = Tuesday W = Wednesday T = Thursday F = Friday  
 S = Saturday S = Sunday
4. After the weekdays have been selected push the 'NEXT' button to move to the 'ON' time entry. The first hour digit flashes. Change the value with the 'SET' key and move to the next digit by pushing the 'NEXT' key.
5. After the last digit of the 'ON' time entry has been set push the 'NEXT' button to move to the 'OFF' time entry. Change the 'OFF' time value the same way as the 'ON' time values above.
6. Proceed with further entries or push the 'MENU/CHANNEL' button to move to another channel. Pushing the 'MENU/CHANNEL' button after channel 4 will terminate programming. The screen will change to 'Ready - Press Enter'.
7. Press 'ENTER' to save the program. The screen displays 'Loading - Please wait' The loading of the timer's memory can take some time depending on the number of entries programmed. The processor automatically sorts the entries in chronological order.
8. Once the processor has saved the program times the display returns automatically to the initial screen with the 'relay status' and 'time-of-day' display.

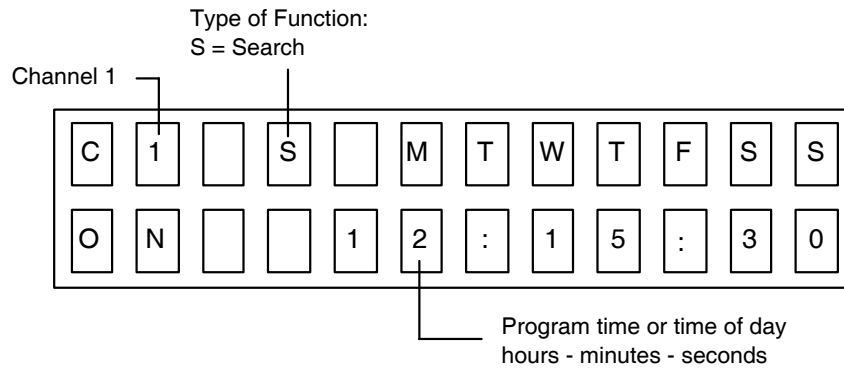
Please note: Each event consists of two entries: the 'ON' and 'OFF' time entries. The shortest possible time difference between on and off times is one second. A maximum of 292 entries are available for all four channels combined.

## CHECK AND EDIT PROGRAM TIME ENTRIES



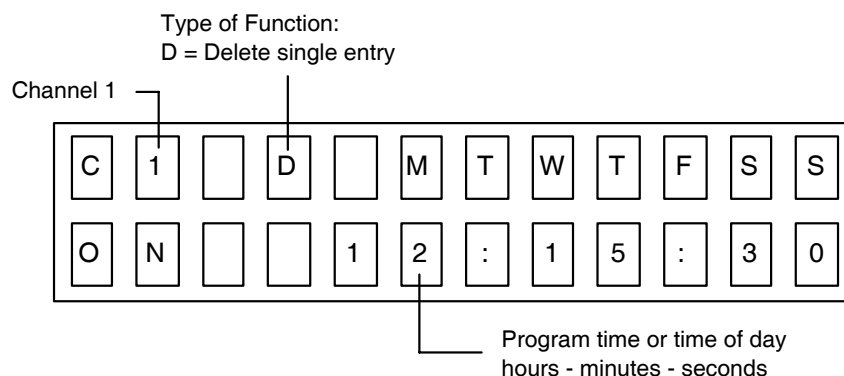
1. Push and hold the 'MENU/CHANNEL' button for a brief moment. The display will change to the channel 1 (C1) entry screen. Pushing the same button again moves the display to channel 2 (C2) and so on.
2. With the 'ENTER' button select the function code 'E' = Edit program time entry. The display shows the time entries in chronological order beginning with the earliest time. Each subsequent push of the 'ENTER' key brings up the next time entry. 'ON' times first, followed by the 'OFF' time.
3. With the 'NEXT' and 'SET' buttons changes can be made to the selection of weekdays and the 'ON' and 'OFF' switching times.
4. If changes to an entry have been made confirm the changes with the 'ENTER' key.
5. Proceed with further entry changes or push the 'MENU/CHANNEL' button to move to another channel. Pushing the 'MENU/CHANNEL' button after the last channel terminates programming. The screen displays 'Ready - press Enter'
6. Press 'ENTER' to save the program. The screen displays 'Loading - Please wait' The loading of the timer's memory can take some time depending on the number of entries programmed. The processor automatically sorts the entries in chronological order.
7. Once the processor has saved the program times the display returns automatically to the initial screen with the 'relay status' and 'time-of-day' display.

