

% Carbon S9000 System Configuration Application Note

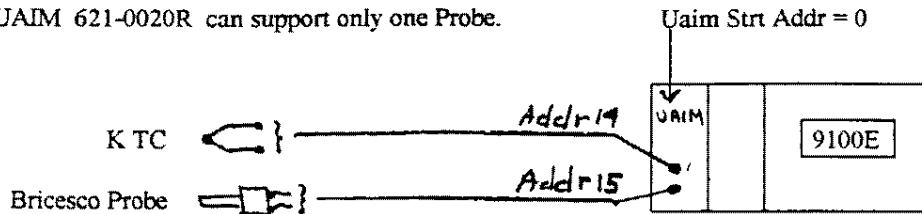
S9000 / Uaim 621-0020R / 9100e / System / EXAMPLE

Specific probe for this example is a BRICESCO Probe. Mfg. Spec. sheet see page 6 of 6
The UAIM configuration is known as CARB "D" Also same for Barber Coleman & MacDhui Probes.

Hardware & CCC Configuration must be completed for correct operation.

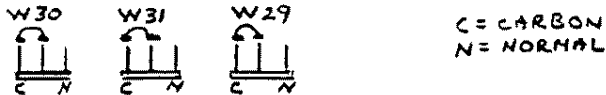
A. HARDWARE CONFIGURATION

1. Each UAIM 621-0020R can support only one Probe.



2. UAIM jumpers must be correctly placed.

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3. Mfg. probe spec. sheet (mv; temp; & % carbon)

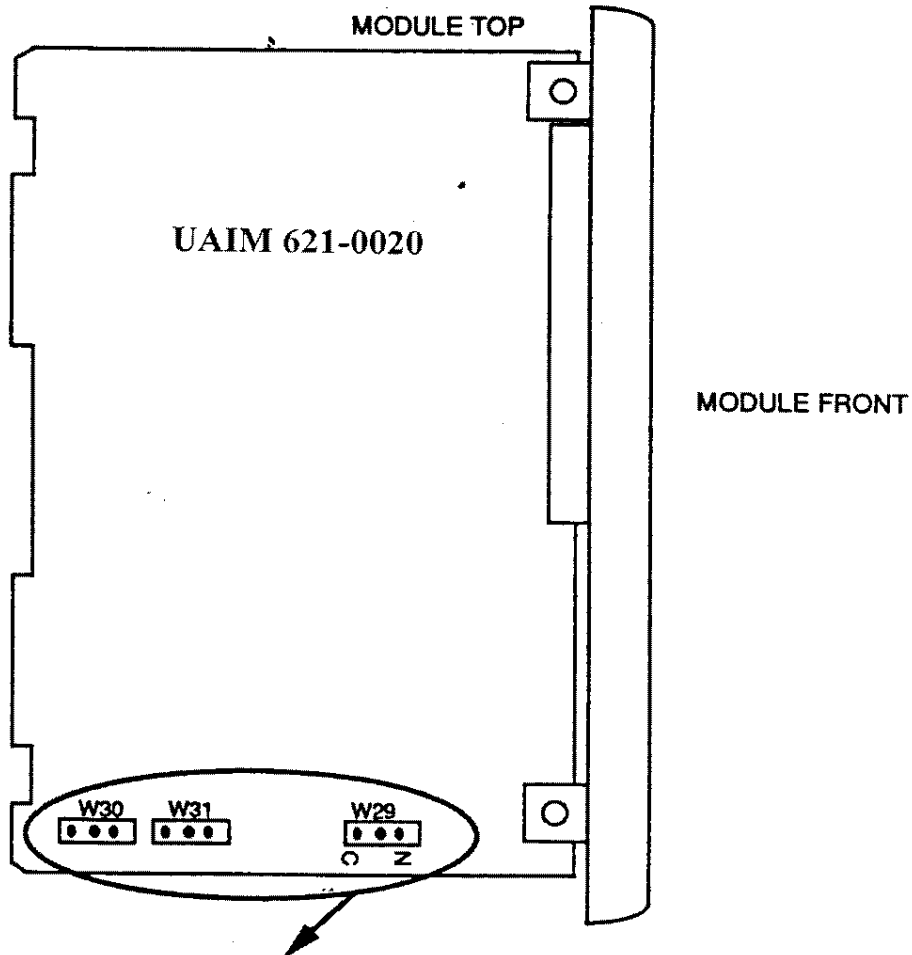
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This example : Bricesco probe

Known as CARB D for UAIM configuration addr 15

This specific probe : 23 % CO + CO2 in atmosphere.

A. Hardware configuration continued.



Input 16 as Carbon Probe:
 To define input 16 as a carbon probe, position the three jumpers in the Carbon (C) position, as shown below:

Also, be sure to connect a thermocouple or a pyrometer at input 15.
 Note that input 16 is the only input that can be a carbon probe.

