Astronomical/annual time switch
AstroRex DY64

0047 70 /74

L⅂ legrand®

One-week overview of the programmed switching times.
Resolution: 0.5 h

Channel number

Switch state

Function

Day, time, date

CHANNEL 1
AUTO ON
TUE 14:00:0
02.NOV.2004

Lithium battery module
Ref. **0047 82**

legrand 047 70
120V/230V 50/60Hz
R6a -20T
16A 250V~μ cos φ = 1   16A 250V~μ cos φ =1

CHANNEL 1
AUTO ON
TUE 14:00:00
02.NOV.2004

1 ON AUTO OFF   2 ON AUTO OFF
3 ON AUTO OFF   4 ON AUTO OFF

Socket for data key
Ref. **0047 81**

120V/230V~50/60Hz   16A 250V~μ cos φ =1   16A 250V~μ cos φ =1

Separate manual switch for each channel

L
N

Menu selection, back in menu,
Actuation >1s = operating display

(MENU)   (OK)   Confirm a selection or accept a parameter setting

(−)   (+)

• Selection of a menu item or set a parameter.
• Channel selection

R							
3600W	1800W	100W	1800W	1800W	2300W	1400VA	1x 58W 7μF

Overview

MENU
SET
PROGRAM
OPTIONS
GB,D,F,E,I,NL

PROGRAM
CHANNEL 1
CHANNEL 2
CHANNEL 3
CHANNEL 4

PROGRAM
CHANNEL X
WEEK
YEAR
EXCEPTION

PROGRAM
CHANNEL X
NEW
EDIT
CHECK
DELETE

LANGUAGE
ENGLISH
DEUTSCH
FRANCAIS
ESPAGNOL
ITALIANO
NEDERLAND

OPTIONS
KEY
COUNTER
DELAYTIME
1h-TEST
PINCODE
CONTRAST
SETUP
INFO

SET
TIME/DATE
SUMMERTIME
ASTRO

Technical data

	0047 70	0047 74
Supply voltage:	120 / 230V 50/60Hz	24 AC/DC
Power consumption:	approx. 0,3…2 W	approx. 3…4 W
Relay outputs 1- 4:	4 changeover contacts 16A 250V~ cos φ = 1	
Accuracy:	± 0,2 s/day under typical installation conditions	
	single-strand	multi-strand
Wire cross-sections:	1,5...4 mm²	1,5...2,5 mm²
Programs	4 channels x 3 program types x 28 programs	
Control signal for channel 1:	supply voltage, referred to neutral	
Control-pulse duration:	> 200ms	
Control-wire length:	max. 50m	
Rated impulse voltage	4 kV	0,33 kV

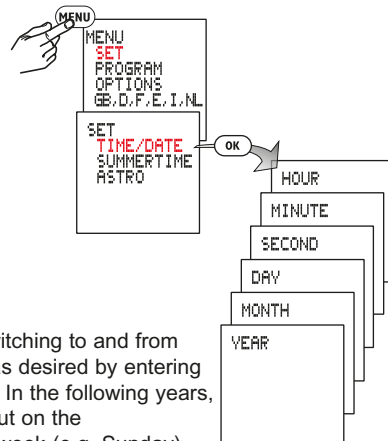|	
Delay time:	0 … 23 h 59 min 59 s
Local coordinates:	Resolution 1°
Battery reserve:	5 years
Storage temperature:	- 20°C to +60°C
Operating principle:	Typ 1.B. S. T. IEC/EN 60730-2-7
Operation in a normal environment	
Degree of contamination:	2
Installation:	in distribution panel

General information

- **Starting:** After connection of the supply voltage, the clock starts to run with the last selected function. The relay position is determined by the currently active program.
- **Backup battery operation mode:**
  - **background lighting** not available**.**
  - **data key READ/WRITE** only via the menu.
- If, during programming, no key is pressed for 60 seconds, the timer automatically switches from the menu display to the normal operating display.
- The channel switch states will be updated when programming has been completed.

---

❶ **Select language**

```
MENU
 SET
 PROGRAM
 OPTIONS
 GB,D,F,E,I,NL
```

```
LANGUAGE
 ENGLISH
 DEUTSCH
 FRANCAIS
 ESPAGNOL
 ITALIANO
```

❷ **Setting**

Ⓐ **Time and date**

```
MENU
 SET
 PROGRAM
 OPTIONS
 GB,D,F,E,I,NL
```

```
SET
 TIME/DATE
 SUMMERTIME
 ASTRO
```

```
HOUR
MINUTE
SECOND
DAY
MONTH
YEAR
```

Ⓑ **Summer time +1h**

```
MENU
 SET
 PROGRAM
 OPTIONS
 GB,D,F,E,I,NL
```

```
SET
 TIME/DATE
 SUMMERTIME
 ASTRO
```
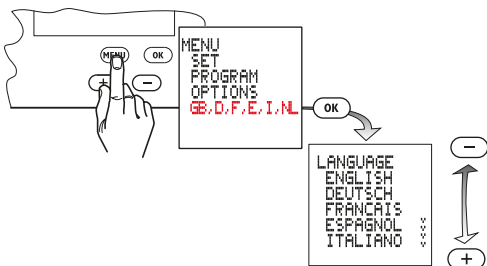
Europe: factory setting.
Special: The dates for switching to and from summer time can be set as desired by entering a start date and end date. In the following years, switching will be carried out on the corresponding day of the week (e.g. Sunday).
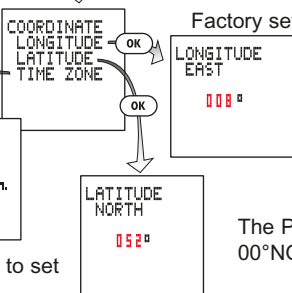
```
SUMMERTIME
 EUROPE
 US
 NO
 SPECIAL
```

```
SUMMERTIME
 SPECIAL
 START
 DATE

 END
 DATE
```

Ⓒ **Astro**

```
MENU
 SET
 PROGRAM
 OPTIONS
 GB,D,F,E,I,NL
```

```
SET
 TIME/DATE
 SUMMERTIME
 ASTRO
```

Select country.
Select the city closest to the planned location for use.

```
COUNTRY
 DEUTSCHL..
 ELLAS
 ESPANA
 FRANCE
 G.BRITAIN
```

```
ASTRO
 PLACE
 COORDINATE
 OFFSET
```

You can adjust the coordinates more precisely with LONGITUDE and LATITUDE.

```
COORDINATE
 LONGITUDE
 LATITUDE
 TIME ZONE
```

```
LONGITUDE
 EAST

 008°
```

```
TIME ZONE

 + 1h 00min.
```

```
LATITUDE
 NORTH

 052°
```

Factory setting: 8°E 52°N

The MINUS key is used to adjust the westward longitude value in the range from 000°**EAST/WEST** to 180°WEST.

The PLUS key is used to adjust the eastward longitude value in the range from 000°EAST/WEST to 180°EAST.

The PLUS key is used to adjust the northward latitude value in the range from 00°NORTH/SOUTH to 90°NORTH.

The MINUS key is used to adjust the southward latitude value in the range from 00°NORTH/SOUTH to 90°SOUTH.

