

Technical Manual and Parts Catalog

INTRODUCTION

This publication is provided solely as a guide for individuals who have received METTLER TOLEDO Technical Training in servicing the METTLER TOLEDO product.

Information regarding METTLER TOLEDO Technical Training may be obtained by writing to:

> METTLER TOLEDO Training Center P.O. Box 1705 Columbus, Ohio 43216 (614) 438-4400

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PRECAUTIONS

- **READ** this manual before operating or servicing this equipment.
- ALWAYS REMOVE POWER and wait at least 30 seconds BEFORE connecting or disconnecting any internal harnesses. Failure to observe these precautions may result in damage to, or destruction of the equipment.



- **ALWAYS** take proper precautions when handling static sensitive devices.
- **DO NOT** connect or disconnect a load cell scale base to the equipment with power connected or damage will result.
- SAVE this manual for future reference.
- DO NOT allow untrained personnel to operate, clean, inspect, maintain, service, or tamper with this equipment.
- ALWAYS DISCONNECT this equipment from the power source before servicing.
- **CALL** METTLER TOLEDO for parts, information, and service.





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1. INSTALLING THE INTERFACE CABLE

Upon completing the unpacking and inspection of the model 8845 Document Printer, it is time to attach the interconnect cable.

The printer communicates with the scale or indicator via RS232 or 20mA current loop. The interface cable must purchase separately. Mettler Toledo offers a variety of standard cables for quick and easy interfacing. Table 6 lists the interconnecting cables offered by Mettler Toledo. Table 7 lists parts required to assemble your own cable.

To install the cable simply follow the instructions below.

- 1. Be sure the power switches of both the printer and the scale/indicator are turned off.
- 2. Plug printer end of the cable into the serial interface printer connector located in the rear of the printer and fasten the screws securely into place. Please refer to Figure 3.2 on page 3 for the connector location.
- 3. Plug the other end of the cable into the scale/indicator serial connector.

NOTE: IF THE CONNECTORS AT BOTH ENDS ARE ALIKE, MAKE SURE TO PLUG THE APPROPRIATE END INTO EACH DEVICE.

NOTE: WHEN INTERFACING TO AN 8530 INDICATOR, IT IS RECOMMENDED THAT 20 mA CURRENT LOOP BE USED TO INSURE MAXIMUM LIGHTNING PROTECTION. USE CABLE PART NUMBER 138216 00A.

2. JUMPER AND PROGRAMMING SWITCHES

This section contains jumper and switch settings for the 8845 serial interface PCB only. For Printer operational settings, refer to the Panasonic Operating Instructions.

2.1 RS232/20mA Jumper Setting

The 8845 Printer is shipped from the factory to receive transmission in RS232. J101 on the serial interface PCB is jumpered between pins A and B. If passive 20 milliamp current loop is required it will be necessary to place the J101 jumper between pins B and C as shown in Figure 1. All other jumpers are set for proper operation and should not be moved.



Refer to the Panasonic Operating Instructions Manual for information on how to gain access to J101.

Figure 1



Figure 2

Switch Number	Switch Function	Industrial Products	Model 830C	Models 8305, 8422, 8423	Model 8460M
SW 1-1	Word Length	ON	ON	OFF	OFF
SW 1-2	Parity Check	ON	ON	OFF	OFF
SW 1-3	Parity Selection	ON	ON	ON	ON
SW 1-4	DTR Polarity	OFF	OFF	OFF	OFF
SW 1-5	Baud Rate	OFF	ON	OFF	OFF
SW 1-6	Baud Rate	ON	OFF	ON	ON
SW 1-7	Baud Rate	OFF	OFF	OFF	OFF
SW 1-8	Baud Rate	OFF	OFF	ON	ON
SW 2-1	Resume Data Transfer	OFF	OFF	OFF	OFF
SW 2-2	Buffer Enable	ON	ON	ON	ON
SW 2-3	Suspend Data Transfer	OFF	OFF	OFF	OFF
SW 2-4	Suspend Data Transfer	ON	ON	ON	ON
SW 2-5	Self Test Mode Enable	OFF	OFF	OFF	OFF
SW 2-6	Self Test Mode Enable	OFF	OFF	OFF	OFF
SW 2-7	DTR Control	ON	ON	ON	OFF
SW 2-8	Protocol Selection	OFF	OFF	OFF	OFF

2.2 Recommended Switch Settings For Mettler Toledo Product

Table 1 - Recommended Switch Selections

Programming Notes:

- 1). The selected baud rate for industrial products is 9600 baud.
- 2). The selected baud rate for the 8301C scale is 1200 baud.
- 3). The following program selections are required for the Model 8422 scale and the Models 8423 and 8305 controllers.

