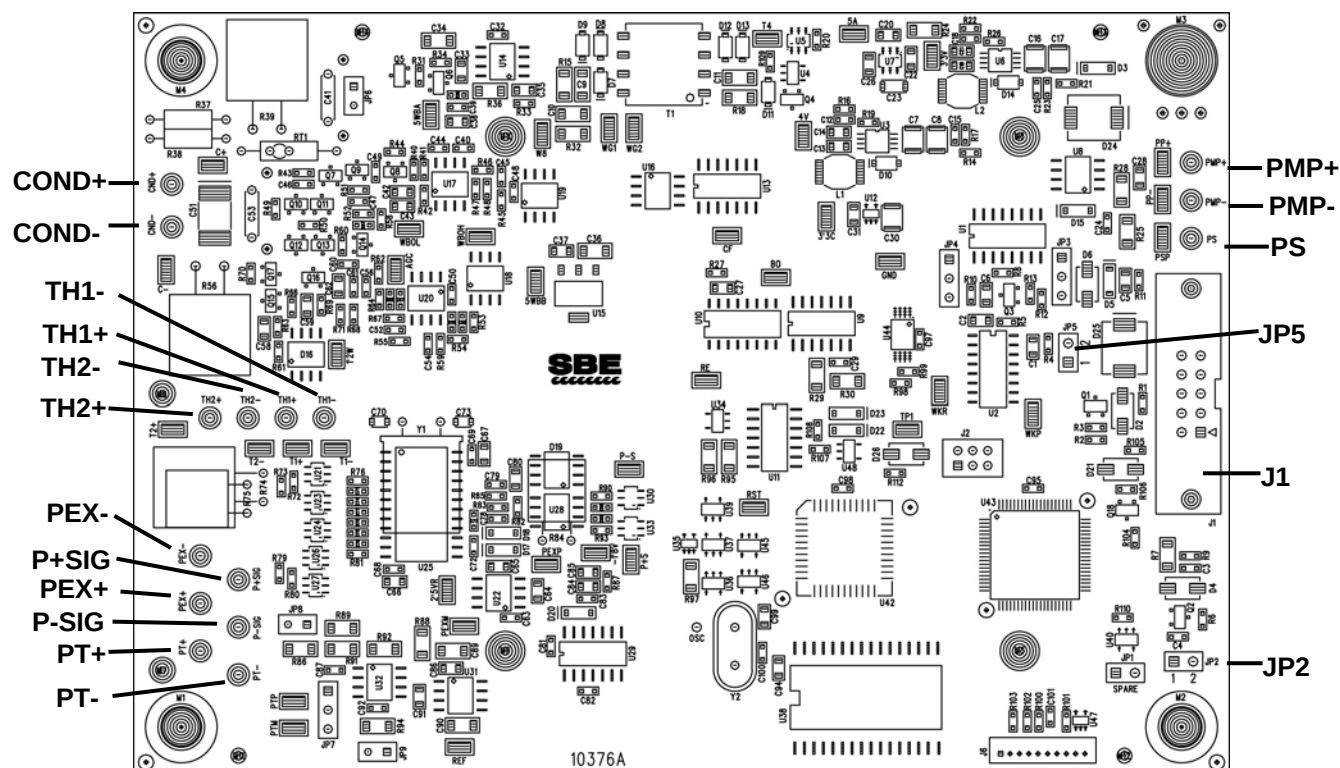


SBE 41CP CTD MODULE for ARGO FLOATS (UW)

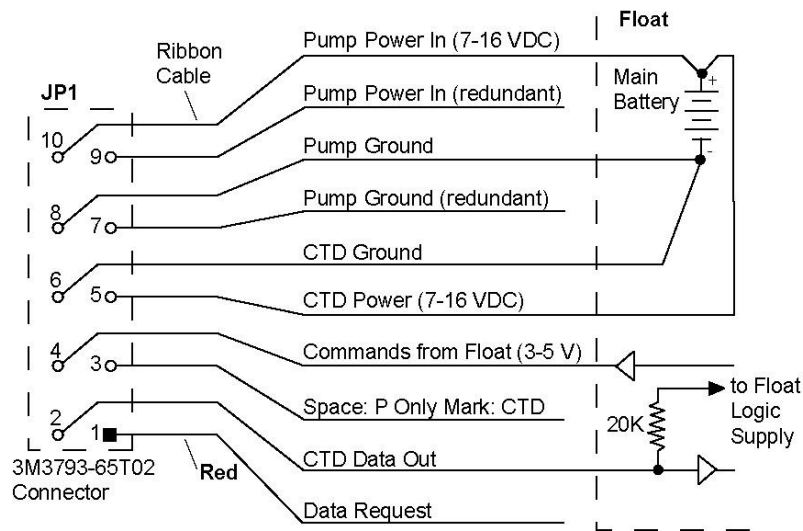
HARDWARE REFERENCE

Assemblies: 41528F
Printed Circuit Board 10376A

ELECTRICAL CONNECTIONS



SOLDER TURRET	DESCRIPTION
COND+	conductivity sensor center electrode
COND-	conductivity sensor outer electrodes
TH2+	not used
TH2-	not used
TH1+	temperature sensor
TH1-	temperature sensor
PT+	pressure sensor temperature compensation diode anode
PT-	pressure sensor temperature compensation diode cathode
PEX+	pressure sensor positive excitation
PEX-	pressure sensor negative excitation
P+SIG	pressure sensor positive output
P-SIG	pressure sensor negative output
PMP+	positive power to pump
PMP-	negative power to pump
PS	pump speed control



