Industrie**funkuhren**

hopf
Elektronik GmbH

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Technical Manual

Relay-Board

Model 7122RC

ENGLISH

Version: 05.00   –   25.05.2011

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Valid for Devices 7122RC with FIRMWARE Version: **05.xx**

Version number (Firmware / Description)

THE FIRST TWO DIGITS OF THE VERSION NUMBER OF THE TECHNICAL DESCRIPTION AND THE FIRST TWO DIGITS OF THE FIRMWARE VERSION MUST **COMPLY WITH EACH OTHER**.

THE DIGITS AFTER THE DECIMAL POINT IN THE VERSION NUMBER INDICATE CORRECTIONS OF ONLY MINIMAL IMPORTANCE IN THE FIRMWARE / DESCRIPTION AND ARE OF NO SIGNIFICANCE FOR THE FUNCTION.

Downloading Technical Descriptions

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Homepage: http://www.hopf.com

E-Mail: info@hopf.com

Symbols and Characters

Operational Reliability

Disregard may cause damages to persons or material.

Functionality

Disregard may impact function of system/device.

Information

Notes and Information.

Safety regulations

The safety regulations and technical data serve to ensure trouble-free operation of the devices and protection of persons and equipment. It is therefore of utmost importance to observe and comply with these regulations. If these are not complied with, then no claims may be made under the terms of the warranty and no liability will be assumed for any ensuing damage.

Safety of the device

This device has been manufactured in accordance with the latest technological standards and approved safety regulations

The device should only be put into operation by trained and qualified staff. Care must be taken that all cable connections are laid and fixed in position correctly. The device should only be operated with the voltage supply indicated on the identification label.

The device should only be operated by qualified staff or employees who have received specific instruction.

If a device must be opened for repair, this should only be carried out by employees with appropriate qualifications or by *hopf* Elektronik GmbH.

Before a device is opened or a fuse is changed all power supplies must be disconnected.

If there are reasons to believe that the operational safety can no longer be guaranteed the device must be taken out of service and labeled accordingly. The safety may be impaired when the device does not operate properly or if it is obviously damaged. Contact your local *hopf* Elektronik GmbH representative for required action.

CE-Konformität

This device fulfils the requirements of the EU directive 89/336/EWG "Electromagnetic compatibility" and 73/23/EWG "Low voltage equipment".

Therefore the device bears the CE identification marking (CE=Communauté Européenne)

CE = Communautes Europeénnes = European communities

The CE indicates to the controlling bodies that the product complies with the requirements of the EU directive - especially with regard to protection of health and safety for the operator and the user - and may be released for sale within the common markets.

Contents   Page

1 General Board Information

The board 7122RC is a 24x Output Board for the potential free output of pulses/signals. It is designed for the **hopf** **7001RC** central clock systems in European format with a 3U/4HP front panel.

By means of its Hot-Plug facility, the board can at any time be removed from and reconnected to any point on an operating system 7001RC, without affecting the function of other system boards.

The board 7122RC is configured via the keyboard of the **hopf** system 7001RC, or using remote software.

The board is characterized by the following features:

- Connection

  The connection of the relays-outputs is carried out via a 96-pin VG strip (DIN41612) in the front panel.

- Free Parameterization

  The choice of the pulses/signals to be output as well as pulse/signal inversion and setting of pulse lengths can be parameterised for each of the 24 outputs free and individually from each other.

- Signal output via relay

  The output of the potential free pulses (Dry Contact) is carried out via 24 relays.

- Signals to be output

  A multitude of signals is available:

    o cyclic pulses,
    o DCF77 pulses
    o status information and
    o system error messages

1.1 Functions

The 7122RC relay board has 24 relay outputs through which potential free status information or signals can be output. Each output can be set up individually.

> ! The outputs are defined as follows (**non** inverted output):
>
> - No signal:
>   relay in idle state,
>
>   ⇨ connection between **[c]** and **[nc]** contacts,
>   ⇨ no connection between **[c]** and **[no]** contacts
>
> - Signal:
>   relay is energised,
>
>   ⇨ connection between **[c]** and **[no]** contacts,
>   ⇨ no connection between **[c]** and **[nc]** contacts.
>
> Legend: **[nc]** = normally close, **[c]** = common, **[no]** = normally open
>
> All signal outputs can be inverted.
> **Exception**: system status.

