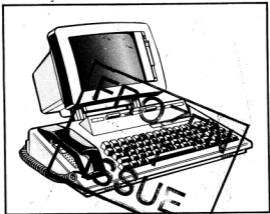


# ASYNCHRONOUS COMMUNICATIONS UNIT



Installation and Operation

ICL endeavours to ensure that the information in this document is correct, but does not accept liability for any error or omission.

Any procedure described in this document for operating ICL equipment should be read and understood by the operator before the equipment is used. To ensure that ICL equipment functions without risk to safety and health, such procedures should be strictly observed by the operator.

The development of ICL products and services is continuous and published information may not be up-to-date. Any particular issue of a product may contain only part of the facilities described in this document or may contain facilities not described here. It is important to check the current position with ICL.

Specifications and statements as to performance in this document are ICL estimates intended for general guidance. They may require adjustment in particular circumstances and are not formal offers or undertakings.

Statements in this document are not part of a contract or program product licence save insofar as they are incorporated into a contract or licence by express reference. Issue of this document does not entitle the recipient to access to or use of the products described, and such access or use may be subject to separate contracts or licences.

#### Technical Publication 85102E01

© International Computers Limited 1988

#### Registered Office

ICL House  
Purley  
London SW15 2NU

A member of the ITC PLC group

First Edition June 1988

Readers' views on this publication are welcome and should be sent to:

The Manager  
PCBC Publications Project  
International Computers Limited  
Aclis House  
Station Road  
Bracknell  
Berkshire

#### Distributed by

ICL Userprint  
P.O. Box 90  
Leitchworth  
Northants NN6 1JL

#### Printed by

ICL Printing Services  
Engineering Training Centre  
International Computers Limited  
Sticks Way West  
Leitchworth  
Northants NN6 4AS

Microline is a trade mark of British Research Limited.  
The CPD (Continuous Professional Development) software  
F.Lite is BT World's best kept secret for the Networking  
Profession. From Microsoft Inc. 18000 Providence Highway,  
Redmond, WA98073.  
ADP is a trade mark of Microsoft Inc.

# Introduction

The Asynchronous Communications Unit (ACU) lets you make a communications connection between your terminal and another computer which is nearby. Because the other computer is nearby, the communications connection is called a local connection.

This local connection, plus the appropriate Terminal Emulation Program (TEP), enables you to use your terminal as though it were a terminal of the other computer. For example, if you connect your terminal via the ACU to an ICL PC, and you have the Termlink TEP, you are able to use the ICL PC's facilities at your terminal.

Compared to a connection that uses a modem and telephone line, a local connection is usually quicker to activate and data is usually transferred more quickly.

Although the ACU is designed to provide a local connection facility, it is also possible to use it with a simple modem to provide a remote connection facility. Note however, that a remote connection does not include the Computer Access facilities of Auto-dial and Auto-answer.

## Proper use of the equipment

DO read these instructions carefully before attempting to use the equipment

DON'T continue to operate the equipment if you doubt that it is working correctly

DO ensure that all connections are properly made in accordance with the instructions

DON'T remove any fixed covers unless you are qualified to do so, and even then power off the equipment before you start

DO power off the equipment before plugging in or unplugging parts or devices

DO check periodically that leads have not become worn or damaged

The circuits in the Asynchronous Communications Unit which connect to peripheral equipment are known as *Protected Extra Low Voltage (PELV)* circuits. These circuits are designed to protect you from hazardous voltages by operating at less than 42.4V and having special insulation systems that maintain safety even in the presence of a fault in the basic insulation of the power supply.

# Contents

- |   |           |
|---|-----------|
| <b>1 Connecting the ACU</b>   | <b>5</b>  |
| Describes how to connect the Asynchronous Communications Unit to your terminal and another computer                 |           |
| <b>2 Setting up the local connection</b>  | <b>7</b>  |
| Tells you how to set up the parameters required by the communications connection                                    |           |
| <b>3 Activating the local connection</b>  | <b>15</b> |
| Tells you how to activate and deactivate the communications connection  |           |
| <b>4 Error messages</b>   | <b>19</b> |
| Describes the few error messages that may appear on your screen when you use the Asynchronous Communications Unit   |           |
| <b>5 Cable connections</b>  | <b>21</b> |
| Describes the cable pins used by the ACU, and gives the cable interconnections required for connection to an ICL PC |           |

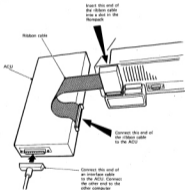
# 1

## Connecting the ACU

When you have unpacked your ACU you should have an ACU, a ribbon cable, and this manual.

