MODEL 7140
RS-232 Broadband Probe Adapter

OPERATION MANUAL

EMC TEST SYSTEMS – An ESCO Company

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Warranty

The Electro-Mechanics Company (EMCO) warrants that our products are free from defects in materials and workmanship for a period of two years from the date of shipment. If you notify us of a defect within the warranty period, we will, at our option, either repair or replace those products which prove to be defective. If applicable, we will also recalibrate the product.

There will be no charge for warranty services performed at the location we designate. You must, however, prepay inbound shipping costs and any duties or taxes. We will pay outbound shipping costs for a carrier of our choice, exclusive of any duties or taxes. You may request warranty services to be performed at your location, but it is our option to do so. If we determine that warranty service can only be performed at your location, you will not be charged for our travel related costs.

This warranty does not apply to:

- Normal wear and tear of materials.
- Consumable items such as fuses, batteries, etc.
- Products which have been improperly installed, maintained or used.
- Products which have been operated outside of specifications.
- Products which have been modified without authorization.
- Calibration of products, unless necessitated by defects.

THIS WARRANTY IS EXCLUSIVE. NO OTHER WARRANTY, WRITTEN OR ORAL, IS EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

THE REMEDIES PROVIDED BY THIS WARRANTY ARE YOUR SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT ARE WE LIABLE FOR ANY DAMAGES WHATSOEVER, INCLUDING BUT NOT LIMITED TO, DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER BASED ON CONTRACT, TORT, OR ANY OTHER LEGAL THEORY.

Please contact our Sales Department for a Return Material Authorization Number before shipping equipment to us.

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Caution

In order to keep the 7140 Broad Band Probe Adapter Unit free of damage and working properly, the following precautions should be taken:

- Never expose the unit to conditions exceeding what are specified in the specifications table.
- Avoid physical shock such as dropping, harsh vibration, etc. to the unit.
- Do not open the unit. If any problem occurs with the unit, please contact your sales representative or the factory.

Notice: failure to comply with the above voids the warranty.

Description

The Model 7140 RS-232 Broad Band Probe Adapter is the interface between Model 7120 Isotropic Field Probe Metering Unit and an IBM® or compatible personal computer with an RS-232 serial communications port, including the software to drive the adapter unit. Its main function is to convert and transfer the light pulses from the fiber optic output port on the metering unit to the communications port on the PC. The software driver presents a display of the values of the electric field being monitored by the probe system and also system error codes.

Specifications

Input Data Link	Fiber Optic
Output Data Link	RS-232
I/O Communication Protocol	Serial 9600 bps 7 Data Bits Even Parity 1 Stop Bit
PC Type Needed	IBM® or compatible
PC Communication Port Needed	Com1: or Com2:
Power Requirement	12 VDC supplied by an AC/DC converter
Operating Temperature	0 - 70 °C
Length	10.5 cm (4.1 in)
Width	7.9 cm (3.1 in)
Height	5.6 cm (2.2 in)
Weight	164 g (5.8 oz)

Note: IBM is a registered trademark of The International Business Machine Corporation.

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Operation

The Model 7140 receives data transmitted from a 7120 Metering Unit. The transmissions from the metering unit are encoded data packets sent via a fiber optic cable. The Adapter Unit then converts the light pulses into the appropriate electrical signals and presents the data the RS-232 communications port of the Personal Computer (PC).

The format of the data packet sent over the RS-232 communications link to the PC is the same format as that used by the 7120 Metering Unit. For a complete explanation of the format, see Transmission Protocol in the 7120 Instruction Manual.

In order to see the data which is received at the RS-232 port. the user must connect the Adapter Unit to the COM1: or COM2: port of the PC and implement the driver software ISO.EXE. Once running, the screen will display a format as shown below in figure 1.