The following signal settings are possible:

- **No output**

- **Second pulse**
  with a pulse length of 1-9 x 10 ms, 100 ms or 1000 ms,
  cycle every 1, 2, 3, 4, 5, 6, 10, 12, 15, 20 or 30 seconds

- **Minute pulse**
  with a pulse length of 1-9 x 10 ms, 100 ms or 1000 ms,
  cycle every 1, 2, 3, 4, 5, 6, 10, 12, 15, 20 or 30 minutes

- **Hour pulse**
  with a pulse length of 1-9 x 10 ms, 100 ms or 1000 ms,
  cycle every 1, 2, 3, 4, 5, 8, 12 or 24 hours

- **DCF77 pulse**
  with 200 ms and 100 ms pulse length

- **System status**
  (Power ON)

- **Radio reception**

- **ERROR Output**
  Major-Error, Minor-Error, Non-Masked-Error, Line Error, System Error

> ! In order not to impair the durability of the relays pulses in one-digit second range or DCF77 pulses must not be adjusted.
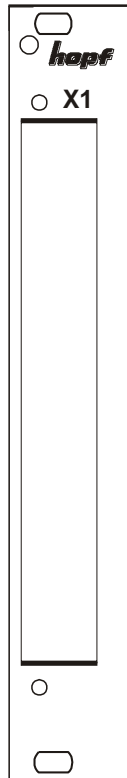
1.2 Board Layout

> When inserting the board 7122RC into the system 7001RC it is absolutely necessary to pay attention to plug the board with the correct VG strip into the system. Non-observance may result in damage of the board 7122RC as well as of the system 7001RC.
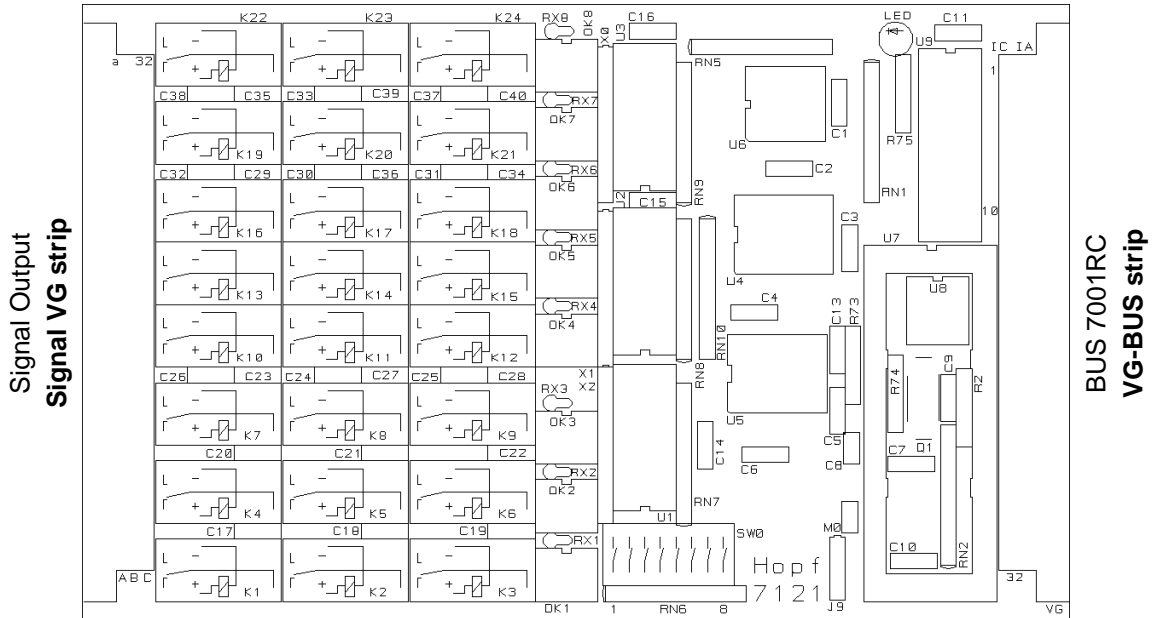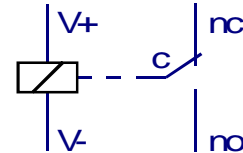

