Programmable #182 Parallel Interface Cash Drawer Manual

APG CASH DRAWER®

The following warning is required by the FCC for all Class A computing devices which have been tested and comply with the standard indicated:

<u>Warning:</u>

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user, at his expense, will be required to take whatever measures may be required to correct the interference.

If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1.   Reorient the receiving antenna.

2.   Relocate the equipment with respect to the receiver.

3.   Plug the equipment into a different outlet so that the computing device and receiver are on different branch circuits

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet , prepared by the Federal Communications Commission, helpful:

<u>How to Identify and Resolve Radio-TV</u>
<u>Interference Problems</u>

This booklet is available from the US Government Printing Office, Washington, DC 20402. Order Stock No. 004-000-00345-4.

Parallel Interface

The APG Model #182 programmable cash drawer is designed to be used with a parallel centronics port from a computer or terminal to create a POS (point-of-sale) system. The cash drawer can be set up to match the opening sequence code sent out by the computer or terminal by setting dip-switches located on the drawer. This manual describes the functions of the cash drawer as well as how to set it up.

The section entitled "Functional Description" provides information on the features of this drawer. "**Getting Started**" shows how to set the dip-switches for your particular application, and gives an example. If you have difficulty, the section under "**Troubleshooting**" should help you identify and correct any problem. The "**Quick Start Tips**" located in the margin throughout the manual provide a quick reference without having to re-read the entire manual.

Functional Description

The cash drawer is equipped with an electronics package that can interpret signals from the parallel centronics port of a computer. It will open the cash drawer only when the proper character(s) is transmitted from the parallel port. This opening sequence can be programmed to be any of the 256 ASCII characters by setting dip-switches on the bottom of the cash drawer. It can also be set to open on one character, two consecutive identical characters, or two different characters in whatever order you select.

Opens on proper ASCII code from parallel port

The drawer can be the only device on a particular port, or it can share a parallel port with other devices. The other devices can include peripherals such as a parallel printer, or other cash drawers. Sharing the parallel port can be easily accomplished by a signal splitter, commonly called a "Y" connector. A "Y" connector is included with each drawer.

One or two characters for opening command

A "Y" connector allows two (2) devices with 25 pin D shell connectors to be plugged into one parallel port on the computer or terminal. The cash drawer and a second device may then share the same information, and each will respond to that information independently. By selecting non-printable characters for the opening sequence, a cash drawer and a printer can easily share the same parallel port. (Be sure the printer does not use the selected character(s) as control characters.) The printer would ignore the non-printable characters, and the cash drawer could use it as the opening command. The cash drawer would ignore all of the other information except for its opening sequence characters(s).

Any of 256 ASCII characters

Can share port with printer

The parameter option settings of the drawer are:

Stand-alone, or shared port modes

1. Stand alone, or shared port operation.
2. One or two characters in the opening sequence.
3. Opening character(s).

When sharing the port with a printer, select the shared port mode

In the stand-alone operation mode, the cash drawer provides the necessary synchronizing signal to the parallel port for proper operation. An additional device is not necessary for the port to function.

The shared port mode of operation does require another device, such as a parallel printer, to provide the necessary synchronizing signals on the parallel port for operation. The cash drawer in this situation is merely listening to the information only on the parallel port.

Select one or two characters to open, depending upon your software & your application.

If the cash drawer is in the stand-alone mode, and an additional device such as a parallel printer on the same port, the printer will probably not print properly. The printer will be sending its own synchronizing signal to the parallel port, which will probably conflict with the cash drawer's synchronizing signal. In this case, it is recommended that the printer provide the synchronizing signal. The cash drawer can process the information as fast as it comes in, and does not need to wait for a printing mechanism to catch up to the data stream.

After an opening code sequence has been sent, the cash drawer ignores all characters for the next four seconds. The purpose of the delay is to prevent rapid and successive operations of the opening solenoid, as well as to recharge the storage capacitor for the next opening.

To aid in the ease of installation and start-up of a new system, there are two indicating LED's inside the drawer. Their purpose is to assist you in getting the system operating quickly and smoothly by giving status indications as follows:

Diagnostic Indicator:
 Green – Power up
 Yellow – Character Received

1. Flash green: Proper power is supplied to the cash drawer electronic package.
2. Flash yellow: ASCII characters are being received from the parallel port.

Getting Started

Getting Started

Unpack Drawer, remove keys from till. Turn key to 12:00 position.

Remove the cash drawer from the shipping container. The drawer is shipped in a locked open position, to keep the latch from banging on the inner drawer during shipment. The keys will be attached to a bill hold down on the till assembly. Using clock position as a reference, the four lock positions and functions are:

 9:00   Locked Open (*for insurance reasons*)
10:30   Manual Open
12:00   On-Line (*normal operating state*)
 3:00   Locked Closed (*computer can not open*)

Factory Settings are shared port mode, two characters. Characters are [[.