The diagram below shows how the ACU should be connected to your terminal and the other computer.

**Note:** Make sure that the electrical supply to all equipment is switched off before you begin to connect the ACU.



**Note:** If you want to use an ACU with a Store Expansion Unit, refer to the Store Expansion Unit installation card for instructions on how to connect the equipment.

Information about the interface cable is given in section 5.

# 2

## Setting up the local connection

Both your terminal and the computer it is connected to must use a common set of communication parameters in order to communicate with each other.

A set of communication parameters is hereafter called a *pattern*.

Before you use a local connection for the first time, you must create a pattern for your terminal that matches that of the other computer. You can find out the communication parameters of the other computer from its user manual or from your support service or dealer.

Once the pattern is created, it is held in your terminal's permanent store and is available each time you use the local connection.

### Create a pattern

To create a pattern, do the following:

- 1 From the Top Level Menu, select **Applications**
- 2 From the Applications Menu, select **Configure Local Comms.**
- 3 A display headed LOCAL COMMS.CONFIGURATOR appears on your screen. Press *f3*
- 4 The display changes to show the words: **Enter name of new pattern**  
  
Type the name that you want the pattern to be known by
- 5 Press *f1*

The display shown on the following page appears on your screen.

## LOCAL COMMS. CONFIGURATOR

Details of pattern: **Base 0**

Output signals	RTS ready	Input Buffer Size	1000 bytes
	RTS ready	Output Buffer Size	50 bytes
Word Length	7 bit data	LP Buffer Filling	200 bytes
	1 stop bit	LP Buffer Emptying	500 bytes
Parity	odd parity to/rx	Input 0-OFF	0'10'
		Input 0-ON	0'11'
Input speed	9600	Output 0-OFF	0'10'
Output speed	9600	Output 0-ON	0'11'
Port Properties	Output buffered	Flow Control	1/P - not 0-ON/OFF
	To enabled		0/P - not 0-ON/OFF
	Rs enabled		1/P - use 0/8
			0/P - use 0/8
			RTS not in use
			CTS not in use

0 - Not Use  
Base change time

0'10 - pattern list  
0'11 - details pattern  
0'00 -

The name of the pattern is shown near the top of the above display. Below the name of the pattern there is a list of the fifteen parameters that make up a pattern. Opposite each parameter description is a parameter value (these are default values supplied with the ACU).

Note: At this stage, the pattern is created.

### Save a pattern

If the pattern contains the parameter values that you want, do either of the following:

- Press /1. This saves the pattern and returns you to the display that lists the names of existing patterns (see page 10)

or

- Press /0. This saves the pattern and returns you to the Top Level Menu

## Existing patterns

Once you create a pattern it is held in your terminal's permanent store. A maximum of seven patterns can exist at one time. Below is an example of the display that lists the names of existing patterns:

```
LOCAL COMMS. CONFIGURATOR                               Vn.1

List of Patterns : Name 1
                  Name 2
                  Name 3
                  Name 4
                  Name 5
                  Name 6
                  Name 7

Current pattern for ACU : Name n

Computer Access manual connection - Local, through ACU

/1 Next Item                /5 Set pattern for ACU
/2 Show pattern details     /7 Change CA Manual Connection
/3 Create new pattern       /8 Exit
/4 Delete pattern
```

To obtain the above display on your screen, do either of the following:

- from the Applications Menu, select **Configure Local Comms.**  
or
- when the display that shows parameter details (page 8) is on your screen, press *f1*



## Set current patterns

On the display that lists the names of existing patterns (example above) there is the line:

**Current Pattern for ACU : Name n**

The pattern that is named in this line is the current pattern. The current pattern is the one that the ACU uses for the local connection. Therefore, the current pattern should be the one that matches the parameters of the computer that your terminal is connected to.

You can nominate any existing pattern as being current. To do so, you simply use the  $\uparrow$  and  $\downarrow$  keys to position the screen highlight over that pattern name, and then press /5.

## Key functions

While the display that lists the names of existing patterns is on your screen, the following key functions may be available (as indicated by the footnotes at the bottom of the display).

Key	Function
$\uparrow$ and $\downarrow$	Moves the screen highlight up or down.
<i>f1</i>	<b>Show pattern details</b> Lets you display on your screen the details of the pattern whose name is highlighted. You can then alter those details if you wish, or delete the whole pattern (described on page 9)
<i>f3</i>	<b>Create new Pattern</b> Lets you create a new pattern (described on page 7)
<i>f4</i>	<b>Delete Pattern</b> Allows you to delete a pattern from the store (described on page 9)
<i>f5</i>	<b>Set current pattern for ACU</b> Lets you specify which pattern is to be current (described above)
<i>f7</i>	<b>Change CA manual connect</b> Allows you to specify whether or not the use of the Computer Access manual connect (see Manual Connect page 15) is automatically treated as a local connection

<i>Key</i>	<i>Function</i>
<i>/O</i>	<b>Exit from application</b> Returns you to the Top Level Menu

## **Parameter values**

Below are listed the parameters that make up a pattern and the possible values for each parameter.