1.3 Front Panel elements

96-pin VG strip X1

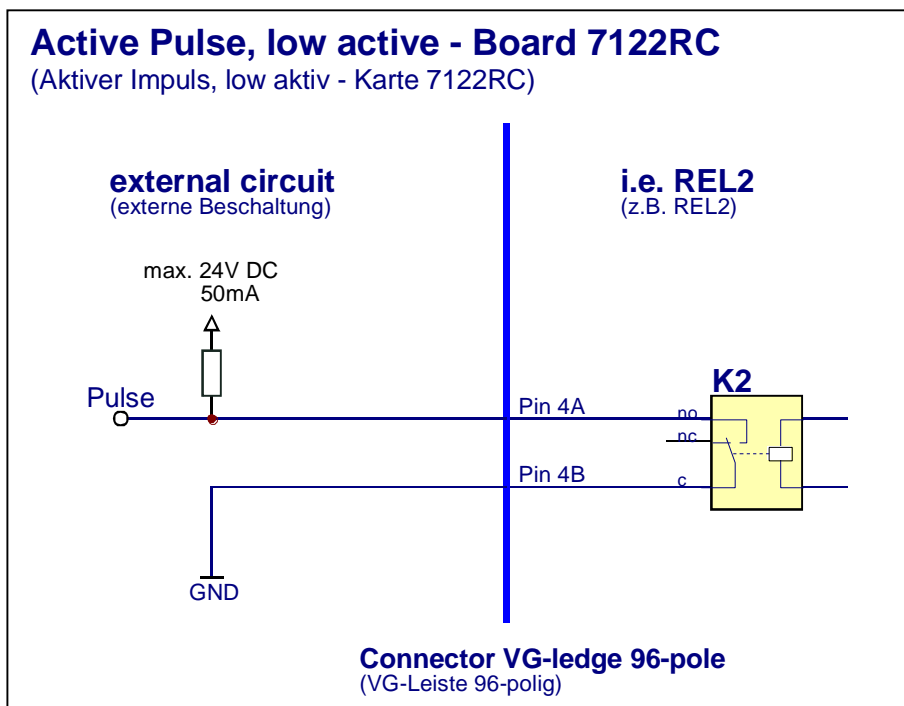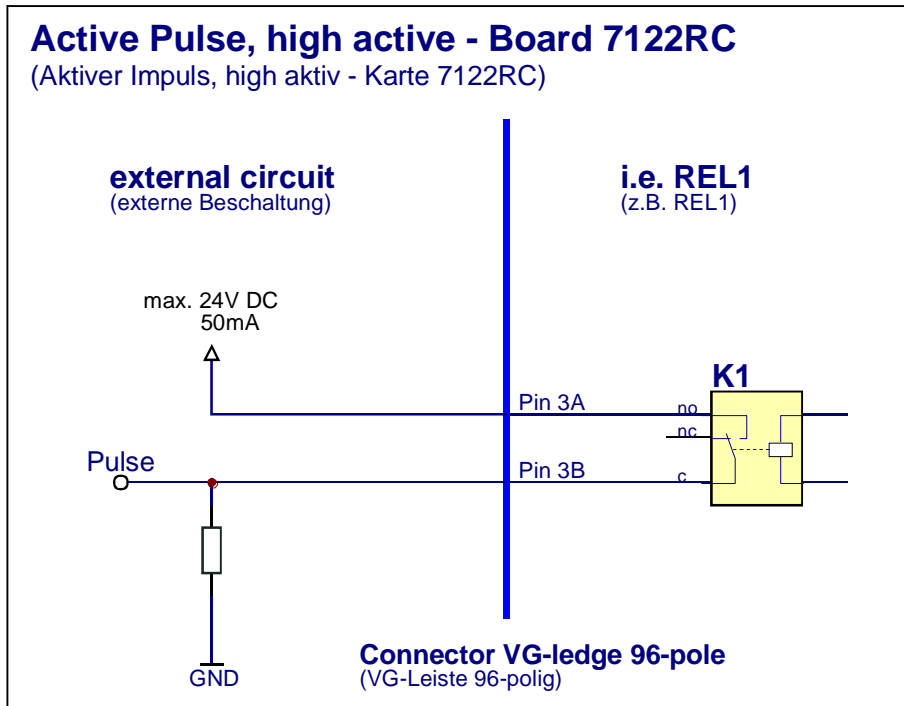### 1.3.1 Contact Assignment of the 96-pin Signal VG strip in the Front Panel

Under no circumstances the Signal VG strip has to be plugged into the system 7001RC. Non-observance may result in damage of the board 7122RC as well as of the system 7001RC

Signals: row a = normally open (no)

row b = common (c)

row c = normally close (nc)

VG strip					
Pin	**a**	**b**	**c**		
1					
2					
3	no	c	n.c.	output relay 1	K 1
4	no	c	n.c.	output relay 2	K 2
5	no	c	n.c.	output relay 3	K 3
6	no	c	n.c.	output relay 4	K 4
7	no	c	n.c.	output relay 5	K 5
8	no	c	n.c.	output relay 6	K 6
9	no	c	n.c.	output relay 7	K 7
10	no	c	n.c.	output relay 8	K 8
11					
12					
13	no	c	n.c.	output relay 9	K 9
14	no	c	n.c.	output relay 10	K 10
15	no	c	n.c.	output relay 11	K 11
16	no	c	n.c.	output relay 12	K 12
17	no	c	n.c.	output relay 13	K 13
18	no	c	n.c.	output relay 14	K 14
19	no	c	n.c.	output relay 15	K 15
20	no	c	n.c.	output relay 16	K 16
21					
22					
23	no	c	n.c.	output relay 17	K 17
24	no	c	n.c.	output relay 18	K 18
25	no	c	n.c.	output relay 19	K 19
26	no	c	n.c.	output relay 20	K 20
27	no	c	n.c.	output relay 21	K 21
28	no	c	n.c.	output relay 22	K 22
29	no	c	n.c.	output relay 23	K 23
30	no	c	n.c.	output relay 24	K 24
31					
32					

