HDLC Sync/Async Adapter

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1.   DESCRIPTION

The HDLC-Sync/Async Adapter performs the unique function of passing HDLC-Sync data over asynchronous composite links. The Adapter is the opposite of a typical sync/async adapter, designed for passing asynchronous data over synchronous composites. The HDLC-Sync/Async Adapter provides the reverse function, a more difficult requirement and, in fact, not available until the introduction of this DCB product.
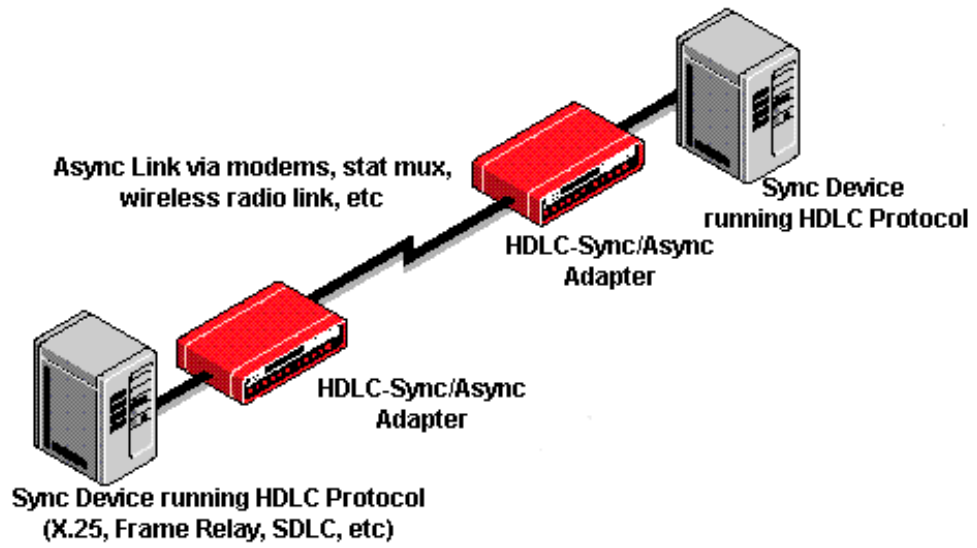
Applications for the HDLC-Sync/Async Adapter include:

- Passing X.25 synchronous composite links through async modems, stat mux ports, terminal server ports, or async wireless radio links.
- Passing Frame Relay synchronous composite links through async modems, stat mux ports, terminal server ports, or async wireless radio links.
- Passing SDLC synchronous composite links through async modems, stat mux ports, terminal server ports, or async wireless radio links.

The HDLC-Sync/Async Adapter is easy to set up and simple to use. Most applications can use the default settings, but if not, there are only two settings required. One is the speed of the async port, ranging from 9600 to 115,200 bps (default is 57.6 Kbps). The other setting is the HDLC port, changing from NRZ (default, typical for Frame Relay and X.25) to NRZI (used for SDLC applications, but SDLC will operate in NRZ mode).

The HDLC Synchronous port clocking can be external from the attached HDLC device or internal. Internal rates range from 9600 to 115,200 bps.

Application

Async Link via modems, stat mux,
wireless radio link, etc

**HDLC-Sync/Async
Adapter**

**Sync Device
running HDLC Protocol**

**HDLC-Sync/Async
Adapter**

**Sync Device running HDLC Protocol
(X.25, Frame Relay, SDLC, etc)**

2.   SPECIFICATIONS

2.1   General

All ports are RS-232, implemented in RJ-45 8-wire connectors.
Async port rates: 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
Hardware flow control on async port.
Sync port to 64 Kbps.
Sync Encoding: defaults to NRZ, NRZI optional

2.2   Controls and Indicators

Front panel push button for loopback and reset.
Side door accessible firmware cartridge for easy firmware upgrades.
Setup via the rear panel network management port (NMP).
Power, Activity, Line Error, Modem Ready, Setup, Loopback LED's

2.3   Physical/Electrical

120 VAC, wall mount power supply, 60 Hz, 18 Watts
10 1/4" x 9 3/4" x 2 1/4"
One pound

2.4   Environmental

Operation: -40 to +70° C, 10 to 95% relative humidity
Storage: -40 to +85° C, 10 to 95% relative humidity

2.5   Network Management Port Commands

Show Configuration
Change Port Configuration
Set ID
Activity Counters
Unit Type
Loop Ports / Quit
Reset
Repeat Last Command
Disconnect NMP

3.   INSTALLATION

3.1   Unpacking

The following is included with each HDLC Sync/Async Adapter:

- HDLC Sync/Async Adapter and external power supply.
- Cables for connecting the SYNC port to a DCE data source and the Network Management Port to a terminal or PC.
- Manual
- Information regarding warranty, maintenance contracts and repair.