## SEARCH FOR TIME ENTRIES



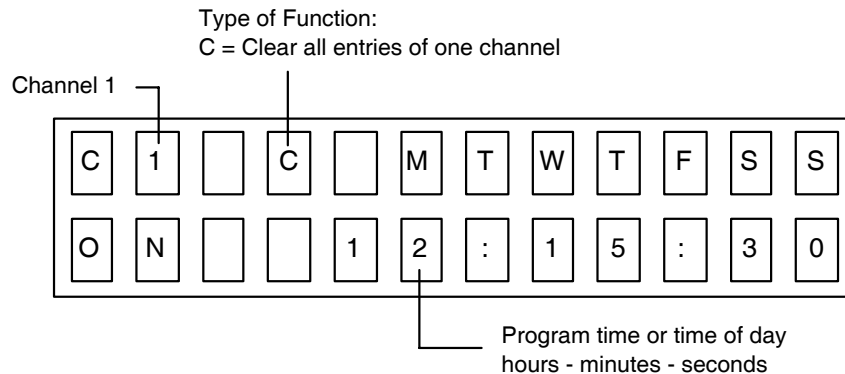
1. Push and hold the 'MENU/CHANNEL' button for a brief moment . The display will change to the channel 1 (C1) entry screen. Pushing the same button again moves the display to channel 2 (C2) and so on.
2. With the 'set' button select the function code 's' = Search for program time entry.
3. With the 'NEXT' and 'SET' buttons enter the time you try to locate.
4. Confirm the entry with the 'ENTER' key.
5. The processor searches for the time in question and if it is actually part of the existing program it will be displayed accordingly. If it is not found in the program then another time entry close to the time in question will be displayed.
6. Additional searches are possible pushing the 'ENTER' key.

## DELETION OF INDIVIDUAL TIME ENTRIES



1. Push and hold the 'MENU/CHANNEL' button for a brief moment . The display will change to the channel 1 (C1) entry screen. Pushing the same button again moves the display to channel 2 (C2) and so on.
2. With the search function find the time entry that need to be erased. Once the time is displayed on screen push the 'SET' button several times until 'D' appears in the function window. Now press 'ENTER' for an immediate deletion of this time entry.  
**ATTENTION!** The timer instantly deletes the entry.

## CLEAR ALL ENTRIES OF ONE CHANNEL



1. Push and hold the 'MENU/CHANNEL' button for a brief moment . The display will change to the channel 1 (C1) entry screen. Pushing the same button again moves the display to channel 2 (C2) and so on.
2. Push the 'SET' button several times until 'C' (Clear all) appears in the function window. Now press 'ENTER' to start the deletion process. The timer asks for confirmation and displays: C1 DELETE? YES = SET  
Confirm with the 'SET' key, if you want all entries of the selected channel erased, otherwise push the 'MENU/CHANNEL' key.

It is not possible to unintentionally erase the time entries of all four channels simultaneously. Only the entries of one channel can be deleted at any one time.

## HOW TO PROGRAM EVENTS STRETCHING OVER SEVERAL DAYS

Program the 'ON' time as per requirement, but select only the one weekday of the event start. Set the 'OFF' time to 24:00:00 midnight.

