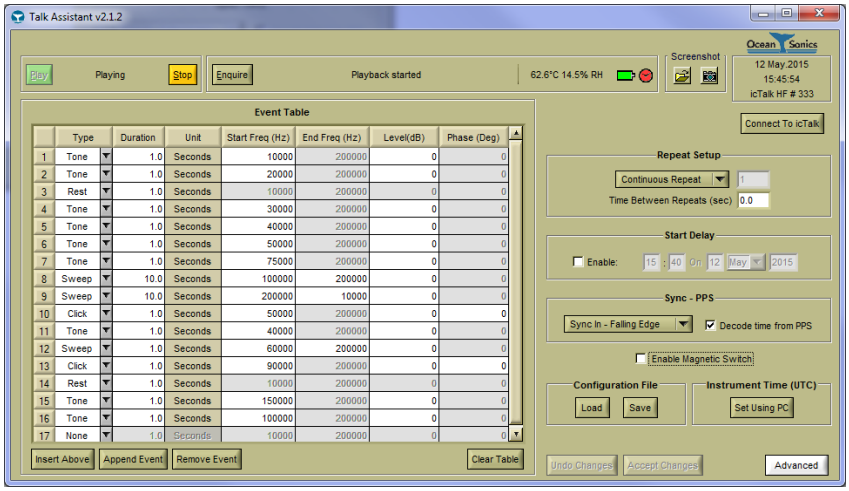
icTalk User Guide

May 19, 2015

icTalk Smart Projectors



Ocean Sonics Ltd.
Hill House, 11 Lornevale Road,
Great Village, NS, B0M 1L0 Canada
Phone: +1 902 655 3000
www.OceanSonics.com

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1 icTalk Smart Projectors

The **icTalk** Smart Projector is an all-in-one projector that produces a complex range of tones, sweeps and clicks. It can be set up by an operator once, and used indefinitely after that, requiring only occasional charging of its battery.

This Smart Projector is well suited for tank calibrations, field QC, and as being a general purpose, low power test projector.

Users communicate with **icTalk** Smart Projectors through a PC program called **Talk Assistant**. This program lets users set up the operating mode, and create the output pattern that the instrument will project.

We hope you enjoy your experience with your **icTalk** product, and look forward to receiving feedback on your experience using it.

2 Features of icTalk

2.1 LF – Low Frequency

The **icTalk LF** is a 200 – 2200Hz smart projector, having configurable output patterns and operating modes. Note that the projector can be set to produce sounds over a wider range of 20 to 8000 Hz.

The **icTalk LF** can be used in a tethered mode, or run from battery power.

In tethered mode, output can be initiated either by sending commands over the communications channel, activating a magnetic switch, or configuring the unit to output sound continuously. The **icTalk LF** communicates over RS232 at a baud rate of 19200 bits per second.

When running from battery power, sound output can be configured to run continuously, or be activated using a magnetic switch.

Figure 2-1: icTalk LF

Output patterns can be built using tones, sweeps, and rests in an event table containing up to 40 events. The output pattern can be configured to repeat continuously, or a set number of times per triggering event (start command or magnetic switch activation). The time between pattern repetitions is also configurable.

2.2 LF – Feature Summary

- Frequency Range: LF, 220 to 2200 Hz
- Configurable output patterns
- Configurable output triggering mechanisms
- Can be run from battery or tethered
- Maximum depth: 3500 meters
- Interface: RS232 (19200 bits/second)
- Small size, 42 mm dia. by 250 mm long (1.65” by 9.8”)

2.3 HF – High Frequency

The **icTalk HF** is a 10 – 200 kHz smart projector, having configurable output patterns and operating modes.

The **icTalk HF** can be used in a tethered mode, or run from battery power.

In tethered mode, output can be initiated either by sending commands over the communications channel, activating a magnetic switch, or configuring the unit to output sound continuously. The **icTalk HF** communicates over RS232 or RS422 at a baud rate of 19200 bits per second.

Figure 2-2: icTalk HF

When running from battery power, sound output can be configured to run continuously, or be activated using a magnetic switch.

Output patterns can be built using tones, sweeps, clicks and rests in an event table containing up to 40 events. The output pattern can be configured to repeat continuously, or a set number of times per triggering event (start command or magnetic switch activation). The time between pattern repetitions is also configurable.

