POS 108

Cash Drawer Alarm, Splitter, Printer Alarm, Paper Sensor Alarm
For POS Printers with RJ12 Cash Drawer port
POS 108 USER MANUAL Support up to PCB Ver. 4.1

POS 108 Cash Drawer Alarm option

The POS108 provides retailers peace of mind with their employees. Through selectable options, the POS108 can notify employees with an electronic buzzer if a cash drawer is left open for more than a selectable amount of time (15 - 40 seconds). The electronic buzzer can be selected to stay on for 60 seconds or stay on until all the drawers are closed.

Most IBM, Star, Epson, Citizen and other compatible POS printers support two cash drawers but the printer only provides one drawer connection. The unique design of the POS108 provides the retailer the option of connecting two cash drawers to one POS printer without the use of special cables.

The POS108 also uses the same RJ12 cash drawer port off the POS printer for its power. No external power adaptors are required. See Figure 1 for the Connection illustration. Note that the push button on the top of the POS108 will sound the BUZZER when the button is pressed with any Cash Drawer Alarm options (This is for Testing the BUZZER only). The Buzzer Test will not sound when in Printer Alarm option is selected.

In order for the cash drawer alarm to work, the cash drawer must be wired to support a drawer open switch. The drawer open switch should be N/O (Normally Open when the cash drawer is closed). The POS108 with Firmware Version 2.8 can support N/O (Normally Open when the drawer is closed). The POS108 with Firmware Version 2.6A will support both N/O (Normally Open when the cash drawer is closed) and N/C (Normally Closed when the drawer is closed) automatically. It must be noted that the POS108 will only support one cash drawer attached to the POS108 in N/C mode and the POS108 will support one or two cash drawers in N/O mode. USING VER 2.6A firmware, all the drawers must be closed before the POS108 is powered up by the printer for the automatic switch sensor to work properly. Important Note: DO NOT MIX Drawer Switch types. You can use up to two N/O drawer(s) on the POS108. You can use ONLY ONE N/C drawer on the POS108 with Firmware Version 2.6A. See Figure 5 & 6 for typical cash drawer wiring requirements.

The cash drawer alarm features of the POS108 do not need any software changes to your applications. The cash drawer alarm works independent of the printer and all applications. The POS108 monitors the cash drawer open switch to trigger the alarm. The drawer open status information is still passed to the printer and is not affected by the POS108. See Figure 1 for typical connection for multiple cash drawers.

If using a (N/C) Normally Closed cash drawer, you can only connect one cash drawer to the POS108 and you will need to use Firmware Version 2.6A with N/C cash drawer with the POS108. The firmware version 2.6A is preinstalled at the Factory and need to be requested upon ordering your POS108.

POS108 Paper Sensor and Cash Drawer Alarm option (POS-PSEN)

The Paper Sensor Option operates the same as a cash drawer switch. You need to use the Paper Sensor attached to the POS108 set in CASH DRAWER ALARM MODE only! DO not use a cash drawer and P Sensor attached to the POS108 at the same time. When paper is present the paper sensor will trigger the alarm as per its dip switch settings. The Paper Sensor Alarm features of the POS108 do not need any software changes to your application. The Paper Sensor alarm works independent of the printer and all applications. Use the same setting as the cash drawer alarm when using a Paper Sensor POS-Psen. Note that you can only use ONE POS-Psen with the POS108. See Figure 2 to typical Psen connection. If you are using firmware Ver 2.6A on the POS108 with a paper sensor, IT IS important to remove any paper in front of the paper sensor before the power is turned on. This is only for VER 2.6A firmware which has an AUTO Sense feature for N/O or N/C cash drawers. The Paper sensor will work in reverse mode if the power is applied with a paper in front of the Paper sensor. Remove the paper and power cycle the POS108 to resolve this. Note that Version 2.8 will not have this problem because the Auto Version was removed from this firmware version.
Figure 1: POS108 Cash Drawer Alarm connection illustration for multiple (N/O) Normally Open cash drawers to one POS printer. If using a (N/C) Normally Closed cash drawer, you can only connect one cash drawer to the POS108 and you will need to use Firmware Version 2.6A with N/C cash drawers with the POS108. The firmware version is preinstalled at the Factory and need to be requested upon ordering your POS108.

