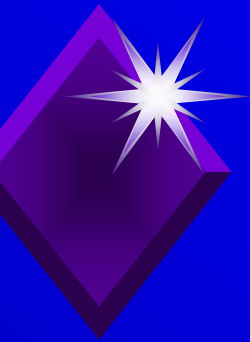
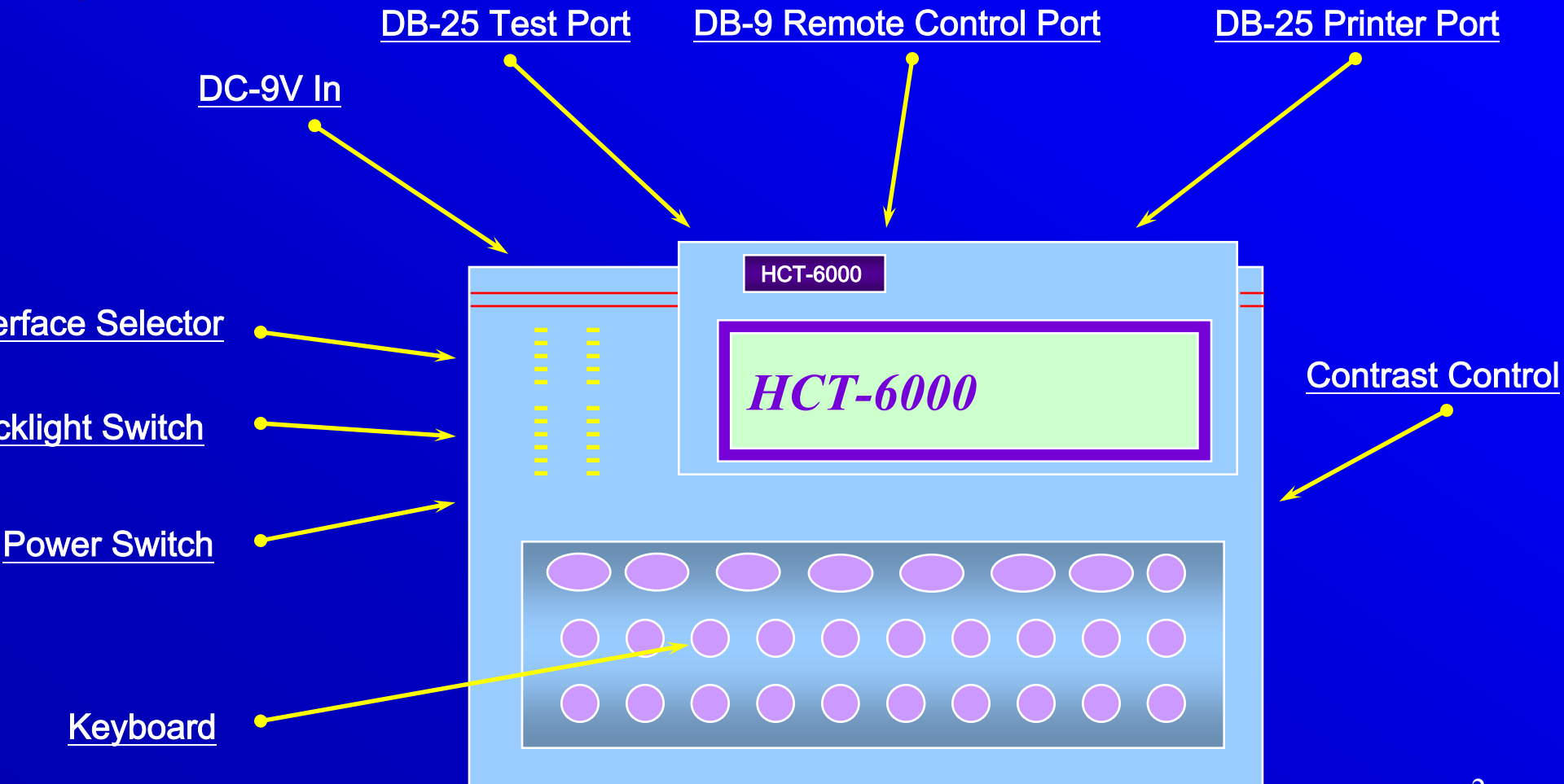