2.4 HF – Feature Summary

- Frequency Range: HF, 10 to 200 kHz
- Configurable output patterns
- Configurable output triggering mechanisms
- Can be run from battery or tethered
- Maximum depth: 3500 meters
- Interface: RS232 (19200 bits/second)
- Small size, 42 mm dia. by 250 mm long (1.65” by 9.8”)

3 Quick Start – Bench Setup

It is important to test the Smart Projector when it is first unpacked, and before each deployment for best results.

The projector works in air well enough to provide a good functional test. Arrange a work surface large enough to hold the hydrophone, cables and the PC used to run the **Talk Assistant** software.

3.1 Checklist

1. Projector to be tested (note its serial number).
2. A PC, ideally the same portable one used to deploy the projector, with the **Talk Assistant** software previously installed. Ensure the PC has a suitable data port interface for the **icTalk** instrument.

3.2 Steps

1. Start up the **Talk Assistant** program on the PC.
2. Connect the **icTalk** to the link cable and the data link to the PC.
3. Click the Connection Settings button in the upper right. Press the Search button to locate the connected **icTalk** device. Double click the device in the list to connect to it. Note the serial number in the displayed status message to ensure it matches the number on the projector.

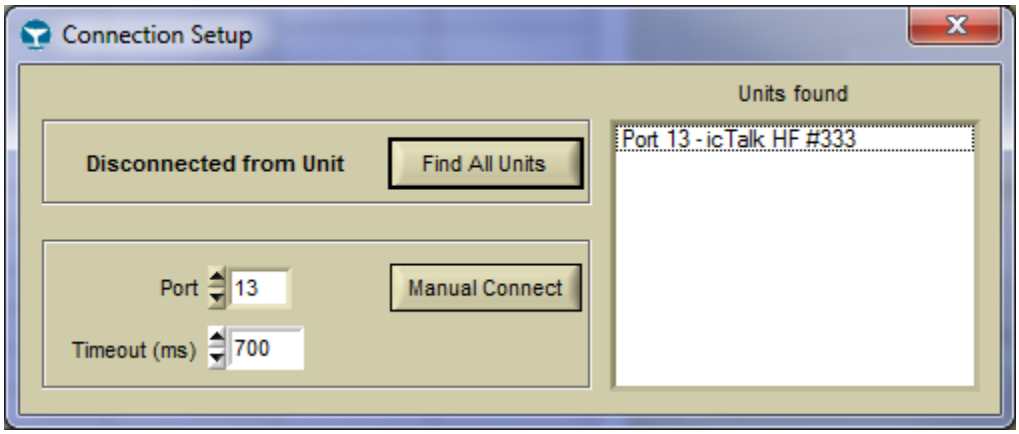


Figure 3-1: Talk Assistant connection setup

Figure 3-2: Talk Assistant status display

4. Verify that the Current Setup and Event Table are set appropriately for the job (Settings in screenshots are for example only, and will most likely not match what is required for your job).