Use the enclosed **time-zone map** to set the correct time zone.
From this map, determine the difference between local time and UTC (**U**niversal **T**ime **C**oordinated) and set this value.

Ⓓ **Offset**

```
MENU
 SET
 PROGRAM
 OPTIONS
 GB,D,F,E,I,NL
```

```
SET
 TIME/DATE
 SUMMERTIME
 ASTRO
```

```
ASTRO
 PLACE
 COORDINATE
 OFFSET
```

```
OFFSET
 SUNSET
 SUNRISE
```

```
OFFSET
 SUNSET

 + 00 min.
```

```
OFFSET
 SUNRISE

 + 00 min.
```

The time switch switches on at the calculated sunset time and off at the calculated sunrise time.
By setting an offset, you can shift the switching times by up to ±120 minutes with respect to the calculated sunrise and sunset times.
Example: If you set the offset to +30 minutes, the time switch will switch 30 minutes after sunrise and 30 minutes after sunset.
If you set the offset to -30 minutes, the time switch will switch 30 minutes before sunrise and 30 minutes before sunset.
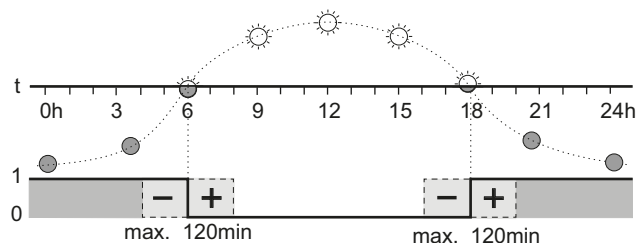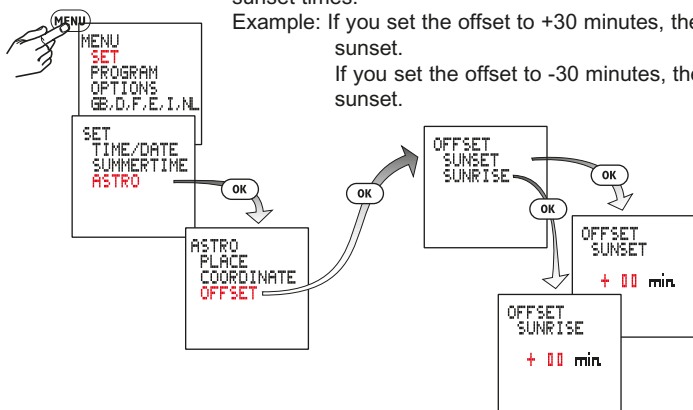
3A PROGRAM / **WEEK**

This menu item is provided for the simple input of programs which are to be repeated weekly (such as switching of lights and boilers).
A weekly program consists of an ON time, an OFF time and the associated ON and OFF days.
• MON TO SUN: the days of the week are already assigned and you only need to set the ON and OFF times. This is used where the same
  program is to be executed on every day of the week.
• INDIVIDUAL: you can assign the ON and OFF times to any desired days. This is used where the same program is to be executed only on
  certain days of the week or different programs are to be executed on the various days.

OR function
The programs defined for each channel are ORed together. In other words, the output will be active if this is defined in any of the programs.
Example: channel 1
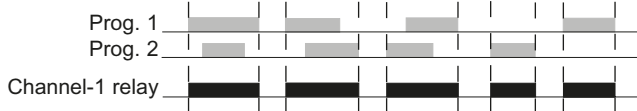
Sample WEEK program

The timer is to switch on at sunset on each day of the week and switch off at sunrise.
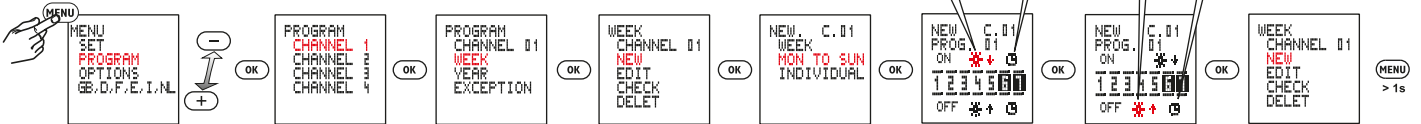
3B PROGRAM / YEAR

This menu item permits the input of (additional) annual programs which are to be executed only during a specified period. These programs and
the weekly programs of the same channel are ORed together as described above.
The period during which a program is to be executed is defined by entering a start date and an end date.
• The option EVERY YEAR should be selected if the additional program is to be executed during the same period of each year
  (e.g. Christmas, national holidays, birthdays, etc.).
• The option ONCE should be selected if the additional program is to be executed only during a single period (e.g. vacation period), but the
  start and end dates of this period are different in each year.

Sample YEAR program

Channel 2 is to be activated each year on at 09:00 hours on 01.11. and deactivated at 23:00 hours.
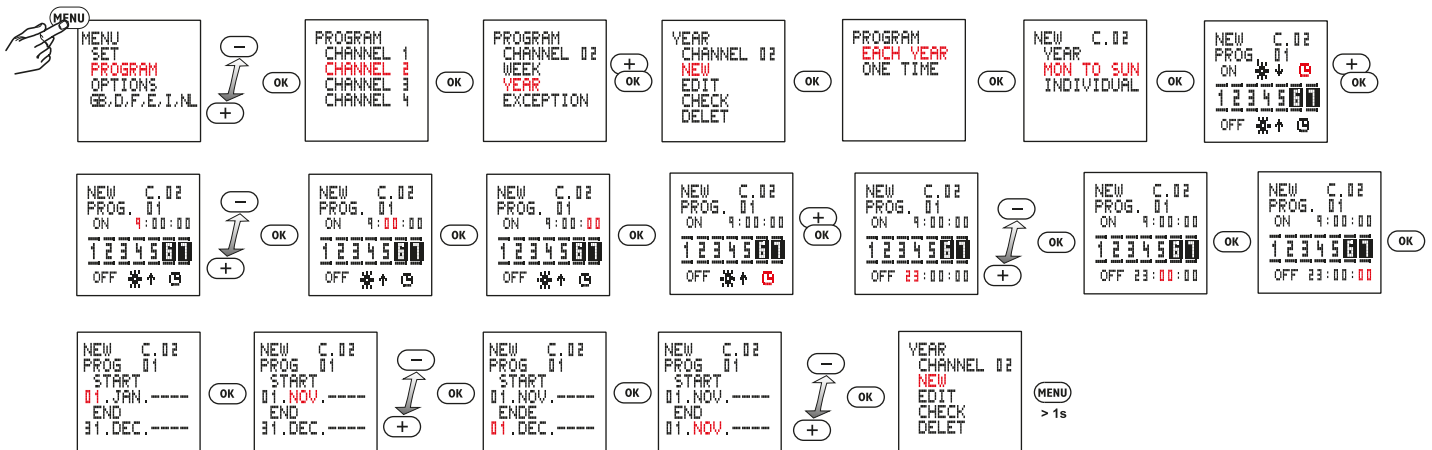
3C · PROGRAM / EXCEPTION

The weekly and annual programs defined for a channel are not executed as long as an extra program is active.
However, other exception programs will be executed while an exception program is active.
The various exception programs are ORed together as described above. (see OR function 3a)
- The option EVERY YEAR should be selected if the exception program is to be activated for the same period in each year
  (e.g. Christmas, national holidays, birthdays, etc.).
- The option ONCE should be selected if the exception program is to be activated only during a single period (e.g. vacation period), but the start
  and end dates of this period are different in each year.
- Option MON TO SUN: the exception program is active from 00:00 hours on the start date to 24:00 hours on the end date.
  During this period, the output of the related channel switches only as defined in the exception program.
- Option INDIVIDUAL: the exception program is active from 00:00 hours on the start date to 24:00 hours on the end date.
  During this period, the output of the related channel switches only as defined in the exception program.
- Option PROG ON: the exception program is active from the ON time on the start date to OFF time on the end date. During this period, the output
  of the channel is permanently on.
- Option PROG OFF: the exception program is active from the ON time on the start date to OFF time on the end date. During this period, the
  output of the channel is permanently off.

