EM38B DATA CONVERSION AND COMPUTER INTERFACE BOARD

DESCRIPTION

The optional data conversion and computer interface module converts the analog INPHASE and CONDUCTIVITY signals from EM38B receiver into digital data and sends the data together with other information to a data logging computer via the on-board RS-232 port. The conversion and sending are automatic and continuous, no trigger is needed.

INTERFACE CABLE

The RS-232 port is provided via a 10-pin circular socket mounted on the EM38B body. A 10-position circular connector to 9-position sub-D female connector cable is supplied with each system for connection between EM38B and the data logging computer.

Only two lines are used from the one-way RS-232 communication. These two lines are:

10-pin circular from EM38B	9-pin sub-D to computer	function
PIN H	pin 5	GROUND
PIN K	pin 2 (RXD)	RS-232 DATA

RS-232 CONFIGURATION

The port is configured as a Date Communication Equipment. No handshaking is used. It is initialized as follows:

Baud rate:	9600
parity:	none
data bits:	8
stop bit:	1

DATA RATE

10 records per second (approximate)

EM38B DATA RECORD FORMAT

Each data record consists of 13 bytes detailed below:

Byte 1 (ASCII)	" T " -- start byte
Byte 2 (information byte. See next section for marker, mode, gain and range interpretation.)	
Byte 3 (ASCII)	+ or -, sign of inphase
Byte 4 (ASCII)	thousand's of inphase
Byte 5 (ASCII)	hundred's of inphase
Byte 6 (ASCII)	ten's of inphase
Byte 7 (ASCII)	one's of inphase
Byte 8 (ASCII)	+ or -, sign of conductivity
Byte 9 (ASCII)	thousand's of conductivity
Byte 10 (ASCII)	hundred's of conductivity
Byte 11 (ASCII)	ten's of conductivity
Byte 12 (ASCII)	one's of conductivity
Byte 13 (ASCII)	carriage return

INFORMATION BYTE INTERPRETATION

The bit format of the information byte is:

BIT	DECIMAL	VALUE AND MEANING
7	128	1
6	64	MARKER = 1 when trigger switch is pressed, = 0 otherwise
5	32	MODE = 1 vertical dipole mode operation = 0 horizontal dipole mode operation
4	16	GAIN = 1 Gain = 8 = 0 Gain = 1
3	8	0
2	4	0
1	2	RANGE 2
0	1	RANGE 1

MULTIPLICATION FACTORS

RANGE 1 and RANGE 2 represent the sensitivity as follows:

COMPONENT	SENSITIVITY	RANGE 2	RANGE 1	MULTIPLICATION
Conductivity	**1000**	1	1	**-1/Gain**
Inphase	**1000**			**-0.0288/Gain**
Conductivity	**100**	1	0	**-0.1/Gain**
Inphase	**1000**			**-0.0288/Gain**
Conductivity	**1000**	0	1	**-1/Gain**
Inphase	**100**			**-0.00288/Gain**
Conductivity	**100**	0	0	**-0.1/Gain**
Inphase	**100**			**-0.00288/Gain**

Multiply readings by above factors to obtain results in mS/m and ppt.