RdF Corporation
23 Elm Avenue
Hudson, New Hampshire 03051-0490
Tele: (603) 882-5195 1-800-445-8367
Fax: (603) 882-6925
E-mail: sensor@rdfcorp.com

ISO 9001 CERTIFIED

Q-116-08 REV A
Q-116-12 REV A

MICRO-FOIL™ HEAT FLUX SENSOR

CALIBRATION

RdF PART NO. 27092

SERIAL NO. 00022886

HEAT FLUX SENSOR:

Output at 70°F: 3.58 μV/BTU/ft² hr

Polarity: (For heat flow into the surface)
White - Positive (+)
Red - Negative (–)

Temperature Multiplication Factor: See Attached Graph

*Thermal Resistance: 0.01 °F/BTU/ft² hr (Typ)

*Heat Capacity: 0.03 BTU/ft² hr/°F (Typ)

Response Time: 0.60 sec (62% response to step function) (Typ)

THERMOCOUPLE:

ANSI TYPE	MATERIAL	POLARITY	COLOR
K	Chromel Alumel	Pos. (+) Neg. (–)	Yellow Red

Output per ANSI MC96.1-1975 and NBS Monograph 125

*Thermal resistance is the temperature difference between the front surface and rear mounting surface of the sensor per unit of heat flow through the sensor. Heat capacity is the amount of heat required to raise the mean temperature of the sensor 1°F. Typical values of these two properties are given primarily to indicate sensor capabilities and are required for heat flow calculations only in very rare instances.

BY: Elaine Tardy DATE: 2-8-00

RdF Corporation
Specialists in Temperature Measurement

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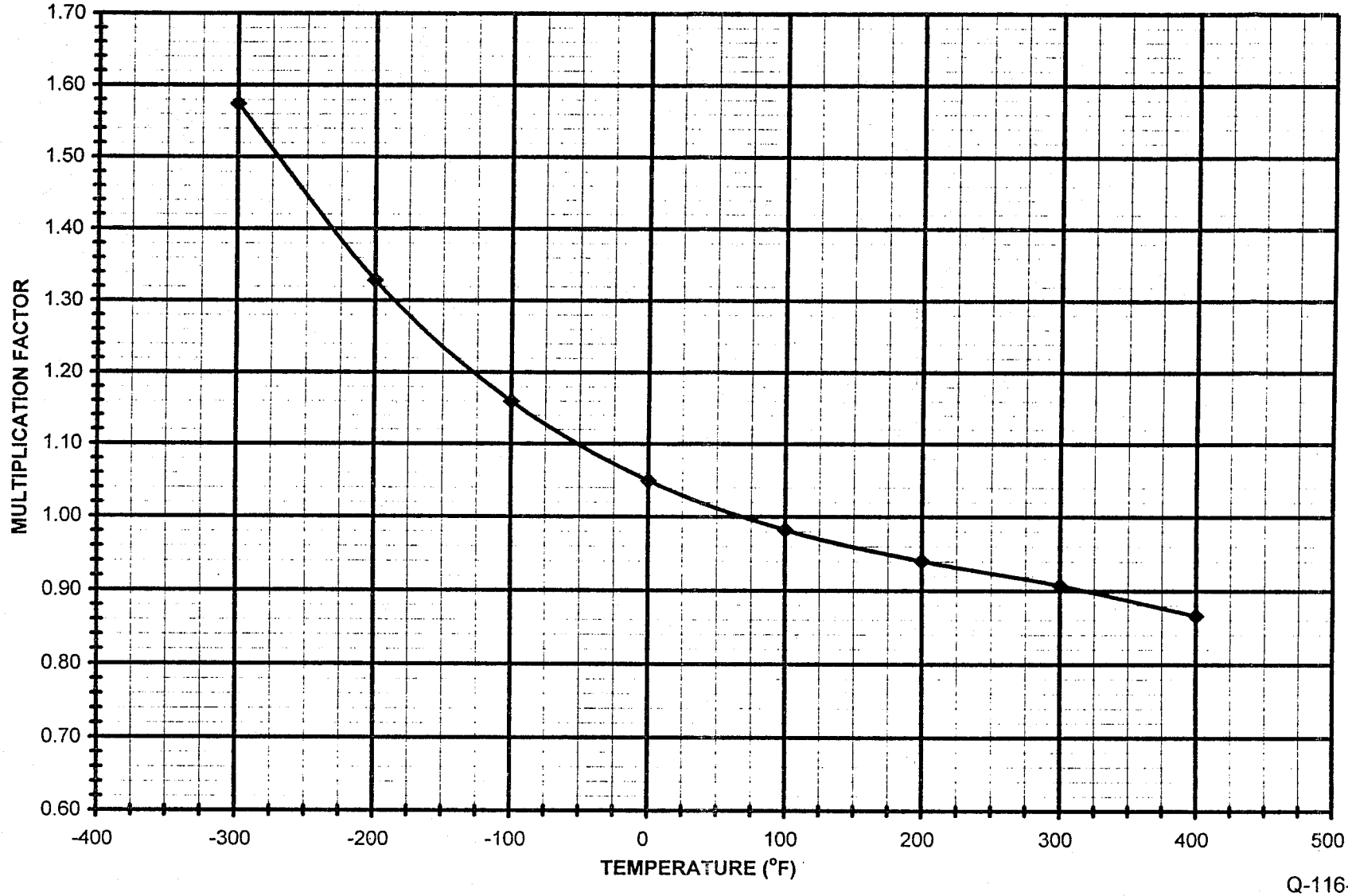
MICRO-FOIL HEAT FLUX SENSOR

