Roche Diagnostics

HITACHI 902 Automatic Analyzer

Host Interface

Introduction

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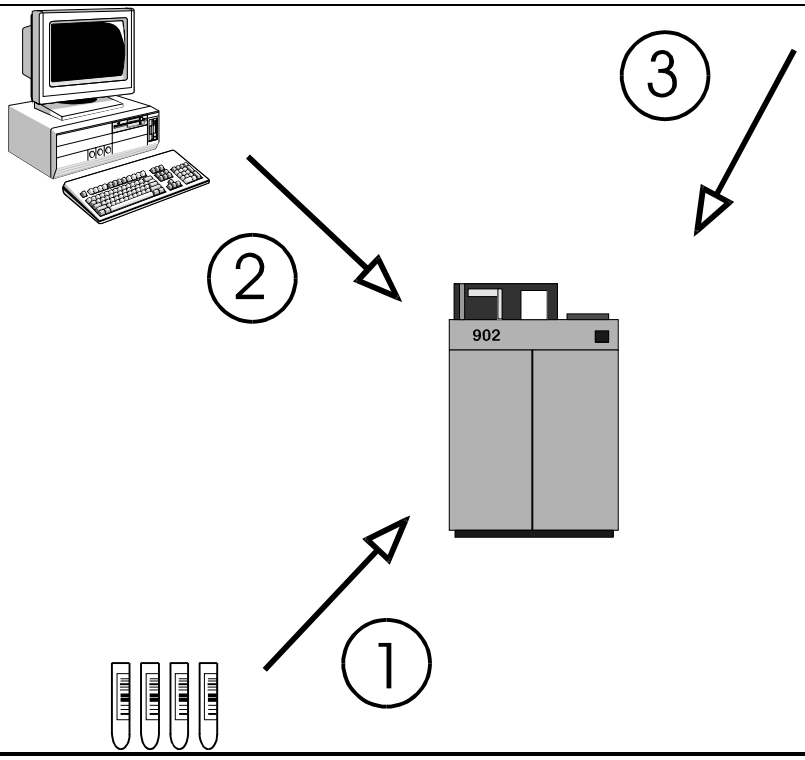
1. Basic Workflow

There are two ways of workflow on the HITACHI 902 analyzer with a host connection:

Test Selection Download in Batch mode

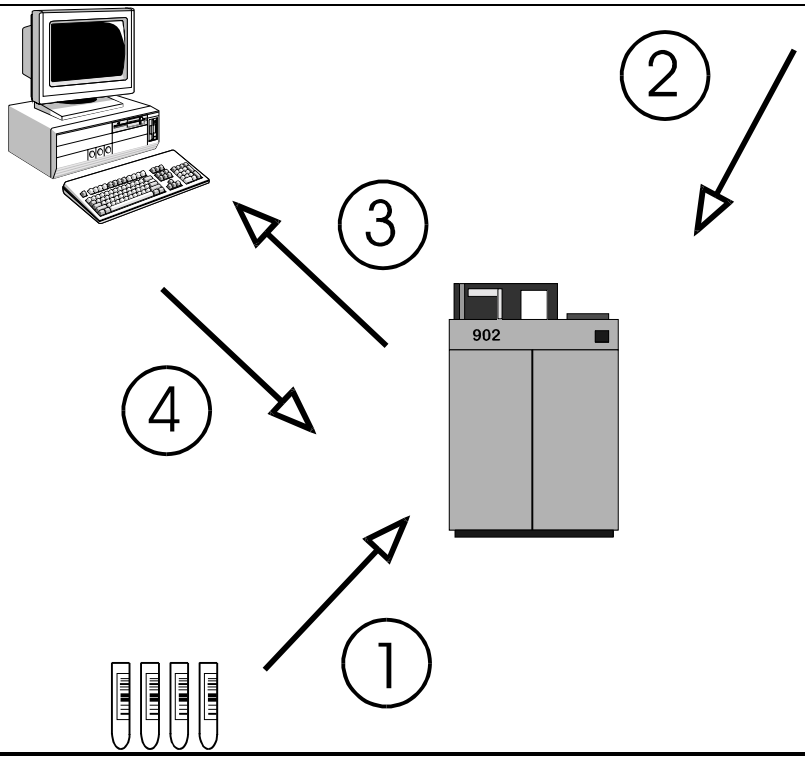
① The operator places the samples on the instrument
② The operator initiates the download of all existing test selections from host side
③ The operator starts the run



