FULL SPECTRUM SYSTEM

2205 TECHNICAL GUIDE

SYSTEM TECHNICAL & USER'S GUIDE

230-540-1600 KHZ SS/540 BATHY/DW-216 SB

3000M ALUMINUM BOTTLE

DELIVERY SPECIFIC DOCUMENT

Customer: *SAAB*

Document No*: 0017102 REV B 04/06/18*

Product ID: 2205

4 Little Brook Road
West Wareham, MA 02576 - USA
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TABLE OF CONTENTS

CAUTION

Operation of Arrays IN-AIR will cause sensor failure due to inadequate heat dissipation. Arrays should be operated IN-AIR for a period of **no more than 5 minutes**. Setting Transmit Power to 0% will allow arrays to Receive signals without Overheating when conducting noise analysis or Rub Tests.

CAUTION

The 2205 utilizes a Push – Pull amplifier design for Side Scan transmission. You can NOT adjust the transmit level in the same manner as a linear amp (utilized on the 2200 series). DO NOT attempt to adjust the transmit power with JStar/Discover/Third Part Software to anything other than 100% (ON) or 0% (OFF). Doing so could harm the electronics.

1. ERRATA

Date	Comment
11/13/2015	Original Release
4/6/18	Document updated with multiple schematic revision changes. Not changes to document text.

2. Overview

This system is designed to provide a 230/540/1600kHz Side Scan with 540kHz Bathymetry and 2-16kHz Sub-Bottom electronics on a single chassis, which in turn is mounted within a 3000m aluminum pressure housing. The Side Scan arrays are comprised of 1 transmit/receive string for each frequency and 10 individual Bathymetric receive elements/channels, for each side (port and starboard). The Sub-Bottom transmit section is comprised of a single DW-216 transducer. The Sub-Bottom receiver is comprised of 2 individual receive arrays that are externally parallel summed before being directed to the receive electronics' for processing.

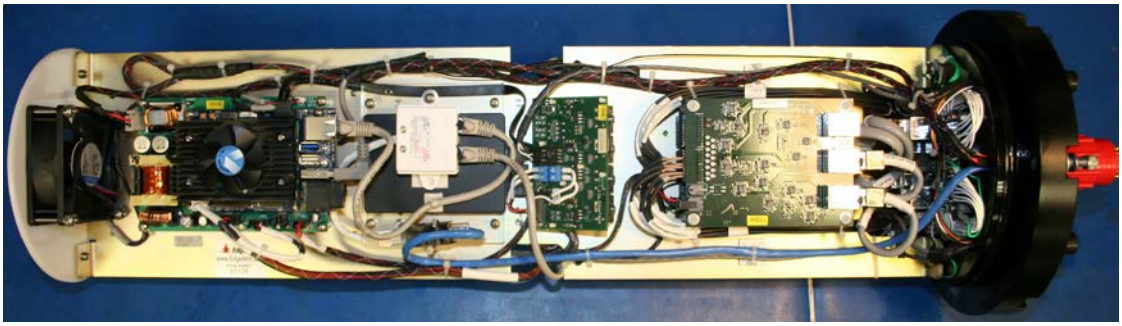
3. Power Requirements

The system is designed to accept a nominal voltage range of 36-60Vdc with a maximum initial inrush current draw of 1.2A at 48Vdc. The system idles at 1.2A when not transmitting. The maximum operational system current draw is 4A at 48Vdc. The average operational current of the system is 2A at 48Vdc when the system is transmitting. Cable losses between the user's power source and the EdgeTech 2205 electronics must be accounted for so that 36-60Vdc is present at the J1 Bulkhead. The system has been tested at the user's required input voltage of 48Vdc.

4. Sonar Bottle

4.1 System Block Diagram

The system block diagram (drawing 0017065) depicts the major external system components and connectivity specific to the system purchased. Please refer to this when considering system specific replacement parts and cabling. Figure 1 depicts the internal system components found in the pressure housing. There are no user serviceable components within the pressure housing. Contact customer service for any system issue.



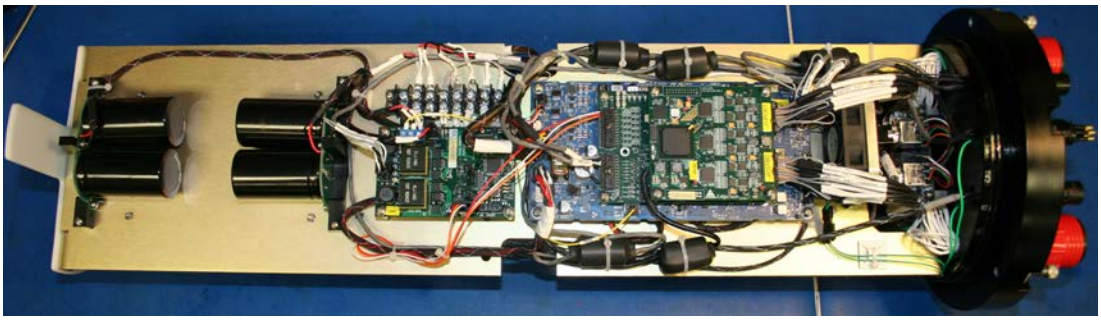


Figure 1. Processor Electronics

4.2 Connector/Internal Cable Configuration

The processor block diagram is provided in drawing 0017067 where it identifies the part/drawing numbers of the internal cabling and how they relate to the external connectors. The end cap configuration is depicted in Figure 2 and is annotated on drawing 0017064**.**

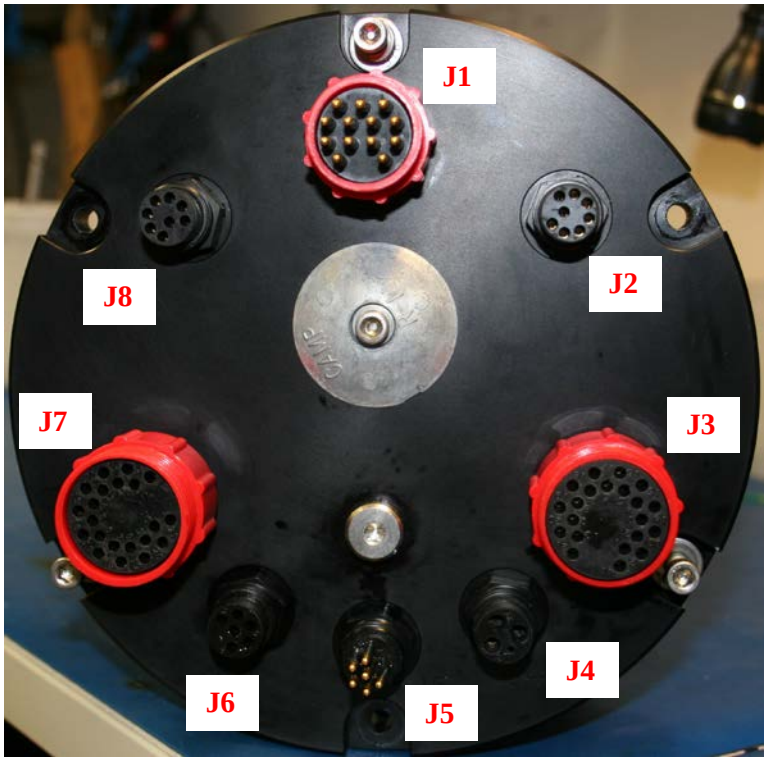


Figure 2. End Cap

4.2.1 J1 Connector – Power, Trigger, Ethernet

J1 provides the connection for a 48Vdc input, Trigger, PPS, and 10/100 Ethernet interface. The embedded CPU is shipped with an IP address of 192.9.0.101 and Subnet Mask of 255.255.255.0. Connection to J1 can be made via the pigtail provided with the system 0012248. This connector's configuration is provided in Table 1. Refer to drawing 0017096 for the wiring configuration.

Connector J1 (DBH13M)	Description
1	48Vdc
2	Shield
3	0Vdc
4	1PPS Trigger
5	1PPS Return
6	Sync Trigger
7	Sync Return
8	Ethernet TX+ (10/100)
9	Ethernet TX- (10/100)
10	Ethernet RX+ (10/100)
11	Ethernet RX- (10/100)
12	N/C
13	N/C

Table 1. Wiring of J1 Connector

4.2.2 J2 & J8 Connector – Side Scan Transducers

The pin outs and connections for the side scan arrays are provided in drawing 0017098. The two side scan arrays are externally connected to J2 (Starboard) and J8 (Port) of the end cap.

4.2.3 J3 & J7 Connectors – Bathymetry Receive

The pin outs and connections for the Bathy receive portion of the array are provided in drawing 0017097. The two arrays are externally connected to J3 (Starboard) and J7 (Port) of the end cap.

4.2.4 J4 & J5 Connectors – Sub-Bottom Transducers

The sub-bottom transducer's transmit cable (drawing 0017108) is connected to J4 (drawing 0017100). The two sub-bottom receive hydrophones are connected to the 2:1 spider (drawing 0017441) whose output is connected to J5 (drawing 0017099).

4.2.5 J6 Connector – Sound Velocity / Spare Serial Port

J6 provides two high speed RS-232 connections which can be setup via software to accept a number of third part sensors and data strings. This connector's configuration is provided in Table 2. Refer to drawing 0017101 for the wiring configuration.

Connector J6 (MCBH6F)	Description
1	Cable Shield
2	RS-232 COM 2001 (TX)
3	RS-232 COM 2001 (RX)
4	RS-232 GND
5	RS-232 COM 2002 (TX)
6	RS-232 COM 2002 (RX)

Table 2. Wiring of J6 Connector

4.3 System Software

4.3.1 Software Version

SOFTWARE	*VERSION*	*EPICOR P/N*	*RELEASED*	*RELEASE NOTES LOCATION*
SONAR	75.8	N/A	YES	SSSSonar2205 Folder
JSTAR	11.7	0012216	YES	Epicor
DISCOVER BATHYMETRY	35.0.1.108	0014900	YES	Epicor
DISCOVER SUB BOTTOM	4.09	0008725	YES	Epicor
SIM FIRMWARE	9C	0012612	YES	Epicor
SAIBu FIRMWARE	15.3	0012890	YES	Epicor