OUTPUT MULTIPLICATION FACTOR VS RECEIVING SURFACE TEMPERATURE (70°F)



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Q-116-03 REV A
Q-116-04 REV A
Q-116-08 REV A
Q-116-11 REV A
Q-116-12 REV A

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Q-116-08 REV A
Q-116-12 REV A

MICRO-FOIL™ HEAT FLUX SENSOR

CALIBRATION

RdF PART NO. 27092

SERIAL NO. 00022887

HEAT FLUX SENSOR:

Output at 70°F: 3.59 μV/BTU/ ft² hr

Polarity: (For heat flow into the surface)
White - Positive (+)
Red - Negative (–)

Temperature Multiplication Factor: See Attached Graph

*Thermal Resistance: 0.01 °F/BTU/ft² hr (Typ)

*Heat Capacity: 0.03 BTU/ft² hr/°F (Typ)

Response Time: 0.60 sec (62% response to step function) (Typ)

THERMOCOUPLE:

ANSI TYPE	MATERIAL	POLARITY	COLOR
K	Chromel Alumel	Pos. (+) Neg. (–)	Yellow Red

Output per ANSI MC96.1-1975 and NBS Monograph 125

*Thermal resistance is the temperature difference between the front surface and rear mounting surface of the sensor per unit of heat flow through the sensor. Heat capacity is the amount of heat required to raise the mean temperature of the sensor 1°F. Typical values of these two properties are given primarily to indicate sensor capabilities and are required for heat flow calculations only in very rare instances.

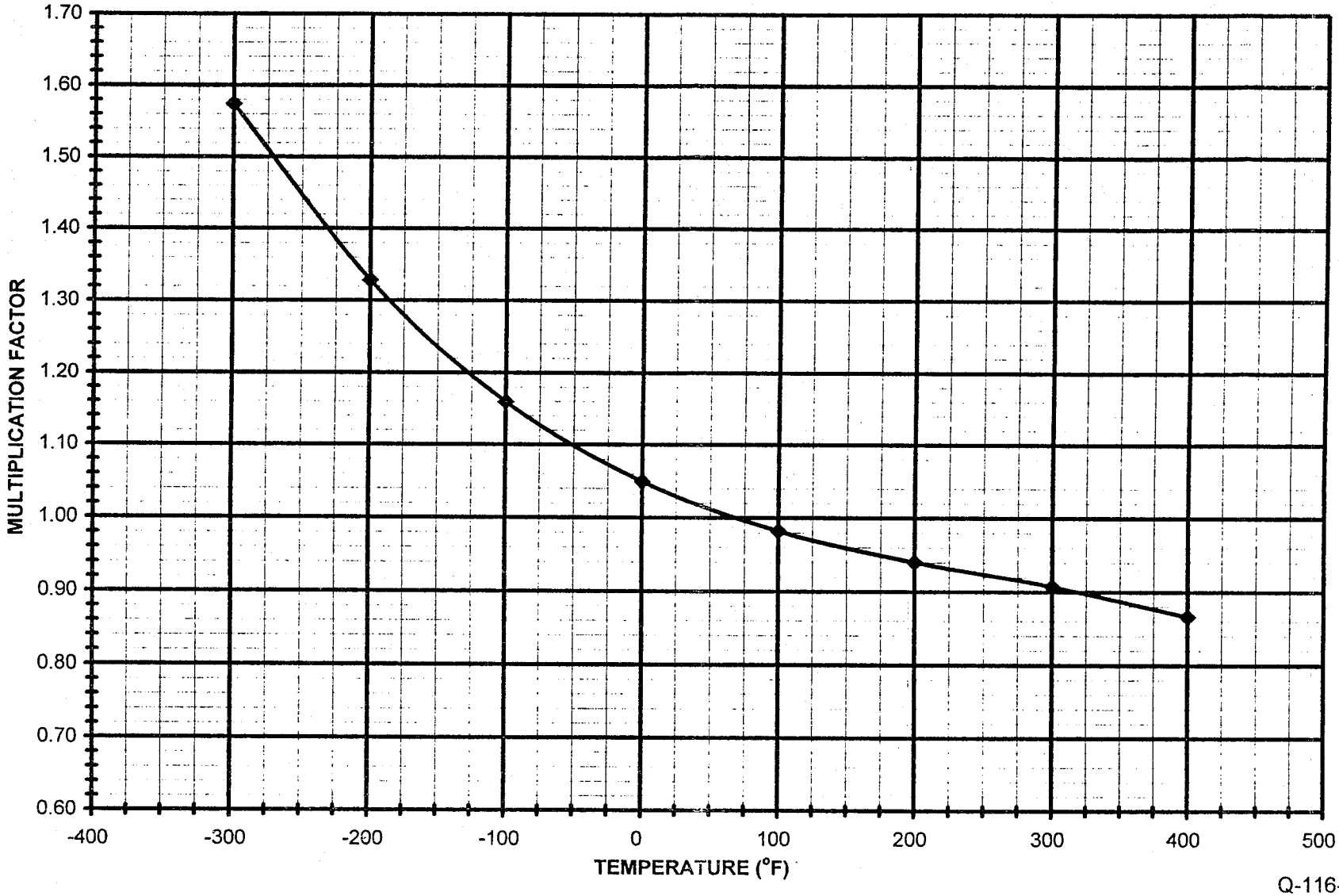
BY: Elaine Tardy DATE: 2-8-00

RdF Corporation
Specialists in Temperature Measurement

ISO 9001 CERTIFIED

MICRO-FOIL HEAT FLUX SENSOR

OUTPUT MULTIPLICATION FACTOR VS RECEIVING SURFACE TEMPERATURE (70^0F)



