

EM-34 DATA CONVERSION AND COMPUTER INTERFACE BOARD

DESCRIPTION

The optional data conversion and computer interface module converts the analog INPHASE and CONDUCTIVITY signals from EM34 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 EM34 panel. A 10-position circular connector to 9-position sub-D female connector cable is supplied with each system for connection between EM34 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 EM34	9-pin sub-D to computer	function
(to be determined)	pin 5	GROUND
(to be determined)	pin 2 (RXD)	RS-232 DATA

RS-232 CONFIGURATION

The port is configured as a Data 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)

EM34 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 separation and range interpretation.)	
Byte 3 (ASCII)	+ or -, sign of conductivity
Byte 4 (ASCII)	thousand's of conductivity
Byte 5 (ASCII)	hundred's of conductivity
Byte 6 (ASCII)	ten's of conductivity
Byte 7 (ASCII)	one's of conductivity
Byte 8 (ASCII)	+ or -, sign of inphase
Byte 9 (ASCII)	thousand's of inphase
Byte 10 (ASCII)	hundred's of inphase
Byte 11 (ASCII)	ten's of inphase
Byte 12 (ASCII)	one's of inphase
Byte 13 (ASCII)	carriage return

INFORMATION BYTE INTERPRETATION

The bit format of the information byte is:

BIT	VALUE OR MEANING
7	1
6	MARKER (= 1 when trigger switch is pressed, = 0 otherwise)
5	MODE (= 0 for vertical operation = 1 for horizontal operation)
4	SEP 3
3	SEP 2
2	RANGE 3
1	RANGE 2
0	RANGE 1

RANGE 1, 2 and 3 represent the sensitivity as follows:

SENSITIVITY	RANGE 1	RANGE 2	RANGE 3
3	0	0	0
10	0	1	0
30	1	1	0
100	0	0	1
300	1	0	1

SEP 2 and SEP 3 represent dipole separation as follows:

Separation	SEP2	SEP3
10 m	0	1
20 m	0	0
40 m	1	1

MULTIPLICATION FACTORS

SENSITIVITY	MULTIPLICATION FACTOR
3	-0.00075
10	-0.0025
30	-0.0075
100	-0.025
300	-0.075

Multiply conductivity reading by corresponding factor to obtain result in mS/m.