4.3.2 Sonar.ini Setting

```
;====================================================================
; This file contains settings you can use to customize the sonar data
; acquisition processor.
; SEE SONAR.TXT for documentation
;====================================================================

;====================================================================
; Main / overall settings.
;====================================================================

[Main]
Config = 2205_SBSS3F_SSHBATHY10
TimeSyncSource=ZDA RMC GGK GGA GLL
PulseCalFile=2205_SBSS3F_SSHBATHY10.pcf
;DiagnosticLogFileLocation=D:\Diagnostic Logs

SIMOptions=1                    ; Enables fault reporting
;HCCA3XGain=1                   ; Uncomment to enable software gain
;DSPSimulator=1                 ; Uncomment to run in simulation mode
DSP_QUEUE_SIZE=2048             ; Sets extra large internal buffer (high data rates)
NETWORK_QUEUE_SIZE=8000         ; Sets extra large network out buffer (high data
rates)
;DSPSimulator=2                 ; Uncomment to enable simulator mode
;CompressNet=2                  ; Uncomment to enable compression on the network


;====================================================================
;Options for  SB - 216
;====================================================================
[SUB0]
PulseDirectory=..\2205_216
```

```
TriggerMask=002        ;  Uncomment to enable Trigger In (Ext Trig)

;=====================================================================
;Options for  SS  Low Frequency - 230 KHz
;=====================================================================
[SUB1]
PulseDirectory=..\2205_230Q_DDPA\
AutoPulseMode = 0      ;  Enables auto pulse selection
TriggerMask=002        ;  Uncomment to enable Trigger In (Ext Trig)
MaxAllowedRange=500    ;  Sets maximum display range in meters per side
AgcGainMin=120         ;  Sets minimum AGC gain in DB * 10 (e.g. 50 => 5 DB)
ExtraAdcHoldoffMs=1.0


;=====================================================================
;Options for  SS  High Frequency - 600 KHz with Bathy
;=====================================================================
[SUB2]
PulseDirectory=..\2205_Bathy_520\
AutoPulseMode = 0      ;  Enables auto pulse selection
;AutoAltitude=2                ;  Enables auto scales pulse amplitudes
TriggerMask=002        ;  Uncomment to enable Trigger In (Ext Trig)
MaxAllowedRange=180    ;  Sets maximum display range in meters per side
;AgcGainMin=120        ;  Sets minimum AGC gain in DB * 10 (e.g. 50 => 5 DB)
ExtraAdcHoldoffMs=0.5

[SUB2IO0]
ADC_GAIN=9000          ;  Sets the reference ADC gain to 9X to match the HCCA Card Value

;=====================================================================
;Options for  SS  Very High Frequency - 1600 KHz
;=====================================================================
```

```
[SUB3]
PulseDirectory=..\2205_1610\
AutoPulseMode = 0       ;  Enables auto pulse selection
TriggerMask=002         ;  Uncomment to enable Trigger In (Ext Trig) on the interface box
MaxAllowedRange=35      ;  Sets maximum display range in meters per side
AgcGainMin=240          ;  Sets minimum AGC gain in DB * 10 (e.g. 50 => 5 DB)

;=================================================================
;Setting TimeSyncMask
;=================================================================
[DSP0]
; Uncomment line below to enable 1 PPS hardware time sync on Trig C
; from interface box.
;TimeSyncMask=001 ;Trigger A as PPS
UDMAReadMode=3

;=================================================================
;Transducer Protection Config - Need to Protect 1.6 MHz
;=================================================================

[TransducerProtection]
TimeInterval=15
MinAmplitude1=50
MinAmplitude2=20
MinAmplitude3=2
MaxDutyCycle=0.05
PercentInWater=25
MonitoredSubsystems=F
ProtectedSubsystems=8
MinPressurePsi=17.0

;=================================================================
```

```
; In Bottle Recording.
;=================================================================

[FILE]
MinDiskFree=15
MaxFileSize=300
FileQueueSize=2000
BaseName=\DATA\DATA
PrimaryDrive=F:
```

4.3.3 SonarSerial.ini Setting

```
[Serial1]               ;For PHINS Binary Format
Create=1
Port=UDP:Socket Number
Parser=17

[Serial2]               ;For GPZDA and GPVTG
Create=1
Port=UDP:Socket Number
Parser=4

[Serial3]               ;For Sound Velocity Connection
Create=1
Port=UDP:Socket Number
Parser=9
```

4.3.4 SonarArrayInfo.ini Setting

NOTE: Changes in the Bathy Array will affect some settings in the following file. It is suggested that the user back-up the "as delivered" settings and modify the text below as appropriate.

```
;_____________________________________
;  500kHz
;_____________________________________
;The SonarArrayInfo.ini file contains some additional descriptive information about
;the transducer arrays.  This was added to support the geometry of bathymetry systems
;but is not limited to that application.
;The file can contain sections for each subsystem, starting with [ArrayInformation0]
;for the first subsystem.  If the file SonarArrayInfo.ini does not exist, then
;the sonar.ini will be used for keywords instead.

[ArrayInformation21] : Where 21 is for bathy on SSH.
SerialNumber0=0013
SerialNumber1=0014
  ;These are the serial number of the installed arrays.  These serial numbers are
  ;alpha-numeric strings of up to 15 characters - typically 4 digits, and represent
  ;the unique manufactured serial number for the arrays installed on the port (0) and
  ;stbd (1) sides.  If the numerical value is less than 4 digits it should have leading
  ;zeros for a minimum of 4 digits total.

PartNumber0=0015135
PartNumber1=0015135
  ;These are the part number of the installed arrays.  These are alpha-numeric strings of
  ;up to 15 characters - typically 7 digits, and represent the EdgeTech part number
  ;for the installed port (0) and stbd (1) arrays.  If the numerical value is less than
  ;7 digits it should have leading zeros for a minimum of 7 digits total.

ArrayElements0=10
ArrayElements1=10
```

;This is the number of staves (independent hydrophones) for the port (0) and stbd (1)
;arrays. Typically 8 or 10.

ElementSpacing0=0.0013865
ElementSpacing1=0.0013792
;Spacing between elements in meters on port (0) and stbd (1) sides respectively.

InstallationAngle0=35
InstallationAngle1=35
;Installation angle in degrees for port (0) and stbd (1) sides.

Frequency0=500
Frequency1=500
;Center Frequency in KHz for port (0) and stbd (1) sides.

MountingDirection0=1
MountingDirection1=1
;Mounting direction for port (0) and stbd (1) arrays. When mounted on tow body,
;indicates the exit direction of the cable from the array.
;Use the string AFT or value 0 if the cable exits aft of the array.
;Use the string FORE or value 1 if the cable exists fore of the array.
;Diff amps are wired backwards to standard convention.

InstallationHorizontalOffset0=0.2285
InstallationHorizontalOffset1=0.2285
;Array installation horizontal offsets in meters (0 for port and 1 for stbd).
;This is the horizontal distance of the array from the navigation
;center point. This is used in calculating ground distance from the
;center point. Default for 6205 is 0.083439m.
;_____
; 520KHz
;_____

;The SonarArrayInfo.ini file contains some additional descriptive information about
;the transducer arrays. This was added to support the geometry of bathymetry systems
;but is not limited to that application.
;The file can contain sections for each subsystem, starting with [ArrayInformation0]
;for the first subsystem. If the file SonarArrayInfo.ini does not exist, then
;the sonar.ini will be used for keywords instead.

[ArrayInformation21] : Where 21 is for bathy on SSH.

SerialNumber0=0013
SerialNumber1=0014
;These are the serial number of the installed arrays. These serial numbers are
;alpha-numeric strings of up to 15 characters - typically 4 digits, and represent
;the unique manufactured serial number for the arrays installed on the port (0) and
;stbd (1) sides. If the numerical value is less than 4 digits it should have leading
;zeros for a minimum of 4 digits total.

PartNumber0=0015135
PartNumber1=0015135
;These are the part number of the installed arrays. These are alpha-numeric strings of
;up to 15 characters - typically 7 digits, and represent the EdgeTech part number
;for the installed port (0) and stbd (1) arrays. If the numerical value is less than
;7 digits it should have leading zeros for a minimum of 7 digits total.

ArrayElements0=10
ArrayElements1=10
;This is the number of staves (independent hydrophones) for the port (0) and stbd (1)
;arrays. Typically 8 or 10.

ElementSpacing0=0.0013865
ElementSpacing1=0.0013792
;Spacing between elements in meters on port (0) and stbd (1) sides respectively.

InstallationAngle0=35
InstallationAngle1=35
;Installation angle in degrees for port (0) and stbd (1) sides.

Frequency0=500
Frequency1=500
;Center Frequency in KHz for port (0) and stbd (1) sides.

MountingDirection0=1
MountingDirection1=1
;Mounting direction for port (0) and stbd (1) arrays. When mounted on tow body,
;indicates the exit direction of the cable from the array.
;Use the string AFT or value 0 if the cable exits aft of the array.
;Use the string FORE or value 1 if the cable exists fore of the array.
;Diff amps are wired backwards to standard convention.

InstallationHorizontalOffset0=0.2285
InstallationHorizontalOffset1=0.2285
;Array installation horizontal offsets in meters (0 for port and 1 for stbd).
;This is the horizontal distance of the array from the navigation
;center point. This is used in calculating ground distance from the
;center point. Default for 6205 is 0.083439m.

4.4 EdgeTech Folder Reset

1. Connect to bottle with tow cable or connect directly to the CPU (if electronics is removed from housing) via a crossover Ethernet cable or through a network switch.
2. Apply power to the electronics.
3. With unit running select Start → All Programs → Accessories → Remote Desktop Connection on PC
4. Type 192.9.0.101 and select Connect

5. If applicable enter the following credentials,
6. USER: administrator
7. PASSWORD: admin
8. Once on the desktop you should see that sonar.exe has been launched and is running. Close this application.
9. Right click on Start→ Explore all users.
10. On the left hand side of the new screen you will see a list of folders/drives under a heading of Folders. Expand DATA (F:), you should see a folder called Edgetech Backup, copy this folder.
11. Under Folders select SONAR (D:), delete the current EdgeTech folder. Right click on screen and paste the EdgeTech folder copied from DATA (F:).
12. Once the folder has been pasted change the folder name from EdgeTech Backup to EdgeTech. If this is not done then the shortcuts will not recognize the new folder.
13. Attempt to re-launch Sonar.exe from shortcut on desktop. If Sonar launches successfully the reset is complete.

4.4.1 Remote Desktop File Operations

To view the disk drives and files for the redirected disk drive:

1. Click **Start**, point to **All Programs** (or **Programs**), point to **Accessories**, point to **Communications**, and then click **Remote Desktop Connection**.
2. Click **Options**, and then click the **Local Resources** tab.
3. Click **Disk Drives**, and then click **Connect**.

4.5 Mechanical

The system electronics are housed in a 3000 meter rated pressure housing, drawing 0016765. The side scan arrays are depicted in drawing 0016742 and are rated to 6000 meters. Dimensions for the KT-216D Sub Bottom assembly can be found on drawing 0010132.

4.6 Bathymetry Data Types

4.6.1 Stave

A stave file contains all of the raw stave, or individual receiver, data that is used to compute the solutions of the seafloor. This file type does not contain bathymetry and is designated by the keyword "_Stave." This keyword is appended to the end of every stave file. An example file name used to designate a stave file is 20130829150420_Stave.jsf.

4.6.2 Binned

A binned file contains bathymetry in which the interferometric data has been binned (or decimated) based on a user defined number of beams (or bins) and total swath. This format closely resembles the output format of a traditional dual headed multibeam. A binned file can be identified by the keyword "_Binned" and is the standard output format of DISCOVER BATHYMETRIC. This keyword is appended to the end of every binned file. An example file name used to designate a binned file is 20130829150420_Binned.jsf.

5. Transducer Mechanical Configuration

5.1 Side Scan

The supplied side Side Scan / Bathymetric arrays should be installed at a 35-45 degree look down angle relative to the horizontal ocean surface. The exact angle will be decided upon after system is installed and testing for range, nadir coverage, and multipath reflections from vehicle have concluded.