BUSY HI?[NO] PTR BAUD RATE?[4800] COMPRESSED PRINT HEX CODE[ØF] (MUST BE ENTERED AS CAPITALIZED LETTERS)

For controllers with EPROMS 130967 00A and 130983 00A:

NORMAL PRINT HEX CODE[12]

4). To maintain maximum lightning protection when installing the 8844 Document Printer with a Model 8530 Indicator, Mettler Toledo recommends that the 20 mA current loop method of transmitting data be used.

2.3 **Programming Switch Selections**

The following tables define how the switches on the Serial Interface PCB are set from the factory. The description of operation of the Switch Bank 1 switch settings are self explanatory. A more detailed description of the Switch Bank 2 switch operation follows Table 5-4.

Switch #	Function	ON	OFF
SW 1-1	Data Length	7 bit	8 bit
SW 1-2	Parity Check	Valid	Invalid
SW 1-3	Parity Bit	Even	Odd
SW 1-4	DIR Signal Polarity	Reversed	Normal
SW 1-5	Baud Rate	Refer to Table 3 Baud Rate Select	Refer to Table 3 Baud Rate Select
SW 1-6	Baud Rate		
SW 1-7	Baud Rate		
SW 1-8	Baud Rate		

Table 2 - Switch Bank One Settings

BAUD RATE	SW 1-5	SW 1-6	SW 1-7	SW 1-8
300	ON	OFF	ON	OFF
600	ON	OFF	OFF	ON
1200	ON	OFF	OFF	OFF
2400	OFF	ON	ON	OFF
4800	OFF	ON	OFF	ON
9600*	OFF	ON	OFF	OFF
19200	OFF	OFF	ON	ON

Table 3 -Baud Rate Selections

	FUNCTION	ON	OFF
SW 2-1	Resume Data Transfer	2048 Bytes 256 Bytes Enable Enable	
SW 2-2	Buffering Enable		
SW 2-3	Suspend Data Transfer	Refer to	o Table 5
SW 2-4	Suspend Data Transfer		
SW 2-5	Self Test Enable	Enable	Disable
SW 2-6	Self Test Mode Select	Hex. Dump Loop Back	
SW 2-7	DIR Control	Enable Disable	
SW 2-8	Protocol	rotocol ETX / ACK X / ON - >	

Table 4 - Switch Bank 2 Settings

REMAINING BUFFER CAPACITY	SW 2-3	SW 2-4
16 Bytes	OFF	OFF
256 Bytes*	OFF	ON
1024 Bytes	ON	OFF
2048 Bytes	ON	ON

Table 5 - Buffer Full Recovery Timing

NOTE: 1. THE 8K BYTE BUFFER CAN BE ENABLED OR DISABLED BY SW 2-2.

2. WHEN THE DIR CONTROL IS ENABLED (SW 2-7 IS ON), X/ON-X/OFF, ETX/ACK PROTOCOL IS AUTOMATICALLY DISABLED.

Switches 2-1, 2-2, 2-3, and 2-4 allow you to designate the number of bytes remaining in the buffer before the printer instructs the Scale or Indicator or computer to suspend data transmission. The buffer input capacity is 8192 bytes. When the amount of byte space remaining in the buffer becomes either 16, 256, 1024, or 2048, depending on the setting of these switches, the printer will signal to suspend data transfer. The signal to resume data transfer will be sent when the unused portion of the buffer increases by the amount of byte space set by switch 2-1.

Switches 2-5 and 2-6 execute two types of self tests. Please refer to the Panasonic Operating Instructions Manual for a more in depth description of these features.

3.0 PROGRAMMING FOR REVERSE FEED

This section instructs on how to set the 8845 and 8530VS for reverse feed when using Mettler Toledo Vehicle Scale Tickets, part number 083025 020, which is the 5 1/2" ticket stock provided with the Model 8530 Vehicle Scale software version Indicator, factory number 8530-0005.

The Model 8845 printer does not provide a 5 1/2" paper length selection, which means that an extra, blank ticket is fed out every time you press the **TEAR OFF** key on the 8844. Loading the paper into the printer so that the perforations line up with the tear off bar will not solve this problem because the printer will not print on the top two inches of the ticket.

The only way to insure that you can start printing anywhere on the ticket, use the tear off bar for each ticket as it is printed, and not waste any paper is to configure the ticket format in the indicator to add escape sequences to the data output from the 8530 that will make the 8845 reverse feed the paper before is starts to print the ticket.

The alphanumeric print fields number 46, 47, 48 or 49 can be used to add the escape sequences to the ticket format. If you need to use all four of the alphanumeric fields in your ticket format then you could use the conversion factor description (field 39) instead. To use the conversion factor description for the reverse feed escape sequences, enter the following data into setup step [39].

