

 UNIVERSAL

Electrofusion Processor

**OPERATION
MANUAL**



MTD TRI FUSION Processors are assembled and serviced in Birmingham, Alabama providing just-in-time delivery and efficient maintenance.

M.T.DEASON COMPANY, INC.
P. O. Box 101807
Birmingham, AL 35210
(800) 633-7131
www.mtdtrifusion.com

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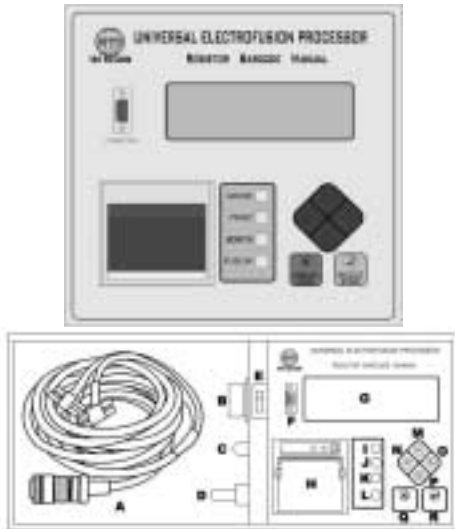
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Specification

SPECIFICATIONS			
Input Voltage	85 to 150 VAC; 49.2 to 70.8 HZ	Continuous Output Voltage	40 ±0.2 Volts
Input Current	80 Amps maximum	Output Current	80 Amps maximum (automatically limited by processor)
Circuit Breaker	Resettable Breaker	Operating Temperature Range	-10°F(-23°C) to 120°F(49°C)
Input power	5.0 KVA (@115V)	Maximum Output power	3400W
Fusion Data Storage	200 Fusions	Fusion Data Print	Built-in Printer (1.5sec / print)
Dimension		22" Long X 10" Wide X 12" High (Aluminum carrying case for processor)	
Weight		36 lbs. Including carrying case & leads	
Electrical Lead		15ft, 30 Amp, 5.5sq, 125 Volt, Twist Lock Plug	
Dedicated Lead		25ft, 30 Amp, 5.5sq, Dedicated 4.7mm	
Universal Lead with 4 built-in Connectors		25ft, 30 Amp, 5.5sq (2.2mm, 3.0mm, 4.0mm and 4.7mm)	
Barcode Reader		Optional with Dedicated and Universal Leads	
Maintain calibration interval		2 years	
Warranty		1 year (extended warranty optional)	

Processor Description

The MTD TRI FUSION Universal Electrofusion Processor is mounted in an aluminum carrying case. This unique carrying case provides excellent protection for the processor during use in the field. All fitting leads and electrical outlets are stored inside carrying case for ease of transporting in field application.



Control Locations

A. Storage for fusion/electric leads	J. Print Button
B. Output Fitting Lead	K. Monitor Button
C. Temperature Sensor	L. Fusion Button
D. Input Electric Power Lead	M. Up Key
E. Power/Circuit Protector Switch	N. Left Key
F. Serial Port	O. Right Key
G. LCD Display	P. Down Key
H. Built-in Printer	Q. Cancel/Stop Key
I. Erase Button	R. Select/Start Key

1. Design

MTD TRI FUSION processor operates in the Resistor, Barcode, and Manual Mode, our patent pending design has drastically reduced the weight of the MTD TRI FUSION Processor and, after completion of fusion, the unique paper printer provides the operator with immediate results.