J1 Connection Detail

Jumpers:

JP2: Remove for normal use. (install for calibration or firmware update via serial port only)

JP5: Remove for normal use. (install for firmware update via JTAG only)

DATA PROTOCOL

Logic level signals:

mark: 3 – 5 volts

space 0 – 0.3 volts

CTD data out is "open collector" -- float must provide pull-up to float logic +supply

Communication settings:

9600 baud

8 data bits

1 stop bit

no parity

Data Request:

Mark state greater than 400 millisecond – enter Command mode. See Command Summary for command syntax.

Mark state 1 to 100 millisecond -

If Pin 3 is in mark state, take PTS sample.

PTS sample time: 3.25 seconds

If Pin 3 is in space state and pin 4 is in space state or open circuit, take fast pressure sample.

fast pressure sample time: 0.65 seconds

If pin 3 is in space state and pin 4 is in mark state, take fast PT sample.

fast PT sample time: 1.95 seconds

PTS and fast PT sample run the pump. To prevent pumping the cell dry, do not take a PTS or fast PT sample when the CTD is shallower than approximately 5 meters.

Note: Sample times may vary by +/- 100 milliseconds due to microprocessor reset timing variations.

Typical PTS Data Request Timing:

<u>Elapsed Time (sec)</u>	<u>PTS Sample Event</u>
0.0	Data Request asserted
0.18	pump on
1.08*	start A/D calibration
1.75*	end A/D calibration, start T & C measurement
2.70*	end T & C measurement, pump off, start P measurement
3.02*	end P measurement, begin calculating values
3.20*	transmit sample
3.25*	power off

* Add pumped take sample wait time N (“tswait=N”) to elapsed time

POWER CONSUMPTION (typical at 12V)

Quiescent Current	15 microamps
Operating (waiting for command)	3.4 milliamps, 2 minute timeout after command inactivity
Operating (computing)	5.6 milliamps
fast pressure or fast PT	5.0 milliamps
Profiling Current (pump running)	22 milliamps

CAUTIONARY NOTES

1. Follow normal procedures to avoid static discharges that could damage CMOS and other electronic parts used on the SBE 41CP CTD boardset.
2. Consult Sea-Bird before disassembling any of the CTD electrical or mechanical components.
3. To ensure that the cell flushes properly, the SBE 41CP must mount to the top of the float. CTD acquisition must occur on the upward profile only.
4. The conductivity cell is shipped dry. A red cap over the TC duct inlet and two translucent rubber plugs in the exhaust posts prevent entry of airborne contaminants that could coat the cell resulting in calibration error. Remove these covers just prior to deployment. Float manufacturers who perform ballasting or other operations requiring immersion of the CTD in water should contact Sea-Bird for guidance. These operations can alter the calibration unless performed correctly.
5. After deployment, it is important that the cell never be pumped dry: the "U" shaped sensor geometry must remain water-filled to ensure that surface oils float away when the float resubmerges. To prevent pumping the cell dry when the float breaks the surface, the SBE 41CP automatically stops the pump when the pressure is less than the value set using the **pumpcutoff** command. A value of 5 dbars (approximately 5 meters depth) is recommended.
6. The pressure sensor will tend to drift toward higher readings over time. This has a relatively small effect on salinity accuracy (a 2 dBar pressure error causes a 1 ppm error in calculation of salinity). More importantly, a pressure error can result in the float breaking the surface even though the pump cutoff threshold has not been reached. Accordingly, when the float is at the surface the float controller should send the **resetoffset** command (refer to the Command Summary for further information). This will correct (re-zero) any pressure offset, thus preventing salinity error and, assuming the cautions described in (5) have been followed, inadvertent surface operation of the pump.
7. The SBE 41CP is designed with the expectation that a profile will be started (command **startprofile**) at the float parking depth and stopped when the **pumpcutoff** threshold is reached. To reduce CTD power consumption, users may wish to consider intermittent operation of the CTD during the deep part of the profile; however, this should only be attempted after consultation with Sea-Bird. Unless carefully planned, discontinuous operation of the CTD will prevent thermal equilibration of the conductivity cell, resulting in salinity error.
8. Operation of the CTD during the float parking interval expels the water otherwise trapped in the cell, possibly leading to long-term drift in salinity. Consult with Sea-Bird if sampling during float parking is required in your application.

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