INSTRUMENTATION DIAGNOSTICA
Technical Product Management and Service

Appendix to

Enzymun - Test® Systems
HOST Interfaces
TWIN 1.93 - TWIN 4.0

This document replaces the earlier appendices version 1.0 from August 1993 and version 2.0 from September 1994.

Version 2.1 - Nov.1994

Number of pages: 19

HOHA94B1.DOC

TWIN Host Handler - History of Result Field Representation

The host communication handler for TWIN300 and TWIN600/700 version 1.93 as well as the version 4.0 replace all former host handler updates (HOHA) made for TWIN300 version 1.3 and TWIN600/700 version 1.2. The host handler of TWIN AL300 version 3.1 corresponds to the TWIN300 version 1.93.

The host communication module is identical for TWIN300 and TWIN600/700 software within one release.

History ES Host Interface

TWIN Version	*Represen-tation*	*Corres-ponding*	*Year*
DEC User Software 2.1 (ES 600)	**RS:06**	**= R1**	**1989**
≠			
TWIN 1.13 (ES 300)	**RS:08**	**= R2**	**1991**
≠ ≠			
TWIN 1.3 (ES 300)	**RS:06**	**= R3**	**1992**
TWIN 1.2 (ES 600/700)	**RS:08**	**= RA**	
↓			
(Host Update for 1.2 & 1.3)	**RS:08**	**= RS**	**1992**
↓	**RA:08**	**= RA**	
TWIN Update 1.92 & 1.93 (ES 300/600/700)	**RS, RA, R1, R2**		**2/94**
↓	**A0, A1, A2, A3**		
TWIN AL300 3.1	**RS, RA, R1, R2**		**4/94**
↓	**A0, A1, A2, A3**		
TWIN AL/NL 4.0 (ES 300/600/700)	**+ R3**		**10/94**

An explanation of the history above will be found on next page.

It is recommended to use **RA:08** as result field representation.

History of Result Field Representation:

☞ **DEC User Software:** *(**RS**, max. lenght 6 ❶ compatibility field **R1**)*

The result field RS within the DEC User Software is a numerical result.

☞ **TWIN300 Release 1.13:** *(**RS**, max. lenght 8 ❷ compatibility field **R2**)*

The result field RS within TWIN300 version 1.13 is a mixture of numerical and alphanumerical results (incompatible with the DEC User Software for ES600).

☞ **TWIN300 Release 1.3 without Host-Update:** *(**RS** identical to field **RA**)*

With TWIN300 version 1.3 the result field RS is consequently changed into an alphanumerical field. The numerical value is added by the so called print flag which marks results out of normal range (´>´ and ´<´-marks).

☞ **Host-Update for TWIN300 Release 1.3 and TWIN600/700 Release 1.2:**
*(introd. of compatib. fields **R1** and **R2**, representation of **RS** and **RA** exchanged)*

Problems now with existing ES600 host connections resulted in a host communication update. The result field RS is renamed into RA (alphanumerical result) and the 'new' field RS (numerical result) for pure numerical values is created. Additionally, to avoid checking status flags on the host side it is agreed on that only valid results will be sent to the host. Otherwise the result field will be empty.

In case the host can not understand R1, R2 or RA in the structure definition set (see menu *LAB COMPUTER SETUP*) the convertion table ***dcom.para*** was introduced. To be activated this file must exist in the directory */user/twin*.

☞ **TWIN300/600/700 Update 1.93:**
(to avoid wrong result representation, skip results which do not fit field length)

The practical experience with different realizations of host communication on host side showed the differences and incompatibility between the existing host communication versions. The introduction of some more parameters and some other add on's now introduce more compatibility to older ES-software versions.

☞ **TWIN AL300 3.1:** (*software for autoloader ES300*)

The result field representations are identical to those of TWIN300 version 1.93.

☞ **TWIN300/600/700 Release 4.0** *(introduction of compatibility field **R3**)*

For TWIN 1.3 some host realizations changed to alphanumeric result representation with the length 6 only (RS:06) without using the host update. These results were cut in length in case if they were longer than 6 characters. To avoid wrong results those fields were empty in the succeeding version. To make compatible to such versions the field R3 was introduced (compatible to TWIN 1.3 without host update).