1.3.2   Example Wiring for Relay Board 7122RC

Active Pulse, high active - Board 7122RC
(Aktiver Impuls, high aktiv - Karte 7122RC)

external circuit
(externe Beschaltung)

i.e. REL1
(z.B. REL1)

max. 24V DC
50mA

K1

Pin 3A   no
                nc
Pulse
Pin 3B   c

GND

Connector VG-ledge 96-pole
(VG-Leiste 96-polig)

Active Pulse, low active - Board 7122RC
(Aktiver Impuls, low aktiv - Karte 7122RC)

external circuit
(externe Beschaltung)

i.e. REL2
(z.B. REL2)

max. 24V DC
50mA

K2

Pulse
Pin 4A   no
                nc
Pin 4B   c

GND

Connector VG-ledge 96-pole
(VG-Leiste 96-polig)

hopf
Elektronik GmbH
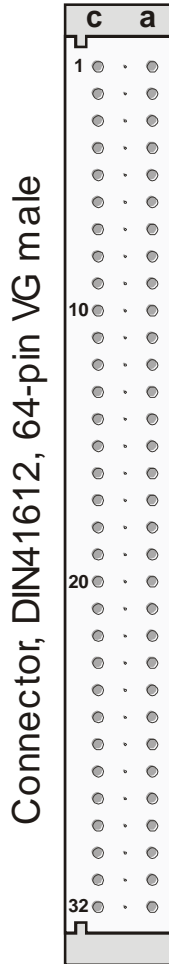
Example of Dry-Contact - Board 7122RC
(Beispielbeschaltung für potentialfreie Signalausgabe - Karte 7122RC)

external circuit
(externe Beschaltung)

i.e. REL3
(z.B. REL3)

consuming unit with power supply
(Verbraucher mit Spannungsversorgung)

max. 24V DC
50mA

load
Verbraucher

Pin 5A

Pin 5B

K3

no
nc
c

Connector VG-ledge 96-pole
(VG-Leiste 96-polig)
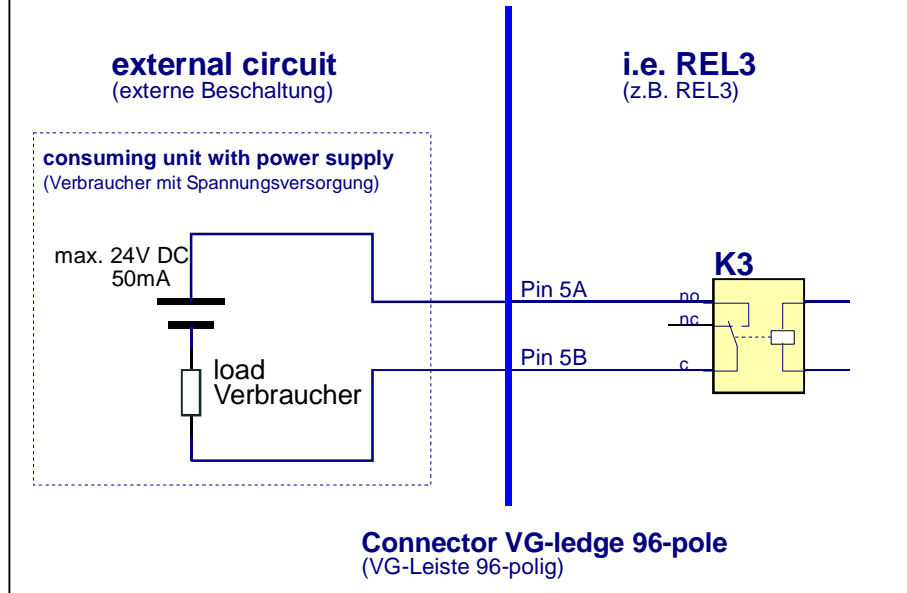
1.3.3 VG strip 64-pin (DIN 41612)

This VG strip serves to connect the board 7122RC with the system 7001RC bus.

