bematech

KitchenGo Premium
Kitchen Display System

Developer Manual

Software Integration and System Setup

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KitchenGo Premium KDS Solution

KitchenGo Premium software suite is an innovative kitchen display solution that supports order distribution and kitchen automation. The suite comes with three different applications – KitchenGo KDS, KitchenGo Router and KitchenGo Statistic. To utilize all available features, such as the ability to bump, unbump, show summary, etc., developers should follow Bematech XML template to generate the data output.

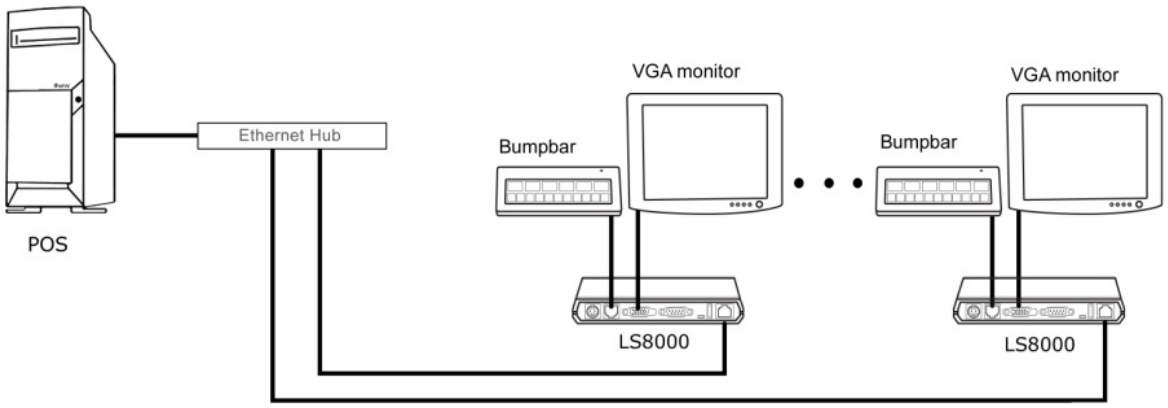
KitchenGo Premium offers features included but not limited to:

Feature	Description
Order routing	Automatically route items to different stations according to filter settings.
Display customization	Independent setting for different parts of the order screen, panel and content.
Touch operation support	In addition to bump bar operations, supports LE1015 and LE1015 touch monitors.
Backup order router	Automatic switch to second order router if primary router unit failed.
Software auto upgrade	Automatic software upgrade when new releases are available.
Password control	Avoid unauthorized changes in configuration. Require password to enter Settings.
Multi-language order display	Support order display of multiple languages.
Ticket printing	Optional connection to printer to station for printing out tickets when order is received/bumped.
Expeditor stations	Consolidates orders and show status.
Expeditor items	These items will only be shown in Expeditor station but not in prep stations. This feature is for items that are handled only by expeditors.
Expeditor alert	Change order panel display when all items are ready.
Order panel view	Grid layouts and flexible size panel (panel sized according to order length).
Split screen	Split screen horizontally or vertically for dual users.
Order summary	Summary of outstanding items.
Advanced summary	Summary of outstanding items, only items without condiments or only items with condiments.
Order waiting time alert	Change order panel colors base on 3 levels timers.

Order headers and footers	Shows order numbers, order type, order destination, order waiting time etc.
Condiment/messages display	Condiment, order message, item messages.
Special order types	Rush order / Fire order
Rush order sorting	Move Rush orders to front of order queue
Sort orders	Sort order by order number, arrival time etc.
Transfer orders	Transfer order to another station.
Order/Item bump	Bump focused order, panel number, item bump, auto bump.
Order/item unbump	Recall orders/items mistakenly bumped.
Order Start / Item Start	Prep start key to indicate to expeditor that the order/item preparation has started.
Order beeper	Beep tone when orders arrive.
Mirror stations	Second station showing same order information. When order is bumped from either station, the order is bumped from both stations.
Duplicate stations	Orders sent to one station is automatically duplicated to a second station. Order is bumped individually in the 2 stations.
Backup stations	Second station can be assigned as a backup. Automatically pick up orders of primary station when primary station is detected off-line.
Work load distributor	Automatic distributes work load between primary and secondary station
Smart order	Show items of an order according to item preparation time to align all items of the order to be finished at the same time.
Bump notification	When order is bumped, send bump notification message back to POS.
Order status	POS can send "Request for Status" message to stations and chef can press bumpbar keys to indicate status of the order. Status message is then send back to POS.
Statistic reports	Generates various statistics reports for analysis of order preparation times, orders per hour etc.
Scheduler	Schedule items to be prepared in a weekly time schedule to cope with busy hours in anticipation of orders.
Item showing method	One item behind /on the fly / when order is paid.
Buildcards	Display pictures of buildcards/recipes for food items