3.2   Location

Place the HDLC Sync/Async Adapter in a clear area where you can see the front panel indicators and reach the rear panel to connect the cables. The HDLC Sync/Async Adapter has an external power supply that requires a 120 VAC outlet. The power cord length is about 6 feet.

3.3   Setup

The ASYNC port defaults to 57,600 bps. The SYNC port defaults to external clock and NRZ encoding. These are the only configurable parameters. To change them, use the Network Management Port CP command (see Section 5). To set the SYNC port for internal clock, press the SETUP button on the front panel (see paragraph 4.1.2).
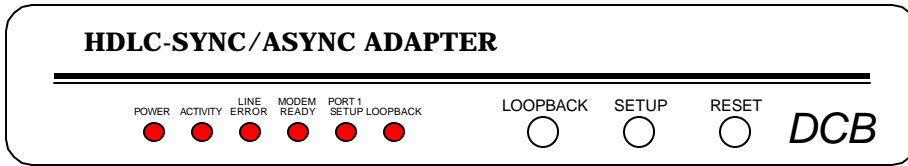
3.4   Connections

Connect the SYNC port to the synchronous data source. The cable provided should work for most DCE/DB-25 configurations.

Connect the ASYNC port to an async modem or other async network port.

4.   FRONT PANEL CONTROLS AND INDICATORS

4.1   Front Panel Controls

HDLC-SYNC/ASYNC ADAPTER

POWER   ACTIVITY   LINE ERROR   MODEM READY   PORT 1 SETUP   LOOPBACK   LOOPBACK   SETUP   RESET   *DCB*

4.1.1   Loopback Switch

This switch puts the unit in bi-directional loopback.

4.1.2   Setup Switch

This switch is used to set the unit for internal SYNC clock. When selected (Port 1 Setup LED on) synchronous clocks are provided on pins 1 and 2 of the NMP connector. In this case, the SYNC connector becomes the Network Management Port.

Depress and hold the Setup switch during reset to reload the factory default port settings.

4.1.3   Reset Switch

Performs a hardware reset. Configuration settings are retained through the reset.

4.2   Indicators

Indicator	Condition	Meaning
Power	ON	Unit has power.
Activity	Flash	This indicator flashes every 256 blocks of data.
Line Error	ON/Flash	Indicates the ASYNC port rate is incorrect.
Modem Ready	ON	RTS is high on the ASYNC port.
Port 1 Setup	ON	Internal SYNC clocks selected.
Loopback	ON	Unit is in loopback.

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## 5.	NETWORK MANAGEMENT PORT

5.1	Connections and Setup

The NMP is accessed through an RJ-45 connector on the rear of the unit. To connect to the NMP, use the cable provided or one of the cables shown in paragraph 6.3.2.

5.1.1	Using a Terminal

Set your terminal for 9600 bps, 8,N,1 and no flow control. Use the cable supplied to connect the NMP to the terminal.

5.1.2	Using a Modem

To use a dial-in modem for remote access you must fix the DTE interface speed of the modem at 9600 bps, 8,N,1. Refer to your modem manual for appropriate setup procedures. Connection to the modem must be made using the NMP to modem cable shown in paragraph 6.3.2.

5.2	Using the Network Management port

To activate the NMP, press the ENTER key. When you see **AT YOUR COMMAND >>**, the NMP is active and ready for your commands. Type H <Enter> to display the command set.