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MICRO-FOIL™ HEAT FLUX SENSOR

CALIBRATION

RdF PART NO. 27092

SERIAL NO. 00022888

HEAT FLUX SENSOR:

Output at 70°F: 3.56 μV/BTU/ ft² hr

Polarity: (For heat flow into the surface)
White - Positive (+)
Red - Negative (–)

Temperature Multiplication Factor: See Attached Graph

*Thermal Resistance: 0.01 °F/BTU/ft² hr (Typ)

*Heat Capacity: 0.03 BTU/ft² hr/°F (Typ)

Response Time: 0.60 sec (62% response to step function) (Typ)

THERMOCOUPLE:

ANSI TYPE	MATERIAL	POLARITY	COLOR
K	Chromel Alumel	Pos. (+) Neg. (–)	Yellow Red

Output per ANSI MC96.1-1975 and NBS Monograph 125

*Thermal resistance is the temperature difference between the front surface and rear mounting surface of the sensor per unit of heat flow through the sensor. Heat capacity is the amount of heat required to raise the mean temperature of the sensor 1°F. Typical values of these two properties are given primarily to indicate sensor capabilities and are required for heat flow calculations only in very rare instances.

BY: Elaine Tardy DATE: 2-8-00

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Specialists in Temperature Measurement

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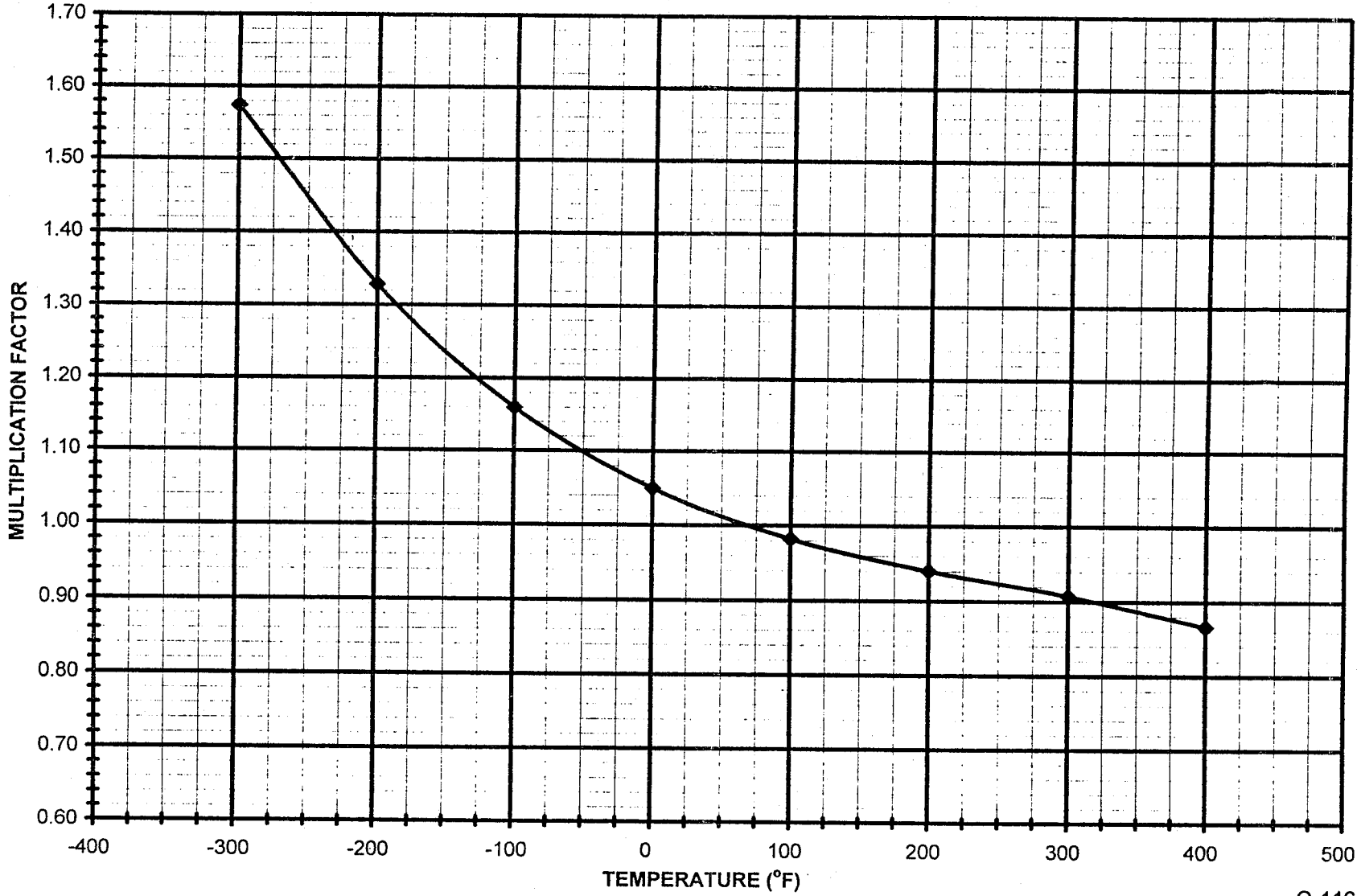
MICRO-FOIL HEAT FLUX SENSOR