Sample EXCEPTION programs

① Channel 2 is to be switched off each year for the entire period 01.08. to 31.08.
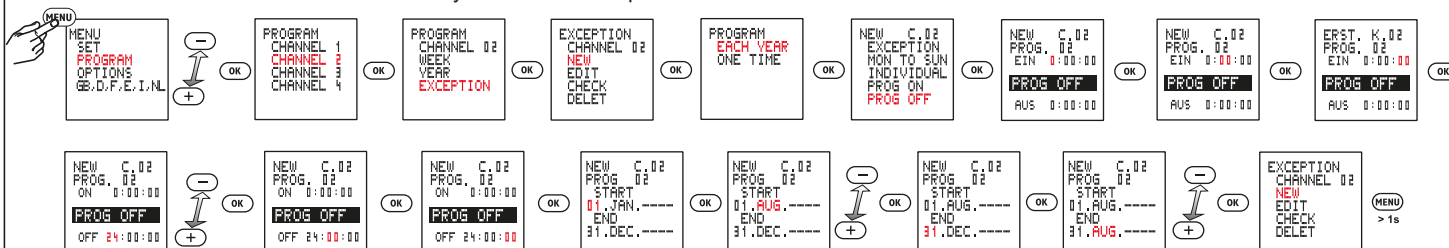
② Each year from 25.12. to 26.12., channel 2 is to be switched on at 6:00 hours, switched off at sunrise, switched on at sunset and switched
off at 23:00 hours. For this, two programs are needed:
Program 1: ON at 6:00 and OFF at sunrise
Program 2: ON at sunset and OFF at 23:00
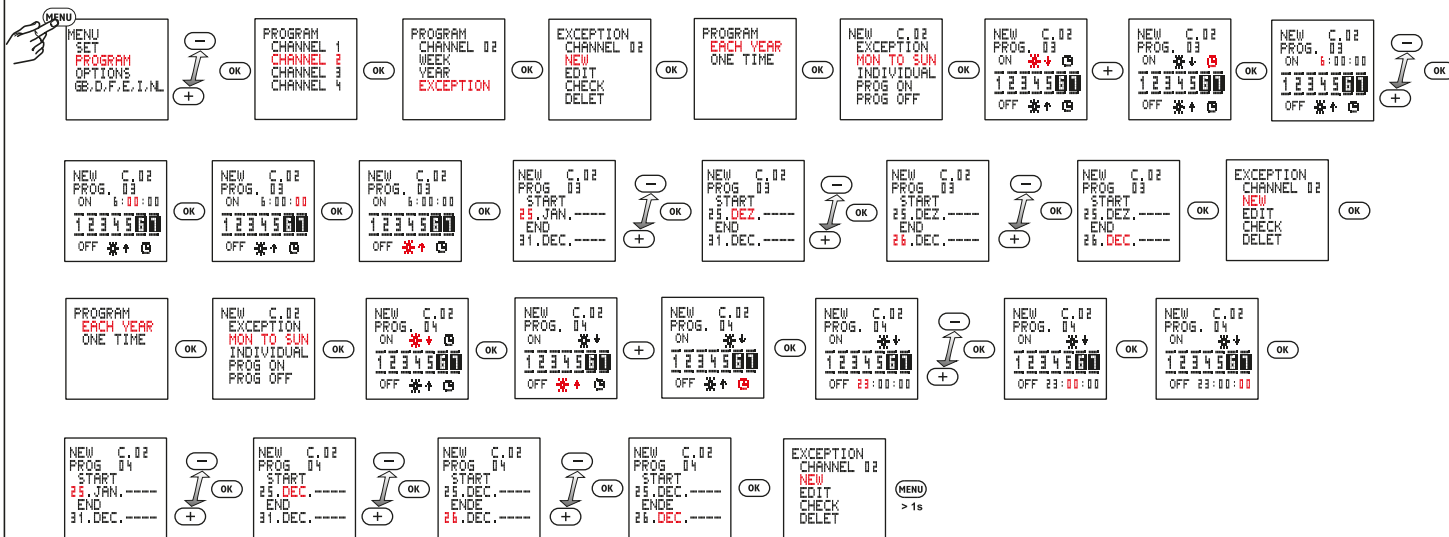
3D · PROGRAM
Edit/Check/Delete
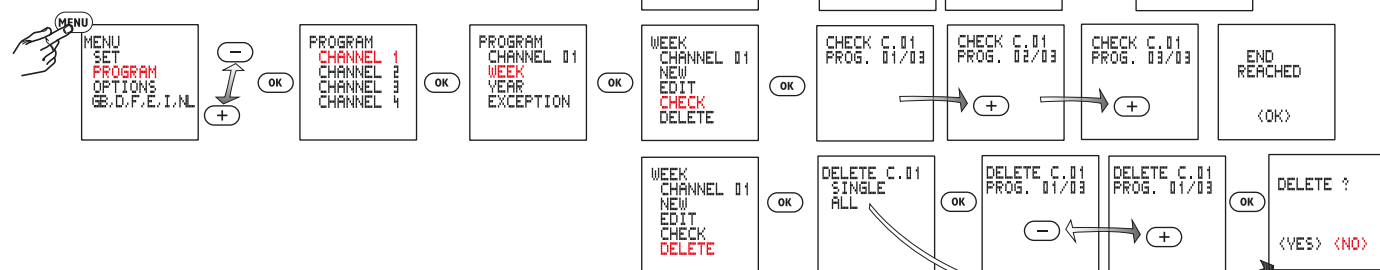
Required inputs, depending on the program type and menu options.

