

## Sprint Direct Connect SDC to 223 and 224 Series Adapter Panels





# Sprint Direct Connect SDC to 223 and 224 Series Adapter Panels

## 1.0 General

This application note is intended to assist technical staff with cable assembly and setting up the hardware of different 223 and 224 Series Adaptor Panels (TRA-223, DSP-223, IP-223, and IP-224) to ONLY the Kyocera DuraPlus Sprint Direct Connect (SDC) Series phone.

- **NOTE:** This application note only supports communications of one (1) of the following types per connected phone (phone is configured to do with PTT is pressed):
  - A single dedicated Talk-Group
  - A single dedicated User
  - Call last received

## 2.0 Interconnect Cable Assembly

A cable assembly is required to connect the 4-pin headset jack of the DuraPlus phone to the various 223 and 224 Series Adaptor Panels. The cable assembly can be purchased from Digi-Key (http://www.digikey.com/) using P/N CP-254CS-ND.

Additionally, a DB-25 or DB-37 male connector and cover is required based on the installed adaptor panel being used.

Use Table 1 to manufacture this cable assembly.

All 223 Series DB-25 Pin	IP-224 DB-37 Pin	Digi-Key Cable	Signal	
25	1	Red	MIC+	
24	20	Black	RX+	
14	24	Yellow	PTT	
2 & 7	29	Green & Shield	GND	

TABLE 1. Cable Pin-out

## 3.0 Kyocera DuraPlus Sprint Direct Connect (SDC) Series phones

#### 3.1 Configuring a Direct Connect a Group

Before you set up a direct connect to a group, ensure the desired TeamDC group is in the phone's contact list and is operational.

To configure a direct connect to a group, do the following:

- 1. From the menu screen, select **Settings**.
- 2. Select DC Settings.
- 3. Select One Touch DC.
- 4. Select Action.
- 5. Select DC a Group.
- 6. Select Contacts.
- 7. Select the **desired group** from the list.
- 8. Select When Screen Off.
- 9. Select Enable.
- 10. Select Exit to return to the idle screen.
- 11. From the menu screen, select Settings.
- 12. Select Keyguard.
- 13. Select Off.
- 14. Select Exit to return to the idle screen.
- 15. Press the PTT and verify the desired TeamDC group is invoked.
- 16. With the cable attached to the phone headset jack, set the headset earpiece level to 4.
- **NOTE:** The phone needs to be attached to the charger, no charging is provided using this connection type.

#### 3.2 Configuring a Direct Connect to a Specific Contact

Before you set up a direct connect to a specific contact, ensure the desired contact is in the phone's contact list and is operational.

#### To configure a direct connect to a specific contact, do the following:

- 1. From the menu screen, select Settings.
- 2. Select **DC Settings**.
- 3. Select **One Touch DC**.
- 4. Select Action.
- 5. Select DC a Contact.
- 6. Select Contacts.
- 7. Select the **desired contact** from the list.
- 8. Select When Screen Off.
- 9. Select Enable.
- 10. Select Exit to return to the idle screen.
- 11. From the menu screen, select **Settings**.
- 12. Select Keyguard.
- 13. Select Off.
- 14. Select Exit to return to the idle screen.
- 15. Press the PTT and verify the desired contact is invoked.
- 16. With the cable attached to the phone headset jack, set the headset earpiece level to 4.
- **NOTE:** The phone needs to be attached to the charger, no charging is provided using this connection type.

#### 3.3 Configuring a Direct Connect to the Most Recent Number

To configure a direct connect to a specific contact, do the following:

- 1. From the menu screen, select **Settings**.
- 2. Select DC Settings.
- 3. Select One Touch DC.
- 4. Select Action.
- 5. Select DC Most Recent Number.
- 6. Select When Screen Off.
- 7. Select Enable.
- 8. Select Exit to return to the idle screen.
- 9. From the menu screen, select Settings.
- 10. Select Keyguard.
- 11. Select Off.
- 12. Select Exit to return to the idle screen.
- 13. Press the PTT and verify the most recent number is invoked.
- 14. With the cable attached to the phone headset jack, set the headset earpiece level to 4.
- **NOTE:** The phone needs to be attached to the charger, no charging is provided using this connection type.

