

Endura AZ20

Combustion oxygen monitor

Connecting CSA-approved cables

1 Introduction

This publication details the connection of Alpha Wire Company, 2- and 12-core CSA-approved cables to the AZ20 probe and remote transmitter system. The procedure must be carried out by a trained technician and in conjunction with the AZ20 installation manuals, IM/AZ20P and IM/AZ20E.

See Section 3, page 3 for cable specifications.

2 Cable connections

2.1 Probe transmitter connections

Referring to IM/AZ20P-EN, Section 4.3.1, connect the 2- and 12-core cables to the probe transmitter's terminal block – see Table 2.1 for cable color details.

Terminal / Cable color	Tag ID	Tx connection
12-core cable part no. 5562C		
Violet	ACJC	Pt1000 cold junction compensation
Slate	ACJC	Pt1000 cold junction compensation
Red	Cell +	Oxygen input (+ve)
Black	Cell –	Oxygen input (–ve)
Green	TC+	Thermocouple (+ve)
White	TC –	Thermocouple (–ve)
Light yellow (Sleeved screens)	SCN	Screens 1 and 2 (Screens 1 and 2 must be connected for correct operation)
2-core cable part no. 5382C		
Red	H	Oven
Black	H	Oven

Table 2.1 Probe transmitter connections

2.2 Probe AutoCal connections

Note. This section is applicable only to probes fitted with AutoCal.

Referring to IM/AZ20P-EN, Section 4.3.2, connect the 12-core cable to the probe's AutoCal terminal block – see Table 2.2 for cable color details.

Terminal / Cable color	Tag ID	AutoCal connection
12-core cable part no. 5562C		
Yellow	PS2	Pressure switch gas 2
White / Black	PS COM	Pressure switch common
Orange	PS1	Pressure switch gas 1
Brown	SV1	Solenoid valve gas 1
White / Brown	SV COM	Solenoid valve common
Blue	SV2	Solenoid valve gas 2

Table 2.2 Probe AutoCal connections

2.3 Remote transmitter connections

Referring to IM/AZ20E-EN, Section 4.4, connect the 2- and 12-core cables to the remote transmitter – see Table 2.3 for cable color details.

Terminal number	Tag ID	Connection type	Cable color
2-core cable part no. 5382C			
1	H	Heater	Red
2	H	Heater	Black
12-core cable part no. 5562C			
3	SCN	Screen	Screens
4	T / C –	Thermocouple (–ve)	White
5	T / C +	Thermocouple (+ve)	Green
6	ACJC	PT1000 cold junction compensation	Slate
7	ACJC	PT1000 cold junction compensation	Violet
8	CELL –	Oxygen input (–ve)	Black
9	CELL +	Oxygen input (+ve)	Red
10	PS2	Pressure switch – gas 2	Yellow
11	P COM	Pressure switch – common	White / Black
12	PS1	Pressure switch – gas 1	Orange
13	SV2	Solenoid valve – gas 2	Blue
14	SV COM	Solenoid valve – common	White / Brown
15	SV1	Solenoid valve – gas 1	Brown

Table 2.3 Remote transmitter connections

3 CSA-approved cable specifications

3.1 Alpha 2-core cable part no. 5382C

ALPHA WIRE COMPANY CUSTOMER PRODUCT SPECIFICATION

Part Number: 5382C	Issue: 11
Page 1 of 1 Pages	Issue Date: 1/29/2008
	Effective Date: 3/1/2008

A. Construction

Diameters (In)

- | | | |
|----------------|---------------------------------|-------|
| 1) Component 1 | 2 X 1 COND | |
| a) Conductor | 18 (16/30) AWG TC | |
| b) Insulation | 0.016" Wall, Nom. PVC | 0.079 |
| (1) Color Code | Alpha Wire Company Color Code D | |

Cond	Color	Cond	Color	Cond	Color
1	BLACK	2	RED		

- | | | |
|-------------------|---|--------------------|
| 2) Cable Assembly | 2 Components Cabled | |
| a) Twists: | 6.9 Twists/foot (min) | |
| b) Core Wrap | Nonwoven Polyester Tape, 25% Overlap, Min. | |
| 3) Shield: | Alum/Mylar Tape, 25% Overlap, Min. | |
| a) Foil Direction | Foil Facing In | |
| b) Drain Wire | 18 (16/30) AWG TC | |
| 4) Jacket | 0.032" Wall, Nom., PVC | 0.230 (0.240 Max.) |
| a) Color(s) | Slate, Black, Yellow, Orange, Blue, Green, Red, Sand Beige, White | |
| b) Ripcord | 1 End 810 Denier Nylon | |
| c) Print | ALPHA WIRE-* P/N 5382C 2C 18 AWG | |

XTRAGUARD 1 XTREME PERFORMANCE FOR XTREME
ENVIRONMENTS - SHIELDED 105C (UL) TYPE CM OR AWM
2464 VW-1 --- LLXXXXXX CSA 105C TYPE CMG FT4
CE ROHS <SEQ FOOTAGE>
* = Factory Code

[Note: Product may have c(UL) or CSA markings depending upon plant of manufacture.]