OUTPUT MULTIPLICATION FACTOR VS RECEIVING SURFACE TEMPERATURE (70^0F)



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Q-116-08 REV A
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MICRO-FOIL™ HEAT FLUX SENSOR

CALIBRATION

RdF PART NO. 27092

SERIAL NO. 00022889

HEAT FLUX SENSOR:

Output at 70°F: 3.55 μV/BTU/ ft² hr

Polarity: (For heat flow into the surface)
White - Positive (+)
Red - Negative (–)

Temperature Multiplication Factor: See Attached Graph

*Thermal Resistance: 0.01 °F/BTU/ft² hr (Typ)

*Heat Capacity: 0.03 BTU/ft² hr/°F (Typ)

Response Time: 0.60 sec (62% response to step function) (Typ)

THERMOCOUPLE:

ANSI TYPE	MATERIAL	POLARITY	COLOR
K	Chromel Alumel	Pos. (+) Neg. (–)	Yellow Red

Output per ANSI MC96.1-1975 and NBS Monograph 125

*Thermal resistance is the temperature difference between the front surface and rear mounting surface of the sensor per unit of heat flow through the sensor. Heat capacity is the amount of heat required to raise the mean temperature of the sensor 1°F. Typical values of these two properties are given primarily to indicate sensor capabilities and are required for heat flow calculations only in very rare instances.

BY: Elaine Tardy DATE: 2-8-00

RdF Corporation
Specialists in Temperature Measurement

ISO 9001 CERTIFIED

MICRO-FOIL HEAT FLUX SENSOR

OUTPUT MULTIPLICATION FACTOR VS RECEIVING SURFACE TEMPERATURE (70^0F)

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Q-116-12 REV A

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Q-116-08 REV A
Q-116-12 REV A

MICRO-FOIL™ HEAT FLUX SENSOR

CALIBRATION

RdF PART NO. 27092

SERIAL NO. 00022890

HEAT FLUX SENSOR:

Output at 70°F: 3.58 μV/BTU/ ft² hr

Polarity: (For heat flow into the surface)
White - Positive (+)
Red - Negative (–)

Temperature Multiplication Factor: See Attached Graph

*Thermal Resistance: 0.01 °F/BTU/ft² hr (Typ)

*Heat Capacity: 0.03 BTU/ft² hr/°F (Typ)

Response Time: 0.60 sec (62% response to step function) (Typ)

THERMOCOUPLE:

ANSI TYPE	MATERIAL	POLARITY	COLOR
K	Chromel Alumel	Pos. (+) Neg. (–)	Yellow Red

Output per ANSI MC96.1-1975 and NBS Monograph 125

*Thermal resistance is the temperature difference between the front surface and rear mounting surface of the sensor per unit of heat flow through the sensor. Heat capacity is the amount of heat required to raise the mean temperature of the sensor 1°F. Typical values of these two properties are given primarily to indicate sensor capabilities and are required for heat flow calculations only in very rare instances.

BY: Elaine Tardif DATE: 2-8-00

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Specialists in Temperature Measurement