Connector, DIN41612, 64-pin VG male

Connector, DIN 41612, 64-pin VG male				
Pin	c		a	Pin
1				1
2				2
3				3
4				4
5				5
6				6
7				7
8				8
9				9
10				10
11				11
12				12
13				13
14				14
15				15
16				16
17				17
18				18
19				19
20				20
21	RES / System Reset			21
22				22
23	SERI / System Bus		SCLK / Bus Clock	23
24	KHZB / controlled 1kHz clock		PPS / controlled 1Hz clock	24
25	FROUT		FRIN	25
26				26
27	AROUT		ARIN	27
28				28
29				29
30				30
31	GND		GND	31
32	+5V DC		VCC / 5Volt	32

2   Embedding the 7122RC Board in the 7001RC System

> **i** This chapter describes the implementing of an additional RC-Function Board into the System 7001RC. In a new delivered System 7001RC all System Boards are already implemented and pre-configured with the *hopf* default settings as a rule.

All RC function boards are individually parameterised from the system 7001RC.

> **i** Every RC function board is uniquely identified via the board type and an assigned board number (1-31)

The following steps are necessary for implementation:

- Identification of the board numbers available

- Setting up of the board number with the DIP switch SW0 on the RC-Function Board 7122RC

- Installation of the RC-Function Board 7122RCin the System 7001RC

- Parameterisation of the RC-Function Board 7122RC

- Activation of the RC-Function Board 7122RCvia the System 7001RC

2.1   Identification of the Board Numbers available

The board numbers allocated so far can be displayed via the **SHOW ALL ADDED SYSTEM-BOARDS** menu. The board numbers that are not listed for this board type are available for the new RC-Function Board 7122RC.

> **!** Boards that are available in terms of hardware, but which have not yet been activated via the system menu, are **not** listed in the **SHOW ALL ADDED SYSTEM-BOARDS** menu.
>
> In order to identify the set board number, these boards must be made available externally, in order to identify the set board number from the DIP switch setting.

2.2 Set the Board Number

In order to clearly identify the board in the system 7001RC, the board number must be defined via the SW0 DIP switch bank. The board number is set as Hex code on SW0. Switch 8 is the lowest value bit and switch 1 the highest value bit. The inscription on the DIP switch housing serves to identify switches 1-8. Board numbers from 1 to 31 can be setup, board numbers outside this range are not recognized by the system 7001RC.

> ⚠ Under no circumstances may two boards of the same type with the same board number be embedded in one system 7001RC. This leads to undefined errors on both boards.

SW0
SW1

⇨ **Board 01**
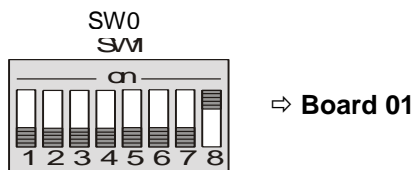
SW0 Pos 4	SW0 Pos 5	SW0 Pos 6	SW0 Pos 7	SW0 Pos 8	board number in 7001RC-System
off	off	off	off	on	1
off	off	off	on	off	2
off	off	off	on	on	3
off	off	on	off	off	4
off	off	on	off	on	5
off	off	on	on	off	6
off	off	on	on	on	7
off	on	off	off	off	8
off	on	off	off	on	9
off	on	off	on	off	10
off	on	off	on	on	11
off	on	on	off	off	12
off	on	on	off	on	13
off	on	on	on	off	14
off	on	on	on	on	15
on	off	off	off	off	16
on	off	off	off	on	17
on	off	off	on	off	18
on	off	off	on	on	19
on	off	on	off	off	20
on	off	on	off	on	21
on	off	on	on	off	22
on	off	on	on	on	23
on	on	off	off	off	24
on	on	off	off	on	25
on	on	off	on	off	26
on	on	off	on	on	27
on	on	on	off	off	28
on	on	on	off	on	29
on	on	on	on	off	30
on	on	on	on	on	31

2.3 Installation of a new Board 7122RC in the System 7001RC

In order to install a new board 7122RC, a free extension slot (slot with board connectors and VG strip installed in the system bus) with a width of 4HP must be available. This information can be obtained from the associated specific system drawing.

If no free extension slot is available, this can usually be retrofitted. Please contact **hopf** Elektronik GmbH.

Further information about installing new RC-Function Boards can be consulted in the technical manual of the System 7001RC.

> The board 7122RC has two VG strips. It absolutely necessary to pay attention to plug the board with the correct VG strip into the system 7001RC. Non-observance may result in damage of the board 7122 as well as of the system 7001RC. See *chapter 1.2 Board Layout*.

2.4 Parameterise / Activating the Board 7122RC in the System 7001RC

The following steps are required to activate the board:

> To avoid undesirable output behaviour of the RC-Function Board 7122RC it is first parameterised and then activated by switching it into the monitoring system.

- In the **BOARD-SETUP** menu, sub-heading **ADD SYSTEM-BOARDS**, log on the newly installed 7122RC-Function Board.