Training video	Play training videos of food item preparations
Table tracker integration	Integrate with table tracker operations (food delivery to table)
Pager integration	Integrate with pager operations (expeditors)
Alert sounds	Alert sound selection for different events.
Order queue display	Display queue of customer orders
Line item display	Line item display mode (header fields as columns), summary display
Line item summary	Show summary of selected items on top of screen
Tab displays	Expeditor tabs - Orders, Destination, Order Queue, Tracker, Pager
Table management integration	Integrate with table management app (table queue, reservation, to-go delivery)
Import/export filter settings	Allow users to import and export filter settings in csv format so that filter data can be edited off-line
Modifier prep time	Add modifier prep time tag. When working with smart orders, add the modifier prep time to item prep time.
Condiment summary	Summary by condiment
Line item display with condiment	In line item display mode, display all condiments on one line with text wrapping when line is too long
Line item display sort by prep time	In line item display mode, when smart order is used, the hidden items are sorted by prep time
Color attribute tag format	Add capability in <RGBColor> tag to support different formats. • decimal integer (value of 0xRRGGBB) • #RRGGBB / #AARRGGBB • rgb(rrr,ggg,bbb) • d. color string, e.g. "red" "darkgray", "maroon", "navy" ...
Text wrap	Allow words wrap to next line when one line is not enough, also support in Line item display mode
Order Icon	Ability to setup ICON in KDS then allow order to display selected icon, E.G.: Order To GO icon

System Overview



A complete KitchenGo Premium system consists of one of the following:

Bump Bar Setup:

1. LS8000 KDS Controller
2. KB9000/KB1700 Bump Bar
3. VGA Monitor
4. KitchenGo Premium software suite

Touch Screen Setup:

1. LS8000 KDS Controller
2. LE1015/LE1015W Touch Monitor
3. KitchenGo Premium software suite

The KitchenGo Premium software suite is pre-installed in the LS8000. Order data is transmitted from the POS stations to KitchenGo Premium through an Ethernet network connection and displayed on the monitor. Either a bump bar or a PCAP touch monitor can be used to operate the stations. Kitchen printers can also be connected to the LS8000 to print out tickets in the kitchen for dispatching with the food items

For POS Development

The integration between POS software and KitchenGo Premium software suite is simple and fast. All you need to do is generate an order file that uses XML file format then send it to KitchenGo Premium through either share folder or TCP/IP. Please check XML order sample and its format below for detail.

XML Description

All Bematech KDS software communicates with POS by accepting an XML file via folder drop or TCP/IP.

Some characters are generally reserved to indicate markup such that they cannot be used for character data. These characters are <, >, and &. Sometimes single and double quotes are also considered as reserved characters. To use those characters in the XML string please use the replacements as follow:

- < instead of <
- > instead of >
- & instead of &
- ' instead of '
- " instead of "
- % instead of %

Note: For node properties, you should NOT convert single or double quotes to ' or *". For example, version="1.0", encoding="UTF-8", BG="10", FG="255"*

After creating the XML file, you may use Internet browser to open and see whether it complies with XML standard.

Tag	Description
<Transaction> </Transaction>	Start and End of XML file
<Order> </Order>	Start and End of the order content. All information needs to be included between these 2 tags.
<ID>198</ID>	• Order ID. Order ID must be unique in whole system. It can be string or integer. • Item ID. Each item must have a unique ID. It can be string or integer. • Condiment ID. Condiment ID must be unique within each item. It can be string or integer.
<PosTerminal>2</PosTerminal>	Information of the POS Terminal
<TransType>n</TransType>	Define which type the order or item is. For order, there are 5 different types in total: • When n=1: add new order. • When n=2: delete existing order. Only order ID tag needs to be included.