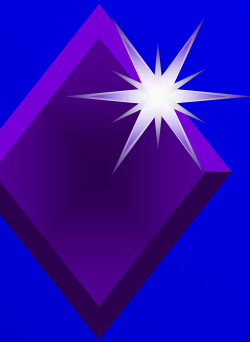
HCT-6000

Handy Protocol Analyzers

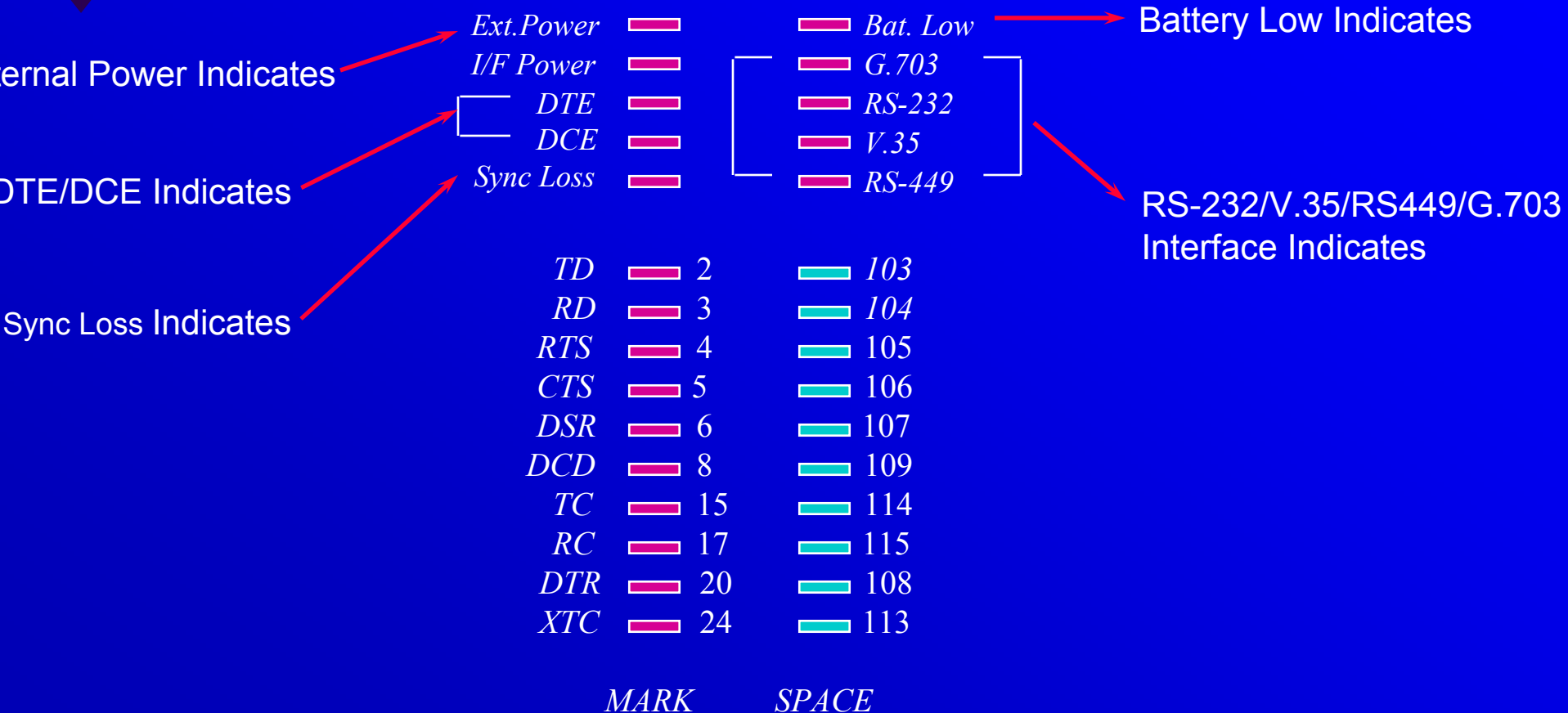


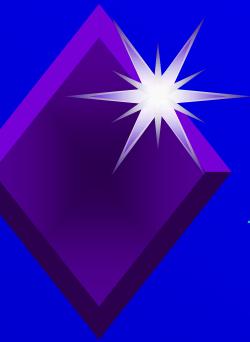
Overview





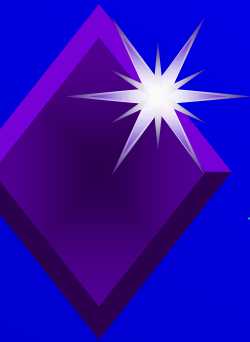
LED Indicators





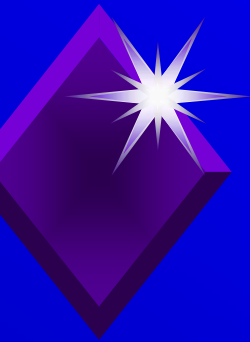
HCT-6000 General Specification

- **Selective Interfaces:**
 - RS-232, V.35, RS-449
- **LCD Display**
 - 32x8 characters
- **Capture Buffer**
 - 512K
- **Status LEDs**
 - TD, RD, RTS, CTS, DSR, DTR, DCD, TC, RC, XTC
- **DTE/DCE Emulation**
- **128Kbps Protocol Analysis**
 - ASYNC, SYNC(BSC), HDLC, SDLC, X.25, Frame Relay, DDCMP, TCP/IP, PPP, SLIP...
 - ASYNC Speed: 50 - 115200 bps
SYNC Speed : 150 - 128K bps
- **BERT Test**
 - with RTS/CTS Flow Control
 - Flexible Printer Function
 - High Speed BERT Test to 2Mbps
 - Nx56Kbps, 1536K bps, Nx64Kbps
 - ITU G.821 Analysis



HCT-6000 Functions Definition

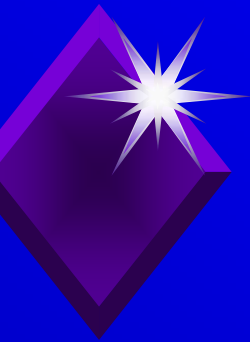
- File management function
- Auto / Manual config.
- Programmable Monitor / Emulate functions
- Remote control function
- Up/Down Load Data to PC
- Monitoring On-Line via printer port
- Rechargeable / Easy to changed battery
- G.703-T1/FT1, E1/FE1 optional Interface



Protocol Analysis

Main Protocols

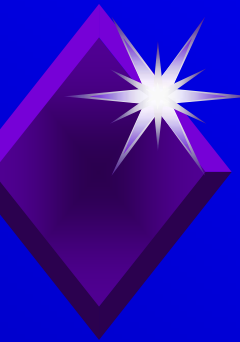
- ◆ Asynchronous
- ◆ Sync(BSC)
- ◆ SDLC/HDLC
- ◆ X.25
- ◆ Frame Relay
- ◆ DDCMP