## 4.0 TRA-223 Series Panels

#### 4.1 TRA-223 Setup

Set the front panel dip switch for the following settings:

Positions 6 and 7	ON
Positions 4, 5, and 8	OFF
2-Wire Operation	
Position 1	ON

1 Obition 1	011
Positions 2 and 3	OFF
4-Wire Operation	
Position 1	OFF
Positions 2 and 3	ON

**NOTE:** If operating in 2-wire simplex mode, Go Ahead tones are not heard at dispatch.

For more information on alignment steps, see the TRA-223 (P/N 803570) technical manual for configuration details. This document is available at:

http://www.telex.com/us/dispatch/downloads/d

#### 4.2 TRA-223 Alignment

With phone configured and attached, the hardware levels can be set. See the alignment section in the TRA-223 manual for basic tips.

## 5.0 DSP-223 Series Panels

#### 5.1 DSP-223 Jumper Settings

To set the DSP-223 jumpers, do the following:

- 1. Set the following jumpers to the A position:
  - J14, J15, J22, J23, J24, J25, J27.
- 2. Set the following jumpers to the **B position**:
  - J12 and J13.
- 3. For 2-Wire operation, set J19 to B; set J20 and J21 to A. For 4-Wire operation, set J19 to A; set J20 and J21 to B.

**NOTE:** If operating in 2-wire simplex mode, Go Ahead tones are not heard at dispatch.

For more information on alignment steps, see the DSP-223 Technical Manual (P/N 803274) Console Line Connection section. This document is available at: http://www.telex.com/us/dispatch/downloads/d

#### 5.2 DSP-223 Alignment

With phone configured and attached, the hardware levels can be set. See the alignment section in the DSP-223 manual for basic tips.

### 6.0 IP-223 Series Panels

#### 6.1 IP-223 Jumper Settings

TABLE 2. IP-223 Jumper Settings

Line 1	Jumper Setting	Line 2	
J33, J34	B=4-Wire	J5, J6	
J16, J21	A=Single Ended	J19, J20	
J14	Β=10 Ω	J24	
J3, J9, J11	A=Single Ended	J25, J28, J29	
J13	A=Low	J27	
J17, J22	Β= 600 Ω	J10, J15	

#### 6.2 IP-223 Software Setup

The IP-223 configuration is accomplished in the Telex System Manager application. Set up the desired IP-223 lines for local radio control and set the jumpers per the following instructions.

For more information, see the Telex System Manager Technical Manual (P/N LIT000259000). This document is available to authorized dealers for download at http://www.telex.com/us/dispatch/downloads/d

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Local Device Files	General Network General Gain	Multicast Serial Over IP Setup	Per Line Setup Account Setu	p Crosspatch Password Tone Setup
<ul> <li>IP-223 - Default</li> <li>IP-224 - IP-224 Greg's</li> </ul>	Enabled Type 1 IF Local Mode Enabled Type 2 IF Local Mode	Line Name SDC TG#2 Line Name Channel 2 Tx Tx	Muticast Address           225.8.11.81           225.8.11.81           Muticast Address           225.8.11.81           225.8.11.81           225.8.11.81           225.8.11.81	Port         Tx Group Port         TTL           1054         0         6           1270         Tx Group Port         TTL           1055         0         6           1073         0         6

To configure the IP-223 for local control, do the following:

- 1. Open Telex System Manager.
- 2. In the Processed Devices pane, select the IP-223 you want to configure.
- 3. Click the **Multicast** tab. *The Multicast page appears.*
- 4. Select **Enable** for the line to configure.
- 5. From the Type drop down menu, select Local.
- 6. In the Line Name field, enter a name for the line.
- 7. In the RX Multicast Address field, enter the RX Multicast Address.
- 8. In the Port field, enter the **port number** for the receive audio.
- 9. In the TX Multicast Address field, enter the TX Multicast Address.
- 10. In the Port field, enter the **port number** to transmit audio.