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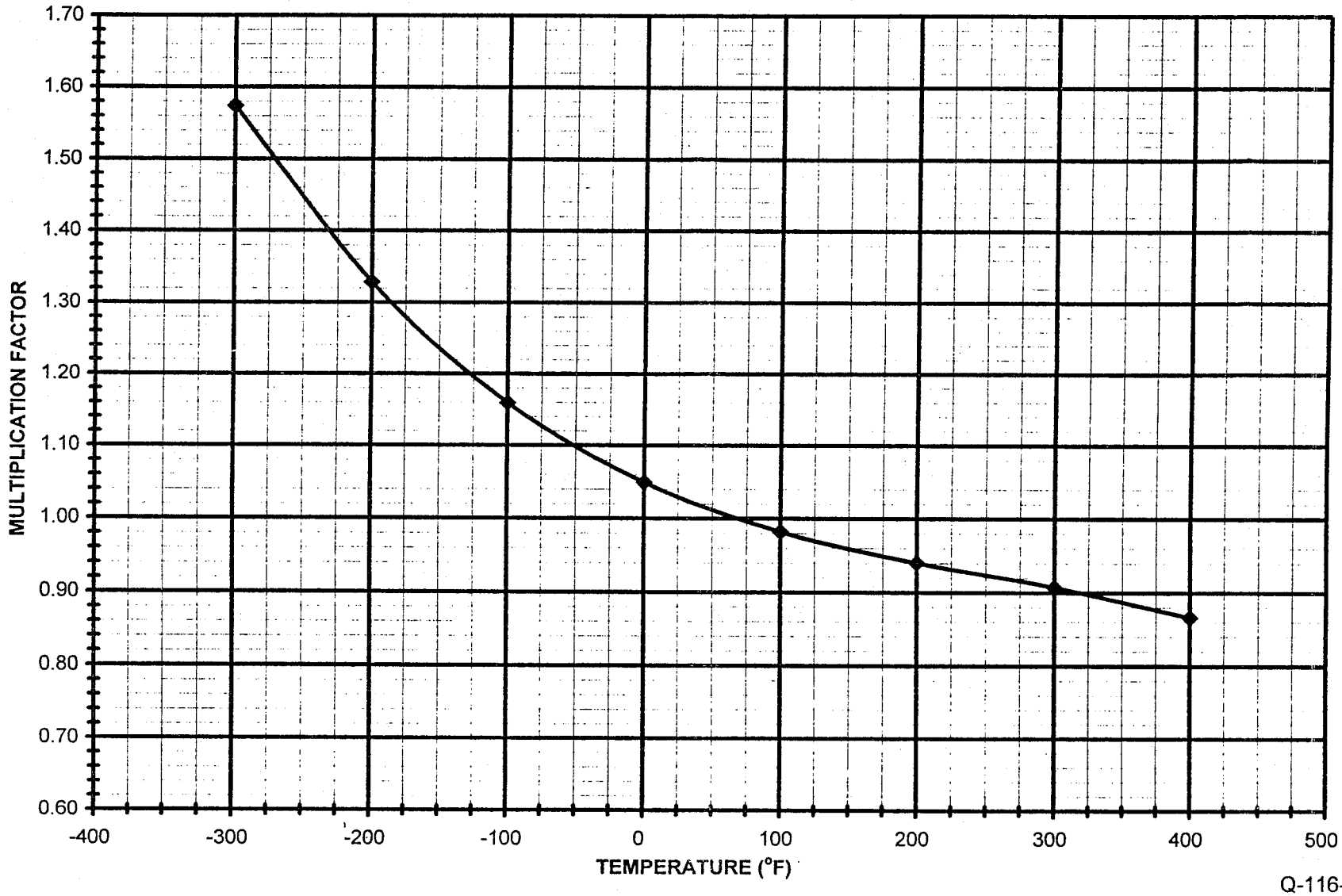
MICRO-FOIL HEAT FLUX SENSOR

OUTPUT MULTIPLICATION FACTOR VS RECEIVING SURFACE TEMPERATURE (70^0F)



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Q-116-08 REV A
Q-116-12 REV A

MICRO-FOIL™ HEAT FLUX SENSOR

CALIBRATION

RdF PART NO. 27092

SERIAL NO. 00022891

HEAT FLUX SENSOR:

Output at 70°F: 3.60 μV/BTU/ ft² hr

Polarity: (For heat flow into the surface)
White - Positive (+)
Red - Negative (–)

Temperature Multiplication Factor: See Attached Graph

*Thermal Resistance: 0.01 °F/BTU/ft² hr (Typ)

*Heat Capacity: 0.03 BTU/ft² hr/°F (Typ)

Response Time: 0.60 sec (62% response to step function) (Typ)

THERMOCOUPLE:

ANSI TYPE	MATERIAL	POLARITY	COLOR
K	Chromel Alumel	Pos. (+) Neg. (–)	Yellow Red

Output per ANSI MC96.1-1975 and NBS Monograph 125

*Thermal resistance is the temperature difference between the front surface and rear mounting surface of the sensor per unit of heat flow through the sensor. Heat capacity is the amount of heat required to raise the mean temperature of the sensor 1°F. Typical values of these two properties are given primarily to indicate sensor capabilities and are required for heat flow calculations only in very rare instances.