<i>Parameter</i>	<i>Possible values</i>
Output Signals	RTS ready / RTS not ready DTR ready / DTR not ready
Word Length	8 bits / 7 bits 1 stop bit / 2 stop bits
Parity	Parity disabled (no parity bit transmitted, received parity not checked) / Parity enabled (if disabled, the following Parity values do not apply) Odd parity transmitted, received parity checked as odd Even parity transmitted, received parity checked as even Mark parity transmitted, received parity disabled Space parity transmitted, received parity disabled
Input Speed	Bits/second: 75 / 150 / 300 / 600 / 1200 / 2400 / 4800 / 9600 / 19200
Output Speed	Bits/second: 75 / 150 / 300 / 600 / 1200 / 2400 / 4800 / 9600 / 19200
Port Properties	Output buffered / Output unbuffered Transmitter(Tx) enabled / Transmitter(Tx) disabled Receiver(Rx) enabled / Receiver(Rx) disabled

<b>Parameter</b>	<b>Possible values</b>
Input Buffer Size	This is a number. See note 1 on page 14
Output Buffer Size	This is a number. See note 1 on page 14
I/P Buffer Filling	This is a number. See note 2 on page 14
I/P Buffer Emptying	This is a number. See note 2 on page 14
Input X-OFF Character	2 hexadecimal digits, representing a byte
Input X-ON Character	2 hexadecimal digits, representing a byte
Output X-OFF Character	2 hexadecimal digits, representing a byte
Output X-ON Character	2 hexadecimal digits, representing a byte
Flow Control	<p>Use X-ON; X-OFF to control input buffer contents / Do not use X-ON; X-OFF to control input buffer contents</p> <p>Honour X-ON; X-OFF from host to control output stream / ignore X-ON; X-OFF from host to control output stream</p> <p>Use DTR to control input buffer contents / Do not use DTR to control input buffer contents</p> <p>Do not transmit if DSR is not ready / ignore DSR</p> <p>Use RTS to control input buffer contents / do not use RTS to control input buffer contents</p> <p>Do not transmit if CTS is not ready / ignore CTS</p>

### **Note 1**

The ACU has a buffer of a fixed size in the hardware unit. The parameters 'Input Buffer Size' and 'Output Buffer Size' specify how much of this ACU buffer should be allocated to the input buffer and the output buffer respectively. There is no need to use up all the available space as buffers, but clearly it cannot be oversubscribed. The value of the input buffer size plus the output buffer size should not exceed 3900 for an ACU. If they do, the pattern will be flagged as invalid. (Note that the ACU uses 2 bytes in the input buffer to hold each data byte received).

### **Note 2**

The I/P Buffer Filling and the I/P Buffer Emptying specify the trigger points for input flow control. Which of the three methods of flow control is, or are, to be used is specified by the Flow Control parameter.

When the number of free bytes in the input buffer falls to the value of the I/P Buffer Filling, then the hardware takes action (directed by the Flow Control parameter) to cause the machine at the other end of the link to stop transmitting data. This will often take a finite time, so it is recommended that the value of the I/P Buffer Filling is sufficiently large to allow the data flow to be stopped before the input buffer becomes full and data loss occurs.

When the number of free bytes in the input buffer rises to the value of the I/P Buffer Emptying, then the hardware takes action to cause the system at the other end of the link to restart the transmission of data.

Note: In order to promote efficient use of the communications link, it is recommended that there is a significant difference between the values of the I/P Buffer Emptying and the I/P Buffer Filling parameters.

# 3

## Activating the local connection

Before you can use a local connection, it must be set up correctly as described in section 2. Once the local connection is set up, you can activate it whenever you want to use it.

To activate a local connection, you can use either *Manual Connect* or *Autoconnect*. These two methods are described below.

### Manual connect

This method makes use of the manual dial procedure of the Computer Access facility. You first need to ensure that a manual connect request will be treated as a local connection through the ACU. Do the following:

- 1 From the Top Level Menu, select **Applications**
- 2 From the Applications Menu, select **Configure Local Comms.**

A display (example on page 10) appears on your screen. On the display is the line:

**Computer Access manual connection -**

Check that the entry at the end of this line is:

**Local, through ACU**

If this is not the entry, press *f7* to make it so.