2. Features

- a. All cursor functions are designed for ease of operation.
- b. The display is equipped with backlighting. This enables operator to work in poor lighting and at night
- c. Depending on site, fusion number is automatically changed and stored. (Fusion numbers will be accumulated on the same site. Fusion numbers can be reset / continued with recorded fusion number for different site).
- d. Site names are recorded in memory along with fusion data and can be downloaded on paper printer after each fusion. Fusion data can also be stored (200 fusions) and downloaded on paper printer or computer at the end of the project.
- e. You can review fusion results using monitor function without printing on paper. (Blinking numbers indicate defected fusion)
- f. The built-in printer uses thermal paper (5 years storage life). Printing one fusion result takes 1.5 seconds.
- g. Processor monitors the change of output current starting at 10%

Processor Check-List

- of fusion thru 100% of fusion. Operator can document immediately on paper printer in the field quality of fusion for O.Q. (Operator Qualification) records.*
- h. Output capacity is designed for 3400W in order to supply stable output current.*
- i. The processor can be equipped with optional WAND type Barcode Reader.*
- j. The processor is designed to monitor and maintain accurate control of output voltage ($40 \pm 0.2\text{VAC}$) and with the input voltage (85~150VAC 50~70Hz).*
- k. The processor can be equipped with dedicated 4.7mm leads or optional universal leads (2.2mm, 3.0mm, 4.0mm and 4.7mm).*

1. Precautions

- a. Use only grounded power source.*
- b. Do not modify power plug.*
- c. Do not pull on the input or output cables.*
- d. Do not connect cable to foreign devices. Keep connectors clean and check prior to connecting to fitting.*
- e. Do not store in direct sunlight or high humidity environment.*
- f. Protect processor electrical and fusion cable during fusion.*
- g. Prevent high impact during transportation and field operation.*
- h. Processor is splash proof. Avoid excess rain and snow.*

2. Power Requirements

a. EF Fitting Power requirements

Electrofusion power requirements will vary depending on the fitting size and ambient temperature. When using processor with other manufacturers' fittings, be sure to check for manufacturer's recommended minimum power (KVA). Go to next page and see the Daeyoun MTD TRI FUSION EF fittings' minimum power table.

b. Power Source

For the installation of electrofusion fittings in field applications, it will be necessary to have a reliable source of AC power for the MTD TRI FUSION processor. The selected AC power source should confirm to the following:

- Maintained and subjected to a periodic maintenance schedule*
- Provide output voltage within the specified operating range for EF fittings*

- Refer minimum wattage capacity per the fitting power table

A matching outlet is needed to mate with the plug equipped on the MTD TRI FUSION electrofusion processor.

- 115V model - 30 Amp, 125 Volt, NEMA L5, twist-lock

Minimum Power (KVA) for Daeyoun MTD TRI FUSION EF Fittings		
Fitting Types	Fitting Size	Min. Power (KVA)
Couplings & Tees & 45, 90 Elbows	1/2" CTS thru 1 1/4" IPS	1.00
	2" IPS thru 4" IPS	2.50
	6" IPS thru 24" IPS	5.00
Reducers	3/4" X 1/2" CTS	1.00
	2" X 1 1/4"	1.50
	4" X 2" IPS	2.50
	6" X 4" IPS	3.50
Tapping Tees (HV) & Saddles	1" X 1/4" thru 2" X 2"	1.00
	3" X 1/2" thru 4" X 2"	1.00
	6" X 1"	1.00
	6, 8, 10, 12" X 2"	2.50
	8, 10, 12" X 6"	2.50
End Caps	2'	1.50
	4'	2.50
	6'	3.50
POLYTAPP Valves	2'	1.50
	4'	2.50
	6'	3.50

Prior to beginning fusion procedure, it is important to insure the following:

- The generator has enough fuel to complete the electrofusion cycle;
- The auto-throttle is disengaged (in anticipation of immediate power draw).

Extension Cord Info

Extension cords are not recommended for use with the MTD TRI FUSION processor. However, if it is necessary to utilize an extension cord, the following is recommended.

