System Installation

Manual

Version 3.1.6

Installation:

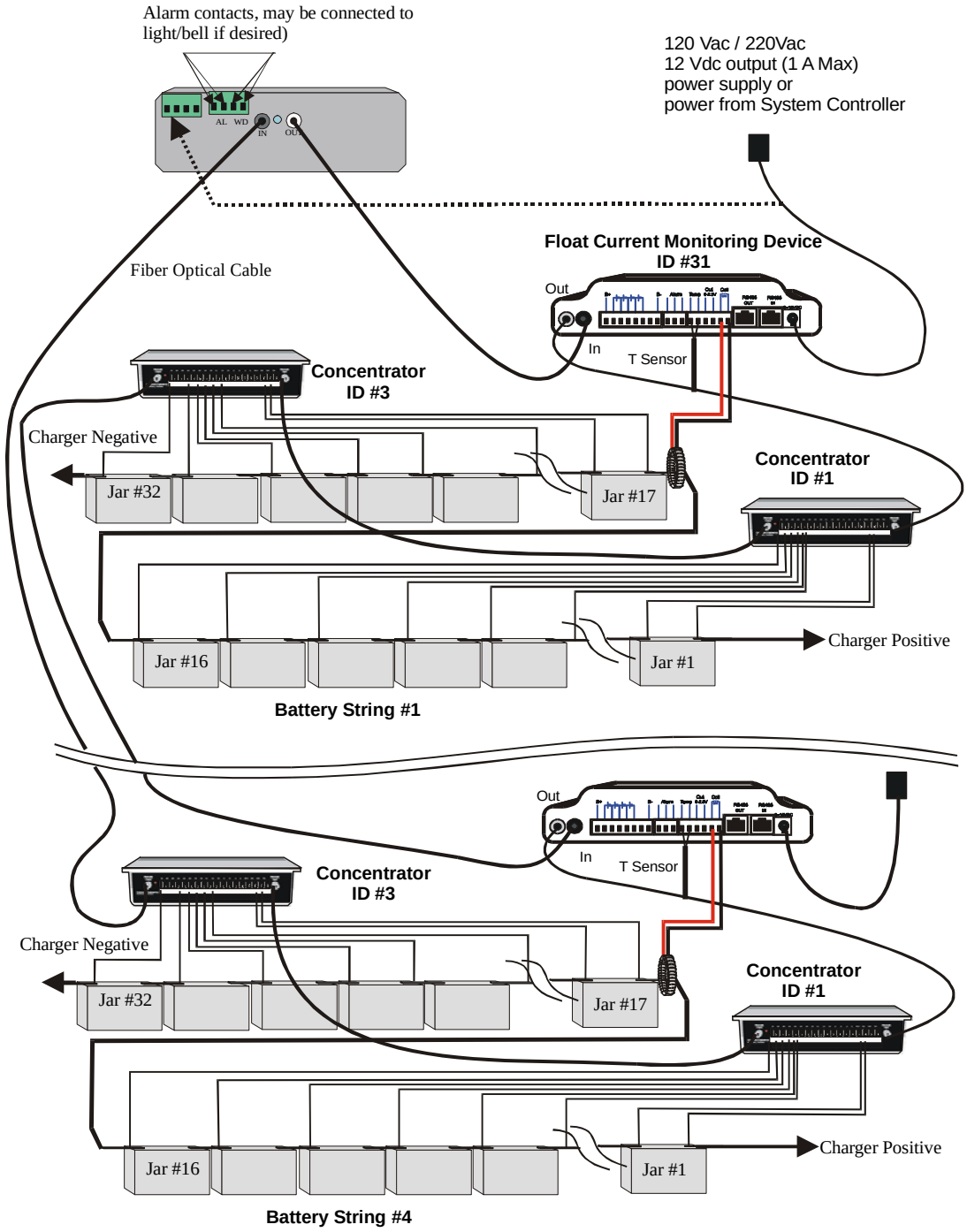


Figure 1: Diagram of typical Concentrator Connections

Installation

There are a few small differences in the equipment depending on whether the system is monitoring 2V or 12V cells. Although concentrators may look the same, it is important to check the nameplate to tell whether the concentrator has the proper voltage for your application. One low voltage concentrator (less than 6 volts per cell) can serve up to 15 cells if the intercell resistance and internal impedance of the cell are measured separately or up to 30 cells if intercell resistance is measured together with the internal cell impedance. One high voltage concentrator (greater than or equal to 6 volts per cell) can serve up to 10 cells if the intercell resistance and internal impedance of the cell are measured separately or up to 20 cells if the intercell resistance is measured together with the internal cell impedance. See Figure 1.

The concentrator can be calibrated to any standard jar voltages from 1.2V to 12V, providing that the total voltage per concentrator does not exceed 240V.

1) All the cell numbers noted here are in reference to the most positive end of the string. The cell at the most positive end of the string will be called Cell #1 and then counted sequentially.

