

**BC-201  
OPERATORS MANUAL**



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## THEORY OF OPERATION

The purpose of the magnetic stripe card control system is to limit the usage of the controlled machine to those authorized to operate the machine. In case of debit operation, this means limiting access to those individuals who have provided enough "value" on their card to pay for use of the machine.

Figure 1-1 shows, in block diagram, the elements necessary for the card control system. The controlled machine requires a minimum of two circuits for interconnection to the card controller.

### 1. Circuit 1 ENABLE

Any controlled machine will require an ENABLE Circuit. It is the function of this circuit to cause the machine to be operative only when a valid card, containing adequate value, is inserted into the card reader.

Although most photocopiers have provisions for enabling/disabling operation through a switch closure or logic control signal, other types of machines such as printers or reader/printers may not be so equipped.

It is recommended that whenever possible, the enable technique conform to the specifications of the machine manufacturer. Accountor Systems will provide information and special cables to interface to most machines. Atypical interface to a photocopier is shown in Figure 1-2.

### 2. Circuit 2 VEND SENSE

The second circuit required to complete the control of any machine is the VEND SENSE Circuit. This signal is necessary to alert the card controller that a "VEND" has been completed; in the case of a photocopier, a copy has been delivered. The controller uses this signal to deduct the proper amount from the debit card and then return it.

Most photocopiers provide a (pulse) or a relay contact closure to signal the card controller. The reason most copiers have these signals available is that for many years such machines used a "counter module" which, when plugged into a special connector on the machine, would enable the machine through the ENABLE Circuit and register machine activity through a mechanical counter. These same circuits are usually used by the card controller.

## INSTALLATION

### 1. Place Of The BC-201

The D-701 is designed to be mounted on any flat surface on or near the machine to be controlled. If insufficient space is available on the machine, it is suggested that the BC-201 be placed on a bracket which is mounted to the side of the machine. It also may be placed on a work table next to the machine. Mounting holes are located in the bottom of the housing to secure it to the surface on which it is placed.

### 2. Connecting the BC-201 To Power

Power is supplied to the BC-201 via a UL Listed Class 2 Power Transformer which provided 16.5 vac to the BC-201. **No** substitutions should be made for this transformer.

### 3. Connecting the BC-201 To The Machine (Refer to figure 2-1)

Two interconnect cables are provided to connect the BC-201 to the machine. They are a six foot cable with a 12-pin AMP connector and a 2 foot generic or machine specific cable. If the machine was identified at the time the BC-201 was ordered, the machine specific cable would have been shipped. If not, a generic cable would have been provided.

Many copies have a "Key Counter" or a space for one. The "Key Counter" is attached to the machine harness via a pigtail with a 4-pin connector on the end of it.

**To connect the BC-201 to the machine with the 2 ft. machine specific cable, do the following:**

1. Remove power from both the machine and the BC-201. **FAILURE TO DO THIS MAY CAUSE DAMAGE TO THE BC-201, THE MACHINE OR BOTH.**
2. Locate the opening or sub-panel where the copy counter is attached or would be attached.
3. Remove the main panel so the wiring behind the connector can be accessed.
4. Within the wiring harness, behind the copy connector opening, you should see a 4-pin connector. The copy counter or a mating 4-pin connector only will be attached to this connector. Disconnect it. Connect the 4-pin connector on the end of the 2 ft. cable supplied with the BC-201.
5. Attach the green ground wire to the chassis of the machine.
6. Replace the panels.

**To connect the BC-201 to the machine using the generic cable.**

**THE GENERIC CABLE SHOULD ONLY BE ATTACHED BY A TECHNICALLY QUALIFIED PERSON.**

1. Perform steps 1, 2, and 3 above.
2. Refer to the diagram of the generic cable in figure 2.1
3. **IF YOU CANNOT LOCATE THE PROPER WIRES TO CONNECT TO, STOP THE CONNCECTION PROCEDURE AND CALL ACCOUNTOR SYSTEMS FOR ASSISTANCE.**
4. Connect the green **GROUND** wire to the machine chassis.
5. Replace the panels.

## **INITIAL SET-UP**

Prior to operation, certain parameters must be set within the BC-201. Some of the parameters are set by Dip Switches and some are set by a Command Card.

