Title:

RC 36-00240.02
LINE RELIABILITY (Synchron)
OPERATING INSTRUCTION

A/S REGNECENTRALEN

RC SYSTEM LIBRARY: FALKONERALLE 1 DK-2000 COPENHAGEN F

RCSL No: 44-RT 1642
Edition: 77.03.10
Author: Ole Sylvest

Keywords:

Musil, Device Reliability, Synchronous Line, Test

Abstract:

Printed by A/S Regnecentralen, Copenhagen

The following pages present the first, general pages of the relaibility program listing.

These pages form an operating guide to the program

LOAD After autoload of

RC 3600 SYSTEM MAINTENANCE

Tape/Disc, or while running RC 3600 MUS/DOMUS software (only for RC 3600 systems), this device reliability program can be loaded and executed the following way:

After contact with operative system = S
(refer to previous chapters or the system operating guide) type:

LOAD TIME <1> <2> <3> <4> P240 RETURN

1: R40R = RC 3680C Sync. Comm. Control
R4MR = RC 3681 Sync. Comm. Multiplexer

2: R40X = RC 3680C Sync. Comm. Control
R4MX = RC 3681 Sync. Comm. Multiplexer

EVENTUAL Log Device, - if not TTY:

3: LPT = Line Printer
CPT = Charaband Printer
SP = Serial Printer

4: Empty = ASCII
TAB1 = ASCII
TAB2 = RC Standard
TAB3 = PL 1
TAB4 = Hungarian
TAB5 = Cyrillic

```
0064
0065 TITLE:          LINE RELIABILITY TESTER.                    RC36-00240 PAGE 01
0066
0067 ABSTRACT:       THIS PROGRAM TESTS TRANSMISSION LINES,
0068                 EITHER USING THE SCC702 OR THE SMX701
0069                 CONTROLLER, IN LOOPBACK MODE.
0070
0071
0072 SIZE:           17770 BYTES. MAX BUFFERSIZE = 2350 BYTES.
0073
0074 DATE:           APRIL 4TH 77.
0075
0076 GENERAL INFORMATION:
0077
0078         THIS PROGRAM ACTS IN FOLLOWING WAY: AFTER ALL
0079         PARAMETERS HAS BEEN ANSWERED AND A START COMMAND
0080         HAS BEEN GIVEN. A BLOCK WILL BE SEND WITH SPECIFIED
0081         SIZE AND RECEIVED AGAIN USING THE LOOP BACK FUNCTION.
0082         IF ERROR OCCURS THE ERRORS WILL BE ACCUMOLATED. IF ITS
0083         TIME FOR MEANWHILE LOGGING IT WILL BE DONE. THE BLOCKS
0084         WILL BE SEND JUST AS MANY TIMES AS THE RUNTIME HAVE
0085         BEEN SPECIFIED.
0086         NOTE:
0087         IF PARAMETERS ARE ANSWERED WRONG THEN THE RELEVANT
0088         QUESTION WILL BE DISPLAYED AGAIN.
0089
0090
0091 DRIVER FOR PROGRAM:
0092
0093         INTERPRETER, R40X, R40R, IF SCC702, TIME.
0094         INTERPRETER, R4MX, R4MR, IF SMX701, TIME.
0095         IF OTHER LOGDEVICES IS USED THEN
0096         THEIR DRIVERS HAVE TO BE LOADED.
0097
0098
0099 SPECIEL REQUIREMENTS:
0100
0101         CODEPROCEDURE P0001 (TIME)          RCSL: 43-GL182
0102         CODEPROCEDURE P0023 (DELAY)         RCSL: 43-GL1409
0103         CODEPROCEDURE P0035 (CHANGETABLE)   RCSL: 43-GL1519
0104
0105
```

```
0106                                                    RC36-00240 PAGE 02
0107
0108
0109 CALULATIONS:
0110
0111     EFFECTIVE TIME:= TIME USED - (PROCESS OWERHEAD FOR DISPLAYS AND
0112                                   CALCULATIONS).
0113
0114
0115     WHEN USING COMMAND "STAT" EFFECTIVE BIT PR SECOND IS:
0116
0117     BPS:=(NUMBER OF GOOD BLOCKS * BLOCKSIZE * 8)/ EFFECTIVE TIME