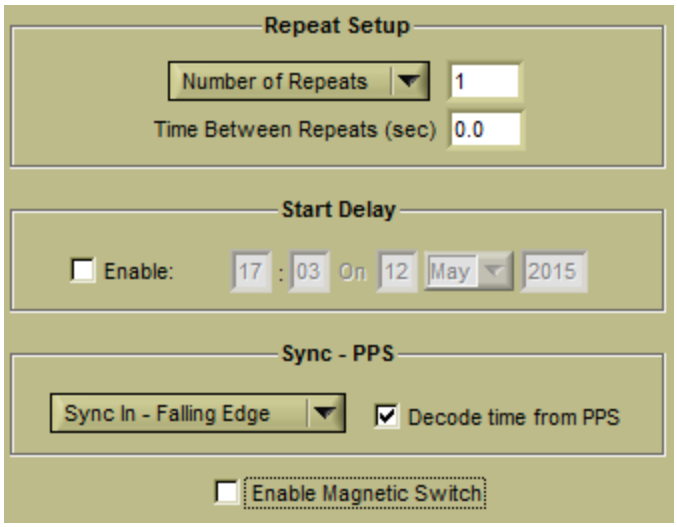


Figure 3-3: Talk Assistant setup display

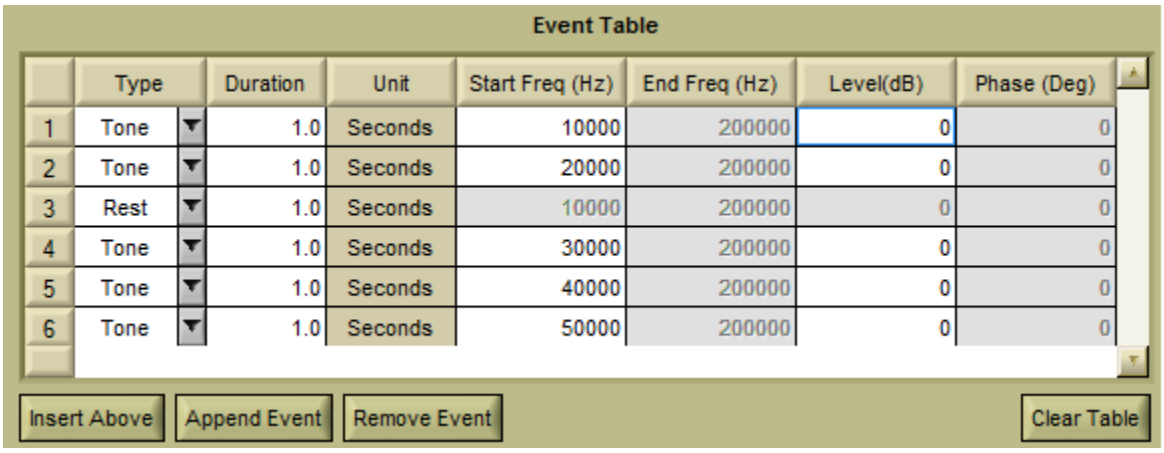


Figure 3-4: Talk Assistant event table display

5. To test the output of the device you should use a hydrophone capable of picking up the output pattern, such as an **icListen** instrument connected to Ocean Sonics' **Lucy** software. Press the Play Sound button to activate pattern playback, or tap a magnet to the label on the instrument if the magnetic switch is to be used for the job.

*Note that if the Unit Status displays a red message, there may be a link problem. Check that connections to the projector and PC are correct. The unit may also require the charger to be plugged in, if the battery requires charging. See the 'Troubleshooting' section for if the problem persists.

4 Deployment

icTalk may be deployed in tethered mode, with a communication link and power connected, or allowed to run from the battery without a communication link. When using **icTalk** without a communication link it is important to ensure that the device has been set up for deployment, with the proper running mode and output pattern configured.

When running from battery the output mode must either be set to continuous, or the magnetic switch must be enabled. In continuous output mode, the output pattern will play continuously from the time the unit is powered on. If the unit is being triggered by the magnetic switch, playback will only begin when the switch is activated.

When running with a communications link present, the playback can be initiated and stopped by sending the proper commands over the communication link. In this mode the unit may also still be controlled using the magnetic switch, or by setting the unit to run in continuous mode.

To power the **icTalk** device, either a communications cable or shorting plug must be connected to the device. It is important to make sure that the **icTalk** connector is fully inserted into the whip cable or shorting jumper before tightening the backshell. Do not use the backshell to force the connector in place. Doing so may cause damage to the connector.

When the device is being retrieved and stored, make sure that it is first rinsed with fresh water, to prevent salt buildup and corrosion during storage.

5 Using the Talk Assistant Software

5.1 Overview

The software used to talk to the **icTalk** projectors is a PC program called **Talk Assistant**. It provides an interface for setup and testing of **icTalk** instruments.

The interaction of the software has been designed for field operations personnel, making it simple to use.