Prog-ram type	Exe-cution	Char-acte-ristics	ON/OFF times	Weekday assi-gnments	Active period START date	Active period END date	Application, objectives, examples
WEEK	Repeated weekly	MON TO SUN	●	○	○	○	The same switching cycle is to be executed on every day of each week. Example: switch lights on at sunset and off at 22:30:00 hours each day.
		INDIVI-DUAL	●	●	○	○	A switching cycle is to be executed only on specific days of each week. Example: switch lights on at sunset and off at 22:30:00 hours on Monday to Friday of each week.
YEAR	EVERY YEAR	MON TO SUN	●	○	Day, month, - - - -	Day, month, - - - -	• A switching cycle is to be executed on each day within a specified period of each year. Example: switch on the outside lights of a church from 17:00:00 to 24:00:00 in the period 1 December to 31 December. • An existing weekly program is to be supplemented with additional switching times on each day during a specific period of each year.
		INDIVI-DUAL	●	●	Day, month, - - - -	Day, month, - - - -	• A switching cycle is to be executed on certain days of the week within a specified period of each year. Example: switch on the outside lights of a church from 17:00:00 to 24:00:00 on each Sunday in the period 1 December to 31 December.. • An existing weekly program is to be supplemented with additional switching times on certain days of the week during a specific period of each year.
	ONCE	MON TO SUN	●	○	Day, month, year	Day, month, year	• A switching cycle is to be executed on each day of a specified period in a specified year. Example: in the year 2005, the heating in a holiday chalet is to be switched on from 07:30:00 to 23:00:00 on each day during the Easter holidays (25 March to 28 March 2005). • An existing weekly program is to be supplemented with additional switching times on each day during a specific period of a specific year.
		INDIVI-DUAL	●	●	Day, month, year	Day, month, year	• A switching cycle is to be executed on certain days of a specified period in a specified year. Example: in the current year, the lights in a sports hall are to be switched on from 19:00:00 to 22:00:00 on each Tuesday and Friday during the period from 10 .January to 23 March. • An existing weekly program is to be supplemented with additional switching times on certain days of the week during a specific period of a specific each year.

Program type	Execution	Characteristics	ON/OFF times	Weekday assignments	Active period START date	Active period END date	Application, objectives, examples
EXCEPTION	EVERY YEAR	MON TO SUN	●	○	Day, month, - - - - from 0:00:00 hours	Day, month, - - - - to 24:00:00 hours	An exception program is to completely replace any existing weekly or annual program on each day during a specific period of each year. Example: the irrigation pump of an orchard is to be switched on from 17:00:00 to 18:00:00 on each day in the period from 20.March ---- to 10.April ----.
		INDIVIDUAL	●	●	Day, month, - - - - from 0:00:00 hours	Day, month, - - - - to 24:00:00 hours	An exception program is to completely replace any existing weekly or annual program on certain days during a specific period of each year. Example: the irrigation pump of an orchard is to be switched on from 17:00:00 to 18:00:00 on each Monday and Friday in the period from 11 April ---- to 15 May ----.
		PROG ON	●	○	Day, month, - - - - from ON time	Day, month, - - - - to OFF time	A channel is to be switched on continuously from the ON time on the START date to the OFF time on the END date every year. This exception program is to completely replace any existing weekly or annual program for this channel. Example: instead of the normal times for illumination of a public building, the illumination is to be switched on from 17:00:00 on the national holiday 3 October ---- until 07:00:00 the next morning 4 October ----.
		PROG OFF	●	○	Day, month, - - - - from ON time	Day, month, - - - - to OFF time	An output is to be switched off continuously from the ON time on the START date to the OFF time on the END date every year. This exception program is to completely replace any existing weekly or annual program for this channel. Example: in order to save power, certain equipment in a factory is to be switched off during the Christmas holiday period of each year. i.e. from 18:00:00 on 23 December ---- to 6:00:00 on 27 December ----.
	ONCE	MON TO SUN	●	○	Day, month, year from 0:00:00 hours	Day, month, year to 24:00:00 hours	On each day during a specific period of a specified year, an exception program is to completely replace any existing weekly or annual program. Example: during the Christmas holidays of the year 2005, the heating in an apartment is to be switched each day from 7:00:00 to 23:00:00, instead of in the normal cycle. This exception period is to begin on 24 December 2005 and end on 06 January 2006.
		INDIVIDUAL	●	●	Day, month, year from 0:00:00 hours	Day, month, year to 24:00:00 hours	On certain weekdays during a specific period of a specific year, an exception program is to completely replace any existing weekly or annual program. Example: in December 2005, the heating system of a department store is to be switched on from 8:00:00 to 18:00:00 each Sunday, because the store opens on Sundays in the period 4 December 2005 to 18 December 2005.
		PROG ON	●	○	Day, month, year from ON time	Day, month, year to OFF time	A channel is to be switched on continuously from the ON time on the START date to the OFF time on the END date of a specific year. This exception program is to completely replace any existing weekly or annual program for this channel. Example: the alarm system of an office building is to be switched on continuously during the vacation period 19:00:00 on 15 July 2005 to 06:00:00 on 7 August 2005.
		PROG OFF	●	○	Day, month, year from ON time	Day, month, year to OFF time	A channel is to be switched off continuously from the ON time on the START date to the OFF time on the END date of a specific year. This exception program is to completely replace any existing weekly or annual program for this channel. Example: in 2005, the normal recess gong in a school is to be switched off during the summer holidays 00:00:00 on 28 July 2005 to 24:00:00 on 10 September 2005.

Select the option PROGRAM / WEEK for a program which is to be executed a on specific days of the week and is to be repeated weekly.

Select the option PROGRAM / YEAR for a program which is to be executed each year or only in a specific year. The execution period within the year can be defined by entering start and end dates.

Select the option PROGRAM / EXCEPTION for a program which is to completely replace existing weekly or annual programs during a specified period.

Priorities of the various program types within the same channel:

	WEEK program	YEAR program	EXCEPTION program
WEEK program	The various weekly programs are ORed together	The various weekly and annual programs are ORed together	The exception program is overriding within its defined period of activity.
YEAR program	The various weekly and annual programs are ORed together	The various annual programs are ORed together	The exception program is overriding within its defined period of activity.
EXCEPTION program	The exception program is overriding within its defined period of activity.	The exception program is overriding within its defined period of activity.	The various exception programs are ORed together

4   **Data key (Color anthracite)**

0047 81
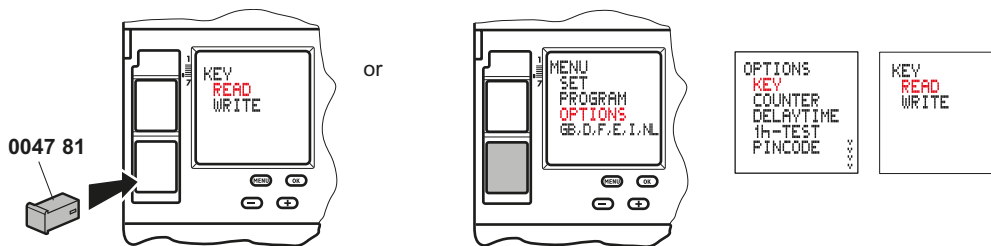
Load the programs from the data key to the time switch (READ KEY)
    Warning! All programs already programmed in the time switch and settings (local coordinates, delay time, summertime) will be overwritten.

0047 81
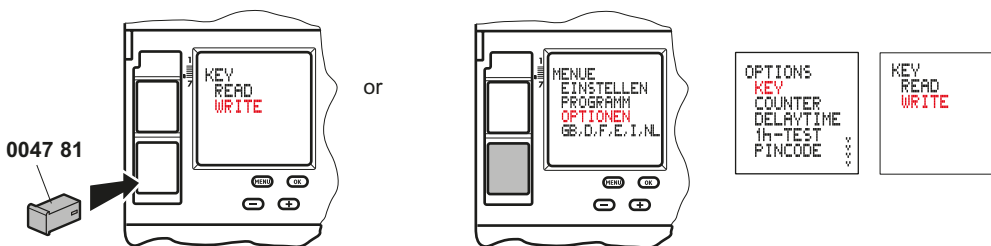
Load the programs of the time switch on to a data key (WRITE KEY)
    Warning! all programs already existing on the data key will be overwritten.