Test selection download in batch mode

Test Selection Download in Realtime mode

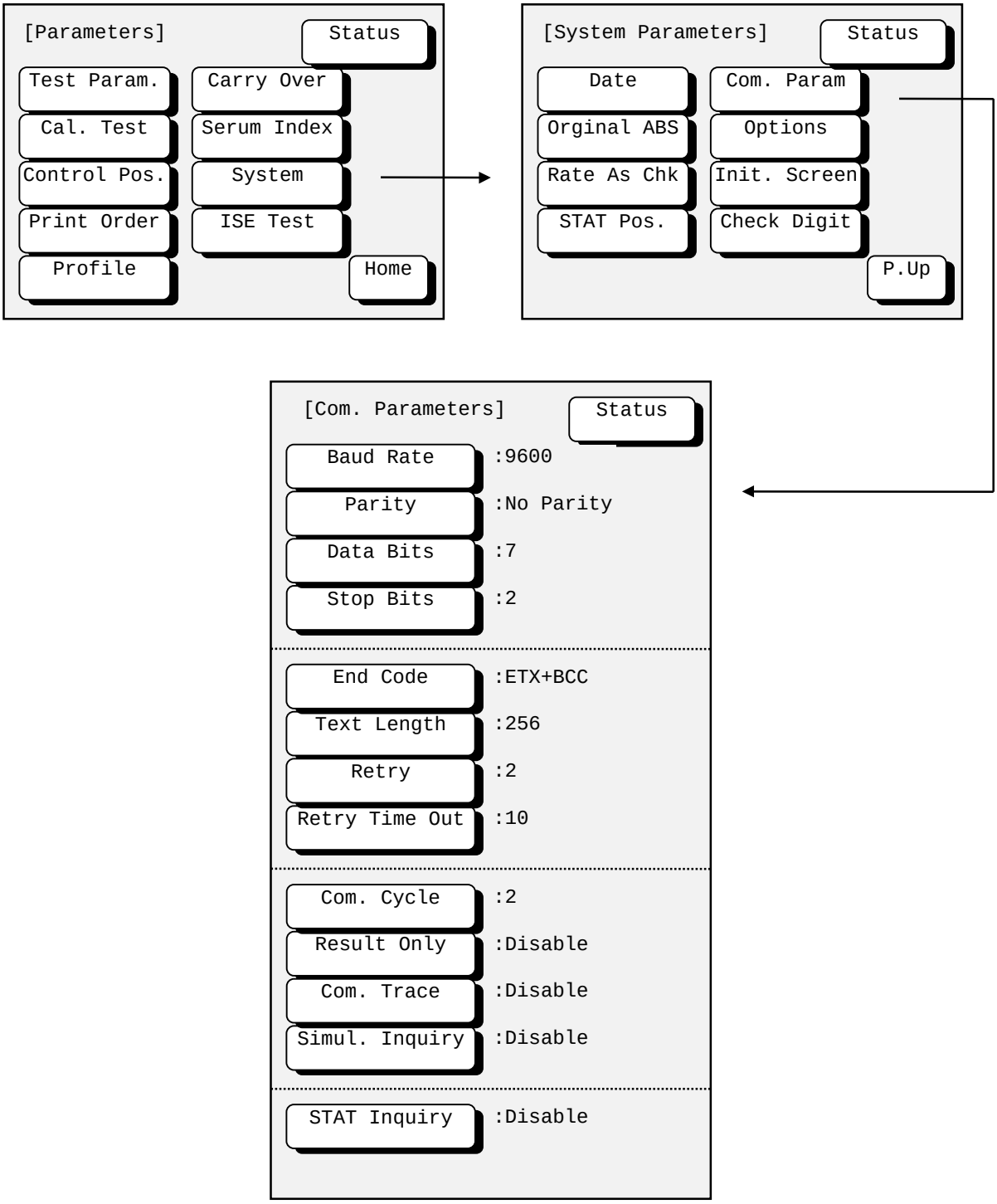
① The operator places the samples on the instrument
② The operator starts the run
③ Upon reading the barcode of each sample the analyzer sends a request for each sample to the host
④ The host sends back the corresponding test selection to the analyzer