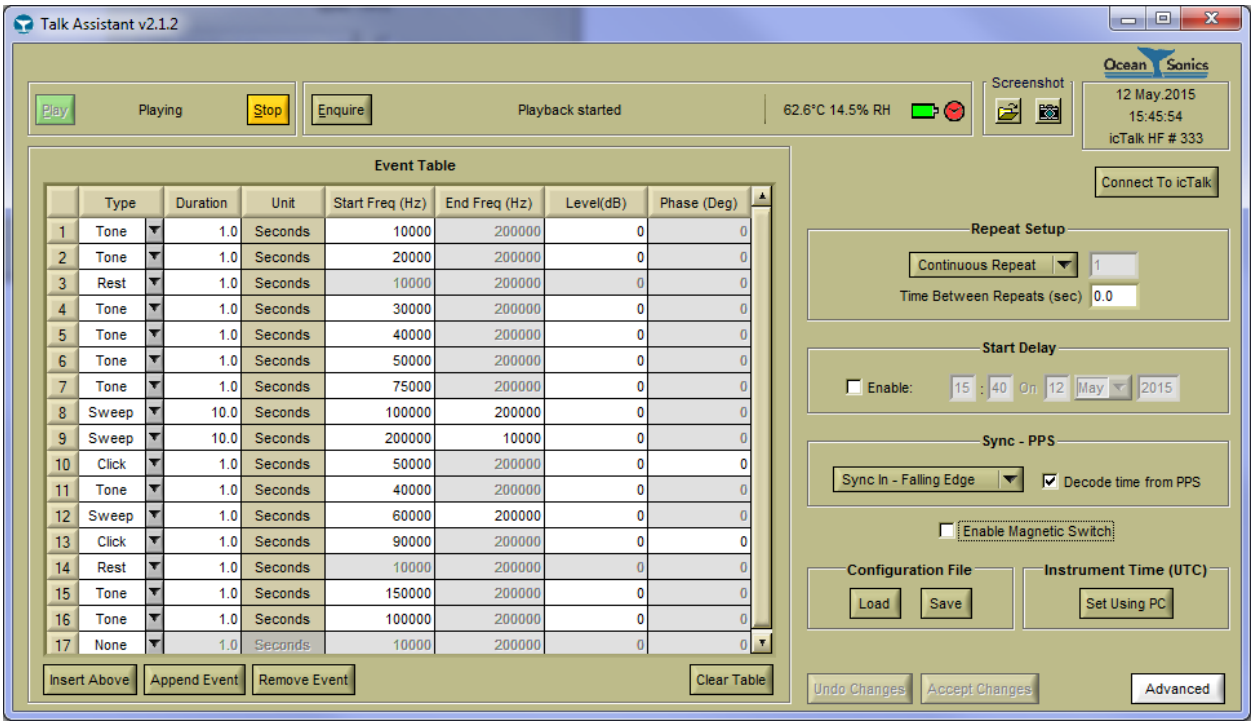


Figure 5-1: Talk Assistant main display

Please refer to the *Talk Assistant 2.1 User Guide* for instructions on operating the **Talk Assistant** software.

6 Troubleshooting icTalk

6.1 Instrument not communicating

- Check wiring. Re-seat plugs and connectors.
- Connect to battery charger to ensure battery is fully charged.
- Check data link interface on PC with another device to ensure PC interface is working.
- Ensure baud rate is correct. If the cable was wired up manually or modified, ensure that the TX and RX lines are not reversed.

6.2 I need to find out the firmware version and serial number

- While running **Talk Assistant**, click the 'Enquire' button and note the response to the button's right.

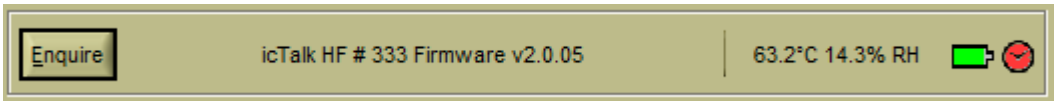


Figure 6-1: Talk Assistant status bar

- Note that if the instrument is not working, the instrument's firmware version number is not accessible. The instrument's serial number is printed on the side of instrument, and its carrying case.

7 Functional Block Diagram

The drawing below shows the **icTalk** key functions. The blocks on the left show the connector functions. Not all interface functions are available on all instruments.

