

OCS-I/O - HE959ADU100

ANALOG INPUT MODULE

1 TECHNICAL SPECIFICATIONS

1.1 General Specifications

Required Power (Steady State)	96mA @ 5V
Analog Inputs	4
Relative Humidity	5-95% non-condensing
Port Wiring	16-24 AWG / 0.2-1.4mm ²
Analog Input Wiring	16-24 AWG / 0.2-1.4mm ²
Operating Air Temp	-40°C (-40°F) to 60°C (140°F)
Storage Temp	-40°C (-40°F) to 85°C (185°F)
Weight	2.9 oz
Dimensions	76.5mm x 124.5mm x 19mm 3" x 4.9" x 0.75"
Certifications (UL/CE)	North America: https://hornerautomation.com/certifications/ Europe: https://www.hornerautomation.eu/support/certifications-2



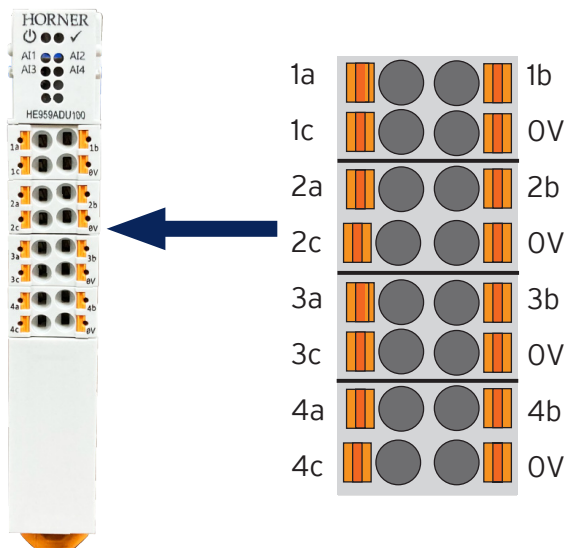
1.2 Analog Inputs

Number of Channels	4
Input Ranges	0-20mA, 4-20mA, 0-10V, 0-60mV
Safe Input Voltage Range	-30V to +30V
Nominal Resolution	16 Bit
Accuracy	0.2% of full scale
Thermocouple	J / K / T / N / E / R / S / B
Converter Type	16-Bit ADC
RTD Excitation Current	0.250mA
Thermocouple supported & Temperature Ranges	PT100 : -200°C to 500 °C PT1000: -50 °C to 200 °C
Data Conversion for RTD and Thermocouples	10 counts/degree Celsius. For example, if the input temperature is 123.4, then count will be 1234.

Cscape Configuration - See MAN1175 for the HE959CNX116.

	Input Type:	Range:	Accuracy:
Sensor Range and Accuracy	TC J (Ungrounded)	-120 to 1000°C / -184 to 1832°F	+/-0.2% of full scale +/-1°C
	TC K (Ungrounded)	-130 to 1372°C / -202 to 2501.6°F	+/-0.2% of full scale +/-1°C
	TC T (Ungrounded)	-130 to 400°C / -202 to 752°F	+/-0.2% of full scale +/-1°C
	TC E (Ungrounded)	-130 to 780°C / -202 to 1436°F	+/-0.2% of full scale +/-1°C
	TC N (Ungrounded)	-130 to 1300°C / -202 to 2372°F	+/-0.2% of full scale +/-1°C
	TC R, S (Ungrounded)	20 to 1768°C / 68 to 3214.4°F	+/-0.2% of full scale +/-3°C
	TC B (Ungrounded)	500 to 1820°C / 212 to 3308°F Functions below 500°C with reduced accuracy	+/-0.2% of full scale +/-3°C

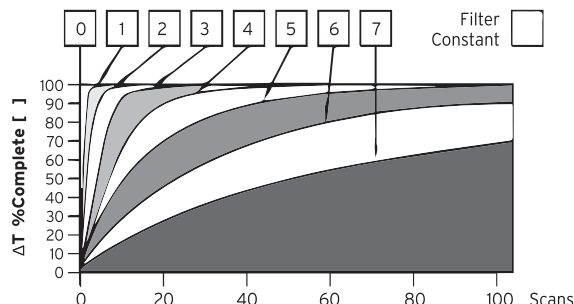
2 WIRING



Analog Input Information

Raw input values are found in the registers as Integer-type data with a range from 0 - 32000.

Analog inputs may be filtered digitally with the Filter Constant found in the Cscape Hardware Configuration for Analog Inputs. Valid filter values are 0 - 7 and act according to the following chart.