BY: Elaine Tardif DATE: 2-8-00

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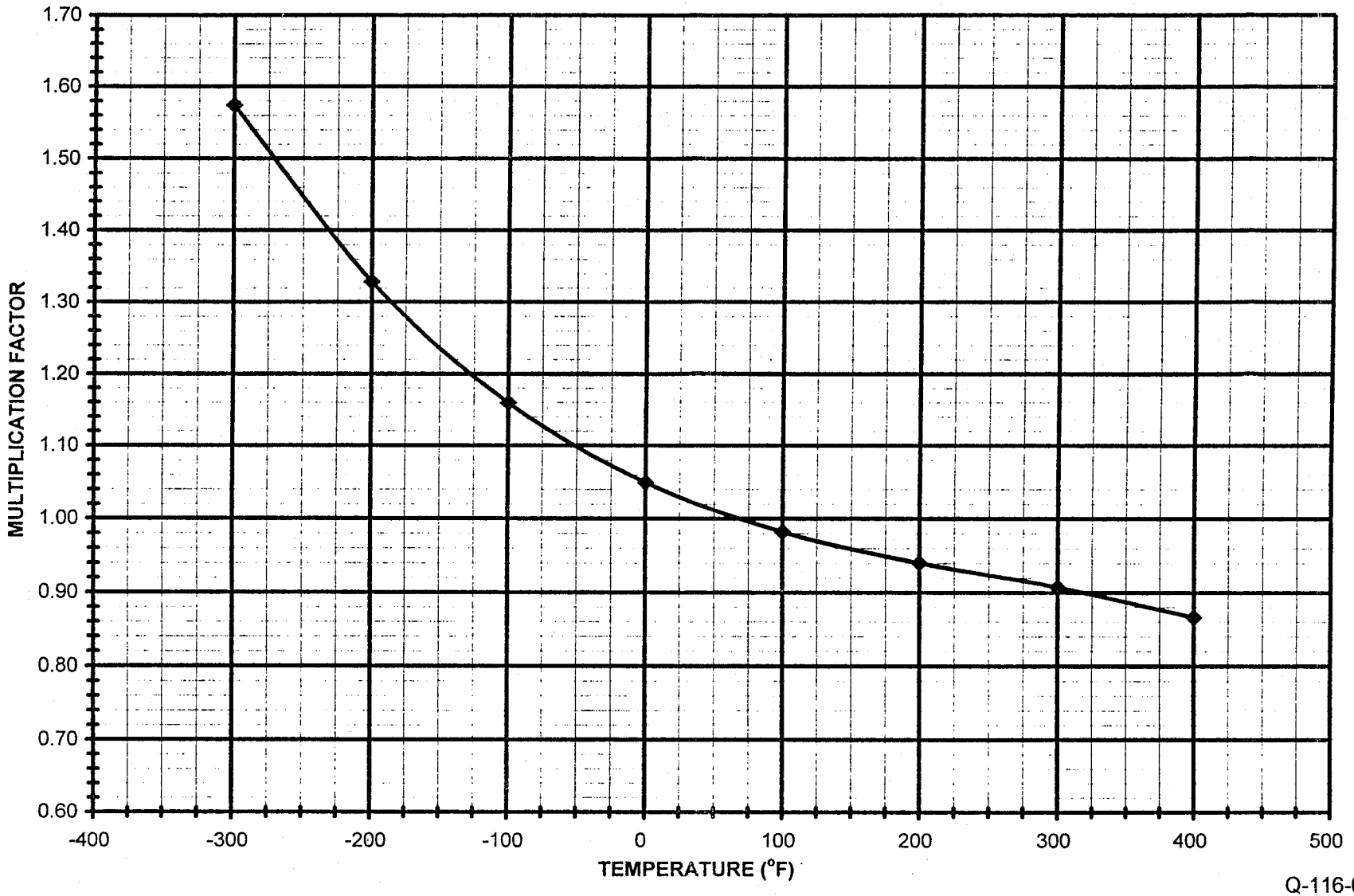
MICRO-FOIL HEAT FLUX SENSOR

OUTPUT MULTIPLICATION FACTOR VS RECEIVING SURFACE TEMPERATURE (70^{0}F)



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Q-116-08 REV A
Q-116-12 REV A

MICRO-FOIL™ HEAT FLUX SENSOR

CALIBRATION

RdF PART NO. 27092

SERIAL NO. 00022892

HEAT FLUX SENSOR:

Output at 70°F: 3.58 μV/BTU/ ft² hr

Polarity: (For heat flow into the surface)
White - Positive (+)
Red - Negative (–)

Temperature Multiplication Factor: See Attached Graph

*Thermal Resistance: 0.01 °F/BTU/ft² hr (Typ)

*Heat Capacity: 0.03 BTU/ft² hr/°F (Typ)

Response Time: 0.60 sec (62% response to step function) (Typ)

THERMOCOUPLE:

ANSI TYPE	MATERIAL	POLARITY	COLOR
K	Chromel Alumel	Pos. (+) Neg. (–)	Yellow Red

Output per ANSI MC96.1-1975 and NBS Monograph 125

*Thermal resistance is the temperature difference between the front surface and rear mounting surface of the sensor per unit of heat flow through the sensor. Heat capacity is the amount of heat required to raise the mean temperature of the sensor 1°F. Typical values of these two properties are given primarily to indicate sensor capabilities and are required for heat flow calculations only in very rare instances.

