

Flexicard F2000

Installer and User Manual

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Flexicard F2000

Installer and User

Manual

6621-0018

Supplier information

The Flexicard 2000 range is designed and manufactured by:

TDSi Ltd.,
Sentinel House,
Nuffield Road,
Poole,
Dorset,
BH17 0RE,
England.

Telephone: Within UK: 01202 666222
 International: +44 1202 666222

Fax: Within UK: 01202 679730
 International: +44 1202 679730

E-mail: info@tdsi.co.uk

Other supplier information:

DEALER STAMP

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Table of Contents

TABLE OF CONTENTS.....	5
HOW THIS MANUAL IS ORGANISED	7
INTRODUCTION.....	7
MANUAL STRUCTURE	8
GENERAL PRINCIPLES.....	9
PRINCIPLES OF CASHLESS PAYMENT	9
PRINCIPLES OF CASH PAYMENT (<i>MODEL 41 ONLY</i>)	10
CARDS	11
BRIEF OVERVIEW OF PRODUCT RANGE	13
DETAILS OF PRODUCT RANGE	15
TECHNICAL SPECIFICATION.....	19
HOW TO USE MASTER AND PROGRAM CARDS.....	21
GUIDANCE NOTES	24
CARD DISTRIBUTION	25
ASSISTING THE USER.....	25
DETAILED INSTALLATION	27
INSTALLATION	27
SET-UP AND USE GUIDANCE.....	46
INTRODUCTION.....	46
REFERENCE SECTION - ALPHABETICAL BY MASTER MENU ITEM	49
ACCOUNT BALANCE (<i>MODEL 25 ONLY</i>)	49
ACCOUNT CARDS (<i>MODEL 25 ONLY</i>).....	49
BLOCK KEY CODES (<i>MODEL 25 ONLY</i>).....	49
CARD DENSITY	49
CARD GENERATION (<i>MODEL 25 ONLY</i>)	50
CARD ISSUE NUMBERS (<i>MODEL 25 ONLY</i>).....	50
CASH ACCESS (<i>MODELS 40, 41 ONLY</i>)	50
CLEAR PERIOD METERS, CLEAR YEARLY METERS	50
COMMUNICATIONS (<i>NOT MODEL 10</i>)	50
CREATE ACCOUNTS (<i>MODEL 25 ONLY</i>)	51
CREATE DEPT. (<i>MODEL 25 ONLY</i>).....	52
ENCODING CASH, ENCODING UNITS	53
LEARN ACCOUNTS (<i>MODEL 25 ONLY</i>)	54
LEARN DEPTS (<i>MODEL 25 ONLY</i>).....	54
NUMBER OF PRICE LINES	54
OFF-PEAK BANNER.....	54
OUT OF SERVICE BANNER.....	54
PEAK TIME START, PEAK TIME END, PEAK PRICING, PEAK BANNER, OFF-PEAK BANNER	54
PRINT REPORTS (<i>NOT MODEL 10</i>)	55
READ ALL.....	55
RESET ACCOUNTS (<i>MODEL 25 ONLY</i>).....	56
RESET BALANCES (<i>MODEL 25 ONLY</i>)	56
RESTORE DEFAULTS	56
SCROLLING BANNER (<i>NOT MODEL 10</i>)	56
SET PRICES, CASH ACCESS.....	57
SET-UP UNIT.....	60
SITE CODE	65
TEST SEQUENCE	66
TRANSACTION MODE (<i>MODEL 25 ONLY</i>)	67
UN-BLOCK KEY CODES (<i>MODEL 25 ONLY</i>).....	68

UPDATE DEPT. (<i>MODEL 25 ONLY</i>)	68
VIEW METERS	68
QUICK REFERENCE.....	71
INTRODUCTION.....	71
CONNECTION LIST.....	71
MASTER MENU FOR MODEL 10 & 20.....	72
MASTER MENU FOR MODEL 25.....	75
MASTER MENU FOR MODEL 30.....	79
MASTER MENU FOR MODEL 40.....	81
MASTER MENU FOR MODEL 41.....	83
TROUBLE-SHOOTING.....	85
ERROR MESSAGES.....	87
INDEX.....	89

How this manual is organised

Introduction

This manual provides information on installation, set-up and use of all models from the F2000 range.

We realise that not everyone starts with the same level of knowledge when they open a manual. Therefore we have organised this manual in such a way that suits several different levels of knowledge (**see over the page for the layout of the manual**):

- If you have no previous experience of systems of this type, the first section, “**General Principles**” gives an introduction to the subject.
- If you are an installer about to install an F2000, and already have knowledge of the general principles but don’t know about F2000, then “**Detailed Installation**” is the section for you.
- If you are an installer about to set-up an F2000, or a user, and already have knowledge of the general principles, but don’t know about F2000, then “**Set-up and Use Guidance**” gives you guidance on which features you may need to make use of. The “**Reference**” section then contains the details on how to use each feature.
- If you already know how to use F2000, then all you will probably need is the “**Quick-Reference**” section.

Note that for the sake of clarity, the term “photo-copier” is used throughout this manual to refer to any suitable business machine.

Manual structure

General principles

Principles of cashless payment
Flexicard cards and F2000 model-range information
How to use master and program cards
Guidance notes for administration of the system

Detailed installation,

Installation: technical details and connections

Set-up and use guidance

Guidance for Installers
Guidance for supervisors
Guidance for users

Reference section

Alphabetic (by master menu feature): each feature fully explained

Quick reference

Connection list
Programming list
Troubleshooting procedure
Error messages

General Principles

Principles of cashless payment

Debit vs. Credit

When a card holder inserts a valid card into the F2000, the F2000 will enable the photo-copier. The definition of a valid card varies according to circumstances, but at the very least the card must carry a Site Code which matches a code already stored in the F2000.

If a debit transaction is appropriate (this depends on information carried on the card), when a copy is made the F2000 will deduct an amount from the card. All models in the range handle this type of transaction (except the Model 40 Value Loader whose sole purpose is to allow users to add value onto their cards).

Model 25 can also handle “credit” transactions, where the F2000 stores the amount charged in accounts; generally, one account for each person.

How does the F2000 control the copier?

The photo-copier is enabled and disabled by means of two relays (electrically operated switches) inside the F2000. If only one relay is used, then this provides “all-or-nothing” control. In some operating modes, by using two relays, two different parts of the copier can be controlled - for example, the A3 and A4 paper trays can be separately controlled. In this way, if a card-holder has enough credit for an A4 but not enough for an A3, then the F2000 can enable just the A4 paper tray.

How can different prices be charged for different copy-types?

When a copy is made, the photocopier informs the F2000 about the nature of the copy (e.g., paper size, colour or black-and-white, spot colour or not). This information is provided via four “Price Lines” connected to the F2000. Different copiers provide the information in different ways, and the F2000 is programmable to allow for this.

How can different groups of people be charged different prices?

The prices to be charged for different copy types are held a price list. F2000 has capacity for up to four such lists, each of which contains cash and unit prices.

When a card is inserted, the F2000 recognises which price list to use based on the following:

- If the card carries the normal high density coding, each card carries the number of the applicable price list.
- With low density coding, (normally only used for compatibility with earlier Flexicard equipment) the price list is based on the Site Code carried on the card. So if a card carries a site code which matches the first site code stored in F2000, then Price List 1 applies.

How does value get on the cards?

Value can be put on the card in several ways:

- by the user, entering cash in a Model 40 or 41
- by a supervisor, using any model from the range
- by the supplier, supplying ready-valued cards

The value can be in cash or units. Typically, you would choose cash for people who have to part with money for their copies; e.g. students. You would choose units for people who don't have to pay cash but whose amount of copying you still want to control, e.g. staff. Each model in the range is capable of accepting both cash and unit cards.

Principles of cash payment (*Model 41 only*)

The Model 41, like the Model 40, has a coin acceptor mechanism which means that it can take cash as well as cards. Thus users can add value to their cards without having to go through the supervisor. The difference between the Model 40 and the Model 41 is that the Model 41 can be connected to a copier, and so coin-only transactions can be permitted. This saves having to issue cards to occasional users. The Model 41 can be set up to take cards or coins or both methods of payment.

The coin mechanism is pre-set to take different denominations, though the supervisor may wish to restrict this to a few high value coins to minimise the frequency of coin-box emptying; this can be set up during the installation by the installation engineer. Separate price lists for the coin values mean that bonus credits can be given above a certain threshold and coins of double the value don't have to encode double the units onto the card.

Cards

Basic information

The card of choice for new installations is the CR-80 size Flexicard, which is the same size as a standard credit card. The Flexicard carries a special magnetic stripe, which is different from a standard credit card in three ways:

- the stripe is narrower and in a different position
- the information encoded on the stripe is completely different from that stored on standard credit cards
- the stripe is of high-coercivity material, which makes it almost impossible to erase information accidentally (e.g. by proximity to TV sets, loudspeakers etc.)

The above factors make it near impossible for anyone to forge a card.

As well as the preferred CR-80 size (credit card size), a CR-50 size Flexicard is available for compatibility with earlier Flexicard installations.

Different versions of the F2000 range are available which can utilise an ISO stripe (like that on a bank or credit card) instead of a Flexicard stripe. The requirement is that either track 2 or track 3 must be available for the exclusive use of F2000 - contact TDSi for further guidance.

Artwork Options

Standard Flexicards are readily available in the following forms:

- Standard (three-colour TDSi laminated design)
- Blank, for over-printing by dye-diffusion process (e.g. video-imaging)
- Disposable (CR-50 only; thinner than standard, two-colour overprinted - the printing wears off eventually)

Custom-artwork cards can be produced, subject to suitability of the design. TDSi requires that the *FLEXiCARD®* logo appears on every card. Embossing is not permitted for technical reasons, but write-on signature panels are possible.

Other options

Other technologies can be included on the card for compatibility with other systems such as Access Control, Time-and-Attendance, Library systems etc. The available technologies are:

- TDSi *MiCROCARD®*
- Reflective bar-codes
- ISO three-track mag-stripe (high-coercivity or low-coercivity)

In all cases, contact TDSi for further details.

Card Data Storage

Low density cards

Early versions of F2000 Model 10 and the earlier F2 range use low-density coding. Such cards contain only the following information:

- Site Code
- Value
- Whether the value is cash or units
- Control information

High density cards

All models of F2000 now utilise a new high-density coding. This has permitted, amongst other things, the following information to be stored on each card where necessary:

- Site Code
- Card type (Debit, Credit or Debit/Credit)Value
- The number of the applicable price list
- Value
- Account number (used for credit transactions in Model 25)
- Issue number (used for replacement credit cards)
- PIN-code (for security in Models 20, 25 and 40)
- Control information

This means that sites using only high density coding need only one site code, as the site code and price list are now independent of each other.

Note that the question of whether the card is a cash or a unit user card is held within the price list field. See the Read All feature in the reference section for mode details.

Upgrade from low- to high-density coding

If you wish, low density cards can be automatically upgraded to high density when first used. But it is important to realise that there is no reverse of this process, so high density cards cannot be used in early versions of Model 10 (unless they are upgraded to the latest version) or its predecessor the F2 range.

The upgrade process “maps” the site code from the low density card to a price list in the following manner:

- If the Site Code on the low density card is the first (or only) Site Code stored in the F2000, then the upgraded card is given Price List 1.
- If the Site Code on the low density card is the second Site Code stored in the F2000, then the upgraded card is given Price List 2.
- If the Site Code on the low density card is the third Site Code stored in the F2000, then the upgraded card is given Price List 3.
- If the Site Code on the low density card is the fourth Site Code stored in the F2000, then the upgraded card is given Price List 4.

Brief overview of Product Range

For full details on each model, please refer to “Details of product range”.

Features common to all models

- Small neat design, for minimum intrusion when mounted on a copier (note that Models 40 and 41 are floor-stand or wall-mount only)
- Option of wall-mount bracket or floor-stand
- Illuminated LCD for display of information during transactions, programming and reporting. Plain-language error messages.
- Illuminated card-return button, gives additional information to user
- Supervisor-programming of features, and encoding of cards, controlled via a single master card or a set of programming cards.
- Audible beep aids intuitive use and understanding of processes
- Tamper-proof security fixings

Model 10

Standard model, with the following key features:

- Eight price lists (four cash, four units), so different groups of people can be charged different prices for the same copy
- Each price list has eight prices for different copy types
- Transaction totals viewable on-screen

Model 20

As Model 10, with the following additions:

- clock, to allow peak-time pricing
- key-pad, to allow Card+PIN security
- serial printer-port, to allow printed reports

Model 25

As Model 20, with the following additions:

- credit accounting, to allow periodic billing and/or cost-centre analysis
- two-way communications port, for full administration from a PC or for printed reports

Model 30

As Model 20, with the following additions:

- Extended firmware command set, allowing online control of F2000 functions from a PC
- Copy, Print and Copy+Print unit configuration modes which provide online, offline or online with fallback transaction types
- Programmable unit status banner messages
- Windows .DLL interface

Model 40

This model is designed for wall-mounting or floor-standing. The strong case is fitted with coin mechanism and coin box and has two locks for access to the coin-box. An optional lockable coin-box is available, where the person who empties the machine is not responsible for handling the cash. Model 40 provides no copier-control features, and is only used for re-valuing cards.

Model 41

This is physically the same as Model 40, with all the features of Model 20 and Model 40 combined. This provides the following features:

- Re-valuing of cards
- Card-only transactions
- Coin-only transactions
- Card-and-coin transactions

Details of product range

Model 10

Modern streamlined case with small footprint

Having a footprint of only 220 x 112 mm, the F2000 can be mounted directly on the top of many photocopiers.

Option of wall-mount bracket or floor-stand

Where mounting directly on the top of a photocopier is not practical, a wall mount bracket permits mounting to a wall either behind or to one side of the copier. The bracket can also be used for side-mounting onto a copier. A floor-stand is available where no other mounting method is practical.

Illuminated Display

The illuminated LCD display is clearly visible even under poor lighting conditions. It is used for display of information during transactions, programming and reporting. Error messages are in plain-language as well as coded numbers.

Audible beep

An audible beep is used for communicating with the user during transactions. This greatly aids intuitive use and understanding of processes.

Debit-card operation

When a card holder inserts a valid card (i.e. correct site code with enough value for the currently selected copy) into the F2000, the F2000 will enable the photo-copier. When a copy is made, the F2000 will deduct an appropriate amount from the card. This is called a “debit” transaction as value is debited from the card.

Meter reports read via the display

By inserting a special program card into the F2000, you can easily see how many copies have been taken.

Four Price Lists with cash and units

Using different price lists allows you to charge different people different prices.

Eight-price capability for colour copiers

Each price list has capacity for eight different prices. This is enough for the most sophisticated colour copiers available today and for the foreseeable future.

Built in encoder option for User-Cards

Using a special set of program cards allows access to the encoding feature. This allows a supervisor to use the F2000 for adding value to a user's card.

Charge by “time and print”

In some situations it is appropriate to charge for the amount of time that a machine is used - for example, a computer. Time billing is a standard feature in F2000, and works alongside conventional billing, so it is possible to charge for each laser print made by the computer, for example, as well as charging for the use of the computer itself.

Compatible with existing Flexicard systems

Flexicard systems have been in use for many years now. The F2000 Model 10 is a direct replacement for the F2 series of products, and so is entirely compatible with existing (low density) cards already in circulation.

Set-up using programming cards

All features of the Model 10 can only be accessed using special programming cards.

Model 20

All the Model 10 features, plus:

Keypad with 0-9, E (Enter), Q (Clear) and up/down/left/right arrow keys

The addition of a keypad provides two important benefits. The main one is that users can secure their cards by defining a PIN when they first use the card. Because anyone finding a lost card will not be able to use it unless they know the PIN, this makes it much more likely that found cards will be handed in. A secondary benefit is that setting up of the F2000 is made even easier using by using the keypad, although a program card is still needed to access the set-up menus.

The keypad also allows access to the option to set up an eye-catching banner message on the LCD.

RS232 serial port for output of reports to printer or computer

The serial printer port allows you to print out information about unit set-up, price lists and meters. These printed reports include date, time and location information.

The Model 20 has two sets of audit meters for year-to-date and period-to-date.

Peak time price lists linked to time of day

As the Model 20 is fitted with a clock, you can set different prices for different times of day. You can also have a different banner message when peak rates are in force.

Model 25

All the features of the Model 20, plus:

Credit transactions

Credit transactions are particularly appropriate for those organisations who wish to charge individual or departmental cost centres based on the value of the transactions during an accounting period.

The Model 25 has battery-backed memory for up to 6,500 accounts, where each account has a unique number. A card used for a credit account would have the account number stored on it, or alternatively the account number can be entered by key-pad, without the need for a card.