5.2 Sub Bottom

The supplied sub-bottom system consists of two major components; transmit transducer and receiver array pair. The transmit transducer should be mounted such that the neoprene face is at the same vertical level as the receiver arrays and in a position that is forward of the arrays by a nominal distance of 9 inches (22.86cm). The receiver arrays should be positioned such that the curved surface (line arrays) is normal to the ocean bottom. The spacing between the array's long length is critical to maximize the receive sensitivity. Table 3 provides the optimum spacing for the standard sub-bottom frequency ranges that EdgeTech offer.

Sub-Bottom	Fmin (Hz)	Fmax (Hz)	Center to Center Spacing (inches)
DW - 106	1,000	6,000	20
DW – 216	2,000	16,000	12
DW - 424	4,000	24,000	6

Table 3: Sub-Bottom Receiver Array Spacing

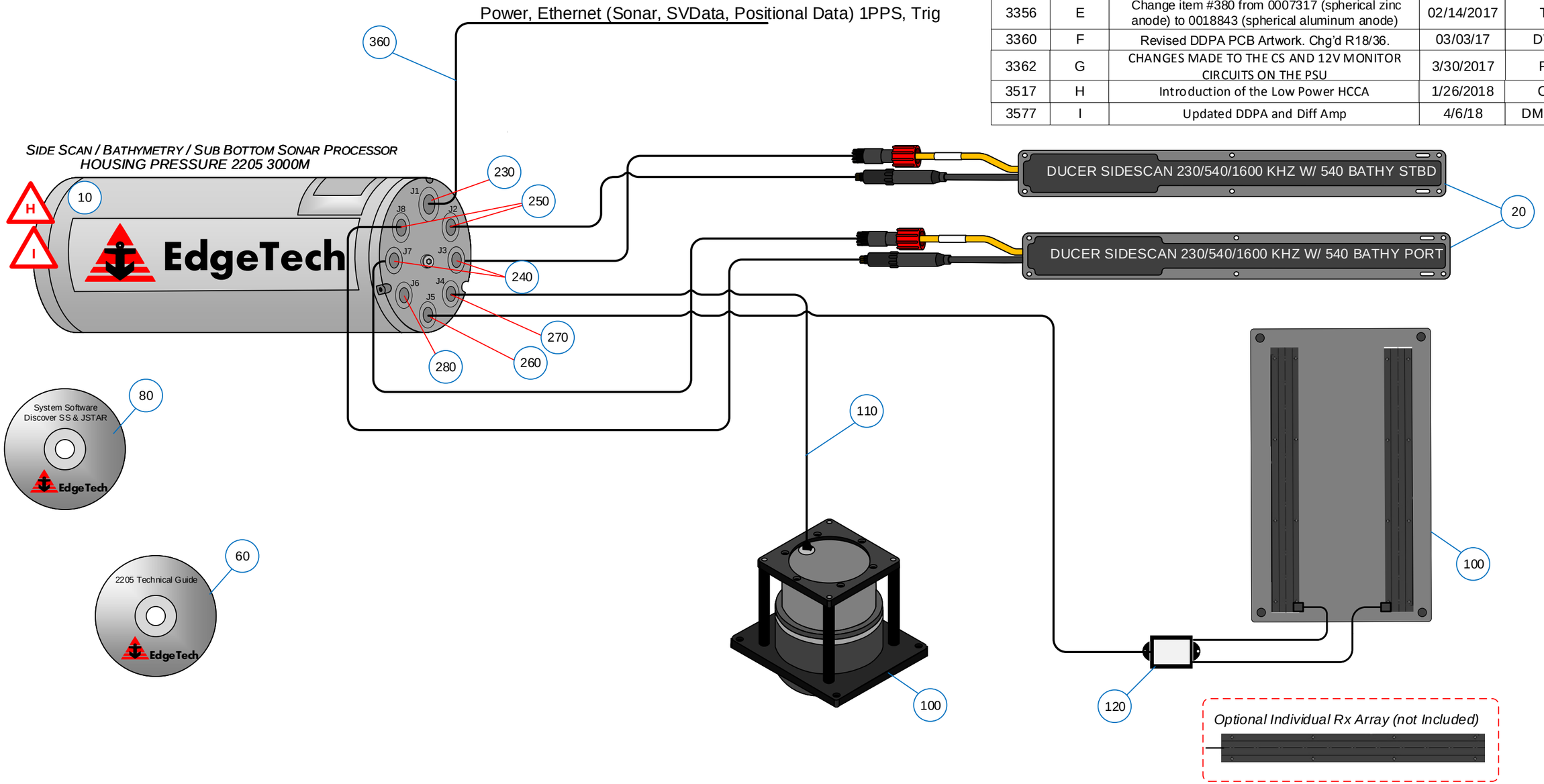
The receiver arrays should be mounted to a rigid backing with a nominal thickness of 0.75 inches to prevent the arrays from flexing. The transmit transducer should only be supported from the hard aluminum flange or body. No clamps or supports should be placed on the neoprene sensor boot. Doing so has the potential to cause the boot to tear and/or damage the transducer.

6. Attached Documents

Title	Reference	Ver
ASSY TOP SYSTEM 2205 SS 230 / 540 / 1600 W/ 540 BATHY SB 216 3000M MODUS / SAAB	0017065	I
ASSY SUB ELECTRONICS CHASSIS 2205 SS 230 / 540 / 1600 W/ 540 BATHY SB 216 3000M MODUS / SAAB	0017067	H
DOC DRAWING CONFIG 2205 ROV AUV END CAP 08 CONN SS SB BATHY 2XCOM	0017064	A
ASSY SUB CABLE 2205 13 POS MALE POWER 10/100 ETHERNET 1X TRIG 1X PPS AL	0017096	A
ASSY SUB CABLE 2205 AUV MCBH8F TO CONCENTRATOR AND J560 SIM J3 DDPA AL	0017098	A
ASSY SUB CABLE 2205 MCBH21F TO CONCENTRATOR BOARD AL	0017097	A
CABLE DEEP TRANSMIT ONLY MCIL3M LPMIL3-FS 65 INCH	0017108	A
ASSY SUB CABLE 2205 AUV SBP TX 03 POS FEMALE TO TERMINAL STRIP	0017100	A
ASSY TOP SPIDER 2205 DEEP RX ONLY SHEILDED 1X MCIL6F TO 2X MCIL3M 20 INCH TOTAL	0017441	A
ASSY SUB CABLE 2205 AUV SBP RX 06 POS MALE J562 & TERMINAL STRIP	0017099	A
ASSY SUB CABLE 2205 AUV MCBH6F OPTIONS HIGH SPEED COM PORTS AL	0017101	A
DOC DRAWING ICD ASSY TOP ELECTRONICS BOTTLE 2205 SS 230 / 540 / 1600 TRI FREQUENCY SB 216 DW MODUS / SAAB	0016765	A
DOC DRAWING ICD DUCER TRI-FREQUENCY SIDESCAN AND BATHY KHZ 2205 6000M	0016742	B
DOC DRAWING ASSEMBLY DW 216	0010132	B

REVISIONS

ECR	REV	DESCRIPTION	DATE	APPROVED
3086	C	CHANGE HOLE CALLOUTS IN CHASSIS	01/27/2016	PO
3114	D	R26 & R29 CHANGED TO 1.6K ON GENERIC SIM	01/27/2016	PO
3356	E	Change item #380 from 0007317 (spherical zinc anode) to 0018843 (spherical aluminum anode)	02/14/2017	TS
3360	F	Revised DDPA PCB Artwork. Chg'd R18/36.	03/03/17	DWF
3362	G	CHANGES MADE TO THE CS AND 12V MONITOR CIRCUITS ON THE PSU	3/30/2017	PO
3517	H	Introduction of the Low Power HCCA	1/26/2018	CM
3577	I	Updated DDPA and Diff Amp	4/6/18	DMD/BS



NOTES:
1) J6 is blanked with a dummy plug. This is a High Speed Serial Port.
2) Due to the New Low Power HCCA 0018606 swap some of the internal wiring may have changed and is not supported by the original cabling.

APPROVALS	DATE	EdgeTech	4 Little Brook Road West Wareham, MA 02576 Tel: (508) 291-0057 / Fax: 356-9760 Email: info@edgetech.com
DRAWN: DMD/JF	06/11/2015		
CHECKED:		ASSY TOP SYSTEM 2205 SS 230/540/1600 W/ 540 BATHY SB 216 3000M SAAB/MODUS	

TEMPLATE:	SCALE:		DRAWING NO.:	REV:
0018966_Rev_A		page 1 of 1	0017065	I

NOTE:
Green is Data Line
Blue is Transmit / Receive
Red is Power
Black is Ground
Purple is Multi-Purpose Wire
Harness

Ethernet Splitter

Hard Drive

Gigabit CPU

DDPA

Terminal Strip

HCCA

Differential Amplifier

END CAP CONCENTRATOR BOARD

SIM

SAIBu

PSU AUV

CPU on Carrier Board Mounts Here

Sub-bottom Power Amp

To DDPA

End Cap

J1	POWER / ETHERNET / 1x TRIGGER / 1x PPS
J3	Bathy Rcv Stbd
J7	Bathy Rcv Port
J8	Side Scan Port
J2	Side Scan Stbd
J6	SVS/AUX COM
J5	SB RX
J4	SB TX

0017065 - 150
0017065 - 230
0017065 - 240
0017065 - 250
0017065 - 280
0017065 - 260
0017065 - 270
0017056 - 50

230kHz TX
230kHz RCV
600/1600 TX/RX
600/1600 TX/RX
Trans RCV +
Trans RCV -
SB TX +
SB TX -
GND
+48V
Chassis GND
End Cap Mounting Screw (Sea Ground)
TB1

REVISIONS				
ECR	REV	DESCRIPTION	DATE	APPROVED
	A	Initial Release	6/2/2015	JF
3121	B	Upgrade SAIBU to DDPA Cable Assembly	1/25/16	JF
3086	C	CHANGE HOLE CALLOUTS IN CHASSIS	1/27/16	PO
3114	D	R26 & R29 CHANGED TO 1.6K ON GENERIC SIM	1/27/16	PO
3360	E	Revised DDPA PCB Artwork. Chg'd R18/36	3/3/2017	DWF
3362	F	CHANGES MADE TO THE CS AND 12V MONITOR CIRCUITS ON THE PSU	3/28/17	PO
3517	G	Introduction of the Low Power HCCA	1/26/18	CM
3577	H	Updated DDPA, Diff Amp and SIM	4/6/18	DMD/BS

Note:
Due to the New Low Power HCCA 0018606 swap some of the internal wiring may have changed and is not supported by the original cabling.