0118
0119     WHEN USING COMMAND "DISP" EFFECTIVE BIT PR SECOND IS:
0120
0121     BPS:=(NUMBER OF GOOD BLOCKS SINCE LAST LOG * BLOCKSIZE * 8) / EFFEC-
0122           TIVE TIME SINCE LAST LOG.
0123
0124
0125     ERRORRATE:= ( FAILED BLOCK * 100 ) / RECEIVED BLOCKS.
0126
0127     BIT RATE PR SECOND CALCULATED AS:
0128
0129         TIMER2:= BLOCKSIZE / (BIT RATE/8) + 1
0130
0131
0132
0133
0134
0135 RUNTIME PARAMETERS:
0136
0137
0138     NOTE THAT NOT ALL RUNTIME PARAMETERS WILL BE DISPLAYED, ONLY
0139     PARAMETERS MARKED WITH STARS, THE OHTERS WILL ALL HAVE DEFAULT
0140     VALUES. TO CHANGE DEFAULT PARAMETERS LOOK AT PAGE 08.
0141
0142
```

```
0143                                                    RC36-00240 PAGE 03
0144
0145 ****TYPE (SCC) IF TEST OF SCC702 ELSE (SMX) FOR THE SMX701
0146
0147                          TO TELL WHICH CONTROLLER IS WANTED,
0148                          IF SMX701 IS WANTED THEN OCCURS:
0149
0150
0151          XMT CHANNEL NUMBER (0-31)
0152
0153                          THE CHANNEL TO TRANSMIT FROM,
0154
0155          REC CHANNEL NUMBER (0-31)
0156
0157                          THE CHANNEL TO RECEIVE IN,
0158
0159                          NOTE: ITS ALLOWED TO USE THE SAME
0160                          CHANNEL FOR INPUT AND OUTPUT,
0161
0162 ****DATA BLOCKS TO BE TRANSMITTED (1-2350)
0163
0164                          NUMBER OF CHARACTER IN THE BLOCK
0165                          WHICH ARE GOING TO BE TRANSMITTED,
0166                          SIZE:=DATA + 5 SYN + STX + 2 CRC + PAD,
0167
0168      TYPE (PTR) FOR PTR INPUT ELSE (NO)
0169
0170                          IF TESTINPUT IS FROM PAPERTAPE
0171                          THEN (PTR), ELSE (NO) FOR AUTO-
0172                          MATIC GENERATED CYCLIC CHARACTERS,
0173
0174                          NOTE: IF PTR ERROR 31 OCCURS THEN
0175                          IF CHARS READ > 0 THEN SIZE:= READ CHARACTERS,
0176
0177
0178 ****BIT RATE PR SECOND  NUMBER OF BIT PR SECOND (MODEM/BAUD)
0179                          LOOK AT CALCULATIONS,
0180
0181      SYNC CHARACTER (DECIMAL: 1-255)
0182
0183                          THE SYNCHRONISATION CHARACTER FOR
0184                          THE CONTROLLER, ( DEFAULT = 50 )
0185
0186      FIRST CHARACTER (DECIMAL: 1-255)
0187
0188                          STARTCHARACTER FOR DATA, ( DEAFULT = 2),
0189
0190 ****LOG: PR BAD BLOCK (+) PR MINUTES (-)
0191
0192                          IF ANSWER = + THEN OCCURS:
0193
0194          NUMBER OF BAD BLOCKS BEFORE LOG
0195
0196                          ANSWER SHOULD BE BETWEEN (1-65000)
0197                          MEANING EVERY TIME THE RECEIVER
0198                          HAS GOT THE SPECIFIED NUMBER OF
0199                          ERRORBLOCKS AN ERROR STATISTIC WILL
0200                          BE DISPLAYED ON LOGDEVICE, AFTER
0201                          LOG ERRORCOUNTER IS 0,
0202
0203                          IF ANSWER = - THEN OCCURS:
0204
0205          NUMBER OF MINUTES BETWEEN LOG (1-59)
0206