Setting limits

There are two types of limit which can apply to credit transactions. A departmental limit can be set, where the grand total for all the accounts in a particular department in one Model 25 cannot exceed the limit. If people from one department can use several Model 25 units, however, this means setting a limit in each unit. This may not provide the control you need, as the departmental limit effectively becomes the total of all the separate limits set in the separate units.

In these circumstances, a Debit/Credit mode of operation can be implemented, where each copy taken results in value being debited from a card as well as being credited to an account. When the card value falls to a level insufficient for further copies, no more copies can be taken. The limit is therefore the starting value on the card, while the credit balance is the total of the different credit balances in all the units used by that card.

Multi-Account cards

This feature is useful where access to more than one department is required by a single user. A multi-account card is a user card that allows the user to access accounts in a number of different departments as opposed to using several different cards with one card for each account. As with normal account cards, these user cards may be credit or credit-debit.

Block-List for lost cards

Because any card used for a credit transaction has a unique number on it, lost or stolen cards can be specifically inhibited in the Model 25 by adding the card's number to the block list in memory.

Model 30

All the features of the Model 20, plus:

The product is intended for use in situations where it is necessary to charge for services where the transactions are being controlled by a PC (e.g. network print systems). The Model 30 also retains its photocopier interface and allow payment for copying services in the normal way.

Select Unit Mode

Copy

This is the copier controller mode. Using the “Copying” menu item you can define whether online copying should be done “Online only” Will automatically go out of service when offline. “Online/Offline” if the server goes offline for any reason the Model 30 will still allow copying using the residual balance on the users card and the transaction record is stored for retrieval by the server when it comes back on line.

Print

Print mode must be used for server controlled transactions where the F2000 Model 30 is required ONLY for the use of card re-valuing.

Copy+Print

This function is a combination of the two above functions. When the user inserts their card into the Model 30, there is an on screen display which requests the user to specify whether they are wishing to use the unit for Photocopying or Printing this is selected by pressing a 1 or a 2.

Copying

Online/Offline

Online ONLY

Offline ONLY

This functions allows them to specify whether local copying transactions should be “Online only”, “Offline only” or can be done online or offline. Using “Copy+Print” and “Offline only” it is possible to set-up the Model 30 so that photocopying transactions are done offline and card re-valuing for server controlled transactions are done online.

Online Banner

This function allows the user to specify a custom banner of a maximum 71 letters that will be displayed when the model 30 is online.

Offline Banner

This function allows the user to specify a custom banner of a maximum 71 letters that will be displayed when the model 30 is offline.

OOS Banner

This function allows the user to specify a custom banner of a maximum 71 letters that will be displayed when the model 30 is out of service banner.

PIN Retries

Allow the user to specify the number of times a user can attempt to enter the correct card and PIN. There is a range of between 0-5 attempts. If the user fails to enter the correct PIN the card will be rejected and flagged.

Model 40 (Value Loader)

Self service revaluation of Debit or Debit/Credit cards

The Model 40 is housed in a strong metal case suitable for wall-mounting or floor-standing. The coin mechanism is pre-programmed to accept different coin denominations. If you want, during installation you can limit the mechanism to, say, just two high-value coins (e.g. £1 and 50p) to minimise the frequency of coin-box emptying.

Optional lockable coin boxes are available where the person who empties the value loader is not responsible for handling the cash.

The amount of credit given for each coin is programmable so that, for example, a £1 coin does not have to give twice as many credits as a 50p coin. Further, bonus credits can be given above certain thresholds.

A Model 40 may also be used by a supervisor for encoding cards.

Model 41

This is physically the same as Model 40, with all the features of Model 20 and Model 40 combined. This provides the following features:

- Re-valuing of cards
- Card-only transactions
- Coin-only transactions
- Card-and-coin transactions

A transaction can start with a coin, or it can start with a card. A different price can be set for cash-only copies; if a card is inserted the price appropriate to the card applies, regardless of whether the transaction started with cash or not.

Technical specification

Photo-copier enable/disable

Two change-over relays

Price line inputs

Four optically isolated inputs, suitable for either “dry-contact” or “powered” connection.

Number of price lists

Four price lists each with cash and units option, making eight price lists in all (I.e. eight different prices can be charged for any given copy-type. In addition, Model 41 has a separate price list for coin-based transactions.

Number of prices per price list

18 (8 in cash, plus 8 in units controlled by Price Lines, plus two for billing by time; one in cash and one in units)

Number of meters per price list

22 eight-digit meters (one meter for each price which registers the number of copies taken, plus credit and debit meters for cash and units, plus two for billing by time; one in cash and one in units)

Display

Back-lit LCD, two rows of 16 characters

Set-up

Menu system accessed by a single master card or a set of program cards, navigation by card ‘jabs’ and card-return button-pushes via the keypad (not Model 10).

Reports

On-screen viewing of meters or (not Model 10) print to serial port.

Card-return button

Illuminated card-return button with tactile and (as a programmable option) audio feedback. Steady illumination indicates availability to accept a card; flashing indicates card is being returned.

Charging by time and pulse

Charging can be by either time or pulse. Combination of the two methods allows for special situations; e.g., charging for computer-time and charging extra per print taken.

Built-in encoding

The built-in encoding feature (access by program card) can be used to add or replace value on a user’s card. All encoding is accounted for by meters.

Maintenance features

A built-in test feature allows read-write tests to be performed. Diagnostic meters record read/write performance statistics. A special tool provided with every unit allows most stuck card situations to be resolved without opening the unit. Tamper-proof security screws prevent unauthorised access to the inner parts.

Communications Interface (*Not Model 10*)

A serial printer port means that reports on the F2000's set-up, on the information in the meters and on the prices that have been set can be obtained. They can be sent either to a computer or a printer. PC software available for the Model 25 permits full set up and retrieval of account information from a PC.

Keypad (*Not Model 10*)

The keypad allows for Card and PIN security to be used and also for the provision of a clock.

Clock (*Not Model 10*)

The addition of a clock in Models 20, 25 and 40 allows for peak time pricing; two different price bands to be set up depending on the time of day. Printed reports also contain the time and date of printing.

How to use Master and Program cards

Introduction

This section describes how the supervisor can control the F2000 by the use of special cards - master cards and program cards. You can skip this section if you are familiar with the use of these cards.

Note that all functions can be accessed via a single master card, so you may not have been supplied with any program cards.

Master Cards

The Master Card gives access to a master menu gives you access to all features of the F2000. The Master Card carries a site code, which prevents master cards from one site being used in an F2000 on another site.

Important:

The easiest way of programming an F2000 is therefore to always use a master card. However, as this gives access to all features, this may present a security risk and so program cards can be given to those who need access only to certain features.

For the remainder of the manual the operations will be described using the Master Card. If you are using Program cards instead, simply enter the card with the same name as the menu option.

Only a master card bearing the “primary” site code will allow you into the master menu. Any other master card will be treated as a Site Code program card.

Program Cards

Each Program Card does a different job: some take you to a menu in which there are several things to be set; others allow you to set only a single option, others perform a function without you having to select anything. Some types of program card must carry a Site Code which matches that in the F2000 in order to access it, others need the security jumper to be placed in position (see Installation section).

Note that you cannot access all of the features of F2000 if all you have is a set of program cards. The full list of cards and their functions is as follows:

Program Card	Function	Site Code Needed?
Unit encode	Encoding card for units	Y
Cash encode	Encoding card for cash	Y
Read all	Read bad cards	
Site code	Set security code for site	
Set-up	Set up unit	Y
Price cash	Set cash prices	Y
Price unit	Set unit prices	Y
View meters	View meters on display	
Print Report	Causes Meter report to be printed	
Clear period	Clear period to date Meters	Y
Clear year	Clear year to date Meters	Y
Test	Read/write test	

Navigating in F2000

Navigating with keypad

In all Models except Model 10 the keypad is used to navigate the menu system. The up and down arrows step through the menu options, the enter key (E) selects the option displayed and the number keys can be used to enter values. The quit key (Q) will exit one step back, so that pressing Q repeatedly will return you to the Hello prompt.

Navigating without keypad

In Model 10 to navigate round menus and make selections three actions are used:

- Card jabs - pushing the card into the slot (until it meets resistance)
- Pressing the card-return button with the card in the reader
- Pressing the card-return button with the card out of the reader.

The way in which these work depends on whether the program card has taken you are in a Menu or a data-entry screen.

Menu

After entering the program card (e.g. Set Up):

- A card jab equals one press of the DOWN arrow
- A button push (card still in reader) equals one press of the UP arrow
- A button push (card removed) equals one press of the E key
- There is no equivalent to the Q key; instead, keep going up or down the menu system to you go one step beyond the last item

Data entry

After entering the program card (e.g. Encode Cash) , the display shows the current setting for this option

- A card jab equals one press of the E key, selects the currently-displayed setting and takes you out of the data entry display back to the original menu
- A button push (card still in reader) one press of the DOWN arrow
- A button push (card removed) equals one press of the UP arrow

Guidance notes

Introduction

The Flexicard Access system is very easy to operate and manage. This guide provides the necessary instructions for setting up and operating the equipment. The system can be used for management and revenue collection in Photocopiers and a range of similar resources such as Laser Printers, Microfiche Reader Printers, Fax and vending machines.

Flexicard values

Flexicards can be encoded with Unit or Money Values. Unit cards are normally deducted 1 unit per copy whereas Money Value cards are deducted by the Price, set in the F2000. A Money Value card always has its value displayed with a decimal point in the appropriate place. Access units have facilities to charge different money prices for two copy sizes but this will only work on some types of copier where a special two price installation has been made.

Units would more usually be used for Staff Copying control and Money Value for paid situations such as students copying facilities and photocopying shops. Both types of card can be used in the same system such as in Universities and Colleges where staff and students use some shared machines. Students can be locked out of certain copiers by simply setting the price to zero.

The maximum value on a card is 9999. In the case of Money Value cards this includes the decimal point. e.g. 99.99 The value of a card can be checked at any time by entering it into an F2000, reading the display and pressing the card return button on the front panel of the unit, to return the card.

How to encode user cards

An important feature of the Flexicard system is that User cards can be encoded or re-encoded as you require them. You may use any of the photocopier access units to do this or you may use an additional unit in the office. On copiers where encoding will not be performed it is more secure to have the facility switched off.

To encode user cards either a Master Card or a set of Encoding Cards is used.

Encoding cards are labelled with their value either in cash or units. The value you wish to put onto the cards can be increased but not decreased from this set value (using the Master Card any amount can be set).

Once the value to be encoded is set any number of user cards can be entered and each will be returned fully encoded for operation with your system and with the credit equal to the value on the display.

When you have finished encoding pressing the card return button allows you to exit.

Encoding Cards are issued in a set containing various values of Units and Cash. Other values can be made available if required. Consult your supplier.

Site codes

Your encoding cards give the user cards a unique Site Code which ensures that your cards cannot be used in any other system. Equally cards from other systems cannot be used in your system.

On the F2000 you can have up to four site codes operating one copier. This makes available a number of possibilities:

- To have four groups of card holders such as different departments having some shared copiers and some copiers for the exclusive use of one group or another.
- To withdraw a current system code and replace it with a new code whilst having a period during which both codes are accepted.
- To have different groups using low-density cards but paying different prices (sites with only high-density cards require only one site code)

General notes on transactions

A HELLO message is displayed after power up indicating that the unit is ready to accept cards.

If there is a power failure or micro reset with a user card in place the interrupted transaction will be resumed provided the card is of the correct type and value.

If a card is inserted when another card is already in the unit, the copier will be disabled, the beeper will sound and the first card withheld until the card-return button is pressed.

If any Price Line is active the card-return button and Auto Return timer are inhibited. This is to help support long cycle copiers.

Card distribution

Cards can be distributed in many ways according to need. This must be established when the system is installed.

1. Departmental Control

Request each department using the photocopiers to estimate the photocopying requirements of key individuals within their department. Cards can then be issued to those individuals with sufficient credit for a suitable period, e.g. 1 month. When a card is exhausted it can be re-encoded or replaced with a fresh card as required. Each time a card is issued this can be recorded in a book and the department can be charged accordingly. For large installations this process can be automated using a Flexicard Management Centre.

To minimise the consequences of losing a card it is suggested that the maximum card value is restricted to 1000 copies.

2. Paid Copying

Each user can purchase a card in one of a small number of fixed values, or denominations. A deposit may be charged to ensure that cards are returned for reuse. When a card is exhausted the old one can be returned and a new one purchased. The use of a simple cash register can help considerably if many cards are to be supplied. Where large numbers of cards are to be used on a regular basis it can be a considerable saving on labour to install a self-service Flexicard Value Loader which accepts coins and recharges the value on the card. In this way a card rarely needs to be exchanged after issue.

In many Universities & Colleges it has been found very efficient to issue cards with zero or a small value to all students on registration. This helps publicise the photocopying service to the students and encourages them to use it. The installation of value loaders in this situation is almost essential.

Assisting the user

1. User Instructions

Following are some suggested instructions for users.

Access Units and Value Loaders should only be used if the “Hello” or user-defined banner message is displayed.

All cards must be entered “face up” (i.e., stripe down). CR-80 (credit-card-sized) cards must be entered in the direction of the arrow (although custom-artwork cards do not necessarily carry an arrow - in which case note that the stripe must be right-of-centre). CR-50 (narrow) cards can be inserted either end first. As soon as a card is accepted it is held in the unit with the value displayed. All changes in value are shown on the display.

Access units will only enable the copier if a valid card with sufficient credit for a copy is inserted.

Pressing the card return button causes the light in the button to flash for a short period before the card is returned. The delay is for reasons of security.

2. User Problems

Occasionally a user may bring you a card that will not allow copies to be made. You should be sympathetic and ask about the circumstances as the problem may be obvious.

In all other cases an error message will be displayed both as an error number and with some text giving a brief description of the problem.

Error messages are displayed for three seconds before being replaced by the “Hello” message.

The recommended actions for the various error messages are as follows:

Error 1 - Runway blocked

There may be a card jammed in the unit. Refer to the Trouble-shooting section.

Error 2 - Encode Card Entered with Encoding Disabled

If this happens to a card-holder then they have found an Encoding Card! Find out the circumstances and recover the card.

Error 3 - Wrong Site Code

If you are using more than one Site Code this is most likely an indication of the wrong card being used in the wrong machine.

Error 4x - Invalid Data on the Card

- a) Tell user you must test the card but first get their estimate of how much value they think is on the card.
- b) Try the card entering it several times from either end to see if the automatic repair mechanism will work. If there is significant mechanical damage to the card it should be replaced.
- c) If the fault persists use the Read All feature in an F2000. A message will indicate that faulty cards can now be entered for reading. The unit will remain in Read All mode until you press the Card Return Button.

If a sensible value was displayed use this as a basis of making a refund, otherwise you will need to use the user’s idea of the card value.

If a refund is made it is useful to have a form to record the circumstances. The form of refund must be decided to suit your circumstances.

Error 5 - Flagged card

If a card is removed from the unit in an illegal manner, the card may give this error when next used.

It is important that the circumstances are investigated.

The card can be read using the Read All card as for Error 4 above, and the supervisor can then re-encode the card to make it valid again.

Error 9 - Excessive value

This should never happen. If it does, check that the Maximum Value set in each price list in your Model 40 or Model 41 matches the equivalent settings in the F2000 controlling the copier.

Detailed installation

Installation

Introduction

The installation process requires the following steps:

Deciding the pricing structure

Before you can start an installation, you must have decided the pricing structure. This requires knowledge of the photocopier outputs and of the F2000 capabilities (and the customer needs!).

Connecting to the photo-copier

A cable is already pre-wired to most of the F2000 internal connections; only in exceptional circumstances should you need access to the F2000's internal connections.

Selection of price line types

The F2000 is factory-set to connect to powered-billing type outputs. If you are connecting to dry-contact outputs then you will need to re-position some connectors under the top plate.

Programming of set-up parameters

After you have finished setting up the unit, you may want to re-position the security jumper (under the top plate) to prevent new site codes being set and to prevent encoding of cards - if that is what the supervisor wants.

Connecting up

Cable designations

The F2000 is pre-wired. Normally, you will only need access to the internal connector if:

- the copier uses “dry contacts” for billing signals
- or
- you need to use both relays AND both need to be either normally open or normally closed

If you do need access to the internal connector, refer to “Internal connections” later in this section. Eight cores are connected to the F2000 internal connections as follows:

Colour	Connection
Black	Relay 1 N. Open
White	Relay 1 Common
Blue	Relay 2 Common
Green	Relay 2 N. Closed
Brown	Price Line 1 (+)
Red	Price Line 1
Yellow	Price Line 2 (+)
Violet	Price Line 2
Screen	Chassis ground

Connecting to power

Before you power up a unit you may should check that the memory battery is connected; you do this by observing the position of a jumper on the F2000 top circuit board (see Accessing the Jumpers below). When F2000 models leave the factory, the jumper is already in place.