5.3	Commands

5.3.1	Help (H,?)

Displays all available commands.

| | | PARAGRAPH |
COMMAND		
Show Configuration	SC	5.3.2
Change Port Configuration	CP	5.3.3
Set ID	ID	5.3.4
Activity Counters/Zero	AC/Z	5.3.5
Type	TY	5.3.6
Loop Ports/Quit	LP/QL	5.3.7
Reset	RESET	5.3.8
Repeat Last Command	*	5.3.9
Disconnect NMP	BYE	5.3.10

5.3.2 Show (Port) Configuration

Displays the current SYNC and ASYNC port settings.

5.3.3 Change Port Configuration

The change port configuration (CP) command is used to set the ASYNC port rate and the SYNC port encoding.

If internal clocking is selected, the command is expanded to include the SYNC clock rate (9600 to 115,200)

5.3.4 Set ID

This command allows you the set an ID (name) to identify the unit.

5.3.5 Activity Counters

The activity counters (AC) display statistics for the number of blocks sent, blocks received and blocks in error for both the SYNC and ASYNC ports.

Use the Zero (Z) command to zero the counters.

5.3.6 Type

The Type (TY) command displays information about the unit including firmware version and unit ID.

5.3.7 Loop Ports / Quit

Use the Loopback (LP) command it initiate a bi-directional loopback. The QL command disables the loop.

5.3.8 Reset

The Reset command forces a hardware reset of the unit.

5.3.9 Repeat Last Command

To repeat the last command, simply press the * key. This is handy for repeating screens of constantly changing data such as the activity counters.

5.3.10 Disconnect NMP

The BYE command toggles the RTS output from the Network Management port. This is used to disconnect equipment such as dial-up modems or the DCB Access Switch.

6. INTERFACE SIGNALS AND CABLING

6.1   Connector Location and Pin Reference

Power   NMP   SYNC   ASYNC

1 2 3 4 5 6 7 8
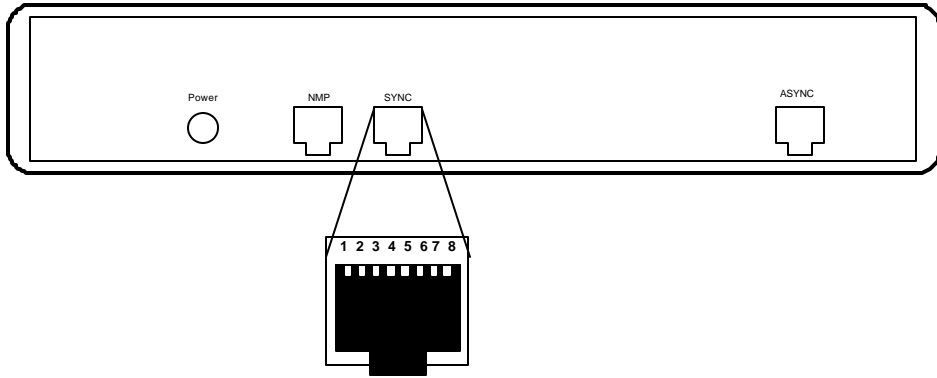
Port Functions for External Clock Operation

Power   SYNC   NMP   ASYNC
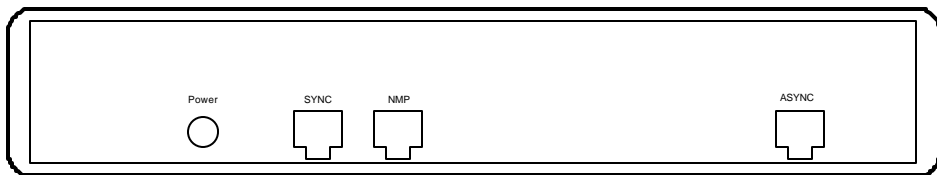
Port Functions for Internal Clock Operation
Port 1 Setup LED ON

Position Number 1 2 3 4 5 6 7 8

8-wire RJ45
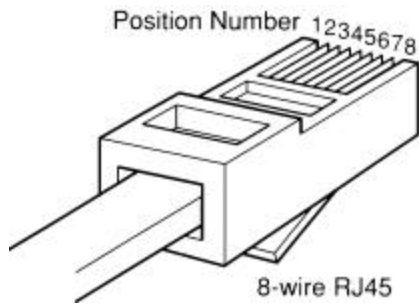
RJ-45 Plug Positions

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6.2   Port Interface

6.2.1   SYNC Port (RJ-45)

Pin	Signal	In/Out
1	Receive Clock	IN
2	Transmit Clock	IN
3	Data Carrier Detect	IN
4	Signal Ground	
5	Transmit Data	OUT
6	Receive Data	IN
7	Request to Send	OUT
8	Clear to Send	IN