Cord Length	Wire Gage
25ft.	#10/3 Wire (6mm ²)
50ft.	# 8/3 wire (10mm ²)

Pigtails (30 amp Twist lock to 15 Amp Standard Plug Adapter)
Pigtails are not recommended for field installations except on fitting sizes 2" and smaller. Pigtail adaptors are recommended only for demonstration and training purposes.

c. Generators

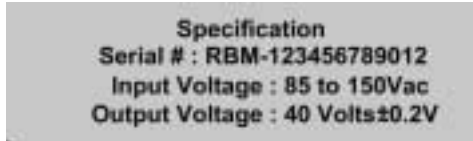
Fuel powered generators are typically a good source of electrical power for the MTD TRI FUSION processor in field operation. Minimum fitting power requirements must be noted, and additional power capacity is recommended for intangibles (powering other accessories, wear & tear, etc.).

Operating MTD TRI FUSION Processor

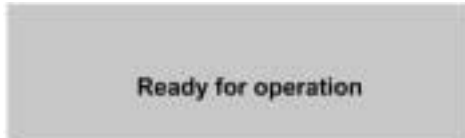


Connect electrical input lead to grounded power source and turn on power switch.

When power is on, the buzzer sounds and the above screen will appear. The logo is displayed for about 2 seconds, and then the next screen appears automatically.

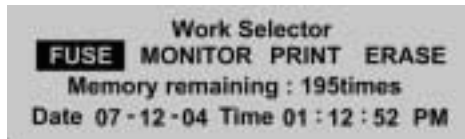


Processor specification screen displays model number, input and output voltage.



When the processor performs a set of self diagnostic tests insuring the processor

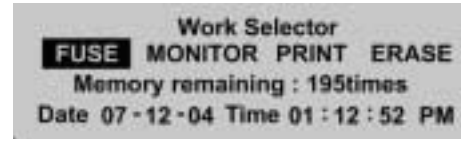
is working properly, this screen appears. Press [Select].



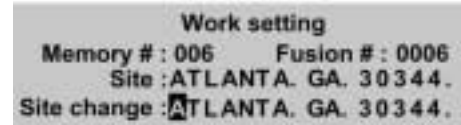
On this screen operator will select fusion, monitor, print, or erase by direction cursor or

function button. Memory stores 200 fusions and number of fusion memory remaining. Current date and time are also displayed.

Operating MTD TRI FUSION Processor-FUSE



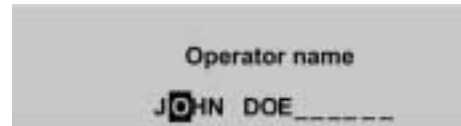
Select [FUSE].



This screen allows operator to set up the location address for the project. Using

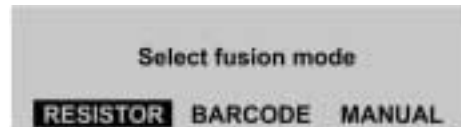
the direction cursors, operator is able to put current location into LCD. (Optional)

Supply the required parameters and press [Select].



This screen allows operator to set up operator's name. (Optional) After set up, press [Select].

After the operator has completely set up the fusion project data (Optional), the display gives the user the fusion mode selection.

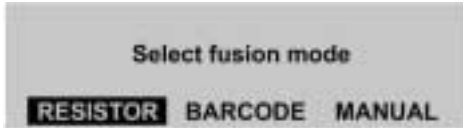


Resistor mode utilizes a resistor to automatically control the pre-determined fusion time.

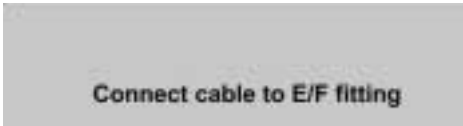
Barcode mode (Format Interleaved 2of5) utilizes the barcode label to control fusion parameters. When the barcode label is scanned, it identifies fitting, size and fusion data.

Manual mode can be accessed in the event the fitting is not equipped with a resistor or the barcode or the fitting is not readable. Retrieve fusion time from fitting label and manually input into processor.

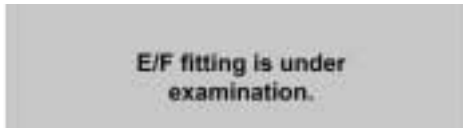
1. Resistor mode



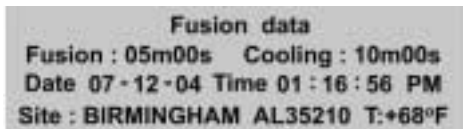
Select [RESISTOR].