2) Before installing the Float Current Device, make sure that proper steps have been taken with the critical load so that when the string is open, the system will not be affected

When a Float Current Device is used, install it on the most positive post of the battery string. Bus bars may have to be reworked in order to fit the transducer. Make certain to re-torque all the bolts loosened after connecting the transducer.

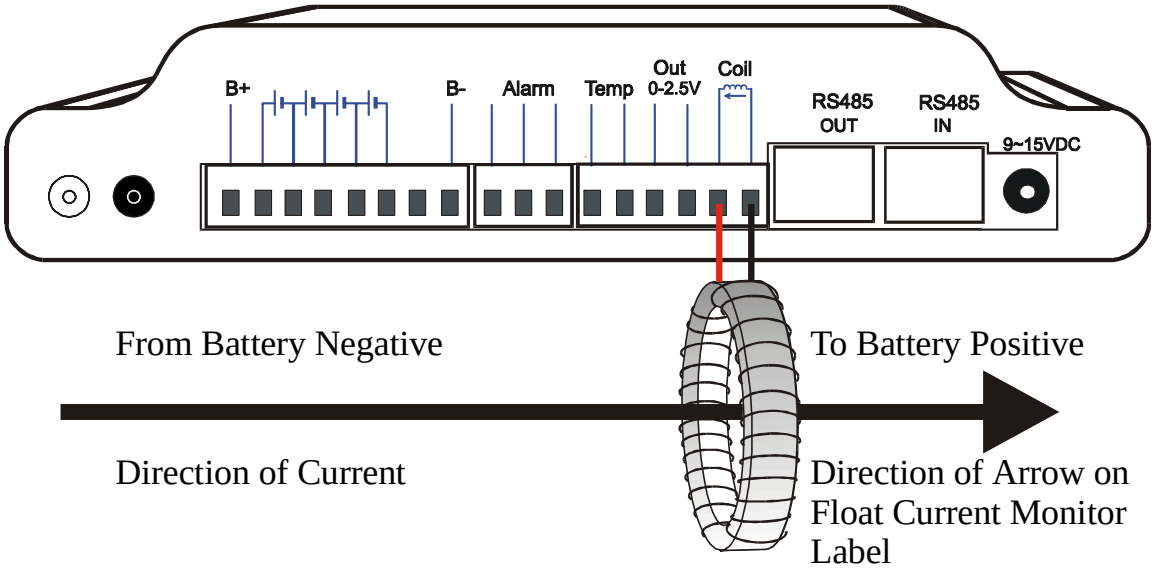


Fig 2: Showing the connections to measure current using Float Current Device

3) Run the plastic wiring duct along the battery rack rail with the outlets positioned at each battery cell pair, see Fig. 3. You may substitute the wiring duct with plastic conduit if necessary.

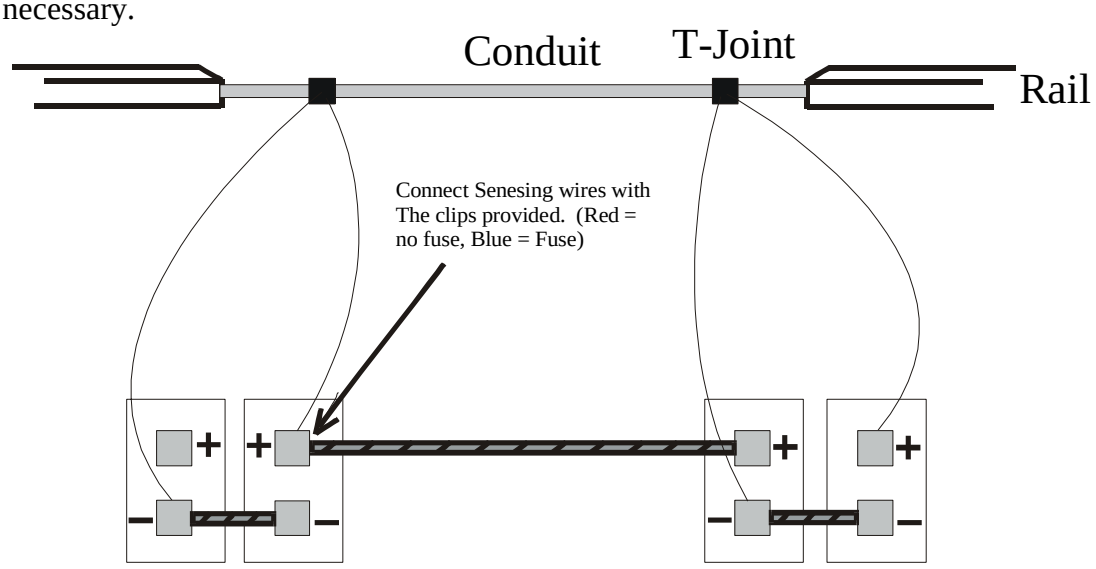


Fig. 3

4) Typically, the concentrators are installed as a wall mount or under the upper battery rack at 30 cell intervals as shown in Fig. 4. If there were a more suitable location for the concentrators than other than the wall inside the battery room or the battery racks, this would also be acceptable. Make sure that wherever the concentrator is installed, it is held in place firmly.