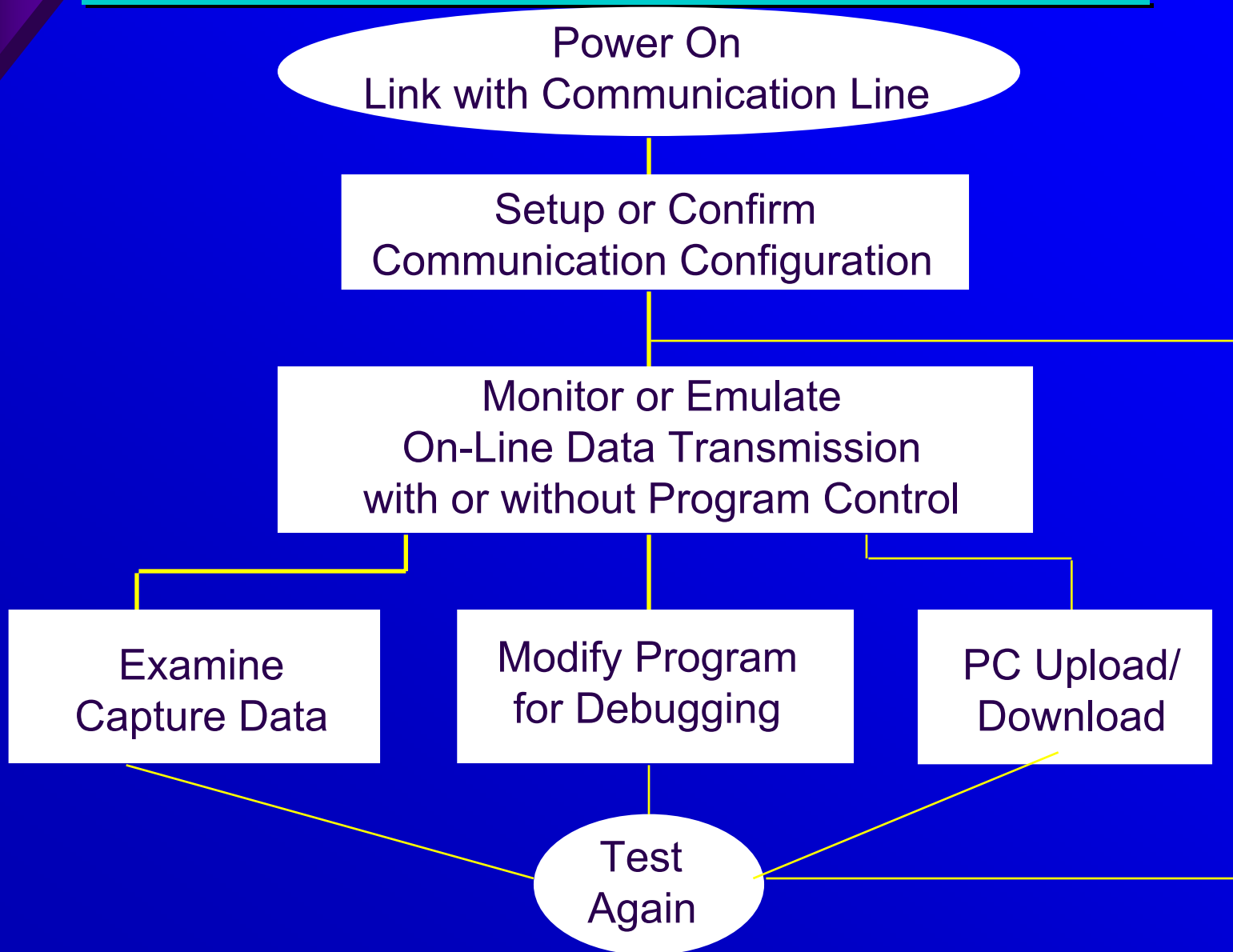
Protocol Analysis Options

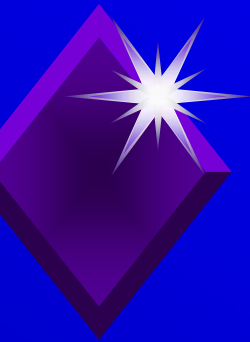
Frame Relay Optional

- ◆ Frame Relay
- ◆ SNA
- ◆ TCP/IP

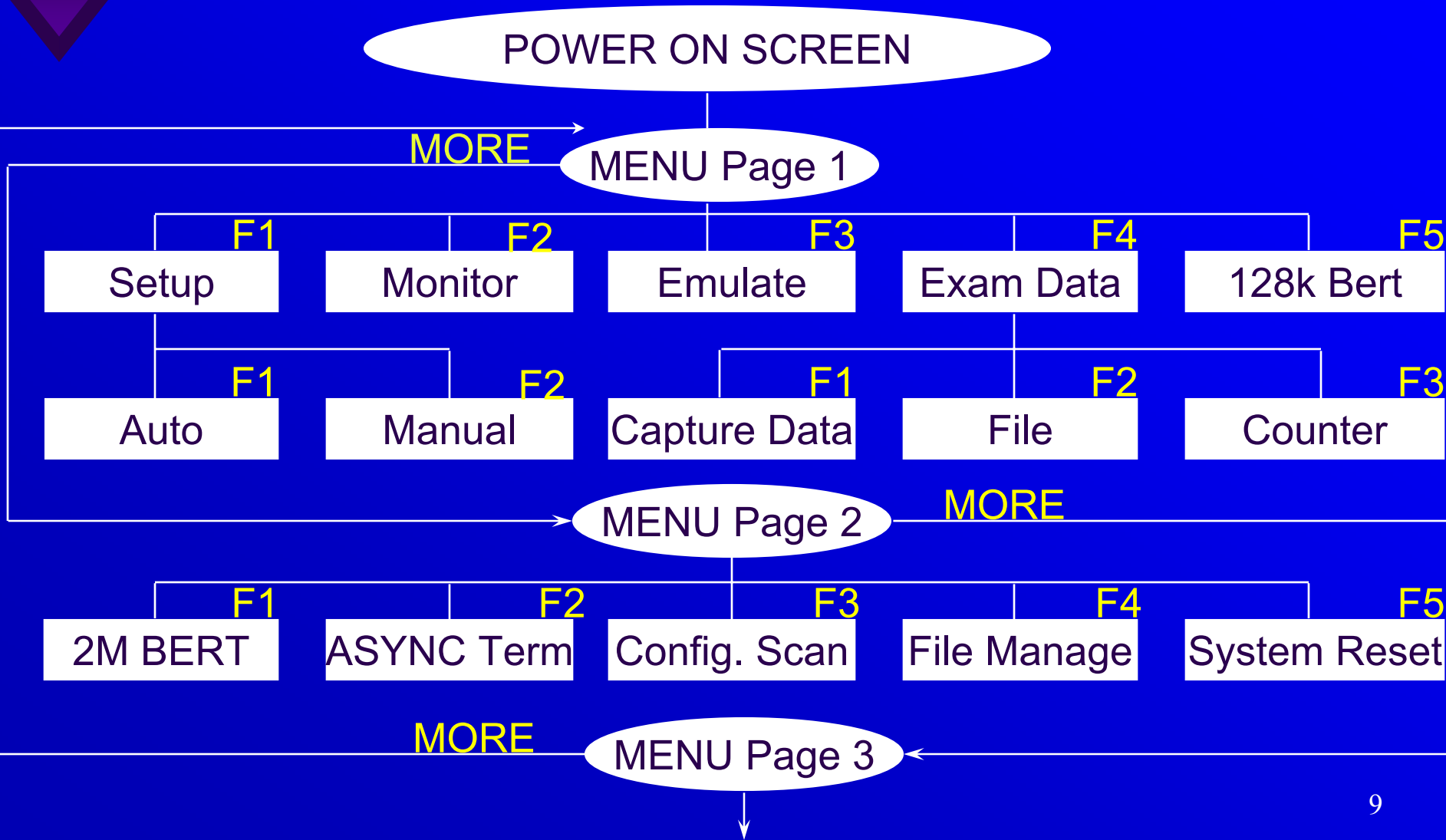


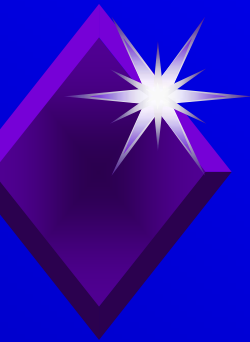
Normal Operation Flowchart



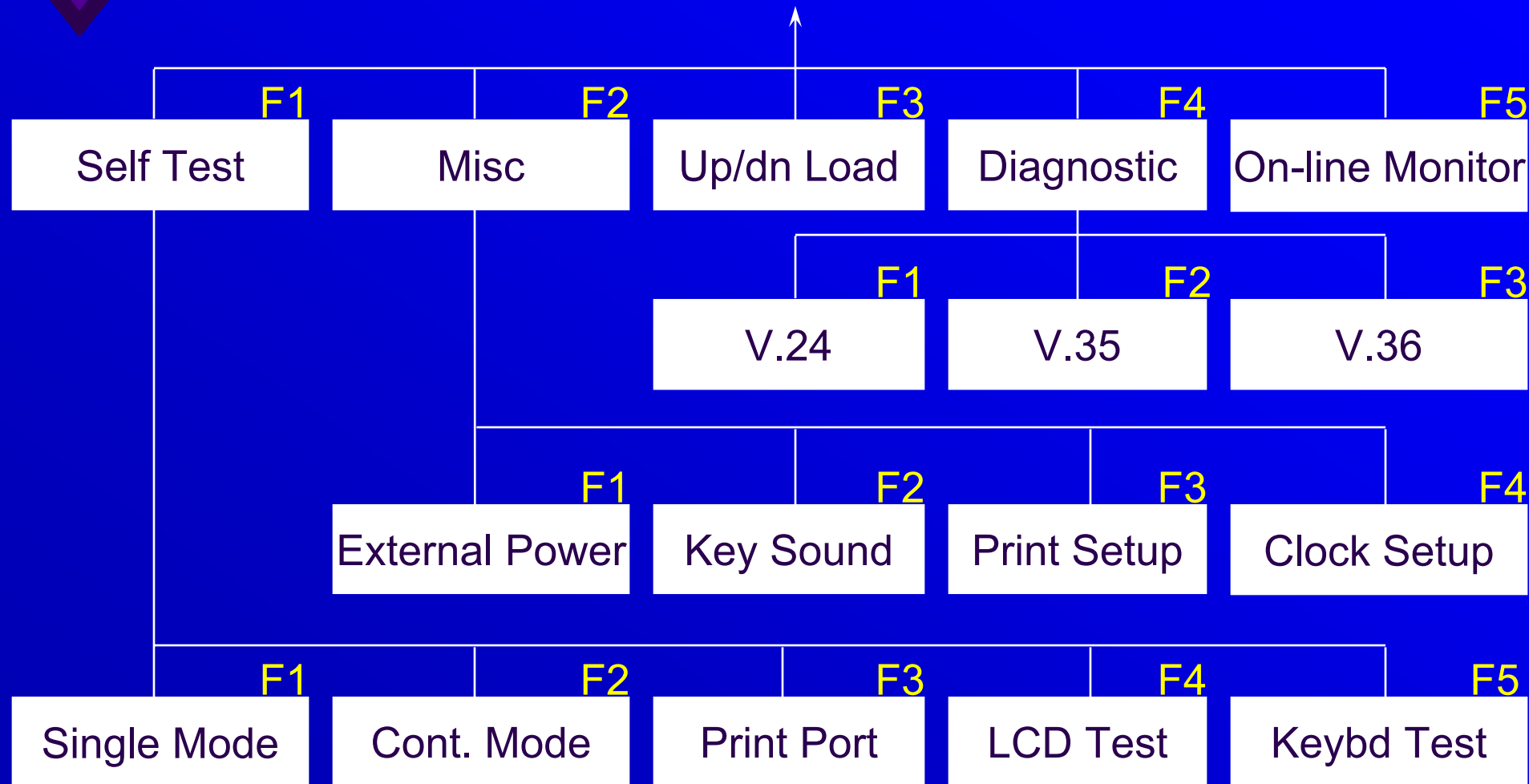


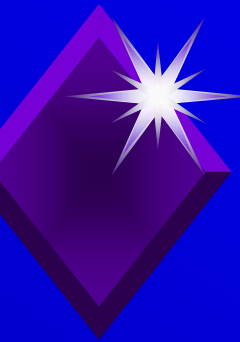
Operation Menu Chart





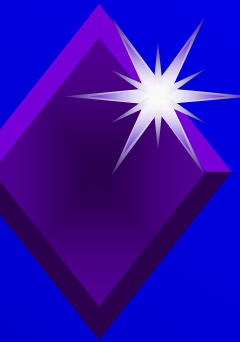
Operation Menu Chart(continued)





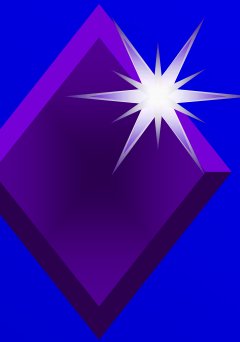
HCT-6000 Function Select...(1)

FUNCTION SELECT	
F1	: Configuration Setup
F2	: Monitor
F3	: Emulate
F4	: Examine Data
F5	: 128K BERT
MORE	: Next Page



HCT-6000 Function Select...(II)

FUNCTION SELECT	
F1	: 2M BERT
F2	: Async Terminal
F3	: Configure Scan
F4	: File Manager
F5	: System Reset
MORE	: Next Page



HCT-6000 Function Select...(III)

FUNCTION SELECT

F1	: Self Test
F2	: Miscellaneous
F3	: Up/Down Load
F4	: Diagnostics
F5	: Online Monitor
MORE	



Sub-Window Editor...

MANUAL CONFIGURATION	
Bit Order	: Normal
Bit Sense	: Normal
Source	: DTE & D
Display	: <u>F-Duplex</u>
Buffer	: Ring
Suppress	: None
ERR Check	: None