	• When n=3: modify existing order. Only modified tag(s) needs to be included. • When n=4: transfer order to other station. See transfer tag below. • When n=5: request order status. For item, there are 3 different types total: • When n=1: add a new item; • When n=2: delete this item; • When n=3: modify this item. For condiment there are 3 different types total: • When n=1: add a new condiment. • When n=2: delete this condiment. • When n=3: modify this condiment.
<Transfer ToStation="3" FromStation="1"/>	Transfer order from station 1 to station 3.
<OrderStatus>n</OrderStatus>	Define order transaction status: • When n=0: order is unpaid • When n=1: order is paid • When n=2: order is in process
<OrderType>string</OrderType>	Define order priority: • When the string is empty, it is a standard order. • When string=RUSH, it is a RUSH order. • When string=Fire, it is a Fire order.
<ServerName></ServerName>	Waiter or waitress' information
<Destination>Dine in</Destination>	Order destination
<GuestTable>S:01</GuestTable>	Table name and/or number
<UserInfo>userinfo</UserInfo>	Information on User, can be used to display a message
<Parked>no</Parked>	A parked order will go to parked pool and won't be displayed on panels. Its value can be yes/no or 1/0
<IconIndex>n</IconIndex>	Display icon on the order hearder.
<OrderMessages></OrderMessages>	Start and End of order message, everything inside these two tags are order message
<Count>n</Count>	Order message count of message (PreModifier), 0<=n<=2
<S0>Order Message 0</S0>	Message contents of message 0
<S1>Order Message 1</S1>	Message contents of message 1
<CatDelay></CatDelay>	The CatDelay tag is used to override the delay time of the categories in Items Filter Setting

<Category Name="Grill" Delay="4"></Category>	Information on category and its delay time in minute
<Item></Item>	Start & End of item, everything inside these two tags are item content
<Item ItemType="1"></Item>	Start & End of Expo item, when POS send ItemType="1", this item is Expo item means this item will only show in Expo station (Good for items that only handle in Expo station)
<BuildCard></BuildCard>	Start & End of buildcard, the link/URL to the file is inside
<TrainingVideo> </TrainingVideo>	Start & End of Training Video, the link/URL to the file is inside
<PreparationTime></PreparationTime>	Start & End of preparation Time, used for smart order on the fly timer, input type is double, unit in minutes. E.G.: 1.5
<HideStation>1,3,4</HideStation>	Hide item on these stations
<ItemDelay>2.3</ItemDelay>	Delay timer on item in minute
<Name>Pasta Salad Supreme</Name>	Item name
<Category>Hot</Category>	Item (food) category
<Quantity>1</Quantity>	Item quantity
<Color BG="10" FG="255"></Color>	256 colors, background and foreground color value
<KDSStation>n:n</KDSStation>	x:0 or x:1, x stands for which station you want the order to be, 0 stands for screen 1 and 1 stands for screen 2, support multiple station with 5:0,4:1 this will send order to both station 4 and 5
<PreModifier> </PreModifier>	Start & End of item PreModifier, everything inside these two tags are item PreModifier
<Condiment></Condiment>	Start & End of item condiment, everything inside these two tags are item condiment
<Action>n</Action>	Use in condiment, n=1 or -1 means add more condiment (+) or less condiment (-)