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Local Device Files	General Network General Gain Multicast Serial Over IP Setup Per Line Setup Account Setup Crosspatch Password Tone Setup
<ul> <li>IP-223 - Default</li> <li>IP-224 - IP-224 Greg's</li> </ul>	Handset Gain Setup Handset Mic Gain 0.0 dB Handset Sidetone Gain 20 dB
	Line Gain Setup Line Receive Gain Transmit Gain CTCSS Recorder Tx Voice Gain MSK Tone Gain
	1 0.0 ¥ dB 10.5 ¥ dB 0.0 ¥ dB 0 dB 0 dB
	2 0.0 ¥ dB 0.0 ¥ dB 0.0 dB 0 dB
	TDI Gain Setup
	Line TDI Receive Gain TDI Transmit Gain
	1 9.0 💌 dB 3.0 💌 dB
	2 9.0 dB 3.0 dB
	Device Info: Type: IP-223 Name: Default Source: IP-223 SDC.vga Firmware: 4.500 Webpape

- 11. Click the **General Gains** tab. *The General Gains page appears.*
- 12. From the Transmit Gain drop down menu, select **-10.5**.

To configure the IP-223 Per Line Setup page, do the following:

- 1. Open the IP-223 Configuration software.
- 2. Click the **Per Line tab**.
- 3. From the Mode group box, select the **type of line** to configure.
- 4. Click **Configure**. *The Per Line Setup page appears*.

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Local Device Hes	Openetal Type Work         General Gan   Multiclast   Send Over IP Setup         For Can Setup         Percount Setup           Mode         Console Mode         SOR         SCTCSS         Setup         <	Enabled Configure
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LAM operation is required

- 5. Select LAM Enabled.
- 6. Click the **Delay tab**. *The Delay page appears*.

	<u> </u>
Serial Port Signaling Signaling Options	
COR CTCSS Delay Function Tone Function Tone - CTCSS LAM Monitor Relay Options PTT	
Delay Setup	
Tx Delay 0 ms Rx Delay 200 ms	
Squelch Tail Delay 0 ms MSK Tone Delay 1000 ms	
PTT Delay 20 ms	

7. In the RX Delay to field, enter 200ms.

8. Click the LAM tab.

The LAM page appears.

Per Line Setup - Line 1 (Local Mode)	×
Serial Port Signaling Signaling Options	
COR CTCSS Delay Function Tone Function Tone - CTCSS LAM Monitor Relay Options PTT	
LAM Setup	
LAM Level -35 dB	
LAM Time 3 sec	

9. In the LAM Level field, enter -35.

10. In the Lam Time field, enter **3**.

Per Line Setup - Line 1 (Loca	l Mode)		×
Serial Port Signaling Signaling	g Options		
COR CTCSS Delay Fund	tion Tone Function Tone - (	CTCSS LAM Monitor Re	elay Options PTT
Options			
Supervisor	Cross Mute	Full Duplex	Rx AGC
High-Pass Rx	Pre-Emphasize Tx	Tx Monitor	D 2 Wire
F1 Last Call	Parallel Tone Console	PTT Notch Filter	🗖 iR1600 Modem
Busy Channel Lockout	Freq Update w/ PTT	Monitor	

- 11. Select the Full Duplex check box.
- 12. Select the **Rx AGC check box**.
- 13. Select the High-Pass Rx check box.
- 14. Click **OK** to close the Per Line Setup window.



15. Using the Record Configuration To Device button, push the changes to the device.

#### 6.3 IP-223 Alignment

Once the phone is configured and attached, the IP-223 hardware levels can be configured.

#### 6.3.1 Setting RX Levels

- 1. Set RX buffer amplifiers R175 (Line 1) or R110 (Line 2) to Mid-range position.
- 2. Set RX AGC compression RV5 (Line 1) and RV1 (Line 2) by turning the FCW (fully clockwise), then CCW (counterclockwise) **25%**.

#### 6.3.2 Setting TX Levels

1. Set the TX buffer amplifier R47 (Line 1) or R61 (Line 5) to Mid-range position.

Using the VU Meter application, console generated voice peaks of -6 on the Ethernet TX traffic should give good clear audio to field units. Complete audio test to and from the console, fine tune hardware adjustments, as needed, for good clear audio to field units.