Those set by Dip Switches are:

Accept Foreign Cards	Set ROM Code
Convert Foreign Cards	Enable Command Cards
Perform Self-Test	Flag Cards
Verify Write	

The Dip Switches, which control each of these parameters, are located on the top board near the right front. They are labeled from front to rear: Switch 1, Switch 2 and Switch 3. Each bank has 8 switches within it. Refer to Figure 3-1.

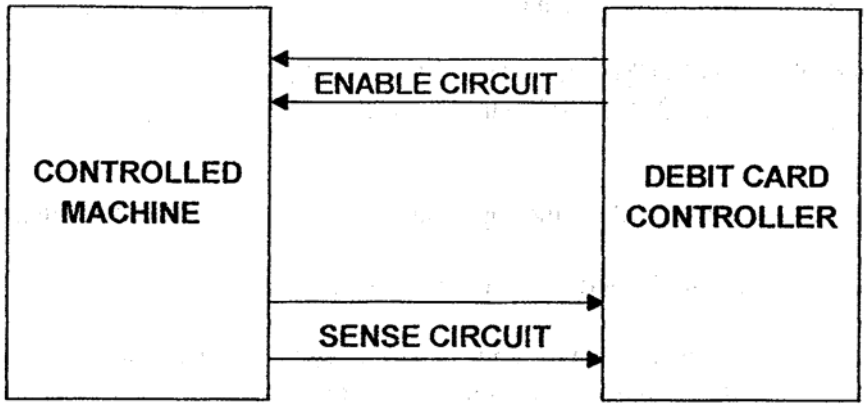


FIGURE 1 -1

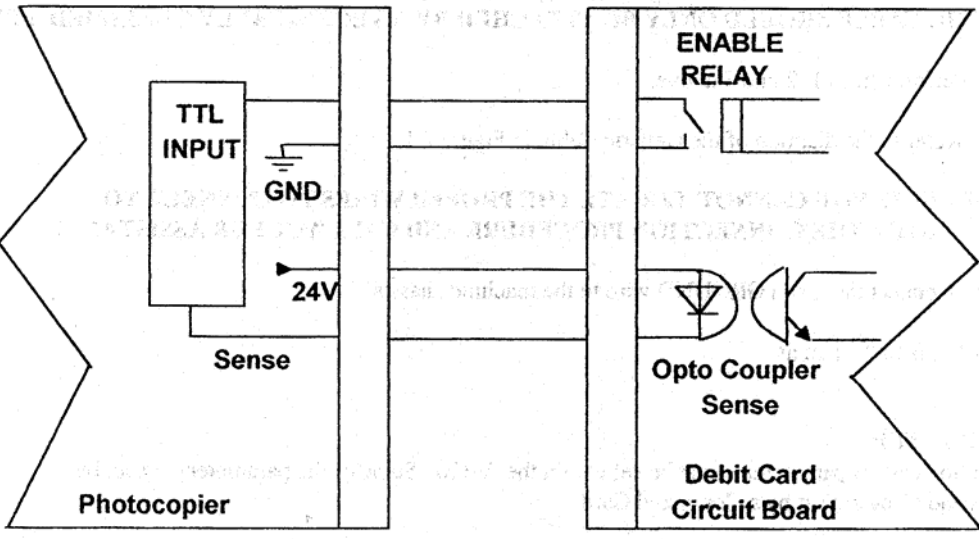


FIGURE 1 -2

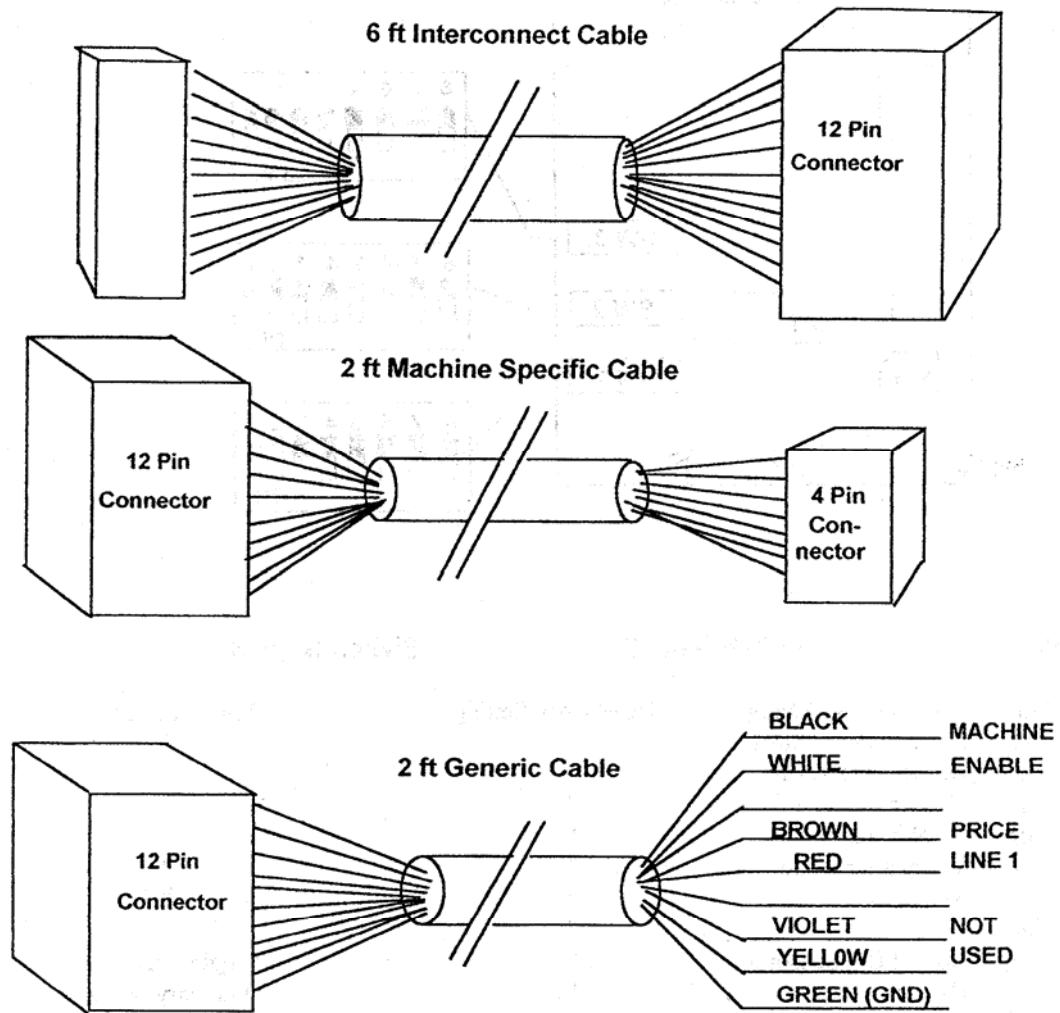
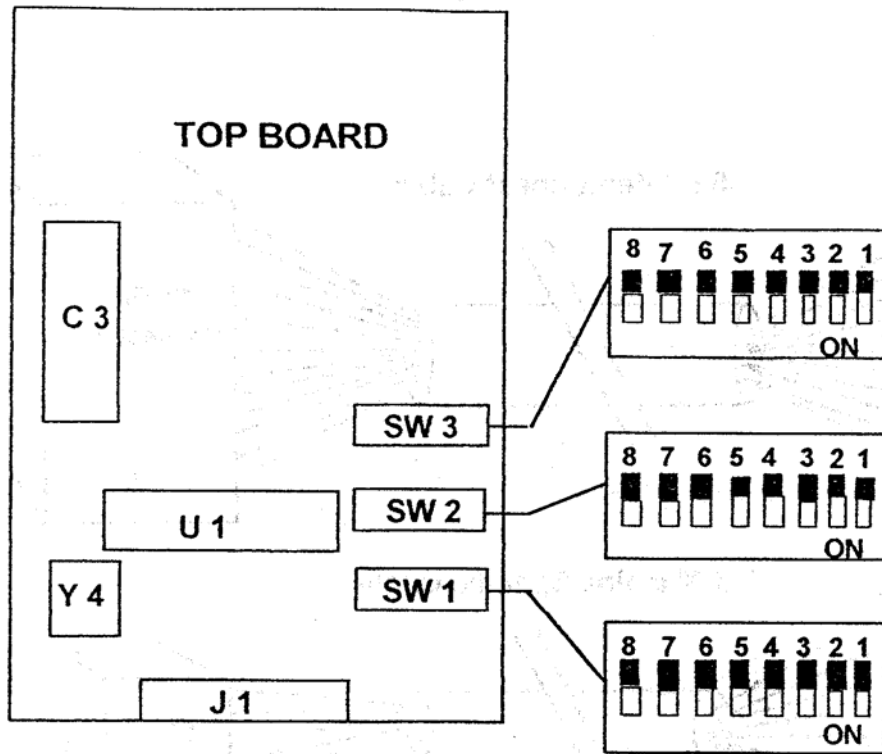