Sample XML order

```
<?xml version="1.0" encoding="UTF-8"?>
<Transaction>
 <Order>
       <ID>199</ID>
       <PosTerminal>2</PosTerminal>
       <TransType>1</TransType>
       <OrderStatus>0</OrderStatus>
       <OrderType>RUSH</OrderType>
       <ServerName>Jack</ServerName>
       <Destination>FastFood</Destination>
       <GuestTable>23</GuestTable>
       <UserInfo>userinfo</UserInfo>
       <OrderMessages>
            <Count>2</Count>
            <S0>Order Message 0</S0>
            <S1>Order Message 1</S1>
       </OrderMessages>
       <Item>
              <ID>14</ID>
              <TransType>1</TransType>
              <Name>Cheese Sandwish</Name>
              <Category>Sandwish</Category>
              <BuildCard>http://www.xxx.com/r8/img/sample_10.jpg</BuildCard>
              <TrainingVideo>http://www.xxx.com/sample_1.mp4</TrainingVideo>
              <Quantity>2</Quantity>
              <KDSStation>0</KDSStation>
              <PreModifier>
                 <Count>2</Count>
                 <S0>Pre-Modifier 0</S0>
                 <S1>Pre-Modifier 1</S1>
              </PreModifier>
              <Color  BG="108" FG="120"></Color>
             <Condiment>
                 <ID>0</ID>
                 <PreModifier>
                       <Count>1</Count>
                       <S0>Seat 1</S0>
                 </PreModifier>
                 <TransType>1</TransType>
                 <Name>Spicy</Name>
                 <Color  BG="128" FG="20"></Color>
                 <Action>1</Action>
             </Condiment>
               <Condiment>
                 <ID>2</ID>
                 <TransType>1</TransType>
                 <Name>tomato</Name>
```

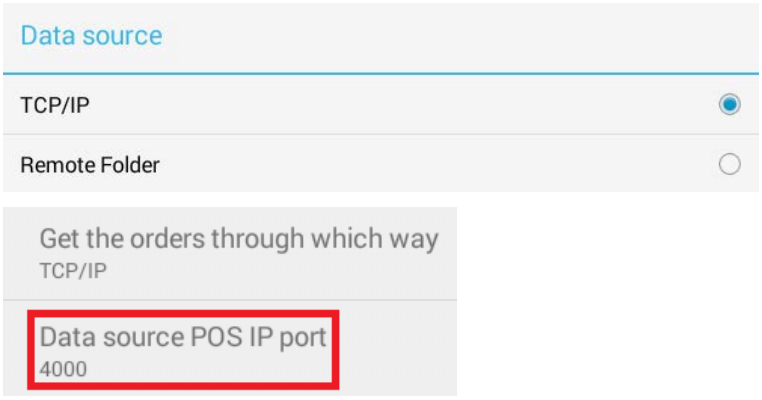
```
            <Color BG="8" FG="213"></Color>
            <Action>-1</Action>
        </Condiment>
 </Item>
<Item>
            <ID>10</ID>
       <TransType>1</TransType>
            <Name>Coffee</Name>
            <Category>Beverages</Category>
            <Quantity>1</Quantity>
            <Color BG="28" FG="200"></Color>
      <KDSStation>0</KDSStation>
      <PreModifier>
            <Count>2</Count>
            <S0>Seat 2</S0>
            <S1>extra msg </S1>
      </PreModifier>
      <Condiment>
            <ID>0</ID>
            <TransType>1</TransType>
            <Name>Suger</Name>
            <Color  BG="48" FG="100"></Color>
            <Action>1</Action>
      </Condiment>
      <Condiment>
            <ID>1</ID>
            <TransType>1</TransType>
            <Name>Milk</Name>
            <Color  BG="58" FG="70"></Color>
            <Action>-1</Action>
      </Condiment>
 </Item>
<Item>
         <ID>11</ID>
         <TransType>1</TransType>
         <Name>Vege Soup</Name>
         <Category>Soup</Category>
         <Quantity>2</Quantity>
         <Color  BG="108" FG="120"></Color>
 </Item>
<Item>
         <ID>12</ID>
         <TransType>1</TransType>
         <Name>Apple Pie</Name>
         <Category>Desserts</Category>
         <Quantity>2</Quantity>
         <Color  BG="108" FG="120"></Color>
        <Condiment>
            <ID>0</ID>
```

```
                <TransType>1</TransType>
                <Name>butter</Name>
                <Color  BG="128" FG="20"></Color>
                <Action>1</Action>
            </Condiment>
              <Condiment>
                <ID>2</ID>
                <TransType>1</TransType>
                <Name>cheese</Name>
                <Color BG="8" FG="213"></Color>
                <Action>-1</Action>
            </Condiment>
     </Item>
     <Item>
             <ID>13</ID>
             <TransType>1</TransType>
             <Name>Garden salad</Name>
             <Category>Salads</Category>
             <Quantity>2</Quantity>
             <Color  BG="108" FG="120"></Color>
            <Condiment>
                <ID>0</ID>
                <TransType>1</TransType>
                <Name>Ranch</Name>
                <Color  BG="128" FG="20"></Color>
                <Action>1</Action>
            </Condiment>
              <Condiment>
                <ID>2</ID>
                <TransType>1</TransType>
                <Name>No Dressing</Name>
                <Color BG="8" FG="213"></Color>
                <Action>-1</Action>
            </Condiment>
     </Item>

</Order>
</Transaction>
```