All F2000 models are normally provided with a regulated mains power adapter (although no power adaptors are shipped to certain export markets - use a regulated 12V 1A DC supply). Plug this in to a suitable mains outlet. The F2000 should display:

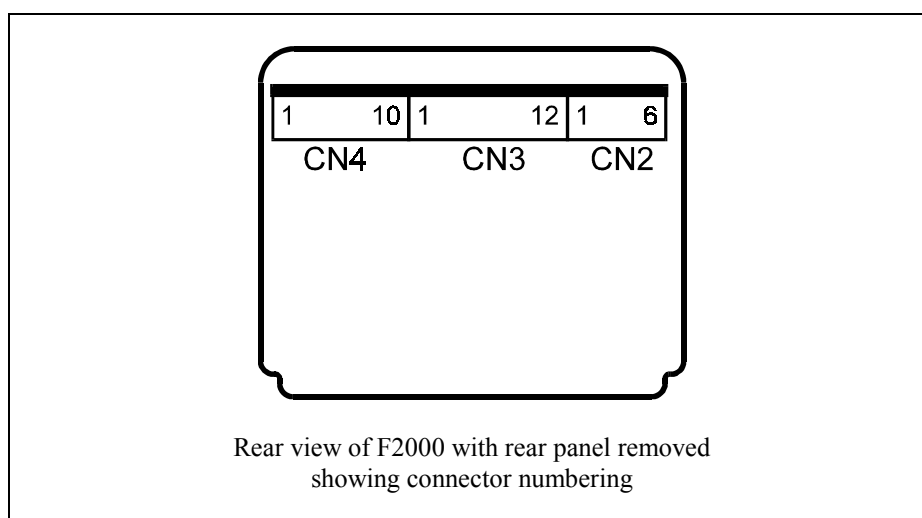
Flexicard 12:34 Hello
--

(Model 10 will not have the time included in the display). On first powering up a unit, the motor will run briefly, and any card in the unit will be checked. If it is a valid card which was present before the power interruption then the transaction will be resumed. The test for whether it is the same card is based on Site Code and value. If it is not the same card then the card will be ejected.

If you need to make any internal connections

Remove power from the F2000. Remove the rear panel (refer to the section below headed "Jumper settings" for details).

The connector numbering is as follows:



Connector designations

CN	Pin	Connection	Colour (8-core)	Colour (12-core)
2	1	Relay 2 N. Closed	Green	Green
	2	Relay 2 common	Blue	Blue
	3	Relay 2 N. Open	no connection	no connection
	4	Relay 1 N. Closed	no connection	no connection
	5	Relay 1 common	White	White
	6	Relay 1 N. Open	Black	Black
3	1	Price Line 4	no connection	Grey
	2	Price Line 4 (+)	no connection	Light Blue
	3	V+	no connection	no connection
	4	Price Line 3	no connection	Pink
	5	Price Line 3 (+)	no connection	Orange
	6	V+	no connection	no connection
	7	Price Line 2	Violet	Violet
	8	Price Line 2 (+)	Yellow	Yellow
	9	V+	no connection	no connection
	10	Price Line 1	Red	Red
	11	Price Line 1 (+)	Brown	Brown
	12	V+	no connection	no connection
4	1-9	not used		
	9	0V	no connection	no connection
	10	0V	no connection	no connection

Note: for “powered billing”, connect output from copier to “Price Line (+)”, and connect copier 0V to “Price Line”.

For “dry contact billing”, re-position the lead from “Price Line (+)” to “V+”. Then connect “V+” from F2000 to one side of contact, connect other side of contact to “Price Line (+)”. Finally, connect Price Line to 0V.

Jumper setting - Memory and Security

Remember to power down the unit before opening up an F2000.

The memory support battery can be disconnected if the F2000 is going to be stored unused for a long period of time; you can do this by re-positioning a jumper on the F2000 top circuit board.

Once you have set the machine up you may wish to prevent the Site Code being changed and cards being encoded. By removing the security jumper; i.e. placing the jumper over one pin instead of both, this can be achieved. Similarly replacing the jumper re-enables these two features.

You will need to remove the top plate for access to these jumpers. This is described below in the section headed “Accessing the jumpers”.

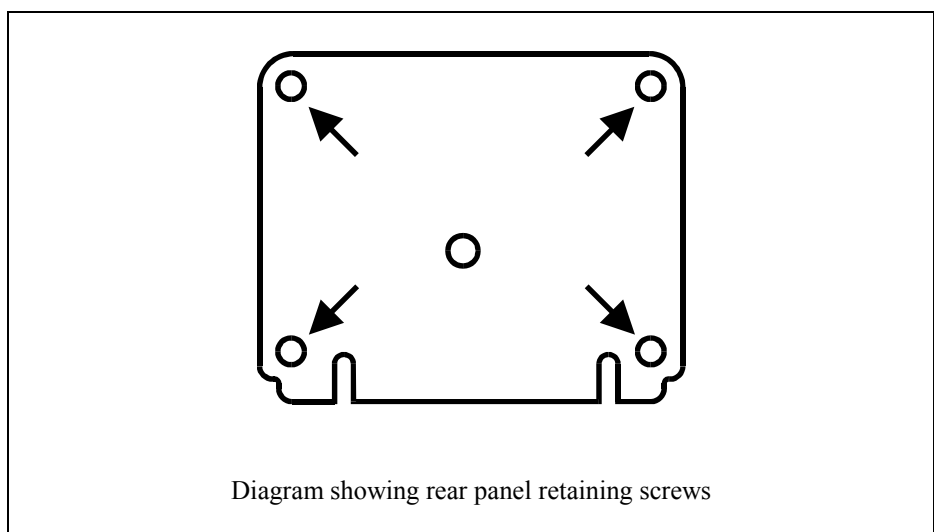
Factory settings

The jumpers have the following functions (factory settings are indicated by ***bold italics***):

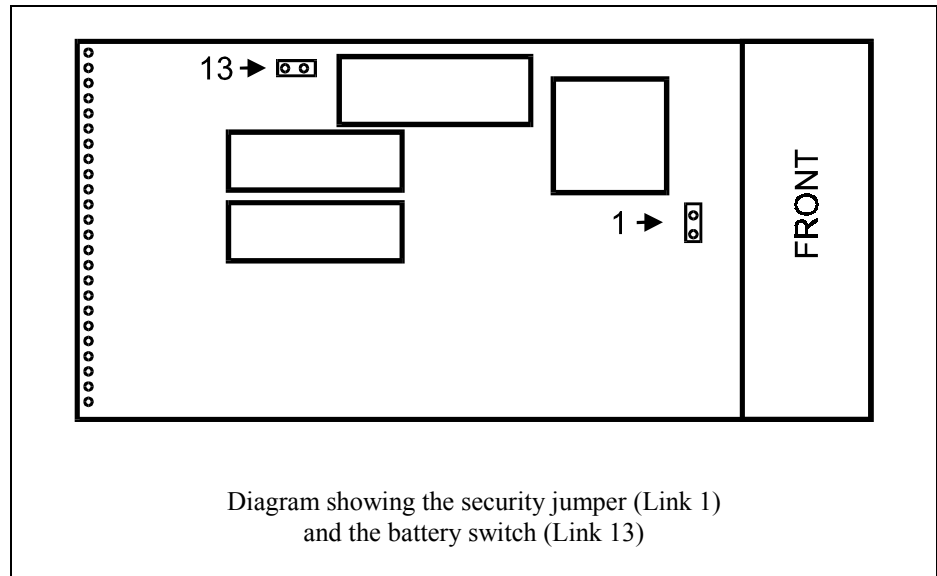
Jumper number	Function	Link closed	Link open
1	Site-code definition enable/disable: site codes cannot be added or changed when this link is open Also, access to the Encode enable/disable feature in the Set-up Unit menu is not allowed when this link is open	Enabled	Disabled
13	Memory battery	In-circuit	No memory support

Accessing the jumpers

First power down the unit then remove the rear panel, which is held in place by four “System Zero”® tamper-proof screws (size 1 screwdriver needed).



Then slide out the top panel. Models 20 and 25 have a keypad attached to the top panel; when you are sliding the panel off you will see a ribbon connection to the front edge of the top circuit board. This connection should be eased off rather than allowing the ribbon to take the strain). Observe the jumper positions:



Communications (*not Model 10*)

Overview

The F2000 can send information on demand (by using the keypad) direct to a printer or P.C., this is called 'one way communication'. It can also be connected to a P.C. running TDSi software and then the software interrogates the F2000, this is called 'two way communication'.

Whichever method you choose, there are two ways of connecting; permanently into the 9-pin D-type female connector inside the unit or temporary plug-in connection to the external 5 Pin DIN connector.

Connection Diagram

Function	F2000 (not Model 10)		Computer		Serial Printer
	5-pin 180° DIN (external)	9-pin D- type male (internal)	9-pin D-type female	25-pin D- type female	25-pin D-type male
RX	1	2	3	2	2
TX	2	3	2	3	3
0V	3	5	5	7	7
CTS	4	8	7	4	20
RTS	5	7	8	5	

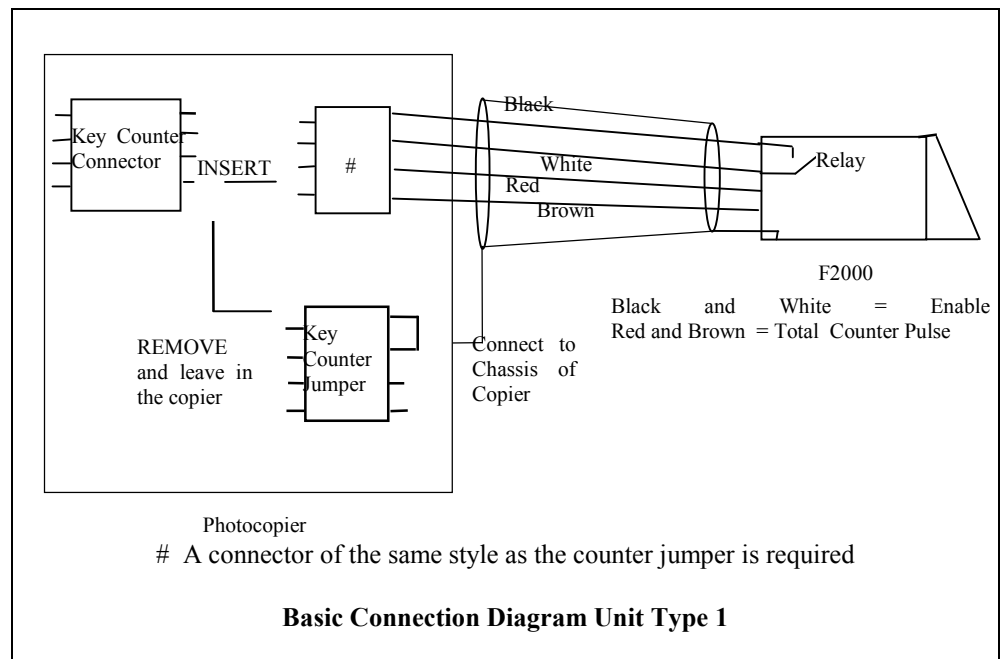
Photocopier Connection

The way in which you connect to a photocopier will pre-determine the Unit Type that you must set up in the F2000. A detailed explanation of Unit Types appears later in this manual in the Reference section under the heading Setup Unit.

Unit Type 1 Typical Installation

Single Price Connection

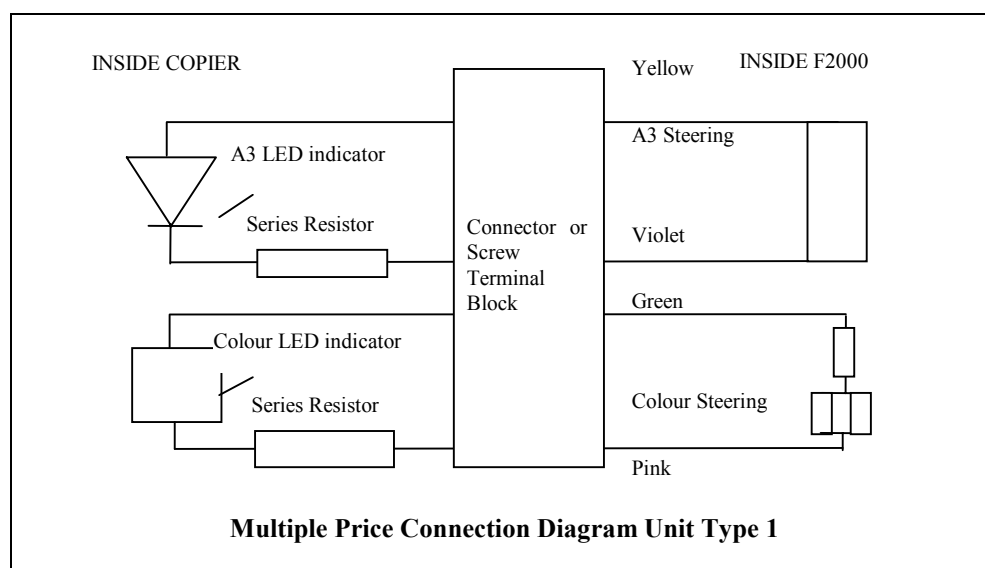
The diagram below gives the basic connections for the F2000 when a single set of prices is to be charged. Keep the Jumper in the copier for service purposes and connect the F2000 using the same style of connector.



Set A4 Prices in Price 1.

For multiple Prices Connection

For multiple prices the connections below need to be made as well.

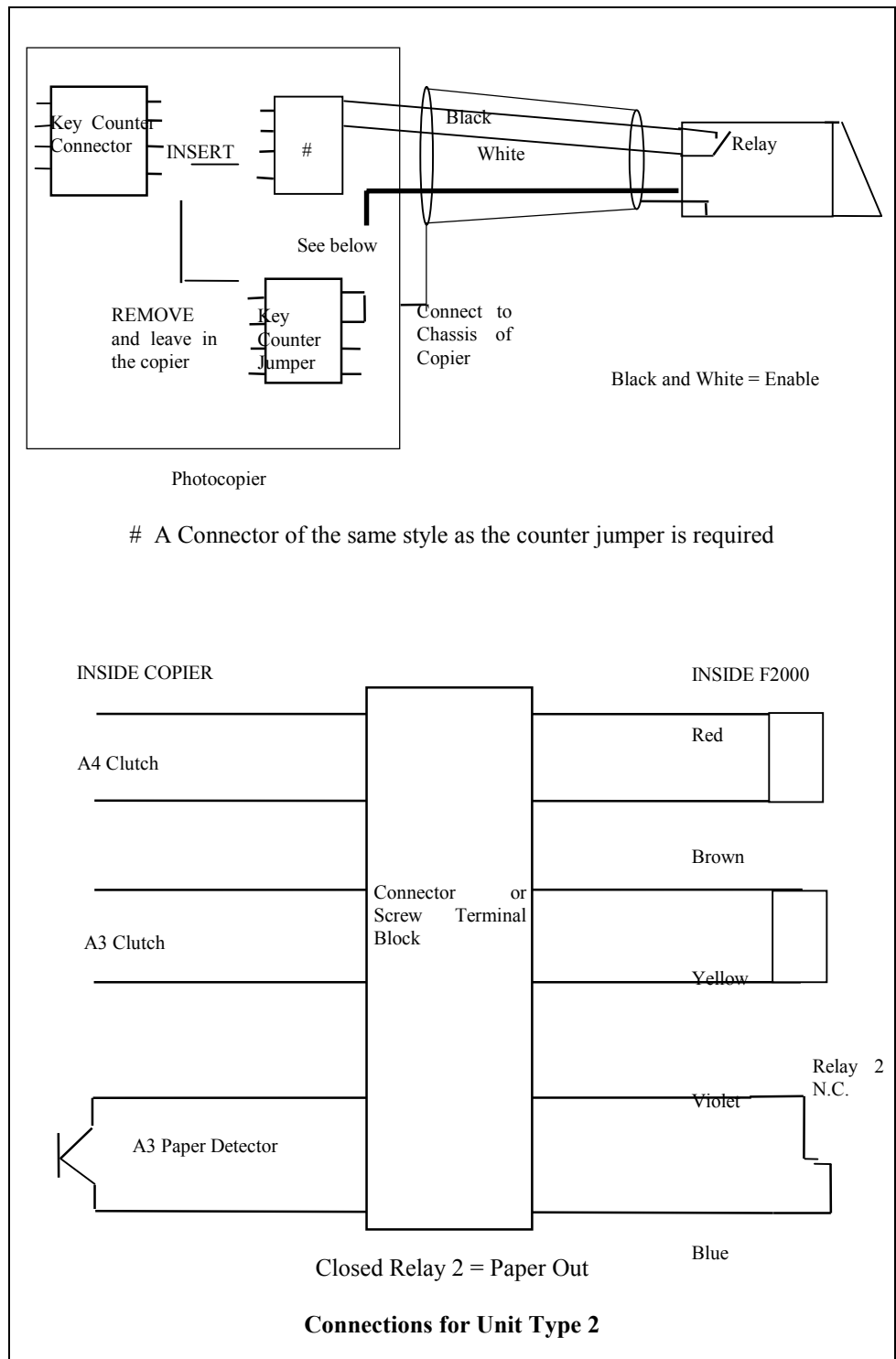


Set A3 prices in Price 2. and set A4 Colour prices in Price 3.