After user connects cable to the EF fitting, next screen will automatically appear.



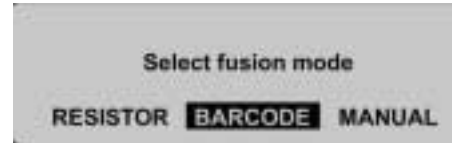
This screen is displayed while processor is reading the resistor of EF fitting (2 to 4 seconds).



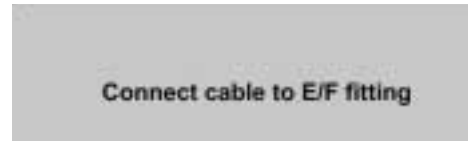
This screen displays fusion time, cooling time, fusion date, and the location of project.

Check fitting parameters against label on fitting information display. If all parameters are correct, press [Start] to start fusion process. (Go to page #15)

2. Barcode mode



Select [BARCODE].

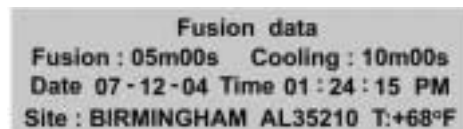


Connect cable to the EF fitting and press [Select] button. Next screen will appear.



When this display appears, operator will scan the barcode on selected fitting. After

operator completes the scan, next screen will appear automatically.

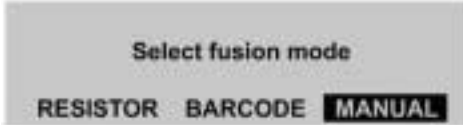


This screen displays fusion time, cooling time, fitting type, fitting manufacture, fitting size

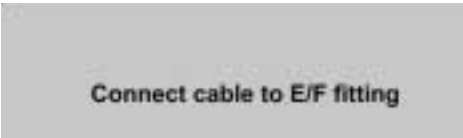
and temperature. Check fitting parameters against barcode information display. If all parameters are correct, press [Start] to start fusion process.

(Go to page #15)

3. Manual mode



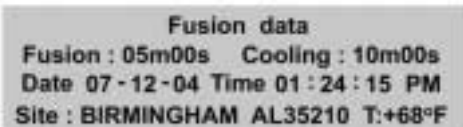
Select
[MANUAL].



Connect cable to the EF fitting and press [Select] button. Next screen will appear.

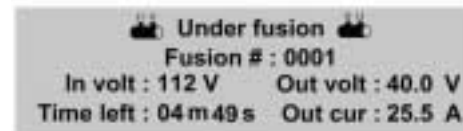


Input fusion time using direction cursors. Fusion time is set in minute and seconds. Press [Select].



This screen displays fusion time, cooling time, fusion date, and the location of project. Check fitting parameters against the permanent information on the fitting. If all parameters are correct, press [Start] to start fusion process. (Go to next page)

After press [Start] to start fusion process, MTD TRI FUSION processor will control the entire fusion process.



This screen displays current fusion data; input voltage, output voltage, fusion time, and output current are displayed. After fusion time is completed, cooling procedure will start.

Following O.Q. (Operation Qualification) requirement, MTD TRI FUSION processor has two different types of cooling time displays.

Type A. (Cooling time on)

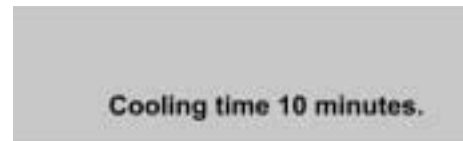


When fusion is over, cooling is started automatically, and the time left is displayed on the screen until cooling time is completed.



Fusion complete.

Type B. (Cooling time off)



When fusion is over, processor displays fusion complete with required total cooling time (no display of count down on cooling time).