0207                          MEANING: EVERY TIME THE EFFECTIVE
0208                          MINUTE IS A MULTIPLUM OF WANTED
0209                          LOG MINUTES THEN A STATISTIC WILL
0210                          BE DISPLAYED ON LOGDEVICE,
```

```
0211
0212      TYPE THE SECONDS TO WAIT FOR NEXT BLOCK                RC36-00240 PAGE 04
0213
0214                              THE MAXIMUM OF TIME (TIMER1)
0215                              UNTIL THE FIRST BYTE OF BLOCK
0216                              ARRIVES.
0217                              DEFAULT IS ONE SECOND, MAX SECOND = 25.
0218
0219      TYPE THE SECONDS TO WAIT FOR WHOLE BLOCK
0220
0221                              THE MAXIMUM OF TIME (TIMER2) OF
0222                              RECEPTION ALL BYTES IN ONE BLOCK.
0223                              DEFAULT DEPENDS ON BIT RATE, MAX SECONDS = 25.
0224
0225
0226
0227 ****LOG: NO LOG (1) BIT STAT (2) ALL (3)
0228
0229                              IF ANSWER = 1 THEN NO LOG OF
0230                              ONE BAD BLOCK WILL BE DISPLAYED.
0231
0232                              IF ANSWER = 2 THEN CHECK OF DIF-
0233                              FERENT BYTES IN A BLOCK WILL BE
0234                              DONE AND A BIT STATISTIC OF DIFFERENT
0235                               BITS IN DIFFERENT BYTES WILL BE
0236                              DISPLAYED ON LOGDEVICE.
0237
0238                              (USED TO CHECK LINE FOR LOOSING SPECIAL BITS)
0239
0240                              IF ANSWER = 3 THEN A LOGGING OF ALL BAD
0241                              CHARACTERS WILL BE DONE, WITH ITS
0242                              BYTE NUMBER (COUNTING FROM ONE) WHAT IT
0243                              SHOULD BE AND WHAT IT WAS RECEIVED AS.
0244                              AT LAST THE BIT STATISTIC WILL OCCUR AS
0245                              IF ANSWER HAD BEEN 2.
0246
0247 ****OUTPUT LOGDEVICE, (TTY/LPT/CPT/SP)
0248
0249                              THE DEVICE WHERE STATISTIC ARE GOING
0250                              TO BE LOGGED ON.
0251                              TTY = TELETYPE
0252                              LPT = LINEPRINTER
0253                              CPT = CHARABAND PRINTER
0254                              SP  = SENTRONIX PRINTER.
0255
0256 ****TESTPERIOD, (HOURS.MINUTES)
0257
0258                              EFFECTIVE TIME THE TEST SHOULD RUN.
0259
0260 ****STOP ON ERROR (YES) OR WAIT UNTIL STATISTIC (NO)
0261
0262                              IF ANSWER = YES THEN TEST
0263                              WILL STOP ON THE FIRST OCCURED ERROR.
0264
0265                              IF ANSWER = NO THEN TEST
0266                              WILL STOP WHEN RUNTIME HAS REACHED.
0267                              OR HARD ERROR ON LOG DEVICE.
0268
0269
0270 ****TYPE (HELP) TO SEE COMMANDS / ELSE (NL)
0271
0272                              IF WRITING HELP ALL POSSIBLE COMMANDS
0273                              WILL BE DISPLAYED, WITH THE MEANING
0274                              OF THE COMMANDS.
0275
```