TCP/IP Programming

If user selects TCP/IP as the data source, the POS software will interface with KitchenGo Premium using a TCP/IP socket. Users can select the port that KitchenGo Premium listens to, as shown below:



The order data should be sent through the socket with the specified format (protocol) shown below in either two formats:

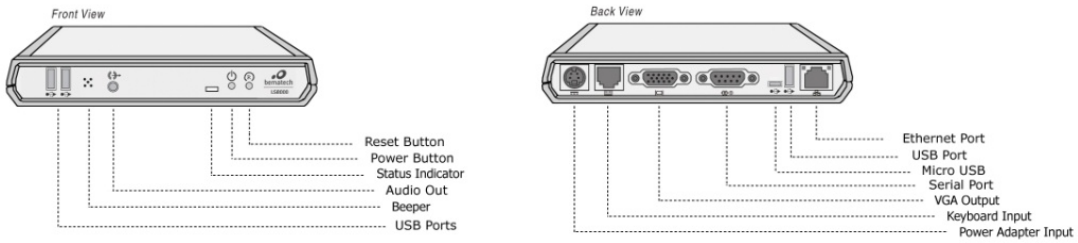
1. <STX> <COMMAND><LEN-HIGH> <LEN-LOW> <DATA/PAYLOAD> <ETX>
2. <STX> = 0x02
   <COMMAND> = 0x05
   <LEN-HIGH> =data length (payload), high byte
   <LEN-LOW> = data length (payload), low byte
   <DATA> = xml file contents
   <ETX> = 0x03

Here is a simple example (in C#) showing tcp connection and placement of the data in the envelope described above:

```
TcpClient client = new TcpClient(AddressFamily.InterNetwork);
private void btnSend_Click(object sender, EventArgs e)
{
   client.Connect(textBoxIP.Text, Int32.Parse(textBoxPORT.Text)); //Connect specified IP and Port
        if (client.Connected)
                {
                        foreach (string filename in lstFiles.Items)
                {
                        send_file(filename);
                 }
```

```
                        client.Close();
                    }
}
private void send_file(string filename)
{
        string s = File.ReadAllText(filename);
        send_string(s);
}
private byte[] convert(string s, string cp) //Convert the data into utf8 bytes
{
        System.Text.Encoding utf8 = System.Text.Encoding.GetEncoding(cp);
        return utf8.GetBytes(s);
}
private void send_string(string s)
{
        byte[] utf8 = convert(s, "utf-8");
        //Full packet = stx + command + high + low+ payload + etx
        int nlen = utf8.Length + 5; //Length of full packet is length of payload + 5
        byte[] buf = new byte[nlen];
        buf[0] = 0x02; //stx
        buf[1] = 0x05; //command
        buf[2] = (byte) (utf8.Length >> 8); //high byte
        buf[3] = (byte)(utf8.Length); //low byte
        utf8.CopyTo(buf, 4); //payload
        buf[4 + utf8.Length] = 0x3; //etx
        NetworkStream stream = client.GetStream();
        stream.Write(buf, 0, buf.Length);
        stream.Close();
}
```

Hardware Setup



1. Remove the LS8000 from its box and follow the LS8000 Installation Guide to setup the unit in your environment.
2. Connect the Bump bar to the LS8000 using either RJ11(PS/2 interface) or USB cable depending on your Bump bar connection type.
3. Connect VGA monitor to LS8000 VGA output.
4. If touch monitor operation is desired, connect the VGA cable to the monitor as well as the LS8000 VGA output, then connect the USB cable to the monitor (USB 2.0 Type B Jack) and to the LS8000 (USB 2.0 Type A Plug).
5. USB mouse and keyboard are recommended for application installation and setup.
6. If needed, connect the ticket printer to the LS8000 using either Serial or USB connection; you may also connect the printer to the Ethernet router if the printer has an Ethernet connection.