5 Operating-hours counter

This displays the total duration of the ON times, from 0 to 065535 hours, and the date on which this counter was last reset.

```
MENU
SET
PROGRAM
OPTIONS
GB,D,F,E,I,
```
```
OPTIONS
KEY
COUNTER
DELAYTIME
1 h-TEST
PINCODE
```
```
COUNTER
CHANNEL 1
CHANNEL 2
CHANNEL 3
CHANNEL 4
```
```
COUNTER
CHANNEL 01
CHECK
RESET
```
```
COUNTER
CHANNEL 01

012345 h

DATE
```
```
COUNTER
CHANNEL 01

000000 h

DATE
```

6 Contrast adjustment

```
MENU
SET
PROGRAM
OPTIONS
GB,D,F,E,I,NL
```
− OK +
```
OPTIONS
COUNTER
DELAYTIME
1h-TEST
PINCODE
CONTRAST
```
− OK +
```
CONTRAST

<−>      <+>
MIN      MAX
```
− OK +
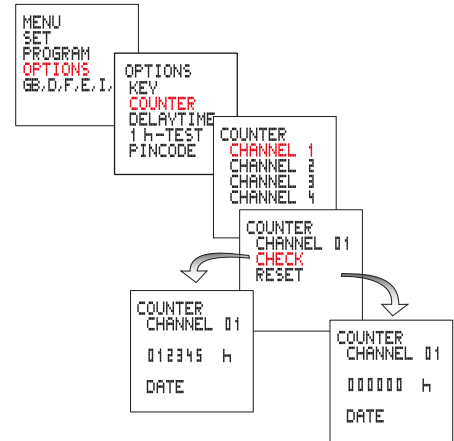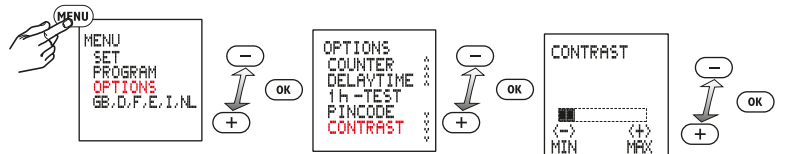
7 1 h-Test

If this menu item is activated, the outputs are switched on for one hour.
The test can be terminated at any time by selecting the option PASSIVE.

```
MENU
SET
PROGRAM
OPTIONS
GB,D,F,E,I,NL
```
− OK +
```
OPTIONS
KEY
COUNTER
DELAYTIME
1h-TEST
PINCODE
```
− OK +
```
1h-TEST
ACTIVE
PASSIVE ✓
```
− OK +
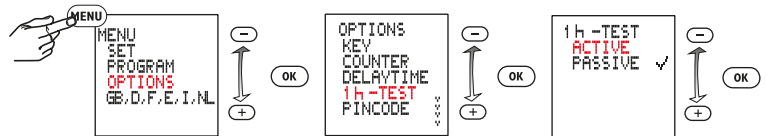
8 Pincode (access protection)

```
MENU
SET
PROGRAM
OPTIONS
GB,D,F,E,I,NL
```
− OK +
```
OPTIONS
KEY
COUNTER
DELAYTIME
1h-TEST
PINCODE
```
− OK +
```
PINCODE
ACTIVE
PASSIVE ✓
```
− OK +
```
PINCODE
ACTIVE
PASSIVE ✓
```
OK
```
PINCODE

0000
```
Example
1234
− OK +
```
PINCODE
ACTIVE ✓
PASSIVE
```
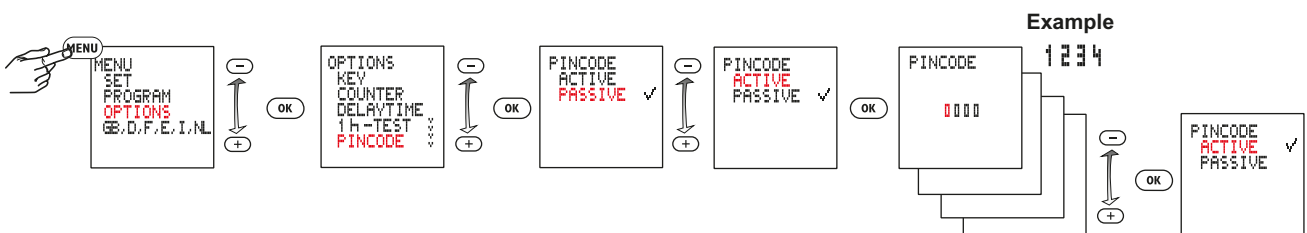
PINCODE active: the PINCODE must be entered before the timer switch can be operated.
The access protection can be cancelled by selecting PASSIVE. It is also cancelled by a reset.

Reset

Note!
A reset clears the entire memory, which means that all previously set data will be lost.
Press and hold all four keys together for about 2 seconds, then release them.
After a reset, the language, time and date, summertime, coordinates, time zone, switching times and pin code must be set again.

MENU   OK
−   +
```
RESET

LANGUAGE
ENGLISH
DEUTSCH
FRANCAIS
ESPAGNOL
ITALIANO
```
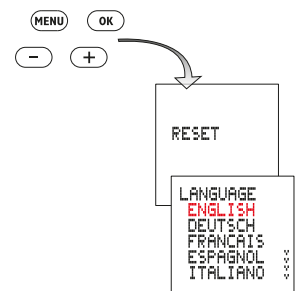
9 **Control input with delaytime**

The control signal affects only channel 1 and overrides all program settings for this channel (OR function). Channel 1 remains switched on as along as the control signal is present. If the function CYCLE is selected under SETUP, channel 1 is switched on and off cyclically.
When the control signal is switched off, the output of channel 1 switches off after the defined delaytime, unless one of the programs for this channel specifies otherwise.

