

EM-38 DD UNIT DATA CONVERSION AND COMPUTER INTERFACE BOARD

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DESCRIPTION

The optional data conversion and computer interface module converts the analog output signal from EM38 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 EM38 body. A 10-position circular connector to 9-position sub-D female connector cable is supplied with each system for connection between EM38 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 EM31	9-pin sub-D to computer	function
H	pin 5	GROUND
D (TXD)	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)

EM38 DATA RECORD FORMAT

Each data record consists of 8 bytes detailed below:

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

INFORMATION BYTE INTERPRETATION

The bit format of the information byte is:

BIT	DECIMAL	VALUE AND MEANING
7	128	1 not used
6	64	MARKER = 1 when trigger switch is pressed, = 0 otherwise
5	32	1 not used
4	16	GAIN = 1 Gain = 8 = 0 Gain = 1
3	8	0
2	4	PHASE = 1 quadrature phase (conductivity) = 0 Inphase measurements
1	2	RANGE = 1 for sensitivity 1000 mS/m = 0 for sensitivity 100 mS/m
0	1	0 not used

MULTIPLICATION FACTORS

RANGE 1 and RANGE 2 represent the sensitivity as follows:

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

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