## 7.0 IP-224 Series Panels

#### 7.1 IP-224 Software Setup

The IP-224 configuration is accomplished in the Telex System Manager application. Set up the desired IP-224 lines for local radio control and set the jumpers per the following instructions.

For more information, see the Telex System Manager Technical Manual (P/N LIT000259000). This document is available to authorized dealers for download at http://www.telex.com/us/dispatch/downloads/d

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Local Device Files	General Network General Gain	Multicast Serial Over IP Setup	Per Line Setup Account Setup	Crosspatch   Password   Tone Setup
<ul> <li>IP-223 - Default</li> <li>IP-224 - IP-224 Greg's</li> </ul>	Enabled Type	Line Name SDC TG#2 Tx	Multicast Address         F           225 . 8 . 11 . 81         1           225 . 8 . 11 . 81         1	Port         Tx Group Port         TTL           054         0         6           270         6
	Enabled Type 2 T Local Mode	Line Name Pare Rx Channel 2 Tx	Multicast Address         F           225         8         11         1           225         8         11         81         1	Port         Tx Group Port         TTL           055         0         6           073         0         6

To configure the IP-223 for local control, do the following:

- 1. Open Telex System Manager.
- 2. In the Processed Devices pane, select the IP-224 you want to configure.
- 3. Click the **Multicast** tab. *The Multicast page appears.*
- 4. Select **Enable** for the line to configure.
- 5. In the LIne Name field, enter **a name** for the line.
- 6. From the Line Type drop down menu, select Local Mode.
- 7. In the RX Multicast Address field, enter the RX Multicast Address.
- 8. In the Port field, enter the port number for the receive audio.
- 9. In the TX Multicast Address field, enter the TX Multicast Address.
- 10. In the Port field, enter the **port number** for the transmit audio.

#### 11. Click the Hardware Setup tab.

The Hardware Setup window appears.

Telex System Manager					-O×
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Local Device Files	General Ethemet Setup Multicast Setup Hardware	Setup Gain Setup	Per Line	Setup	
<ul> <li>IP-223 - Default</li> <li>IP-224 - IP-224 Greg's</li> </ul>	2-Wire/4-Wire Audio:	Line 1 4 Wire	•	Line 2	
	RX Audio Single-Ended/Balance:	Single-Ended	•	Single-Ended	
	RX Audio Impedance:	10 Ohms	•	600 Ohms	
	TX Audio Single-Ended/Balance:	Single-Ended	•	Single-Ended	
	TX Audio Impedance:	800 Ohms	•	200 Ohms 💌	
	I/O Pullup/Pulldown/Float:	Pullup	*	Pullup	
	I/O Voltage:	5V DC 1/0	•	5V DC I/O	
	Serial Mode:	TTL	7		
	Baud Rate:	9600, N, 8, 2	Ŧ	9600, N, 8, 2 💌	
	RS485 Address:	2	¥	2	
	Device Info: Type: IP-224 Name: IP-224 Greg's office	Source: IP-224 SDC.	vga Firm	ware: 1.102 Webpage	

Under Line 1

- 12. From the 2-Wire/4-Wire Audio drop down menu, select 4 Wire.
- 13. From the RX Audio Single-Ended/Balance drop down menu, select Single-Ended.
- 14. From the RX Audio Impedance drop down menu, select 10 Ohms.
- 15. From the TX Audio Single-Ended/Balance drop down menu, select Single-Ended.
- 16. From the TX Audio Impedance drop down menu, select 800 Ohms.
- 17. From the I/O Pullup/Pulldown/Float drop down menu, select Pullup.
- 18. From the I/O Voltage drop down menu, select 5V DC I/O.

