3037-6-A03-00-TS-X08

Rock Wool Production Line

Thermoresistance for cooling water Plant - Technical Specification

Rev	Description	Edited	Check	Iss'd	Appr'd	Date
00	Revision 0	ZER	BER	Exec	MLG	20/12/17
01						
02						
03						
04						
05						

INDEX

1. Premise and reference documents

This document shows the data and technical specifications of the Thermoresistance to be installed in the cooling water plant.

References documents:

- **3037-6-A03-00-PD-900** cooling water plant process flow diagram.

2. List of Thermoresistance (by Client)

TAG	LOOP	ND	CLASS	UBICATION (N° PIPE LINE)
TE	40	Ø ½" – Gas	A01	DW-027
TE	70	Ø ½" – Gas	A01	DW-012
TE	90	Ø ½" – Gas	A01	DW-078
TE	100	Ø ½" – Gas	A01	DW-026
TE	130	Ø ½" – Gas	A01	DW-042
TE	190	Ø ½" – Gas	A01	DW-031
TE	191	Ø ½" – Gas	A01	DW-026

- Thermoresistance PT100 single element 3 wires
- Sheath AISI316 diam. 6mm L200mm
- Head standard IP65 with transmitter 4-20ma/0-100°C
- Sliding connection AISI316 Ø ½" – Gas
- Head transmitter Signal converter - IN: PT100 / OUT: 4-20mA

See also M&SL document **3037-6-XX0-00-CE-900**

3. Data sheets Thermoresistance - Transmitters (by Client)

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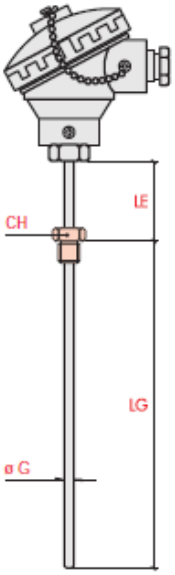
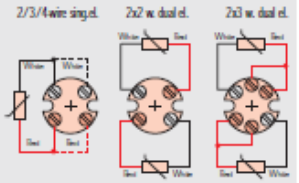
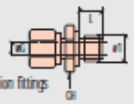


Electrical connection



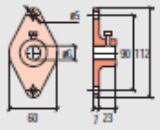
Mounting Fittings
(For models without fixed attaching device only)



Suggested adjustable compression fittings

Material	ø1	L	CH	øG	Model
AISI 316	1/8"G	10.5	12	5	Z1 RFS-B/E050
	1/8"NPT	10.5	12	5	Z1 RFS-B/M050
	1/4"G	12	17	6	Z1 RFS-B/F060
	1/2"G	14	24	6	Z1 RFS-B/I060
	1/4"G	12	17	8	Z1 RFS-B/F080
	1/2"G	14	24	8	Z1 RFS-B/I080
Treated brass	1/4"G	12	17	6	Z1 RFS-O/F060
	1/2"G	14	24	6	Z1 RFS-O/I060
	1/4"G	12	17	8	Z1 RFS-O/F080
	1/2"G	14	24	8	Z1 RFS-O/I080

Flanges



Model	øG
Z2 FLS-A/A060	6
Z2 FLS-A/A080	8

Low pressure sensors with connection head

F1 Straight RTD, 5 to 8mm sheath o.d., optional fixed attaching device

Connection head	Diameter ø G mm	Base code
Cylindrical IP54	5	F1 C50
	6	F1 C60
	8	F1 C80
Miniat. IP67	5	F1 M50
	6	F1 M60
	8	F1 M80
Standard IP67, optional transmitter *	5	F1 S50
	6	F1 S60
	8	F1 S80
	5 + T	F1 T50
	6 + T	F1 T60
	8 + T	F1 T80
Nylon IP65, optional transmitter *	5	F1 N50
	6	F1 N60
	8	F1 N80
	5 + T	F1 Y50
	6 + T	F1 Y60
	8 + T	F1 Y80
EEx d IIB IP65, optional transmitter *	6	F1 X60
	8	F1 X80
	6 + T	F1 U60
	8 + T	F1 U80

Note: * Transmitter for single element only

Value in [ohm] at 0°C	Element N° and limits	Type of RTD
P Pt100 DIN - IEC	0 3-wire single el. Cl. B (1 DIN)	0 Ceramic 750 °C max
X Pt500 DIN - IEC	1 3-wire single el. Cl. A (1/2 DIN)	1 Thin film 250 °C max
Y Pt1000 DIN - IEC	2 3-wire single el. 1/3 DIN	
Z Ni100 DIN - IEC	3 4-wire single el. Cl. A (1/2 DIN)	
	4 4-wire single el. 1/3 DIN	
	5 4-wire dual Cl. B (1 DIN)	
	6 6-wire dual el. Cl. B (1 DIN)	
	7 6-wire dual el. Cl. A (1/2 DIN)	
	8 6-wire dual el. 1/3 DIN	

Sheath material	Sheath LG mm
B AISI 316	0100
	0150
	0200
	0250
	0300
	0350
	0400
	0450
	0500
	L min 0080

Type of thread	Extension LE mm
S Without	00 Without
D M10 x 1.5 - L13 CH - 14 (for ø5 and ø6)	05 50
E 1/8" Gas - L12 CH - 14 (for ø5 and ø6)	08 80
F 1/4" Gas - L13 CH - 17	10 100
H 3/8" Gas - L15 CH - 22	
I 1/2" Gas - L15 CH - 24	
M 1/8" NPT - L10 CH - 14 (for ø5 and ø6)	
N 1/4" NPT - L13 CH - 17	
P 3/8" NPT - L15 CH - 22	
Q 1/2" NPT - L15 CH - 24	

Note: other lengths on request for LG and LE. Code ex.: LG = 135mm Code **0135** / LE = 60mm Code **06**

Reference model:
Straight RTD, standard head, 6mm sheath o.d., 3-wire Pt100 single elem., class B (1 DIN), ceramic element, AISI 316 sheath, 100mm length, no extension, no fixed attaching device.