Each concentrator is uniquely identified by the concentrator number, which is displayed on the nameplate. The concentrator must be installed sequentially. Refer to the accompanying wiring chart/diagram for recommended positions.

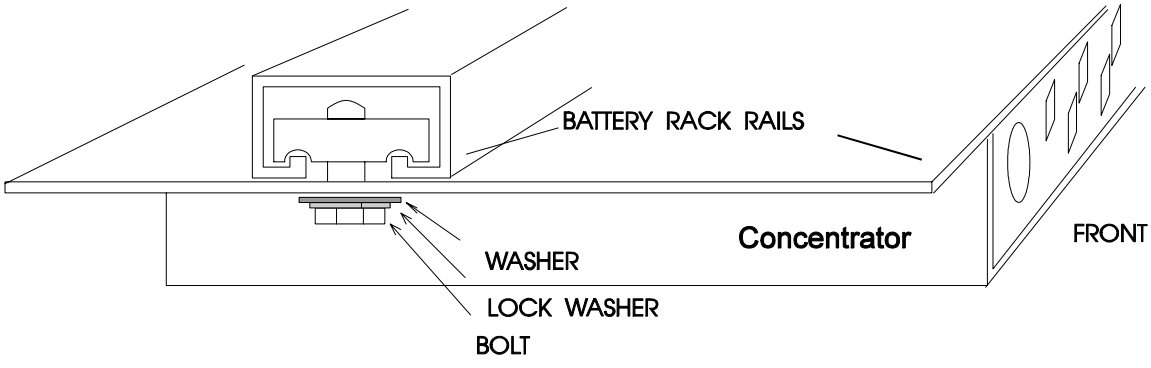


Fig. 4a: Concentrator Battery Rack Installation (side view)

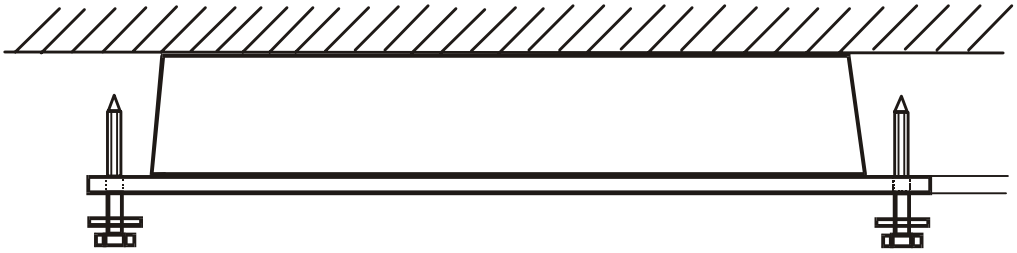
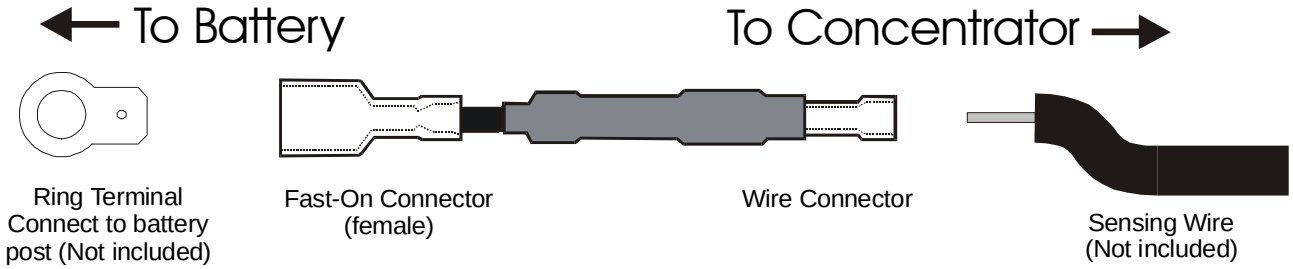


Fig. 4b: Concentrator Wall Installation (top view)

5) Following the wiring chart, connect the concentrator terminals to the battery. At the concentrator end, crimp the female fast-on connectors to the AWG18 wire. Run the wire via plastic wiring duct to the corresponding battery. You may have to use cable ties to keep the wiring in place. For the connection at the battery, the wire should be placed inside the quick disconnect of the appropriate battery cell. Connect the pigtail to the quick disconnect as shown in Figure 5. Remember that there are two types of battery clips.

It is important to remember that there are two types of battery clips. One type is blue and contains fuses and the other type is red and contains current limiting resistors. Again, refer to the wiring chart to determine which one to use. It is highly advisable that all wires should be labeled at each end of the cable. These labels are provided with each system.