FIGURE 2 -1



**Switch Bank 1**

Sw 1	Off	Allow Foreign Cards
	On	Reject Foreign Cards
Sw 2	Off	Do Not Flag Cards
	On	Flag Cards
Sw 3	Off	Do Not Verify
	On	Verify After Write
Sw 4	Off	Not Used
	On	"
Sw 5	Off	Do Not Use Sensor 3
	On	Use Sensor 3
Sw 6	Off	Disallow Command Cards
	On	Allow Command Cards
Sw 7	Off	Do Not Perform Self-Test
	On	Perform Self-Test
Sw 8	Off	Do Not Convert Cards
	On	Convert Foreign Cards

**Switch Bank 2**

ROM Code Setting
"
"
"
"
"
"
"
"
"
"

**Switch Bank 3**

ROM Code For Foreign Cards	
"	
"	
"	
"	
"	
Toggle "Hello"	
Stationary "Hello"	
Hold Flagged Card (ver 303 only)	
Do Not Hold Card	"
Enable Tenth Cents	"
Disable Tenth Cents	"
Not Used	
Not Used	

ROM Codes and Site Codes are part of the controller and card security system. All devices and all cards must have the same ROM Code and Site Code in order for them to be interchangeable, or for all cards to work on all controllers.

**ROM CODES  
SWITCH BANK TWO**

Switch Number	1	2	3	4	5	6	7	8
Rom Code Digit								
0	Off	Off	Off	Off				
1	On	Off	Off	Off				
2	Off	On	Off	Off				
3	On	On	Off	Off				
4	Off	Off	On	Off				
5	On	Off	On	Off				
6	Off	On	On	Off				
7	On	On	On	Off				
8	Off	Off	Off	On				
9	On	Off	Off	On				
A					Off	On	Off	On
B					On	On	Off	On
C					Off	Off	On	On
D					On	Off	On	On
E					Off	On	On	On
F					On	On	On	On

Read the Switch positions on your controller and determine the number and letter. The ROM Code for your unit(s), then, is the reverse of these two digits. Every Command Card has a letter and number on it, which should be the ROM Code.

The Site number, in parenthesis, for your facility is also on the Encoded Cash Card and the Encoded Units Cards. You will verify or set the site number of the controller(s) with the Parameter Setup Command Card.

## **CAUTION**

### **PARAMETER SETUP**

#### **Software Version 3.03 and 3.19**

When setting a number value for any of the parameters, you must be very careful not to go past the number. If you do, you must exit the **Parameter Setup Routine** and start over. The solution is to press the Card Return Button and hold it in until the display shows a number about 20 to 30 less than you are trying to set. From there, increment the number one digit at a time.

#### **Software Version 3.23**

The procedure for setting a number value in this version of software has been made significantly easier than above. To program a number response to any parameter, again, be careful not to overshoot the value. If however, you do overshoot the value, merely depress the "Card Return Button" and partially insert a card and simultaneously release the button and retrieve the card. The value will reset to ZERO.

# PARAMETER SETUP

Display	Screen Display Range	Setting	Meaning
id	1 – 65,535	1 thru # of machine	Each machine should be assigned a specific ID number
CASH 1.1	\$0.000 - \$65.535	.25	This is the Price Line 1 for Site 1 Users
CASH 1.2	“	.25	This is the Price Line 1 for Site 2 Users
CASH 1.3	“	.25	This is the Price Line 1 for Site 3 Users
CASH 2.1	“	1.00	This is the Price Line 2 for Site 1 Users
CASH 2.2	“	1.00	This is the Price Line 2 for Site 2 Users
CASH 2.3	“	1.00	This is the Price Line 2 for Site 3 Users
Unit 1	00 –999	1	This is the number of units the machine will deduct for P L 1.
Unit 2	“	1	This is the number of units the machine will deduct for P L 2.
PULSE	0.00 sec – 655.35 sec	0.05 sec.	The reader is expecting to see a pulse from the machine at least this long to represent a copy
bLind	0.00 SEC – 655.35 sec	0.2	After the above “Pulse”, this is the amount of time the reader will ignore any incoming pulse
dELdiS “Delay Disable” Dispense”	0.0 sec – 6553.5 sec	0	This is the amount of time that the card reader keeps the machine enabled after the card return process is initiated
dELEJt “Delay Eject”	0.0 sec – 6553.5 sec	0	After pressing the card return button, the amount of time that elapses before the return process starts is controlled by this setting. In some instances the setting may need to be less to prevent free usage
Auto “Auto Eject”	0 sec – 65535 sec	0	After your customer inserts their card, the reader will wait this amount. A “0” response will inhibit Auto Eject of time for machine activity before it will automatically return the card
LG.CASH	\$0 - \$655.35	0	If the reader sees a card exceeding this value, it will reject it. 0 will allow cards of any value to be accepted
LG.Unit	0 – 65535	0	Same as above except referring to units instead of \$\$
TEntH.d	Yes or No	NO	
HOLd	Yes or No	No	
2 <sup>nd</sup> . Inp	Pulse or Level	Pulse	
Group 1 Site A	0-65535	180	All readers in all devices must use the same Site Number(s)
Group 2 Site B	“	1	All readers in all devices must use the same Site Number(s)
Group 3 Site C	“	2	All readers in all devices must use the same Site Number(s)

