Title:

RC3502 IOM Testprogram Package
User's Guide

RC International

Keywords:

RC3502, RC45, IOM551, Testprogram.

Abstract:

This program describes the reliability testprogram
for the IOM551 in RC45.

(16 printed pages).

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APPENDICES:

1.   INTRODUCTION

This manual describes a reliability testprogram for test of an IOM551-interface in RC45, connecting RC45 terminal with a RC3502 computer.

In the testprogram is included an IOM-driver process which can handle write control, read status, writing and reading of data blocks. The data transmission is half duplex, i.e. write data is followed by a read data on same interrupt level.

```
RC3502                              RC45
 ┌─┬──────┐                     ┌─────────────┐
 │ │ I    │                     │ ┌─────────┐ │
 │ │ O    │                     │ │         │ │
 │ │ M    │   CBL674            │ │ IOM551  │ │
 │ │      │                     │ │         │ │
 │ │ 2    │                     │ └─────────┘ │
 │ │ 0    │                     │             │
 │ │ 1    │                     └─────────────┘
 │ │      │
 │ │ /    │                          RC45
 │ │      │                     ┌─────────────┐
 │ │ 2    │                     │ ┌─────────┐ │
 │ │ 0    │                     │ │         │ │
 │ │ 2    │   CBL674            │ │ IOM551  │ │
 │ │      │                     │ │         │ │
 │ │      │                     │ └─────────┘ │
 └─┴──────┘                     └─────────────┘
```
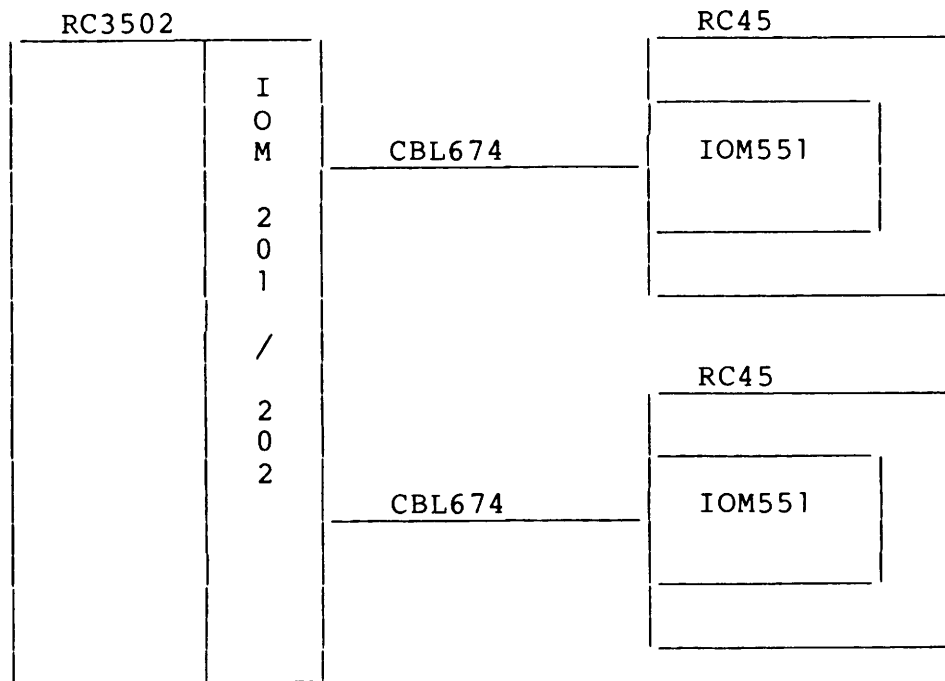
Fig. 1. IOM551 test.

1.1   Configuration Requirements

A minimum configuration for the RC3502 test system with a connection to an RC8000 or another load medium possibility for loading the test system TOP35 and the test program. Further a IOM201 or IOM202, cables for connection (CBL410/466/674/675/676/677), and RC45 with IOM551.

1.2   Parameter Values

Param.No.	Text	Default	Min.	Max.
000	testprogram	A	A	A
001	no of runs	20	1	32760
002	first intr. level	80	8	122
003	no of channels	8	1	8
006	data check	YES	NO	YES
007	error check	YES	NO	YES
010	blocklength	1754	1	16383
011	blocks pr run	255	0	32760
012	data kind	2	0	4
049	max. error messages	10	1	32760

Remarks:

p002:   Interrupt level for the first channel.

p003:   Number of channels in use. If more than 8 channels are wanted you can start more incarnations of the IOMTEST to do the job.

p006:   If true, it is checked that the received data are the same as the ones transmitted.

p007:   If true, error messages are written, else no errors are reported.

p010:   Blocklength in bytes.

p011:   Number of blocks per run. If zero then only write control and read status are performed.

p012:   Datakind can have the following values:

    0:   all chars are 0.
    1:   all chars are 255.
    2:   incrementing char values.
    3:   the chars are alternating between
         $55 and $AA.
    4:   the chars have incrementing alfanumeric
         values (in the range from 33 to 124).