Figure 4: Sensing Wire Battery Connection



Sensing wires are to be connected to the fast-on connectors located on the front of each concentrator. Follow the wiring chart and tag the wires accordingly.

WARNING: If there is a switch on the concentrator, make sure it is in the off position before making any connections. Also, work from the right connectors to the left, insuring that the (B-) connection is the last one to be connected. This will provide power to the concentrator. Do not connect it until you are able to run Utility program (see Operation and Setup Manual).

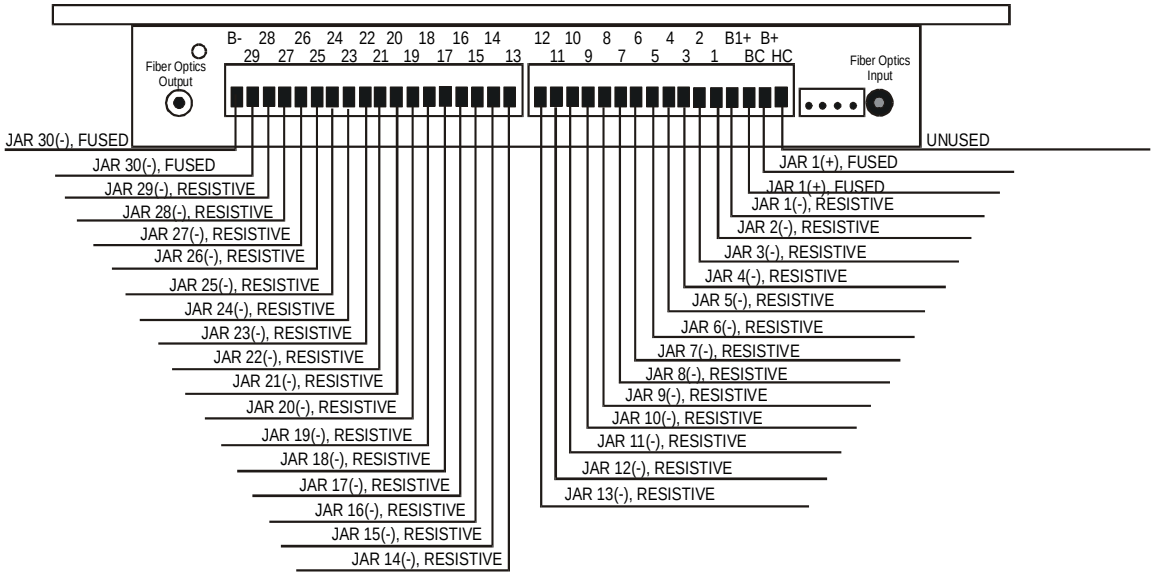


Figure 6: Cell/Jar Inputs

6) Connect the concentrators using the Fiber Optic Cables. They are connected in a daisy chain format with the FIBER-out of one concentrator connected to the FIBER-in of the next concentrator. **Note: Neither the sequence nor the total length of the cable is important. The only important aspect is the length of the <u>longest</u> piece of the cable is.** The FIBER-OUT of the last concentrator of the fiber optic link is connected to the Fiber I/O unit which is connected to the fax modem. Plug this cable into the INPUT. The OUTPUT is connected to one of the concentrators of the string's FIBER-IN. Plan your connections of the fiber optic cables to minimize the length of the longest fiber optical run. See Fig. 7.

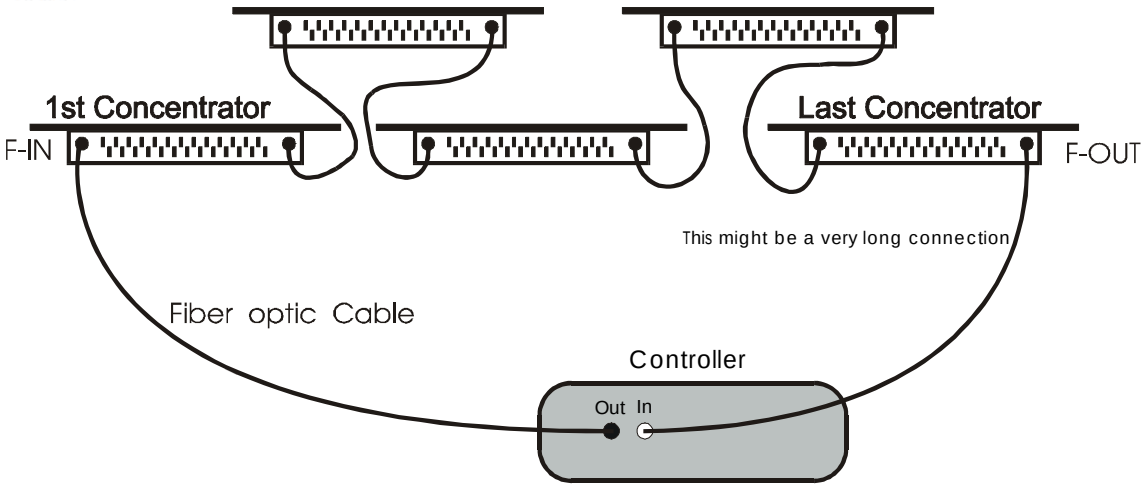


Fig. 8: All fiber optic cable runs should be no more than 100ft/33m

If you are monitoring several strings at once, through multiple concentrators, and you wish to separate one or several strings/concentrators, it is simply a matter of re-arranging the fiber optic setup.