- In the **BOARD-SETUP** menu, sub-heading **SET SYSTEM BOARDS PARAMETER** parameterise the board (see *chapter 3 Administration of the 7122RC Board*).

- In the **BOARD-SETUP** menu, sub-heading **SET SYSTEM BOARDS TO MONITORING-MODE OR IDLE-MODE** integrate the newly installed 7122RC-Function Board into the monitoring system.

> The menus:
> - **ADD SYSTEM-BOARDS** and
> - **SET SYSTEM BOARDS TO MONITORING-MODE OR IDLE-MODE**
>
> can be consulted in the technical manual of the system 7001RC.

3 Administration of the 7122RC Board

The technical manual of the System 7001RC is the basis for the configuration. Successional only the input of values are described which are located in the menu **BOARD-SETUP:4**. In the display screens the English display format is shown.

> **i** All parameters can be activated also in the system 7001RC with the associated *hopf* 7001RC Remotesoftware (see technical description *hopf* 7001RC Remotesoftware).

> **!** The menu **SET SYSTEM-BOARDS PARAMETER** has to be completely finished by pressing the ENT key so that the System 7001RC accepts the newly configured parameters.

3.1 Input Functions for the 7122RC Board via the BOARD-SETUP-menu

The input and/or indicator functions of the board parameters is called in the menu **BOARD-SETUP:4**.

Key ENT ⇨ Main menu
Key 4 ⇨ Board-Setup
Key N ⇨ browse to menu option:

```
S E T   S Y S T E M - B O A R D S   P A R A M E T E R     Y / N
```

Select with key Y .

Search the RC-Function Board to be parameterised with key N and select it with key Y .

Example picture:

```
  P A R A M E T E R   B O A R D   0 3   O F   2 5     7 1 2 2   N O . : 0 1
S T A T U S : M / -     B O A R D N A M E : " P U L S E O U T "     S E T > Y / N
```

PARAMETER BOARD 03 OF 25 ⇨ RC-Function Board **03** of a total of **25** implemented

7122 NR.: 01 ⇨ Board type **7122RC** with board number **01**

STATUS: M/**-** ⇨ **M** = Monitor mode / **-** = Operating without error

I/**E** **I** = Idle mode / **E** = Board error

BOARDNAME:" PULSEOUT " ⇨ **PULSEOUT** Freely selectable board name by the customer

3.1.1 Menu Control of the RC-Function Board 7122RC

In the following menu the several relay outputs of the board 7122RC can be configured.

B	.	7	1	2	2		N	O	.	:	0	1		R	E	L	:	1	3		P	/	N	:	P		0	1		s			D	:	3	/	2	
							N	E	W		R	E	L	:	1	3		P	/	N	:	~		~	~	~	~	~		D	:	~	/	~				

The current setting of the output is shown on the upper line:

- **Board 7122RC** with board number **01**
- **REL:13**   ⇨ displayed output 13
- **P/N: P**   ⇨ not inverted
- **01 s**   ⇨ cycle time: pulse every second
- **D:3/2**   ⇨ pulse length 3×10^2 ms = 300ms

The menu is controlled as follows:

- Key $\boxed{\text{ENT}}$ selects the relay-output to be set,
- Keys $\boxed{\text{P}}$ or $\boxed{\text{N}}$ select whether the output should be inverted (N) or not inverted (P),
- Keys $\boxed{\text{U}}$ and $\boxed{\text{D}}$ select the mode (signal/status) to be output,
- Key $\boxed{\text{BR}}$ interrupts the entry without saving,
- The menu requires a complete entry and must be confirmed by pressing $\boxed{\text{ENT}}$.

If an implausible or incorrect entry is made then an error message is output and the entry can be made again. Incorrect data is not saved.

3.1.2 Selecting the Relay-Output

B	.	7	1	2	2		N	O	.	:	0	1		R	E	L	:	1	3		P	/	N	:	N		0	1		s			D	:	3	/	2	
							N	E	W		R	E	L	:	1	3		P	/	N	:	_										D	:		/		

By pressing the $\boxed{\text{ENT}}$ key the relay-outputs are displayed respectively selected for configuration in sequence from 01 to 24. If the relay-output to be setup appears then the entry is started by setting up the signal output inversion (see **chapter 3.1.3 Inverting the Signal Output**).

3.1.3 Inverting the Signal Output

The inversion of the signal output logic is set with the $\boxed{\text{P}}$ (= **p**ositive) and $\boxed{\text{N}}$ (= **n**egative) keys. The $\boxed{\text{P}}$ key sets a non-inverted signal output. The $\boxed{\text{N}}$ key inverts the signal output. Definition of the status of the signal outputs for **non**-inverted output see **chapter 1.1 Functions**.