Result Representation:

	DEC Softw. compatible	TWIN 1.13 compatible	TWIN 1.3 & 1.2 Host Update and TWIN 1.93 definitions			TWIN 1.3 compatible	Remark
	R1:06 A0,A1,A2,A3	**R2:06** AM,AX,AY,AZ	**RS:06** AM,AX,AY,AZ	**RA:06** AM,AX,AY,AZ	**RA:08** AM,AX,AY,AZ	**R3:06** AM,AX,AY,AZ	**Rn: result** **An: absorbance**
	numerical	**alpha-num.**	**numerical**	**alpha-num.**	**alpha-num.**	**alpha-num.**	
Cutoff:	´+1····´	´POS···´	´+1····´	´·POS··´	´·POS····´	´·POS··´	Rn only
	´0·····´	´GREY··´	´0·····´	´·GREY·´	´·GREY···´	´·GREY·´	
	´-1····´	´NEG···´	´-1····´	´·NEG··´	´·NEG····´	´·NEG··´	
empty field:	´-99999´	´·····´	´·····´	´·····´	´·····´	´·····´	
invalid values:	´-99999´	´·····´	´·····´	´·····´	´·····´	´·····´	
zero values:	´0.00··´	´0.00··´	´0.00··´	´·0.00·´	´·0.00···´	´·0.00·´	
normal range value:	´1.23··´	´1.23··´	´1.23··´	´·1.23·´	´·1.23···´	´·1.23·´	
	´100000´	´100000´	´100000´	´·····´	´·100000·´	´·10000´	
	´123.56´	´123.56´	´123.56´	´·····´	´·123.56·´	´·123.5´	
value < 0:	´-99999´	´******´	´·····´	´******´	´********´	´******´	
value < lower standard:	´0.10··´	´0.10··´	´·····´	´<0.10·´	´<0.10···´	´<0.10·´	
value > upper standard:	´2.00··´	´2.00··´	´·····´	´>2.00·´	´>2.00···´	´>2.00·´	
				´·····´	= does not fit field length => use greater length		

Example for result representation:

IN:14	TC:06	RS:06	RA:08	R1:06	R2:08	ST:02	AM:08	AX:08	TY:02	AI:03
••••••••••••••	TSH•••	••••••	••••••••	••••••	••••••••	0•	.189••••	.189••••	RL	•••
••••••••••••••	TSH•••	0.00••	•0.00•••	0.00••	0.00••••	22	0.022•••	0.022•••	ST	146
••••••••••••••	TSH•••	0.29••	•0.29•••	0.29••	0.29••••	22	0.053•••	0.053•••	ST	147
••••••••••••••	TSH•••	2.23••	•2.23•••	2.23••	2.23••••	22	0.279•••	0.279•••	ST	148
••••••••••••••	TSH•••	13.91•	•13.91••	13.91•	13.91•••	22	1.556•••	1.556•••	ST	149
••••••••••••••	TSH•••	39.20•	•39.20••	39.20•	39.20•••	22	3.391•••	3.391•••	ST	150
••••••••••••••	TSH•••	1.67••	•1.67•••	1.67••	1.67••••	22	0.213•••	0.213•••	CO	151
Patient001••••	TSH•••	••••••	>39.20••	39.20•	39.20•••	31	9.999•••	>>>>>>>>	PR	1••
Patient002••••	TSH•••	35.75•	•35.75••	35.75•	35.75•••	30	3.198•••	3.198•••	PR	2••
Patient003••••	TSH•••	30.51•	•30.51••	30.51•	30.51•••	30	2.875•••	2.875•••	PR	3••
Patient004••••	TSH•••	7.30••	•7.30•••	7.30••	7.30••••	30	0.870•••	0.870•••	PR	4••
Patient005••••	TSH•••	4.01••	•4.01•••	4.01••	4.01••••	30	0.491•••	0.491•••	PR	5••
Patient006••••	TSH•••	2.89••	•2.89•••	2.89••	2.89••••	22	0.358•••	0.358•••	PR	6••
Patient007••••	TSH•••	0.24••	•0.24•••	0.24••	0.24••••	22	0.048•••	0.048•••	PR	7••
Patient008••••	TSH•••	0.17••	•0.17•••	0.17••	0.17••••	30	0.040•••	0.040•••	PR	8••
Patient009••••	TSH•••	0.00••	•0.00•••	0.00••	0.00••••	30	0.020•••	0.020•••	PR	9••
Patient010••••	TSH•••	0.00••	•0.00•••	0.00••	0.00••••	30	0.000•••	0.000•••	PR	10•
Patient011••••	TSH•••	0.00••	•0.00•••	0.00••	0.00••••	30	-0.058••	-0.058••	PR	11•