Figure 2: POS108 Paper Sensor Alarm connection illustration to POS printer.

Do not connect any cash drawer when using a POS-Psen with the POS108. See POS-PSen Manual for installation instructions. The POS108 with the Psen is ideal for restaurant kitchen or bar order printers and other service industries. It uses the same RJ12 cash drawer port off the printer for its power. NO software changes are needed with the POS108 and Psen combination. Remember to Set your jumpers inside the PSEN to match the printer you are using before you connect them to the printer. (Damage to the POS108 or PSEN may occur if improperly set)

Jumper Position inside POS-Psen Ver: 4.1 & Ver 5.0
POS108 Printer Alarm option

The POS108 sounds an electronic buzzer that goes off when a cash drawer pulse is triggered by the printer. It uses the same RJ12 cash drawer port off the printer for its power. The electronic buzzer is triggered by the cash drawer pulse function of the printer. No cash drawer is required. There are two selectable options available for the Printer Alarm. See Table 1 for option settings. The alarm can be silenced by pressing the push button located on the top of the POS108. See Figure 3 for typical configuration. Note that the printer alarm option is monitoring the cash drawer pulse generated by the printer to trigger the alarm. The printing of the receipt has no effect on the alarm trigger unless the cash drawer pulse is generated by the printer at the beginning or end of the printed receipt. Some software application changes may be needed to accomplish this task. NO cash drawer should be connected for the printer alarm option to work properly. See your printer manual on how to trigger open a cash drawer using your printer.

![POS108 connection illustration for Printer Alarm to POS printer.](image)

*Do not connect any cash drawer or PSEN (paper sensor) when using Printer Alarm option.*

Features of the POS108 include: a dual RJ12 female connector, status LED, no external power supply required (power is provided by the printer), and an alarm that are switch selectable.

![POS108 Connection Panel Layout PCB Ver 3.4 & 3.6](image)

*Figure 4-a: POS108 Connection Panel Layout PCB Ver 3.4 & 3.6*

![POS108 Connection Panel Layout PCB Ver 4.0 & 4.1](image)

*Figure 4-b: POS108 Connection Panel Layout PCB Ver 4.0 & 4.1*
Sw1 (ON): Select Cash Drawer Alarm / Paper Sensor

Sw1 (OFF): Select Printer Alarm

Sw2 (ON): Select option A for either alarms

Sw2 (OFF): Select option B for either alarms

Sw3 Sw 4: (XX Seconds selector for either Alarm)

Cash Drawer Alarm Option A Sw2(ON): Alarm will sound when drawer is open for XX seconds then turn off after 60 seconds or close drawer.

Cash Drawer Alarm Option B Sw2(OFF): Alarm will sound when drawer is open for XX seconds. Close drawer to turn off Alarm.

<table>
<thead>
<tr>
<th>J1</th>
<th>Normal Operations (Closed) Default</th>
<th>If using a POS-PSen on a Star Printer  Remove J1 (Open) Remove Jumper Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>J2</td>
<td>If Connecting the POS 108 to a Epson / IBM Printer, J2 (Closed) Default</td>
<td>Remove Jumper from J2 and use the Jumper Block on J3 if connecting the POS108 to Star / Citizen printer</td>
</tr>
<tr>
<td>J3</td>
<td>If connecting the POS108 to a Star / Citizen Printer, J3 (Closed)</td>
<td>J3 is (Open) Default. Note: J2 is Closed if J3 is Open. Caution: Do not connect J2 &amp; J3 at the same time.</td>
</tr>
</tbody>
</table>

Table 7: Jumper location and description on the POS108 PCB Ver 4.0 & 4.1
Table 1A: POS108 Dip Switch 1-2 & Table 1B: POS108 Dip Switch 3-4

Printer Alarm Option A Sw2(ON): Alarm will sound for a selected amount of time (1 to 10 seconds) when a receipt and a drawer trigger option is printed. Push button to silence alarm before preset alarm time.

Printer Alarm Option B Sw2(OFF): Alarm will sound when a receipt and a drawer trigger option is printed. Push button to silence alarm.