Note: Anytime you no longer want manual connect to be treated as a local connection, you should repeat the steps above and press *f7* to set the entry to: **Remote, through modem**

When manual connect is set to **Local, through ACU**, you can activate the local connection as follows:

- 1 From the Top Level Menu, select **Computer Access**
- 2 From the Computer Access Menu, select **Manual Connect**

- 3 Follow the instructions displayed on your screen

The local connection is activated immediately.

Note: How to deactivate the local connection is described on page 17.

## Autoconnect

For any local connection that you intend to activate by Autoconnect there must exist an associated profile and also a Computer Services Directory entry. The following points apply to the Computer Services Directory entry:

- The Number field must contain exactly 0000 (four zeros). This defines the entry as a local connection directory entry
- The NAME and Profile fields must contain entries
- An entry in the Line field is optional
- A shortcode entry is optional

When the above conditions for Autoconnect are met, you can use either of the following two methods to activate the local connection:

- Connect using Shortcode** (assuming one has been assigned)
  - 1 From the Top Level Menu, select **Computer Access**
  - 2 When the Computer Access Menu is displayed on your screen, type the shortcode of the local connection directory entry

The local connection is automatically activated.
- Connect via Directory**
  - 1 From the Top Level Menu, select **Computer Access**
  - 2 From the Computer Access Menu, select **Computer Services Directory**
  - 3 Highlight the local connection directory entry that you want. If required, use the **↑** and **↓** keys to move the screen highlight up or down

## Deactivate the local connection

### 4 Press *f1*

The local connection is automatically activated.

Note: How to deactivate the local connection is described below.

When you no longer want to use the local connection you can use either of the following two methods to deactivate it:

#### Press *f6*

The local connection is deactivated. Press the START key to return to the Top Level Menu.

or

#### Press *f8*. Then, from the Computer Access menu, select **D**isconnect

The local connection is deactivated and the Computer Access menu reappears on your screen.

# 4

## Error messages

Some error messages may be displayed on your screen during the process of establishing a local connection. These messages are additional to those which may be produced by Computer Access itself.

The error messages are displayed in the noticeboard at the foot of the screen and are accompanied by an audible signal.

The messages that may appear, and their meanings, are as follows:

### **CA FAIL : NO ACU**

This means that a local connection has been requested but there is no ACU connected to the system.

### **CA FAIL : ACU IN USE**

This means that a local connection has been requested, but the ACU is already being used by another application. You may repeat the request when the ACU is free.

### **CA FAIL : BAD PATTERN**

The ACU software has rejected the Pattern as invalid. You should adjust the values in the Pattern to make sure they match the requirements of the local host (as described in section 2).

### **TOO MANY UNITS**

This appears if you have connected more than four devices to your terminal. Remove enough of the devices to make the message go away.

### **SERIAL PORT FAILURE**

This means a hardware problem. You should consult an engineer.



# 5

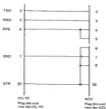
## Cable connections

The cable connection to the ACU is a standard RS232, 25 way female 'D' connector.

The pins used by the ACU are:

- 1
- 2 Transmit Data (output)
- 3 Receive Data (input)
- 4 Request to Send (output)
- 5 Clear to Send (input)
- 6 Data Set Ready (input)
- 7 Signal Ground
- 8 Data Carrier Detected (input)
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20 Data Terminal Ready (output)
- 21
- 22 Ring Indicator (input)
- 23
- 24
- 25

Below is shown the interconnections in an interface cable that connects an ACU to an ICL PC. A standard ICL PC interface cable is suitable.



## ASYNCHRONOUS COMMUNICATIONS UNIT SUPPLEMENT I

This is a supplement to the Asynchronous Communications Unit manual. It provides you with additional information that you may need if you have problems which you are unable to solve.

### **FAULT FINDING**

If you have problems which you are unable to solve, try working through Test A, below. This test checks whether the ACU is faulty. If you are still unable to identify the problem, consult your maintenance authority or supplier for advice.

Part of Test A involves disconnecting your terminal from the power supply. So before you start Test A, save a copy of the store contents to reload later.