IN:14	TC:06	RS:06	RA:08	R1:06	R2:08	ST:02	AM:08	AX:08	TY:02	AI:03
••••••••••••••	T4••••	••••••	••••••••	••••••	••••••••	0•	.189••••	.189••••	RL	•••
••••••••••••••	T4••••	0.04••	•0.04•••	0.04••	0.04••••	22	1.658•••	1.658•••	ST	141
••••••••••••••	T4••••	3.79••	•3.79•••	3.79••	3.79••••	22	0.834•••	0.834•••	ST	142
••••••••••••••	T4••••	7.65••	•7.65•••	7.65••	7.65••••	22	0.477•••	0.477•••	ST	143
••••••••••••••	T4••••	13.12•	•13.12••	13.12•	13.12•••	22	0.315•••	0.315•••	ST	144
••••••••••••••	T4••••	••••••	>24.80••	24.80•	24.80•••	31	0.222•••	0.222•••	ST	145
••••••••••••••	T4••••	5.73••	•5.73•••	5.73••	5.73••••	22	0.606•••	0.606•••	CO	151
Patient001••••	T4••••	0.00••	•0.00•••	0.00••	0.00••••	30	9.999•••	>>>>>>>>	PR	1••
Patient002••••	T4••••	0.91••	•0.91•••	0.91••	0.91••••	30	1.493•••	1.493•••	PR	2••
Patient003••••	T4••••	3.57••	•3.57•••	3.57••	3.57••••	30	0.870•••	0.870•••	PR	3••
••••••••••••••	T4••••	5.80••	•5.80•••	5.80••	5.80••••	22	0.600•••	0.600•••	CO	151
Patient004••••	T4••••	4.49••	•4.49•••	4.49••	4.49••••	30	0.736•••	0.736•••	PR	4••
Patient005••••	T4••••	4.52••	•4.52•••	4.52••	4.52••••	22	0.732•••	0.732•••	PR	5••
Patient006••••	T4••••	6.91••	•6.91•••	6.91••	6.91••••	22	0.519•••	0.519•••	PR	6••
••••••••••••••	T4••••	5.87••	•5.87•••	5.87••	5.87••••	22	0.594•••	0.594•••	CO	151
Patient007••••	T4••••	11.87•	•11.87••	11.87•	11.87•••	30	0.338•••	0.338•••	PR	7••
Patient008••••	T4••••	12.12•	•12.12••	12.12•	12.12•••	30	0.333•••	0.333•••	PR	8••
Patient009••••	T4••••	21.77•	•21.77••	21.77•	21.77•••	30	0.236•••	0.236•••	PR	9••
••••••••••••••	T4••••	5.93••	•5.93•••	5.93••	5.93••••	22	0.589•••	0.589•••	CO	151
Patient010••••	T4••••	••••••	>24.80••	24.80•	24.80•••	31	0.218•••	0.218•••	PR	10•
Patient011••••	T4••••	••••••	>24.80••	24.80•	24.80•••	31	0.186•••	0.186•••	PR	11•

