

Order No.: 311  
Class : 0.1  
Type : Report  
Author : B. Scharøe  
Petersen  
Ed. : October 1965

Description of Input/Output Signals to RC 2000



GIER System Library  
O.1 Technique  
B. Scharøe Petersen  
A/S REGNECENTRALEN, Rialto  
October 1965

Order No. 311

1.

Description of Input/Output Signals to RC 2000

ABSTRACT: The paper gives the necessary information pertaining to the connection of the RC 2000 Paper Tape Reader to electronic digital computers.

Alterations: The information contained herein may be subject to change without further notice.

Dimensions: Width : 52.0 cm  
Depth : 46.3 cm  
Height: 32.6 cm  
Weight: 36 kg

Environment: Ambient Air Temperature: 15-30°C  
Relative Humidity : 40-70 pro cent

Power Requirements: Single phase AC  
Voltage : 115, 127, 220 V  
Frequency: 50, 60 Hz  
Power consumption 120 W

Connection: A power supply cable (3 meters in length) and a 30-poled Tuchel plug for input/output signals are supplied with each reader.

Specifications for RC 2000, standard.(valid from serial number 2126)Paper out (plug 1 c 8)

This signal is low to indicate the "Paper out" situation.  
It goes high when depressing READ or RESET if paper tape has  
been properly placed in the tape guide.

When reaching the end of tape the signal goes low.

Signal levels at no load: true: - 8V nominal.

false: - 0,3V nominal.

Rise and fall time at no load : max. 1 uS.

Circuit: Emitter follower, 1K ohm to - 8V.

1st character (plug 1 c 7)

This signal is low in 12 mS after RESET has been depressed and  
indicates that the core store is being cleared.

The trailing edge indicates that the reader is now ready to  
read the first character from the paper tape into the core  
store.

Signal levels at no load: true: - 8V nominal

false: + 8V nominal.

Rise and fall times at no load: not specified.

Circuit: Grounded emitter at + 8V, 2K ohm to - 8V.

Start - signal (plug 1 a 9)

In order to read one character from the buffer, the startsignal must be changed from the false to the true level. The rise and fall times of the signal are not critical, but the duration should be no less than 4  $\mu$ S.

The representation of the start signal may be either high or low (may be changed by strapping on the printed circuit board pos.B0).

Signal levels: high: more pos. than - 0,5V, max. + 5V  
low: more neg. than - 5V, min. - 40V

Busy signal (plug 1 c 9)

This signal indicates that the reader is busy and will not react to a startsignal.

The busy signal will change from "false" to "true" level when the start signal is received and will remain so until about 2  $\mu$ S after the character has been read to the output lines.

The representation of "busy" may be either high or low (according to strapping on the circuit card pos. B0).

Signal levels at no load: high: - 0.3V nominal  
low: - 8V nominal.

Rise and fall times at no load : max. 1  $\mu$ S.

Circuit: Emitter follower, 1K ohm to - 8V.

Output (plug 1 a 1 - a 8)

This is a non-gated output, sending the information in high representation.

Signal levels at no load: true: - 0.5V nominal  
false: - 8V nominal.

Rise and fall times at no load: max. 1 uS.

Circuit: Emitter follower 1K ohm to - 8V.

Output (plug 1 b 1 - b 8)

This is a gated output sending the information in low representation. The duration of the gate pulse is  $150 \mu\text{S} \pm 20\%$  from the trailing edge of the busy signal.

The duration of the gate pulse is determined by a capacitor on printed circuit board B 2. It may be changed to accommodate for other durations. It is also possible to leave out the gating so that the output is non-gated.

Signal levels at no load: true: - 6V nominal  
false: + 1.5V nominal.

Rise and fall times at no load : max. 10 uS.

Circuit: Output impedance 2K ohm.

If non-gated output is wanted output may be directly from an emitter-follower with specifications as for high non-gated output above.

#### Ready signal (plug 1 b 9)

This signal having a duration of  $15 \mu\text{S} \pm 10\%$ , indicates that the gating of the character is completed.

Signal levels at no load: true: - 8V nominal  
false: + 2V nominal.

Rise and fall times at no load : max. 1  $\mu\text{S}$ .

Circuit: Grounded emitter, 1K ohm to - 8V.

#### 8 channel tape selected (plug 1 c 1)

#### 7 channel tape selected (plug 1 c 2)

#### 5 channel tape selected (plug 1 c 3)

#### Olivetti tape selected (plug 1 c 4)

These lines are grounded when the signal is true, else left floating.

#### Signal ground plug (1 a 0, b 0, c 0)

#### Further output options:

The output can be specially adapted to interface many types of computers. Such interfacing has taken place with ICT 1004, SAAB D 21, Bull gamma 30 (=RCA 301).

Two (or more) RC 2000's may be parallel connected to a single data input by a slight change in the output circuits, so that the readers are operated with only the start signals separate.

Specification for input to the RC 2000 buffer.

The RC 2000 ferrite core buffer may be used to buffer input signals from other devices. When used in this mode the photo-cell read head and the motor are electrically disconnected by relay switching of the corresponding control wires available at the input connector.

Also controlled via this are the following signals:

Reset of buffer.

Data 1...8; sets the corresponding input register flip-flop when high.

Sum data ; the character set in the input register is transferred to core buffer on the trailing edge of this signal.

The RC 2000 returns one signal going high when more than 128 characters are stored in the buffer, and one signal going low when the buffer is empty. Also + 8V and - 8V are available at the interface to drive small loads.

Control signals (plug 6 b 1. b 2. b 3. b 4):

These wires are normally left floating.

In order to switch the reader to external control b 1, b 2, b 3 are shorted together and b 4 is shorted to signal ground.

Reset buffer (plug 6 b 6):

A positive pulse will trigger reset of the buffer in the same way as the RESET button. The reset takes app. 12 mS.

Signal levels: true : 0V nominal.  
                  false : - 8V nominal.  
Duration : min. 10 uS, max. 5 mS.

Data 1 to 8 (plug 6 a 1 to 6 a 8):

A positive pulse or level will set the input register flip-flop.  
Signal levels: true : 0V nominal.  
                  false : - 8V nominal.  
Duration and rise times not specified.

Sum data (plug 6 a 9):

This signal should be the logical sum of the data signals.  
Buffering will take place on the trailing edge of this signal.  
Signal levels: true : 0V nominal.  
                  false : - 8V nominal.  
Duration and rise times not specified.

128 characters stored (plug 6 c 1):

This signal indicates that more than 128 characters are stored  
in the buffer.  
Signal levels at no load: true: - 0.3V nominal.  
                              false: - 8V nominal.  
Rise and fall times: max. 1 uS.  
Circuit: grounded emitter 2K ohm to - 8V.  
Load: max. 1 mA.



Buffer\_empty (plug 6 c 9):

This signal indicates that the buffer is empty.

Signal levels at no load: true: Diodes reverse biased by - 8V.

false: - 0.5V, diodes conducting

max. load 1 mA.

Signal ground (plug 6 a 0, b 0, c 0):

+ 8V (plug 6 b 9) and - 8V (6 b 8): From the internal power supply may be loaded with max. 50 mA.