Test selection download in realtime mode

2. Setup of Communication Parameters

All settings concerning the host interface are made on the **COM. PARAMETERS** screen.
(menu path: **PARAM SYSTEM COM. PARAM**)



COM. PARAMETERS screen

Serial interface parameters:

- Baud Rate 9600, 4800 baud
- Parity Check none, odd, even
- Data Bits 7, 8
- Stop Bits 1, 2

HIT 902 specific settings:

- Data-End Code 5 options
- Maximum Text Length 256, 512 bytes
- Retry Count 1 to 4
- Retry Time Out 1 to 4 seconds
- Communication Cycle 2, 3, 5, 10 seconds

Unidirectional communication mode:

- 'Result Only' mode

Host Communication Trace:

- Option of recording the communication (the log can be printed and deleted on the **TOOLS COM. TRACE** screen)

Test selection Inquiry:

- 'Simul. Inquiry' option
- STAT Inquiry

These settings cannot be changed, if communication is running.

Communication is enabled on the **START CONDITION** screen by selecting the 'Host Com.' option.

To access the **START CONDITION** screen press the **[BATCH MODE]** or **[EASY MODE]** button and the **[Ok ?]** button, then one of the arrow keys to move to the second page.

3. Data Transmission Control Procedure

3.1. Establishment of Data Link

After activating the Host communication on the **START CONDITION** screen, the AU transmits the ***ANY*** frame to the host. Communication is started from this point. The host has to answer within the communication cycle time, usually with a ***MOR*** frame.
x seconds after the receipt of the ***MOR*** frame, the AU sends the next ***ANY*** frame to the host. (x is the communication cycle time which can be set on the **COM. PARAMETERS** screen)
In subsequent steps, the AU and the host continue transmission alternately.

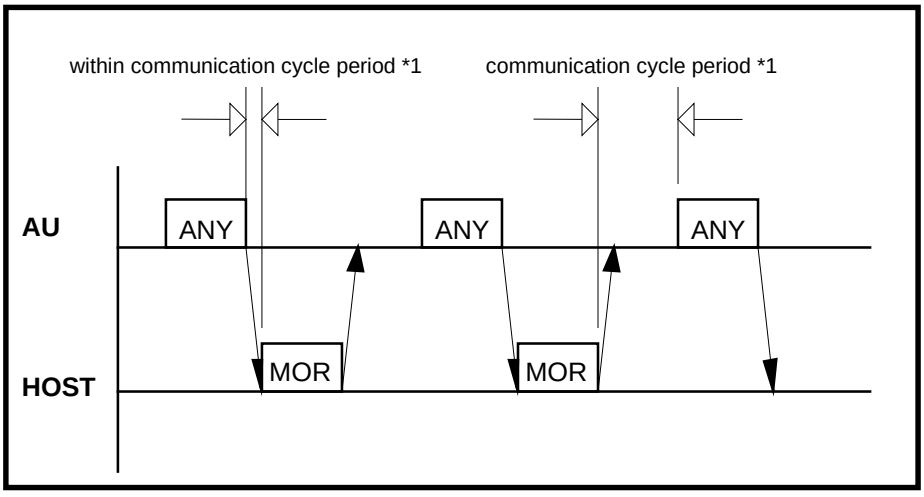
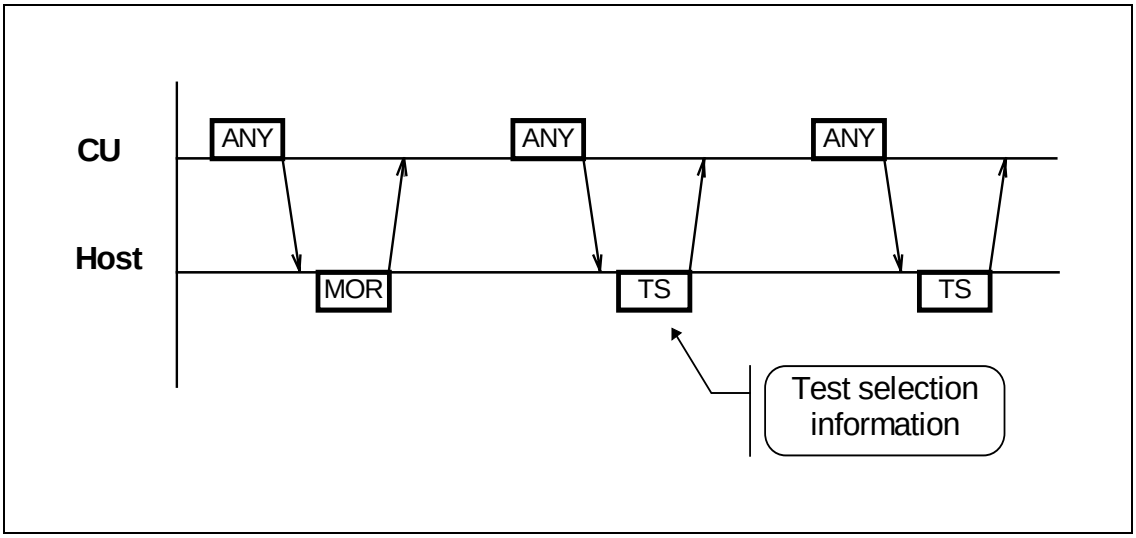