Note: Refer to the user manuals of each individual hardware for information on how to setup the printer and the bump bar. For the USB printer, only the Bematech LR2000 and MP200 are supported. For Serial or Ethernet connection, you can use a Bematech LR2000/LR2000E, Bematech MP200/MP200E, or Epson printer.

Component	Model Number	Type	Manufacturer
Kitchen Printer	LR2000	USB, Serial	Bematech
	MP200	USB, Serial	Bematech
	LR2000E	Ethernet	Bematech
	MP200E	Ethernet	Bematech
	-ANY-	Serial, Ethernet	Epson

Software Setup

The KitchenGo Premium software suite consists of three applications:

- KitchenGo KDS
- KitchenGo Router
- KitchenGo Statistics

The KitchenGo Premium software suite is pre-installed in the LS8000 KDS controller, no extra installation is needed unless a manual installation or update is required.

If the POS software already includes order routing functionality, it is not necessary to enable the KitchenGo Router application. If the POS software does not manage order routing itself, the KitchenGo Router can be enabled to support this particular functionality and provide other advanced features, such as smart ordering.

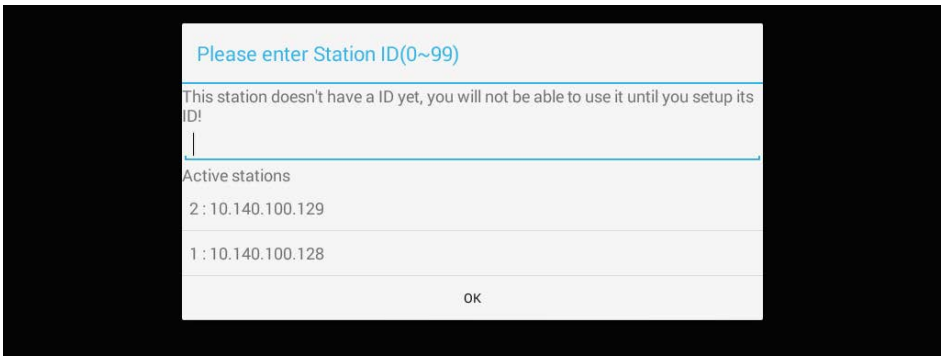
Manual Installation/Update

Below are the steps to install/update KitchenGo Premium:

1. Save the KitchenGo Premium APKs onto a USB flash drive;
2. Connect the USB flash drive to the LS8000;
3. Go to the desktop of the LS8000 and click “Explorer”  ;
4. Click "USB Storage" and navigate to the path where you stored the APKs;
5. Click the app you want to install and follow the software wizard to finish.

Create Station ID

1. Boot up each individual LS8000 station and open the KitchenGo KDS application.
2. Enter the Station ID you wish to use. *NOTE: Station ID must be unique for each station on the same network.*
3. Click OK.



Connect to the POS software

There are 2 different system setups available in KitchenGo Premium to connect to the POS software – with KitchenGo Router and without KitchenGo Router. It is recommended to use KitchenGo Router if the order routing function is not managed by the POS software.

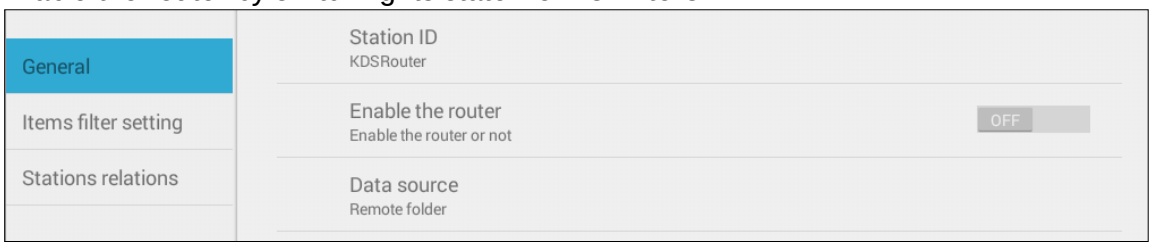
NOTE: if the POS software integrates with Bematech KDS Manager, please follow "System Setup with KitchenGo Router".