Unit Type 2 Typical Installation

Multiple Price Connection

The connections in both diagrams below need to be made.



Set A4 prices in Price 1 and A3 prices in Price 2.

F2000 Timings and Billing Pulses

A detailed explanation of Unit Types appears later in this manual in the Setting Up section.

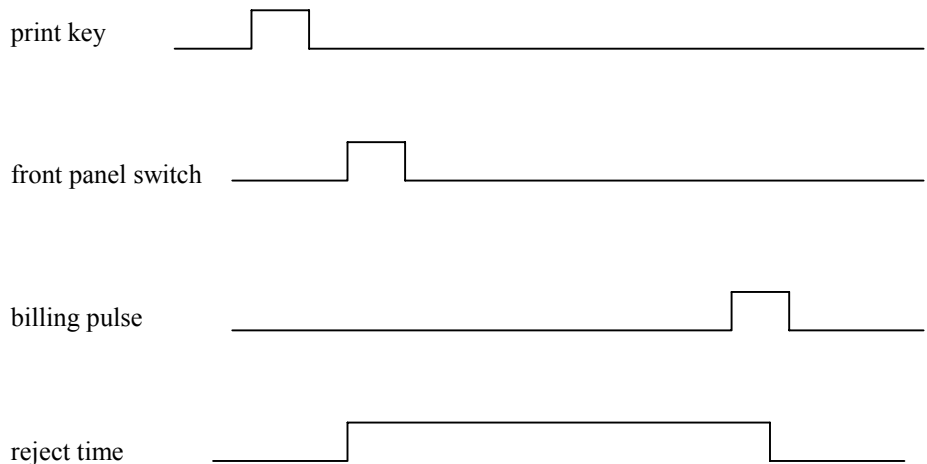
Description of Flexicard timings

Security Delay

Once the front panel switch (FPS) is pressed the time set will determine when the card is released. This is only needed if the copier sends the billing pulse at the end of its cycle or when the paper leaves the machine.

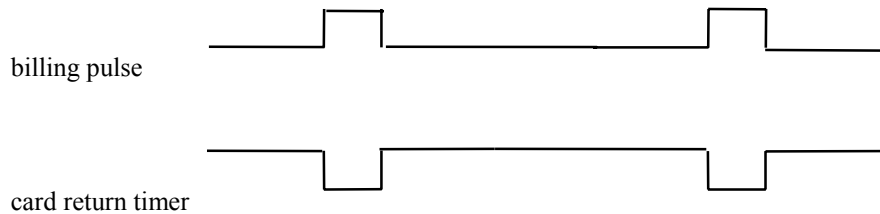
With a copier of this type, if it no security delay is set and the “PRINT” key on the copier is pressed followed quickly by the FPS on the F2000, the copier starts and the card is returned before a billing pulse is sent. This results in a free copy.

The correct time for the reject delay should be the amount of time from the “PRINT” button being pressed to the card being charged.



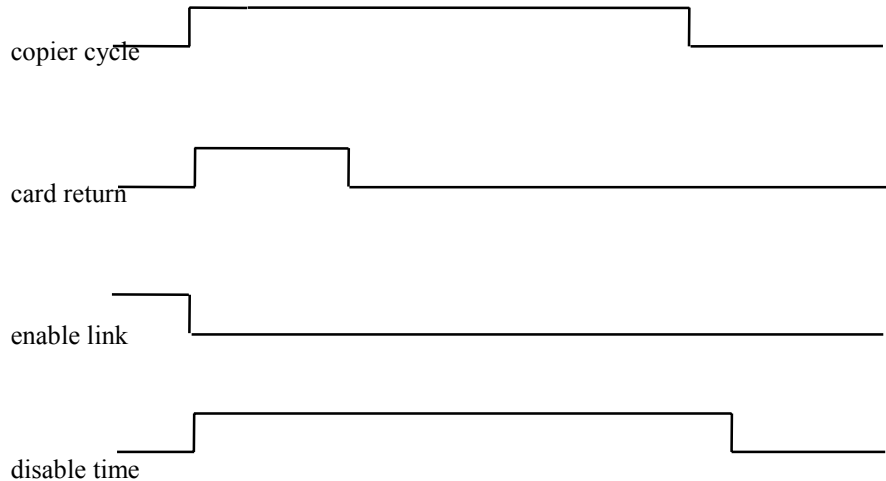
Auto Return Time

This is the amount of idle time a card will be held in a unit before being ejected.

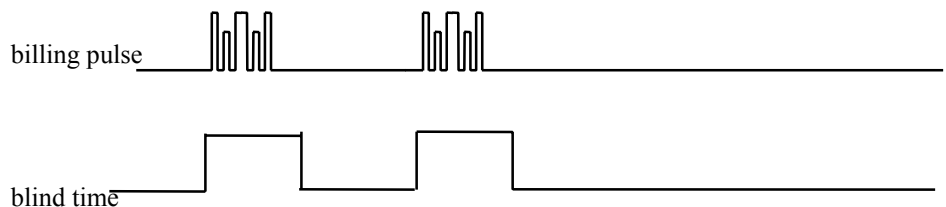


Copier Off Delay

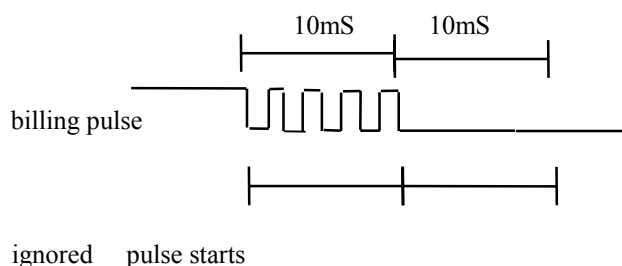
This is the amount of time the copier will remain enabled after the card is ejected. It's primary function is to stop paper jams if a card is released mid cycle. If the copier enable link is broken at the beginning of the cycle it may stop the copier immediately without finishing the run causing a paper jam.

*Blind time*

This timing is used when either a noisy pulse or a bouncing signal is emitted by the copier. If the Flexicard assumes 1V and below is off or "0" and 3V and above is on or "1" then a voltage of 2V could be either. The blind time will determine how long a unit will ignore any pulses after seeing the first change of state on the billing line before charging again.

*Sense time*

The sense time works in a series of 5mS pulses. When it sees a change of state it will start a counter counting every 5mS until the specified number of checks has been done i.e. if the sense time is set to 10 a total of 10 x 5mS checks will be done before a billing pulse is acknowledged. If the state changes within the time then another 10 successful checks will have to be made. The smallest number of checks necessary should be selected.



F2000 billing pulses

The following diagrams show the billing pulses for the different Unit Types that can be selected in the F2000.

The diagrams represent the state of the price lines. Low (i.e. at the same level on the page as the text) is “Off”; High is “On”.

Assume the following prices for price lines 1 - 8.

Price 1 = 1 unit Price 5 = 5 units

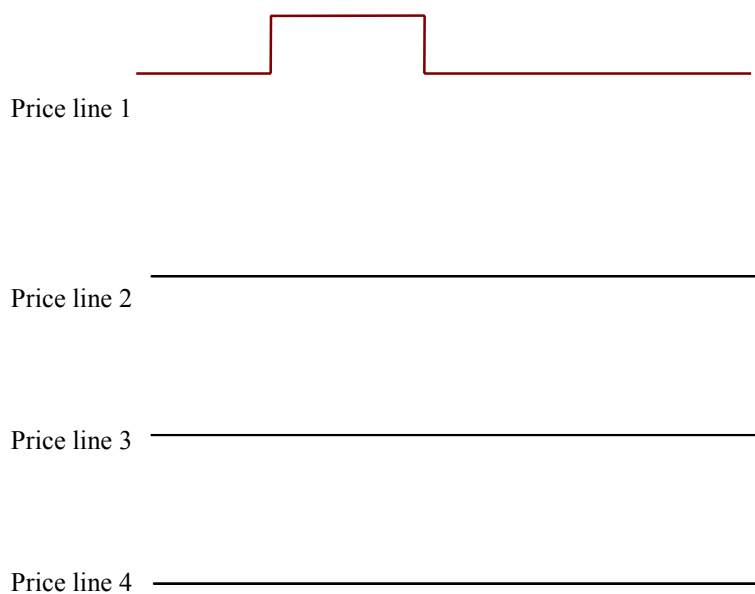
Price 2 = 2 units Price 6 = 6 units

Price 3 = 3 units Price 7 = 7 units

Price 4 = 4 units Price 8 = 8 units

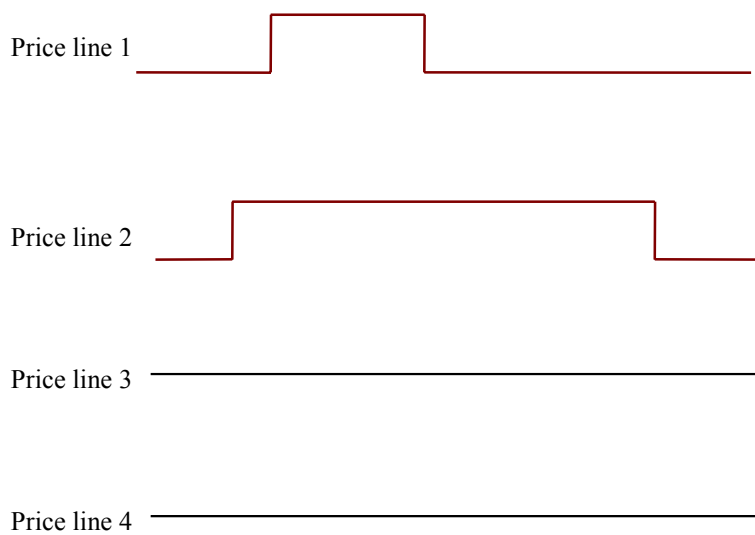
Unit type 1

a)



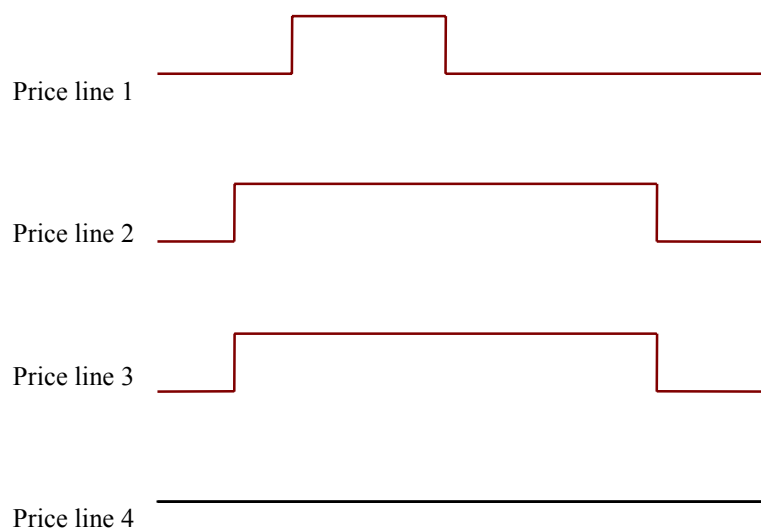
= 1 unit (price 1)

b)



= 2 units(price 2)

c)



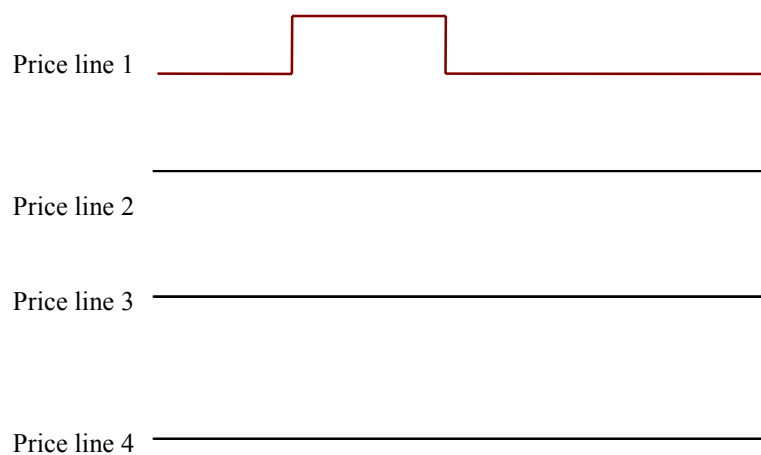
= 4 units (price 4)

This is where the price lines 2, 3 and 4 are used as a level to determine which price is to be used when price line 1 is pulsed. The table will show how this works:-

PL2	PL3	PL4	Price
0	0	0	1
1	0	0	2
0	1	0	3
1	1	0	4
0	0	1	5
1	0	1	6
0	1	1	7
1	1	1	8




Unit type 2

a)





= 1 unit (price 1)

b)

Price line 1 Price line 2 Price line 3 Price line 4 

= 2 units (price 2)

c)

Price line 1 Price line 2 Price line 3 Price line 4 

=4 units (price 4)

Each price line is activated by a separate pulse. If two pulses are received at the same time the ***highest*** of the two prices will be selected i.e. if price lines 2 and 4 are pulsed simultaneously, price 4 is higher than price 2 therefore price 4 will be charged.

Unit type 3

a)






=1 unit (price 1)

b)





= 2 units (price 2)

c)

Price line 1 Price line 2 Price line 3 Price line 4 

= 3 units (price 3)


d)

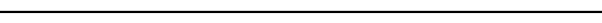
Price line 1 Price line 2 Price line 3 Price line 4 

= 4 units (price 4)

e)

Price line 1) 

Price line 2 


Price line 3 


Price line 4 

= 5 units (price 5)

f)

Price line 1 

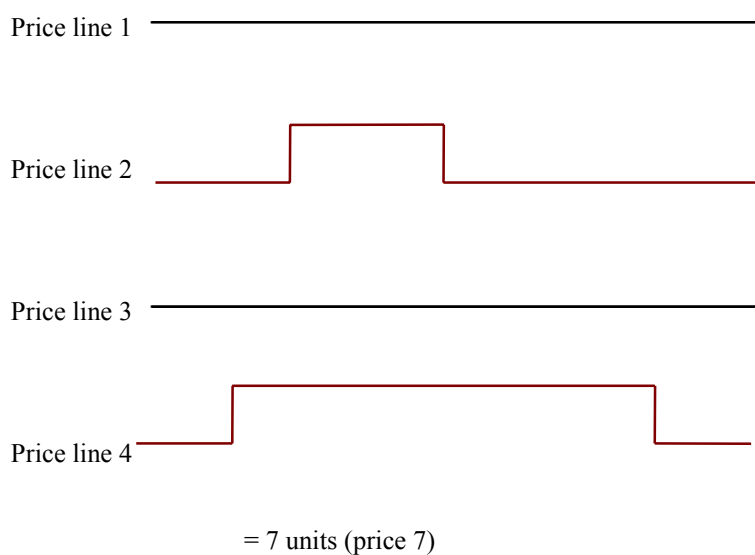
Price line 2 

Price line 3 

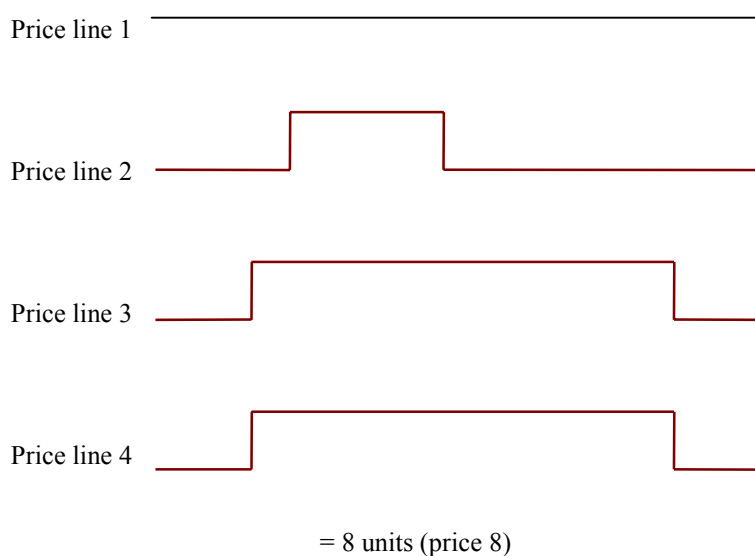
Price line 4 

= 6 units (price 6)

g)



h)



The price used here is determined by a binary system linking price lines 1 - 2 and price lines 3 - 4. The following table again shows how a price is selected:-

PL1	PL2	PL3	PL4	Price
1	0	0	0	1
1	0	1	0	2
0	1	0	0	3
0	1	1	0	4
1	0	0	1	5
1	0	1	1	6
0	1	0	1	7
0	1	1	1	8

or:

PL1/PL2	PL3/PL4			
	00	10	01	11
10	price 1	price 2	price 5	price 6
01	price 3	price 4	price 7	price 8

Set-up and use guidance

Introduction

Because there are various models of F2000, and there is a wide range of features which you may or may not want to make use of, it is impossible to give a step-by-step guide.