OUTPUT MESSAGES:

EXECUTION STARTED HH,MM,SS

WRITTEN AS ACCEPT OF COMMAND START

EXECUTION STOPPED HH,MM,SS

WRITTEN AS ACCEPT OF COMMAND STOP

EXECUTION CONTINUED HH,MM,SS

WRITTEN AS ACCEPT OF COMMAND CONT

LOG DEVICE ERROR NNNNN

CONSULT THE RC3600 OPERATORS MANUAL

PTR ERROR NNNNN CONSULT THE RC3600 OPERATORS MANUAL

TESTSTATISTIC: USER INFORMATION TO SEE THE RESULT
ERROR STATISTIC: OF THE TEST

```
0305                                                    RC36-00240 PAGE 06
0306 DURING RUN FOLLOWING OUTPUT MESSAGES CAN OCCUR:
0307
0308
0309     *** HH,MM,SS LINE RELIABILITY TEST ***
0310
0311
0312    *** HH,MM,SS STATUS:
0313
0314    BLOCKS: REC: XXXXXXX FAILED: XXXXX ERRORRATE: XXX%
0315    TOTAL:  REC: XXXXXXX FAILED: XXXXX BPS:     XXXXX
0316
0317
0318                          BLOCKS REC MEANS NUMBER OF BLOCK RECEIVED
0319                          SINCE LAST LOG.
0320
0321                          BLOCKS FAILED MEANS NUMBER OF BLOCKS
0322                          WITH EITHER BLOCK CHECK ERROR OR
0323                          TIMEOUT.
0324
0325                          ERRORRATE MEANS NUMBER OF ERRORBLOCKS
0326                          IN PERCENT OF SEND BLOCKS SINCE LAST
0327                          LOG.
0328
0329                          BLOCKS TOTAL MEANS NUMBER OF BLOCKS
0330                          RECEIVED SINCE PROGRAM START.
0331
0332                          TOTAL FAILED MEANS NUMBER OF BLOCKS
0333                          FAILED SINCE PROGRAM START.
0334
0335                          BPS MEANS THE EFFECTIVE BIT RATE
0336                          SINCE LAST LOG OR SINCE START.
0337
0338
0339
0340
0341     *** HH,MM,SS LINE RELIABILITY TEST ***
0342
0343     BLOCK CHECK ERROR
0344
0345     NO.    XMT  REC
0346     XXXX   XXX  XXX
0347
0348     ERROR BIT STATISTICS BIT(0-7)
0349
0350     BIT0 BIT1 BIT2 BIT3 BIT4 BIT5 BIT6 BIT7
0351
0352                          IN CASE OF BADBLOCK = 3
0353                          THEN OCCURS EVERY TIME IF BLOCKCHECK ERROR
0354                          THIS LOG.
0355
0356                          NO.  MEANS DATA BYTE NUMBER WHICH WAS
0357                          WRONG. (START COUNTING FROM ONE).
0358
0359                          XMT  MEANS THE TRANSMITTED BYTE.
0360
0361                          REC  MEANS THE RECEIVED BYTE.
0362
0363                          THE ERROR BIT STATISTIC
0364                          IS AN ACCUMULATION OF ALL DIFFERENT
0365                          BITS IN THE DIFFERENTS BYTES.
0366
0367
0368                          IF ANSWER WAS 2 THEN ONLY
0369                          BIT STATISTIC WILL OCCUR.
0370
0371
0372
0373
0374
```

INPUT MESSAGES:

START	START EXECUTION, UNLESS LOG ERROR HAD OCCURRED THEN IT MEANS REPEAT THE OPERATION.
CONT	EXECUTION IS CONTINUED WITHOUT CHANGING STATUS.
STOP	EXECUTION STOPS AND STATISTICS WILL BE DISPLAYED AND PROGRAM IS SET NEUTRAL;
STAT	WILL GIVE A DISPLAY OF CURRENT STATUS FROM TEST START TO NOW.
DISP	WILL GIVE A DISPLAY OF THE DIFFERENT STATUS BETWEEN THE WANTED LOG DISPLAYS.
HELP	WILL DIPLAY ALL COMMANDS AND THEIR MEANING.

```
0398
0399 TO MODIFIE SINGLE PARAMETERS:                    RC36-00240 PAGE 08
0400
0401     TESTDEVICE <NAME> (XMT) OR (REC) <CHANNEL NUMBER>
0402
0403                          EXAMPLES: IF TESTDEVICE SMX701 CHANNEL 1
0404                          IN TRANMITTER IS WANTED TO BE CHANNEL 2 THEN
0405
0406          WRITE:    TESTDEVICE SMX XMT 2
0407
0408                          SAME WITH INPUT PROGRAM
0409
0410          WRITE:    TESTDEVICE SMX REC 2
0411
0412     SIZE <COUNT>         IF NEW BLOCK SIZE IS WANTED
0413                          THE NEW TEST CHARACTER FROM
0414                          PTR WILL BE READ AUTOMATICALLY
0415                          ELSE THE AUTOMATIC CYCLIC CHARAC-
0416                          TER WILL BE GENERATED IF NOT FROM
0417                          PTR.
0418
0419     INPUT (PTR) OR (NO)  IF CHANGING TESTINPUT DEVICE,
0420                          NOTE THAT THE CHARACTER WILL BE
0421                          READ AUTOMATICALLY IF INPUT
0422                          FROM PTR WITH SIZE.
0423
0424     SYNCHAR <VALUE>      INSERT A NEW SYNCHAR.
0425
0426     FIRSTCHAR <VALUE>    INSERTS A NEW START CHARACTER FOR DATA.
0427
0428     TESTTIME (+) OR (-) <VALUE>
0429                          PLUS: FOR PR BAD BLOCK
0430                          MINUS: FOR PR MINUTES
0431                          THE TESTIME FOR PR LOG.
0432
0433     BPS <VALUE>          CHANGE THE BIT RATE.
0434
0435     TIMER1 <VALUE>       NEW TIMER FOR WAIT FOR NEXT BLOCK.
0436
0437     TIMER2 <VALUE>       NEW TIMER FOR WHOLE BLOCK.
0438
0439     BADBLOCK <VALUE>     LOG PR BAD BLOCK.
0440                          1 => NO LOG
0441                          2 => BIT STAT
0442                          3 => ALL
0443
0444     LOGDEVICE <DRIVERNAME>
0445
0446                          TO CHANGE TO NEW LOGDEVICE.
0447
0448     RUNTIME <HH.MM.SS>   CHANGE THE EFFECTIVE RUNTIME.
0449                          NOTE THAT IF COMMAND START HAS
0450                          BEEN GIVEN IT WILL BE THE NEW
0451                          STOP TIME. IF CAMMAND CONT HAS BEEN
0452                          GIVEN THE PROGRAM WILL CONTINUE
0453                          AS IF THIS HAS BEEN THE STOP TIME
0454                          ALL THE TIME.
0455
0456     HOLD <ANSWER>        IF ANSWER = YES THEN IT WILL STOP
0457                          ON THE FIRST OCCURRED ERROR
0458                          IF ANSWER = NO THEN IT WILL STOP
0459                          ON RUNTIME OR HARD ERROR ON LOG
0460                          DEVICE.
0461
0462 !
```

VERSION	AUTHOR	DATE	CHANGE
01	CAMS	77.01.16	MAKE TIME COUNTING MORE GENEREL COUNT THE EFFECTIVE BIT RATE FROM START AND BETWEEN LOGS. MAKE CYCLIC BUFRING.
02	CAMS	77.04.20	CORRECT ERROR RATE CALCULATION. CORRECT ERROR USING THE CYCLIC BUFRING. IT ONLY OCCURRED IN ONE MINUT FOR EVERY HOUR IF THE ERROR RATE WAS ABOUT 100 %.