Compare this picture to the one above to see how a concentrator can be extracted from the loop for maintenance, or repair. Re-arranging the fiber optic cables will result in a temporary loss of communication.

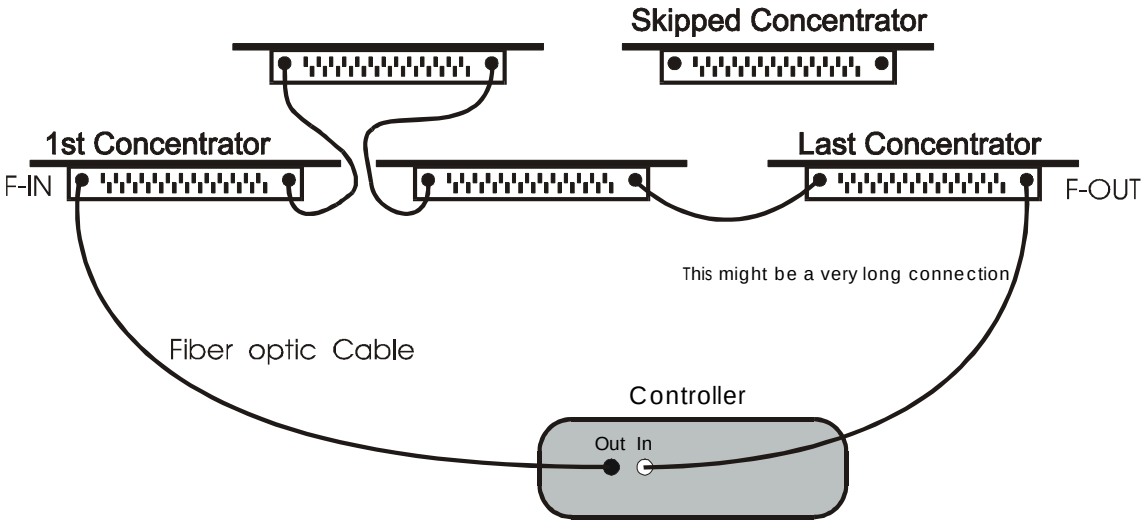


Figure 9

Setup and Configuration

For configuration and setup of the system, see the **Operation and Setup Manual** for the controller.

Running Fiber Optic Cables

Keep the radius on all bends at least 2 inches or 40 mm. Fiber optic cables can only be joined using special tools. Care should be taken to run all lengths prior to cutting.