## **CAUTION!!!!**

### **ENCODING CARDS VIA CASH CARD OR UNITS CARD**

#### **Software Version 3.03 and 3.19**

To encode cash or units onto a customer's card, you must be careful not to overshoot the value to be encoded. If you do, you must escape the "Encode Card" routine and start over. It is suggested that you press the Card Return Button and hold it until you are within 20 or 30 from the value and release it. Then increment to the value one digit at a time.

If the response to the "Encoder Add" parameter in the Parameter Setup was **NO**, the value displayed upon pressing the Card Return Button once will be zero. Subsequent values will increment from there. If the value of the "Encode Cash or Units Card" is not zero and the answer to the "Encoder Add" parameter was **YES**, then the displayed value when pressing the Card Return Button once will be the value of the "Encode Cash or Units Card".

#### **Software Version 3.23**

With version 3.23, there is no "Encoder Add" parameter in Parameter Setup. If the value of the "Encode Cash or Units Card" is other than zero, the display will increment from that value rather than zero when the Card Return Button is depressed once. If the "Encode Cash or Units Card" is other than zero and you wish to encode a value onto a customer's card less than the displayed value, depress and hold the Card Return Button and partially insert a card. Immediately and simultaneously release the Card Return Button and retrieve the card. The displayed value will now be zero.

## ENCODE CASH or UNITS CARD

STEP	UNIT REACTION
1. Insert Encode Cash Card	Display Alternates between "CASH" and "00.00". If your Encode Card has a preset minimum number, it will be alternately displayed. (To change the minimum number, see step 6 below)
2. Depress the Card Return Button and hold it until the display approaches the value you intend to place on the card. <b>While holding the button, you will notice that it starts advancing rapidly at 10, 100 and then again at 1,000. So before you get to the value you expect, release the button and step to the final number one step at a time.</b>	The display starts over at 00.00 and advances slowly at first, then progressively more rapidly.
3. If you go past the value, you can reset to zero by doing the following: Press and hold the Card Return Button and partially insert the Card. Simultaneously release the Button and retrieve the card.	The display resets from the former value to zero.
4. With the value at the amount desired, begin inserting User Cards.	Each card will now have the amount encoded onto it.
5. When finished, depress the Card Return Button.	The display will say "Hello".
<b>NOTE: When encoding cards, the new value will be written over any previous value.</b>	
6. To reset the initial value on the Encode Cash Card, perform steps 1, 2 and 3. Now insert the Encode Cash Card.	The Encode Cash Card will now initiate the encoding at this new value.

To Encode Units onto cards, follow the same procedure as above except use the Encode Units Card.

All Accountor Systems Model BC-201 controllers have the encode capability. Operation as an encoder depends on the unit being able to accept command cards. Be sure Switch 6 on Switch Bank 1 is on.

## CLEAR METERS CARD

STEP	UNIT REACTION
1. Depress the card Return Button and insert the Clear Meters Card. Failure to depress the Card Return Button will cause an ER 15 message.	The display will show " <b>CLEAR</b> " followed by the "idle message", " <b>HELLO</b> ". The number of "Clears" stored in the "Read Meters" listing will now have incremented by one. All of the other numbers will now be 0.

## **CAUTION!!!!**

### **READING METERS**

#### **Software Version 3.03 and 3.19**

Reading the meters in either of these two versions of software requires that the operator step through all meter readings even though he or she may be interested in only the first one or two. By inserting the Read Meters Card and leaving it partially inserted, the display will step thru the meters more rapidly than manually reinserting the card after every reading.