Control input

```
CHANNEL 1
S-SIGN. ON
TUE 14:00:00
02.NOV.2005
```

Switched output

0 ... 23h 59min 59s

Delaytime

Setting the delaytime

```
MENU
SET
PROGRAM
OPTIONS
GB,D,F,E,I,NL
```

```
OPTIONS
 KEY
 COUNTER
 DELAYTIME
 1h -TEST
 PINCODE
```

```
DELAYTIME
HOUR

0:00:00
```

```
DELAYTIME
MINUTE

0:00:00
```

```
DELAYTIME
SECOND

0:00:00
```

0 ... 23h 59min 59s
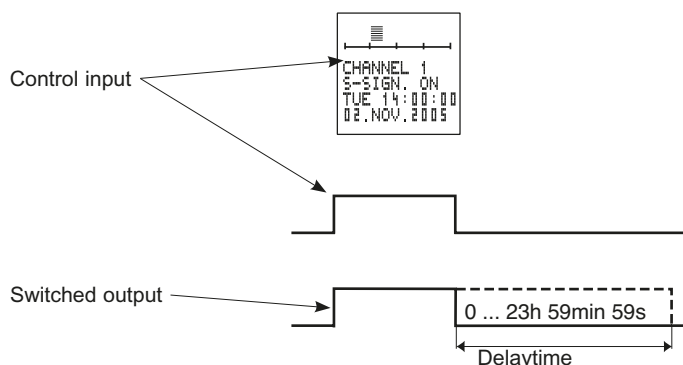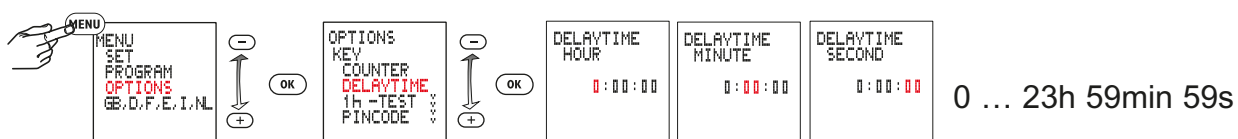
Changing the lithium battery module

Important note:
If the battery is replaced with the supply voltage connected, all stored program data are retained. If the battery is replaced with the supply voltage disconnected, the date and time must be set again. Notes for disposal of the lithium battery:
Dispose of the exhausted battery in accordance with your local regulations. Make sure the battery is fully discharged before disposal.

CLAC
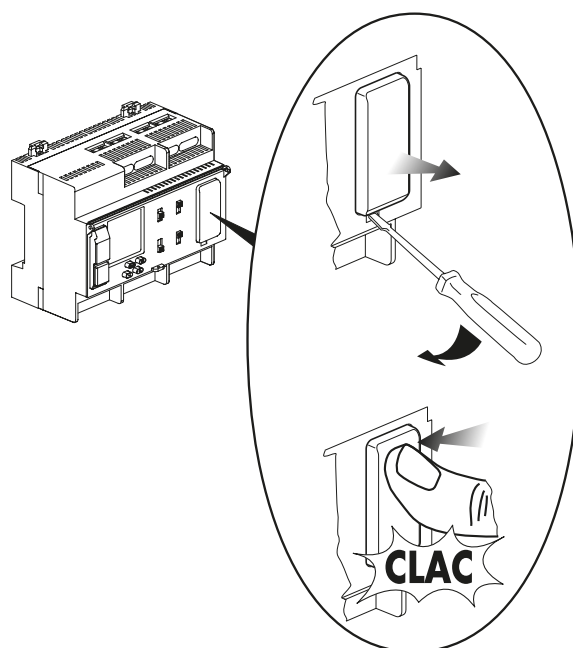
The data interface KEY is preset and cannot be changed.

```
MENU              OPTIONS
 SET               KEY
 PROGRAM           COUNTER                      SETUP              PORT
 OPTIONS           DELAYTIME                     PORT               KEY
 GB,D,F,E,I,NL     1h -TEST    ^               OK  SYNC          OK  DCF11      without function
            OK     PINCODE     v                   CHANNEL 1          RS232
                   CONTRAST           +    OK
                   SETUP
                   INFO
```
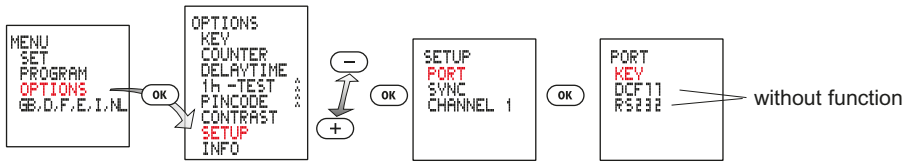
Activating and deactivating mains synchronisation.

The default setting is PASSIVE. In order to improve the long-term accuracy, it is advisable to activate synchronisation on 50/60 Hz mains with frequency adjustment.

```
MENU              OPTIONS
 SET               KEY
 PROGRAM           COUNTER                      SETUP             SYNC                  SYNC
 OPTIONS           DELAYTIME                     PORT              ACTIVE                50 HZ   ✓
 GB,D,F,E,I,NL     1h -TEST    ^             OK   SYNC         OK   PASSIVE          OK   60 HZ        OK   MENU
            OK     PINCODE     v                  CHANNEL 1
                   CONTRAST           +    OK                             +    OK
                   SETUP
                   INFO
```
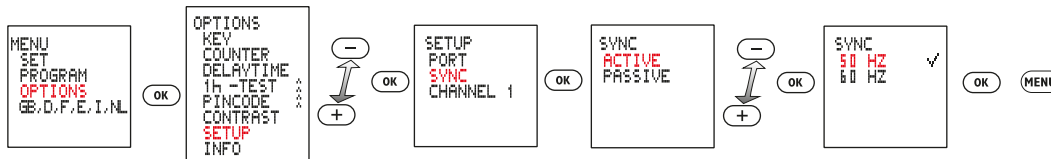
Cycle function for channel 1

```
                                                                                 PERIOD            PULSE
                                                                                 HOUR              HOUR
MENU              OPTIONS
 SET               KEY
 PROGRAM           COUNTER                      SETUP            CHANNEL 1         PERIOD            PULSE
 OPTIONS           DELAYTIME                     PORT             STANDARD ✓        MINUTE            MINUTE
 GB,D,F,E,I,NL     1h -TEST    ^             OK   SYNC        OK   CYCLE      OK                 OK
            OK     PINCODE     v                  CHANNEL 1                        PERIOD            PULSE
                   CONTRAST           +    OK                                     SECOND            SECONDE
                   SETUP
                   INFO                                                           0:00:02           0:00:01
```
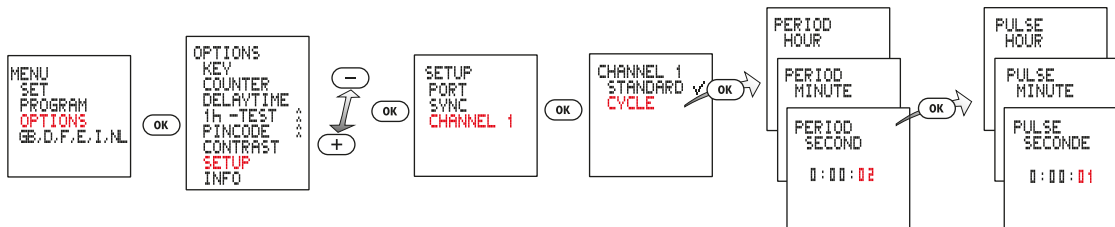
	min	max
PERIOD	2 s	2h
PULSE-TIME	1 s	1h 59min 59s

Instead of its STANDARD function, the output of channel 1 is switched on and off cyclically. The available parameters are the PERIOD and the PULSE-TIME within this period.