Terminating Fiber Optic Cables

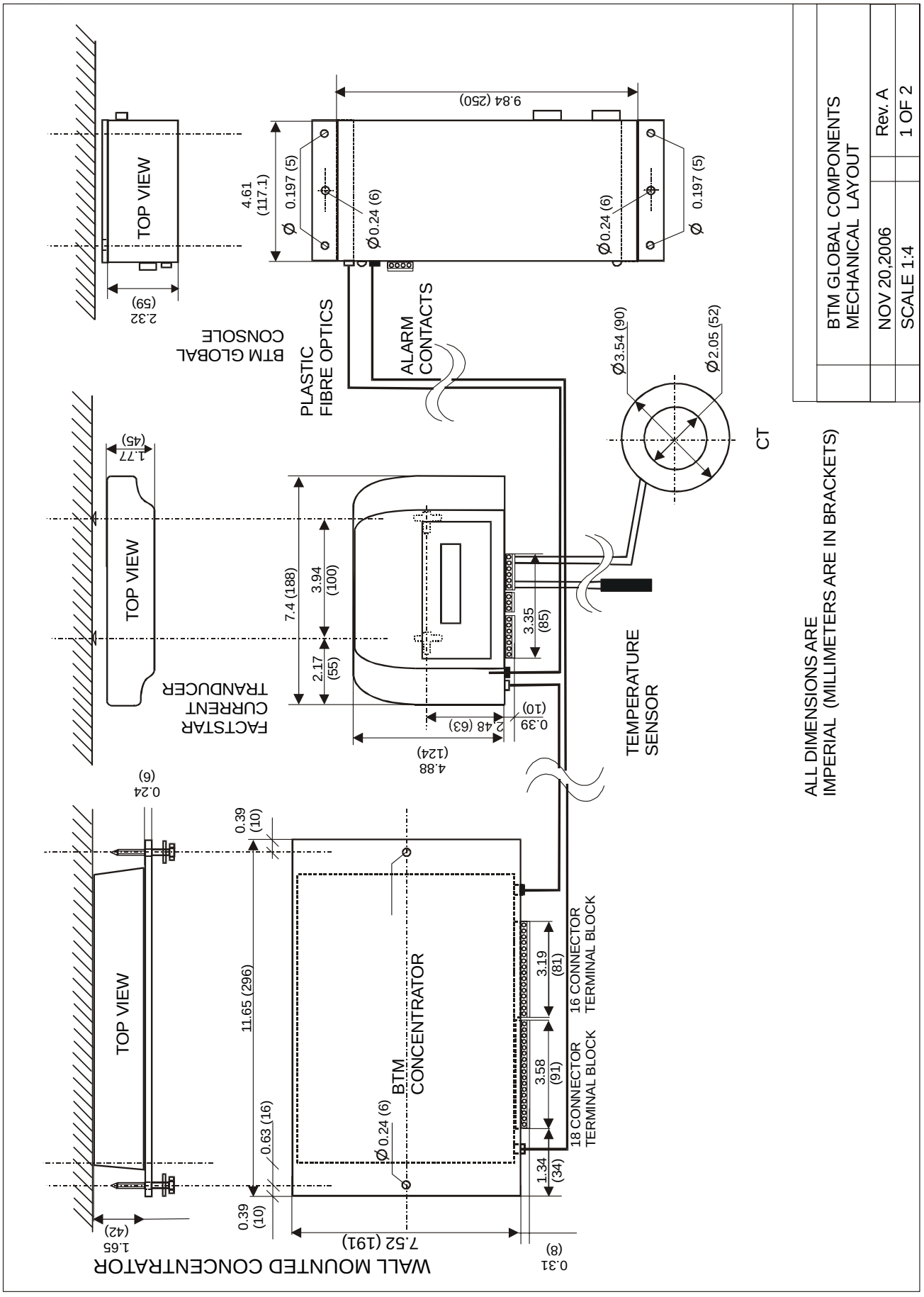
The fiber optic cable from the concentrators should be terminated in the appropriate socket in the RS-232 converter unit. The converter should be located close to the computer and modem. Prepare the end of the fiber optic cable by cutting it at a right angle with a sharp utility knife. The outer covering should then be stripped back for a length of 0.15 inches or 3 mm. To smooth off the fiber optic for better light transfer, heat the blade of the utility knife for a few seconds and then place it on the end of the fiber cable for about 1 second. This will leave a shiny flat end on the cable. Position the prepared end of the fiber optic cable in the input (or output) of the special fiber optic's connector, be sure the connector is loosened. Push the end of fiber optics cable into the housing, tighten the connector with finger force as would be used to close a toothpaste container.

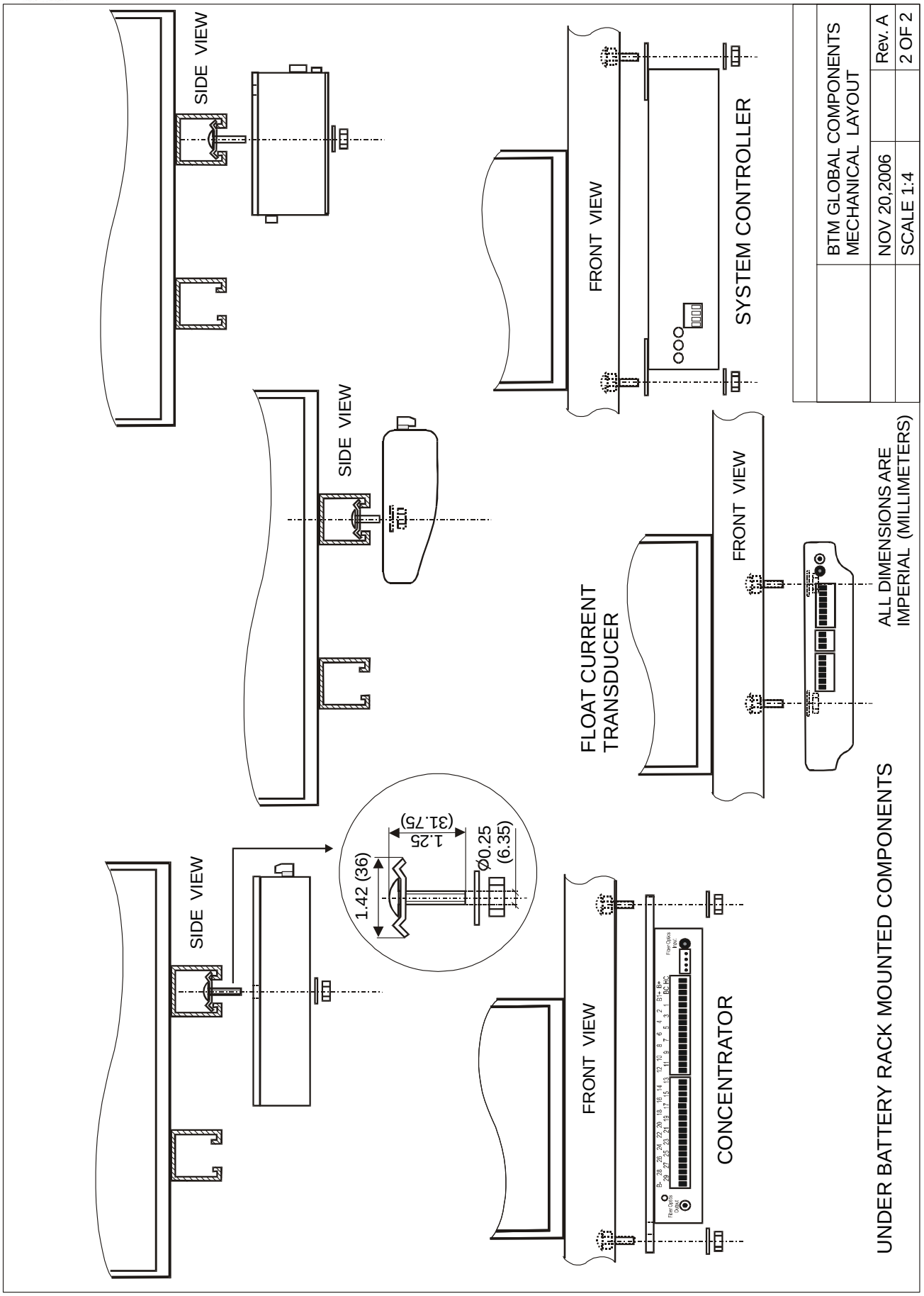
When installation is complete, enter information into the table below.