6.2.2   ASYNC Port (RJ-45)

Pin	Signal	In/Out
1	Data Set Ready	OUT
2	Data Carrier Detect	OUT
3	Busy (Flow Control)	IN
4	Signal Ground	
5	Receive Data	OUT
6	Transmit Data	IN
7	Clear to Send	OUT
8	Request to Send	IN

6.2.3   Network Management Port (RJ-45)

Pin	Signal	In/Out
1	Internal Clock	OUT
2	Internal Clock	OUT
3	Data Carrier Detect	IN
4	Signal Ground	
5	Transmit Data	OUT
6	Receive Data	IN
7	Request to Send	OUT
8	Clear to Send	IN

6.3   Cables

6.3.1   SYNC Port Cable

A two foot modem to composite cable is included with each Sync to Async adapter. Use this cable to connect to a synchronous HDLC data source. The configuration is as follows:

```
    SYNC Port            HDLC Source (DCE)
      RJ-45                   DB-25P

        1 ――――――――――――― 17
        2 ――――――――――――― 15
        3 ――――――――――――― 8
        4 ――――――――――――― 7
        5 ――――――――――――― 2
        6 ――――――――――――― 3
        7 ――――――――――┐    4
                     └―― 20
        8 ――――――――――――― 5
```
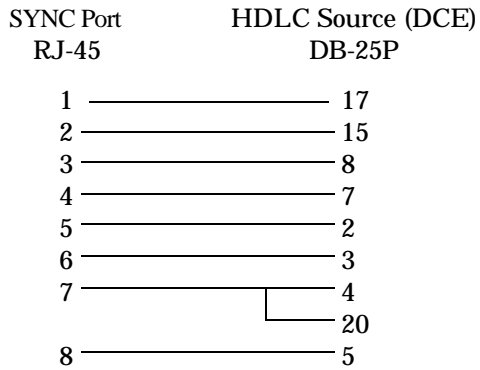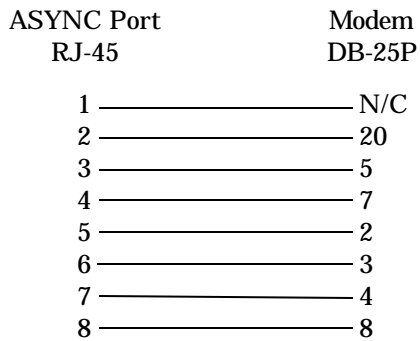
6.3.2   ASYNC Port Cables

To an ASYNC Modem

```
    ASYNC Port               Modem
      RJ-45                  DB-25P

        1 ――――――――――――― N/C
        2 ――――――――――――― 20
        3 ――――――――――――― 5
        4 ――――――――――――― 7
        5 ――――――――――――― 2
        6 ――――――――――――― 3
        7 ――――――――――――― 4
        8 ――――――――――――― 8
```

To a DCB DGR-115 Wireless Modem

```
    ASYNC Port               DGR-115
      RJ-45                    DE-9P

        1 ――――――――――――― N/C
        2 ――――――――――――― N/C
        3 ――――――――――――― 8
        4 ――――――――――――― 5
        5 ――――――――――――― 3
        6 ――――――――――――― 2
        7 ――――――――――――― 4
        8 ――――――――――――― 6
```
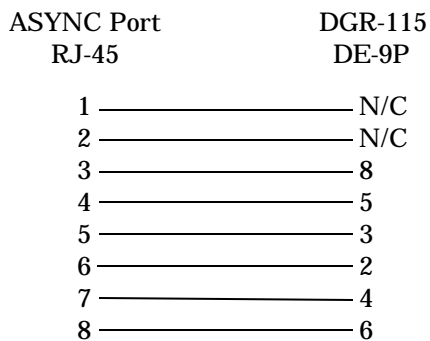
6.3.3 Network Management Port Cables