IN:14	TC:06	RS:06	RA:08	R1:06	R2:08	ST:02	AM:08	AX:08	TY:02	AI:03
••••••••••••••	TBK•••	••••••	••••••••	••••••	••••••••	0•	.189••••	.189••••	RL	•••
••••••••••••••	TBK•••	0.32••	•0.32•••	0.32••	0.32••••	22	1.429•••	1.429•••	ST	139
••••••••••••••	TBK•••	1.75••	•1.75•••	1.75••	1.75••••	22	0.534•••	0.534•••	ST	140
Patient001••••	TBK•••	••••••	>1.75•••	1.75••	1.75••••	31	0.066•••	0.066•••	PR	1••
Patient002••••	TBK•••	••••••	>1.75•••	1.75••	1.75••••	31	0.348•••	0.348•••	PR	2••
Patient003••••	TBK•••	1.75••	•1.75•••	1.75••	1.75••••	30	0.534•••	0.534•••	PR	3••
Patient004••••	TBK•••	1.45••	•1.45•••	1.45••	1.45••••	30	0.722•••	0.722•••	PR	4••
Patient005••••	TBK•••	1.36••	•1.36•••	1.36••	1.36••••	22	0.781•••	0.781•••	PR	5••
Patient006••••	TBK•••	1.10••	•1.10•••	1.10••	1.10••••	22	0.941•••	0.941•••	PR	6••
Patient007••••	TBK•••	0.84••	•0.84•••	0.84••	0.84••••	22	1.103•••	1.103•••	PR	7••
Patient008••••	TBK•••	0.77••	•0.77•••	0.77••	0.77••••	30	1.149•••	1.149•••	PR	8••
Patient009••••	TBK•••	0.61••	•0.61•••	0.61••	0.61••••	30	1.250•••	1.250•••	PR	9••
Patient010••••	TBK•••	••••••	<0.32•••	0.32••	0.32••••	31	1.484•••	1.484•••	PR	10•
Patient011••••	TBK•••	••••••	<0.32•••	0.32••	0.32••••	31	1.497•••	1.497•••	PR	11•
Patient012••••	TBK•••	••••••	>1.75•••	1.75••	1.75••••	31	-0.686••	-0.686••	PR	12•

IN:14	TC:06	RS:06	RA:08	R1:06	R2:08	ST:02	AM:08	AX:08	TY:02	AI:03
••••••••••••••	AHIVG•	••••••	••••••••	••••••	••••••••	0•	.189••••	.189••••	RL	•••
••••••••••••••	AHIVG•	-1••••	•NEG••••	-1••••	NEG•••••	22	0.061•••	0.061•••	ST	137
••••••••••••••	AHIVG•	+1••••	•POS••••	+1••••	POS•••••	22	2.348•••	2.348•••	ST	138
Patient001••••	AHIVG•	+1••••	•POS••••	+1••••	POS•••••	22	9.999•••	>>>>>>>>	PR	1••
Patient002••••	AHIVG•	+1••••	•POS••••	+1••••	POS•••••	22	1.873•••	1.873•••	PR	2••
Patient003••••	AHIVG•	+1••••	•POS••••	+1••••	POS•••••	22	0.870•••	0.870•••	PR	3••
Patient004••••	AHIVG•	+1••••	•POS••••	+1••••	POS•••••	22	0.241•••	0.241•••	PR	4••
Patient005••••	AHIVG•	+1••••	•POS••••	+1••••	POS•••••	22	0.232•••	0.232•••	PR	5••
Patient006••••	AHIVG•	0•••••	•GREY•••	0•••••	GREY••••	22	0.222•••	0.222•••	PR	6••
Patient007••••	AHIVG•	0•••••	•GREY•••	0•••••	GREY••••	22	0.206•••	0.206•••	PR	7••
Patient008••••	AHIVG•	-1••••	•NEG••••	-1••••	NEG•••••	22	0.199•••	0.199•••	PR	8••
Patient009••••	AHIVG•	-1••••	•NEG••••	-1••••	NEG•••••	22	0.146•••	0.146•••	PR	9••
Patient010••••	AHIVG•	-1••••	•NEG••••	-1••••	NEG•••••	22	0.020•••	0.020•••	PR	10•
Patient011••••	AHIVG•	-1••••	•NEG••••	-1••••	NEG•••••	22	-0.132••	-0.132••	PR	11•

1. Result Field Representation with TWIN 1.93 or Successor Version:

It is recommended to use **RA:08** as result field representation.