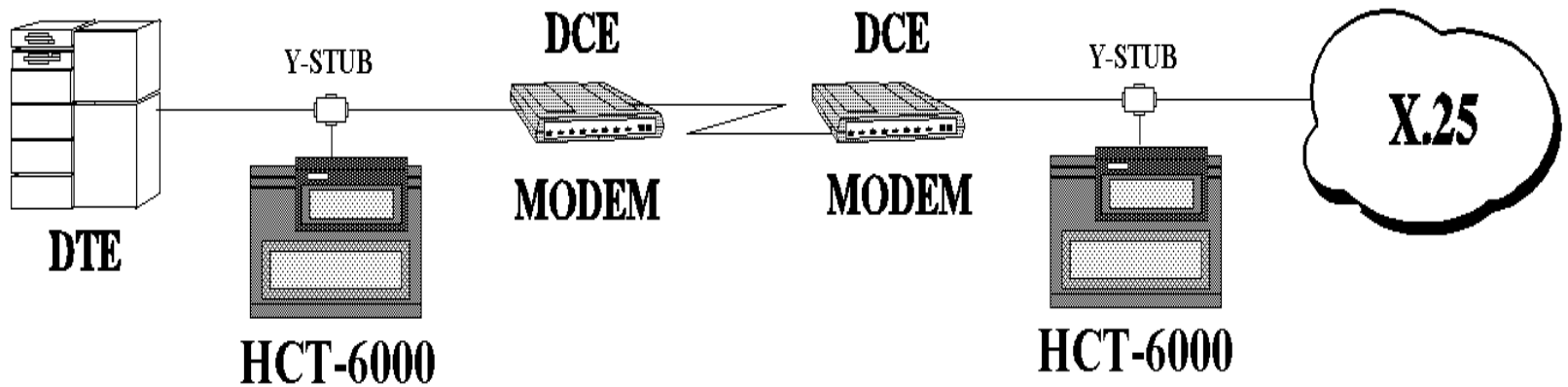
F-Duplex
H-Duplex
Data&State

Use the → arrow key

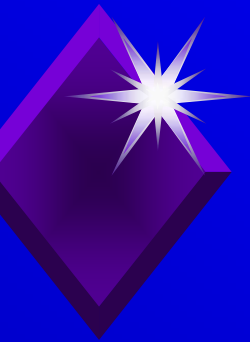
- See the Sub-Window

- Select the parameter setting

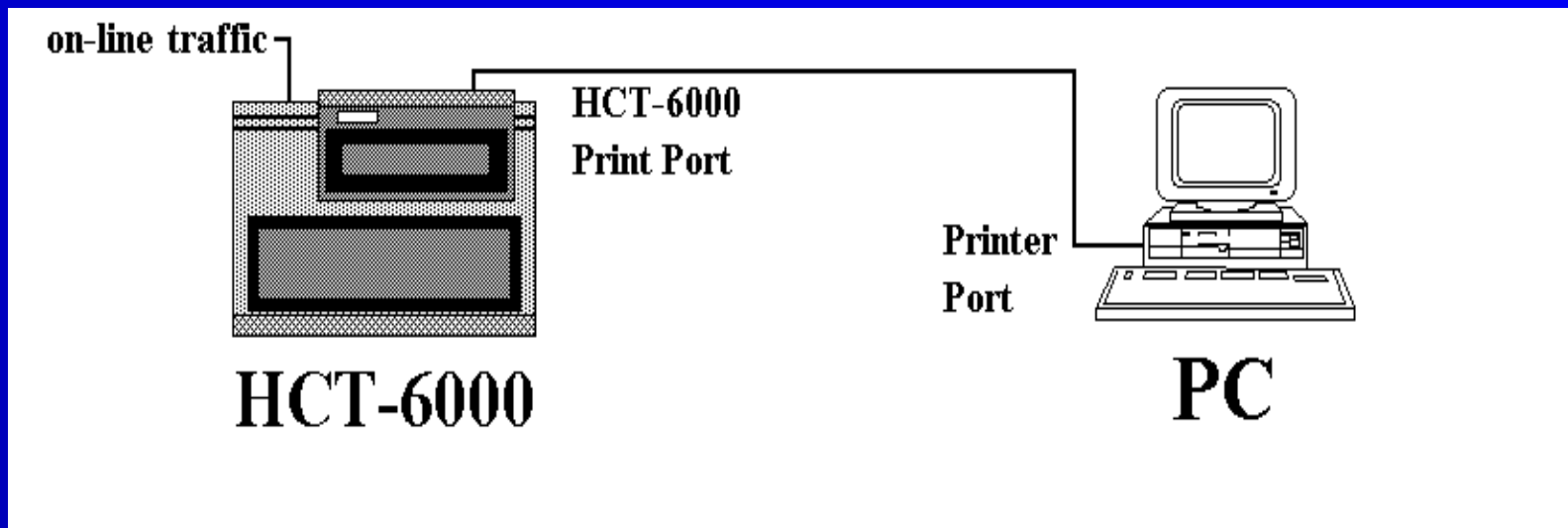
HCT-6000 Monitor Function



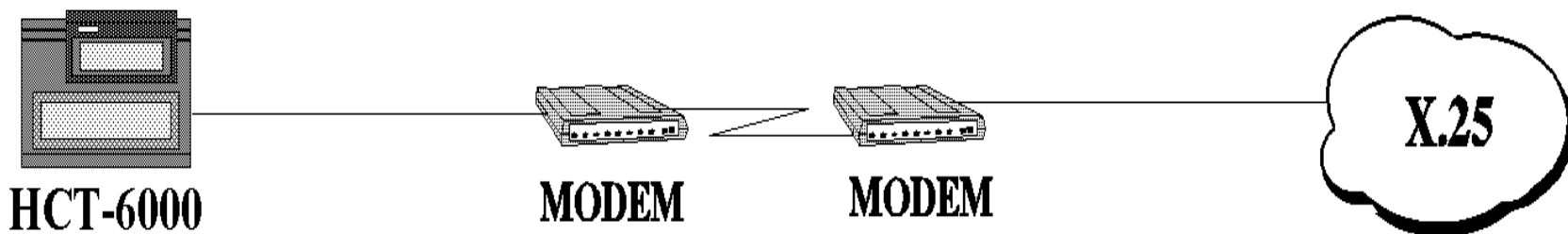
```
-- MONITOR MODE --      DTE & DCE  
PROGRAM : ENABLE  
LABEL 1  
END.
```



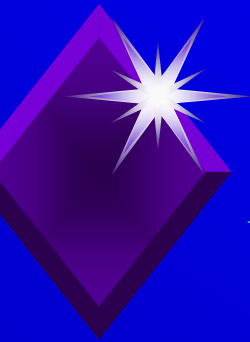
HCT-6000 ON LINE Test



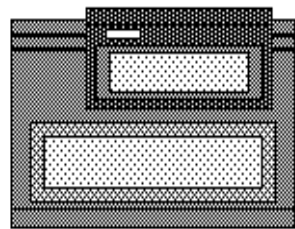
HCT-6000 Emulate DTE Mode



```
-- EMULATE MODE --      DTE
EMULATE : DTE
PROGRAM : ENABLE
LABEL 1
END.
```



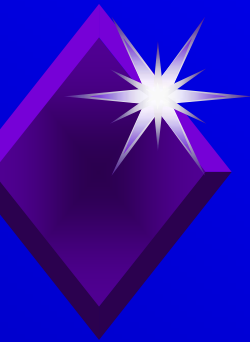
HCT-6000 Emulate DCE Mode



HCT-6000



PC



Capture Data Function...

----- **EXAM DATA** -----

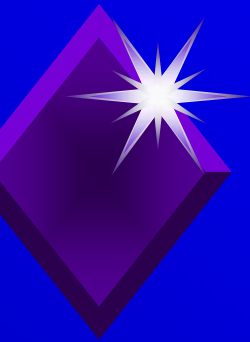
F1 : Examine Captured Data
F2 : Examine File Data
F3 : Examine Timer/Counter

Press F1



----- **EXAM DATA** -----

F1 : Exam. Data Only
F2 : Exam. Data & State
F3 : Exam. Frame & Packet



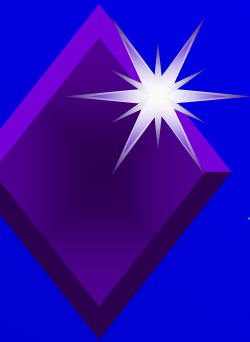
Captured Data Display...

```
THE QUICK BROWN FOX JUMPS OVER A  
-----  
LAZY DOG 0123456789.THE QUICK BR  
-----  
OWN FOX JUMPS OVER A LAZY DOG 01  
-----  
23456789.THE QUICK BROWN FOX JUM
```

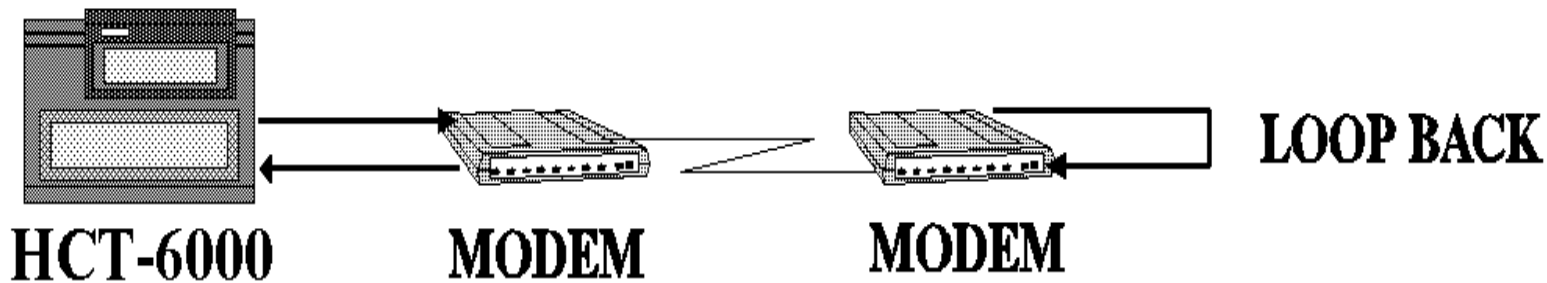
DTE & DCE Data Only Display

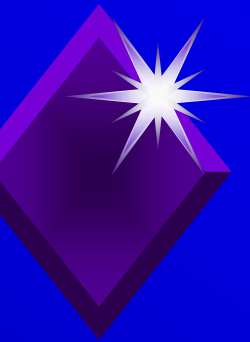
```
RTS _____  
CTS _____  
DSR _____  
DTR _____  
DTE THE QUICK BROWN FOX JUMPS OU  
DCE -----
```