BY: Elaine Tardy DATE: 2-8-00

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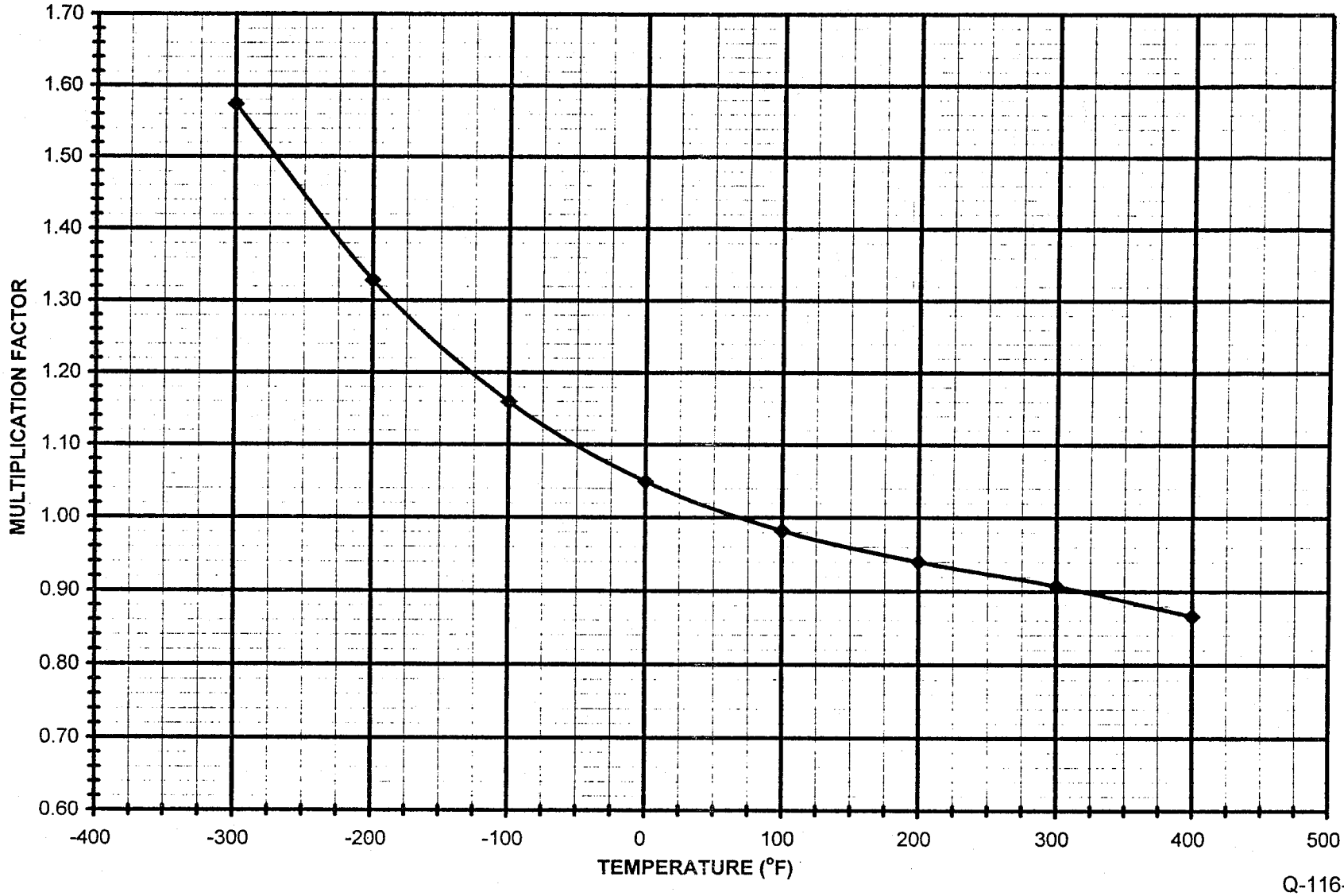
MICRO-FOIL HEAT FLUX SENSOR

OUTPUT MULTIPLICATION FACTOR VS RECEIVING SURFACE TEMPERATURE (70^0F)



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Q-116-08 REV A
Q-116-12 REV A

MICRO-FOIL™ HEAT FLUX SENSOR

CALIBRATION

RdF PART NO. 27092

SERIAL NO. 00022893

HEAT FLUX SENSOR:

Output at 70°F: 360 μV/BTU/ ft² hr

Polarity: (For heat flow into the surface)
White - Positive (+)
Red - Negative (–)

Temperature Multiplication Factor: See Attached Graph

*Thermal Resistance: 0.01 °F/BTU/ft² hr (Typ)

*Heat Capacity: 0.03 BTU/ft² hr/°F (Typ)

Response Time: 0.60 sec (62% response to step function) (Typ)

THERMOCOUPLE:

ANSI TYPE	MATERIAL	POLARITY	COLOR
K	Chromel Alumel	Pos. (+) Neg. (–)	Yellow Red

Output per ANSI MC96.1-1975 and NBS Monograph 125

*Thermal resistance is the temperature difference between the front surface and rear mounting surface of the sensor per unit of heat flow through the sensor. Heat capacity is the amount of heat required to raise the mean temperature of the sensor 1°F. Typical values of these two properties are given primarily to indicate sensor capabilities and are required for heat flow calculations only in very rare instances.