R1: If an existing host only accepts the RS representation of DEC User Software release 2.1 then R1 with TWIN 1.93 or successor version should be used.

R2: If an existing host only accepts the RS representation of TWIN 300 User Software release 1.13 then R2 with TWIN 1.93 or successor version should be used.

R3: If an existing host only accepts the RS:06 representation of TWIN 300 User Software release 1.3 without host update then
- with TWIN 1.93 the host handler of version 1.3 should be used (setup with the *Host Selection Upate*)
- with TWIN 4.0 or successor version the field R3 should be used.

(This compatibility field only should be used in case of RS with length 6, otherwise RA for lenght greater than 6. With RA:06 some results might be skipped because the value does not fit the field lenght 6.
This field will be available since version 4.0, not for version 1.93.)

RS: specification: RS is a pure numerical field
(this field was introduced with host-update for TWIN releases 1.2 & 1.3)

RA: specification: RA is an alphanumerical field:
(this field was introduced with host-update for TWIN releases 1.2 & 1.3 and is identical to the field RS of TWIN releases 1.2 & 1.3)
the first character of the RA-field was introduced to characterize the result with the so called print flag (refer to labelling of results).

A0: compatible to DEC User Software
(corresponds to mean absorbance AM)

A1: compatible to DEC User Software
(corresponds to absorbance AX)

A2: compatible to DEC User Software
(corresponds to absorbance AY)

A3: compatible to DEC User Software
(corresponds to absorbance AZ)

2. Short Fields:

In the case that the result field length is not long enough to hold the measured value the '***invalid value***' will be used.

Example:

Result	RS:06	RA:06 1. character print flag	RS:08	RA:08 1. character print flag
123.45	´123.45´	´·····´	´123.45··´	´·123.45·´
NEGATIV	´-1····´	´·····´	´-1·····´	´·NEGATIV´

3. Default Values:

Differences for the default values (***invalid value*** and ***empty field)***:

R1: Default value for uncalculated results: ´**-99999**´.

R2: Default value for uncalculated results: ´·····´.

R3: Default value for uncalculated results: ´·····´.

RS: Default value for uncalculated results: ´·····´.

RA: Default value for uncalculated results: ´·····´.

[**A0**, **A1**, **A2**, **A3**]: Default value for uncalculated results: ´**-99999**´.

[**AM**, **AX**, **AY**, **AZ**]: Default value for uncalculated results: ´·····´.

4. Reagent Blank:

The result (=concentration) for reagent blank (variable type TY:02 = ´RL´) will not be transmitted in the TWIN software (see example).

IN:12	TC:06	RA:08	ST:02	AM:08	AX:08	TY:02	AI:03;
••••••••••••	TSH•••	••••••••	0•	.189••••	.189••••	RL	•••;

5. Receive Buffer And Communication Error:

After a communication error during downloading requests the receive buffer will not be emptied as in older host communication versions. Request data sets having the right data structure will be transferred to the data base (DEC User Software compatibility).

Example:

During the receipt of requests the DEC User Software accepts requests if the host finishes the communication with **<ACK><EOT>**. This does not fulfill the protocol rules, however the transmitted data are O.K..

ES-System		**Host**	
<ENQ>	-->		
	<--	<ACK>	
	<--	<STX>P=RQ.....	
<ACK>	-->		
<ENQ>	-->		
	<--	<ACK>	***Wrong*.**
	<--	<EOT>	

6. Send Buffer And Receive Buffer:

Now both buffers can be deleted from QNX level (Send-Result-Buffer = **F_SERE**, Receive-Request-Buffer = **F_RERE**). A buffer not existing will be initialized without any error message.

(Background: Within TWIN both buffers are ASCII-files. Missing a buffer file had result in an error abortion. This was changed for update host update).

7. System Status:

There is a different system status handling between DEC User Software and TWIN. TWIN only uses the flags 40 to 43 (= release flags) to control results for upload.

The two release flags (menu *SYSTEM PROGRAMMING - SYSTEM STATUS - Upload Flag*)
41 = '*Rerun'* and
42 = '*Result blocked by operator*'
will be sent as result status (field ST) to the host.