Legend titles (multilingual):
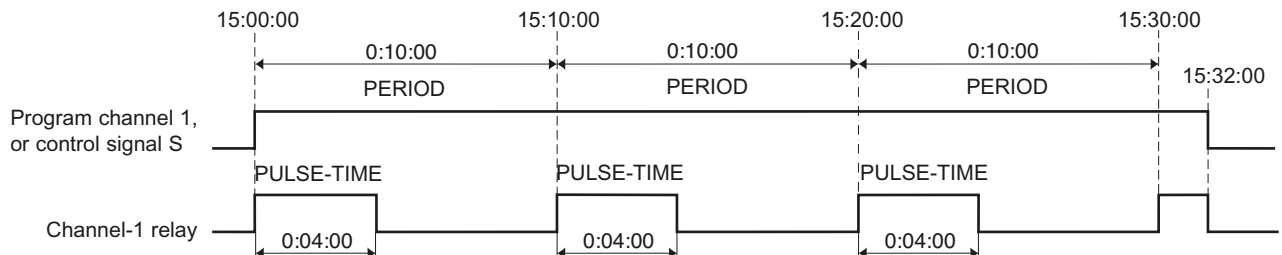
- Zeitzonenkarte
- Carte des fuseaux horaires
- Time-of-day map
- Tijdszone kaart
- Carta dei fusi allegata
- Carta de husos horarios
- Time-of-day oversigt
- Aikavyöhykekarttaa
- Mapa s časovými pásmami
- Karta časovnih pasov
- Mapa časových pásem
- Időzóna térkép
- Ajavööndite kaart
- Laika zonu karte
- Laiko juostų žemėlapis
- Mapa stref czasowych
- Tidssonenkortet
- Tidzons kartan
- Carta de fusos horários
- ήώτα υὡιαΩτιμ ατὡηξτιμμ
- Zaman dilimleri kartı
- 时区图
- خريطة مناطق التوقيت

Time zone offsets (top/bottom scale):
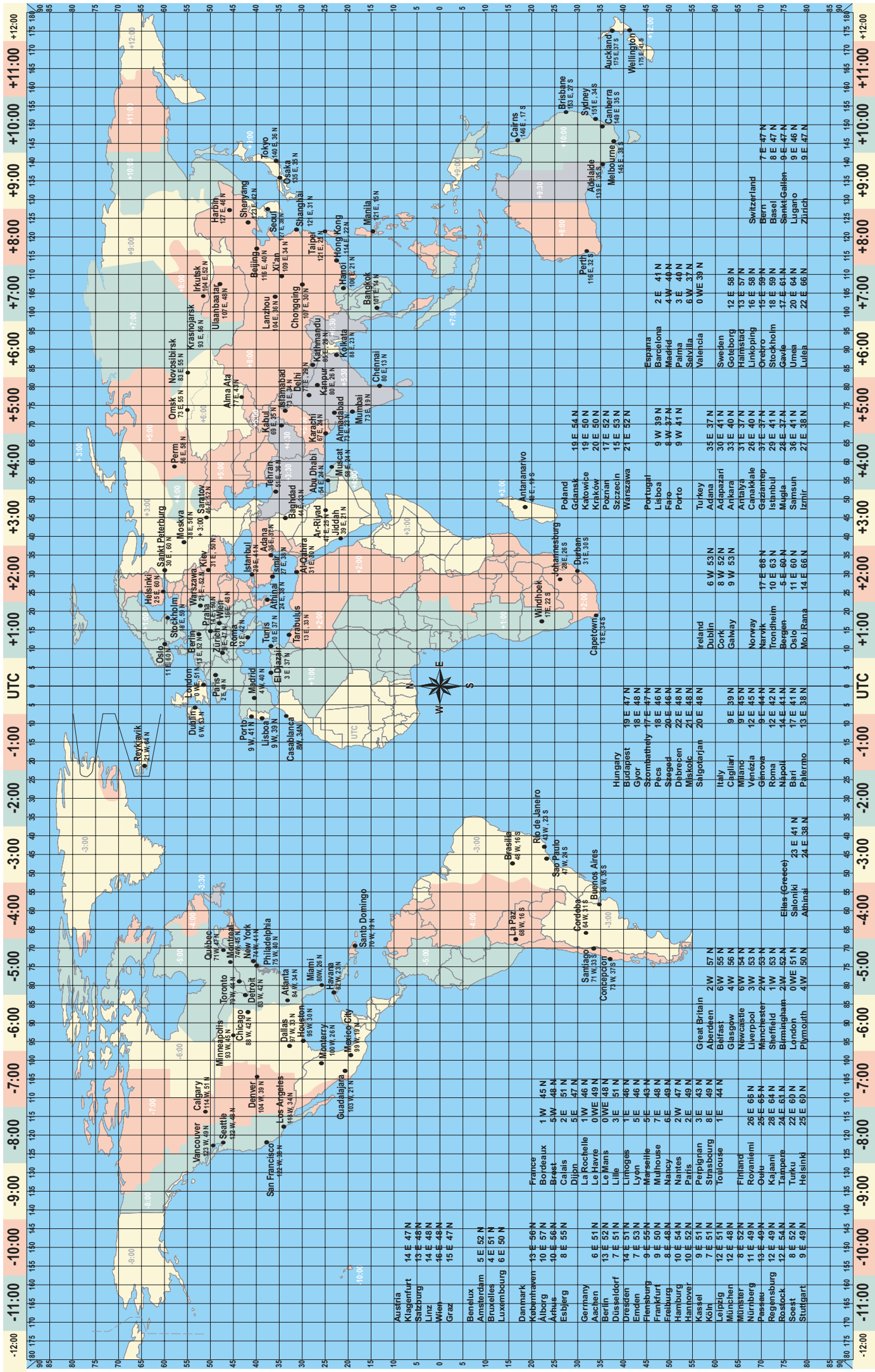
−12:00 −11:00 −10:00 −9:00 −8:00 −7:00 −6:00 −5:00 −4:00 −3:00 −2:00 −1:00 UTC +1:00 +2:00 +3:00 +4:00 +5:00 +6:00 +7:00 +8:00 +9:00 +10:00 +11:00 +12:00

City lists with coordinates:

Austria		
Klagenfurt	14 E	47 N
Salzburg	13 E	48 N
Linz	14 E	48 N
Wien	16 E	48 N
Graz	15 E	47 N

Benelux		
Amsterdam	5 E	51 N
Bruxelles	4 E	51 N
Luxembourg	6 E	50 N

Danmark		
København	13 E	56 N
Alborg	10 E	57 N
Arhus	10 E	56 N
Esbjerg	8 E	55 N

Germany		
Aachen	6 E	51 N
Berlin	13 E	52 N
Düsseldorf	7 E	51 N
Dresden	14 E	51 N
Emden	7 E	53 N
Flensburg	9 E	55 N
Frankfurt	9 E	50 N
Freiburg	8 E	48 N
Hamburg	10 E	54 N
Hannover	10 E	52 N
Kassel	9 E	51 N
Köln	7 E	51 N
Leipzig	12 E	51 N
München	12 E	48 N
Münster	8 E	52 N
Nürnberg	11 E	49 N
Passau	13 E	49 N
Regensburg	12 E	49 N
Rostock	12 E	54 N
Soest	8 E	52 N
Stuttgart	9 E	49 N

France		
Bordeaux	1 W	45 N
Brest	5 W	48 N
Calais	2 E	51 N
Dijon	5 E	47 N
La Rochelle	1 W	46 N
Le Havre	0 WE	49 N
Le Mans	0 WE	48 N
Lille	3 E	51 N
Limoges	1 E	46 N
Lyon	5 E	46 N
Marseille	5 E	43 N
Mulhouse	7 E	48 N
Nancy	6 E	49 N
Nantes	2 W	47 N
Paris	2 E	49 N
Perpignan	3 E	43 N
Strasbourg	8 E	49 N
Toulouse	1 E	44 N