Hardware installation site notes.

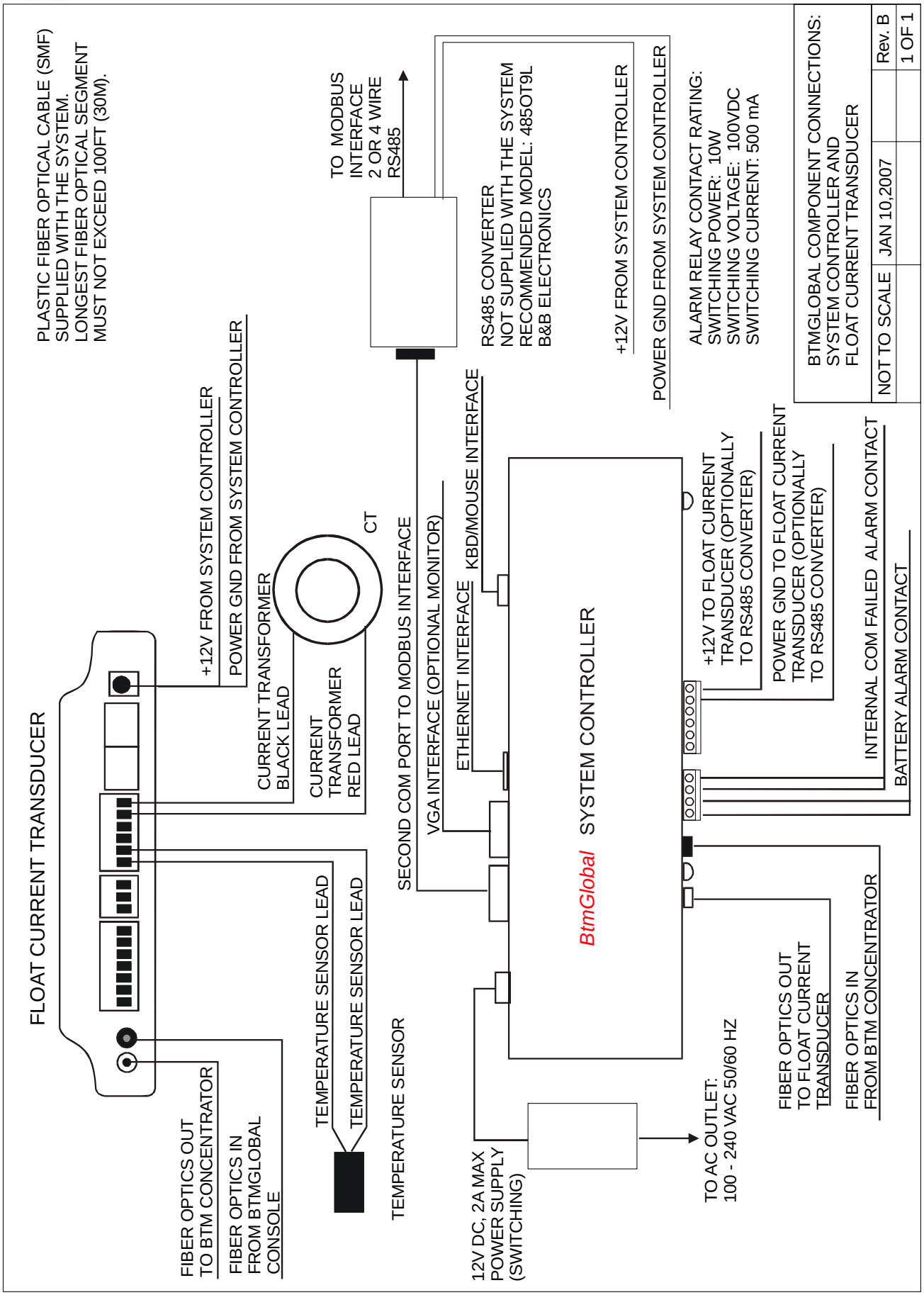
Concentrators					
		Fiber in	Fiber out		Serving cells
Serial #	used as #	From	to	string #	from - to