Figure 1**:** Communication timing without information exchange

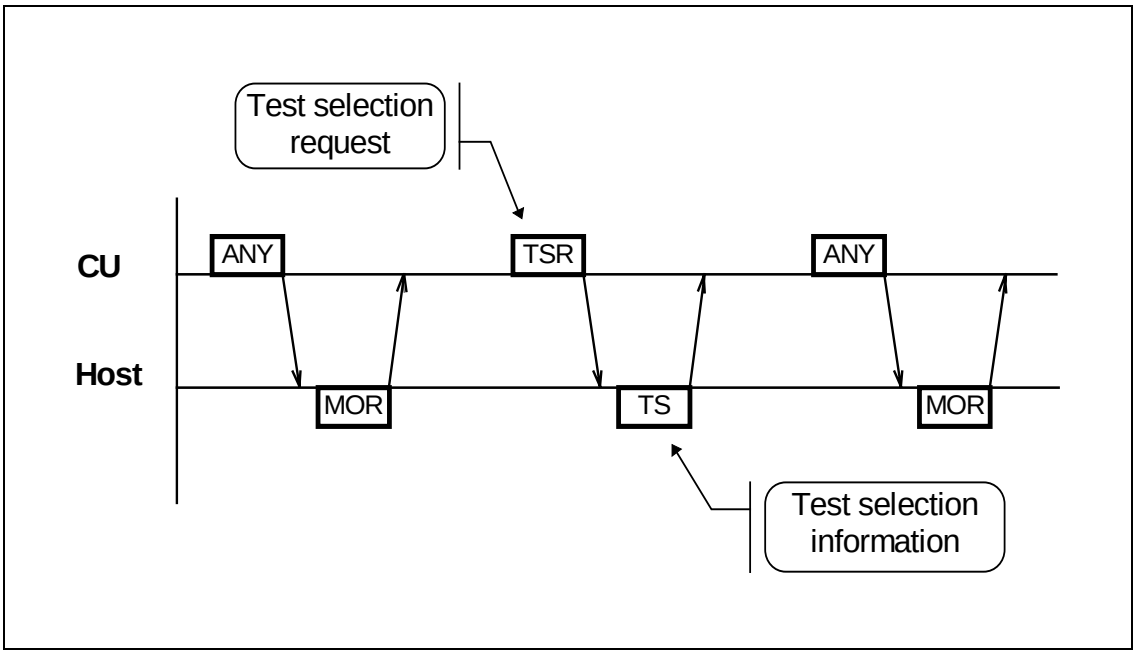
*1: The communication cycle period can be adjusted (2 to 10 seconds / default = 2 seconds) on the **COM. PARAMETERS** screen