Instead, this section gives a brief overview, while the detail of how to use each feature is covered in the Reference section.

If you are not familiar with the use of program and master cards, refer to the General Principles section before proceeding.

Guidance for set-up

The recommended order in which to set up the F2000 is described briefly below. The Reference section then describes in detail how to actually perform the setting up.

Starting with a previously set-up unit

- If your F2000 does NOT accept the Master card you intend using, you will need to clear out the memory of the unit before you can proceed. To do this, power down the unit, remove the battery support link (see the Installation section), wait one minute, replace the link and power up. The unit is now completely reset; carry on as described below under “Starting with a reset unit”.
- If your F2000 DOES accept the Master card you intend using, then use this master card and select the Restore Defaults option, then quit to the Hello prompt. The unit is now completely reset; carry on as described below.

Starting with a reset unit

- Insert the Master card and step to the first option, which is Card Density. Set the card density option you require (see Card Density below to help you decide)
- Step to the next option, which is Site Code, and set to list 1. From now on, only a master card carrying the same site code as the card you started with will allow you into the master menu.
- Step to the next option, which is Set Up Unit, and program the required features (see Set Up Unit below for details on each feature)
- then set any additional Site Code(s) required (normally, only needed for compatibility with any existing low-density cards)
- then set up any features you wish to make use of (this requires that you know which features you wish to make use of - the Quick Reference section contains the minimum set-up for each of the various models in the F2000 range). As a minimum, set up the Time and Date in the Set-up Unit menu (not Model 10).
- next, set up the price lists (including Model 41 Cash Access pricing if appropriate) and coin-conversion lists (Model 40 and 41 only)
- finally, we recommend that you remove the security jumper, to prevent unauthorised changing of certain aspects of the F2000

Guidance for daily use

As a supervisor, there are several features that you may want to make use of.

- Encode Cash and Encode Units (create users' cards or add/replace value on existing users cards)
- Account Cards (create credit or debit/credit cards) (*Model 25 only*)
- Create Accounts (puts new account numbers in memory) (*Model 25 only*)
- Block or Un-block account numbers
- Account Balance, Reset Balances and Reset Accounts (clear or modify one or several account balances) (*Model 25 only*)
- View Meters
- Clear Meters
- Print Reports (*Not Model 10*)

End-user guidance

Copying transaction

The normal display that an end-user will see when approaching the F2000 to do some copying is:

Flexicard
12:34
Hello

(On Model 10 there is no time display; on all other models the "Hello" message may be replaced by the scrolling Banner Message).

The other indication that the F2000 is ready to accept a card is the card-return button light. The light is on when the unit is ready to accept a card. Note that standard CR-80 (credit-card-size) cards can only be entered one way round; usually indicated by an arrow on the card.

When a user first enters their card into the F2000, unless the unit is a Model 10 with no keypad, or the card is a low-density card and the F2000 is set to Low-density only or Low Not Upgraded, they will be given the option:

New Pin or Quit?

They can either enter a four digit PIN number which will then be needed each time the card is used, or if quit (Q) is selected they will never need a PIN. (PINs are also possible on Master Cards created by a supervisor using the Card Generation option in Model 25).

Note that this "Card-plus PIN" feature cannot be turned off - it is an automatic feature which the card-holder can decide whether or not to make use of.

When the transaction starts, the display changes to give information about the transaction. The top line will in most cases correctly show the price of the next copy, except that some copiers do not provide this information until the copy is actually taken; in such case the top line shows "User Cash Card" or "User Unit Card". The bottom line shows different information depending on the type of transaction:

- Debit transaction (all models), or Debit/Credit (Model 25 only): the value remaining on the card is shown.

- Credit transaction (Model 25 only): at first the current balance of the credit account stored in the Model 25 is shown. (Note that if a user is allowed to use more than one Model 25, the balance does not include balances from the other units). As soon as the first copy is taken, the display changes to show the value of the current transaction.
- Cash transaction (Model 41 only): the amount of cash remaining is shown. Note that a transaction can start out as a cash transaction, and then a card can be inserted at which point the transaction becomes a debit transaction. The display then shows the combined value of the card and cash, and the copy price changes to that appropriate for the card.

When the user has finished, pressing the card-return button returns the card, but this may not be immediate because a Security Delay may have been set. This is signalled by the flashing of the light in the button; typically the delay is set to 2-5 seconds.

Value-loading transaction

Model 40

In a Model 40, the card must be inserted before coins will be accepted. If a Maximum Cash or Maximum Units value has been implemented by the supervisor, if the next coin inserted was the largest coin and it would take the credit over the maximum, then the coin mechanism is blocked.

Model 41

In a Model 41, a value-loading operation can start with either the card or coins.

When value loading to a Units User Card and more than 1p is being charged per unit, but insufficient coins have been inserted for a full unit to be transferred to the user card, the display will indicate the whole number of units and remaining cash credited. In this situation either further coins can be added to transfer a whole unit to the card or the remainder can be used for a cash transaction.

If a Maximum Cash or Maximum Units value has been implemented by the supervisor, the credit displayed is allowed to exceed the maximum, but when the card is returned only the maximum value is transferred to the card. The remainder is left on the display, either for the next card to pick up or for use in a cash transaction.

Note that a bonus may have been implemented by the supervisor; the rules of this bonus scheme will depend on settings made by the supervisor and therefore cannot be covered here.

Cash transaction

Inserting a coin starts a transaction; any amount of coins can be added at any time during the transaction.

You cannot end a cash transaction while credit remains on the display; the transaction ends automatically when the credit reduces to zero.

Note that a bonus may have been implemented by the supervisor; the rules of this bonus scheme will depend on settings made by the supervisor and therefore cannot be covered here.

Reference Section - Alphabetical by Master Menu item

Account Balance (*Model 25 only*)

This menu option only appears if Account Fields has been set in the Set-up Unit menu.

This feature allows you to re-define the current balance of a single account. When you type in the account number, always use 8 digits regardless of the length of your account numbers - simply add leading zeroes to make up the 8 digits.

As you press the eighth digit, if the account was in memory the display will change to show the current balance and you can then type in a new balance.

Note that two other features are similar: Reset Balances allows the balance of several accounts to be modified simultaneously, while Reset Accounts completely erases all accounts and departments.

Account Cards (*Model 25 only*)

This menu option only appears if Account Fields has been set in the Set-up Unit menu.

Note that Create Accounts (explained in the Setting up section) is a quicker way of creating several cards at a time, if the numbering is sequential.

This feature creates one card at a time, either credit or credit/debit, for any account number and price list.

Alternatively, a multi-account card may be created. This card allows the user to access accounts in a number of different departments as opposed to using several different cards with one for each account (see Create Accounts for more details).

You will be asked for the issue level for the card (only if Issue Control is ON - otherwise the option not shown).

Debit-credit cards require a value and you can choose whether this is cash or units and in which Price List.

Block key codes (*Model 25 only*)

This allows you to block specific account numbers.

The main purpose of blocking an account is to prevent that account from being learned. This is therefore only applicable if learning is enabled, and if the account you are trying to block is not already in use.

If you are not using learning, or if the account is already in use, then the correct way of dealing with a lost or stolen card is to up-issue it - see Issue Control.

IMPORTANT: you must not create more than one account with the same account number but in different price lists if you intend using Blocking. This is because when you block an account you are not given the chance to specify which price list.

Note that you must first create an account before you can block it.

Card density

This feature allows you determine whether low-density cards are accepted, and if so, whether they are upgraded.

- If you have any F2 units on site, select “Low not upgraded”.
- If you have low density cards in circulation, but ALL units on-site are now F2000, then select “Low to Hi allowed”
- If this is new installation with new cards, select “Hi density only”.

The “low-density only” option should not be needed in normal circumstances.

Card generation (*Model 25 only*)

This feature allows you to create two special cards: a Master card and a Create Accounts program card.

The Master Card supplied by TDSi is a low density master card. Using the Card Generation feature creates your own high density master card. The benefit is that a high density master card can be given a PIN for security, so that anyone finding a master card cannot use it.

This feature also allows you to create a program card not available from TDSi, that gives direct access to the Create Accounts feature. This allows you to give someone the ability to create accounts (and cards for those accounts), without giving them the ability to do anything else.

When you use this feature, you are always expected to enter two cards: the first becomes a Master card; the second a Create Accounts program card. If you only want a master card then you can abort the creation of the second card by inserting any card upside-down.

Card Issue numbers (*Model 25 only*)

If issue control is ON, then notice will be taken of the issue level of a credit or credit/debit card. If the issue level of an inserted account card is less than the issue level stored against the account, the card will be flagged (if flagging is on) and rejected. Cards of specific issue levels can only be created in Renew User Cards. The benefit of using issue numbers is that you don't have to issue a new account number to someone who has lost their card. Issuing a new account number might mean that you would have to make changes to whatever accounting system you were using to collate information.

Cash Access (*Models 40, 41 only*)

This feature allows you to set coin conversions and copying prices for cash-only transactions.

This feature works exactly the same as Set Prices - please refer to that section.

Clear Period Meters, Clear Yearly meters

You can clear the period meters by using the Clear Period Program Card or the Clear Period option in the Master menu. Yearly meters, which do not exist in Model 10, can only be cleared using the master card.

When you use either feature, all the meters are cleared immediately - you are not given any choices or chance to change your mind!

Communications (*Not Model 10*)

This option allows you to set up the configuration of the printer or computer that reports will be printed to. The printer selection is a 1-way communication while the computer selection utilises 2-way communications with error checking. The computer

selection is **only** appropriate if you are using TDSi's PC software; if you simply want to send reports to a PC running "terminal" software then select the printer option.

Important: when using a computer as a dumb terminal, XON/XOFF should be used as the flow control (i.e. software flow control).

When you select communications first choose computer or printer. If Computer option is selected only the Baud Rate can be set.

In the printer option you can then set the options in the following table:

Menu Option	Range	Default
Baud Rate	300 - 38400	1200
Word Size	eight bits seven bits	eight
Parity Setting	mark parity no parity even parity odd parity space parity	none
Flow Control	XCTS, XCTS +XON/XOFF, None, XON/XOFF	XCTS
Stop Bits	one bit two bits	one

Create Accounts (*Model 25 only*)

This menu option only appears if account fields has been set in the Set Up menu. You don't need to use this feature if you are happy to allow learning of account numbers. The feature creates accounts in memory, and allows you to create cards if you want to. Each account has a price list allocated to it. Note that duplicate account numbers with two or more price lists are effectively different accounts, but we do not recommend creating such accounts, especially if you intend to use Blocking, as you cannot select the price list when blocking and account.

The following three parameters are required to uniquely identify an account:

- Cash or Units
- Price List
- Department

IMPORTANT: Never use "0" as a starting number.

Account cards can be configured to allow either credit or credit-debit transactions. A card used for a credit account has no actual limit on its balance other than the limit on the department in which it is used. A credit-debit card however, has a limit imposed on the card restricting the number of copies that can be taken. Alternatively, multi-credit or multi-debit/credit account cards may be used where access is required to accounts in several different departments. This is preferable to having to use several different cards when access to more than one department is required by a single user. It is important to note that if you intend allowing card-less transactions, the account numbers must be widely spaced, to minimise the risk of someone taking a lucky guess. This feature makes creation of widely-spaced account numbers easy, by asking you for a start number, an end number, and the total number of accounts you want to create.

For example, if you ask for 100 accounts, with the first account numbered 1, we would suggest that you use an end number not of 100, but of 50000. This would create 100 accounts in what looked like a random scatter, with only a 1-in-500 chance that someone would guess an account number. In fact, every Model 25 would create

the same accounts given the same request. So if you had several Model 25 units installed, wanted to allow card-less transactions, and wanted the same account numbers on every unit, then you enter the same three pieces of information into every unit: first number, last number and quantity of accounts.

When using a multi-account user card the user will be prompted to enter the required department number before commencing the transaction. These accounts may also be accessed via the keypad as normal although since learning does not apply to card less transactions access will only be granted if the account number is already stored in the unit.

Incidentally, to find out what account numbers have been created, you will need to print them out or download them using TDSi's PC software.

If you have a Model 25 that you use not for controlling a copier, but simply for creating cards, then you can use this feature to create account cards in bulk for use in another F2000 - but remember that the feature also create accounts in memory. Repeated use of this feature may therefore cause the error message "not enough space" if you fill up the memory or specifically try to create an account, which already exists. The solution is to use Reset Accounts first.

Important:

If you want to create a large number of consecutive accounts, create them in blocks of 1500 maximum. This will be quicker than creating one large block.

Create dept. (*Model 25 only*)

If you don't want to "Learn Departments", or want a different Department Limit from the one set in Program Unit / Account Fields / Department Limit, then you can define a Department here.

Encoding Cash, Encoding Units

These two features (Encoding cash and Encoding units) permit:

- adding or replacing value on a debit card
- adding or replacing value on a debit/credit card
- creating a new debit card

IMPORTANT: if you have set your Card Density option to “Low not upgraded” then this function will encode cards as low density. Any other Card Density option will create high density cards.

Encoding a user’s card can be done with either a Cash Encode or Unit Encode Program Card. These cards are labelled with their value; for example, “100 Units” or “£5.00”. These cards have a pre-determined value on them, but this is purely for convenience and you can increase (but not decrease) the actual amount to be added to the user’s card - although you cannot exceed the Max. Credit value set in the price list for the appropriate site code.

Encoding of cards is only possible if encoding has been enabled in the Set-up Unit menu; the choice of whether value is added or replaced is also pre-set in the Set-up Unit menu. Creating a new debit card is only possible if the Replace Value option has been chosen.

Using the encoding feature

When you enter the encoding feature, you will be asked whether this is for Cash or Units, and for which price list. The display then changes the display to:

<p>Encoding cards 0.00</p>

or

<p>Encoding cards 0</p>

Note: These displays are examples - if you used an encoding card the actual display depends on the amount of value defined on the encoding card.

You can use the keypad if fitted to enter the required amount, or use card-return button pushes to increment the value (holding the button down causes it to continue incrementing automatically). Note that you cannot exceed the Maximum Cash or Unit Value set in the price list that is appropriate to this encoding operation.

Finally, insert the user’s card. If it is a new card (i.e., no site code) then the card will be given the same site code as on the encoding card, and the value displayed will be stored on the card. If the card already carries a site code, then that code must match the one on the encoding card, and the value displayed will either replace or be added to (depending on set up) any existing value on the card (unless that would cause it to exceed the Max. Credit set in the price list for that site code - in which case it is set to the same as the Max. Credit). Obviously you cannot add units to a card already encoded in cash, and vice-versa.

Once you have set a value, you can encode as many cards as you want, but once you have encoded your first card you cannot change the value as pressing the card-return button once more will cause the F2000 to exit from this mode.

This function has meters which record the total amount of credit added against each price list.

When encoding cash is never shown with tenths.

Learn accounts (*Model 25 only*)

This feature is used to prevent or enable new account numbers being created in memory when a card with an unknown account number is used. If the unknown account number is for an unknown department, it will still be rejected if Learn Depts is not enabled.

Note that in card-less transactions, if these have been permitted, the keyed-in account number is never learned by Model 25.

Learn depts (*Model 25 only*)

See Learn Accounts above for the implications of using this feature. Learned departments take the limit specified in Program Unit / Account Fields / Department Limit. There is no point in allowing learning of departments if you don't also allow learning of accounts.

Number of Price lines

In the Master Card Menu the number of price lines can be limited to 1, 2, 3 or 4 by altering the number in the No. of Price lines option. Limiting the number of price lines is sensible if they are not all needed as it means that less information will be presented to the supervisor when setting prices, viewing meters etc.