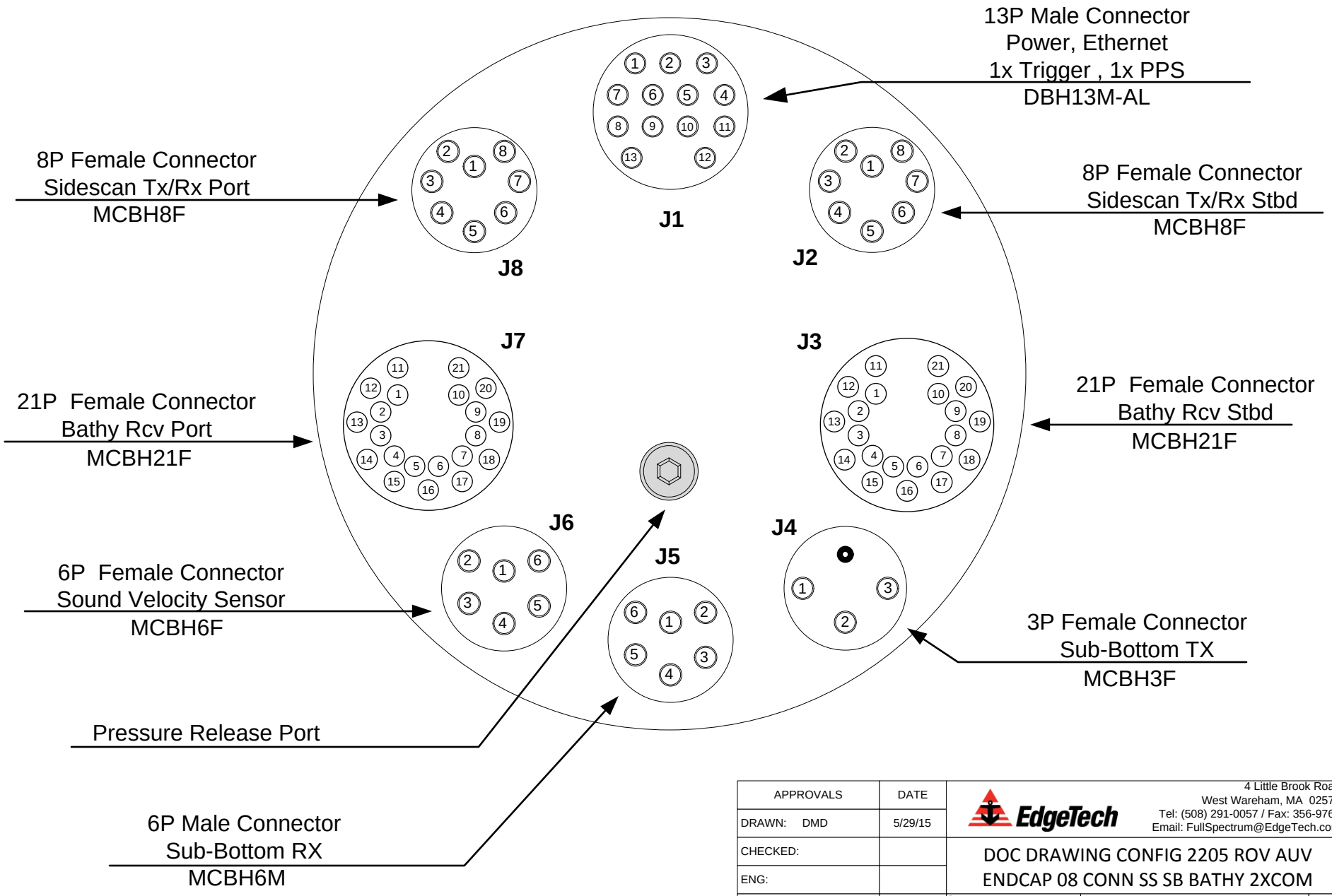
APPROVALS	DATE
DRAWN: J. Feliciano	6/1/2015
CHECKED:	
ENG:	
ISSUED	
SYSTEM	2205

EdgeTech
4 Little Brook Road
West Wareham, MA 02576
Tel: (508) 291-0057 / Fax: 356-9760
Email: info@EdgeTech.com

ASSY SUB ELECTRONICS CHASSIS 2205 SS 230 / 540 / 1600 W/ 540 BATHY SB 216 3000M SAAB / MODUS

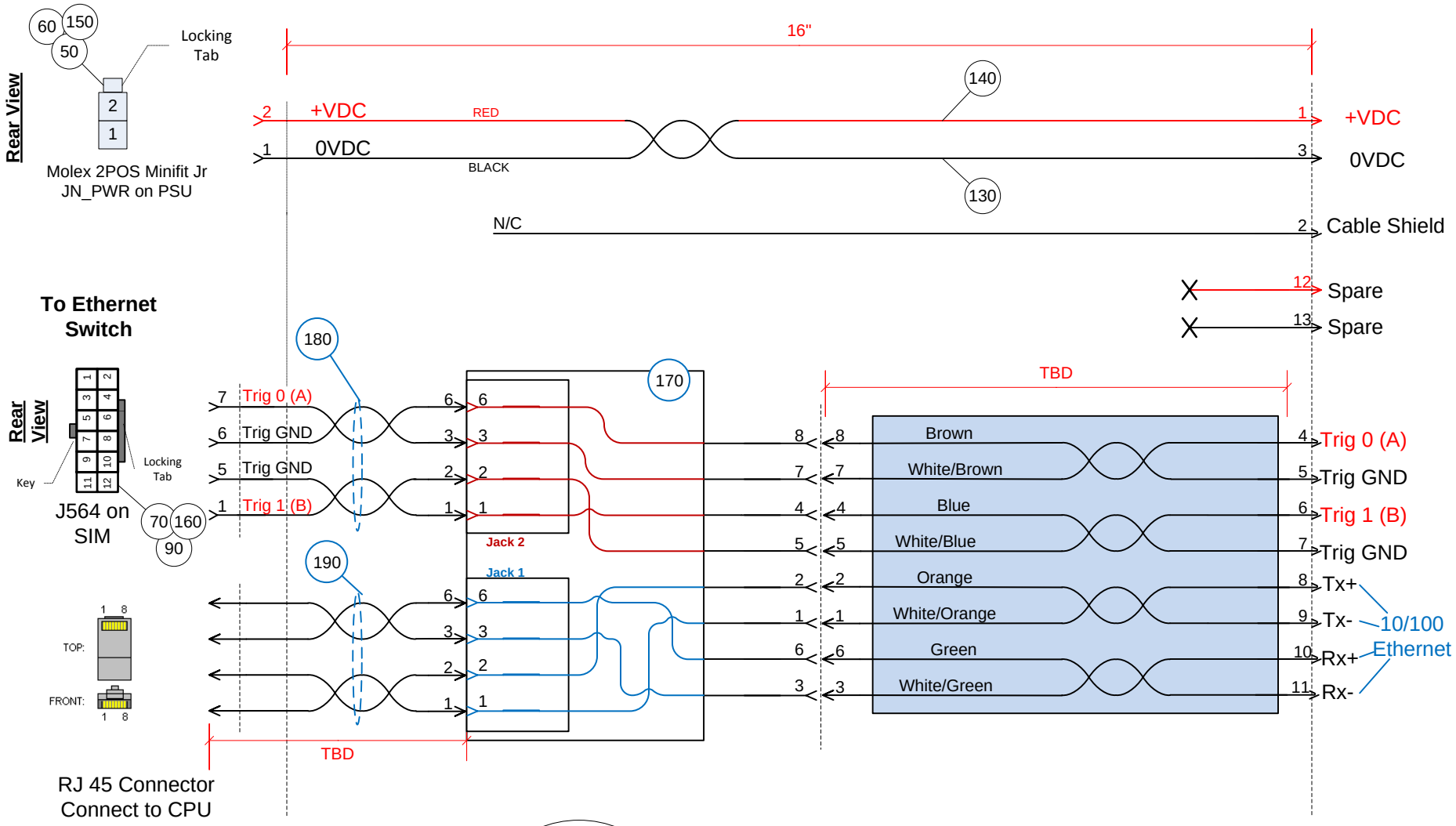
CARDFILE NAME
SCALE page 1 of 1
DRAWING NO. 0017067
Rev H

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	Initial Release	5/29/15	DMD



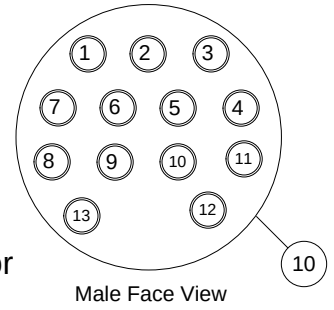
APPROVALS	DATE		
DRAWN: DMD	5/29/15	EdgeTech	4 Little Brook Road West Wareham, MA 02576 Tel: (508) 291-0057 / Fax: 356-9760 Email: FullSpectrum@EdgeTech.com
CHECKED:		DOC DRAWING CONFIG 2205 ROV AUV ENDCAP 08 CONN SS SB BATHY 2XCOM	
ENG:			
ISSUED		CARDFILE NAME	DRAWING NO. 0017064 / REV A
SYSTEM	2205	SCALE page 1 of 1	

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	Initial release	6/8/2015	JF



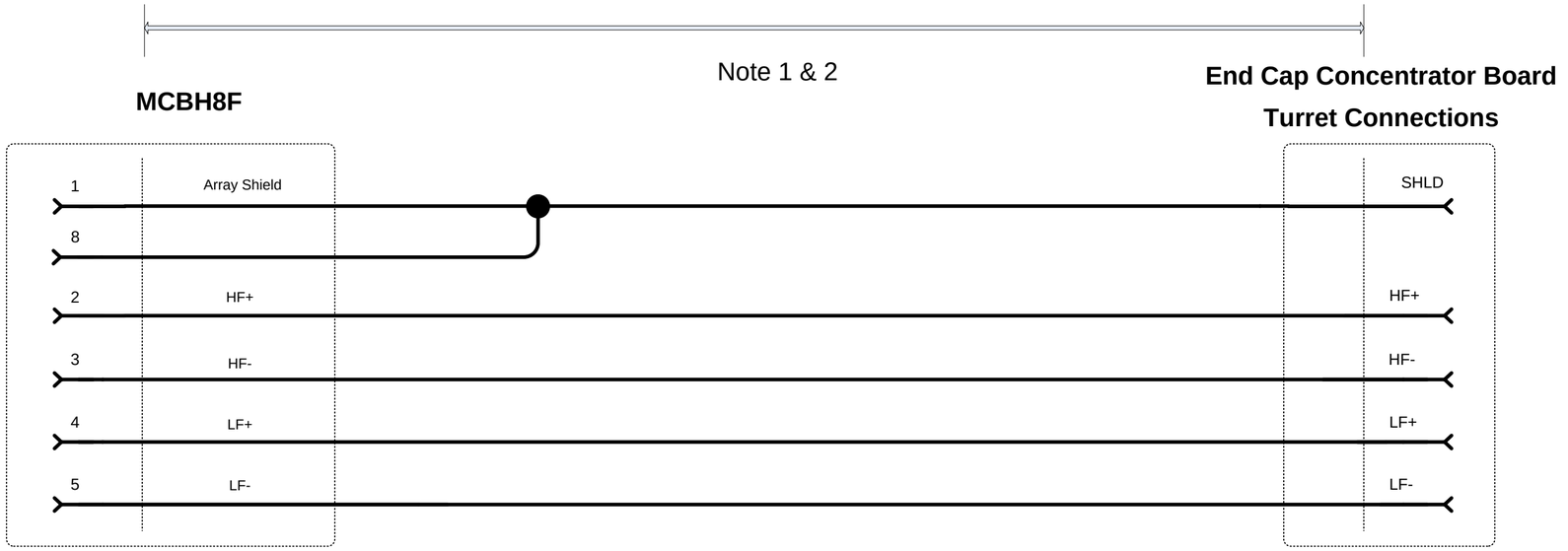
Notes:

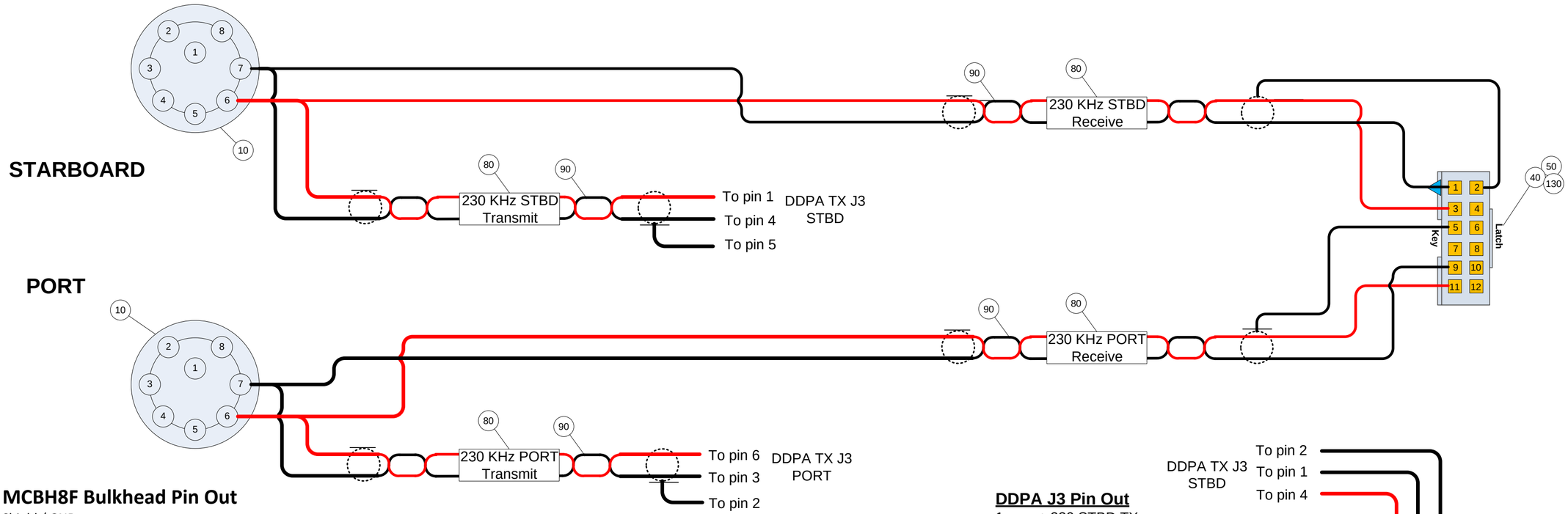
1. Install male locking sleeve before installing connector in endcap
2. Heatshrink all unused connections
3. Install connectors after installing into endcap
4. Cut trigger cable to required length for application.



APPROVALS	DATE	EdgeTech	4 Little Brook Road W.Wareham, MA 02576 Tel: (508) 291-0057 / Fax: 291-2491
DRAWN: JF	6/8/2015		
CHECKED:		ASSY SUB CABLE 2205 13 POS MALE POWER 10/100 ETHERNET 1X TRIG 1X PPS AL	
ENG:			
ISSUED		CARDFILE NAME	DRAWING NO. 0017096 REV A
SYSTEM	2205	SCALE page 1 of 1	

REVISIONS				
ECR	REV	DESCRIPTION	DATE	APPROVED
	A	Initial Release	6/9/2015	JF





SIM J560 Pin Out

1. - 230 STBD RX
2. Ground
3. + 230 STBD RX
4. N/C
5 Ground
6. N/C
7. N/C
8. N/C
9. - 230 PORT RX
10. N/C
11. + 230 PORT RX
12. N/C

MCBH8F Bulkhead Pin Out

Shield / GND
Pin #1
Pin #8

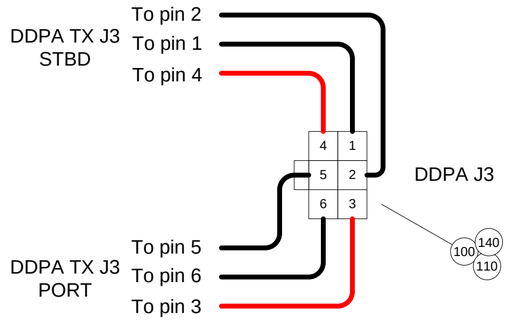
1600kHz
(+) Pin #2
(-) Pin #3

540khz
(+) Pin #4
(-) Pin #5

230kHz
(+) Pin #6
(-) Pin #7

DDPA J3 Pin Out

1. + 230 STBD TX
2. Ground
3. - 230 PORT TX
4. - 230 STBD TX
5. Ground
6. + 230 PORT TX

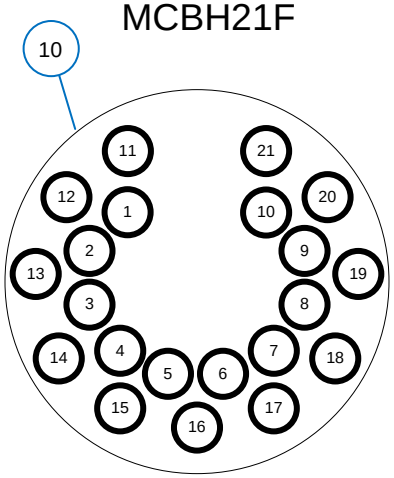


Notes:
1 – Cable lengths are to be as short as possible.
2 – Solder each wire to their respective turret on the End Cap Concentrator board
3 – Label cables with proper notation 230 KHz RX, 230 KHz TX, 540 KHz, 1600 KHz
4 – Cable length should be determined by application

APPROVALS	DATE	EdgeTech	4 Little Brook Rd. West Wareham, MA 02576 Main 508 291 0057 Fax 508 291 2491 Eng Direct 508 356 9748	
DRAWN: J. FELICIANO	6/9/2015	ASSY SUB CABLE 2205 AUV MCBH8F TO CONCENTRATOR AND J560 SIM J3 DDPA AL		
CHECKED:				
ENG:				
ISSUED		CARDFILE NAME	DRAWING NO.	Rev
SYSTEM	2205	SCALE page 1	0017098	A

REVISIONS				
ECR	REV	DESCRIPTION	DATE	APPROVED
	A	Initial Release	6/9/2015	JF

Note 1



Female Face View

MCBH21F		End Cap Concentrator Board Turret Connections
1	Shield	SHLD
2	Element 1+	CH0+
3	Element 1-	CH0-
4	Element 2+	CH1+
5	Element 2-	CH1-
6	Element 3+	CH2+
7	Element 3-	CH2-
8	Element 4+	CH3+
9	Element 4-	CH3-
10	Element 5+	CH4+
11	Element 5-	CH4-
12	Element 6+	CH5+
13	Element 6-	CH5-
14	Element 7+	CH6+
15	Element 7-	CH6-
16	Element 8+	CH7+
17	Element 8-	CH7-
18	Element 9+	CH8+
19	Element 9-	CH8-
20	Element 10+	CH9+
21	Element 10-	CH9-

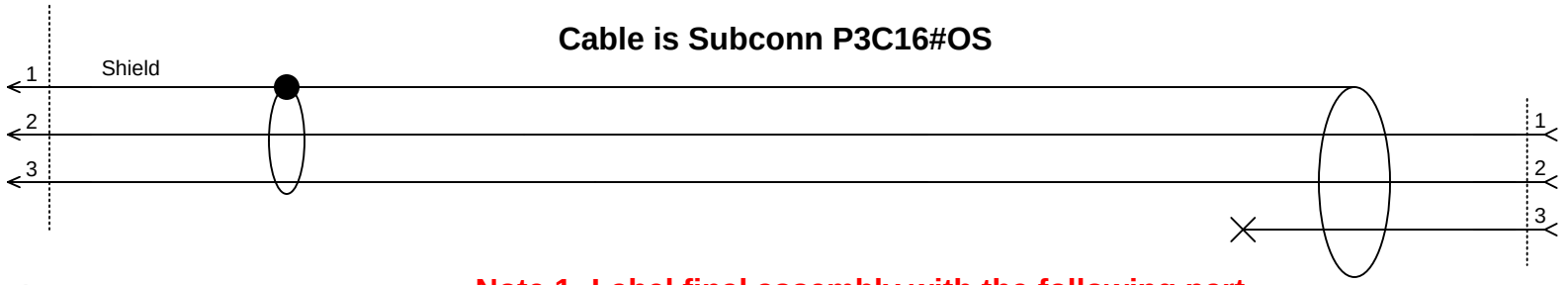
Notes:

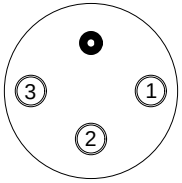
1 – Cable lengths are to be as short as possible.
2 – Solder each wire to their respective turret on the End Cap Concentrator board

APPROVALS	DATE		
DRAWN: J. Feliciano	6/9/2015	EdgeTech	4 Little Brook Road West Wareham, MA 02576 Tel: (508) 291-0057 / Fax: 356-9760 Email: info@edgetech.com
CHECKED:		ASSY SUB CABLE 2205 MCBH21F TO CONCENTRATOR BOARD AL	
ENG:			
ISSUED		CARDFILE NAME	DRAWING NO. 0017097 / REV A
SYSTEM	2205	SCALE / page 1 of 1	

REVISIONS				
ECR	REV	DESCRIPTION	DATE	APPROVED
	A	Release	6/4/2015	JF

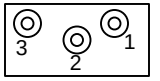
Cable is Subconn P3C16#OS



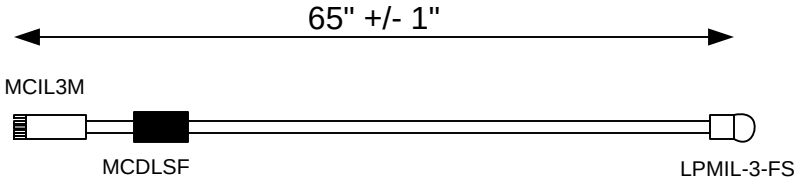


Subconn:MCIL3M
Male Face View

Note 1: Label final assembly with the following part numbers: 0017108_REV_A
Label must be suitable for marine and subsea environment. Affix label 5" from MCIL3M face.