Data & State Display



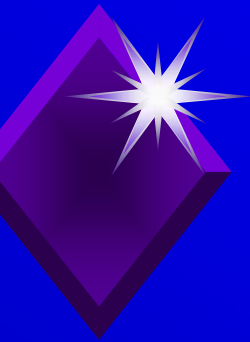
HCT-6000 Loop Back Test...





128K BERT Functions...

- ◆ **Protocol** : SYNC and ASYNC.
- ◆ **Pattern** : 63, 511, 2047, Fox Pattern, Space, Mark, ALT.
- ◆ **Test Duration** : $10^3 \sim 10^8$ bits, 1 ~ 60 Minutes ,
◆ Forever.
- ◆ **Data Rates** : SYNC : 150 ~ 128K bps
ASYNC : 50 ~ 115.2K bps
- ◆ **Flow Control** : CTS Enable/Disable
- ◆ **Print Result** : Interval Setting
- ◆ **Print Result** : while Error Occur Setting



2M BERT Test Functions...

◆ *Data Format :*

*Common Used
G.821 Analysis.*

◆ *Mode :*

*DTE SYNC
DCE SYNC.*

◆ *Pattern :*

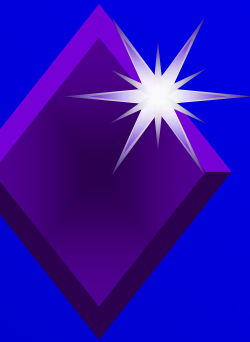
*63, 127, 511, 2047, $2^{15}-1$,
 $2^{20}-1$, QRSS, $2^{23}-1$, Mark,
Space, Alt, 11001100, 3 in
24, 1 in 16, 1 in 8, 1 in 4.*

◆ *Test Duration :*

*1 - 60 minutes
Forever.*

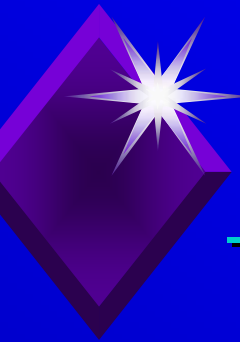
◆ *Data Rates :*

*48K,
N64K (up to 2048K),
N56K (up to 1792K)
1544K bps.*



2M BERT Test Functions...

- ◆ **Tx Clock :**
*Internal or Internal Inverted
External or External Inverted*
- ◆ **Rx Clock :**
*DPLL
External or External Inverted*
- ◆ **Tx Error Rate Types :**
*Single, and $10^{-1} \sim 10^{-7}$ Error
Rate.*
- ◆ **Flow Control :**
CTS Enable / Disable
- ◆ **Print Interval Setting**
- ◆ **Print On Error Setting**



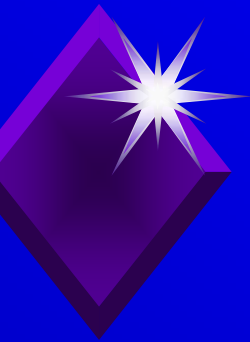
128K BERT Running Display...

- BERT/BLERT -		Sp:9600	Pat:511	
Bit Tx= 123456789	BlkTx=	0		
Bit Rx= 123456789	BlkRx=	0		
Bit Er= 0	BlkEr =	60		
Bit Er/R= 0. 0e-00	ErSec=	0		
Forced Er= 0	1D23:59:59			
F Force	F Force	F Reset	F	HALT
1 1 Err	2 5 Err	3 Count	4	PRINT?



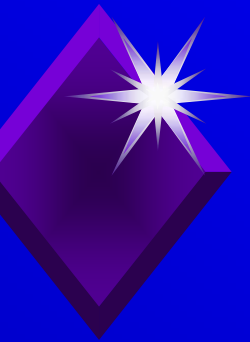
128K BERT Display Definition...

Abbreviation	Mean	Range and note
Sp	Speed, Data rate	Please refer to guide
Pat	Pattern	Please refer to guide
Bit Tx	Transmitted bit count	0 to 999999999, 1.0000E9 to 9.9999E12
Bit Rx	Received bit count	0 to 999999999, 1.0000E9 to 9.9999E12
Bit Tx	Transmitted block count	0 to 999999999, 1.0000E9 to 9.9999E11
Bit Rx	Received block count	0 to 999999999, 1.0000E9 to 9.9999E11
Bit Er	Received bit error count	0 to 999999999, 1.0000E9 to 9.9999E12
Bit Er/R	Received bit error rate	0 to 1.0E-13
ERSec	Error seconds	0 to 999999999
Forced Er	Forced error bit count	0 to 999999



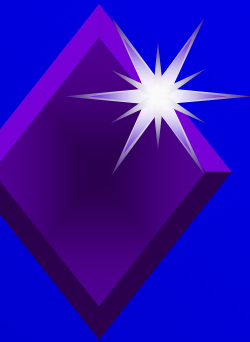
128K BERT Display Definition...

Abbreviation	Mean	Range and note
1D23:59:59	Test duration	0 to 999 days
Force 1 Err	Force one error.	0 to 999999
Reset Count	Reset all the result and re-sync.	
HALT	The test is halt by pressing RUN key. It can be continue by pressing RUN Key again.	
Complete	The test is complete.	
PRINT?	When the test is complete, you can Print the result by pressing PRINT key or exit it by pressing ESC key.	



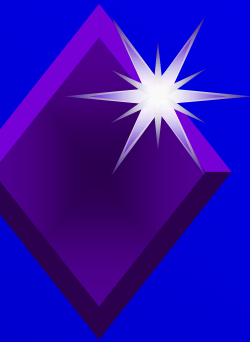
2M BERT Running Display...

-----HIGH SPEED BERT TEST -----			
Speed:2048K(N64)	Pat: 511		
Bit Rx= 123456789	SLSec=		0
Bit Er= 0	EFSec=		60
Bit Er/R= 0. 0e-00	ERSec=		0
Forced Er= 0			1D23:59:59
F Force	F For-	F Reset	F TxEr SYNC.
1 1 Err	2 mat	3 Count	4





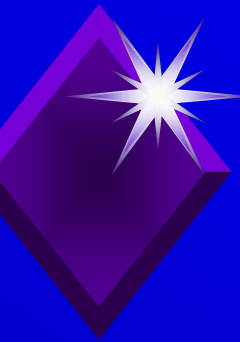
2M BERT Display Definition...