### Test A

<u>Steps</u>	<u>Yes</u>	<u>No</u>
1 Is an error message displayed?	Go to step 2	Go to <u>Test B</u> (page 3 of this supplement)
2 Is the message <b>BAD PATTERN</b> displayed?	Correct the pattern (see Section 2 of this manual) and try again	Go to step 3
3 Is the message <b>MODEM IN USE</b> displayed?	Try again when the modem is free	Go to step 4
4 Is the message <b>ACU IN USE</b> displayed?	Try again when the ACU is free	Go to step 5
5 Switch power off. Refer to Section 1 of this manual and check that the ACU is correctly connected. Switch power on. Does the fault persist?	Go to step 6	The ACU is working correctly and ready for use
6 Is the message <b>SERIAL PORT FAILURE</b> displayed?	Return the ACU for repair	Go to step 7
7 Is one of the messages <b>INVALID CAPSULE</b> or <b>END PROGRAM</b> displayed?	Go to step 8 (on the next page)	Go to step 10 (on the next page)

Test A (cont)

<u>Steps</u>	<u>Yes</u>	<u>No</u>
8 Switch power off. Remove all capsules from the Rompack. Switch power on. Does the fault persist?	Go to step 9	One of your capsules is faulty. Try each capsule in turn to determine which one and return it to the supplier
9 Switch power off. Disconnect the ACU from your terminal. Switch power on. Does the fault persist?	The fault is not caused by the ACU. See the <u>Solving problems</u> section of the Handbook for guidance	Return the ACU for repair
10 Is the message <u>NO MEMORY UNITS</u> displayed?	Go to step 11	See the <u>Solving problems</u> section of the Handbook for details of other error messages
11 Switch power off. Disconnect any other external devices which are attached to your terminal. Switch power on. Does the fault persist?	Return the ACU for repair	You have too many external devices connected. Connect a maximum of four devices, and try again

Test 8Steps

- 1 Does your terminal repeatedly go through initialization? (Do you repeatedly see displays with vertical bars, followed by the initialization display?)
- 2 Switch power off. Refer to Section 1 of this manual and check that the ACU is correctly connected. Switch power on. Does the fault persist?
- 3 Switch power off. Disconnect the ACU from your terminal. Switch power on. Does the fault persist?
- 4 Does the option CONFIGURE LOCAL COMMS appear on the Applications Menu?
- 5 Switch power off. Refer to Section 1 of this manual and check that the ACU is correctly connected. Switch power on. Does CONFIGURE LOCAL COMMS appear on the Applications Menu?
- 6 Are you using the correct pattern (that is, one which is compatible with the communications settings used by the host computer)?

Yes

Go to step 2

Go to step 3

The fault is not caused by the ACU. See the Solving problems section of the Handbook for guidance

Go to step 6

Go to step 6

Go to step 7 (on the next page)

No

Go to step 4

Go to step 6

Return the ACU for repair

Go to step 5

Return the ACU for repair

Set up the pattern as required (see Section 2 of this manual), then try again

Step 8 (cont)

Steps	Yes	No
7 Is the computer you're connecting to ready to communicate with the ACU? (Check with the operator of the computer)	Go to step 8	Make sure the computer is ready, then try again
8 Is there a direct local connection to a nearby computer?	Go to step 9	Go to step 10
9 Are you using the correct cable to connect the ACU and the computer?	Go to step 10	Use the correct cable, then try again
10 Is there any response from the computer you're connecting to?	If the response is garbled, go back to step 6 and repeat the checks from there. If the response is the expected one, the ACU is working correctly	Refer to the documentation for the computer you're connecting to, and check what you have to do in order to start communicating with the computer. With some computers, you have to press the key or send a BREAK signal.) If there is still no response, the ACU may be faulty. Consult your maintenance authority or supplier for advice

## ASYNCHRONOUS COMMUNICATIONS UNIT SUPPLEMENT 2

This is a supplement to the Asynchronous Communications Unit manual. It provides you with information that you may need in order to:

- Fit the plastic protective cover supplied with your Asynchronous Communications Unit
- Use the Asynchronous Communications Unit to connect your terminal to an ICL PC Quattro.

### **FITTING THE PROTECTIVE COVER**

**IMPORTANT:** when you have installed all the equipment, as described in the Asynchronous Communications Unit manual, fit the protective cover on top of the Asynchronous Communications Unit before switching on the power supply again.

### **CONNECTING TO AN ICL PC QUATTRO**

Before using a local connection for the first time, make sure that the set of communications parameters you create for your terminal matches that of the other computer. This set of parameters is called a pattern.

If the computer to which you are connecting is an ICL PC Quattro, the procedure for setting up the pattern is as follows:

- 1 Create a pattern. The instructions on page 7 of the Asynchronous Communications Unit manual tell you how to do this.
- 2 Refer to page 8 of the manual for instructions on how to alter a pattern, and then assign the following values to these two parameters:

Input buffer size	500 bytes
I/P buffer filling	100 bytes