Sw 2 SW 3: Timing selector for value of XX. Switch 1 will determine which table to use.
**Figure 7: Typical Epson Cash Drawer Wiring**

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Signal Name</th>
<th>Function</th>
<th>I/O Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FG</td>
<td>Frame ground</td>
<td>—</td>
</tr>
<tr>
<td>2</td>
<td>DRD1</td>
<td>Drive signal 1</td>
<td>OUT</td>
</tr>
<tr>
<td>3</td>
<td>+24 V</td>
<td>Drive power</td>
<td>OUT</td>
</tr>
<tr>
<td>4</td>
<td>+24 V</td>
<td>Drive power</td>
<td>OUT</td>
</tr>
<tr>
<td>5</td>
<td>DRD2</td>
<td>Drive signal 2</td>
<td>OUT</td>
</tr>
<tr>
<td>6</td>
<td>DRNS</td>
<td>Sense signal</td>
<td>IN</td>
</tr>
</tbody>
</table>

**Table 4: RJ12 Drawer 1 and Drawer 2 pin out**

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Drawer # 1 Signal Name</th>
<th>Drawer # 2 Signal Name</th>
<th>Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Frame Ground</td>
<td>Frame Ground</td>
<td>Ground</td>
</tr>
<tr>
<td>2</td>
<td>Drawer # 1 Sink Signal</td>
<td>Drawer # 2 Sink Signal</td>
<td>Input</td>
</tr>
<tr>
<td>3</td>
<td>Open Drawer Source pull up voltage</td>
<td>Open Drawer Source pull up voltage</td>
<td>PU Power</td>
</tr>
<tr>
<td>4</td>
<td>+24 VDC</td>
<td>+24 VDC</td>
<td>Power</td>
</tr>
<tr>
<td>5</td>
<td>Drawer # 2 Sink Signal</td>
<td>Drawer # 1 Sink Signal</td>
<td>Input</td>
</tr>
<tr>
<td>6</td>
<td>Open Drawer Status Switch</td>
<td>Open Drawer Status Switch</td>
<td>Input</td>
</tr>
</tbody>
</table>

**Figure 8: Typical Star Cash Drawer Wiring**
Table 5: Jumper location and description on the POS108 PCB Ver 3.4

<table>
<thead>
<tr>
<th>J1</th>
<th>Star / Citizen (Pin 1-2)</th>
<th>Epson/ IBM Printer (Pin 2-3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>J2</td>
<td>Enable internal Buzzer (Closed) Default</td>
<td>Disable internal Buzzer (Open)</td>
</tr>
<tr>
<td>J3</td>
<td>Connector for External Buzzer +24VDC</td>
<td></td>
</tr>
<tr>
<td>J4</td>
<td>Connector for External Push Button</td>
<td></td>
</tr>
</tbody>
</table>

Figure 9: POS108 PCB Panel Layout (J5 is on PCB Ver 3.4 PCB only)

Table 6: Jumper location and description on the POS108 PCB Ver 3.6

<table>
<thead>
<tr>
<th>J1</th>
<th>Star / Citizen (Pin 1-2)</th>
<th>Epson/ IBM Printer (Pin 2-3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>J2</td>
<td>Enable internal Buzzer (Closed) Default</td>
<td>Disable internal Buzzer (Open)</td>
</tr>
<tr>
<td>J3</td>
<td>Connector for External Buzzer +24VDC</td>
<td></td>
</tr>
<tr>
<td>J4</td>
<td>Connector for External Push Button</td>
<td></td>
</tr>
<tr>
<td>J5</td>
<td>Open only if using a PSEN with Star Printer</td>
<td>Closed (Default) (PCB Ver 3.6)</td>
</tr>
</tbody>
</table>
The drawer solenoid is connected to +24 VDC and to the Drawer Sink Signal. Typically pins 2 & 4 are used for drawer #1. The Drawer Status Switch is connected to an Open Drawer Switch source pull up voltage and the switch is closed only when the cash drawer is OPEN, typically pins 3 & 6. Special Note: The drawer trigger #2 for most POS Printers connects to the solenoid using Pin 4 & 5. Since most cash drawers are wired to only use Pin 2 & 4, the POS108 is designed to support the same type of cash drawer in both cash drawer port #1 & #2. See table 3 for pin out for both ports.