B. Industry Approvals

- | | | |
|-----------------------------------|--|------------------|
| 1) UL | | |
| a) Component 1 | AWM/STYLE 1569 | 105°C / 300 VRMS |
| b) Overall | AWM/STYLE 2464 | 80°C / 300 VRMS |
| | CM | 105°C |
| | VW-1 | |
| 2) CSA International | CMG | 105°C |
| | FT4 | |
| 3) EU Directive 2002/95/EC(RoHS): | All materials used in the manufacture of this part are in compliance with EU Directive 2002/95/EU regarding the restriction of use of certain hazardous substances in electrical and electronic equipment. Consult Alpha Wire's web site for compliance Date of Manufacture. | |
| 4) California Proposition 65: | The outer surface materials used in the manufacture of this part meet the requirements of California Proposition 65. | |
| 5) CE: | LVD 73/23/EEC Amendment 93/68/EEC | |

C. Physical & Mechanical Properties

- | | |
|------------------------|--------------------|
| 1) Temperature Range | -20 to 105°C |
| 2) Bend Radius | 10X Cable Diameter |
| 3) Pull Tension | 38 Lbs, Maximum |
| 4) Sunlight Resistance | Yes |

D. Electrical Properties

- | | |
|---------------------------------|---|
| (For Engineering purposes only) | |
| 1) Voltage Rating | 300 VRMS |
| 2) Capacitance | 57 pF/ft @1 kHz, Nominal Conductor to Conductor |
| 3) Ground Capacitance | 103 pF/ft @1 kHz, Nominal |
| 4) Characteristic Impedance | 40 Ω |
| 5) Inductance | 0.18 μH/ft, Nominal |

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ALPHA WIRE COMPANY
CUSTOMER PRODUCT SPECIFICATION

Part Number: 5382C	Issue: 11
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	Effective Date: 3/1/2008

- 6) Conductor DCR 7.2 Ω /1000ft @20°C, Nominal
- 7) OA Shield DCR 6.1 Ω /1000ft @20°C, Nominal

E. Other

- 1) Packaging
 - a) 1000 FT
 - b) 500 FT
 - c) 100 FT
 - d) Bulk(Made-to-order)

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3.2 Alpha 12-core cable part no. 5562C

ALPHA WIRE COMPANY CUSTOMER PRODUCT SPECIFICATION

Part Number: 5562C
Page 1 of 1 Pages

Issue: 10
Issue Date: 1/29/2008
Effective Date: 3/1/2008

A. Construction**Diameters (In)**

- 1) Component 1 12 X 1 COND
a) Conductor 20 (7/28) AWG TC
b) Insulation 0.010" Wall, Nom. PVC, Semi Rigid 0.058
(1) Color Code Alpha Wire Company Color Code E

Cond	Color	Cond	Color	Cond	Color
1	BLACK	5	YELLOW	9	SLATE
2	BROWN	6	GREEN	10	WHITE
3	RED	7	BLUE	11	WHITE/BLACK
4	ORANGE	8	VIOLET	12	WHITE/BROWN

- 2) Cable Assembly 12 Components Cabled
a) Twists: 4.4 Twists/foot (min)
b) Core Wrap Nonwoven Polyester Tape, 25% Overlap, Min.
3) Shield: Alum/Mylar Tape, 25% Overlap, Min.
a) Foil Direction Foil Facing In
b) Drain Wire 20 (7/28) AWG TC
4) Jacket 0.063" Wall, Nom., PVC 0.375 (0.393 Max.)
a) Color(s) Slate, Black, Yellow, Orange, Blue, Green, Red, Sand Beige, White
b) Ripcord 1 End 810 Denier Nylon
c) Print ALPHA WIRE-* P/N 5562C 12C 20 AWG

XTRAGUARD 1 XTREME PERFORMANCE FOR XTREME
ENVIRONMENTS - SHIELDED 105C (UL) TYPE CM OR AWM
2343 VW-1 --- LLXXXXXX CSA 105C TYPE CMG FT4
CE ROHS <SEQ FOOTAGE>

* = Factory Code

[Note: Product may have c(UL) or CSA markings depending upon plant of manufacture.]

B. Industry Approvals

- 1) UL
a) Component 1 AWM/STYLE 10002 105°C / 300 VRMS
b) Overall AWM/STYLE 2343 80°C
CM 105°C
VW-1
2) CSA International CMG 105°C
FT4
3) EU Directive 2002/95/EC(RoHS):
All materials used in the manufacture of this part are in compliance with EU Directive 2002/95/EU regarding the restriction of use of certain hazardous substances in electrical and electronic equipment. Consult Alpha Wire's web site for compliance Date of Manufacture.
4) California Proposition 65: The outer surface materials used in the manufacture of this part meet the requirements of California Proposition 65.
5) CE: LVD 73/23/EEC Amendment 93/68/EEC

C. Physical & Mechanical Properties

- 1) Temperature Range -20 to 105°C
2) Bend Radius 10X Cable Diameter
3) Pull Tension 114 Lbs, Maximum
4) Sunlight Resistance Yes

D. Electrical Properties

- (For Engineering purposes only)
1) Voltage Rating 300 VRMS
2) Capacitance 40 pF/ft @1 kHz, Nominal Conductor to Conductor
3) Ground Capacitance 72 pF/ft @1 kHz, Nominal
4) Inductance 0.17 µH/ft, Nominal

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CUSTOMER PRODUCT SPECIFICATION

Part Number: 5562C	Issue: 10
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- 5) Conductor DCR 10.3 Ω /1000ft @20°C, Nominal
- 6) OA Shield DCR 8.3 Ω /1000ft @20°C, Nominal

E. Other

- 1) Packaging
 - a) 1000 FT
 - b) 500 FT
 - c) 100 FT
 - d) Bulk(Made-to-order)

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