The two release flags
40 = '*Result released by operator'* and
43 = '*Result* released'
will never appear at the host. Instead of these the test status 21-36 will be sent as status to the host.

(Background: Normally for TWIN not release flags but the status which leads to the release will be sent to the host.)

8. Limited Host Communication Trace:

The host communication trace will be erased if a new run is started. During the start up process it will be limited to 500 records.

(Background: The host communication trace list will be stored on the run data diskette. A very long trace produces a data overflow on the diskette).

9. Busy Files:

Host communication is divided into two steps:

1. the data transmission from/to the host via serial communication and
2. the data transfer into/from the data base via data base update.

Because of simultaneous file access to the buffer files from both processes conflicts may appear. Therefore especially for slave mode results the following behaviour was realized:

During an active data transmission no data sets can be written into the upload buffer file ('*Upload not possible*').

During the data transfer into the upload buffer no data transmission can be started. The host gets a **<EOT>**=´*End of Transmission*'.

10. Conversion Table For Result Abbreviations:

If using result field representations R1, R2, R3 or RA in the structure definition data set for measure data (P=MD...) it may happen that the host does not understand R1, R2, R3 or RA, however the host expects the corresponding result format. E.g., instead of R1 the host only understands RS.

For this purpose the conversion table (**dcom.para**) allows to transfer another parameter (R1, R2, R3, RA) than it is defined in the data structure set (P=MD:05,RS:06...).

The file **/user/twin/dcom.para** does not exist by default!.

To simplify the installation of dcom.para there is a program **host** which allows to select the needed result type. This special program is available with the *Host Selection Update* and since TWIN version 4.0 with the User Software.

Example for TWIN 1.93:

Insert the diskette *Host Selection Update* and execute the command `1:/update`. From now on at ´$´-prompt execute the program ´host´ to change the result representation:

```
================================================================================
                    Host Driver Selection For TWIN 1.93
                        Version for ES 300/600/700
                           all language versions
================================================================================

  Option   Setup     Result    Compatibility              Conversion  Host
 --------------------------------------------------------------------------------
       1:  RA:08               recommendation (default)   none        1.93
       2:  RS:08      RA       TWIN 1.3 w/o Host Update   dcom.130.8  1.93
       3:  RS:06      RS       TWIN 1.3 w/o Host Update   none        1.3
       4:  RS:06      R2       TWIN 1.13                  dcom.113    1.93
       5:  RS:06      R1       DEC User Software          dcom.dec    1.93

       H:  Help
       0:  Exit without change
--------------------------------------------------------------------------------

       Select option and hit [ENTER] ...5
```

```
================================================================================
                    Host Driver Selection For TWIN 1.93
                        Version for ES 300/600/700
                           all language versions
================================================================================

  Option   Setup     Result    Compatibility              Conversion  Host
 --------------------------------------------------------------------------------
       1:  RA:08               recommendation (default)   none        1.93
       2:  RS:08      RA       TWIN 1.3 w/o Host Update   dcom.130.8  1.93
       3:  RS:06      RS       TWIN 1.3 w/o Host Update   none        1.3
       4:  RS:06      R2       TWIN 1.13                  dcom.113    1.93
       5:  RS:06      R1       DEC User Software          dcom.dec    1.93
 --------------------------------------------------------------------------------

 dcom.dec copied to dcom.para.  HOHA.193 (version 1.93) copied to HOHA.

 Host Driver Option 5 installed (compatible to DEC User Software).

 After re-installing TWIN do not forget to execute host again.
 Please adjust your host software to RA:08 with the next host software update.

 Please reboot the system: [CTRL-ALT-SHIFT-DEL].
```

Example for TWIN 4.0:

At ´$´-prompt execute the program ´host´ to change the result representation:

```
================================================================================
                    Host Driver Selection For TWIN 4.x
                        Version for ES 300/600/700
                           all language versions
================================================================================

  Option   Setup     Result    Compatibility              Conversion table
--------------------------------------------------------------------------------
       1:  RA:08               recommendation (default)   none
       2:  RS:08      RA       TWIN 1.3 w/o Host Update   dcom.130.8
       3:  RS:06      R3       TWIN 1.3 w/o Host Update   dcom.130.6
       4:  RS:06      R2       TWIN 1.13                  dcom.113
       5:  RS:06      R1       DEC User Software          dcom.dec

       H:  Help
       0:  Exit without change
--------------------------------------------------------------------------------

       Select option and hit [ENTER] ... 3
```

```
================================================================================
                    Host Driver Selection For TWIN 4.x
                        Version for ES 300/600/700
                           all language versions
================================================================================

  Option   Setup     Result    Compatibility              Conversion table
--------------------------------------------------------------------------------
       1:  RA:08               recommendation (default)   none
       2:  RS:08      RA       TWIN 1.3 w/o Host Update   dcom.130.8
       3:  RS:06      R3       TWIN 1.3 w/o Host Update   dcom.130.6
       4:  RS:06      R2       TWIN 1.13                  dcom.113
       5:  RS:06      R1       DEC User Software          dcom.dec
--------------------------------------------------------------------------------

dcom.130.6 copied to dcom.para.

Host Driver Option 3 installed (compatible to TWIN 1.3 w/o Host Update).

After re-installing TWIN do not forget to execute host again.
Please adjust your host software to RA:08 with the next host software update.

Please reboot the system: [CTRL-ALT-SHIFT-DEL].
```

11. Remote Access:

All program files needed for modem control and bi-directional file transfer will be delivered in the newer versions (***comm*** and ***qcp***).

The system initialization (*sys.init*) calls up a modem initialization script (*/config/modem.init*) to setup serial port $term4 (=COM5) for modem connection.

The baudrate has to be adapted to the modem speed.

```
"
" Initialize port $term4 for remote terminal
"
stty < $term4 > $null >* $null
if ne #? 0000 exit
stty baud=9600 par=none stop=1 bits=8 +fix > $term4
ontty $term4 comm b=9600 +h l=3:/tmp
```

12. Limit Check For Requests:

The host communication handler does **not** check the limits for the maximum number of requests. This must be done from the host software.

Limits are:	TWIN 700	500 requests/test	3000 requests
	TWIN 300	300 requests/test	2000 requests

Host Parameters:

No.	Description	Code	Type	Length	Default	Comment
				Max.		Max.: maximal length
Variables for Download and Upload						
1.	Ident Number	IN	A	18	-	no leading and no internal spaces
2.	Test Code	TC	A	6	-	
3.	Test Number	TN	I	2	-	valid range [1..99]
4.	Remark Request	RR	A	40	-	
5.	Ward	KL	A	16	HOST	
6.	Patient Name	NA	A	20	-	
7.	First Name	VN	A	16	-	
8.	Sex 0 = unknown 1 = male 2 = female 3 = child	SX	I	2	0	valid range [0..3]
9.	Date of Birth Format = YYYYMMDD or Format = YYMMDD	GE	I	8	-	The date can have the length 6 or 8.
10.	Dilution Factor	VD	I	5	1	valid range [1..99999]
11.	Patient Address	PA	A	60	-	
12.	Prevalue 1	PV	R	8	-	only dummies,
13.	Prevalue 2	PX	R	8	-	will not be used internally
14.	Prevalue 3	PY	R	8	-	requests (from HOST) will be ignored results (to HOST) will be sent as empty field.
Variables for Upload						
15.	Instrument Identification	II	A	10	-	
16.	Operator Name	ON	A	20	-	
17.	Date Format = YYYYMMDD or Format = YYMMDD	DA	A	8	-	The date can have the length 6 or 8.