3.1.4 Selecting the Pulse and Status Output

B	.	7	1	2	2		N	O	.	:	0	1		R	E	L	:	1	3		P	/	N	:	N		0	1		s			D	:	3	/	2
							N	E	W		R	E	L	:	1	3		P	/	N	:	P			0	0		s	_		D	:		/			

The following signal outputs can be scrolled using the [U] key for up and the [D] key for down beginning with 00 (= no output). The pulse outputs listed in the table below will be listed one after the other:

Input	Meaning	Characteristic
00 s	No output	
	Second Pulses	
01 s	Signal every sec.	• All cycles are counted back to 00 seconds (⇨ minute change). Thus the 12 second signal, for example, takes place at 00, 12, 24, 36 and 48 seconds of the minute in question.
02 s	Signal every 2 sec.	
03 s	Signal every 3 sec.	
04 s	Signal every 4 sec.	
05 s	Signal every 5 sec.	
06 s	Signal every 6 sec.	• The selected signal length must not be the same as or longer than the cycle duration since otherwise the output in question will be permanently switched through
10 s	Signal every 10 sec.	
12 s	Signal every 12 sec.	
15 s	Signal every 15 sec.	
20 s	Signal every 20 sec.	
30 s	Signal every 30 sec.	
	Minute Pulses	
01 m	Signal every min.	• All cycles are counted back to 00 minutes (⇨ hour change). Thus the 15 minute signal, for example, takes place at 00, 15, 30, and 45 minutes of the hour in question.
02 m	Signal every 2 min.	
03 m	Signal every 3 min.	
04 m	Signal every 4 min.	
05 m	Signal every 5 min.	
06 m	Signal every 6 min.	
10 m	Signal every 10 min.	
12 m	Signal every 12 min.	
15 m	Signal every 15 min.	
20 m	Signal every 20 min.	
30 m	Signal every 30 min.	
	Hour Pulses	
01 h	Signal every hour	• All cycles are counted back to 00 hours (⇨ day change). Thus the 8 hour signal, for example, takes place at 00, 8, and 16 hours of the day in question.
02 h	Signal every 2 hours	
03 h	Signal every 3 hours	
04 h	Signal every 4 hours	
06 h	Signal every 6 hours	
08 h	Signal every 8 hours	
12 h	Signal every 12 hours	
24 h	Signal every 24 hours	

Input	Meaning	Characteristic
DCF77 Pulse Output		
DCFT	DCF77 pulse	• Signal length high bit: 200 ms (fixed adjusted) • Signal length low bit: 100 ms (fixed adjusted)
Status Output		
Pwr	System status (Power ON)	• Switches the output in operation • Can not be inverted
Sync	Radio reception	• Switches the output when the system is synchronised • Can be inverted
ERROR Output		
Maj	Major-Error	• Switches the output when an **ERROR** with **high priority** is detected in the system
Min	Minor-Error	• Switches the output when an **ERROR** with **low priority** is detected in the system
Mask	Masked	• Switches the output when an **ERROR** is detected in the system (not filtered)
Line	Line Error	• Switches the output when a **LINE- ERROR** (ex. 7406RC) is detected in the system (not filtered)
E-01	System Error (*)	• Switches the output when the **ERROR -1** is detected in the system
E-02	System Error (*)	• Switches the output when the **ERROR -2** is detected in the system
E-03	System Error (*)	• Switches the output when the **ERROR -3** is detected in the system
E-04	System Error (*)	• Switches the output when the **ERROR -4** is detected in the system
E-05	System Error (*)	• Switches the output when the **ERROR -5** is detected in the system
E-06	System Error (*)	• Switches the output when the **ERROR -6** is detected in the system
E-07	System Error (*)	• Switches the output when the **ERROR -7** is detected in the system
E-08	System Error (*)	• Switches the output when the **ERROR -8** is detected in the system
E-09	System Error (*)	• Switches the output when the **ERROR -9** is detected in the system
E-10	System Error (*)	• Switches the output when the **ERROR -10** is detected in the system
E-11	System Error (*)	• Switches the output when the **ERROR -11** is detected in the system
E-12	System Error (*)	• Switches the output when the **ERROR -12** is detected in the system
E-13	System Error (*)	• Switches the output when the **ERROR -13** is detected in the system
E-14	System Error (*)	• Switches the output when the **ERROR -14** is detected in the system
E-15	System Error (*)	• Switches the output when the **ERROR -15** is detected in the system
E-16	System Error (*)	• Switches the output when the **ERROR -16** is detected in the system