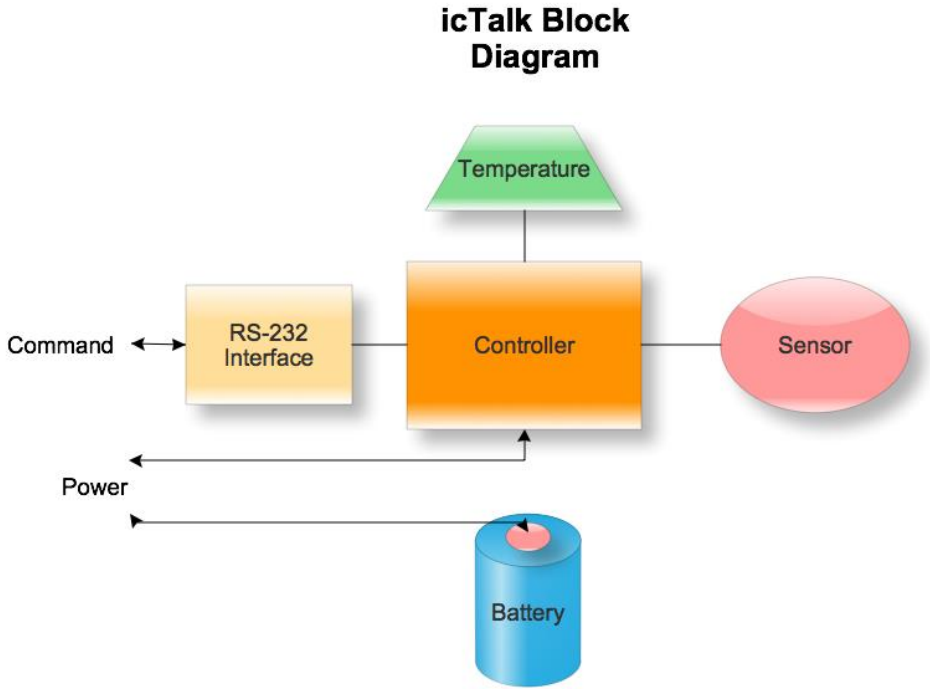


Figure 7-1: Functional Block Diagram

8 Instrument Performance

The following chart shows typical **icTalk LF** over the frequency range 200 Hz to 2200 Hz

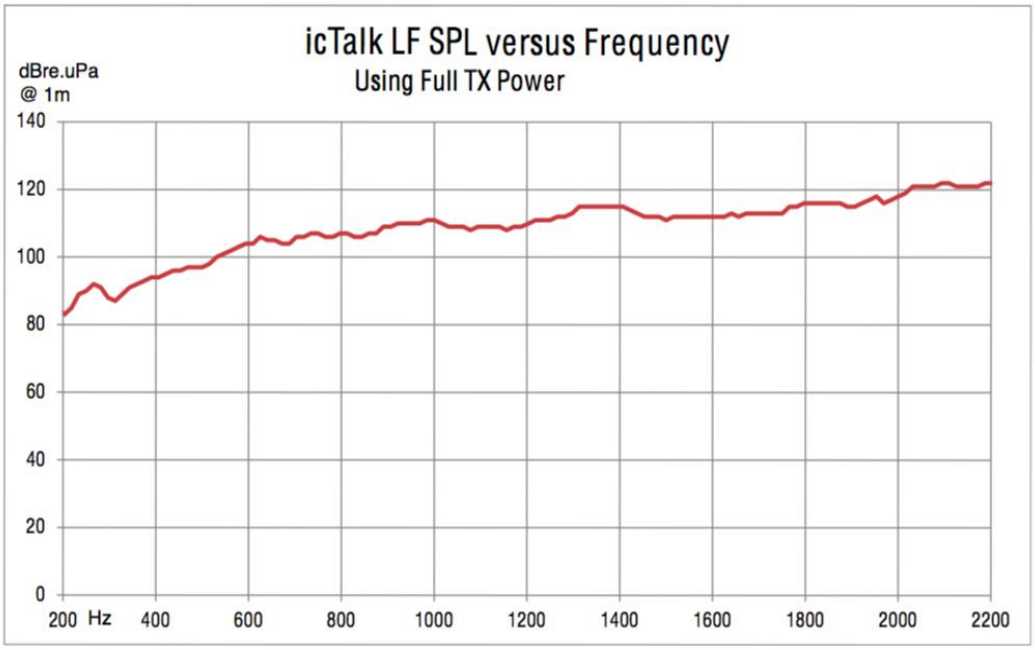


Figure 8-1: icTalk LF Signal Power Level vs. Frequency (Typical)

The following chart shows typical **icTalk HF** over the frequency range 10 kHz to 200 kHz