Operating MTD TRI FUSION Processor-MONITOR

```

Work Selector
FUSE MONITOR PRINT ERASE
Memory remaining : 195times
Date 09 -21 -04 Time 05 :17 :07 PM
    
```

Press
[MONITOR].

```

Monitor
Last fusion memory # : 006
Monitor fusion memory # : 000
    
```

Operator can monitor fusion result before printing.

Processor stores

200 fusions and operator is able to see the fusion result by inputting the requested fusion number. Press [Select].

```

Oper:JOHN DOE _ _ _ _ _ /RESISTOR
Site:BIRMINGHAM AL35210 /#0001
Fusion time : 05m00s Temp : +68°F
Date 07 -12 -04 Time 01 :16 :58 PM
    
```

The operator will confirm fusion data including operator name, fusion mode,

fusion location, fusion number, fusion time, temperature, date and time. Press [Select].

```

Input voltage : 085V- 146V
Output voltage : 39.9V-40.1V
Output current : 20.3A-27.9A
Cooling time : 10m00s
    
```

This screen displays the minimum and maximum value of input, output voltage and current. Also it displays the total cooling time.

Operating MTD TRI FUSION Processor-PRINTER

```

Work Selector
FUSE MONITOR PRINT ERASE
Memory remaining : 195times
Date 09 -21 -04 Time 05 :16 :50 PM
    
```

Press
[PRINT].

```

Print out type
LAST SET ALL
    
```

Operator can select last fusion (LAST), all fusions up to 200 (ALL) or specified

fusion range between 1 and 200 (SET).

```

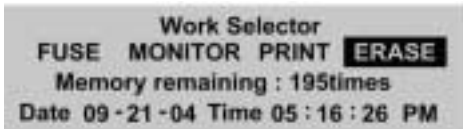
Print range
Last fusion memory # : 006
Start : 006 End : 006
    
```

Input fusion memory number from Start to End and press [Select].

```

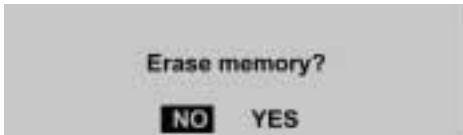
MTD Wireless report
-----
ABC 123 COMPANY
Item date : 10-07-04 01:38 PM
Part name # : 00
Serial # : 198A-12345678910
Operator : JOHN DOE
Site : BIRMINGHAM AL35210
Fusion # : 0006
Temperature : 48°F
Work temp : 1400°C/255°F
Filling MP : 01
Filling sta : 001 PFB
Spooky time : 05m00s
Fusion time : 05m00s
Cooling time : 10m00s
MFI : ABC
In voltage : 085V - 146V
Out voltage : 39.9V - 40.1V
Out current : 20.3A - 27.9A
---Fusion record report (6)---
10% Fusion : 04.2A - 01.3A
20% Fusion : 03.0A - 04.2A
30% Fusion : 02.3A - 03.0A
40% Fusion : 01.1A - 02.3A
50% Fusion : 01.3A - 01.1A
60% Fusion : 01.0A - 01.3A
70% Fusion : 00.1A - 01.0A
80% Fusion : 00.0A - 00.1A
90% Fusion : 00.4A - 00.0A
100% Fusion : 00.3A - 00.4A
Reported : 11 Fusion Data 11
-----
    
```

Operating MTD TRI FUSION Processor-ERASE



Work Selector
FUSE MONITOR PRINT **ERASE**
Memory remaining : 195times
Date 09-21-04 Time 05:16:26 PM

Press
[ERASE].



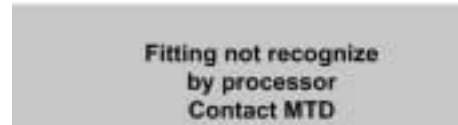
Erase memory?
NO YES

Operator can download on paper or computer prior to erasing the memory.

Select [Yes] or [No] and press [Select].

* If operator selects [Yes], this will erase total fusion memory.