Program the next entry with the next weekday and set the 'ON' time to 00:00:00 and the 'OFF' time to 24:00:00. The relay will remain switched on all day on this weekday. Several consecutive weekdays can be programmed the same way to keep the relay switched on. On the final weekday, the day the relay is supposed to turn off, program the event as follows:

Select the weekday, program the 'ON' time with 00:00:00 and the 'OFF' time as per required time, e.g. 14:00:00

To get out of programming push the 'MENU/CHANNEL' button until 'ready - press Enter' appears. Push the 'ENTER' button to save the new entries.

The display returns automatically to the initial screen with the 'relay status' and 'time-of-day' display.

## SPECIFICATIONS

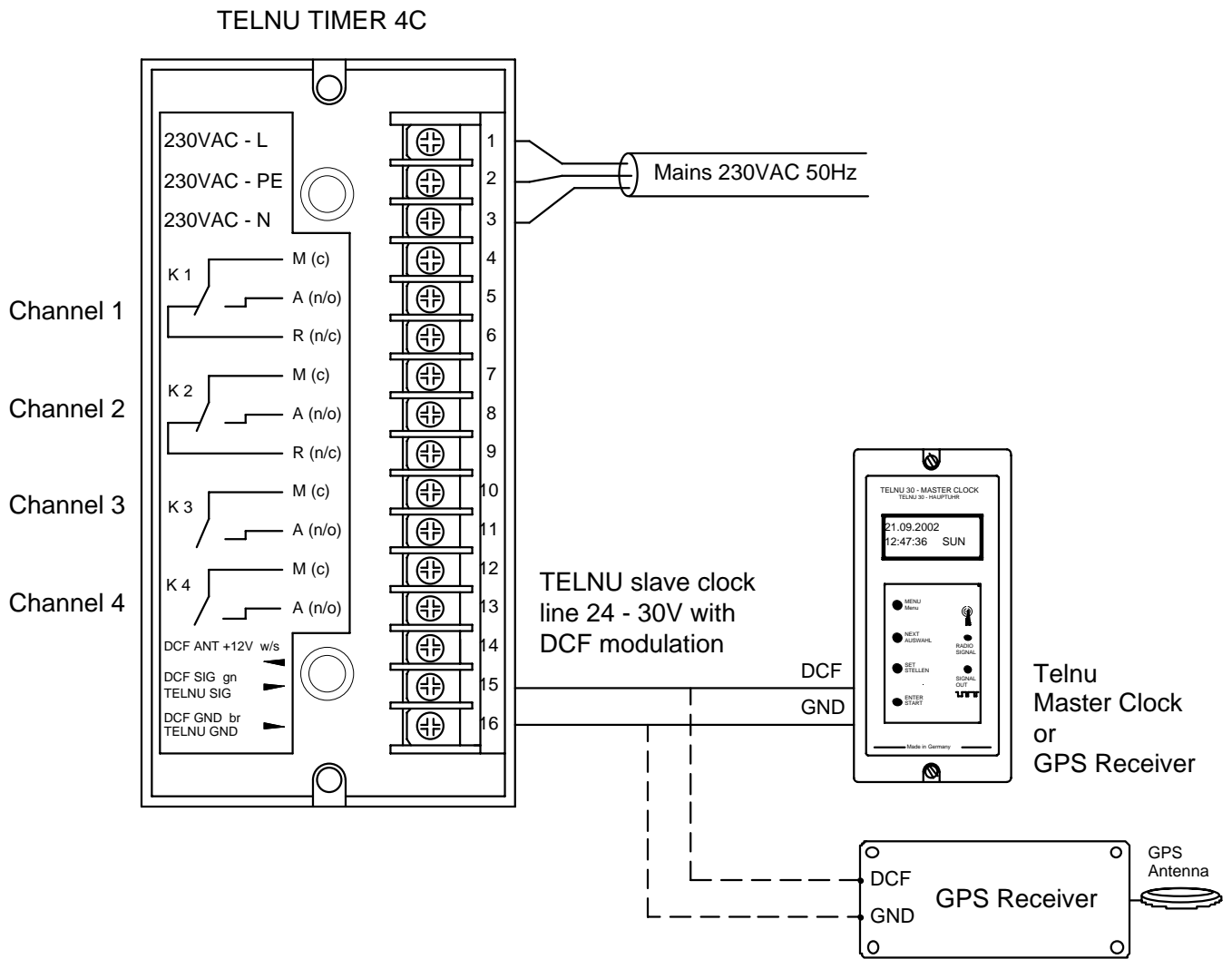
<b>Model Number:</b>	K-TELNU-TIMER 4C
<b>Function:</b>	4x channel switch computer for daily and weekly cycles
<b>Operating Mode:</b>	Slave operation controlled from external DCF77 time codes
<b>Power Supply:</b>	230/240VAC +/-10%
<b>Power Consumption:</b>	3VA
<b>Relay Outputs:</b>	4x independently programmable relay circuits
<b>Relay Configuration:</b>	Relay 1& 2: one floating contact pair; one normally open, the other normally closed Relay 3 & 4 one single floating contact, normally open
<b>Contacts Voltage:</b>	max. 230VAC
<b>Contacts Current Handling:</b>	max. 3A non inductive ( $\cos \phi = 1$ )
<b>Switching Frequency:</b>	min. 1 second
<b>Memory Capacity:</b>	max. 292 switching times for all four channels combined
<b>Start-up time:</b>	approx. 4 min from first reception of DCF77 time codes
<b>Operating Temperature:</b>	0°C to +50°C, humidity: non condensing
<b>Accuracy:</b>	depending on primary source (master clock, DCF77 receiver, GPS receiver)
<b>Enclosure:</b>	Top: light grey high impact resistant Polystyrene Base: dark grey, PA66-gf material, with terminal strip
<b>Protection Rating:</b>	IP40
<b>Dimensions:</b>	W x H x D 75 x 150 x 106 mm (3" x 6" x 4¼")
<b>Weight:</b>	600 g