F1 S60 - P 0 0 - B 0100 - S 00

ed. 1

TEMPERATURE TRANSMITTERS

SEM203 P

- SUITABLE FOR PT100 SENSORS
- UNIQUE PUSH BUTTON CONFIGURATION WITHOUT PC
- PUSH BUTTON SENSOR MATCHING
- (4 to 20) mA OUTPUT
- HIGH STABILITY
- PROGRAMMABLE BURNOUT

INTRODUCTION

The SEM203/P is a low cost configurable in-head transmitter that accepts PT100 temperature sensors and converts sensor output over a configured range to a standard industrial (4 to 20) mA transmission signal.

A simple push button operation allows the user to not only select the desire range and burnout direction but also perform user trim at both (4 and 20) mA points.

The SEM203 in head transmitter incorporates the latest digital technology to ensure accurate drift free performance.
If required the desired range can be specified at the time of order, removing the need for user configuration.
If the range is not specified then the transmitter will be shipped with the default range of (0 to 100) °C set.

PUSH BUTTON CONFIGURATION

EQUIPMENT
Decade box or resistance of the equivalent value for the low and high temperature values for the desired range to be set.

METHOD
A single push button and LED indicator allows the user to navigate a three menus, allowing configuration of the transmitter. The menus are as follow:-

Menu 1	Configure range.
Menu 2	Configure burnout direction.
Menu 3	Trim output current @ either 4 mA or 20 mA.

SPECIFICATIONS @ 20 °C

INPUT

Sensor Type	PT100 100R @ 0°C 2 or 3 Wire
Sensor Range	(-195 to +845) °C (18 to 390) Ω
Sensor Connection	Screw terminal
Minimum span (*1)	25 °C
Linearisation	BS EN 60751(IEC 751) standard / JISC 1604
Measurement Accuracy (*2)	0.2 °C ± 0.05% of Reading
Thermal Drift	±0.02 °C / °C
Excitation current	<200 uA
Lead Resistance effect	0.002 °C / Ohm
Maximum lead Resistance	20 Ohms per leg

OUTPUT

Output Type	2 wire (4 to 20) mA current loop
Output range	(4.0 to 20.0) mA
Output Connection	Screw Terminal
Maximum output	21.5mA (in high burnout condition)
Minimum output	<3.9 mA (in low burnout condition)
Accuracy	(mA output /2000) or 5 uA (Which ever is the greater)
Loop Voltage effect	0.2 uA / V
Thermal drift	±2 uA / °C
Maximum output load	[(Vsupply-10)/21]K Ohms (Example: 700 Ohms @ 24V)

GENERAL SPECIFICATION

Update time	500 ms
Response Time	1 second
Start up time	4 seconds (I out < 4 mA during start up)
Warm-up time	1 minutes to full accuracy
Power Supply	(10 to 30) Volts dc

TEMPERATURE TRANSMITTERS

ENVIRONMENTAL

Ambient operating range	(-40 to +85) °C [Full Accuracy only between (-30 to +75) °C]
Ambient storage temperature	(-50 to +90) °C
Ambient humidity range	(10 to 90) % RH non condensing

PHYSICAL

Dimensions	43 mm diameter; 21 mm height
Weight	31 g (encapsulated)

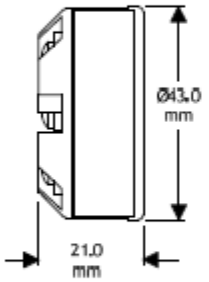
APPROVALS

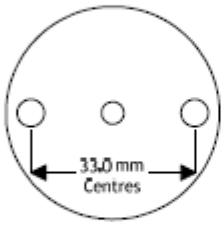
EMC - BS EN 61326	Electrical equipment for measurement control and laboratory use.
ANNEX A	Immunity test requirements for equipment intended for use in industrial locations
ANNEX F	Test configurations, operational conditions and performance criteria for transducers with integrated or remote signal conditioning.
IEC 61000-4-2	Electrostatic discharge
IEC 61000-4-3	EM Field
IEC 61000-4-4	Transient Burst (output)
IEC 61000-4-5	Surge (output)

Note - Sensor input wires to be less than 3 metres to comply.

Note *1	Any span may be selected, full accuracy is only guaranteed for spans greater than the minimum recommended
Note *2	Basic measurement accuracy includes the effects of calibration, linearisation and repeatability

MECHANICAL

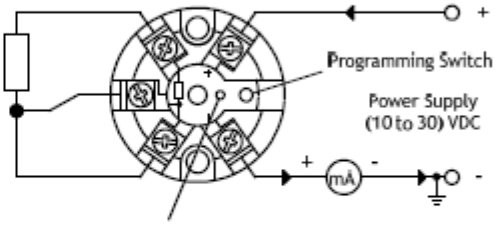




Fixing holes 2 x Ø5.5 mm

Centre hole Ø4.0 mm

ELECTRICAL



Burnout / Program LED

ORDER CODE

SERIES	SEM203	
Pt100	P	
CONFIG203*1		

*NOTES:
1) For special configuration, please contact the sales office.

Upscale burnout is standard, for downscale please contact the sales office