

## BRU-1/KRU-1 Digital time switch

### Application

Used in INTEGRAL RS and RSA systems for control of night and week-end operating modes, for example.

#### Features:

- Supplied in standard Staefa room operating unit housing
- Microprocessor-controlled quartz clock
- Time functions entered and displayed digitally
- Easy to programme
- Facility for individual checking and correction of switch times
- Min. 72 h battery reserve
- Option of programming in blocks
- Mode selector switch



**BRU-1**  
**KRU-1**

### Types

**BRU-1** 1 channel, 12 switch times and mode selector switch  
**KRU-1** like BRU-1 but includes built-in T1 sensing element

### Technical data

Supply voltage	8 ... 24 VDC or VAC									
Power consumption	80 m VA									
Output	Open collector	<table border="1"> <tr> <td>BRU-1</td> <td>Output</td> </tr> <tr> <td>KRU-1</td> <td></td> </tr> <tr> <td>OFF</td> <td>LOW</td> </tr> <tr> <td>ON</td> <td>FLOATING</td> </tr> </table>	BRU-1	Output	KRU-1		OFF	LOW	ON	FLOATING
BRU-1	Output									
KRU-1										
OFF	LOW									
ON	FLOATING									
Voltage	27 VDC max.									
Current	300 mA max.									
R <sub>ON</sub>	10 Ω max.									
Programmable switch times	12									
Minimum interval between switch times	1 min.									
Battery reserve	72 h, after 100 h operation									
Accuracy	± 5 min. per year at 10 ... 40 °C									
Display	LCD, 9 mm									
Mode selector switch	☉ Auto   * Day   ☾ Night									
Connections:										
Mode selector switch	3-wire									
T1 sensor (KRU-1)	2-wire interchangeable									
Max. cable length	170 m 1.5 mm <sup>2</sup> Cu									
	110 m 1.0 mm <sup>2</sup> Cu (max. 2 Ω per core)									
Protection class	III (⊕)									
Protection standard	IP 30 to IEC 529, DIN 40050									
Ambient temperature:										
Operation	0 ... 50 °C									
Storage	-25 ... 70 °C									
Sensor measuring range (T1)	-50 ... 150 °C									

### Principle of operation

The programmed switch-times are automatically stored in chronological order, by the micro-processor. The power supply is battery-backed, and in the event of a power failure, the switch commands continue to be implemented within the battery reserve period. If the voltage falls too low, the clock stops, to ensure that switching does not occur at the wrong times.

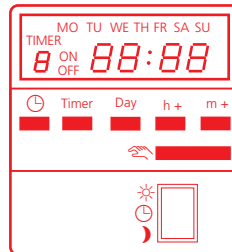
The mode selector switch can be used to select continuous day or night mode, irrespective of the programme entered. In night mode, the system operates at the set-back temperature.

The temperature sensor contains a silicon PTC resistance element, i.e. one whose resistance increases as the temperature rises.

**Display**

MO ... SU Days  
 TIMER 1 ... 6 Switch commands  
 ON/OFF Switch states  
 00:00 Hours, minutes

Display



Keys

Mode selector switch

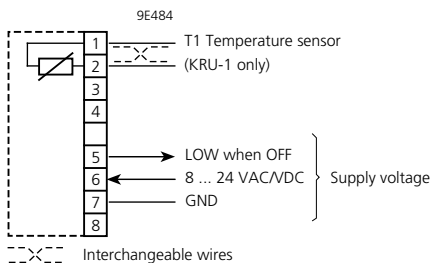
**Keys**

☰ Set time and day  
 Timer Programme switch times (Time and day[s])  
 Day Day  
 h+ Hours  
 m+ Minutes