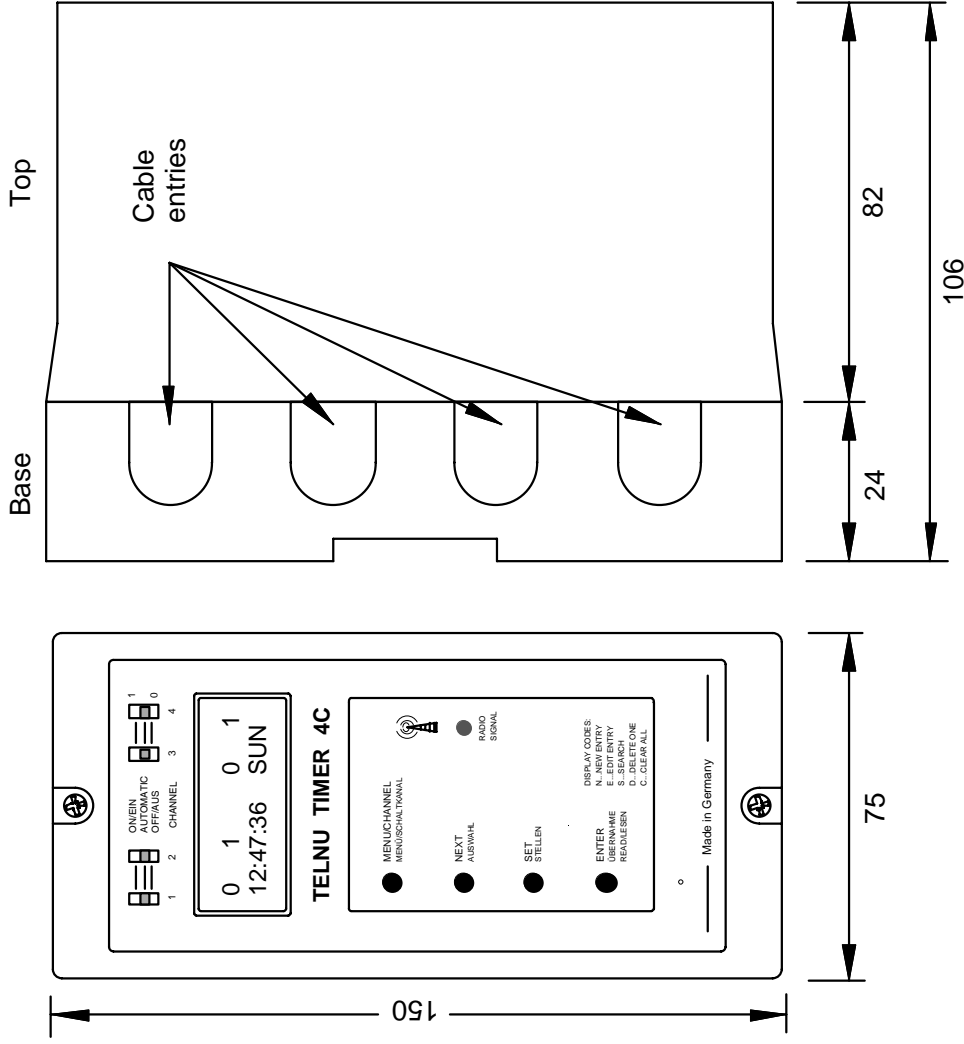
<b>K-GPS/DCF (World wide)</b>	12 Channel Satellite Receiver
Operating Voltage	115/230VAC 50Hz +/- 10%
Current Consumption	approx. 4VA
Protection Rating	IP65 weatherproof
Dimensions	(WxHxD) 230 x 75 x 67 mm (9¼" x 3" x 2¾")
Mounting	Surface mounting
Weight with Antenna	730g