E-17	System Error (*)	• Switches the output when the **ERROR -17** is detected in the system
E-18	System Error (*)	• Switches the output when the **ERROR -18** is detected in the system
E-19	System Error (*)	• Switches the output when the **ERROR -19** is detected in the system
E-20	System Error (*)	• Switches the output when the **ERROR -20** is detected in the system
E-21	System Error (*)	• Switches the output when the **ERROR -21** is detected in the system
E-22	System Error (*)	• Switches the output when the **ERROR -22** is detected in the system
E-23	System Error (*)	• Switches the output when the **ERROR -23** is detected in the system
E-24	System Error (*)	• Switches the output when the **ERROR -24** is detected in the system
E-25	System Error (*)	• Switches the output when the **ERROR -25** is detected in the system
E-26	System Error (*)	• Switches the output when the **ERROR -26** is detected in the system
E-27	System Error (*)	• Switches the output when the **ERROR -27** is detected in the system
E-28	System Error (*)	• Switches the output when the **ERROR -28** is detected in the system
E-29	System Error (*)	• Switches the output when the **ERROR -29** is detected in the system
E-30	System Error (*)	• Switches the output when the **ERROR -30** is detected in the system
E-31	System Error (*)	• Switches the output when the **ERROR -31** is detected in the system
E-32	System Error (*)	• Switches the output when the **ERROR -32** is detected in the system

(*) see manual 7001RC-7020 in chapter "Error Messages - Meanings".

Input	Meaning	Characteristic
Md01	Modus 1 hour pulse with a length of 6 seconds	• Fixed output mode hour pulse with a length of 6 seconds; starts with minute 59 and second 55, ends with minute 00 and second 01
Md02	at present without function	• no output
Md03	at present without function	• no output
Md04	at present without function	• no output
Md05	at present without function	• no output
Md06	at present without function	• no output
Md07	at present without function	• no output
Md08	at present without function	• no output
Md09	at present without function	• no output
Md10	at present without function	• no output
Md11	at present without function	• no output
Md12	at present without function	• no output
Md13	at present without function	• no output
Md14	at present without function	• no output
Md15	at present without function	• no output
Md16	at present without function	• no output
Md17	at present without function	• no output
Md18	at present without function	• no output
Md19	at present without function	• no output
Md20	at present without function	• no output
Md21	at present without function	• no output
Md22	at present without function	• no output
Md23	at present without function	• no output
Md24	at present without function	• no output
Md25	at present without function	• no output
Md26	at present without function	• no output
Md27	at present without function	• no output
Md28	at present without function	• no output
Md29	at present without function	• no output
Md30	at present without function	• no output
Md31	at present without function	• no output
Md32	at present without function	• no output

3.1.5 Signal Length

> **i** By selecting the DCF77 pulse output, status outputs or ERROR outputs values for the pulse length have to be also set. This input is disregarded with the status output, it serves only for the completion of the input.

B	.	7	1	2	2		N	O	.	:	0	1		R	E	L	:	1	3		P	/	N	:	N		0	1		s			D	:	3	/	2
							N	E	W		R	E	L	:	1	3		P	/	N	:	P		0	1		s	_			D	:	5	/	_		

The signal length is defined with the **D:**. The first digit (1 to 9) indicates the multiplier, the second digit (1 to 3) the exponent. The basis for the exponent is always 10ms. In the shown example $3 \cdot 10^2$ ms = 300 ms are currently set (see upper line).

3.2 Input Example

Requested is a non-inverted pulse of 50ms length every second at relays output number 13.

After selecting the board 7122RC to be adjusted as described in *chapter 3.1 Input Functions for the 7122RC Board via the BOARD-SETUP-menu* the ⌷ENT⌷ key is pressed as often as **13** appears behind **REL:**.

Hereafter the key ⌷P⌷ is pressed to select a non-inverted output.

The required second pulse is selected afterwards by pressing the key ⌷U⌷ until '**01 s**' appears in the display.

At last the pulse length is adjusted. A pulse length of 50 ms requires the following input:

50ms ⇨ $5 \cdot 10^1$ ms ⇨ **5** as multiplier, **1** as exponent ⇨ Input **D: 5 / 1**

For this reason the whole line looks as follows:

B	.	7	1	2	2		N	O	.	:	0	1		R	E	L	:	1	3		P	/	N	:	N		0	1		s			D	:	3	/	2
							N	E	W		R	E	L	:	1	3		P	/	N	:	P		0	1		s	_			D	:	5	/	1		

4 Technical Data

Voltage supply:	+5V DC via bussystem
Input current:	approx. 200 mA
Number of output relays:	24
Switching capacity of the outputs:	24V DC / 200 mA
Expected life:	min. operations 1×10^{9}
Contact bounce:	approx. 0.5 msec.
MTBF:	> 300.000 hours, relays 10 million number of cycles

Customer service:

Hard- and software alterations according to customer specifications are available

> **i** The *hopf* company withhold the right to hard and software alterations.