BY: Elaine Tardy DATE: 2-8-00

RdF Corporation
Specialists in Temperature Measurement

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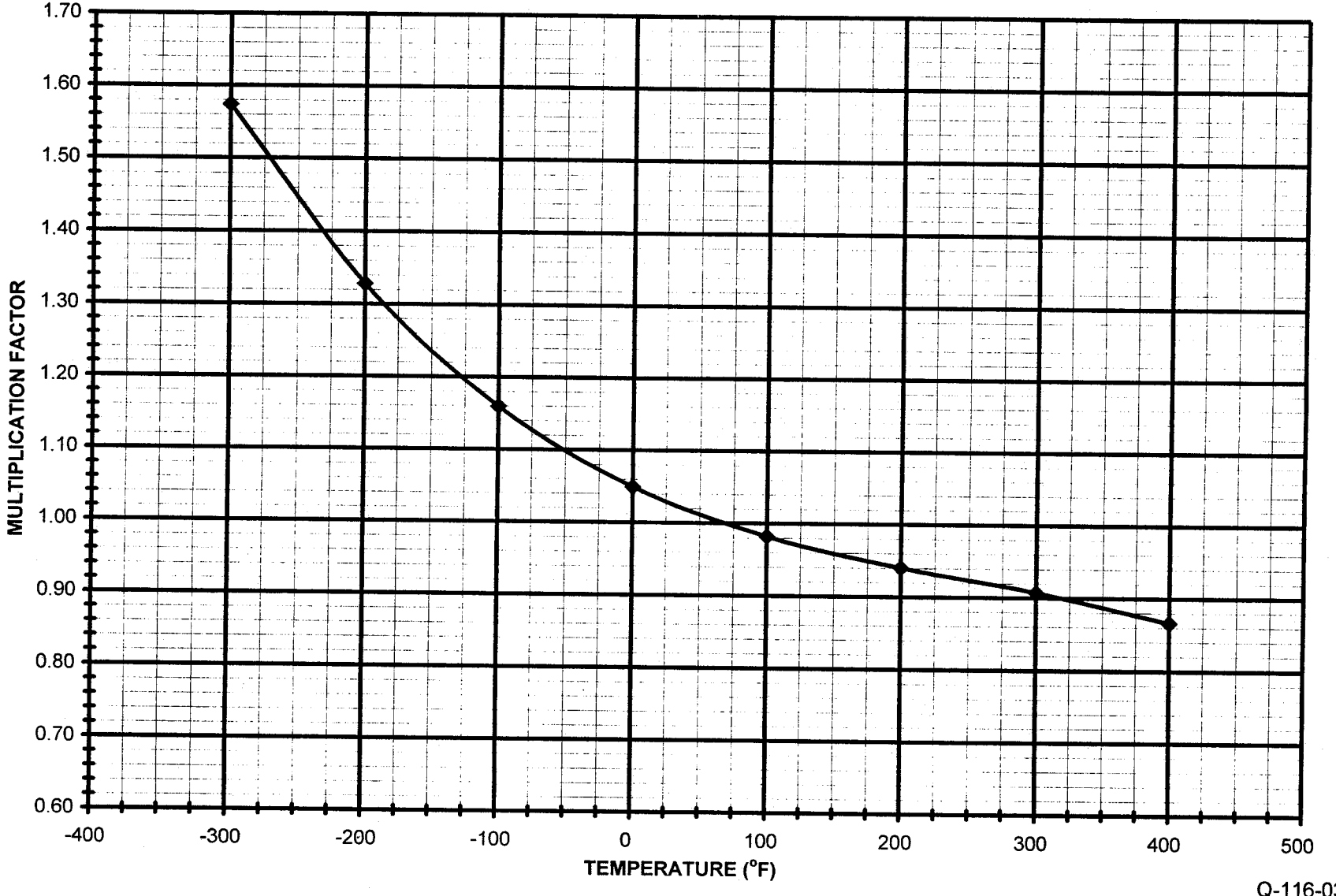
ISO 9001 CERTIFIED

MICRO-FOIL HEAT FLUX SENSOR

OUTPUT MULTIPLICATION FACTOR VS RECEIVING SURFACE TEMPERATURE (70^0F)



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Q-116-08 REV A
Q-116-11 REV A
Q-116-12 REV A

Behind A# 001444

RdF Specialists in Temperature Measurement

Certificate of Calibration

TEST NUMBER 77244

RdF P/N: 27070-1/27092

Serial No: SEE BELOW

Customer:: SOUTHWEST RESEARCH INSITIUTION

Range 70°F Calibration

Item No.: N/A

AS FOUND CONDITION: IN TOLERANCE

AS LEFT CONDITION: IN TOLERANCE

PO#: X852458S

HUMIDITY: 21%

CAL DATE 02/08/00

TEMPERATURE: 72°F

NEXT RECOMMENDED DUE DATE: 02/08/01

CALIBRATION DATA

S/N. NO.	70°F
00022886	3.58
00022887	3.59
00022888	3.56
00022889	3.55
00022890	3.58
00022891	3.60
00022892	3.58
00022893	3.60

RdF Corporation
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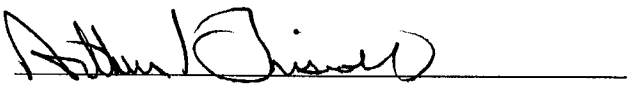
ISO 9001 CERTIFIED COMPANY

RdF Corporation certifies that the articles identified below have been manufactured, inspected and/or tested under controlled conditions in compliance with the applicable specifications and drawings. Calibration instruments used at RdF are traceable to N.I.S.T.

RdF Equipment Used for Calibration	NIST Trace No.	Cal Date	Cal due
Keithley Mulitmeter Item # 2351	QA-02606-R-17332	02/24/99	02/24/00

Certified by:  Date: 03/03/00

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RdF *Specialists in Temperature Measurement*

CERTIFICATE OF CONFORMANCE

CUSTOMER: **SOUTHWEST RESEARCH INSTITUTE**

P.O. NUMBER: **X852458S**

RdF SALES ORDER: **77244**

RdF Corporation certifies that the articles identified below have been manufactured, inspected and/or tested under controlled conditions in compliance with the applicable specifications and drawings. Calibration instruments used at RdF are traceable to N.I.S.T.

ITEM	QTY	DESCRIPTION
1	2	27092 HEAT FLUX SENSOR S/N: 00022886 THRU 00022889 00022890 THRU 00022893
2	1	LOT CHARGE FOR CERTIFICATE OF CALIBRATION

Date: 000303

RdF Quality Assurance Representative

Q-330A REV. G 11/96

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