<b>K-ANTDCF77/7 (Europe only)</b>	DCF77 Long Wave Receiver for outdoor applications
Operating Voltage	8 ... 30VDC
Current Consumption	approx. 5mA
Sensitivity	approx. 500 $\mu$ V/m
Operating Temperature	-25° - +75° C
Protection Rating	IP65 weatherproof, fully encapsulated
Dimensions	(WxHxD) 99 x 65 x 37 mm (4" x 2⅔" x 1⅔")
Mounting	Surface or DIN rail mounting
Weight DCF77 Antenna with Bracket	260g

# NIS-TELNU-TIMER 4C

## Connection Diagram





# TELNU TIMER 4C

## 4 Channel Switch Computer for Telnu/DCF Slave Clock Operation

Made in Germany

### Telnu Timer 4C

- Program retention during power failures
- 4-Channels, 1 & 2 change-over contacts, 3 & 4 single normally open contact
- Contact voltage: max. 230VAC
- Contact current handling: max. 3A non inductive
- Memory capacity: total of 292 switching times
- Operating temperature: 0 - 50 degrees Celsius
- Accuracy depends on driving master clock or GPS receiver
- Enclosure: Impact resistant Polystyrol, light grey
- Mounting base: dark grey, material PA 66-gf
- Protection grade: IP40 for internal installation
- Mounting type: surface or DIN Rail mounting
- Telnu/DCF satellite operation
- Power Supply: 230/240VAC 50Hz 3VA
- Dimensions: Telnu Timer 4C HxWxD 150x75x106mm
- Weight: approx. 600 g

### OPTION GPS RECEIVER

- K-GPS/DCF 12 channel GPS Satellite Receiver
- Power supply: 240VAC 50Hz +/- 10%
- Power consumption: approx. 4VA
- Operating temperature range: -25 to + 65 degrees C

### ORDER CODES

NIS-K-TELNU-TIMER 4C = Telnu/DCF Slave 4 Channel Switch Computer  
 K-GPS/DCF = 12 Channel GPS satellite receiver

**CE** This Unit complies with following EU-Directives:  
 73/23/EWG from 19-02-1973  
 89/336/EWG from 03-05-1989  
 93/69/EWG from 22-07-1993

This Unit complies with following Standards:  
 EN 60 335-1 and EN 60 335-2-6  
 EN 55014-2 VDE 0875 Part 14-2  
 EN 55022 1998  
 EN 61000-3-2 / VDE 0838 Part 2  
 EN 61000-4-4 / VDE 0847

**Telnu...** The fully hands-free self-correcting clock system!