Abbreviation	Mean	Range and note
Speed	Data rate	Please refer to user guide.
Pat	Pattern	Please refer to user guide.
Bit Rx	Received bit count	0 to 999999999, 1.0000e9 to 9.9999e14
Bit Er	Received bit error count	0 to 999999999, 1.0000e9 to 9.9999e14
Bit Er/R	Received bit error rate	0 to 1.0e-15
SLSec	Sync loss seconds	0 to 999999999
EFSec	Error free seconds	0 to 999999999
ERSec	Error seconds	0 to 999999999
Forced Er	Forced error bit count.	0 to 999999
1D23:59:59	Test duration	0 to 9999 days
Force 1 Err	Force one error.	0 to 999999



2M BERT Display Definition...

Abbreviation	Mean	Range and note
Speed	Data rate	Please refer to user guide.
Format	Toggle to G.821 display for mat.	
Reset Count	Reset all the result and re-sync.	
TxEr	Enable the auto transmit error rate function.	F4 
	Disable the auto transmit error rate function.	F4 
SYNC	It is in SYNC now.	
SYN LOSS	It is in SYNC LOSS now.	
HALT	The test is halt by pressing RUN key. It can be continue by pressing RUN key again.	
Complete	The test is complete.	



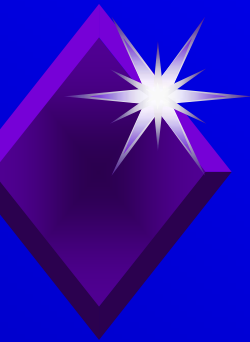
2M BERT Running Display... (G.821 Analysis)

AVL SEC=	60	%AVL SEC =	100 %
DEG MIN=	0	%DEG MIN =	0 %
SE SEC=	0	%SE SEC=	0 %
ERR SEC=	0	%ERR SEC =	0 %
UNA SEC=	0	%UNA SEC =	0 %
G.821 ELAPSED TIME=		1D23:59:59	
F Force	F For-	F Reset	F TxEr SYNC.
1 1 Err	2 mate	3 Count	4



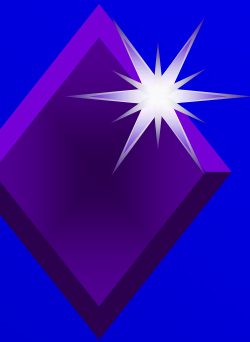
2M BERT Display Definitions...

Abbreviation	Mean	Range and note
AVL SEC	Available Seconds	0 to 999999999
%AVL SEC	Percent of Available Seconds	0 to 100%
DEG MIN	Degraded Minutes	0 to 999999999
%DEG MIN	Percent of Degraded Minutes	0 to 100%
SE SEC	Severely Errored Seconds	0 to 999999999
%SE SEC	Percent of Severely Errored Seconds	0 to 100%
ERR SEC	G.821 Errored Seconds	0 to 999999999
%ERR SEC	Percent of G.821 Errored Seconds	0 to 100%
UNA SEC	Unavailable Seconds	0 to 999999999
%UNA SEC	Percent of Unavailable Seconds	0 to 100%
1D23:59:59	Test duration	0 to 9999 days
Force 1 Err	Force one error.	0 to 999999
Format	Toggle to G.821 display format.	
Reset Count	Reset all the result and re-sync.	



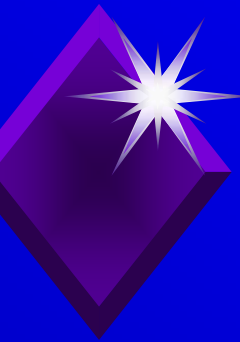
2M BERT Display Definitions...

Abbreviation	Mean	Range and note
TxEr	Enable the auto transmit error rate function.	F TxEr 4 *
	Disable the auto transmit error rate function.	F TxEr 4
SYNC.	It is in SYNC now.	
SYN. LOSS	It is in SYNC LOSS now.	
HALT	The test is halt by pressing RUN key. It can be continue by pressing RUN key again.	
COMPLETE	The test is complete.	



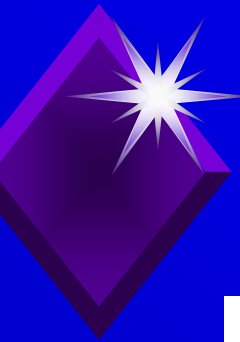
Async Terminal Emulation

```
----- TERMINAL SETUP-----  
Emulate      : DTE  
Mode         : Scroll  
Code        : ASCII  
Speed       : 9600  
Bits        : 8  
Parity      : None  
Stop bit    : 1
```



Auto Scan & Config. Setting

```
----- CONFIGURE SCAN -----  
Emulate      : DTE  
Scan Type    : Auto  
Protocol     : [Async   ]  
Code         : [ASCII  ]  
Speed        : 64000  
Bits         : 8  
Parity       : None
```



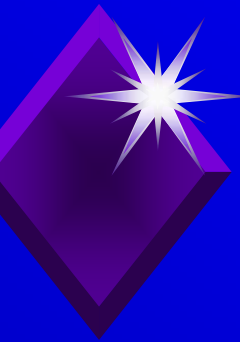
File Management...(1)

```
-----  
FILE MANAGER  
FREE   = 485K  
FILE   =  
 1 =    000K  
 2 =    000K  
 3 =    000K  
 4 =    000K  
 5 =    000K  
Save  
Load  
Clear
```

function

```
-----  
FILE MANAGER  
FREE   = 485K  
FILE   =  
 1 =    000K  
 2 =    000K  
 3 =    000K  
 4 =    000K  
 5 =    000K  
File 1  
File 2  
File 3  
File 4  
File 5
```

Select file



File Management...(II)

```
-----SAVE FILE : 1-----  
FREE : 485K  
FILE :  
1=          00K  
  
<^><v>+<ENTER>:Sel  
<ESC>:Save & Exit
```

Cap. Data
Conf. Setup
Moni. Prog.
Emul. Prog.
ALL

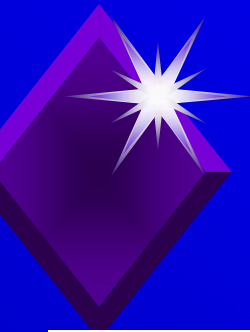
Select Data type

```
-----SAVE FILE : 1-----  
FREE : 000K  
FILE :  
1=          00K  
Capt. data 485 K  
Select data [█] 1K
```

Cap. Data
Conf. Setup
Moni. Prog.
Emul. Prog.

```
FClear FData FData FBit FOver  
1 Data2 Head3 Tail4 Mask5 Write
```

Save File... Attention: If use PC Upload – Please select “All”