Station Setup with KitchenGo Router

1. Open the KitchenGo Router application.

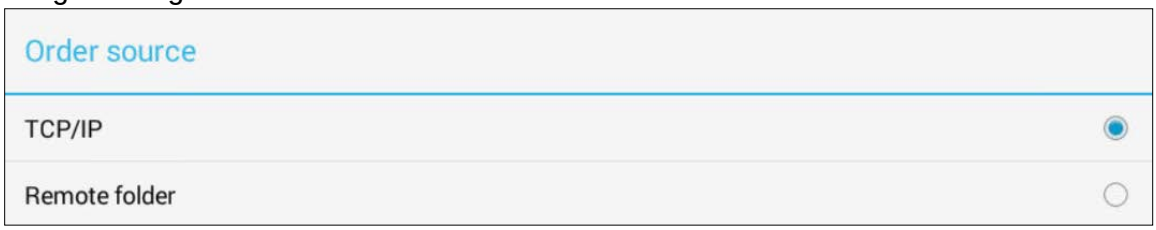
   NOTE: when using KitchenGo Router to manage order routing, enable the router on only one LS8000 station.

2. Click Menu on the top right corner of the screen and select "Settings".
3. Enable the router by switching its state from OFF to ON.

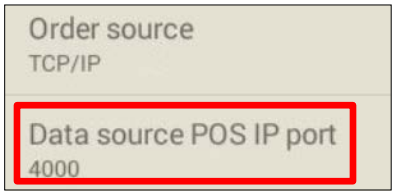


Date Source Setup

1. click Data source and select the communication method. This setting needs to match the design/setting of the POS Software.



   a. **TCP/IP**: With "TCP/IP" set as the order source, the POS software will interface with the KitchenGo Router through a TCP/IP socket. Users can select the port that the KitchenGo Router listens to, as shown below.



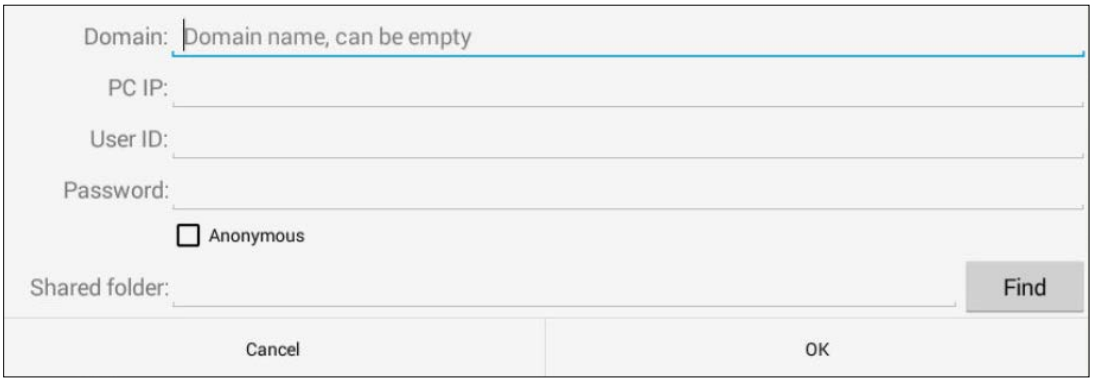
   Note: You can find the IP address of the LS8000 by selecting "Show My IP" from the

Menu panel. this will be the IP address that needs to be set up in the POS software for KDS communication. For details and its sample code, please refer to the TCP/IP section in the user manual.

b. **Remote Folder**: When "Remote Folder" is set as the order source, the POS software will interface with the KitchenGo Router by dropping order files into a folder shared on the network.

i. First, select "remote folder" as the order source, then click “Data source remote folder”.

ii. Enter Domain (optional), IP address and login information of the remote computer. Once the login is verified, you will be able to find available shared folders by clicking Find. Go through the list of folders to select the one to which the POS software sends the XML files and click OK.



NOTE: Please refer to the troubleshooting section in the user manual for details if you have trouble setting up the remote folder.