In order to electronically operate the drawer, there are a few simple set-up parameters that may need to be made for each individual application. Three (3) sets of dip-switches are located on the bottom of the drawer. They define the mode parameters, the number of opening characters, and determine the opening sequence code. You may need to consult your software manual or the software supplier to determine some of these parameters.

4

The three (3) banks of switches are labeled, A, B, and C, and each individual switch in the bank are stamped with a number. Refer to Chart #1 for bank A switch settings, and Chart #2 for bank B and C switch settings, as discussed below.

Bank A:

1. In bank A, which has two switches, switch #1 determines the mode of operation. If this switch is closed, or "on", then the drawer is in the stand-alone mode. If the switch is "off", then the drawer can be used in the shared port mode. It is not recommended to be in stand-alone mode when sharing the port with another device.

2. Switch #2 determines the number of characters required for the opening sequence. If the switch is "on", then only one character is required to open the drawer. The setting of switch bank B determines which character is used, and bank C is ignored. If the switch is "off", then two characters are required to open the drawer. In the two-character mode, bank C is the first character, and bank B is the second character in the opening sequence.

Bank B & C:

3. The opening sequence character(s) need to be set next. If only one character is required to open the drawer by the software package, then only switch bank B is required to be set, and bank C is ignored. If two characters are required, then bank C is the first character, and bank B is the second character. Note that they can be the same or different characters, depending upon your application.

   In order to choose different switch settings, refer to Chart #2. This chart shows how the dip-switches need to be set for a particular character. Also note that the same chart is used for setting both characters.

Power & Cable Connections:

4. Next connect the cash drawer to the proper parallel port on your computer or terminal. If an additional peripheral device is being used on the same parallel port, use the "Y" connector to plug the other device and the cash drawer into the port

   Now plug the DC jack of the AC adaptor into the socket located adjacent to the dip-switches on the bottom of the cash drawer. Plug the AC power adaptor into a 115VAC, 60HZ, o.5 amp outlet. Your cash drawer is now ready to use.

"On" means pushed down
on the side that says "on"

Note switch bank used for
1st & 2nd characters is different

B & C defaults are the same-
all "off" except 3, 6, & 8

Connect parallel cable to
computer

Connect power cable to
drawer and 115V outlet.

Example Settings

This example uses the original factory setting of the dip-switches. This set-up will open the cash drawer when a parallel centronics printer is plugged into the "Y" connector, and when two identical characters ([[ASCII #91) are sent from the computer.

Examples use original factory settings

Bank "A" settings:	Switch Number	Position On/Off
Shared Port	1	Off
Two Characters	2	Off

Bank "B" and "C" switches (set identically for two left brackets, [[ )

1		Off
2		Off
3	On	
4		Off
5		Off
6	On	
7		Off
8	On	

The examples below, using DOS commands, will show how to determine if the drawer is properly hooked up and how to open the drawer for the settings shown above.

1. This command will list all of the files in the directory out to the LPT1 port. If the cash drawer is hooked up, the yellow LED will be flashing as characters are being received.

   C:>DIR>LPT1

2. To send two left bracket characters to the LPT1 port, a short file is easy to set up and use as a test:

DOS Commands for drawer test

   C:>copy con drawer.dem
   The quick brown fox jumped over the lazy dog
   [[
   F6 (function key F6)

   The computer will respond with: 1 File(s) copied

   Then type:

   C:>TYPE DRAWER.DEM>LPT1

   The drawer should open with the setting above.

Troubleshooting

I. There are two indicating lights or LED's (Light Emitting Diode) inside the drawer for ease of troubleshooting. The green LED will flash at approximately ½ second intervals when the drawer is powered up and the electronics are functioning properly. The yellow LED flashes when ASCII characters are being received from the parallel port by the cash drawer. These lights can easily be seen by looking into the back of the drawer with the drawer in the open position, and the cash tray removed.

   A. If the green LED is not flashing:

       1. Check to make sure the AC power adaptor is plugged into a 115VAC, 60HZ outlet, and that the outlet is functional.

       2. Be sure that the DC power end of the adaptor is connected to the cash drawer.

       3. If the light still will not flash, test the power adaptor to be sure it is working, or replace it.

   B. If the yellow LED doesn't flash:

       1. Check to make sure that the green light is flashing, and that the drawer is powered up.

       2. Check to make sure that cash drawer is plugged into the correct parallel port on the computer or terminal. It can sometimes be confusing as to which is the correct parallel or serial port on a computer or terminal.