[39]	[997590]
		[997590]
		[997590]
		[997538]

What you are entering is four sets of escape sequences. The 8845 will reverse feed if three characters are received in the following order: $\langle Esc \rangle j \langle n \rangle$. The $\langle Esc \rangle$ is an ASCII escape character, the lower case j character selects reverse feed mode and the third character $\langle n \rangle$ is the

decimal value of an ASCII character which tells the 8845 how far to reverse feed. The 8845 will reverse feeds n/216 inches.

In the data entry listed for setup step **[39]**, the first two numbers in each entry "99" is the escape character. The second pair of numbers in each entry "75" is a lower case "j". The last two numbers in each entry, "90" or "38" is <n>, the distance the 8845 is to reverse line feed for that escape sequence, (n/216")

Enter the alphanumeric field or conversion factor that contains the reverse line feed escape sequences as the first print field in each of the ticket formats that you are using, setup steps **[74]**, **[76]**, and or **[78]**. You will also need to adjust the number of line feeds after print, setup steps **[75]**, **[77]**, and or **[79]** for the ticket formats that you are using so that the ticket will feed out to the tear off bar after printing.

Once you have finished setting up the ticket formats you will need to verify that the reverse feed escape sequences are feeding the correct amount of paper for your particular printer. If you find that the paper perforations do not line up with the tear off bar after several tickets have been printed, then try adjusting the last pair of digits in the last reverse feed escape sequence. If the perforations are not advancing out far enough out of the printer then try slightly decreasing the last pair of numbers in the last escape sequence, this will slightly increase the amount of paper fed out each time a ticket is printed. If the perforations are advancing too far out of the printer then try slightly increase the amount of paper fed out each time a ticket is pair of numbers in the last escape sequence, this will slightly decrease the amount of paper fed out each time a ticket is pair of numbers in the last escape sequence, this will slightly decrease the amount of paper fed out each time at the last pair of numbers in the last escape sequence, this will slightly decrease the amount of paper fed out each time at the last pair of numbers in the last escape sequence, this will slightly decrease the amount of paper fed out each time at ticket is pair of numbers in the last escape sequence.

Note: The reverse feed escape sequences only work if the 8845 is in the EPSON emulation mode. This is the default emulation mode of the 8845. If you are unable to make the reverse feed escape sequences work, then verify that the 8845 is in the EPSON emulation mode. The printer emulation mode is selected in the printer configuration mode.

4.0 TROUBLESHOOTING

This section describes troubleshooting as it pertains to the interface of Mettler Toledo products. For further troubleshooting refer to the Panasonic Operating Instructions Manual or contact your local authorized Mettler Toledo Service Facility.

After verifying the printer has paper and the on line indicator is lit, follow the appropriate procedures in this section to isolate the problem.

4.1 Testing the 20 mA Output of the Scale or Indicator

If you suspect the Scale/Indicator may not be transmitting data to the printer when using 20 mA current loop, following is a test procedure which will assist you in determining whether the current loop is operational.

-Remove power from both units and disconnect the Data cable from the 8844.

-Connect your red meter lead to pin 25 on the printer end of the cable. Now connect the black lead to pin 23 of the printer end of the cable. Set your meter to read milliamps.

-Apply power. Your meter should read as follows:

300 to 9600 Baud **on demand**: The meters display should have a stable reading between 18.0 and 40.0 mA. Any reading below 18.0 mA or above 40 mA indicates there is a malfunction in the sending device.

NOTE: WHEN MEASURING THE HIGHER BAUD RATES IN THE DEMAND MODE, THE METER DISPLAY WILL FLUCTUATE FOR A SHORTER PERIOD OF TIME.

4.2 Testing RS232 Output of Scale/Indicator

If you suspect the Scale/Indicator may not be transmitting data to the printer when using RS232, follow this testing procedure which will assist you in determining whether the Scale/Indicator is operational.

-Remove power from both units and disconnect the Data cable from the 8844.

-Set your meter to read 20 volts DC. Connect the red lead to pin 2 of the printer end of the data cable and the black lead to pin 7.

-Apply power, your meter should read as follows:

300 to 9600 baud on **demand**:

Your meter should read between -5 and -15 with no fluctuation.

NOTE: WHEN MEASURING THE HIGHER BAUD RATES IN THE DEMAND MODE, THE METER DISPLAY WILL FLUCTUATE FOR A SHORTER PERIOD OF TIME.