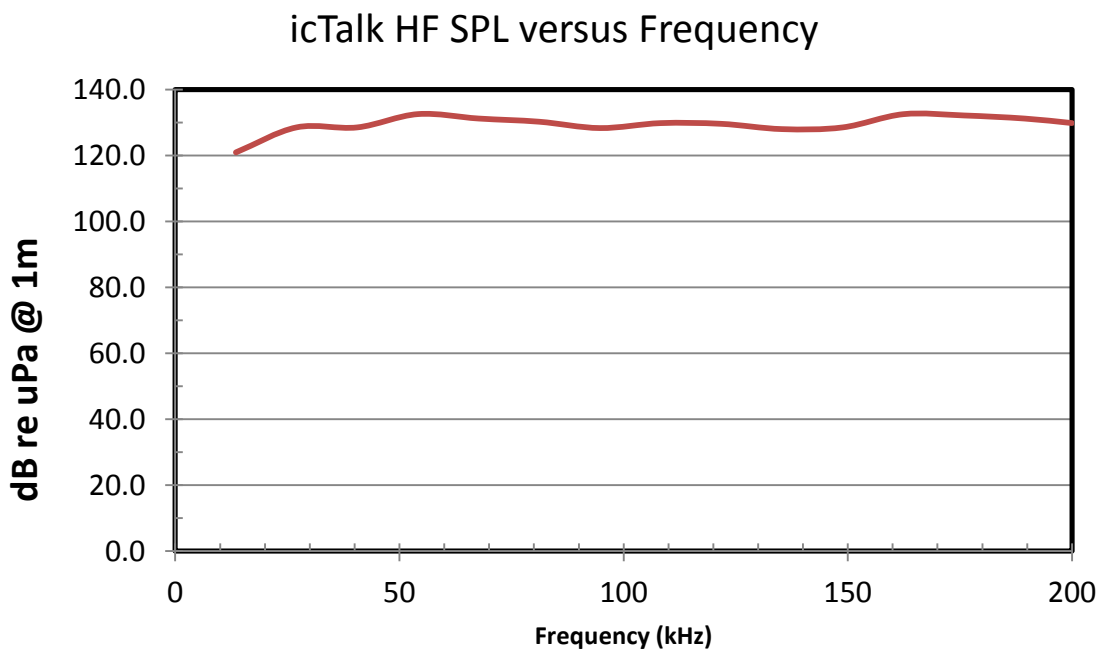


Figure 8-2: icTalk HF Signal Power Level vs. Frequency (Typical)

9 Options and Configurations

The configuration options for **icTalk** are listed in the table.

Spec	Standard	Options
Depth	200 meters	3500 meters
Connection	Male 8-pin bulkhead	-
Frequency	220 Hz to 2200 Hz (LF) 10 kHz to 200 kHz (HF)	-
Use	Tethered / Mooring with battery	Autonomous with internal battery

10 Wiring Tables for icTalk

The following are standard pinouts used with molded cables and shorting jumpers provided by Ocean Sonics. As your application may have specific requirements, please refer to the wiring table provided with your unit. For the official drawings for the molded cables, see *Appendix A*.

10.1 RS232 Interface

To power the **icTalk** device, pin 3 must be shorted to pin 4, and pin 5 must be shorted to pin 6.

Subconn	Signal
MCBH8M	Name
1	GND (Serial)
2	RX(**icTalk** Input)
3	VBAT+
4	+4.2V (Li-ion Charger Only)
5	VBAT-
6	GND
7	-
8	TX(**icTalk** Output)

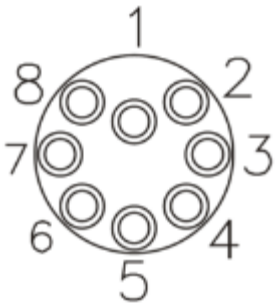


Figure 10-1: Subconn MCBH8M male face

10.2 Shorting Jumper

To run **icTalk** untethered, a shorting jumper is used to connect the power pins to the battery voltage. Pins 3 and 4 are shorted together, and pins 5 and 6 are shorted together.