       3. Confirm that your computer's parallel port works properly. Connect another device that you know works, or use the sample program listed below.

       4. Double check all the dip-switch settings. To be sure that the switch is fully seated in the proper position, toggle each switch from its current position to the opposite position and back. That is, if it is on, turn it off, and then turn it on again. Do this for all of the dip-switches.

II. This short program (written for an IBM or compatible device) using DOS commands, will help determine if:

- Your computer's parallel port works properly.

- The cable is connected correctly.

- All of the switches are set properly for the cash drawer to open.

It will open the drawer with the factory default dip-switch settings (shared port, two characters, [[-ASCII 91). See Chart #1 and #2 for the original factory settings.

> **C:>copy con drawer.dem**
> **The quick brown fox jumped over the lazy dog**
> **[[**
> **F6 (function key F6)**

The computer will respond with: 1 file(s) copied

Then type:

C:>TYPE DRAWER.DEM>LPT1

The drawer should open with the factory default setting.

III. If the drawer still doesn't open:

    A. Check to make sure that the character(s) selected is/are the correct ones. Refer to the example program in this section to test different opening characters.

    B. Check to make sure that the software package being used is telling the drawer to open, and that the software is directing the opening command to the correct port.

    C. If you are using other devices on the same parallel port, disconnect them, and test the cash drawer in the stand alone mode.

    D. The drawer requires an additional, non-matching character to be sent after the opening character(s). Check to be sure your software is fulfilling that requirement.

    E. If you're using one character as the opening sequence, bank B is the switch bank to set for the opening code, and bank C is ignored. For a two character opening sequence, bank C is the first character, and bank B is the second one.

    F. Verify that the character that you think is being sent, is really what is being sent. To do this, connect both the cash drawer and a printer to the port. Then try using one printable character (such as an A, or [ ) that will show up on the printer. Be sure the switches are set properly.

    G. If you still have difficulty, contact the software supplier, or the APG service department at (763) 571-5000.

IV. If the printer is printing, but the lines are incomplete, or the
   printer is just printing garbage:

   A. Check to be sure the cash drawer is in the shared port
      mode. In the stand-alone mode, if the cash drawer is sharing a
      port, the information printed will probably be incomplete. It is
      not recommended to leave the drawer in the stand-alone mode
      when sharing the port with another device.

Incomplete / Illegible copy

For Additional

Technical Assistance

Or Information

Call: 763-571-5000

Or email to

support@apgcd.com

**Port Parameter Set-up Dip-Switch
Functions Bank "A"**

Switch Number	State	Function
1	on	stand alone operation
	off*	shared port operation
2	on	single opening character
	off*	dual opening character
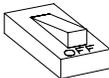
= "ON" switch position
= Pushed down on the side of the switch that
  says "on".
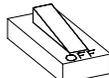
= "OFF" switch position
= Pushed down on the side of the switch that
  says "off".

* original factory setting

Chart #1
Mode Settings
(Bank A)
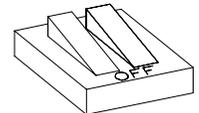
Factory Default
Bank "A"

9

Chart #2
Character Settings
(Banks B & C)
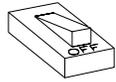
= *1 on chart shown pushed down on side that says "on", or has numbers.*
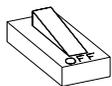
= *(Blank) on chart shown pushed down on side that says "off".*

3-D view of switch in "OFF" position
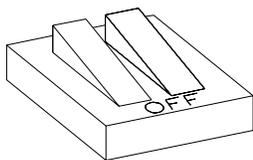
ASCII CHAR.	DECIMAL NUMBER	HEX #	1	2	3	4	5	6	7	8
			DIP-SWITCH SETTING							
NUL	0	0	1	1	1	1	1	1	1	1
SOH	1	1		1	1	1	1	1	1	1
STX	2	2	1		1	1	1	1	1	1
ETX	3	3			1	1	1	1	1	1
EOT	4	4	1	1		1	1	1	1	1
ENQ	5	5		1		1	1	1	1	1
ACK	6	6	1			1	1	1	1	1
BEL	7	7				1	1	1	1	1
BS	8	8	1	1	1		1	1	1	1
HT	9	9		1	1		1	1	1	1
LF	10	A	1		1		1	1	1	1
VT	11	B			1		1	1	1	1
FF	12	C	1	1			1	1	1	1
CR	13	D		1			1	1	1	1
SO	14	E	1				1	1	1	1
SI	15	F					1	1	1	1
DLE	16	10	1	1	1	1		1	1	1
DC1	17	11		1	1	1		1	1	1
DC2	18	12	1		1	1		1	1	1
DC3	19	13			1	1		1	1	1
DC4	20	14	1	1		1		1	1	1
NAK	21	15		1		1		1	1	1
SYN	22	16	1			1		1	1	1
ETB	23	17				1		1	1	1
CAN	24	18	1	1	1			1	1	1
EM	25	19		1	1			1	1	1
SUB	26	1A	1		1			1	1	1
ESC	27	1B			1			1	1	1
FS	28	1C	1	1				1	1	1
GS	29	1D		1				1	1	1
RS	30	1E	1					1	1	1
US	31	1F						1	1	1
SP	32	20	1	1	1	1	1		1	1
!	33	21		1	1	1	1		1	1
"	34	22	1		1	1	1		1	1
#	35	23			1	1	1		1	1
$	36	24	1	1		1	1		1	1
%	37	25		1		1	1		1	1
&	38	26	1			1	1		1	1
'	39	27				1	1		1	1
(	40	28	1	1	1		1		1	1
)	41	29		1	1		1		1	1
*	42	2A	1		1		1		1	1
+	43	2B			1		1		1	1
,	44	2C	1	1			1		1	1
-	45	2D		1			1		1	1
.	46	2E	1				1		1	1
/	47	2F					1		1	1