Data Values	
INPUT MODE:	DATA FORMAT, 16-bit INT:
0-20mA, 4-20mA	0-32000
RTD	20 Counts/ °C

Analog Input Wiring



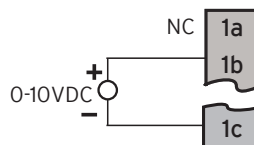
WARNING: Do not put any voltage on the 1A, 2A, 3A, or 4A port. Doing so will damage the board.



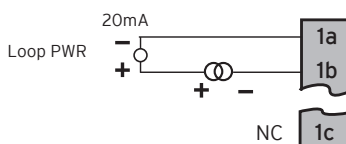
Use 75°C copper conductors only.

SIGNAL	LABEL	DESCRIPTION	SIGNAL	LABEL
AI1a	1a	Universal Analog Input "1a"	A1b	1b
A1c	1c		0V	Common
AI2a	2a	Universal Analog Input "2a"	A2b	2b
A2c	1c		0V	Common
AI3a	3a	Universal Analog Input "3a"	A3b	3b
A3c	3c		0V	Common
AI4a	4a	Universal Analog Input "4a"	A4b	4b
A4c	4c		0V	Common

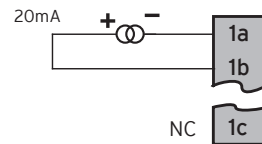
0-10V Analog In



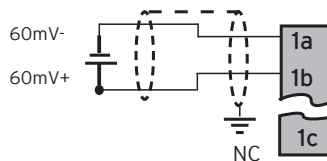
20mA Analog In - Not Self-Powered



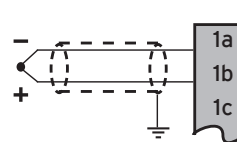
20mA Analog In - Self-Powered



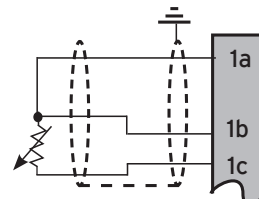
mV In



Thermocouple In



RTD In



2 DIAGNOSTIC LED INDICATORS

Status	OK LED
OFF	Power Up
ON	IO Module Running Normally
BLINK (1Hz)	On of the following errors: a. Communication between IO Base and IO Module (IO ERROR) b. No Configuration c. OCS idle mode
LED Status for Individual I/O Channels	
A11	Analog Input - 1 Active*
A12	Analog Input - 2 Active*
A13	Analog Input - 3 Active*
A14	Analog Input - 4 Active*

NOTE: LED will be in OFF state if the channel is disabled from Cscape configuration.

***NOTE:**

- LED will be ON during Normal operations.
- Analog Input channel configured as ma, Volts or mv LED will be OFF till the input signal is 0+0.2%
- Analog Input channel configured as PT100, PT1000 LED will be OFF if open circuit is detected, LED will be ON during Normal operation
- Analog Input channel configured as Thermocouple Input LED will be ON if the channel is Enabled.

3 SAFETY

3.1 - WARNINGS



WARNING - If the equipment is used in a manner not specified by Horner APG, the protection provided by the equipment may be impaired.

WARNING - EXPLOSION HAZARD - Do not disconnect equipment unless power has been removed or the area is known to be non-hazardous

AVERTISSEMENT - RISQUE D'EXPLOSION -Ne débranchez pas l'équipement tant que l'alimentation n'a pas été coupée ou que la zone n'est pas dangereuse.

WARNING - EXPLOSION HAZARD - Substitution of any component may impair suitability for Class I, Division 2

AVERTISSEMENT - RISQUE D'EXPLOSION -Le remplacement de tout composant peut nuire à la compatibilité avec la classe I, division 2

WARNING - POSSIBLE EQUIPMENT DAMAGE - Remove power from the I/O Base and any peripheral equipment connected to this local system before adding or replacing this or any module.

AVERTISSEMENT - DOMMAGES POSSIBLES À L'ÉQUIPEMENT - Coupez l'alimentation de la base d'E / S et de tout équipement périphérique connecté à ce système local avant d'ajouter ou de remplacer ce module ou tout autre module.

3.2 - SAFETY

- All applicable codes and standards should be followed in the installation of this product.
- Shielded, twisted-pair wiring should be used for best performance.
- Shields should be grounded at one end only, preferably at the end providing the best noise shunting.
- Use the following wire type or equivalent: Belden 8441.

4 PART NUMBER

HE959ADU100

5 TECHNICAL SUPPORT

For assistance and manual updates, contact Technical Support at the following locations:

North America

(317) 916-4274

www.hornerautomation.com

APGUSATechSupport@heapg.com

Europe

(+) 353-21-4321-266

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