Stations Relations Setup

Navigate to "Stations relations" on the left-hand side and setup the Stations relations table. When it is done, click "Save & Update to all" to update the relation table to all stations, please make sure all stations are online and there are no errors before you update.

NOTE: Please refer to the troubleshooting section in the user manual for details if you have trouble setting up the stations relationship.

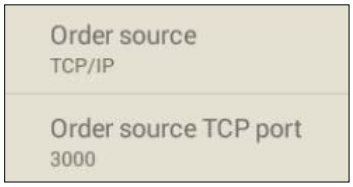
System setup with KitchenGo Router Setup is complete. Set up the POS Software and test the operations by sending a test order from the POS software.

Station setup without router

Date Source Setup

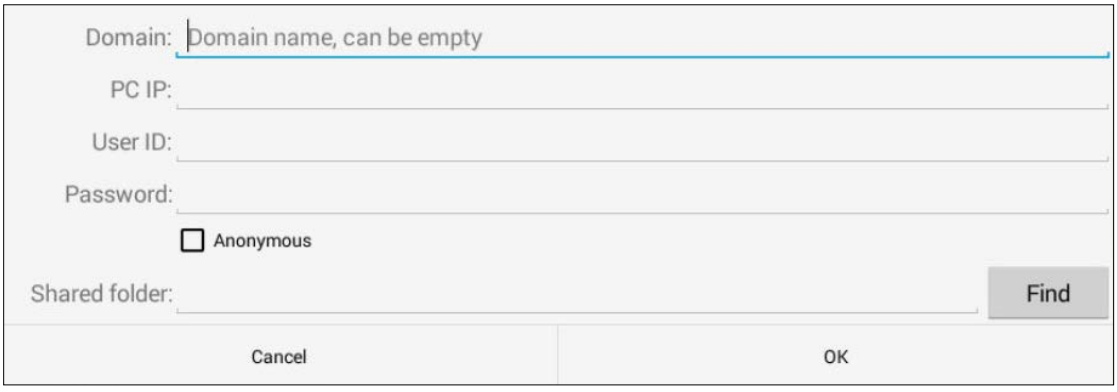
In this setup, all the LS8000 stations will only open the KitchenGo KDS application. The KitchenGo Router app in all stations should be kept disabled.

1. Open the KitchenGo KDS application.
2. Click Menu  on the top right corner of screen and select "Settings".
3. Click “Order source” and select the order source. This setting needs to be matched to the design/setting of POS Software.
   a. **TCP/IP**: With "TCP/IP" set as the order source, the POS software will interface with the KitchenGo KDS through a TCP/IP socket. Users can select the port that the KitchenGo KDS listens to, as shown below:



Note: You can find the IP address of the LS8000 by selecting "Show My IP" from the Menu panel. this will be the IP address that needs to be set up in the POS software for KDS communication. For details and its sample code, please refer to the TCP/IP section in the user manual.

   b. **Remote Folder**: When "Remote Folder" is set as the order source, the POS software will interface with the KitchenGo KDS by dropping the order files in a folder shared on the network.
      i. First, select "remote folder" as the order source, then click “Data source remote folder.
      ii. Enter Domain (optional), IP address and login information for the remote computer. If the login is verified, you will be able to find available shared folders by clicking Find. Go through the list of folders to select the folder to which the POS software sends the order files and click OK.



NOTE: Please refer to the troubleshooting section in the user manual for details if you have trouble setting up the remote folder.

Repeat the above the steps to setup all stations' order source.

For "TCP/IP", the order source port setting can be the same for all stations or different ports can be used, depending on the POS Software design. For "Remote Folder", you will need different shared folders for different stations. It is like sending orders to different printers. For example, Station0's Shared folder-C$/order/station0; Station1's Shared folder-C$/order/station1.

Stations Relations Setup

Navigate to "Stations relations" and setup the Stations relations table. When it is done, click "Save & Update to all" to update the relation table to all stations, please make sure all stations are online and there are no errors before you update.

NOTE: Please refer to the troubleshooting section in the user manual for details if you have trouble setting up the stations relationship.

System setup without KitchenGo Router is complete. Set up the POS Software and test the operations by sending a test order from the POS software.

Check KitchenGo Premium User Manual for more details about all KitchenGo KDS features and detailed configuration