Chart #2 – continued
Character Settings
(Banks B & C)

ASCII CHAR.	DECIMAL NUMBER	HEX #	DIP-SWITCH SETTING							
			1	2	3	4	5	6	7	8
0	48	30	1	1	1	1			1	1
1	49	31		1	1	1			1	1
2	50	32	1		1	1			1	1
3	51	33			1	1			1	1
4	52	34	1	1		1			1	1
5	53	35		1		1			1	1
6	54	36	1			1			1	1
7	55	37				1			1	1
8	56	38	1	1	1				1	1
9	57	39		1	1				1	1
:	58	3A	1		1				1	1
;	59	3B			1				1	1
<	60	3C	1	1					1	1
=	61	3D		1					1	1
>	62	3E	1						1	1
?	63	3F							1	1
@	64	40	1	1	1	1	1	1		1
A	65	41		1	1	1	1	1		1
B	66	42	1		1	1	1	1		1
C	67	43			1	1	1	1		1
D	68	44	1	1		1	1	1		1
E	69	45		1		1	1	1		1
F	70	46	1			1	1	1		1
G	71	47				1	1	1		1
H	72	48	1	1	1		1	1		1
I	73	49		1	1		1	1		1
J	74	4A	1		1		1	1		1
K	75	4B			1		1	1		1
L	76	4C	1	1			1	1		1
M	77	4D		1			1	1		1
N	78	4E	1				1	1		1
O	79	4F					1	1		1
P	80	50	1	1	1	1		1		1
Q	81	51		1	1	1		1		1
R	82	52	1		1	1		1		1
S	83	53			1	1		1		1
T	84	54	1	1		1		1		1
U	85	55		1		1		1		1
V	86	56	1			1		1		1
W	87	57				1		1		1
X	88	58	1	1	1			1		1
Y	89	59		1	1			1		1
Z	90	5A	1		1			1		1
[	91	5B			1			1		1
\	92	5C	1	1				1		1
]	93	5D		1				1		1
^	94	5E	1					1		1
_	95	5F						1		1

Factory Default
Banks B & C

ASCII Character #91 ([ )

Chart #2 - continued
Character Settings
(Banks B & C)

ASCII CHAR.	DECIMAL NUMBER	HEX #	DIP-SWITCH SETTING							
			1	2	3	4	5	6	7	8
`	96	60	1	1	1	1	1			1
a	97	61		1	1	1	1			1
b	98	62	1		1	1	1			1
c	99	63			1	1	1			1
d	100	64	1	1		1	1			1
e	101	65		1		1	1			1
f	102	66	1			1	1			1
g	103	67				1	1			1
h	104	68	1	1	1		1			1
i	105	69		1	1		1			1
j	106	6A	1		1		1			1
k	107	6B			1		1			1
l	108	6C	1	1			1			1
m	109	6D		1			1			1
n	110	6E	1				1			1
o	111	6F					1			1
p	112	70	1	1	1	1				1
q	113	71		1	1	1				1
r	114	72	1		1	1				1
s	115	73			1	1				1
t	116	74	1	1		1				1
u	117	75		1		1				1
v	118	76	1			1				1
w	119	77				1				1
x	120	78	1	1	1					1
y	121	79		1	1					1
z	122	7A	1		1					1
{	123	7B			1					1
|	124	7C	1	1						1
}	125	7D		1						1
~	126	7E	1							1
DEL	127	7F								1

APG CASH DRAWER®

ISO 9001 REGISTERED

OLE POS

M-23G-182 Rev B

Made in U.S.A.