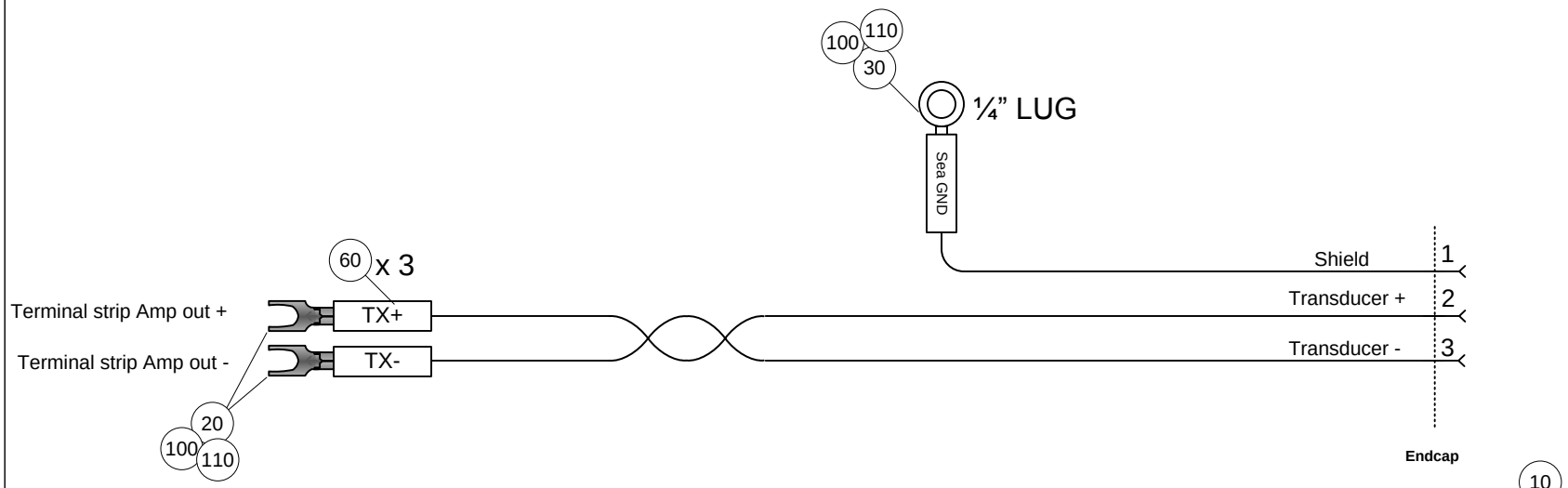


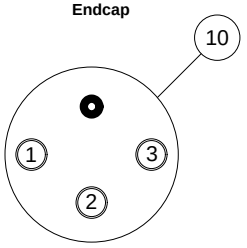
LPMIL-3-FS
Female Face View



APPROVALS	DATE		
DRAWN: J.FELICIANO	6/4/2015	EdgeTech	1141 Holland Drive, Suite 1 Boca Raton, FL 33487 Tel: (561) 995-7767 / Fax: 995-7761 Email: FullSpectrum@EdgeTech.com
CHECKED:		CABLE DEEP TRANSMIT ONLY MCIL3M LPMIL3-FS 65 INCH	
ENG:			
ISSUED		CARDFILE NAME	DRAWING NO. 0017108 / REV A
SYSTEM	SBP	SCALE / page 1 of 1	

REVISIONS				
ECR	REV	DESCRIPTION	DATE	APPROVED
	A	Initial Release	6/9/2015	JF





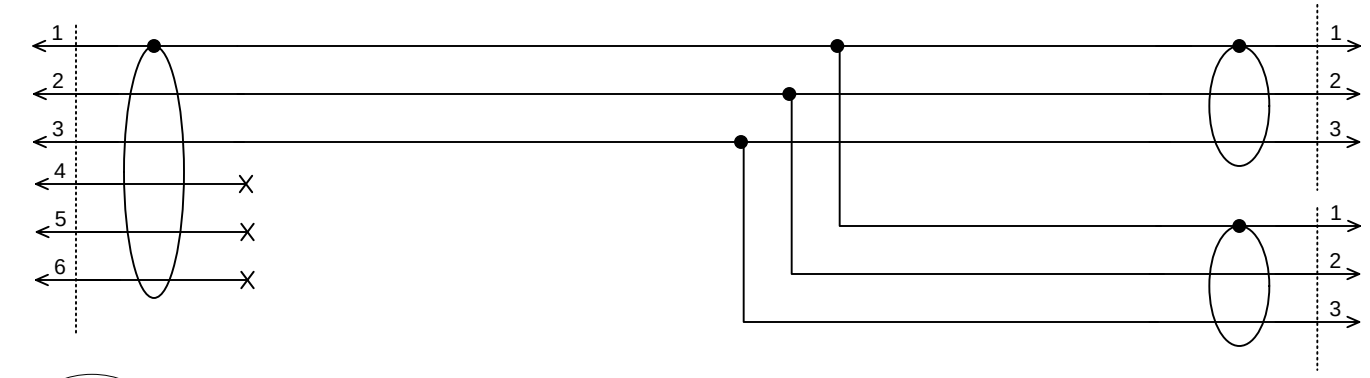
Female Face View
MCBH3F

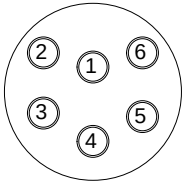
Notes:

1 - Cable length 10" (shorten if appropriate)
2 – Twist wires 3 twist per inch

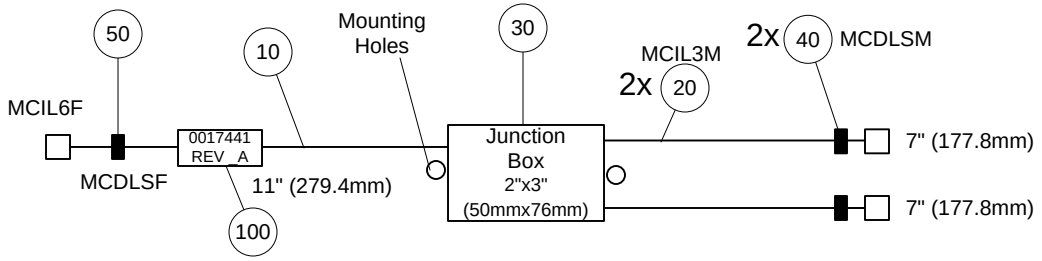
APPROVALS	DATE		
DRAWN: JF	6/9/2015	EdgeTech	4 Little Brook Road W.Wareham, MA 02576 Tel: (508) 291-0057 / Fax: 291-2491
CHECKED:		ASSY SUB CABLE 2205 AUV SBP TX 03 POS FEMALE TO TERMINAL BLOCK	
ENG:			
ISSUED		CARDFILE NAME	DRAWING NO. 0017100 / REV A
SYSTEM	2205	SCALE page 1 of 1	

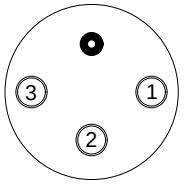
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	Release to Production	8/21/2015	JF





Face View MCIL6F





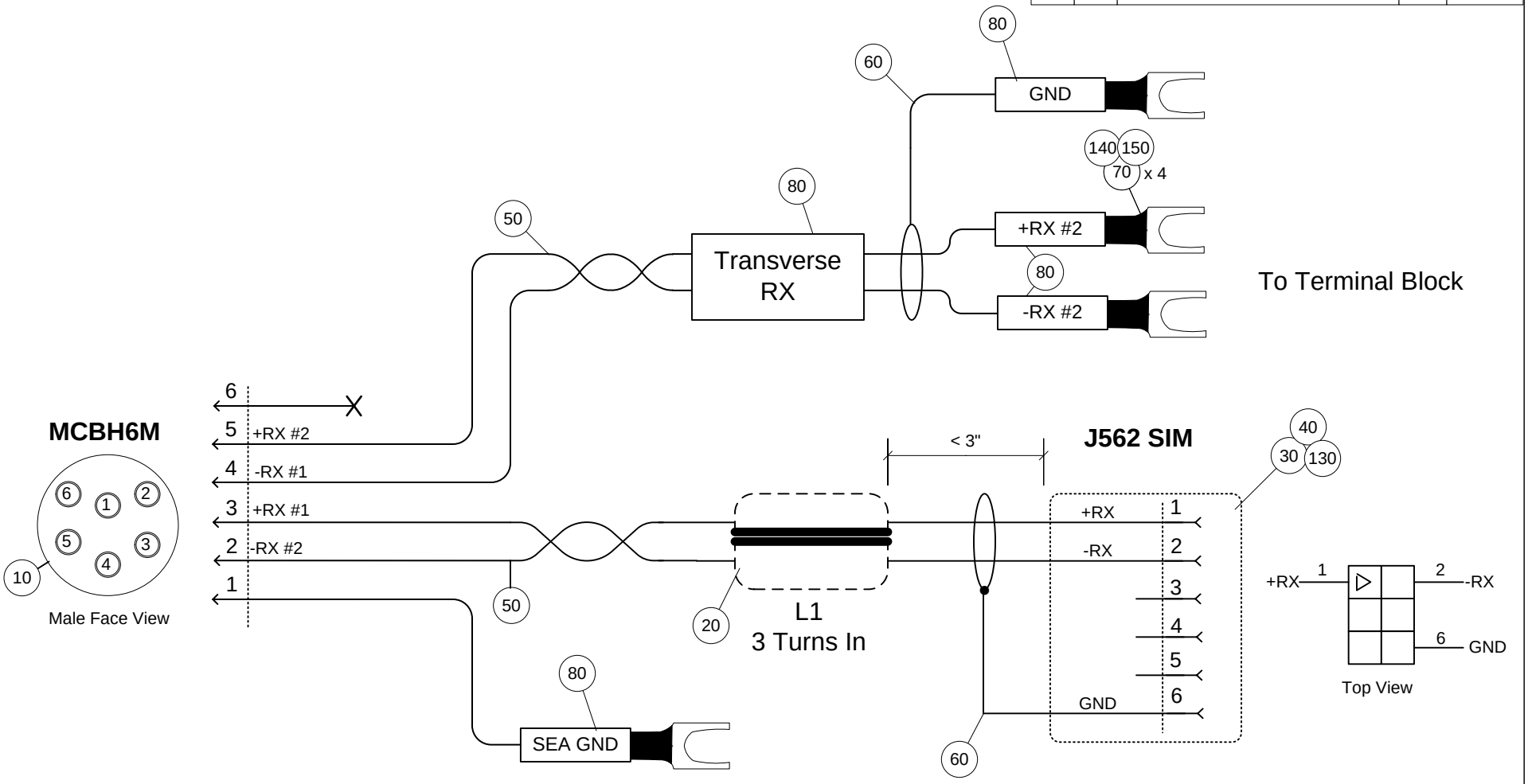
Face View MCIL3M

Note:

1. Spliced connections must be soldered, individually coated with Scotchkote (3M 054007-14853) or equivalent, and then covered in heat shrink tubing prior to encapsulation.
2. Heat shrink label with part number and current revision.
3. Length tolerances are + 1 inch / - 0 inch

APPROVALS	DATE		
DRAWN: J. FELICIANO	8/21/2015	EdgeTech	4 Little Brook Road W.Wareham, MA 02576 Tel: (508) 291-0057 / Fax: 291-2491
CHECKED:		ASSY TOP SPIDER 2205 DEEP RX ONLY SHEILDED 1X MCIL6F TO 2X MCIL3M 18 INCH TOTAL	
ENG:			
ISSUED		CARDFILE NAME	DRAWING NO. 0017441 / REV A
SYSTEM	2205	SCALE / page 1 of 1	