Input 16 as Normal Input:^{a,b}
 To define input 16 as any other input, position the jumpers in the Normal (N) position, as shown below:

^a Factory setting

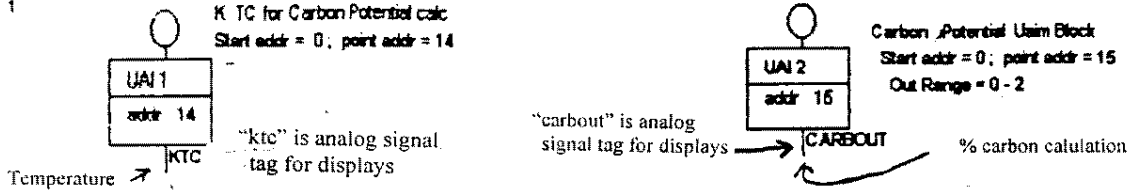
^b If you calibrate the UAIM, position W29–W31 in the Normal (N) position before calibration.

FIGURE 3—JUMPER SELECTION FOR INPUT 16

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B. CCC Configuration

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Control Block Configuration - CARBPOT
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Block Number: 1
Block Type: UAI

<u>Configuration Parameter</u>	<u>Value</u>
START ADR	0
INPUT ADR	14
I/O TYP	LOCAL
INPUT TYP	DIR SENSOR
CHAR	K TC
CHAR UNIT	DEG F
AI HI	2400.00
AI LO	0.00
SCAN RATE	1 SEC
SW FILTER	OFF
BURNOUT	DISABLED
CRD FSAFE	UPSCALE
PROCESSNG	PROBE TEMP ← MUST CONFIGURE (DON'T FORGET)!
BIAS/%CO	0.00
EMISSIV	0.00

Block Number: 2
Block Type: UAI

<u>Configuration Parameter</u>	<u>Value</u>
START ADR	0
INPUT ADR	15
I/O TYP	LOCAL
INPUT TYP	DIR SENSOR
CHAR	CARB D ← Choose Carb A, B, C, D, etc. (USE HELP SCREEN)
CHAR UNIT	NONE
AI HI	2.00
AI LO	0.00
SCAN RATE	1 SEC
SW FILTER	OFF
BURNOUT	DISABLED
CRD FSAFE	DOWNSCALE
PROCESSNG	%CARBON
BIAS/%CO	23.00 ← 23% FROM SPEC. SHEET OF PROBE
EMISSIV	0.00

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B. CCC CONFIGURATION ,Continued

Point Configuration - CARBPOT
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Analog Signal Points

CARBOUT Description: Carbon Potential uaim Blk out
 Security Areas: none, none, none
 Scan Time (seconds): 1:0
 Block /Num: UAI 2
 Output: OUT
 Decimal Place: 2 ← MAKE SURE 2 DEC. PTS. FOR DISPLAY!
 Engineering Units:
 Engineering Limit High: 2.000 } ← 0 to 2 % Carbon Range
 Engineering Limit Low: 0.000 }
 Communication Address: 2:1
 PC Spvsvr Alarm Enabled: No

2 Description: K tc for carbon potential calc
 Security Areas: none, none, none
 Scan Time (seconds): 1:0
 Block /Num: UAI 1
 Output: OUT
 Decimal Place: 0
 Engineering Units:
 Engineering Limit High: 2400
 Engineering Limit Low: 0.000
 Communication Address: 1:1
 PC Spvsvr Alarm Enabled: No

C. Configuration Summary

% Carbon Calculation
S9000 mod. System

% Carbon system Hardware and CCC Configuration:

A. Uaim Module 621-0029R setup: (Assume for this example start address of UAIM Mod is 0)

1. K TC connect to input # 15 (address 14)

2. Probe connect to output #16 (address 15)

Probe generates 0 to 1250 mv dc

3. Set Jumpers on UAIM

Jumpers w30,w31 & w29. Jumper pins "C" to "Center pin" (all three)

B. CCC Configuration:

1. Configure two UAIM blocks. One for TC and other for CARBON potential.

a. TC input addr 14.

b. CARBON addr 15

2. Example:

Parameter	UAIM TC config	UAIM CARB config
Start address	0	0
Input address	14	15
I/O type	Local	Local
Input type	Dir Sensor	Dir Sensor
Char	K TC	CARB D (Types A thru E)
Char Unit	Degf	None
AI Hi	2400	2.00
AI Lo	0	0.00
Scan Rate	1 Sec	1 Sec
Sw Filter	Off	Off
Burnout	Disabled	Disabled
CRD Fsafe	Upscale	Upscale
Processing	PROBE TEMP **	% CARBON
Bias/ % CO	0.00	23.00 (from spec sheet)
Emissiv	0.00	0.00

Notes: CARB A thru E definitions for Mfg.'s probe ...use "Help" on CCC screens for definitions.