**Mode selector switch**

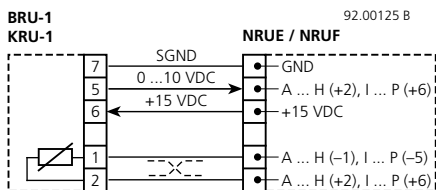
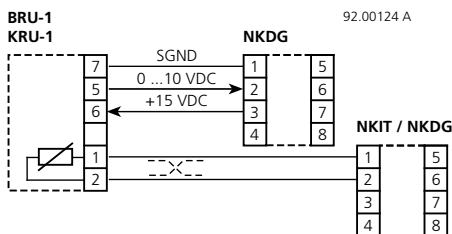
☰ Overrides the current switch state until the next automatic change, without otherwise affecting the time programme entered.  
 ☀ Continuous Day mode  
 ☰ Automatic Day/Night change-over  
 ☾ Continuous Night mode

**Terminal layout BRU-1, KRU-1**

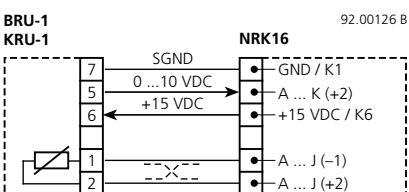


**Connection diagrams**

**INTEGRAL RS**

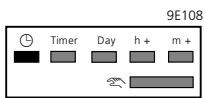


**INTEGRAL RSA**



# BRU-1, KRU-1 digital time clocks

## Commissioning



### A Setting the day and time

1. Keep ☹ depressed throughout this procedure.
2. Set the current time, using the [h+] and [m+] keys. ([h+] = hours / [m+] = minutes)
3. Holding down the [h+] and [m+] keys for longer than 1 second will cause the display to increment automatically.
4. Press [DAY] to select and display the current day.
5. Release ☹ to start the clock. (For accuracy within seconds, the clock can be started in line with the automatic speaking clock, for example.)



## Programming switch times (Modifying or deleting)

### B Programming a switch-on time

Press the [TIMER] key once. The time shown in the display panel will be replaced by: TIMER "1" ON.. -:-. Follow the instructions under A2+3 (Setting the time) to enter the time at which the connected device is to switch on. After selecting the correct switch-on time, press the [TIMER] key.

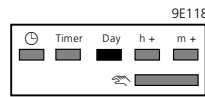
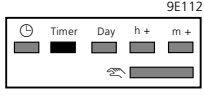
This stores the command in the programme memory. The panel will now display: TIMER "1" OFF -:-.

### C Programming a switch-off time

With the display reading: TIMER „1“ OFF -:-, follow the instructions under A2+3 (Setting the time) to enter the time at which the connected device is to switch off. Now press the [TIMER] key to store the command in the programme memory.

D Six separate switch-on and switch -off commands can be programmed in the manner described above.

E If the switch-times are entered without entering a day, the routine will be performed daily.



### F Selecting days by block

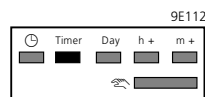
In addition to the selection of individual days, the [DAY] key can also be used to select groups of days.

1. Monday – Friday
2. Saturday + Sunday
3. Monday – Saturday

If a given day or one of the above groups is stored in the memory as part of a switch programme, the associated switch command will be performed at the programmed time on the day or days selected.

### Modifying or checking the switch commands

Whenever, required, the [TIMER] key can be used to display the programmed switch commands in succession, for checking or modification.



To modify a switch command, the programmed time is overwritten. To do this, follow the instructions under B and C (Programming switch-on and switch-off times).

### Deleting switch commands

If, when overwriting a switch command with the [h+] or [m+] keys, the symbol -- is displayed in either the minutes and/or hours field, the information entered will have no effect. The data entered will, however, still be stored in the memory as an inoperative, incomplete input.



### Switch state display

The current switch state (ON or OFF) is always shown in the display panel to the left of the time entered.

### Manual key ("Hand" symbol)

Irrespective of the programme, the ☞ key can be used to override the next switch command in memory at any time.

### Mode selector switch

By use of the mode selector switch, the programme can be continuously overridden without changing the programmed switch commands.

- Switch position ☼ : Continuous Day mode
- Switch position ☾ : Continuous Night mode.