Off-Peak banner

See "Peak Banner"

Out of Service banner

See "Peak Banner"

Peak Time Start, Peak Time End, Peak Pricing, Peak Banner, Off-peak banner

A different set of prices can be charged for a set period of the day using peak time pricing. To set up this option first set Peak Time Status to On in the Setup Unit menu. This causes the following peak time options to appear in the master menu in place of Scrolling Banner:

Peak Time Start

Peak Time Start sets the start date for the peak pricing and the time when peak pricing will commence every day between the start and end dates.

Peak Time End

Peak Time End sets the end date for the peak pricing and the time when the peak pricing will finish every day between the start and end dates.

Peak Banner

See the Banner Message section in Setting Up.

Off Peak Banner

See the Banner Message section in Setting Up.

Out of Service Banner

See the Banner Message section in Setting Up.

Peak Pricing

Peak Pricing gives access to the price lists which will be used during the peak period specified above. It is set up in exactly the same way as the other price lists with the same options as in the table above.

Print Reports (*Not Model 10*)

If you have a printer attached to the F2000, the Print Reports option allows you to print several different types of report:

- **METERING:** gives the information stored in the Period and Yearly meters
- **PRICING:** gives the settings of the various price lists
- **CASH ACCESS (Model 41 only):** gives cash prices, coin conversions and bonus levels
- **ACCOUNT DETAILS (Model 25 only):** shows the credit balance against every account, with departmental totals and lists of blocked account numbers
- **SETUP:** gives the 'setup' information - e.g. auto return time, security time setting and communications information

Read All

The purpose of the Read All function is to allow a supervisor to view the details stored on a card. With this information it can then become possible to solve certain problem situations - for example, in the case of a Flagged card.

Using the Read All feature

- Access the Read All feature
- Insert the card you wish to check: the display shows:

SiteCode 91 255

- If the card is a user card, then step through the available information (card-jabs or down-arrow key); you will see the following information (if the information is on the card):

Site Code
Card Type 0
Card Type 1
Issue Number
Price List
Value
Account number

Important: although in all other aspects of the user interface Price Lists are numbered 1-4, and then sub-divided into Cash or Units, there is only one character used to store the price list on the card. So the logic used is:

Price list displayed	True price list	Cash or Units
1	1	Cash
2	2	Units

3	2	Cash
4	2	Units
5	3	Cash
6	3	Units
7	4	Cash
8	4	Units

The Card Type fields, when you take the two digits together, have the following significance:

Type	Meaning
11	Debit card
61	Credit card
41	Debit Credit card

Note that if you use the Read All function to see what is on a Program or Master card, all you will see is the Site Code. This is for security reasons.

Reset Accounts (*Model 25 only*)

This feature completely erases all account numbers, balances, departments, departmental limits and departmental totals.

If learning is off, then you will have to use Create Accounts to get account numbers back in memory.

If all you want to do is to clear the balances to zero, use Reset Balances.

Reset Balances (*Model 25 only*)

This feature allows you to reset the balances of several accounts simultaneously. You can use this to, for example, set all balances to zero at the start of a new accounting period.

You will be asked to specify a single group of accounts, based on the following:

- Cash or Units
- Price List
- Department

Restore Defaults

Using this feature completely erases and resets all items in the memory of the F2000, except the clock and the communications parameters.

Scrolling Banner (*Not Model 10*)

When Peak Time is turned off the option in the main menu for setting the banner is Scrolling Banner. To type in the required message use the keypad. Pressing the keys repeatedly gives the letter options under the numbers and the up arrow changes the format to capitals while the down arrow returns it to lower case. To move to the next letter use the right arrow key and then press enter (E) when the message is finished. If Peak Time is on this banner option becomes Off Peak Banner and the option Peak Time Banner can be used to set a different message during peak time.

Set Prices, Cash Access

Overview

The following points should be borne in mind when setting up price lists:

- Each item in a price list can be set in cash, in units, or both.
- You have a choice between charging in units and charging in cash. The only difference between the two is that in the “cash” option you can price accurately to one tenth of one unit, and the normal way of using this is to have a one-to-one correlation between the display and the real amount; e.g., a display of 5.5 means five-and-a-half pence (or centimes, or cents). When working with units, you will normally have a look-up table; e.g., a display of 1 means half a penny (or centime, or cent) - whatever your smallest increment of charging is.
- A user card that is encoded with cash will not be accepted if the price list (for the site code carried on that users card) is set in units, and vice versa.
- If a price in a price list is set to zero, then the copier will not be enabled while it is signalling that particular price unless billing by time has been set.
- A separate price list (Cash Access menu) is maintained for the cash-only transactions found in the Model 41.

Set copying prices and (Models 40 and 41 only) coin conversions

This section refers to two menu features: Set Prices and (Models 40 and 41 only) Cash Access.

Two program cards are supplied for setting prices; one card is for cash prices and one is for unit prices. These menu options are combined in one function (Set Prices) in the Master menu.

Note that in a model 41, copying prices for cash-only transactions are set in the Cash Access menu - this is only accessible from a master card.

When you enter the Set Prices feature, once you have chosen whether Cash or Units, and which price list, the display will look something like this:

Cash Prices List n, Price 1
--

where n is the number of the price list. (entering the Cash Access menu in a Model 41 takes you straight to this display, showing List 5, Price 1).

Differences between models

- The Model 10, 20 and 25 contain only a Set Prices menu, and this menu contains only Prices.
- The Model 40 contains only a Set Prices menu, and this contains only Conversions plus the Max Cash setting.
- The Model 41 Contains both Set Prices and Cash Access menus, each of which contain Prices and Conversions.

Prices

Message	Range (Cash)	Range (Units)
List n Cash 1	0.000 -> 99.99.9	0000 -> 9999
List n Cash 2	0.000 -> 99.99.9	0000 -> 9999
List n Cash 3	0.000 -> 99.99.9	0000 -> 9999
List n Cash 4	0.000 -> 99.99.9	0000 -> 9999
List n Cash 5	0.000 -> 99.99.9	0000 -> 9999
List n Cash 6	0.000 -> 99.99.9	0000 -> 9999
List n Cash 7	0.000 -> 99.99.9	0000 -> 9999
List n Cash 8	0.000 -> 99.99.9	0000 -> 9999
Billing Price (Not Unit Type 1)	0.000 -> 99.99.9	0000 -> 9999
Max Cash Value	0 -> 99.00.0 (in 99 steps)	0000 -> 9900 (in 99 steps)
End Credit Price (Not Unit Type 1)	1-4 (Unit type 2) 1-8 (Unit type 3)	1-4 (Unit type 2) 1-8 (Unit type 3)
Low Credit Price (Not Unit Type 1)	1-4 (Unit type 2) 1-8 (Unit type 3)	1-4 (Unit type 2)
List n Exchange	0.000 -> 99.99.9	0000 -> 9999

Conversion

Message	Range (Cash)	Range (Units)
Bonus Thresholds Cash Level 1	0.000 -> 99.99.9	0000 -> 9999
Cash 1 Bonus	0.000 -> 99.99.9	0000 -> 9999
Bonus Thresholds Cash Level 2	0.000 -> 99.99.9	0000 -> 9999
Cash 2 Bonus	0.000 -> 99.99.9	0000 -> 9999
List n Cash 1	0.000 -> 99.99.9	0000 -> 9999
List n Cash 2	0.000 -> 99.99.9	0000 -> 9999
List n Cash 3	0.000 -> 99.99.9	0000 -> 9999
List n Cash 4	0.000 -> 99.99.9	0000 -> 9999
List n Cash 5	0.000 -> 99.99.9	0000 -> 9999
List n Cash 6	0.000 -> 99.99.9	0000 -> 9999

If the unit is a Model 41, then beyond this point you will be able to set the coin conversion values which will be used for unit cards of this price list.

Price list entries**List n Cash n**

The display will show either “List n Cash n” or “List n, Units n” according to the selection you made when entering this feature.

Note that prices 5-8 are unused when the Unit Type is set to Unit Type 2.

Billing Price

This is the amount charged per unit of time (that the relays remain energised). The length of this unit of time is set in the main program menu under Billing Timer. This is only capable of being set when Unit Type 2 or 3 is selected, and then only if a Billing Time has been set.

Max Cash (or unit) Value

If a user card is seen which exceeds the value set here, and flagging is turned on (see program menu), the card will be “flagged” and rejected. This makes it unusable in any F2000 until it is re-encoded.

If flagging is not turned on, the card is simply rejected with an Error 9 message.

The value set here also prevents a card from being encoded with more than this value, if encoding is permitted in this unit.

Set End Credit (*Not Unit Type 1*)

The numbers here refer to the price in the price list; i.e. a number in the range 1-8. If the value of a user's card is below that of the specified price when the card is first seen, or falls below this value as the result of a transaction, then the copier will be disabled (i.e., Relay 1 will be de-energised) and the transaction will be ended. This is only capable of being set when Unit Type 2 or 3 is selected.

Note that both of these unit types also test for sufficient credit by comparing the highest possible price with the current card credit; if it cannot afford the most expensive option the card will be rejected for insufficient credit regardless of whether the card credit exceeds the End Credit.

Important: do not set End Credit without also setting Low Credit.

Set Low Credit (Not Unit Type 1)

The numbers here refer to the price in the price list; i.e. a number in the range 1-8. If the value of a user's card is below that of the specified price when the card is first seen, or falls below this value as the result of a transaction, then Relay 2 will be de-energised. This can be used to disable higher-cost transactions while leaving lower-cost ones enabled (i.e., those controlled by Relay 1). This is only capable of being set when Unit Type 2 or 3 is selected.

Important: do not set Low Credit without also setting End Credit.

List n Exchange

If you intend to use Units instead of (or as well as) Cash based card transactions, List 'n' Exchange provides a simple means of setting the value of 1 unit. This will be necessary when Value Loading units cards.

List 'n' Exchange acts as a ratio between coins and units (ie coins per unit). For example, to set a price of 5p per unit, set a List n Exchange value of 5 in the Prices; Cash menu and a List n Exchange value of 1 in the Prices; Units menu.

Note! One of the List 'n' Exchange values must be set to 1. Changing a List 'n' Exchange value (eg Cash List 'n' Exchange) will automatically default the other (Units List 'n' Exchange) to 1.

A different List n Exchange value may be set for each price list.

Explanation of Conversion List Entries

List n Cash (or Units) n

This is where you set the value that is to be credited for each coin of this type. In the UK the following coins are used and have been set as default:

Coin 1	1p
Coin 2	2p
Coin 3	5p
Coin 4	10p
Coin 5	20p
Coin 6	50p
Coin 7	£1.00
Coin 8	Reserved for £2.00

Note that the coin mechanism is already capable of accepting the new 50p piece, due to be issued in September 1997. However, if your Model 40 or 41 has a label inside saying "not enabled for £2 coin" then you will need an engineer call-out to convert the coin mechanism when the £2 coin is issued in November 1997.

Bonus thresholds

The purpose of a Bonus is to give extra credit above a certain amount of cash entered at the coin mechanism.

There are two bonus "levels" (the trigger point at which the bonus applies) and two bonuses (the amount added over and above the actual cash entered).

Cash Level 1 only applies once in any transaction: the first time that amount of cash is entered. The amount specified as "Cash Bonus 1" will be added to the credit.

Cash Level 2 can apply many times during a transaction: every time that amount of cash has been entered. Note that the first time Cash Level 2 applies is when that amount of cash has been entered over and above Cash Level 1. For example, if Cash Level 1 is £3 and Cash Level 2 is £5, then Cash Level 2 will not apply until £8 has been entered. Thereafter, it will re-apply at £13, £18, £23 and so on. Each time, the amount specified as "Cash Bonus 2" will be added to the credit.

Set-up Unit


Entering the Set-up Unit menu brings up the following display:

Set up menu Step with card

The menu contains the following menu options :

Message	Description	Range	Default
Unit Id (Not Model 10)	Identifies unit on printouts	0-250	0
Account fields (only Model 25)	Sets number of digits used for account numbers	1-8	8
Security Delay	Card-return button timer	0-250 s	1
Auto Return Time	Automatic card return timer	0-250 s	120
Copier off delay	Delay to disable copier	0.0-25.0 s	0.0
Sense Time	Time to detect a copier pulse	0.00-2.50 s	0.0
Blind Time	Time to detect next pulse	0.0-25.0 s	0.0
Beep on Time	Beeper on time	0-250 s	1
Unit Type	Unit type:	1-13	1
Billing Timer (Not Type 1)	Automatic billing cycle time	0-250 s	0
Flagging	Card security flagging:	On or Off	On
Card Encoding	Card Encoding enable/disable	Off; Add Card Value; Replace Card Value	Off
Show Tenths	Show tenths for user cash cards	On or Off	Off
Peak Time Status (Not Model 10)	Peak time:	On or Off	Off
Time and Date (Not Model 10)	Sets Time and Date		

The rest of this section takes you through each of these in turn.

Items marked with a  symbol are related to security and correct functioning of the photocopier. Do not change these items unless you are sure you need to!

Unit Id. (*Not Model 10*)

The Unit Id. means that each unit's printout information can be identified. This unit ID is also used in communications with a PC.

Account fields (*Model 25 only*)

Key width

Used to set number of digits used for all account numbers. This key width includes the number of digits to be used for the departments; e.g. if you have 20 departments

and 150 accounts in each department, then you want a key width of 5, so that a typical account number might be 17025 (Department 17).

Department Width

Used to set number of leading digits used as department identity

Department

Used to set a “Unit Default Department” which restricts the unit to cards from one department unless “Create Depts” and/or “Learn Depts” is used

Department Limit

Used to set a limit for the default department, which is used as a default limit for all Learned Depts. Do not set a limit of 0; this will prevent any copying for that department.

Security delay



If a user presses the card-return button during a transaction, it may not be appropriate to return the card immediately because this could, on certain copiers, allow a copy to be made while the card is being ejected; hence the value of the copy would not be deducted.

Instead, the card will be ejected after the amount of time specified by this setting, unless a pulse is seen on a Price Line during that time, in which case the timer starts again. While the security delay is being enforced, the illuminated card-return button flashes to let the cardholder know that their card is about to be returned.

Auto Return Time

The “Auto Return” time allows the card to be returned automatically after a specified period of inactivity on the Price Lines connected to the copier. The beeper will sound at the end of the period to alert the user. On expiry of the timer the copier is disabled and the Return timer started. Setting it to zero disables the function. This is normally set to zero until the unit is installed. If you are using billing by time, then this must be set to zero unless you wish to limit the amount of time available.

Copier off delay



The “Copier off delay” time delays the disabling of the copier which occurs as a result of card credit expiry. This is used where a copier is designed to jam if disabled in the early part of a copy cycle. Normally it is set to zero.

Sense Time



The “Sense Time” selects the pulse detection time. This would normally be used on the fastest setting unless there was a noisy signal from the copier.

Blind Time



The “Blind Time” enables a time to be selected so that after an Input Pulse is received another one will be ignored during that time. It is useful in suppressing a second pulse, which can occur in some copiers when making A3 or larger copies. It would normally be set to zero.

Beep on Time

“Beep on Time” time sets the length of Beep. A Setting of 0 disables the beep whereas a positive setting gives a short beep each time the card-return button is pressed. The time setting is used for the length of a warning or alarm.

Unit Type

The operation of the Price Line Inputs is different depending on the setting of the “Unit Type”. When using a Model 41, it is vital that you add 10 to the model type shown below; i.e., Unit types 11, 12 and 13. Unit types 4-10 should not be used.

Unit type 1



This selects a mode of operation where energising the Price Line inputs 2,3 & 4 in different (binary) combinations determines which price in the price list is deducted when price line 1 is pulsed. For example: both price lines 2 & 3 active will select price 4, price line 3 alone will select price 3 and price line 2 alone will select price 2. This method of operation is preferred as the card unit can reject any card with insufficient credit for the required copy as soon as Price lines 2, 3 or 4 are activated and before the copy is initiated.

In this mode the selected price is displayed along with the card credit balance.

Unit type 2



This selects a mode of operation where pulsing one of the Price Line inputs 1,2,3 or 4 will deduct different prices in the price list. For example: Price line 1 deducts Price 1, Price line 2 deducts Price 2 etc. If two pulses occur simultaneously the price positioned highest in the price list will be deducted.

This method is less preferable as the card unit must reject any card with insufficient credit for the most expensive copy to prevent fraud. Hence there could be a credit balance on a card sufficient to purchase cheaper copies but which cannot be used. To help overcome this it is possible to select which price is used as the card credit value below which the transaction ends, “End Credit”, and in addition the price which is used as the card credit value below which just the second relay output is disabled, “Low Credit”. The second relay can be used to disable a more expensive service.

A special price - the “Billing Price” is definable when setting up price lists for timed charging concurrently with price lines. See next section.