The % CO entry comes from Mfg Spec sheets. This example was 23 % for a Bricesco Probe

** This entry usually gets forgotten... Must be as shown !

Bricesco

EXAMPLE:
CARB "D" = (SELECTION ON CONFIG.)
USE FOR: BARBER COLEMAN
MAC DHUI
BRICESCO
THIS PARTICULAR PROBE IS:
Approx 23% (CO + CO₂)
"BRICESCO" PROBE

OVER ALL TEMP RANGE:
800°C to 1090°C
(1472°F to 1999°F)

Millivolt Readings for Endothermic Atmospheres Generated from
Propane and Containing approximately 23% (CO + CO₂)

OXYGEN PROBE READINGS PROPANE GAS

TEMPERATURE DEG. C

$F = \frac{9}{5} C + 32$ $1000^{\circ}C = 1825^{\circ}F$
 $R = F + 460$

%C	810	820	830	840	850	860	870	880	890	900	910	920	930	940	950	960	970	980	990	1000	1010	1020	1030	1040	1050	1060	1070	1080	1090	
0.30			1054	1056	1057	1059	1060	1062	1063	1065	1067	1068	1070	1072	1074	1075	1077	1079	1081	1083	1085	1087	1089	1091	1093	1095	1097	1099	1101	
0.35	1058	1059	1060	1062	1063	1065	1067	1068	1070	1072	1074	1075	1077	1079	1081	1082	1084	1086	1088	1090	1092	1094	1096	1098	1100	1102	1104	1106	1108	
0.40	1062	1065	1067	1069	1070	1072	1074	1075	1077	1079	1081	1082	1084	1085	1087	1088	1090	1092	1094	1096	1098	1100	1102	1104	1106	1108	1110	1112	1114	
0.45	1071	1073	1075	1076	1078	1080	1082	1084	1085	1087	1089	1091	1093	1095	1097	1099	1101	1103	1105	1106	1108	1110	1112	1114	1116	1118	1120	1122	1124	
0.50	1075	1077	1080	1082	1084	1086	1088	1089	1091	1093	1095	1097	1100	1102	1104	1106	1108	1110	1112	1114	1116	1118	1120	1122	1124	1126	1128	1130	1132	
0.55	1080	1082	1085	1087	1089	1091	1093	1095	1097	1099	1101	1103	1105	1107	1110	1112	1114	1116	1118	1120	1122	1124	1126	1128	1130	1132	1134	1136	1138	
0.60	1085	1087	1090	1092	1094	1096	1098	1100	1102	1104	1106	1109	1111	1114	1116	1118	1120	1122	1124	1126	1128	1130	1132	1134	1136	1138	1140	1142	1144	
0.65	1090	1093	1095	1097	1099	1101	1103	1105	1107	1109	1111	1114	1116	1118	1120	1122	1124	1126	1128	1130	1132	1134	1136	1138	1140	1142	1144	1146	1148	
0.70	1095	1097	1099	1101	1103	1105	1107	1110	1112	1114	1116	1118	1120	1122	1124	1126	1128	1130	1132	1134	1136	1138	1140	1142	1144	1146	1148	1150	1152	
0.75	1099	1101	1103	1105	1107	1110	1112	1114	1116	1118	1120	1122	1124	1126	1128	1130	1132	1134	1136	1138	1140	1142	1144	1146	1148	1150	1152	1154	1156	
0.80	1103	1105	1107	1109	1111	1114	1116	1118	1120	1122	1124	1126	1128	1130	1132	1134	1136	1138	1140	1142	1144	1146	1148	1150	1152	1154	1156	1158	1160	
0.85	1107	1109	1111	1113	1115	1117	1120	1122	1124	1126	1128	1130	1132	1134	1136	1138	1140	1142	1144	1146	1148	1150	1152	1154	1156	1158	1160	1162	1164	
0.90	1111	1112	1115	1117	1119	1121	1123	1126	1128	1130	1133	1135	1138	1140	1142	1144	1146	1148	1150	1152	1154	1156	1158	1160	1162	1164	1166	1168	1170	
0.95	1115	1116	1118	1120	1123	1125	1127	1129	1132	1134	1137	1139	1141	1144	1146	1148	1150	1152	1154	1156	1158	1160	1162	1164	1166	1168	1170	1172	1174	
1.00	1119	1121	1124	1126	1128	1131	1133	1135	1138	1140	1143	1145	1147	1150	1152	1154	1156	1158	1160	1162	1164	1166	1168	1170	1172	1174	1176	1178	1180	
1.05			1125	1127	1129	1132	1134	1136	1139	1141	1144	1146	1149	1151	1154	1156	1158	1160	1162	1164	1166	1168	1170	1172	1174	1176	1178	1180	1182	
1.10					1132	1135	1137	1140	1142	1145	1147	1149	1151	1154	1156	1158	1160	1162	1164	1166	1168	1170	1172	1174	1176	1178	1180	1182	1184	
1.15					1138	1140	1143	1145	1148	1150	1153	1155	1158	1160	1162	1164	1166	1168	1170	1172	1174	1176	1178	1180	1182	1184	1186	1188	1190	
1.20					1146	1148	1151	1153	1156	1158	1161	1163	1166	1168	1170	1172	1174	1176	1178	1180	1182	1184	1186	1188	1190	1192	1194	1196	1198	1201