#### **Software Version 3.23**

With this version of software, escaping from the "Read Meters" program is possible after you have read the meter(s) desired without having to view the remaining meters. Simply repeat the procedure above to get to desired meter. After viewing it, press the Card Return Button. The display will show "HELLO".

## READ METERS CARD

STEP	UNIT REACTION
1. Insert "Read Meters Card" and remove it.	The display will briefly display " <b>rd.Acnt</b> ". This is to confirm that you have inserted a Read Meters card". It will then alternately display " <b>CASH</b> " and a number. The number is the number of uses of the machine by cash cards since the last time the meters were cleared.
2. Partially insert the card and remove it.	Display alternately shows " <b>Unit</b> " and a number. This the number of times the machine has been used by a Units Card since the last time the meters were cleared.
3. Partially insert the card and remove it.	Display alternately shows " <b>S.COPy</b> " and a number. This is the number of times the machine has been used by a Service Technician using his/her "Service Card" since the last time the meters were cleared.
4. Partially insert the card and remove it.	Display alternately shows " <b>bypass</b> " and a number. This is the number of times the machine has been used by some means other than a card such as by manually closing the switch or by a coin mechanism.
5. Partially insert the card and remove it.	Displays alternates between " <b>t.CASH</b> " and a number. This is the total cash deducted from cards since meters were cleared last.
6. Partially insert the card and remove it.	Display alternates between " <b>t. Unit</b> " and a number. This is the total number of united deducted from cards since meters were cleared last.
7. Partially insert the card and remove it.	Display alternates between " <b>t.CCArd</b> " and a number. This is the total number cards that have been encoded since the last time meters were cleared.
8. Partially insert the card and remove it.	Display alternates between " <b>t.UCArd</b> " and a number. This is the total number of units encoded onto cards since the last time the meters were cleared.
9. Partially insert the card and remove it.	Display alternates between <b>t.ECASH</b> " and a number. This is the total \$\$ encoded onto cards since the meters were cleared last.
10. Partially insert the card and remove it.	Display alternates between " <b>t.Eunit</b> " and a number. This is the total number of units encoded onto cards since the meters were cleared last.
11. Partially insert the card and remove it.	Display alternates between " <b>t.relay</b> " and a number. This is the total number of times the machine has been enabled by whatever source since the last time the meters were cleared.
12. Partially insert the card and remove it.	Display alternates between " <b>t.CArd</b> " and a number. This the total number of cards read since the meters were last cleared.
13. Partially insert the card and remove it.	Display alternates between " <b>LG.CASH</b> " and a number. This is the largest value seen since the meters were cleared the last time.
14. Partially insert the card and remove it.	Display alternates between <b>LG.Unit</b> " and a number. This is the largest unit value seen since the meters were last cleared.
15. Partially insert the card and remove it.	Display alternates between " <b>CLEAr</b> " and a number. This is the number of times the meters have been cleared since installation.
16. Partially insert the card and remove it.	Displays says " <b>HELLO</b> ". This is the "idle message".

## ERROR CODES

<b>DISPLAY</b>	<b>PROBLEM</b>	<b>CAUSE/CURE</b>
Er 1	Sensor Error	Card inserted incorrectly or controller may need service
Er 2	Blank Card Inserted	Card inserted backwards or blank card inserted
Er 3	ROM Code Error, Ver 3.19 and 3.23 only	Check and compare ROM Code on Command Cards with switch settings on the controller
Er 4	ROM Code Error Ver 3.03 only	Check and compare ROM Code on Command Cards with switch settings on the controller
Er 5, 6 & 7	Various	Not likely to happen
Er 8	Flagged Card	Flagged Card. It was unreadable the last time it was ejected from the reader
Er 9	Site Code Error	The Site Code does not match the reader. try the card in another reader or try another card in this reader
Er 10	Max value exceeded	Check the LG.CASH setting and the value on the Card
Er 11	Prices are set to Zero	Check CASH setting
Er 12	Motor Speed Error	Call Accountor Systems for assistance
Er 13	Command Card Switch	Turn on Switch 6 of Switch Bank 1
Er 14	Illegal User card	Invalid Card
Er 15	Card Return Button not Depressed, ver 3.03 only	Press Card Return Button while inserting the Clear Meters Card