3.2. Batch Test Selection Download



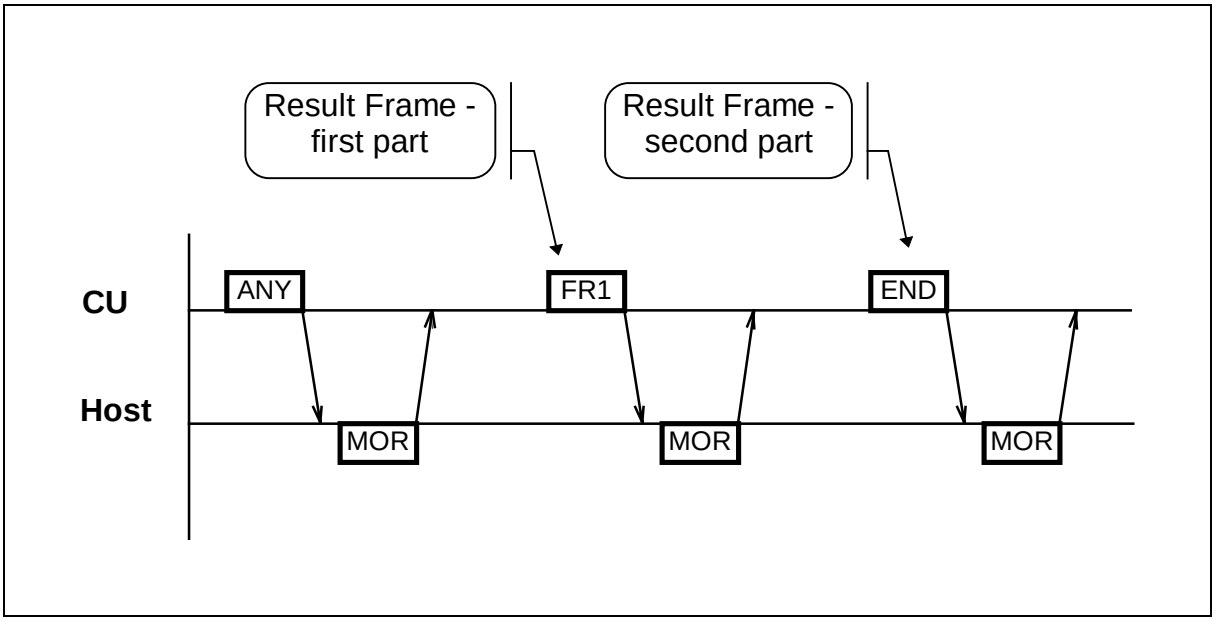
Communication timing of a test selection transmission in batch mode