Subconn Shorting Jumper		
Pin #	Circuit Name	Wire Colour
1	A	BRN
2	A	WHT/BRN
3	B	GRN
4	B	WHT/GRN
5	C	ORG
6	C	WHT/ORG
7	D	BLU
8	D	WHT/BLU

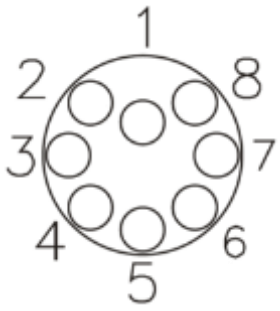


Figure 10-2: Subconn MCDC8F female face

10.3 Legacy RS-232 Cable

The following wiring table is for the bench test cable shipped with LF units 101, 102, and HF units 2201 to 2204.

Subconn	Signal	Whip Wire	Splice (4-STP)	RS232 DB9 Female	Male Coax Charge Receptacle	
MCIL8F	Name	Colour	Colour	Pin	Colour	Pin
1	GND (Serial)	RED/BLK	BRN	5	-	-
2	RX(**icTalk** Input)	RED	WHT/BRN	3	-	-
3	VBAT+	BRN	GRN	-	BLK/WHT	TIP
4	+4.2V (Li-ion Charger Only)	BRN/WHT	WHT/GRN	-	BLK/WHT	TIP
5	VBAT-	BLU	ORG	-	BLK	RING
6	GND	BLU/WHT	WHT/ORG	-	BLK	RING
7	-	YEL/BLK	BLU	-	-	-
8	TX(**icTalk** Output)	YEL	WHT/BLU	2	-	-

The wiring table below is for newer units configured with RS-422 / USB adapter cables

Subconn	Signal	Whip (4-UTP)	USB Adapter	Male Coax Charge Receptacle	
MCIL8F	Name	Colour	Pin	Colour	Pin
1	DC-	BRN	-	BLK	-RING
2	GND	BLU	GND	BLK	-RING
3	TX- (icTalk out)	GRN	RXD-	-	-
4	TX+(icTalk out)	WHT/GRN	RXD+	-	-
5	RX-	ORG	TXD-	-	-
6	RX+	WHT/ORG	TXD+	-	-
7	DC+ (12 or 24 V)	WHT/BRN	-	BLK/WHT	TIP
8	SYNC	WHT/BLU	-	-	-

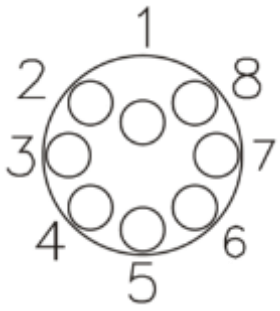


Figure 10-3: Subconn MCOM8F female face

11 Recommended Connectors

The following table lists all the connectors used by **icTalk**. Please ensure you check the number of pins and the connector gender before ordering connectors or whips from another vendor.

All listed are rated to 3500 M depth.

Connection	Maker	Pins	Part #	Thread	Mate & Backshell	Dummy/Short Plug
Bulkhead - Male	**Subconn**	8	MCBH8M	7/16 x 20	MCIL8F & MCDLSF	MCDC8F

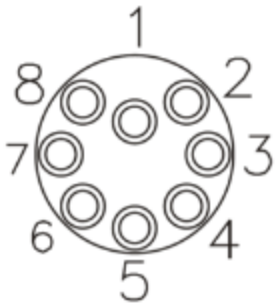
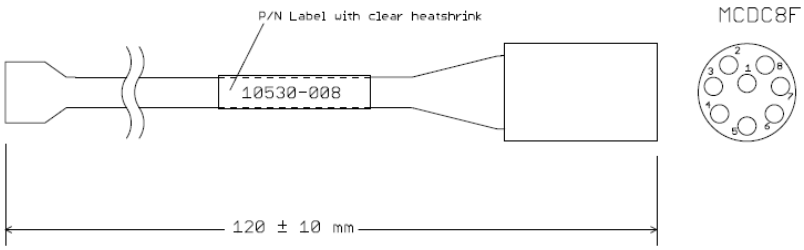


Figure 11-1: Subconn MCBH8M male face

Appendix A - Molded Cable Drawings

A.1 - Molded Inline Female Shorting Jumper

Molded Inline Female Shorting Jumper



ASSEMBLY INSTRUCTIONS

1. Terminate MCDC8F according to Table 1
2. Overmould tip with hard rubber
3. Apply P/N label with heatshrink

Table 1. MCDC8F Connection

CIRCUIT NAME	MCIL8F PIN
A	1
	2
	7
	8
B	3
	4
C	5
	6