To a TERMINAL

```
     NMP                     Terminal
     RJ-45                    DB-25P

      3 ————————————————— 20
      4 ————————————————— 7
      5 ————————————————— 3
      6 ————————————————— 2
      7 ——————————┐——————— 5
                  ├——————— 6
                  └——————— 8
      8 ————————————————— 4
```
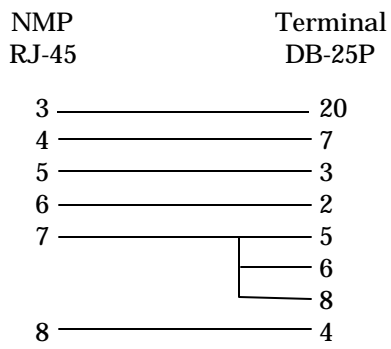
To a PC using terminal emulation

```
     NMP                          Computer
     RJ-45                     DE-9S     DB-25S

      3 ————————————————— 4      or    20
      4 ————————————————— 5      or    7
      5 ————————————————— 2      or    3
      6 ————————————————— 3      or    2
      7 ——————————┐——————— 8      or    5
                  ├——————— 6      or    6
                  └——————— 1      or    8
      8 ————————————————— 7      or    4
```
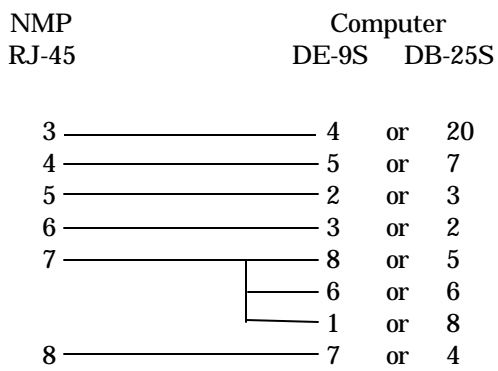
To a dial-up MODEM for remote access

```
     NMP                      Modem
     RJ-45                    DB-25P

      3 ————————————————— 8
      4 ————————————————— 7
      5 ————————————————— 2
      6 ————————————————— 3
      7 ——————————┐——————— 4
                  └——————— 20
      8 ————————————————— 5
```

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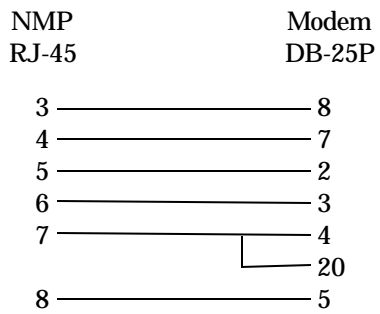
7.   TROUBLESHOOTING

7.1   General Approach

When troubleshooting problems, a rational plan can save you many hours of frustration. The following is a brief outline of standard troubleshooting procedures.

1. Gather the facts to determine the exact nature of the problem.

2. Draw a picture of the system showing the equipment at both the host and remote ends and the phone lines or in-house wiring. Use this as a reference to note your observations, test steps and test results. A picture keeps you focused and often saves duplicate effort.

3. Record the front panel indications before changing anything. This is an important part of fact gathering

4. If you change anything, change only one thing at a time.

5. Use the built-in test functions, especially the loopback tests. Record your results.

8. WARRANTY

All DCB products are warranted to be free of defects in materials and workmanship for one year. Data Comm for Business, Inc. will repair or replace any equipment proven to be defective within the warranty period. All warranty work is F.O.B. Dewey, IL. This warranty is exclusive of abuse, misuse, accidental damage, acts of God or consequential damages, etc. DCB liability shall not exceed the original purchase price.

All equipment returned for repair must be accompanied by a Returned Material Authorization (RMA) number. To receive an RMA number, call (217) 897-6600 between the hours of 8 AM and 5 PM central time. Equipment must be shipped prepaid to DCB and will be returned at DCB's expense.

Ship returned items to:

Data Comm for Business
2949 CR 1000E
Dewey, IL 61840

Data Comm for Business, Inc.
PO Box 6329
Champaign, IL 61826-6329

Tel   (217) 897-6600
Fax   (217) 897-1331
Email   support@dcbnet.com