3.3. Realtime Test Selection Transfer



Communication timing of a test selection transmission in realtime mode

3.4. Result Transfer in batch or realtime mode



Communication timing of a two-frame result transmission

3.5. Retry Handling

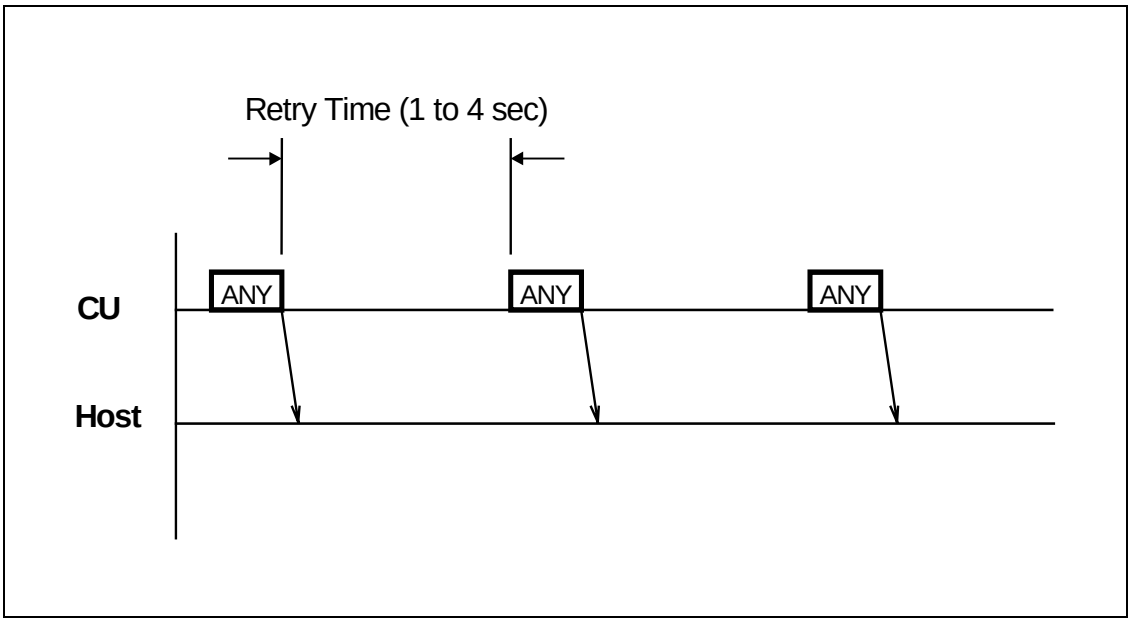


Figure 2: Communication timing if host does not answer

4. Communication Functions

4.1. Function List for Test Selection Data

Type		Realtime Request	Batch Transfer	Conditions
Routine sample				Invalid when 'Result Only' mode is selected on COM. PARAMETERS screen
STAT sample	with ID			Valid when 'STAT Inquiry' option is selected on COM. PARAMETERS screen
	without ID			Invalid when 'Result Only' mode is selected on COM. PARAMETERS screen

Function list for test selection data

4.2. Function List for Result Data

Type	Realtime	Batch	Result Request	Conditions
Routine sample				Specific sample request is invalid when 'Result Only' mode is selected on COM. PARAMETERS screen
STAT sample				
Control sample				
Calibration				
Original absorbance				Available only if 'Original ABS' is enabled on PARAM. -> SYSTEM > ORIGINAL ABS screen

Function list for result data

Comments:

- If 'Original ABS' is enabled there is no test selection inquiry sent from analyzer to host.
- The above real-time communication indicates a communication carried out while the instrument is busy in analysis, and the batch communication indicates a communication when specified through the screen.
- Batch result communication is initiated on …

  MONITOR **Routine samples** **SEND** screen
  for Routine results (no. 1 to 400)
  MONITOR **STAT samples** **SEND** screen
  for STAT results (no. 1 to 50)
  MONITOR **Control samples** **SEND** screen
  for Control results (no. 101 to 530)

5. Documentation and Tools for HITACHI 902 Host Interface

- *HITACHI 902 Host Interface Manual - ID 1808974-001*

- *HITACHI 902 Host Interface Introduction (this document)*

- *Host Interface Testsoftware for HITACHI 902*
  Host and Analyzer Interface Simulator

- *Monitor program - ID 1224140-001*
  Line Listener program for troubleshooting incl. T-connector and cables

  Serial T-connector - ID 1224085-001
  Small adapter which can be inserted between instrument and host

Contact the address below for requesting tools without ID.

If problems with the installation or questions about the transfer should arise please contact the responsible person of Roche Diagnostics GmbH (Germany):

Roche Diagnostics GmbH
Global System Support

Sandhofer Straße 116
D-68305 Mannheim
Phone: (49) 621 / 759-2464
Telefax: (49) 621 / 759-4394

6. Trace Example - HITACHI 902

The following characters are replaced for better readability:

Code 02h	start of text	[STX]
Code 03h	end of text	[ETX]
Code 0Dh	carriage return	[CR]
Code 20h	space	·

Hex. code of Block Check character in brackets { }

Test Selection inquiry from AU to HOST incl. Result (in realtime mode)

```
AU   14:44:00,39 [STX]>[ETX]{3Dh}
Host 14:44:00,39 [STX]>[ETX]{3Dh}

AU   14:44:02,03 [STX];A·····3·····000456·····[ETX]{6Dh}
Host 14:44:02,08 [STX];A·····3·····000456·····37100000000
                 0110000000000000000000000000000[ETX]{48h}

AU   14:44:02,26 [STX]>[ETX]{3Dh}
Host 14:44:02,30 [STX]>[ETX]{3Dh}

...

AU   14:58:11,07 [STX]>[ETX]{3Dh}
Host 14:58:11,07 [STX]>[ETX]{3Dh}

AU   14:58:12,50 [STX]:A·····3···3·····000456·····3··1···0.2
                 ··11·-0.04··12·-0.25·[ETX]{51h}
Host 14:58:12,55 [STX]>[ETX]{3Dh}

AU   14:58:14,37 [STX]>[ETX]{3Dh}
Host 14:58:14,37 [STX]>[ETX]{3Dh}
```