REVISIONS				
ECR	REV	DESCRIPTION	DATE	APPROVED
	A	Initial Release	6/8/15	JF

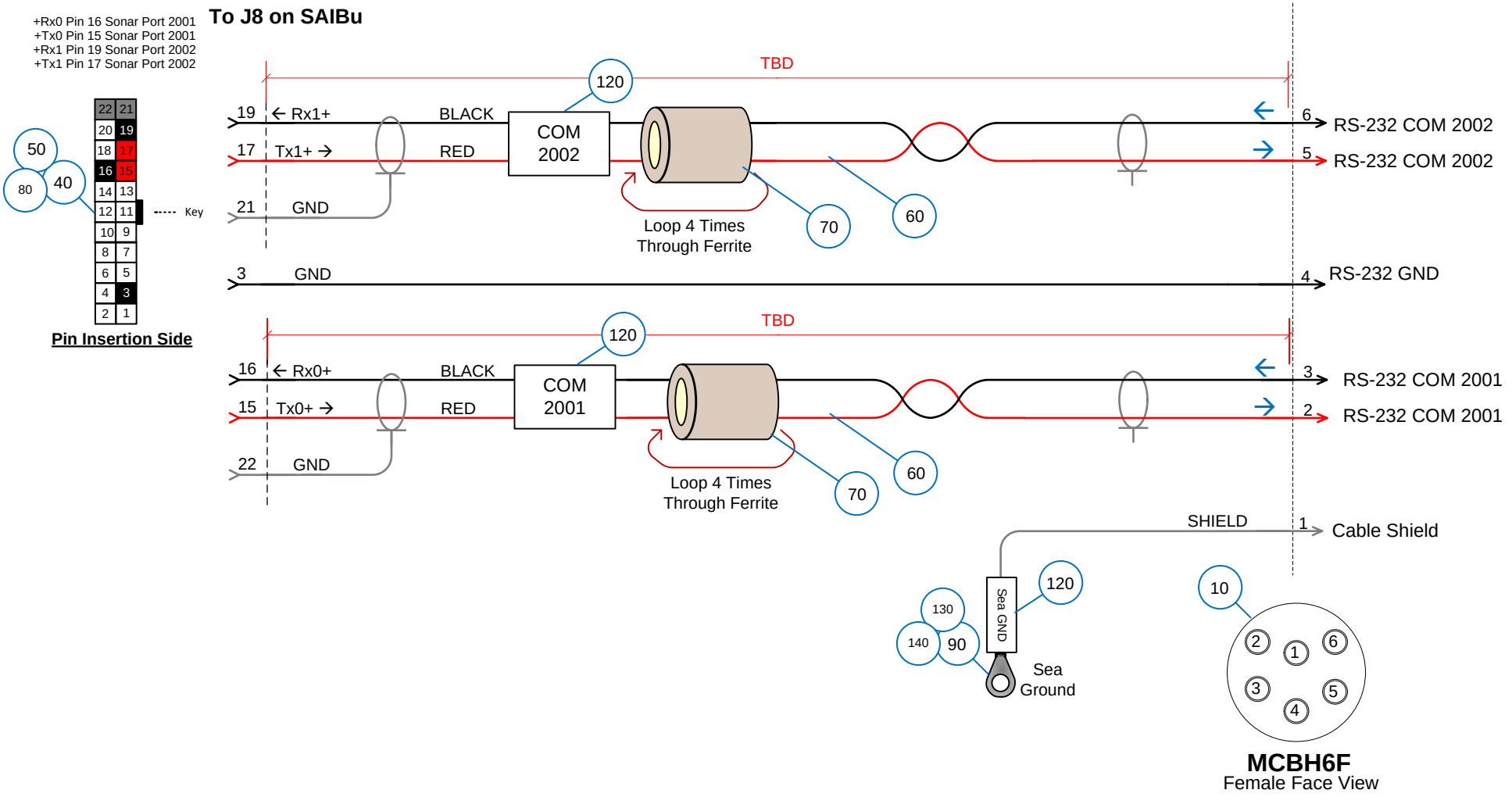


Notes:

1 - Cable length 6" for J562 connection. Cable Length TBD for Terminal Block connection
2 – Heat shrink all solder connections
3 – Splice must be with in 1" of bulkhead
4 - Cover cable ends with heat shrink
5 - Ferrite must have 3 turns of wire through the center
6 - Install ferrite and connectors after bulkhead is installed on End cap

APPROVALS	DATE	EdgeTech	4 Little Brook Road W.Wareham, MA 02576 Tel: (508) 291-0057 / Fax: 291-2491
DRAWN: J. FELICIANO	06/8/2015	ASSY SUB CABLE 2205 AUV SBP RX 06 POS MALE J562 & TERMINAL STRIP	
CHECKED:			
ENG:			
ISSUED		CARDFILE NAME	DRAWING NO. 0017099
SYSTEM	2205	SCALE page 1 of 1	REV A

REVISIONS				
ECR	REV	DESCRIPTION	DATE	APPROVED
	A	Initial release	6/9/2015	JF



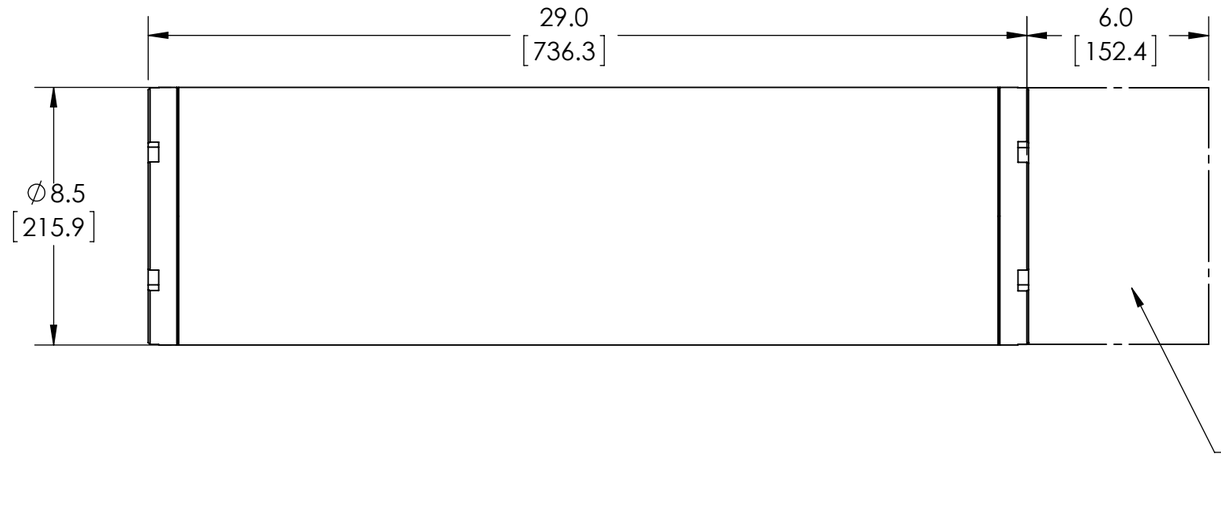
Notes:
1) Install connectors after installing the bulkhead onto the end cap.
2) Wrap the cable 4 times through the ferrite.
3) Cut all unused connections to about 1 inch from the bulkhead and heat shrink all of them.
4) Cable Lengths to be determined by application.

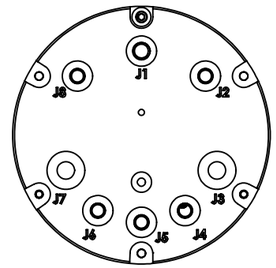
APPROVALS	DATE	EdgeTech	4 Little Brook Road W.Wareham, MA 02576 Tel: (508) 291-0057 / Fax: 291-2491
DRAWN: J. FELICIANO	6/9/2015	ASSY SUB CABLE 2205 AUV MCBH6F OPTIONS HIGH SPEED COM PORTS AL	
CHECKED:			
ENG:			
ISSUED		CARDFILE NAME	DRAWING NO. 0017101 REV A
SYSTEM	2205	SCALE page 1 of 1	

REVISIONS				
ECR#	REV	DESCRIPTION	DATE	APPROVED
	A	RELEASED TO MANUFACTURING	5/28/2015	JB

NOTES:
DIMENSIONS IN [BRACKETS] ARE IN MM

MATERIAL: ALUMINUM 6061-T6 HARDCOAT ANODIZED
DEPTH RATING: 3000M
WEIGHT IN WATER: ~10 LBS [4.5 KG]
WEIGHT IN AIR: ~65 LBS [29.5 KG]

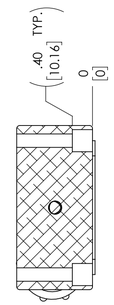




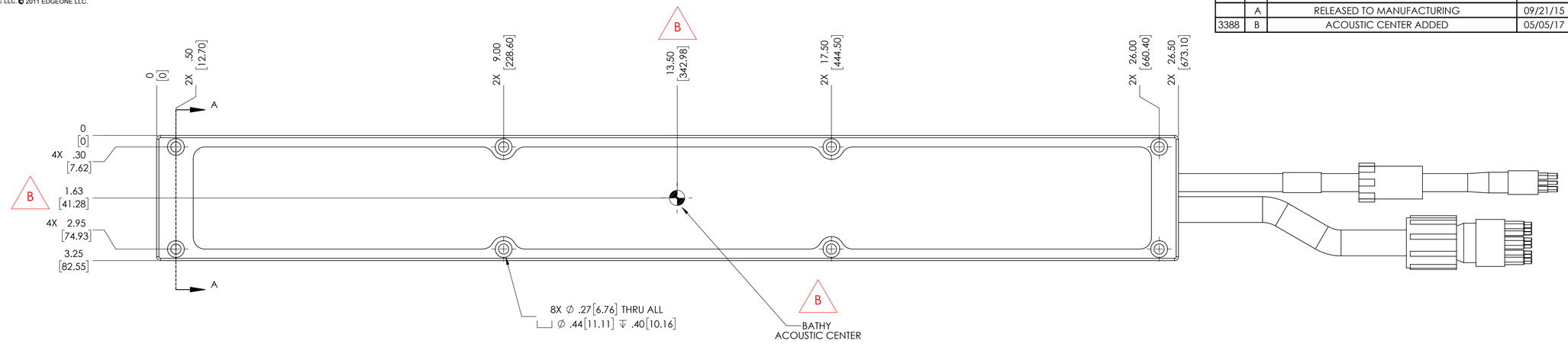
MATERIAL	UNLESS OTHERWISE NOTED: DIMENSIONS ARE IN INCHES INTERPRET DIM AND TOL PER ASME Y14.5M-1994 THIRD ANGLE PROJECTION		APPROVALS	SIGNATURE & DATE	EdgeTech 4 LITTLE BROOK ROAD WEST WAREHAM, MA 02576 WWW.EDGETECH.COM TEL. (508)291-0057
			DRAWN	BOUCHER 5/28/2015	
			CHECKED	DD 5/28/2015	
FINISH	TOLERANCES		MECH		TITLE ICD, ELECTRONICS BOTTLE, 2205, TRI FREQUENCY SB 216 MODUS/SAAB
	DECIMALS: 2 PLACES	DECIMALS: 3 PLACES	FRACTIONS	ANGLES	ELECT		
	+/-.010	+/-.005	+/-1/64	+/-0.5°	SYSTEM		CADFILENAME:
	DO NOT SCALE PRINT				REMOVE BURRS, BREAK SHARP EDGES		SCALE

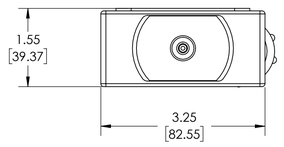
SIZE	DRAWING NO.	REV
B	0016765	A

REVISIONS				
ECR#	REV	DESCRIPTION	DATE	APPROVED
	A	RELEASED TO MANUFACTURING	09/21/15	PES
3388	B	ACOUSTIC CENTER ADDED	05/05/17	PES