Copy this page when is filled and attach to operation/setup manual


BTM GLOBAL COMPONENTS
MECHANICAL LAYOUT
NOV 20,2006
Rev. A
SCALE 1:4
1 OF 2
ALL DIMENSIONS ARE
IMPERIAL (MILLIMETERS ARE IN BRACKETS)
WALL MOUNTED CONCENTRATOR
TOP VIEW
BTM
CONCENTRATOR
16 CONNECTOR
TERMINAL BLOCK
18 CONNECTOR
TERMINAL BLOCK
FACTSTAR
CURRENT
TRANDUCER
TEMPERATURE
SENSOR
CT
PLASTIC
FIBRE OPTICS
ALARM
CONTACTS
BTM GLOBAL
CONSOLE
9.84 (250)
4.61
(117.1)
0.197 (5)
Ø0.24 (6)
Ø3.54 (90)
Ø2.05 (52)
7.52 (191)
11.65 (296)
0.63 (16)
0.39
(10)
1.65
(42)
0.24
(6)
0.31
(8)
4.88
(124)
2.48 (63)
0.39
(10)
7.4 (188)
3.94
(100)
2.17
(55)
3.35
(85)
1.77
(45)
2.32
(59)
3.19
(81)
3.58
(91)
1.34
(34)



431 Alden Rd. #11, Markham, Ontario CANADA 905-305-8204 www.polytronicseng.com


PLASTIC FIBER OPTICAL CABLE (SMF)
SUPPLIED WITH THE SYSTEM.
LONGEST FIBER OPTICAL SEGMENT
MUST NOT EXCEED 100FT (30M).
FLOAT CURRENT TRANSDUCER
FIBER OPTICS OUT
TO BTM CONCENTRATOR
FIBER OPTICS IN
FROM BTMGLOBAL
CONSOLE
TEMPERATURE SENSOR LEAD
TEMPERATURE SENSOR LEAD
TEMPERATURE SENSOR
+12V FROM SYSTEM CONTROLLER
POWER GND FROM SYSTEM CONTROLLER
CURRENT TRANSFORMER
BLACK LEAD
CURRENT
TRANSFORMER
RED LEAD
CT
SECOND COM PORT TO MODBUS INTERFACE
VGA INTERFACE (OPTIONAL MONITOR)
ETHERNET INTERFACE
KBD/MOUSE INTERFACE
BtmGlobal SYSTEM CONTROLLER
12V DC, 2A MAX
POWER SUPPLY
(SWITCHING)
TO AC OUTLET:
100 - 240 VAC 50/60 HZ
TO MODBUS
INTERFACE
2 OR 4 WIRE
RS485
RS485 CONVERTER
NOT SUPPLIED WITH THE SYSTEM
RECOMMENDED MODEL: 485OT9L
B&B ELECTRONICS
+12V FROM SYSTEM CONTROLLER
POWER GND FROM SYSTEM CONTROLLER
ALARM RELAY CONTACT RATING:
SWITCHING POWER: 10W
SWITCHING VOLTAGE: 100VDC
SWITCHING CURRENT: 500 mA
+12V TO FLOAT CURRENT
TRANSDUCER (OPTIONALLY
TO RS485 CONVERTER)
POWER GND TO FLOAT CURRENT
TRANSDUCER (OPTIONALLY
TO RS485 CONVERTER)
INTERNAL COM FAILED ALARM CONTACT
BATTERY ALARM CONTACT
FIBER OPTICS OUT
TO FLOAT CURRENT
TRANSDUCER
FIBER OPTICS IN
FROM BTM CONCENTRATOR
BTMGLOBAL COMPONENT CONNECTIONS:
SYSTEM CONTROLLER AND
FLOAT CURRENT TRANSDUCER
NOT TO SCALE
JAN 10,2007
Rev. B
1 OF 1