Finland		
Rovaniemi	26 E	66 N
Oulu	25 E	65 N
Kajaani	28 E	64 N
Tampere	24 E	61 N
Turku	22 E	60 N
Helsinki	25 E	60 N

Great Britain		
Aberdeen	2 W	57 N
Belfast	6 W	55 N
Glasgow	4 W	56 N
Newcastle	6 W	54 N
Liverpool	3 W	53 N
Manchester	2 W	53 N
Sheffield	1 W	53 N
Birmingham	2 W	52 N
London	0 WE	51 N
Plymouth	4 W	50 N

Ireland		
Dublin	6 W	53 N
Cork	8 W	52 N
Galway	9 W	53 N

Norway		
Narvik	17 E	68 N
Trondheim	10 E	63 N
Bergen	5 E	60 N
Oslo	11 E	60 N
Moi Rana	14 E	66 N

Hungary		
Budapest	19 E	47 N
Gyor	18 E	48 N
Szombathely	17 E	47 N
Pecs	18 E	46 N
Szeged	20 E	46 N
Debrecen	22 E	48 N
Miskolc	21 E	48 N
Salgotarjan	20 E	48 N

Italy		
Cagliari	9 E	39 N
Milano	9 E	45 N
Venezia	12 E	45 N
Genova	9 E	44 N
Roma	12 E	42 N
Napoli	14 E	41 N
Bari	17 E	41 N
Palermo	13 E	38 N

Turkey		
Adana	35 E	37 N
Adapazari	30 E	41 N
Ankara	33 E	40 N
Antalya	31 E	37 N
Canakkale	26 E	40 N
Gaziantep	37 E	37 N
Istanbul	29 E	41 N
Mugla	28 E	37 N
Samsun	36 E	41 N
Izmir	27 E	38 N

Poland		
Gdansk	19 E	54 N
Katowice	19 E	50 N
Kraków	20 E	50 N
Poznan	17 E	52 N
Szczecin	15 E	53 N
Warszawa	21 E	52 N

Portugal		
Lisboa	9 W	39 N
Faro	8 W	37 N
Porto	9 W	41 N

Espana		
Barcelona	2 E	41 N
Madrid	4 W	40 N
Palma	3 E	40 N
Selvilla	6 W	37 N
Valencia	0 WE	39 N

Sweden		
Goteborg	12 E	58 N
Halmstad	13 E	57 N
Linkoping	16 E	58 N
Orebro	15 E	59 N
Stockholm	18 E	59 N
Gavle	17 E	61 N
Umea	20 E	64 N
Lulea	22 E	66 N

Switzerland		
Bern	7 E	47 N
Basel	8 E	47 N
Sankt Gallen	9 E	47 N
Lugano	9 E	46 N
Zürich	9 E	47 N

Elias (Greece)		
Saloniki	23 E	41 N
Athinai	24 E	38 N

City labels on map (selected):

Auckland 175 E, 37 S · Wellington 175 E, 41 S · Brisbane 153 E, 27 S · Sydney 151 E, 34 S · Canberra 149 E, 35 S · Melbourne 145 E, 38 S · Adelaide 138 E, 35 S · Cairns 146 E, 17 S · Perth 116 E, 32 S · Tokyo 140 E, 36 N · Osaka 135 E, 35 N · Seoul 127 E, 42 N · Sheryang 127 E, 46 N · Harbin 127 E, 46 N · Shanghai 121 E, 31 N · Taipei 121 E, 25 N · Hong Kong 114 E, 22 N · Manila 121 E, 15 N · Beijing 116 E, 40 N · Xi'an 109 E, 34 N · Hanoi 106 E, 21 N · Bangkok 101 E, 14 N · Chongqing 107 E, 30 N · Lanzhou 104 E, 36 N · Irkutsk 104 E, 52 N · Ulaanbaatar 107 E, 48 N · Krasnojarsk 93 E, 55 N · Kathmandu 85 E, 28 N · Kolkata 88 E, 23 N · Chennai 80 E, 13 N · Delhi 77 E, 29 N · Kanpur 80 E, 26 N · Ahmadabad 73 E, 23 N · Mumbai 73 E, 19 N · Novosibirsk 83 E, 55 N · Omsk 73 E, 55 N · Alma Ata 77 E, 43 N · Karachi 67 E, 25 N · Kabul 69 E, 35 N · Perm 56 E, 58 N · Istanbul 73 E, 24 N · Tehran 51 E, 36 N · Abu Dhabi 54 E, 24 N · Muscat 58 E, 24 N · Baghdad · Ar-Riyad 46 E, 25 N · Jiddah 39 E, 21 N · Antananarivo 48 E, 19 S · Moskva 38 E, 60 N · Sankt Peterburg 30 E, 60 N · Kiev 31 E, 50 N · Santov 46 E, 52 N · Helsinki 25 E, 60 N · Stockholm 18 E, 59 N · Warszawa 21 E, 52 N · Praha 14 E, 50 N · Wien 16 E, 48 N · Berlin 13 E, 52 N · Oslo 11 E, 60 N · Athinai 24 E, 38 N · Istanbul 29 E, 41 N · Izmir 27 E, 38 N · Adana 35 E, 37 N · Tunis 10 E, 37 N · Roma 12 E, 42 N · Zürich 9 E, 47 N · Tarabulus 13 E, 33 N · Al-Qahira 31 E, 30 N · El Djazair 3 E, 37 N · Madrid 4 W, 40 N · Paris 2 E, 49 N · London 0 WE, 51 N · Dublin 6 W, 53 N · Reykiavik 21 W, 64 N · Porto 9 W, 41 N · Lisboa 9 W, 39 N · Casablanca 8 W, 34 N · Windhoek 17 E, 22 S · Johannesburg 28 E, 26 S · Durban 31 E, 30 S · Capetown 18 E, 34 S · Quebec 71 W, 47 N · Montreal 74 W, 46 N · New York 74 W, 41 N · Philadelphia 75 W, 40 N · Toronto 80 W, 44 N · Detroit 83 W, 42 N · Atlanta 84 W, 34 N · Miami 80 W, 26 N · Havana 82 W, 23 N · Santo Domingo 70 W, 19 N · Chicago 88 W, 42 N · Dallas 97 W, 33 N · Houston 95 W, 30 N · Monterrey 100 W, 26 N · Mexico City 99 W, 19 N · Minneapolis 93 W, 45 N · Denver 104 W, 39 N · Los Angeles 118 W, 34 N · San Francisco 122 W, 38 N · Seattle 122 W, 48 N · Vancouver 123 W, 49 N · Calgary 114 W, 51 N · Guadalajara 103 W, 21 N · Rio de Janeiro 43 W, 23 S · Sao Paulo 47 W, 24 S · Brasilia 48 W, 16 S · Buenos Aires 58 W, 35 S · Cordoba 64 W, 31 S · Santiago 71 W, 33 S · Concepcion 73 W, 37 S · La Paz 68 W, 16 S