Unit type 3



This selects a mode, which combines characteristics from 1 and 2. Pulsing Price Line 1 will deduct price 1, 2, 5 or 6 in the price list depending on the way Price Lines 3 & 4 are energised in different (binary) combinations. Similarly pulsing of Price Line 2 will deduct price 3, 4, 7 or 8. The following table represents this:

PL3/PL4 (level) ⇒ PL1/PL2 (pulse) ↓	00	10	01	11
10	Price 1	Price 2	Price 5	Price 6
01	Price 3	Price 4	Price 7	Price 8

The insufficient credit level is therefore the highest price of the two prices selected by Price Lines 3 and 4 as it is not known before the copy is initiated whether Price Line 1 or Price Line 2 will be pulsed.

As above a special price - the “Billing Price” is definable when setting up price lists for timed charging concurrently with price lines.

Billing Timer (*Unit Types 2,3 only*)

“Billing Timer”. This is only used when Unit Type 2 or 3 is selected. It is for charging time spent on using devices such as computers or modems. The timer sets



the period of a clock, which runs as soon as the device is enabled. The price in the active price list described as “Billing price” is deducted in advance of each time period. This function does not inhibit normal billing as a Laser printer could be attached to the computer; this allows computer-use to be charged by time, and the laser printer use to be charged per copy. If zero is set then the function is disabled. If you are using billing by time, then you must set the Auto Return Time to zero unless you wish to limit the amount of time available.

Flagging



“Flagging On” should be selected in high security situations. This mode writes special information on a card after it is read so that if it is extracted illegally an Error 5 will be given on subsequent use. The value can be read with the Read All Card and then it must be re-encoded.

Card Encoding



Note that you cannot change the encoding option unless the security jumper is in place. Refer to the installation section for details on how to re-position this jumper. “Card Encoding” selects the options for Card encoding. These options are “Off”, “Replace Card Value” and “Add Card Value”. “Off” disables all encoding, “Replace Card Value” overwrites all existing data on a card while “Add Card Value” places additional values on to a card (up to the Maximum Credit set for the price list). A card with an invalid site code will be accepted and changed only if the mode is set to “Replace”.

Show Tenths

“Show Tenths” allows cash values for user cards to be displayed as: 99.99 or 99.99.9

Peak Time Status (*Not Model 10*)

“Peak Time On” should be selected if a different pricing structure is required during a certain period of the day. This brings up other entries in the Master Card Main menu which allow you to set up the peak time information.

Time and Date (*Not Model 10*)

“Time and Date” allows you to reset the clock and calendar. Use the keypad for the numbers and the < > keys to move between the day, month, year, hour and minute sections. The date format is DD/MM/YY; time format is 24-hour (i.e. 1pm must be set as 13:00).

Note: remember to reset the clock when time changes from summertime to wintertime and back again.

Site Code

Site codes are used for two reasons:

- for security, to prevent cards (both program cards and user cards) from another site being used
- (low density cards only) to provide differential pricing; e.g. between students and staff.

If you are using only high density cards, which carry a price list, then you only need to allocate one site code.

For differential pricing where low density cards are in use, you need to allocate two or more. Four price lists exist in an F2000, each one of which can only have one site code allocated to it. At least one price list must have a site code allocated to it; user cards will not be accepted by the F2000 unless they carry a site code which matches one of those allocated (and prices are set in cash or units).

To be able to allocate (or re-allocate) site codes, a security jumper inside the unit must be in position. If this has not already been done, refer to the installation section. You will have been issued with one or more site codes, as agreed with your supplier. For each site code issued to you, you will have been supplied with a Master card bearing that code. You may also have been supplied with a full set of program cards bearing the same site code.

To allocate a Site Code

You enter the Site Code option using either a Master card or a Site Code program card. If the site code on the card is not already stored in the F2000; the display will change to:

<p>Set Site Codes Site not set</p>
--

and then change to show:

<p>Set Site Codes Price list - n?</p>

To allocate the site code (carried by the Master Card or Site Code Program Card that you used to get to this feature), step through the available options using the card-return button. The available options are:

- Price List 1
- Price List 2
- Price List 3
- Price List 4

When the required price list is shown, select it with a card jab. Note that you must set these in order; for example, you cannot select Price List 3 until you have allocated a site code to Price List 1.

Viewing or deleting a site code allocation

When you enter a site code program card or a master card, if the site code on that card was already allocated to a price list then the display will show:

Set Site Codes Site is set

Followed by:

Set Site Codes Set To List n

where n is the number of the price list to which this site code is allocated. Jab the card once to exit with the site code remaining set.

To delete the site code allocation

Press the card return button. The display will show:

Set Site Codes Cancel List?

Jab the card once to cancel the list (i.e. to remove the allocated site code from the list) OR press the button again to return to the previous display if you don't want to cancel the list.

Security of the Site Codes

Once all necessary site codes have been set, we recommend that you remove the "security jumper". However, the jumper must be in place if you want to turn on the Encoding option in the Set-up Unit menu. Once the option has been set, you can remove the jumper; encoding will still be allowed but the option cannot be changed.

Refer to the installation section for instructions on how to remove the jumper.

Test Sequence

Read/Write "see/saw" tests may be performed by using the special test feature. A user card is entered and cycled under test. The display will increment to show failures until the user presses the card-return button which will stop the test, then the card is returned with its original value intact so that it can still be used.

The test feature provides other functions as well; a full description of all functions appears in the reference section.

Starting a test

Insert the test card (Test Sequence in the Master Card Menu); the display changes to:

TEST *INSERT CARD?*

You then have the choice of entering one of the following types of card (any other card type will result in an error message).

- User card
- View Meters
- Clear Period

The effect of these cards in test mode is as follows:

User Card

Inserting a user card in the Test Sequence feature causes test data to be written to and read from the card repeatedly until card-return button is pressed.

During the test, the display shows:

Reads	the total number of read attempts
DE	the number of times it was not possible to recover valid data from the card
RE	the number of times valid data is read from the card but the data is not what was written

To finish the test, press and hold down the card return button until the card is ejected. Note that the Quit key on the keypad does not end the test. After the test has finished, the original data is written back to the card, so the card will still contain the same value it started with.

View Meters

Inserting a View Meters in the Test Sequence feature gives access to the unit set-up data and special diagnostic meters described below. The Diagnostic Meters are not accessible from the Master menu.

Message	Diagnostic meter function
Reads	Total reads from cards (note that this figure is normally four times the number of card transactions due to read-after-write validation)
Writes	Total writes to cards
Bad Rds	Invalid reads from cards
Bad Wts	Invalid writes to cards (i.e. the read-after-write did not read the same information that was written - each incidence of this will also have caused a reset)
Flagged	Total number of flagged cards seen (NOT the number of cards that have been flagged by this F2000)
Bypass	Total bypass copies i.e. those made with the copier disabled - this is normally impossible unless someone has deliberately interfered with the connections
Resets	Total micro resets; e.g. power-down.

Clear Period

Inserting a Clear Period in the Test Sequence feature clears the Diagnostic meters. You cannot clear the Diagnostic Meters from the Master menu..

Transaction mode (*Model 25 only*)

This determines whether keypad-only transactions are to be permitted.

If “Card Not Needed” is selected, pressing any number key starts a transaction (the panel switch light goes out) and the full number of account digits must be entered (as specified in Set up Unit / Account Fields / Key Width) followed by the enter key. For security reasons, the number entered is not displayed.

Note that Learning cannot apply to account numbers entered at the keypad. Only if the account number you enter is already stored will the transaction start; otherwise you will get the message “Key code error”.

In the event of there being duplicate account numbers (i.e. same account number but in different price lists), the price list used for the transaction is the lowest-numbered price list that contains that account number.

Un-block key codes (*Model 25 only*)

This allows you to un-block blocked accounts.

Update dept. (*Model 25 only*)

This feature allows you to modify the departmental limit for a department previously created or learned.

View Meters

Each of the 16 prices in every price list has a meter associated with it; these meters record the total number of copies taken against each price, not the amount debited. In addition, the total number of copies taken against each price is stored in two meters; one for cash transactions and one for unit transactions.

Also, if the F2000 has been used for encoding cards, then the total amount of cash and number of units encoded is stored in two more meters.

Finally, if the Billing timer is being used, then two more meters record the cash and units charged by this method. See next table.

There are two complete sets of meters (not Model 10), to allow you to take interim (period) readings and final (year) readings. This View Meters feature shows you only the Period meters; the Year meters are only available by taking a printed report.

You can zero the period meters with the Clear Period card; you can only zero Yearly meters by using a Master Card.

Meters for unused price lists are not displayed.

Using the view meters card

Entering a View Meters Program Card brings up the following display:

View Meters Step with Card

followed by

Cash Price Listn
Cash 1 00000000

where n is the first price list to have a site code allocated.

From this display:

- successive card jabs (or button pushes with the card removed) will take you forward through the meters
- pressing the card-return button (card in) will take you backward through the meters

When you get to the last item in the list, either by going forwards or backwards, you exit back to normal operation.

Price list meters

Meter	Function
Cash 1 00000000	Number of copies made against this price
Cash 2 00000000	ditto
Cash 3 00000000	ditto
Cash 4 00000000	ditto
Cash 5 00000000	ditto
Cash 6 00000000	ditto
Cash 7 00000000	ditto
Cash 8 00000000	ditto
Encoded 00000000	Amount of cash encoded onto cash cards
Debited 00000000	Amount of cash deducted from cash cards
Billing 00000000 (Not Unit Type 1)	Number of billing time periods deducted from cash cards
Units 1 00000000	Number of copies made against this price
Units 2 00000000	ditto
Units 3 00000000	ditto
Units 4 00000000	ditto
Units 5 00000000	ditto
Units 6 00000000	ditto
Units 7 00000000	ditto
Units 8 00000000	ditto
Encoded 00000000	Number of units encoded onto unit cards
Debited 00000000	Number of units deducted from unit cards
Billing 00000000 (Not Unit Type 1)	Number of billing time periods deducted from unit cards

Note that the Billing meters only appear if Billing is in use.
In a Model 40 or 41, the first meters displayed will be Coins Received.

Yearly Meters (*Not Model 10*)

The meters visible using the View Meters feature are referred to as Period meters. A second set of meters, called Yearly meters exist so that you can clear the period meters on a regular basis without losing grand totals. (The Yearly meters are only available via printed reports).

So, for example, you could clear the period meters once a month, and the Yearly meters once a year; or clear the period meters once a week, and the Yearly ones once a month. It is up to you to decide how to use this, and of course if you never clear the period meters then the yearly ones will always show the same totals as the period ones.

Quick reference

Introduction

The purpose of this section is to provide a stand-alone guide for people who know how to use an F2000, but need a short list of features, connections, error messages and minimum set-up.

Connection list

Copier connections

Colour	Connection
Black	Relay 1 N. Open
White	Relay 1 Common
Blue	Relay 2 Common
Green	Relay 2 N. Closed
Brown	Price Line 1 (+)
Red	Price Line 1
Yellow	Price Line 2 (+)
Violet	Price Line 2
Screen	Chassis ground

Communications connections (not Model 10)

Function	F2000		Computer		Serial Printer
	5 PIN 180° DIN (external)	9 pin D-type male (internal)	9 pin D-type female	25 pin D- type female	25 pin D-type male
RX	1	2	3	2	2
TX	2	3	2	3	3
0V	3	5	5	7	7
CTS	4	8	7	4	20
RTS	5	7	8	5	

Master menu for Model 10 & 20

Items marked (20) only appear in Model 20. Items marked (?) may or may not appear unless something else has been set up first.

Encoding cash	
	Price list (add value only)
	Enter value
Encoding units	
	Price list (add value only)
	Enter value
Print reports (20)	
	Meters
	Pricing
	Account Details
	Setup
View meters	
	Unit Price List 1
	Cash Price List 1
	etc.
Read all	
	Site Code, Value etc.
Clear period meters	
Clear yearly meters (20)	
Set prices	
	Cash or Units?
	Price List
Scrolling banner (?) (20)	
Peaktime start(?) (20)	
Peaktime end(?) (20)	
Peak banner(?) (20)	
Off-peak banner(?) (20)	
Peak pricing(?) (20)	
	Cash or Units?
	Price List
Card density	
	Lo-to-high allowed
	Lo not upgraded
	High density only
Site code	
	set to list 1 / 2 / 3 / 4

Setup unit	
	unit id (20)
	Security delay
	Auto return time
	Copier off delay
	Sense time
	Blind time
	Beep on time
	Unit type
	Billing timer
	Flagging
	Card encoding
	Show tenths (20)
	Peak time status
	Time and date (20)
No. of price lines	
	1 / 2 / 3 / 4
Communications	
	Printer
	Computer
Restore defaults	
Test sequence	

Minimum set-up for Model 10

1. Using a master card, set Card Density to Low Density only
2. Set Site Code to List 1
3. Enter Set-up Unit menu, go to Encoding and set to Replace Value
4. Quit to Hello prompt
5. Using a master card or Price Cash program card, go to Set Prices, choose Cash and then Price List 1, and set List 1 Cash1 to 0.01.0
6. Using a master card or Cash Encode program card, go to Encoding Cash, and create a card for Price List 1. Set a value of (say) £1.00 and insert a user card.
7. Quit to hello prompt.
8. Make sure all switches are off on the test box if attached (if any switches are on, this will call up a different copy-price and the card would be ejected because only List 1 Cash1 is set). Insert the user card. The relays should be enable and the display should show Price 0.01 and Credit of £1.00. Pressing the Copy button should deduct 1p each time.

Minimum set-up for Model 20

This assumes you want to use or demonstrate the two main additional features; i.e. Card+PIN and Printed Reports. Also, it is assumed that you are using the printer supplied by TDSi; for any other printer you may need to change parameters in the Communications menu.

1. Using a master card, set Card Density to High Density Only
2. Set Site Code to List 1
3. Enter Set-up Unit menu, go to Encoding and set to Replace Value
4. In Set-up Unit menu, go to Time and Date and set the correct time and date
5. Quit to Hello prompt
6. Using a master card or Price Cash program card, go to Set Prices, choose Cash and then Price List 1, and set List 1 Cash1 to 0.01.0
7. Using a master card or Cash Encode program card, go to Encoding Cash, and create a card for Price List 1. Set a value of (say) £1.00 and insert a user card.
8. Quit to Hello prompt.
9. Make sure all switches are off on the test box if attached (if any switches are on, this will call up a different copy-price and the card would be ejected because only List 1 Cash1 is set). Insert the user card. You will be asked for a PIN - if you enter one then this is the PIN for that card for ever more. If you Quit without entering a PIN then that card will never be asked for a PIN again.
10. The relays should be enable and the display should show Price 0.01 and Credit of £1.00. Pressing the Copy button should deduct 1p each time.
11. Quit to the Hello prompt. Connect the printer and turn it on. Use a master card to access the Print Reports menu, select Meters and press E. The Meters report should be printed out.

Master menu for Model 25

Items marked (?) may or may not appear unless something else has been set up first.

Account cards(?)	
	Key code or Quit?
	User Card Type
Create Accounts(?)	
	Cash or units
	Price list
	Department
	Range Start
	Range Finish
	Key code total
	Make cards?
Encoding cash	
	Price list (add value only)
	Enter value
Encoding units	
	Price list (add value only)
	Enter value
Print reports	
	Meters
	Pricing
	Account Details
	Setup
View meters	
	Unit Price List 1
	Cash Price List 1
	etc.
Read all	
	Site Code, Value etc.
Block key codes (?)	
	Key code or Quit
	Issue
Unblock key codes (?)	
Clear period meters	
Clear yearly meters	
Set prices	
	Cash or Units?
	Price List
Account Balance (?)	
	Cash or Units?
	Price List
	Key code or Quit?
	Enter new value
Reset Balances (?)	
	Cash or Units?
	Price List

	Department
	Enter new value
Create dept. (?)	
	Department
	Department Limit
Update dept. (?)	
	Department
	Department Limit
	Department Total
Scrolling banner (?)	
Peak time start (?)	
Peak time end (?)	
Peak banner (?)	
Off-peak banner (?)	
Peak pricing (?)	
	Cash or Units?
	Price List
Reset accounts	
Card generation	
	Master Card
	Create Accounts
Card density	
	Lo-to-high allowed
	Lo not upgraded
	High density only
Site code	
	set to list 1 / 2 / 3 / 4
Setup unit	
	unit id
	account fields
	Security delay
	Auto return time
	Copier off delay
	Sense time
	Blind time
	Beep on time
	Unit type
	Billing timer
	Flagging
	Card encoding
	Show tenths
	Peak time status
	Time and date
No. of price lines	
	1 / 2 / 3 / 4
Communications	
	Printer
	Computer
Restore defaults	

Transaction mode	
	card necessary
	card not needed
Learn accounts(?)	
	no learning
	learning allowed
Learn depts(?)	
	no learning
	learning allowed
Card Issue Nos(?)	
	no issue control
	issue control on
Test sequence	

Minimum Setup for Model 25

This assumes you want to use or demonstrate the main additional feature; i.e. credit accounting. Also, it is assumed that you are using the printer supplied by TDSi; for any other printer you need

1. Using a master card, set Card Density to High Density only
2. Set Site Code to List 1
3. Enter Set-up Unit menu, go to Account Fields and set Key Width to 8; Department width of 3; Department 100 and Department Limit of 10000.
4. In Set-up Unit menu, go to Encoding and set to Replace Value
5. In Set-up Unit menu, go to Time and Date and set the correct time and date
6. Quit to Hello prompt
7. Using a master card or Price Cash program card, go to Set Prices, choose Cash and then Price List 1, and set List 1 Cash1 to 0.01.0
8. Using a master card go to Account Cards, choose Cash and Price List 1 and Issue 1, then enter Keycode of 10012345, select "Credit". Insert a user card.
9. Quit to hello prompt.
10. Make sure all switches are off on the test box if attached (if any switches are on, this will call up a different copy-price and the card would be ejected because only List 1 Cash1 is set). Insert the user card. The relays should be enable and the display should show Price 0.01 and Credit of 0.00. Pressing the Copy button should increase credit by 1p each time.
11. Quit to hello prompt. Reinsert card. Previous credit balance is shown.
12. Pressing copy button returns display to 0.01 as display is now showing value of this transaction so far.
13. Quit to the Hello prompt. Connect the printer and turn it on. Use a master card to access the Print Reports menu, select Account Details and press E. The Account Details report should be printed out.