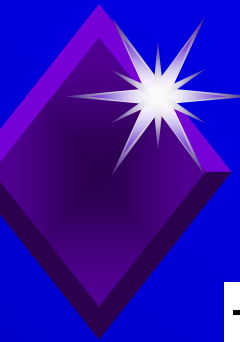


System Reset

The reset will :

1. Reset all parameters to default.
2. Clear all saved files and capture data.

Do you want to reset? YES / **no**



Self Test

SELF TEST

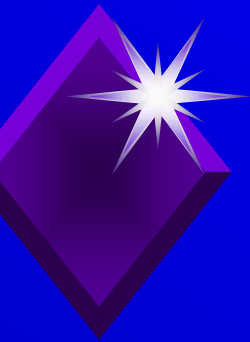
```
F1 : Self Test Single Mode
F2 : Self Test Continue Mode
F3 : Print Port Test
F4 : LCD Test
F5 : Keyboard Test
```

Select Self Test

SELF TEST

```
System ROM : Pass!
System RAM : Pass!
Internal -
  DTE Port : Pass!
  DCE Port : Pass!
```

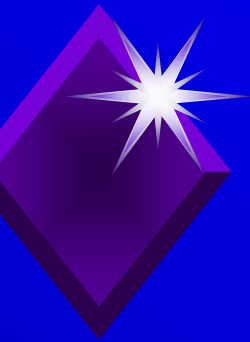
-----Press any key to exit.-----



Other Functions

MISCELLANEOUS

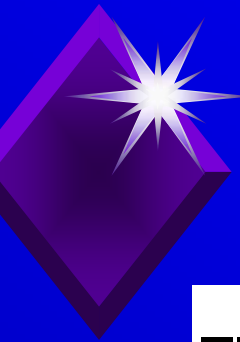
- F1** : Ext-Power Setup
 - F2** : Key Sound Setup
 - F3** : Printer Setup
 - F4** : Date Setup
 - F5** : Password Setup
-



Up/Down Load Data

```
----- UP/DOWN LOAD -----  
Option      : UP LOAD  
From        : SYSTEM  
-----
```

- *Connect PC & HCT-6000 via serial port*
- *Execute HCT-PC software at DOS Config.*
- *Select UPLOAD - transfer Data from HCT to PC*
- *Select DOWNLOAD - transfer Data from PC to HCT*



Interface Test

DIAGNOSTIC

```
F1 : U.24 Interface Test
F2 : U.35 Interface Test
F3 : U.36 Interface Test
```

Select Interface

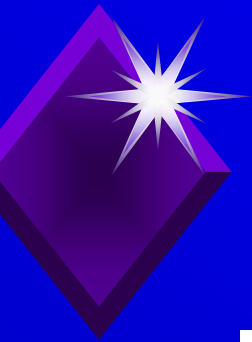
U.35 INTERFACE TEST

Please connect the following....

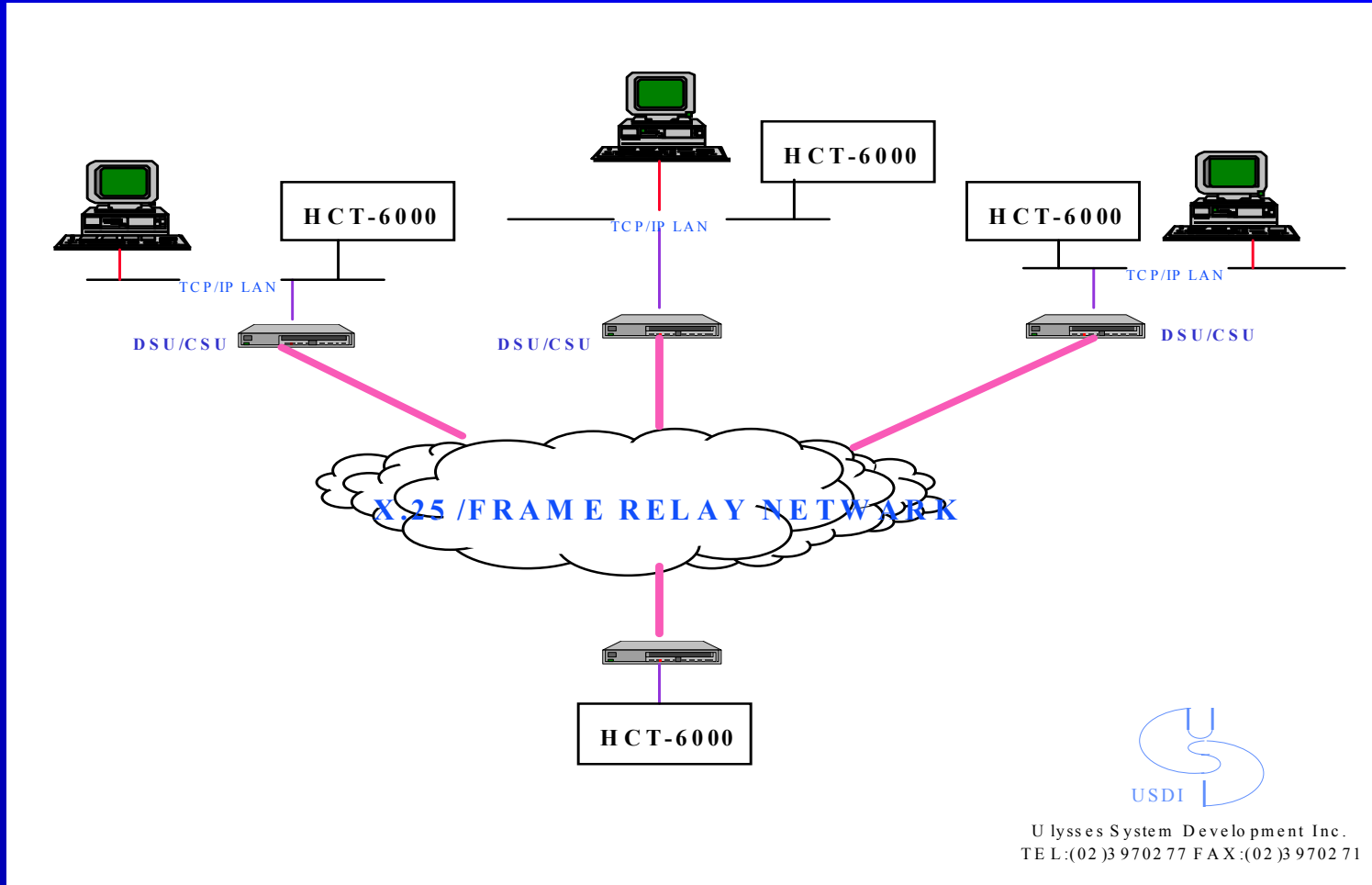
```
Pin 2 <----> Pin 3
Pin 14 <----> Pin 16
Pin 4 <----> Pin 5
Pin 20 <----> Pin 6
```

Ready ! then press <RUN>

*Refer to the instructions
Short or tie the relevant
pins of the connector
together.*



TCP/IP X.25 FRAME RELAY Test Diagram



Ulysses System Development Inc.
TEL:(02)3 9702 77 FAX:(02)3 9702 71