![Diagram of POS108 PCB Panel Layout](image)

Looking into The connector

![Diagram of RJ12 Connector Pinout](image)

Note: The electronic Buzzer in the POS108 is powered by the POS printers Cash Drawer RJ12 port.

A flashing LED indicates that an event is active (Drawer is Open / Paper Sensor ON or in a Timing Loop).

**INSTALLATION:**

- Select Cash Drawer alarm or Printer Alarm using Dip switches 1
- Select Option A or B for the selected Alarm using Dip switch 2
- Select Time duration for the Selected Option Dip switches 3 – 4
- Depending on the POS108 PCB Version, Select Printer type on POS108 Jumpers & POS-PSen if applicable. Select Epson-IBM or Star-Citizen Printer.
- Connect Cash Drawer or POS-PSen Paper Sensor (only applies to Cash Drawer Alarm Option) Close the drawer if 1 or 2 drawer(s) are used! If using a POS-Psen Only use 1 POS-Psen (NO Drawers)
- Connect RJ12 to POS printer Cash Drawer port and power up Printer
- Using Double sides adhesive Velcro (Included) mount the POS108 where desired
- Test Alarm functions. In Cash Drawer Alarm Mode, Push Button will sound Buzzer for Test (P/B Test available on Firmware Version 2.8 and 2.6A or higher only)

**CONTENT INCLUDED:**

1. Pos 108 Device
2. 1 Black Velcro double-sided adhesive strip.
**WARRANTY:**

1-year limited warranty for parts and Labor. Warranty is void if anyone other than the Manufacturer’s repair department or an authorized repair center services the POS108.

To prevent any Damage to your POS108 or POS-PSen, Always confirm the proper settings are set for the Printer type you are connecting your device to. Damage as a result of improper settings when connection to your printer is not covered by the warranty.

**External Power Accessory kit Available for POS108 & Paper Sensor POS-PSen.**

Note that you can utilize the POS108 with a Paper Sensor POS-Psen on any printers that do not have a Cash drawer port on them. You simply need to order the 24V DC 1 Amp power Kit adapter. Contact your POS108 reseller for more details. When ordering your External Power Accessory Kit, ensure you set your Power settings on the POS108 and POS-Psen match your power kit ordered (Epson or Start) power kits are available.
### POS 108

#### Selectable modes using Dip Switches

<table>
<thead>
<tr>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash Drawer Alarm (Until Drawer is closed)</td>
</tr>
<tr>
<td>Cash Drawer Alarm (Until Drawer is closed or Max 1 Minute ON)</td>
</tr>
<tr>
<td>Paper Sensor Alarm (Until receipt is removed)</td>
</tr>
<tr>
<td>Paper Sensor Alarm (Until receipt is removed or Max 1 Minute ON)</td>
</tr>
<tr>
<td>Print Receipt Alarm (Selectable 1 - 10 seconds On)</td>
</tr>
<tr>
<td>Print Receipt Alarm (On until Push Button to Shut-off) Will monitor up to a 50 millisecond minimum cash drawer pulse width</td>
</tr>
</tbody>
</table>

#### Power

- Power from RJ12 cash drawer port on receipt printer

#### Current

- 10 - 200 mA typical current used by device only

#### Drawer Connectors

- 2 x RJ12, Drawer 1 & Drawer 2

#### Dimensions

- 80 x 45 x 28.5 mm (WxDxH) 150 gm

#### RJ12 Cable Length

- 180 cm (6 Feet)

#### Humidity / Temp.

- 10% - 90% relative humidity, -20°C to 55°C

#### Printers Supported

- Star/ Epson/ Citizen/ IBM and compatible printers with RJ12 drawer port (2 Drawer function is limited to Printer options)

#### Piezo Electric Buzzer

- 4.5 kHz @ 90 dBA at 30 cm, External Buzzer connection option

#### Drawer Triggers

- The Drawers are triggered by the Cash Drawer pulse from the RJ12 of Receipt Printer Cash Drawer port. (2 Drawer function is limited to Printer options)

#### Drawer Alarm

- Alarm will sound if either drawers are left open manually or by the printer trigger. Cash Drawer must have an RJ12 cable with a drawer normally open switch (N/O) for the Drawer Alarm to function. Automatic N/O and N/C detection upon Power up of POS108 with Firmware Version 2.6A only. Close Drawer on Power up of POS108 for Auto mode to work properly.