Master Menu for Model 30

Select Unit Mode	
	Copy
	Print
	Copy+Print
Copying	
	Online Only
	Offline Only
	Online/Offline
Encoding Cash	
	Enter Value
Encoding Units	
	Enter Value
Print Reports	
	Meters
	Pricing
	Set-up
View meters	
	Cash Price List 1
	Unit Price List 1
	Etc.
Read all	
	Site code, Value etc.
Clear Period Meters	
Set Prices	
	Cash or Units
	Price List
Card Generation	
	Master Card
	Create Accounts
Card density	
	Low-to-high allowed
	Low not upgraded
	High density only
	Low density only
Site Code	
	Set to list 1 / 2 / 3 / 4
Set-up unit	
	Unit id
	Security delay
	Auto return time
	Copier off delay
	Sense time
	Blind time
	Beep on time
	Unit type
	Flagging
	Card encoding
	Final verify
	Show tenths
	Peak time status
	Time and Date
	Meters reset

	Flag debit cards
	Set-up unit
	No of price lines
	Communications
	Restore defaults
	Test sequence
	Online banner
	Offline banner
	OOS banner
	PIN retries

Minimum Set-up for Model 30

1. Using a master card, set Card Density to High Density only
2. Set Site Code to List 1
3. In Select Unit Mode, go to Copy+Print
4. In Copying menu, go to Online/Offline
5. In Set-up Unit menu, go to Encoding and set to Replace Value
6. In Set-up Unit menu, go to Time and Date and set the correct time and date
7. Quit to Hello prompt
8. Using the master card or Price Cash program card, go to set prices, choose cash and then Price List 1, and set List 1 Cash 1 to correct price. E.g. 0.01.0p

Master menu for Model 40

Encoding cash	
	Price list (add value only)
	Enter value
Encoding units	
	Price list (add value only)
	Enter value
Print reports	
	Meters
	Pricing
	Setup
View meters	
	Coins Received
	Unit Price List 1 Units +
	Cash Price List 1 Cash +
Read all	
	Site Code, Value etc.
Clear period meters	
Clear yearly meters	
Set prices	
	Cash or Units
	Price list used
Scrolling banner	
Card density	
	Lo-to-high allowed
	Lo not upgraded
	High density only
Site code	
	set to list 1 / 2 / 3 / 4
Setup unit	
	Unit ID
	Beep on time
	Flagging
	Card encoding
	Time and date
Communications	
	Printer parameters
Restore defaults	
Test sequence	

Minimum Setup for Model 40

1. Using a master card, set Card Density to Low Density only
2. Set Site Code to List 1
3. Enter Set-up Unit menu, go to Encoding and set to Replace Value
4. Quit to Hello prompt
5. Using a master card or Cash Encode program card, go to Encoding Cash, and create a card for Price List 1. Set a value of (say) £1.00 and insert a user card.
6. Quit to hello prompt.
7. Enter the user card. Display will show Credit 1.00. Enter coins and credit will increase.

Master Menu for Model 41

Encoding cash	
	Price list (add value only)
	Enter value
Encoding units	
	Price list (add value only)
	Enter value
Print reports	
	Meters
	Pricing
	Cash Access
	Setup
View meters	
	Coins received
	Unit Price List 1
	Cash Price List 1
	etc.
Read all	
	Site Code, Value etc.
Clear period meters	
Clear yearly meters	
Set prices	
	Cash or Units?
	Price List
Cash Access (?)	
	Prices
	Cash conversion
	Bonus thresholds
Peak Cash Access (?)	
	Prices
	Cash conversion*
	List Exchange
	Bonus thresholds
Scrolling banner	
Peaktime start(?)	
Peaktime end(?)	
Peak banner(?)	
Off-peak banner(?)	
Peak pricing(?)	
	Cash or Units?
	Price List
Card density	
	Lo-to-high allowed
	Lo not upgraded
	High density only

Site code	
	set to list 1 / 2 / 3 / 4
Setup unit	
	unit id
	Security delay
	Auto return time
	Copier off delay
	Sense time
	Blind time
	Beep on time
	Unit type
	Billing timer
	Flagging
	Card encoding
	Show tenths
	Peak time status
	Time and date
No. of price lines	
	1 / 2 / 3 / 4
Communications	
	Printer
	Computer
Restore defaults	
Test sequence	

* Cash Conversion under the Set Prices menu only appears when Cash prices are selected. Cash Conversion does not appear when Unit prices are selected.

Minimum set-up for Model 41

This assumes you only want to demonstrate/use value loading and copying for cash. Other features may be used as described for Model 20.

1. Using a master card, set Card Density to High Density Only
2. Set Site Code to List 1
3. Enter Set-up Unit menu, go to Encoding and set to Replace Value
4. In Set-up Unit menu, go to Unit Type and set the Unit Type 11.
5. Quit to Hello prompt
6. Using a master card or Price Cash program card, go to Set Prices, and set List 1 Cash1 to 0.01.0
7. Staying in Set Prices, step through to List n Exchange. If you intend to use Unit based transactions set the required cash price for 1 unit. (To receive more than 1 unit per penny, use the List n Exchange under Prices; Units).
8. Using a master card go to Cash Access, go to Set Prices, and set List 5 Cash1 to 0.02.0
9. Using a master card or Cash Encode program card, go to Encoding Cash, and create a card for Price List 1. Set a value of (say) £1.00 and insert a user card.
10. Quit to Hello prompt.

11. Make sure all switches are off on the test box if attached (if any switches are on, this will call up a different copy-price and the card would be ejected because only List 1 Cash1 is set). Insert the user card. You will be asked for a PIN - if you enter one then this is the PIN for that card for ever more. If you Quit without entering a PIN then that card will never be asked for a PIN again.
12. The relays should be enable and the display should show Price 0.01 and Credit of £1.00. Pressing the Copy button should deduct 1p each time. Inserting coins will add to the credit.
13. Quit to the Hello prompt. Insert a coin with no card in. Relays will be enabled; display will show Price 0.02 and Credit ?? depending on coins inserted. Pressing the Copy button should deduct 1p each time. Inserting coins will add to the credit. Inserting a user card will transfer all credit to the card and the price will change to 0.01

Trouble-shooting

Introduction

In daily use, you will rarely encounter problems. If any do occur you should be able to solve them without needing to call a service engineer.

The rest of this section tells you how do deal with the following problems:

- Card jam
- A user card that isn't accepted (although other users' cards are)
- Suspected poor read/write performance
- Unexplained error message

Card Jam

As a first course of action, put another card in the reader as far as it will go without forcing, and then remove it. This may cause the unit to run the motor and eject any card still in.

If this does not work, remove power for 10 seconds, then restore the power.

If this does not work, remove the power again, and push the card out by inserting the special tool provided for this purpose into the hole in the rear panel.

If this fails, the card can only be removed by gaining access to the inside workings of the unit; this therefore requires a trained engineer.

User card rejected

Flagged card

One reason for card rejection is because the card is "flagged", i.e. it was removed from an F2000 before a transaction was complete. This results in an Error 5 message (unless Flagging is turned off in the Setup Unit menu).

To solve this problem, use the Read All feature (as described in the Reference section) to read the value stored on the card, then use Encoding Cash, Encoding Units or Account Cards to re-encode the card as required.

Insufficient credit or excess credit

Another reason for card rejection is insufficient credit, i.e. the card value is less than one of the following:

- the selected price (unit type 1)
- the End Credit (if set - unit types 2 and 3)
- the highest price (unit type 2)
- the highest of the two selected prices (unit type 3)
- The card will also be rejected with Error 9 if the card value exceeds the Max Value defined in the Price List applicable to that card..

Auto Return Time

The card will be returned after a period of inactivity on the Price Lines if this option has been set. This may seem to some users that their card is being rejected, when in fact they have simply spent too long after inserting their card before taking their first copy!

Poor read/write performance

Read/Write “see/saw” tests may be performed by using the special test feature. A user card is entered and cycled under test. The display will increment to show failures until the test is stopped by pressing the card-return button, then the card is returned with its original value intact so that it can still be used.

The test feature provides other functions as well; a full description of all functions appears in the reference section.

Unexplained error messages

Explanations for all error messages are included in the Quick Reference section which follows this one.

Error messages

Message	Description
Runway blocked Error 1	Blocked front sensor or card not pushed in. One reason might be that there is already a card in the unit when an attempt is made to insert another.
Encode disabled Error 2	Encode card entered with encode disabled (encoding must be enabled in Set-up Unit menu; security jumper must be in place to allow encoding option in Set-up Unit menu to be changed)
Wrong site code Error 3	Wrong site code
Flagged card Error 5	Flagged card. Use Read All feature to see if any data can be read.
Suspect Card Error 7	
Set Site Code Up Error 8	Invalid command card; e.g. entering a Site Code card when the security jumper is not in place.
Excessive value Error 9	Card value exceeds Max Cash (or Unit) value set in Price List for that card.
Invalid Card Error 10	The card entered is invalid; the issue number may be out of date.
Unit not set up Error 11	The unit hasn't been set up yet. Set-up the unit, power it down and see if the problem recurs. If it does, suspect expired or disconnected memory battery.
Blank Card Error 41	Blank card
Bad Data Field Error 42	Bad data field on card. Use Read All feature to see if any data can be read.
Bad Data Format Error 43	Bad start field on card. Use Read All feature to see if any data can be read.
Checksum Error Error 44	Check-sum error on card. Use Read All feature to see if any data can be read.
Bad Write Error 45	The F2000 tried to do a read-after-write verification and found that the data did not match. The card may have been physically damaged before it was used. Try to repeat whatever action caused the fault.
Card gone Error 46	The card was forcibly removed during a transaction
Wrong Density Error 57	The card is the wrong density for this machine; e.g. using a high-density card in Model 10.
Foreign card Error 58	The data on the card does not appear to have been written by an F2000.
Wrong Density Error 59	Self-explanatory
Invalid PIN Error 60	The PIN entered was not the same as that stored on the card, or was not entered within the 5 minutes allowed for PIN-

	entry.
A/c No. Error Error 61	The account number on the card does not satisfy parameters set in the F2000.
A/c No. Error Error 62	The account number on the card does not satisfy parameters set in the F2000.
A/c No. Error Error 62	The account number on the card does not satisfy parameters set in the F2000.
Blocked card Error 64	Self explanatory
No account found Error 65	Self explanatory
Card is Obsolete Error 66	The account number on the card being used is at a lower issue than currently valid.
Accounts not set Error 67	Self explanatory
Dept unknown Error 68	Self explanatory
Account unknown Error 68	Self explanatory
Bad write5 Error 70	The card has not been written to properly. Try again; if it still fails then replace the card.
Keycode error Error 71	Attempting to use an account for an un-defined department
Keycode error Error 72	Attempting to use an account for an un-defined department
Keycode error Error 73	Attempting to use an account for an un-defined department
Not enough space Error 74	When creating accounts, either a duplicate already in memory or not enough room in memory.
Illegal card	e.g. entering an program card in test mode.
BadWrite	Usually, trying to encode a card but the card has been entered upside-down or back-to-front
Credit is low	This can appear if no price is set, or if the value on the card is less than the current tariff.

Index

- Auto Return Time, 24, 36, 63, 64, 66, 90
- Banner Message, 15, 48
- Beep, 12, 14, 24, 63, 64, 65
- Billing
 - dry contact outputs, 27, 30
 - meter, 73
 - powered outputs, 27, 30
 - price, 60, 61, 66
 - pulse, 36, 38
 - time, 14, 59, 63, 64, 66, 71
 - Time, 18
- Blind time, 37, 63, 65
- Block keycodes, 50
- Bonus thresholds, 62
- Card plus PIN, 48
- Cards
 - Artwork Options, 10
 - basic information, 10
 - card density, 51, 54
 - Data Storage, 11
 - distribution, 24
 - encoding, 54, 66
 - flagged, 89
 - flagging, 26
 - Flagging, 66
 - generating master cards, 51
 - jammed, 89
 - Master, 20
 - Program, 20
 - re-valuing, 17
- Cash Access, 58, 59
- Cash encode function, 21
- Clear Period, 21, 52, 70, 71
- Clear Year, 21, 52
- Clock, 15, 19, 68
- coin conversions, 59
- Communication, 12, 19, 32, 64
- Communications, 52
- Connection
 - to computer or printer, 32
 - to copier, 27
- Copier off delay, 63, 65
- Copier Off Delay, 37
- Copy, 16
- Copying, 16
- Create Accounts, 52
- Create dept, 53
- Credit
 - credit is low, 92
 - end credit, 60, 61
 - End credit, 66
 - excess, 90
 - insufficient, 66, 90
 - low credit, 60, 62
 - Low credit, 66
 - maximum, 67
 - transactions, 8, 15
- Credit/Debit, 15
- Debit-card operation, 14
- Density, 11, 51
- Department Limit, 64
- Department Width, 64
- Diagnostic meters, 19, 70, 71
- DLL, 13
- Encoding, 14, 19, 21, 54, 63, 66
 - disabled, 25
- Error messages, 91
- Flagged card, 89
- Flagging, 63, 66
- High density cards, 11
- Input. *See* Price Line
- ISO stripe, 10
- Issue control, 51
- Jumper
 - memory, 30
 - security, 20, 27, 30
 - settings**, 31
- Key width, 64
- Learn accounts, 55
- Learn depts, 55
- Limits
 - setting transaction limits, 15
- Master Cards, 20
- Max Cash (or Unit) Value, 61
- Meters, 18
 - billing, 73
 - clearing, 52
 - period. *See* Period meters
 - price list, 73
 - viewing, 21, 71
 - yearly. *See* Year Meters
- Model 30, 13
 - Model 30
 - Menu, 83
 - Off Peak Banner. *See* Banner Message
 - Offline Banner, 17
 - Off-Peak banner, 55
 - Online Banner, 16
 - Out Of Service Banner, 17, 55
 - Peak time, 15, 56
 - banner. *See* Banner Message
 - end, 56
 - pricing, 56
 - start, 56
 - status, 63, 67
- PIN, 48
- Price line, 8, 18, 49, 63
 - and unit type, 65
 - connections, 27
 - number of, 55
 - types, 27
- Prices, 59

- Cash copying, 59
- Print, 16
- Program Cards, 20
- Read all function, 21, 57
- Read/write test, 19, 21, 69, 90
- Relay, 8, 18
 - and low credit, 62
 - and unit types, 66
 - connections, 27
- Report, 18
 - meter, 14
 - printed, 15, 19, 56
- Reset Accounts, 57
- Reset Balances, 58
- Restore Defaults, 58
- Scrolling Banner, 58. *See* Banner Message
- Security
 - Delay, 36
 - jumper. *See* Jumper
- Security delay, 64
- Sense time, 38
- Sense Time, 63, 65
- Set Prices, 58, 59
- Set-up function, 21
- Set-up unit, 63
- Show Tenths, 63, 67
- Site code, 23
- Site Code, 8, 11, 20, 28, 30
 - wrong site code error, 25
- Site Code, 68
- Tenths. *See* Show tenths
- Test Sequence, 69
- Time and Date, 64, 68
- Time billing. *See* Billing
- Transaction mode, 71
- Trouble-shooting, 89
- Unblock keycodes, 71
- Unit encode function, 21
- Unit type, 39
- Unit Type, 33, 61, 62, 63, 65, 66, 73
- Update dept, 71
- View Meters, 71
- Yearly Meters, 73