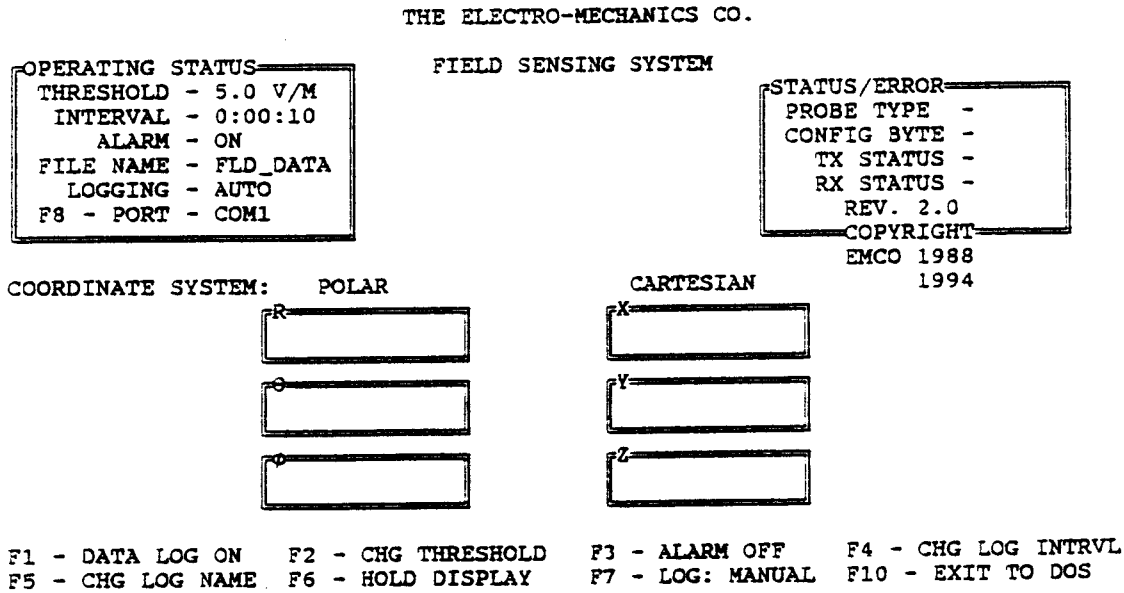

Figure 1. Display Screen

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NOTE: *In order to maximize performance of the software driver, it is recommended that the file ISO.EXE be copied to and run from the hard disk.*

If the PC has a color monitor, the software begins with an EMCO logo for approximately five seconds. It will then begin running and display the data windows. The user may hit any key while the logo is displayed to immediately start the program.

An explanation of the Status/Erropr Codes and the operation of the function keys are as follows:

- **Probe Type.** Indicates which probe is currently being used with the metering unit. Refer to the 7120 Instruction Manual for a current explanation of the codes.
- **Config Byte.** Indicates the gain of each amplifier channel of the 7120 Metering Unit. Refer to the 7120 Instruction Manual for a current explanation of the codes.
- **TX Status.** Indicates Error Status 1 and Error Status 2 bytes. Refer to the 7120 Instruction Manual for a current explanation of the codes.
- **RX Error.** One nibble:

  Bit 0 - not used
  Bit 1 - Receiver Buffer Empty when set
  Bit 2 - Receiver Buffer Full when set
  Bit 3 - Receiver Overflow (Data Lost) when set

- **F1 (Data Log ON/OFF) - Manual.** Toggles a storage routine in the program on and off. When the routine is activated, it opens a file specified by the user (e.g. FLD_DATA.XXX) where XXX is a number from 0 to 999. Every time F1 is pressed, a new file is created starting with the extension 0.

  The data file contains all information shown on the display as it changes, including the status/error codes and the field strength in both polar and Cartesian coördinates. The file also contains time stamps at the beginning of the file, the end of the file, and every 30 second interval in between. At the beginning of the file is a brief description of the data

format in order that the data may be read without having to refer to the manual.

- **F1 (Data Log ON/OFF) - Auto.** The Auto Logging routine works the same as the Manual Logging routine with the exception that it automatically logs in the data at specified time intervals prescribed by the user. While the threshold exceeds the prescribed threshold, the data is automatically stored in the current file with the current extension.

  NOTE: *If the program is terminated and restarted in the Manual mode, then any data that is saved to disk will write over any previously saved data in files of the same name. It is suggested that if the default filename is used, then the files should be backed up on a different disk or directories after exiting the program. Otherwise, change the file name each time the program is started in order to prevent losing previously saved data that is to be retained. If the program is terminated and restarted in the Auto mode, the data that is saved to disk will append to the existing file*

  When the program is terminated normally (use the F-10 key), a file is created containing the parameters last used. The parameters are stored into a text file named DEFAULT.DAT. If the DEFAULT.DAT file is accidentally deleted, the program will set its own parameters.