#### Printer Alarm

- The printer alarm is triggered by the Cash Drawer pulse from the RJ12 of Receipt Printer Cash Drawer port. NO Drawer needed, External Push Button Connection option

#### Operating System

- Not dependent on any operating system or software

#### Warranty

- 1 year
Note: This equipment has been tested and found to comply with the limit for a class A digital device, pursuant to part 15 of the FCC rule. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates uses and can radiate radio frequency energy and interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

Disclaimer

The Manufacturer makes no claims or warranties with respect to the content or accuracy of this publication or the product it describes, including warranties of fitness or merchantability for a particular purpose. The Manufacturer shall not be liable for any special, incidental or consequential damages, nor damages due to use or misuse born from integration into any mechanical, electrical or computer system. The Manufacturer is not responsible for the accuracy of any device connected to the POS108. The Manufacturer reserves the right to make any changes to this manual or product(s) without obligation to notify any person of such changes. Warranty is void if the case is opened by anyone other then the Manufacturer’s repair department or authorized repair center.

Epson, Star, Citizen and IBM are registered trademarks of the appropriate printer manufactures.
Technical Notes

Using Firmware Version 2.6A:

If you are using a cash drawer that is wired N/C (Normally Closed Drawer Switch) You can only connect one N/C cash drawer to the POS108 and you will need to pre-order your POS108 with Firmware Version 2.6A installed at the Factory. This firmware version will auto detect your cash drawer type upon power up of the POS108. The Cash drawer should be closed in order for the auto detect to work properly before power is applied to the POS108.

If you are using a paper sensor PSEN with version 2.6A firmware installed in the POS108, you must ensure that no paper is located in front of the PSEN before the POS108 is powered. Leaving a paper in front of the PSEN upon power up, will sound the alarm once the paper is removed. To correct this, remove the paper in front of the PSEN and power cycle the POS108.

Using Paper Sensor POS-Psen on POS108 with Star Printer:

POS108 PCB Ver 4.0 & 4.1:

If you are using a Paper Sensor POS-PSEN and a POS108 PCB Ver 4.0 on a Star printer, it is important to verify that the POS108 and the Paper Sensor are both set to Star option. The POS108 with PCB Ver 4.0 & 4.1 can now be fully configured without having to open the case of the POS108. You will need to remove J1 (Open) when using a Paper Sensor POS-Psen on a POS108 connected to a Star Printer only. Confirm that the Jumper J3 is set (Closed) for a Star Printer. Note J2 MUST be (Open). Also ensure that the Paper Sensor POS-Psen jumpers J1 & J2 inside the POS-PSEN is also set to Star.

POS108 PCB Ver 3.6:

If you are using a Paper Sensor POS-PSEN and a POS108 PCB Ver 3.6 on a Star printer, it is important to verify that the POS108 and the Paper Sensor are both set to Star option. You will need to open the POS 108 case and remove the Jumper J5 (Open) inside POS108 Ver 3.6 if using a Paper Sensor POS-Psen on a Star Printer. Also Confirm that J1 inside the POS108 is also set to Star. Ensure that the Paper Sensor POS-Psen jumpers J1 & J2 inside the POS-PSEN is also set to Star.

PCB Ver 3.4

If you are using a Paper Sensor POS-PSEN and a POS108 PCB Ver 3.4 on a Star printer, it is important to verify that the POS108 and the Paper Sensor POS-Psen are both set to Star option. You will need open the case of the POS108 and will need to disconnect the wire from the CABLE pin # 7 which is connected to (Pin 6 on RJ12). Verify that J1 is set to Star. It is recommended that you order a POS108 with a PCB Ver 3.6 or Higher if you are using a Paper Sensor POS_PSen on a POS108 connected to a Star Printer. (Special instructions are available upon request if you need to modify your POS108 Ver 3.4 to function with a POS-PSen on a Star Printer. Contact your distributor for more info.)