#### 19. Click the General Gains tab.

The General Gains window

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ocal Device Files	General   Ethernet Setup   Multicast	Setup   Hardware Setup Gain Setup	Per Line Setup	
IP-223 - Default	Per Line Gain Setup	Line 1	Line 2	
IP+224 + IP+224 Greg s	CTCSS Input	[0.0 dB	dB	
	CTCSS Output	dB	[0.0 dB	
	Handset Output	0.0 dB	dB	
	Analog Recorder Output	0.0 dB	[0.0 dB	
	RX Input	[10.0 dB	[0.0 dB	
	TX Monitor Input	[0.0 dB	0.0 dB	
	TX Output	28.0 dB	0.0 dB	
	TX Voice	0.0 dB	-2.0 dB	
	RX AGC Gains			
	RX AGC Enabled			
	RX AGC Target Level	-5 🛩 dB	0 💌 dB	
	RX AGC Min Level	J dB	dB	
	RX AGC Max Gain	I5.0 dB	dB	
	Handset Setup	dB		dB

20. Configure the **gain sliders** as shown in Line 1, above.

To configure the IP-224 Per Line Setup page, do the following:

- 1. Open the IP-224 Configuration software.
- 2. Click the Per Line tab.

#### 3. Click Configure.

The Per Line Setup window appears.

nep		
athemet Setup   Multicast	Setup Hardware Setup Gain Setup Per Line Setup	
ype: Local Mode ode: Off	Local Mode: >CTCSS >Delay >Function Tone Setup >LAM/COR >Options >Relay Setup >Signaling Options >Tone Setup	Configure
	ype: Local Mode ode: Off	Image: Setup       Multicast Setup       Hardware Setup       Gain Setup       Per Line Setup         Image: Local Mode       CCcal Mode:       CTCSS         Image: Off       >Delay       >Function Tone Setup         >LAM/COR       >Options       >Tone Setup         >Tone Setup       >Tone Setup

- 4. Select LAM Enabled.
- 5. Click the **Delay tab**.

The Delay page appears.

Per Line Setup - Li	ine 1 (Local Mode)	×
Serial Port Signalir	ng   Signaling Options	
COR CTCSS	Delay Function Tone Function Tone - CTCSS LAM Monitor Relay Options PTT	<u>ا ا</u>
	Delay Setup       Tx Delay     0     ms     Rx Delay     200     ms       Squelch Tail Delay     0     ms     MSK Tone Delay     1000     ms       PTT Delay     20     ms     Image: Color of the set of the	

- 6. In the RX Delay to field, enter **200ms**.
- 7. Click the LAM/COR tab.

The LAM/COR window appears.

CTCSS Delay Function Tone AM/COR Options Relay Setup Signaling	Options   Tone Setup	
LAM Setup LAM Enabled LAM Level 45 dB LAM Time 3 sec	COR Setup COR Enabled COR Active High	

- 8. Select the LAM Enabled check box.
- 9. In the LAM Level field, enter -45.
- 10. In the LAM Time field, enter **3**.

11. Click the **Options** tab.

The Options page appears.

Busy Channel Lockout      Full Duplex     Pre-Emphasize TX     Supervisor
I Cross Mute Migh-Pass RX I PTT Notch Filter
F1 Last Cal Monitor Enable RX AGC
Freq Update w/ PTT  Parallel Tone Console  Scan List

- 12. Select the Full Duplex check box.
- 13. Select the High-Pass RX check box.
- 14. Click OK to exit.



15. Using the Record Configuration To Device button, push the **changes** to the device.

#### 7.2 IP-224 Alignment

Once the phone is configured and attached, testing levels and fine tuning may be required.

No physical hardware adjustments in the IP-224 exist.

Using the VU Meter application, console generated voice peaks of -6 on the Ethernet TX traffic should give good clear audio to field units.

Complete audio test to and from the console, fine tune hardware adjustments, as needed, for good clear audio to field units.

Revision History				
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Document Number: AN-DISPATCH-049				
Revision	Change Description	Date		
А	Update brand, format and new document number	10-APR-2013		

## Suggestions or comments:

Please contact technical support with suggestions or comments concerning this application note.

#### **Technical Support:**

Email: TelexDispatchtechsupport@us.bosch.com

**Fax:** 1-402-467-3279

Phone: 1-800-898-6723

#### Bosch Security Systems, Inc 8601 East Cornhusker Hwy Lincoln, Nebraska 68507

#### Phone: 1-800-752-7560 • Fax 1-402-467-3279

#### Email: Telexdispatch@us.bosch.com

#### Web: www.telex.com