Error Messages



Fitting not recognize
by processor
Contact MTD

This message appears in case there is a bar code which is not supported by the

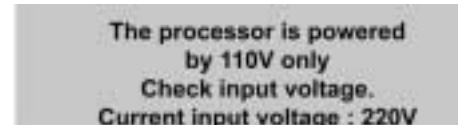
processor or when fusion time exceeds.



Backup battery low

This message appears when the battery is low. It informs operator to replace the


battery (AA 3.6V). The processor is equipped with capacity charger and backup battery enabling storage of data when not in use. When not in use, life of battery is 5 years.



The processor is powered
by 110V only
Check input voltage.
Current input voltage : 220V

Input power for the processor ranges from 85 to 150V. Message will be displayed

when processor is out of this range.



Check EF leads
to fitting connection.

Check if EF leads are connected properly to EF fitting. Re-connect the leads as

required and then re-start fusion.

Processor leads disconnected
during fusion. Restart fusion



This message is shown when the processor leads are disconnected during the fusion.

Check connection and re-start fusion.

Over current
Replace the fitting.



This message is shown when the processor senses an over current condition during

the fusion. Cut out fitting and replace it.

Memory capacity exceeded.
Erase after printing.

This message will appear when the processor stores 200 fusions.

Operator can do-

wnload on paper or computer prior to erasing the memory.

Wrong barcode read
Read it again

This message is shown when a wrong bar code is read or when bar code reader fails.

Rescan fitting.

Switch leads
if not connected properly.

This message informs operator to connect resistor lead to resistor terminal in the

resistor mode (Red to Red).

This message is shown when there is an internal error found in the processor, or the processor has been in service for greater than two years since last calibration. Contact M.T.Deason Co., Inc. 1-800-633-7131, www.mtdtrifusion.com

WARRANTY

M. T. Deason Company, Inc. warrants to the original purchaser that the MTD TRI FUSION Universal Processor is free from electrical and mechanical defects for a period of 1 year from the date of purchase(Additional one-year extended warranty available). Our warranty covers defects in material and workmanship. All warranties are void if the customer makes any attempt to modify the product or perform unauthorized repairs to the same or use the product in a manner for which it was not designed or contrary to the procedures set forth in the MTD TRI FUSION Operation Manual. Repairs to processor must be done by MTD TRI FUSION Technicians for the warranty to be valid. Warranty does not cover physical damage or connecting processor to improper voltage. All claims of defective product must be sent to M. T. Deason Company in writing with processor serial number for Return Material Authorization (RMA). MTD reserves the right to repair or replace any processor claimed defective or refund the purchase price upon the return of product. MTD makes no other warranty implied, expressed, or statutory other than those here stated. No other representative or distributor for the company has the authority to make any changes to stated warranty or assume any other liability.

To register warranty, please fill out and return warranty located on last page of MTD TRI FUSION Operation Manual.

MTD TRI FUSION ELECTROFUSION WARRANTY CARD



COMPANY NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

PHONE _____

NAME _____ TITLE _____

SERIAL NO. _____ DATE PURCHASED _____

PURCHASED FROM _____

WARRANTY

M. T. Deason Company, Inc. warrants to the original purchaser that the MTD TRI FUSION Universal Processor is free from electrical and mechanical defects for a period of 1 year from the date of purchase(Additional one-year extended warranty available). Our warranty covers defects in material and workmanship. All warranties are void if the customer makes any attempt to modify the product or perform unauthorized repairs to the same or use the product in a manner for which it was not designed or contrary to the procedures set forth in the MTD TRI FUSION Operation Manual. Repairs to processor must be done by MTD TRI FUSION Technicians for the warranty to be valid. Warranty does not cover physical damage or connecting processor to improper voltage. All claims of defective product must be sent to M. T. Deason Company in writing with processor serial number for Return Material Authorization (RMA). MTD reserves the right to repair or replace any processor claimed defective or refund the purchase price upon the return of product. MTD makes no other warranty implied, expressed, or statutory other than those here stated. No other representative or distributor for the company has the authority to make any changes to stated warranty or assume any other liability.