No.	Description	Code	Type	Length	Default	Comment
				Max.		Max.: maximal length
Variables for Upload (continue)						
18.	Result	RS	R	8	-	numerical result
19.	Alphanumerical Result	RA	A	8	-	alphanumerical result
20.	Numerical Result (DEC User Software compatible)	R1	R	8	-	numerical result
21.	Alphanumerical Result (TWIN 1.13 compatible)	R2	A	8	-	alphanumerical result
22.	Alphanumerical Result (TWIN 1.3 compatible)	R3	A	8	-	only to use for compatibility
23.	Unit	UN	A	10	-	
24.	Status	ST	I	2	-	valid range [8,20-36]
25.	Type RL = Reagent Blank (Subst. or Water) ST = Standard CO = Control PR = Patient Result	TY	A	2	-	valid range [RL,ST,CO,PR] During Upload the results will be sent test oriented following the order: **1. Blank Value** **2. Standard Value** **3. Samples and Controls depending on rotor position**
26.	Remark Test	RT	A	12	-	
27.	Control Code	CC	A	10	-	
28.	Lot Number	IO	A	6	-	
29.	Mean Absorbance	AM	A	8	-	depending on the result-labeling
30.	Mean Absorbance (DEC compatible)	A0	R	8	-	
31.	Absorbance Value 1	AX	A	8	-	
32.	Absorbance Value 1 (DEC compatible)	A1	R	8	-	

No.	Description	Code	Type	Length	Default	Comment
				Max.		Max.: maximal length
Variables for Upload (continue)						
33.	Absorbance Value 2	AY	A	8	-	
34.	Absorbance Value 2 (DEC compatible)	A2	R	8	-	
35.	Absorbance Value 3	AZ	A	8	-	
36.	Absorbance Value 3 (DEC compatible)	A3	R	8	-	
37.	Sample Rotor Position	AI	I	3	-	valid range [1-150]

General Field Types:

A alphanumerical field:
Separators like ´**,**´ (comma) and ´**;**´ (semicolon) are not permitted. Else all printable characters of the ASCII table can be used. Alphanumerical fields will be written as read.
Miscellaneous: Leading spaces must not be used within key fields, like **IN** (identification number) and **TC** (test code).
Especially spaces, commas or periods within the *identification number* or the *test code* must be avoided.

R numerical field:
Valid characters are **0..9**, the decimal point ´**.**´, space and ´**+**´ and ´**-**´ for positive and negative results.
Miscellaneous: If the result is invalid it will be sent as an empty field.
Reading numerical fields, they have not to be right justified or left justified. Leading spaces or zeros will be cut.
Numerical values will be written left justified.

I numerical integer field:
Valid characters are **0..9**.
Miscellaneous: Reading spaces within a numerical field results in a default value (e.g. VD=1 or SX=0).

D date field:
Format is YYYYMMDD or YYMMDD.
Date fields will be read and written left justified (fixed length 6 or 8).

Special Fields:

RS, R1

The numerical result fields RS and R1 are only of the character range [0..9,´.´,´+´,´-´). Cutoff-results will have ´+1´ for ´*pos*´=´>´, ´-1´ for ´*neg*´=´<´ and ´0´ for ´*border*´=´=´.

Results out of concentration range, where a result label ´**>**´, ´**<**´ or ´**********´ should appear the field will be sent as an empty field.

RA, R2, R3

The result fields RA, R2 and R3 are alphanumerical. The result value will be constructed out of the regular measured value following the so called print flag ´>´, ´<´ for values out of concentration range or ´ ´ (space) for valid results.

Depending on the input to the ´result marks´ within the menu test applications cutoff values will be sent as ´***pos***´ for ´**>**´, ´***neg***´ for ´**<**´ and ´ ´ for ´**=**´ (border).

Labeling Of Results (RA, RS, AM, AX, AY, AZ) For Upload.

> / <	The calculated value is above/below the highest/lowest standard, or outside the upper/lower extrapolation range. The noted result is the concentration of the highest/lowest standard or the upper/lower extrapolation limit. The host must check status (31).
**********	The concentration value is below zero. The host must check status.
<<<<<<	The measured absorbance was lower than -1. The host must check status.
>>>>>>	The measured absorbance is higher than the maximum absorbance defined in the test applications. The host must check status.
- - - - - -	The absorbance has not been measured. No valid concentration value has been determined. The host must check status.

Differences between TWIN and DEC User Software:

The DEC user software allows spaces within identification numbers or tests

Separator within a data set:
TWIN reads up to a comma. DEC reads up to a comma and checks the position.