# BRODERSEN

DESCRIPTION

The UCL-08AI.J/K/R/S/T are expansion modules with direct interface for thermo coupled temperature sensors.
When using the modules in connection with Series 2000 master or slave modules, the master or slave module will automatically linearise the measuring values.
The module includes cold junction compensation circuit.

VERSIONS/ORDERING CODES

Type		UCL- 08 AI. K1
Expansion module	UCL	
Number of inputs		
8 inputs	08	
Input type		
Analog input	AI	
Sensor/input range		
Fe-CuNi (J):		
-50 - 1200°C	J1	
NiCr-Ni (K)		
-50 - 1350°C	K1	
0- 600°C	K2*	
PtRh-Pt 13% (R)		
-50 - 1750°C	R1	
PtRh-Pt 10% (S)		
-50 - 1750°C	S1	
Cu-Cu-Ni (T)		
0- 300°C	T1*	

* See note 5
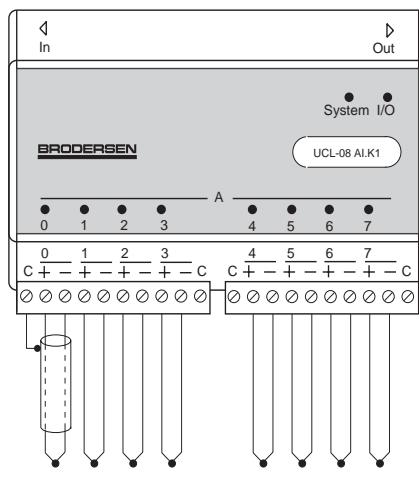
TECHNICAL DATA

Number of inputs:	8 analog channels (multiplexed), note 1
Input configuration:	Differential (+/-)
Indicators:	One (red) for each channel indicating that the input is active. (note 3).
Input range/sensor type:	
Fe-CuNi (J):	-50 - 1200°C
NiCr-Ni (K):	-50 - 1350°C
PtRh-Pt 13% (R):	-50 - 1750°C
PtRh-Pt 10% (S):	-50 - 1750°C
Cu-CuNi (T):	0- 300°C
Resolution:	12 bit
Accuracy:	Better than 0.5% of FSR. K2+T1: Better than 1,5% of FSR.
Linearity:	Better than 0.1% of FSR.
Conversion/settling time:	Max. 60ms per channel. Max. 0.5s.
Temperature stability:	Better than ± 100ppm/°C (typical).
Common mode rejection (50/60Hz), note 4**:**	
J1/K1:	> 60dB
R1/S1/K2:	> 50dB
T1:	> 45dB
Common mode input voltage:	max. ±10V.
Absolute maximum input voltage:	±12V, note 3.
Cold point compensation:	Better than +/-0.06°C per °C.
EMC:	EN50081-1, EN50082-2.
Isolation (input to electronics)**:**	500V DC (note 4).
Module current consumption:	Max. 200mA.

WIRING DIAGRAM

CIRCUIT CONFIGURATION
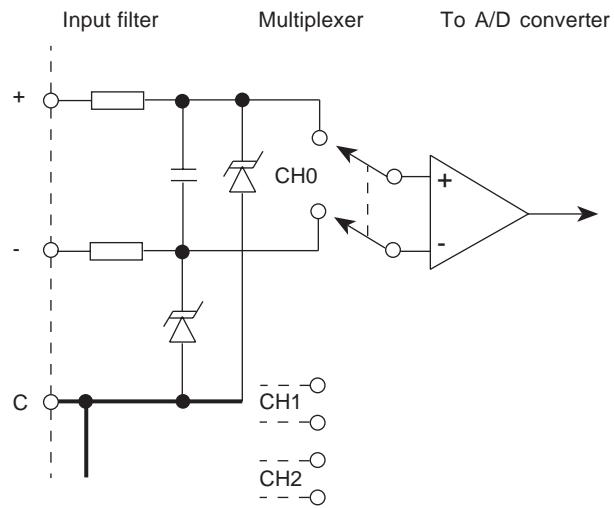
Analog input
Analog input, 8 ch. thermo coupled sensors UCL-08AI.J/K/R/S/T

CONVERSION TABLE

Temperature	Sensor type / SYSTEM 2000 database value				
[°C]	J	K1	K2	R/S	T1
<-50	0	0	0	0	0
-50	0	0	0	0	0
-25	82	73	0	57	0
0	164	146	0	114	0
25	246	219	171	171	341
50	328	293	341	228	683
100	491	439	683	341	1365
150	655	585	1024	455	2048
200	819	731	1365	569	2730
300	1147	1024	2048	796	4095
400	1474	1316	2730	1024	4095
500	1802	1609	3413	1251	4095
600	2129	1901	4095	1479	4095
700	2457	2194	4095	1706	4095
800	2785	2486	4095	1934	4095
1000	3440	3071	4095	2389	4095
1200	4095	3656	4095	2844	4095
1350	4095	4095	4095	3185	4095
1500	4095	4095	4095	3526	4095
1750	4095	4095	4095	4095	4095
>1750	4095	4095	4095	4095	4095
Resolution [°C]	0,30525	0,34188	0,14652	0,43956	0,07326

NOTES/REMARKS

1) Only one channel is active at a time. The Series 2000 slave or master module automatically multiplexes the 8 channels and delivers the 8 measuring values after linearisation to the Series 2000 database as 8 separate integers (0-4095).

2) The 8 inputs are not isolated from each other, but as a group isolated from other modules internal circuit.

3) Voltages exceeding the maximum voltage may **CAUSE PERMA-NENT DAMAGE** to the module.

4) As thermo couples deliver very small signals (uV), cables should be kept short and far away from other electrical instal lations especially circuits with high current or voltage or circuits known to produce electrical noise.

5) Ranges are only available with newer UCB-xx modules with B-CONW facilities.
Actual temperature tables are available on the IOTOOL32Pro CD for download into the modules. In order to reject noise and hum, the UCB/UCR modules integrate and average the input signal.
NOTE: The Remote Master module (RM) do NOT have this function!