NB. Every second byte are used by RC45 as an at-
tribute, so each line on the screen takes 160 bytes.

1.3   Load and Start of the Test   1.3

How to load in general, see ref. 4.

TOP35 and the IOM-test are loaded and started as
described in ref. 5. To start the test, type
<NEW:IOM> when TOP35 is waiting for input. This
causes the test to start and wait for parameter
setting or to be started.

2.   TEST DESCRIPTION   2.

2.1   Dynamic Test Buffers   2.1

With the blocksize parameters an arbitary databuffer-
size can be selected. These buffers are not allocated
when the test is initiated, but dynamically allocated
when the test is started. Only one receive- and
transmit-buffer (of maximum size) is allocated for
each interrupt level. If the allocation meets limita-
tions in memory, the test tries to get buffers with
half the size, and so on.

The buffer allocation can fail in two ways: It finds
no buffers at all, or it finds too few buffers of the
size to have one transmit buffer and one receive
buffer per level. In both cases, the test will be
terminated.

If the allocation of buffers is insufficient, the
test will write as follows:

--- maximum test buffer size   :   <size>

2.2   IOM-Driver   2.2

The IOM-driver process heading is:

PROCESS iom_driver (VAR sem: semaphore; level: integer);

The IOM-driver is waiting on the semaphore: sem, for
a message and associated data buffer. The format of
the data buffer is as described in ref. 3.

The driver can handle functions as reset, set
echomode, set blocktestmode, write control, write,
and read.

Incarnation name is "iom_<level in hex>"

2.2.1 Control Function

First the timer is set to a timeout value.

Then the driver starts a ctrwaitid and a sense on the actual level.

Errors may occur if timeout occurs before the transmission is finished, or received STATUS-IN is different from the wanted value.

2.2.2 Write Function

If the driver has a read message then the driver starts a outbyteblock on the actual level.

Then the timer is set to a timeout value and an inbyteblock are performed.

Errors may occur if timeout occurs before the transmission is finished,
or no read message is ready.

2.2.3 Read Function

The message is saved for a later write function.

2.3 Test Strategy

The strategy is close related to the procedure described in ref. 2.
First a control 0, to reset the device on the level.
When the status ´after reset´ is received, the test will write on the console:

-- level <level> connected.

If a IOMSTREAMER program is running then the text will be:

-- level <level> streamer.

Parameter p001 tells the test program, how many runs you want the test to perform.

First run consists of transferring ´set echomode´, 255 different controls and read status. If <p011> is zero, then each run is like first run. If <p011> is > 0 then a ´set blocktestmode´ is transferred and <p011> data blocks are transmitted and received in each run.

When all runs are finished or max_mess of errors has occurred, the program terminates, writing on the console:

wwwwwww transmitted rrrrrrr received on level: lll

where wwwwwww is no of blocks written, rrrrrrr is no of blocks received, and lll is interrupt level.

3.   ERROR TEXTS   3.

If an error is detected during the operation of the
test, an errormessage is written on the outputmedia
as follows:

 <error text>
 level no   : <xxx>

If datacheck is selected furthermore two lines with:
"expected" and "received" will be printed if it is a
data error or blocklength error.

The errortexts may be:

 <timeout, after reset>
 STATUS not received in time.

 <error, after reset>
 The received STATUS is not correct.

 <timeout, after set echo>
 STATUS not received in time.

 <error, after set echo>
 The received STATUS is not correct.

 <timeout in echo mode>
 STATUS not received in time.

 <error in echo mode>
 The received STATUS is not correct.

 <timeout, after set block mode>
 STATUS not received in time.

 <error, after set block mode>
 The received STATUS is not correct.

 <illegal blocklength>
 The terminal cannot handle this blocklength,
 try with smaller blocks.

 <timeout, data lost on output>
 Datatransfer operation did not finish in time.

 <data lost in outblock>
 Outbyteblock did not finish correct.

<blocklength error>
The received data block length differs from the one
expected. (from testprogram)

<data error>
The received data differs from the one transmitted
(occurs mostly in connection to blocklength error).
(from testprogram)

<illegal driver command>
Error in testprogram.

<no buffer>
The RC3502 IOM-driver is not ready to receive.
Error in testprogram.

A.   **REFERENCES**

1. RCSL No. 99 0 00971
   Technical Description of IOM551.

2. RCSL No. 99 0 00972
   Checkout Procedure of IOM551.

3. RCSL No. 31-D617
   PASCAL80 Driver Conventions

4. RCSL No. 99 0 00771
   RC3502/2 Operating Guide

5. RCSL No. 30-M329
   RC3502, TOP35, Test Operating System,
   User's Guide

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