5.0 INTERCONNECTING CABLES

5.1 CABLE PART NUMBERS

DESCRIPTION	PART NUMBER	FACTOR NUMBER
Industrial 6' cable with DB-25 connector. (RS232)	B128220 00A	0900-0214
Industrial 20' cable with DE-9 connector. (RS232)	131911 00A	0900-0255
Industrial 20' cable with 26 pin bayonet connector. (RS232)	128221 00A	0900-0215
Industrial 6' cable with DB-25 connector (bi-directional) (RS232)	129609 00A	0900-0243 (132305 00A)
10 foot cable from Retail Models 8422, 8423 and 8305. (RS232)	A127164 00A	0900-0209
25 foot cable from Retail Models 8422, 8423 and 8305. (RS232)	A127177 00A	0900-0213
6 foot cable from 8530 (20mA current loop)	138216 00A	0900-0290 (138219 00A)

Table 6 - Cables

5.2 PRINTER MATING CONNECTOR

DESCRIPTION	PART NUMBER	FACTORY NUMBER
Complete connector kit	128881 00A	0917-0144
- DB 25 Male connector	107187 00A	
- Metal cable clamp	125389 00A	
- Male connector pins	107189 00A	
Bulk Cable (sold by the foot)	510422 190	

Table 7 - Mating Connector Parts

5.3 INTERFACE CONNECTOR

The printer is fitted with a standard 25 pins DB type connector on the rear cover, with pin numbers and signal descriptions as follows:

PIN	SIGNAL NAME	FLOW
1	Chassis Ground	
2	TxD (Transmit Data RS-232)	OUT
3	RxD (Receive Data RS-232)	IN
6	DSR (Data Set Ready)	IN
7	Signal Ground	
8	DCD	
11	REV (Reverse Channel)	OUT
17	20 mÅ TxD (+)	OUT
20	DIR (Data Terminal Ready)	OUT
23	20 mA RxD (-)	IN
24	20 mA TxD (-)	OUT
25	20 mA RxD (+)	IN

Table 8 - Signal Descriptions





INTERCONNECTING NOTES

- 1. RS232-C has a medium amount of noise immunity. Performance of the communication link may be improved by not bundling the cable with other wiring and routing the cable away from devices which produce electrical noise.
- 2. RS232-C has a recommended maximum distance of 50 feet. Long distances of successful communications are highly dependent on the electrical environment.
- 3. 20 mA current loop has a recommended distance of 1000 feet. Longer distances of successful communications are highly dependent on the electrical environment.

5.4 CABLE CONFIGURATIONS

The following diagrams show the wiring connections of the standard Mettler Toledo interconnecting printer cables.

5.4.1 Standard industrial products (cable with DB-25 connector). RS232 Interface.



5.4.2 Standard industrial products (cable with DE9 connector). RS232 Interface.

Indicator			Mode	el 8845
(TxD)	3 —		— <u>3</u>	(RxD)
(Gnd)	5 —		—7	(Gnd)
(RxD)	2		2	
(RTS)	7 —			
(CTS)	8 —			

5.4.3 Standard industrial products (cable with 10-pin bayonet connector used for NEMA 4X enclosures). RS232 Interface.



5.4.4 8572 to 8845 wiring





5.4.5 Cable to Model 8305 controller, Model 8422 scale and Model 8423 controller using a DE-9 pin connector. RS232 Interface.

8305/8422	/8423	Moo	del 8845
(TxD)	2	3	(RxD)
(RxD)	3	2	(TxD)
(Gnd)	7—	7	(Gnd)
(CTS)	5—	11	(REV)
		19	(N.C.)

5.4.6 Cable to Model 8301-C scale using a 9 pin cannon connector. RS232 Interface.

8301-C		Model 8845		
(Gnd)	3	7	(Gnd)	
(TxD)	5	3	(RxD)	
Chassis)	8	1	(Chassis)	

5.4.7 Standard interface cable wiring for 20 mA current loop interface.

Scale/IndicatorModel 8845+20 mA TransmitPin 25-20 mA TransmitPin 23

5.4.8 8140,8142, and 8141/8525 Fibre Optic Connector Module 20 Milliamp Wiring.

8140/8142		Model 8845
Wall J Y	Desk / Rack 9 22	25 23
P R	14 15	
D E	4	

5.4.9 8530, 8581, and 8582 20 Milliamp Wiring.

Wall	Desk / Rack	
J	9	25
Y	22	23

5.4.10 8520, 8522, and 8525 20 Milliamp Wiring.

TB 1 Pin # Model 8845

4_____Pin 25 3_____Pin 23

NOTE: For some scales and Indicators it may be necessary to install a jumper on the Scale/Indicator side of the cable to supply the 20 mA loop. Reference the units Technical Manual For more information concerning wiring of the 20 mA current loop.

6.0 REPLACEMENT PARTS

Description

Ink Ribbon Cassette Remanufactured Printer

Part Number

143554 00A 8845-0001-RMD

Mettler - Toledo Inc. Industrial Products 350 W.Wilson Bridge Road Worthington, OH. 43085

P/N 145017 00A

Printed in the U.S.A.

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