  CAUTION: IF THE PROGRAM IS NOT TERMINATED NORMALLY (e.g. PRESSING THE RESET BUTTON), THE DEFAULT FILE MAY CONTAIN SOME FAULTY SETTINGS; IT MAY BE NECESSARY TO DELETE THE FILE DEFAULT.DAT.

- **F2 (CHG THRESHOLD).** Allows for user to change the threshold. If the field strength exceeds the prescribed

threshold in the Polar coördinate, it will activate the alarm (provided the alarm feature has been enabled -- refer to F3).

- **F3 (Alarm ON/OFF).** Toggles the alarm to enable or disable. If the alarm is enabled, the alarm will display a warning message on the screen along with a series of beeps to indicate that the field strength in the polar coördinate has exceeded the prescribed threshold. When the alarm message is activated, the message window will display the maximum value of R.
- **F4 (CHG LOG INTERVAL).** Allows for the user to input for log time intervals between 0 seconds and 7,199 seconds. When the F4 key is pressed, a window will display the time interval. First the hour must be entered between 0 and 1. Next, the minutes must be entered between 0 and 59. Finally, the seconds must be entered between 0 and 59. *NOTE: If the enter key is pressed with no data input, the field will enter a value of 0. Also, the F2, F3 and F4 keys are only enabled when the program is in the **Auto Mode**.*
- **F5 (CHG LOG NAME).** This enables the user to change the name of the file in which the probe data is stored. The program provides the same extension as mentioned above from 0 to 999. **Do NOT type an extension -- only a file name.** Every time a new file name is entered, the program resets the extension numbering to zero.
- **F6 (HOLD/START DISPLAY).** This toggles the display between one-shot and continuous modes. When initiated, the display will stop updating and show the last values encountered. By depressing F2 again, the display will start updating the screen again.
- **F7 (LOG: MANUAL/AUTO).** Toggles between Manual and Auto Logging. When set to the Manual Mode, the data is logged manually using the F1 key. When it is in the Auto Mode, the data is logged at prescribed time intervals entered by the user.
- **F8 (COM1:/COM2:).** Toggles between COM1: port and COM2: port. The default is always COM1:.
- **F9 (CLEAR MESSAGE).** Applies only to Auto Mode. Turns Message screen off. This key is used only when

message screen is displayed and the total R value is not exceeding the prescribed threshold.

NOTE: *F2, F3, F4, F5, F7 and F8 function keys are disabled during the logging of data in the Auto Mode.*

- **F10 (EXIT TO DOS).** Exits the program and returns the user to the DOS prompt.

EUROPEAN COMMUNITY DECLARATION OF CONFORMITY

The EC Declaration of Conformity is the method by which EMC Test Systems, L.P. declares that the equipment listed on this document complies with the Low-voltage and EMC Directives.

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Issued by:
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The products manufactured under the EMCO product name and listed below are eligible to bear the EC Mark:

Model 7140 RS232/Fiberoptic Adaptor
Part Number 100924 Power Supply 220VAC wall-mount

Applicable Requirements:

Standard	Criteria
EN61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use
EN60742/1989	Isolating transformers and safety isolating transformers
EN55022	Class B
IEC 801-2	Level 2 4/8kV
IEC 801-3	Level 2 3V/m
IEC 801-4	Level 2 .5 I/O, 1kV AC

Authorized Signatories

Bruce Butler, General Manager

James C. Psencik, Engineering Mgr.

Charles Garrison, Quality Assurance

Date of Declaration: December 10, 1996

The authorizing signature on the EC Declaration of Conformity document authorizes EMC Test Systems, L.P. to affix the CE mark to the indicated product. CE marks placed on these products will be distinct and visible. Other marks or inscriptions liable to be confused with the CE mark will not be affixed to these products.
EMC Test Systems, L.P. has ensured that appropriate documentation shall remain available on premises for inspection and validation purposes for a period of no less than 10 years.

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