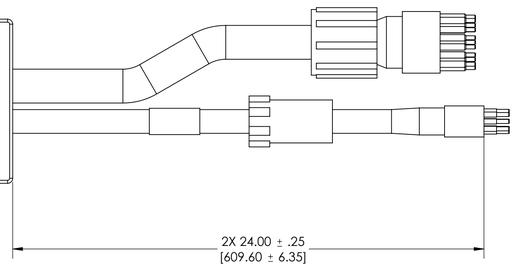
SECTION A-A
SCALE 1 : 1.5



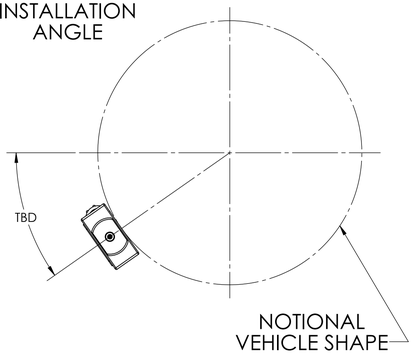


PLATFORM NOSE

PLATFORM TAIL

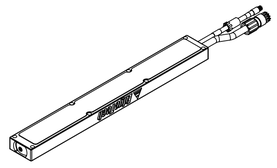


ARRAY INSTALLATION ANGLE



NOTES:

1. TRANSDUCER WEIGHT:
   IN AIR: 10.0 LBF [4.54 KG]
   IN WATER: 4.90 LBF [2.23 KG]
   (ESTIMATE: FINAL WEIGHT PROVIDED AFTER FIRST ARTICLE BUILD)
2. TRANSDUCER DEPTH RATING: 6000M
3. TRANSDUCER MATERIALS:
   ANODIZED ALUMINUM HOUSING
   / URETHANE ACOUSTIC WINDOW /
   URETHANE / RUBBER
4. TRANSDUCER PIGTAIL CONNECTORS:
   SIDE SCAN: SUBCONN 8 PIN MALE (MCIL)
   BATHY: SUBCONN 21 PIN MALE (MCIL)
5. DIMENSIONS IN [BRACKETS] ARE IN MM.



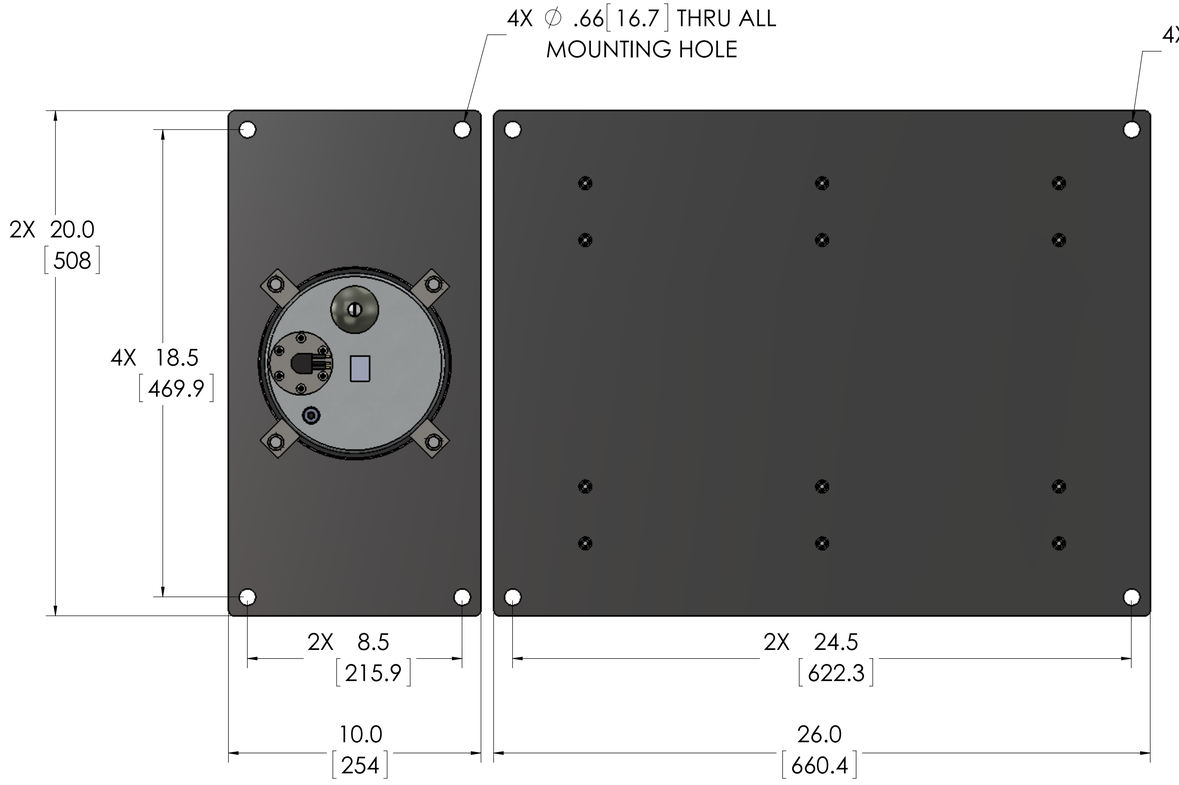
MATERIAL: ANODIZED ALUMINUM, URETHANE, RUBBER	UNLESS OTHERWISE NOTED: DIMENSIONS ARE IN INCHES. INTERPRET DIM AND TOL PER ASME Y14.5-1994. THIRD ANGLE PROJECTION	APPROVALS	
FINISH	TOLERANCES: DECIMALS 2 PLACES +/-.010; 3 PLACES +/-.005; FRACTIONS +/-1/64; ANGLES +/-0.5°	DRAWN VEILLEUX 03/17/15; CHECKED; MECH VEILLEUX 03/17/15; ELECT; SYSTEM	DO NOT SCALE PRINT. REMOVE BURRS, BREAK SHARP EDGES

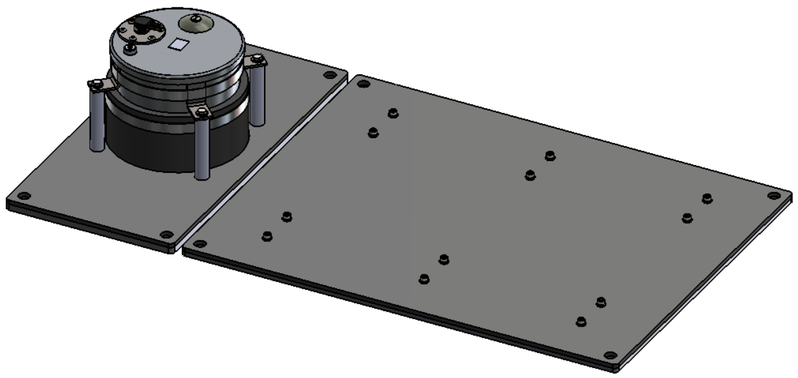
EdgeTech — An Applied Company of ORE Offshore
4 LITTLE BROOK ROAD
WEST WAREHAM, MA 02576
WWW.EDGETECH.COM
TEL. (508)291-0057

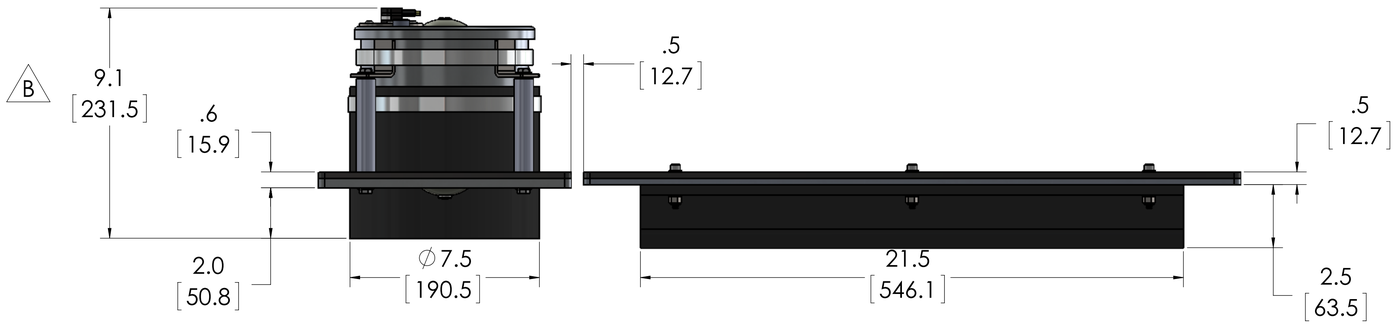
TITLE: ICD, TRANSDUCER, TRI-FREQUENCY SIDE SCAN, BATHY, 2205

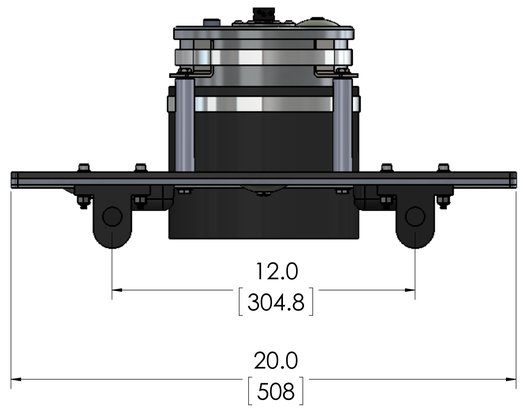
CADFILENAME: 0015131.SLDASM
SCALE: 2:3
D
DRAWING NO.: 0016742
REV: B

REVISIONS				
ECR#	REV	DESCRIPTION	DATE	APPROVED
	A	RELEASED TO PRODUCTION	3/16/2006	
3102	B	UPDATE TRANSDUCER HEIGHT	12/15/15	JB









NOTES:
DIMENSIONS IN [BRACKETS] ARE IN MILLIMETERS

WEIGHT IN AIR: 52 LBS [24 KG]
WEIGHT IN WATER: 26 LBS [12 KG]

DEPTH RATING: 6000 METERS

MATERIAL	UNLESS OTHERWISE NOTED: DIMENSIONS ARE IN INCHES. INTERPRET DIM AND TOL PER ASME Y14.5-1994. THIRD ANGLE PROJECTION			APPROVALS			EdgeTech — An AdSea Company of ORE Offshore. 4 LITTLE BROOK ROAD, WEST WAREHAM, MA 02576, WWW.EDGETECH.COM, TEL. (508)291-0057
				DRAWN	L. CORTES	6/16/2006	
FINISH	TOLERANCES			CHECKED			TITLE: ICD ASSEMBLY DW 216 KIT
	DECIMALS: 2 PLACES	DECIMALS: 3 PLACES	FRACTIONS / ANGLES	MECH			
	+/-.010	+/-.005	+/-1/64, +/-0.5°	ELECT			
				SYSTEM			CADFILENAME:
	DO NOT SCALE PRINT			REDRAWN	BOUCHER	11/4/2015	SCALE: D — DRAWING NO. 0010132 — REV B
	REMOVE BURRS, BREAK SHARP EDGES						SHEET 1 OF 1