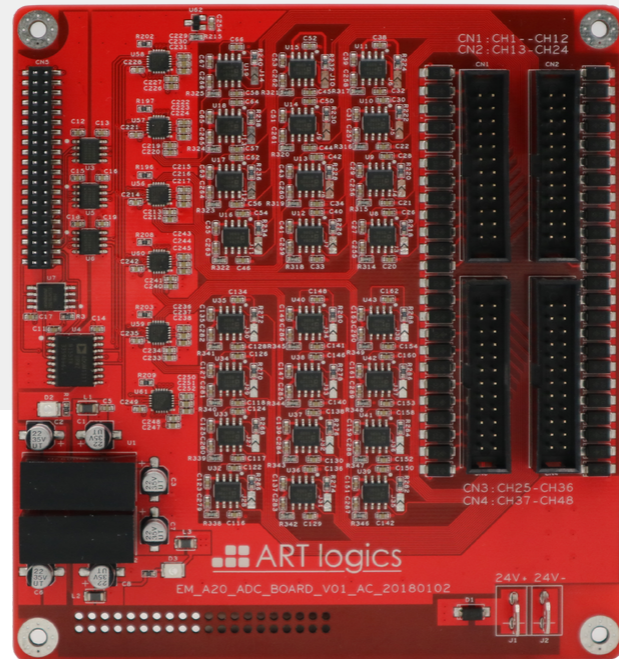


EM – A20: Input Voltage Measurement

OVERVIEW

The EM-A20 board provides massive extra resources to expand the Voltage measurement ability of TCU100.

These Voltage input includes 48 analogue input from -40V to +40V.



KEY FEATURES

- 48 channels differential & protected (divided in 4 groups)
- Connection to the FPGA by SPI bus
- EEPROM to store the calibration
- Isolated power and SPI

LIST OF ACCESSORIES

- 4 Connectors 24 Ways DIP Type
- 2 Fastons
- 4 Plastic protections for faston connector
- 2 flat connectors 40 ways
- 2 CONN-FC, 2X20 pins, FEMALE, 2.54MM

DIMENSION

L*W = 175mm x 240mm

OPERATING TEMPERATURE

-0 °C ~ +65 °C

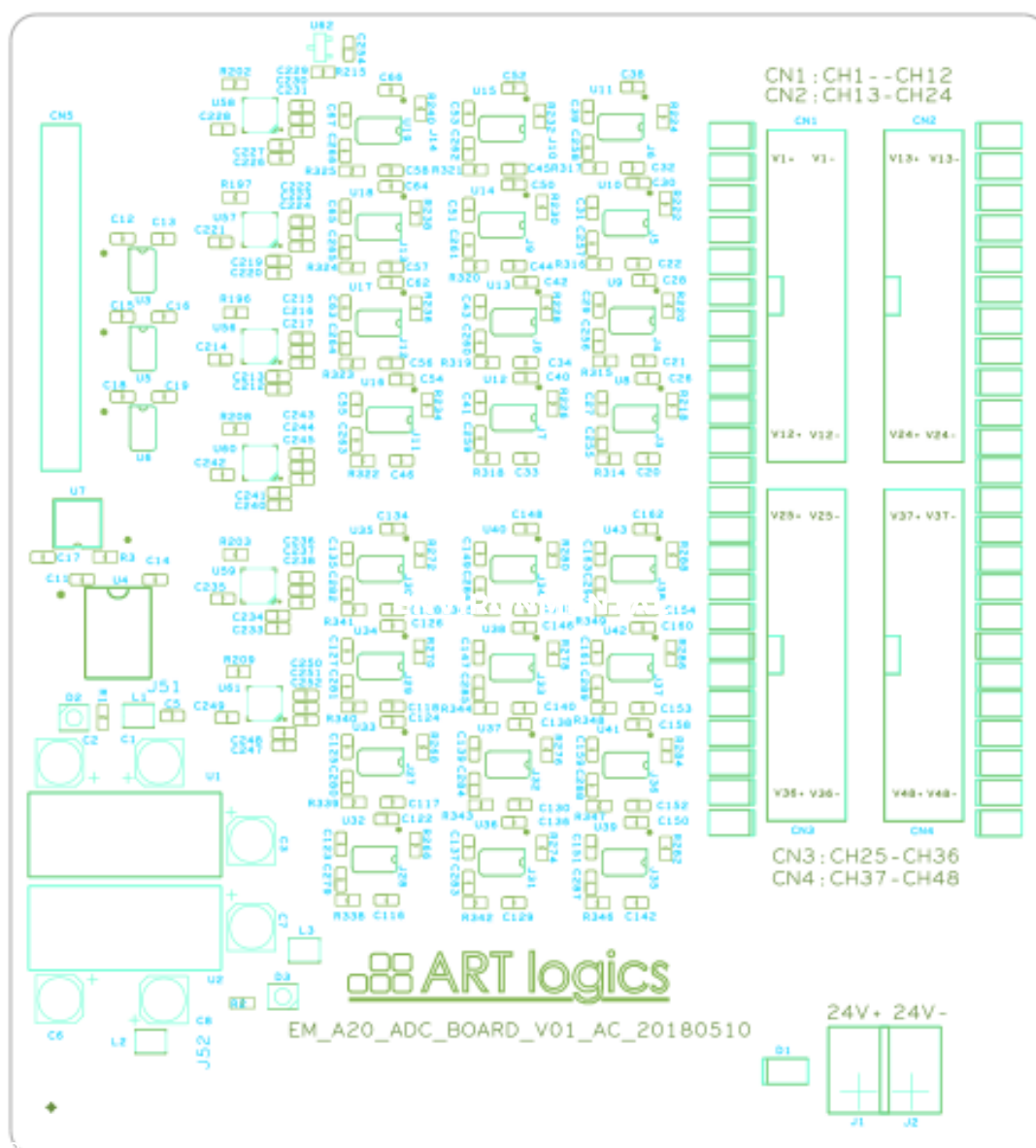
POWER REQUIREMENT

DC Power Supply:
24VDC, 150 mA

DETAILED SPECIFICATIONS:

Board Parameter	Value	Unit
Analog to Digital Converter (ADC)	AD7689BCPZ	
Resolution	16 bits	
Measurement Range (Normal / Max)	+/-20V +/-40V	V
Accuracy (base on full range)	0.03	%
Input Impedance(Differential/Common)	220K/55K	Ω
Input Voltage Range(Differential & Common)	+/- 120	V
Board current consumption	139	mA
Power on peak current consumption	150	mA
Jumpers Connected Convert Value(AC Version)	Vout = -40 - 40	V
Jumpers Disconnected Convert Value(AC Version)	Vout = -20 - 20	V
Jumpers Connected Convert Value(AB Version)	Vout = -20 - 20	V
Jumpers Disconnected Convert Value(AB Version)	Vout = -40 - 40	V

CONNECTION:



The EM-A20 consists of 6 ADC, each ADC control 8* voltage input.

CN5	Connection to FPGA Board
J1, J2	J1: +24VDC, J2: GND
CN1	Vin from 1-12
CN2	Vin from 13-24
CN3	Vin from 25-36
CN4	Vin from 37-48

CONNECTION TABLE

Table1 – ADC 1 Connection List

Pin Number	Pin Name	Pin Number	Pin Name
CN1.1	VIN1+	CN1.2	VIN1-
CN1.3	VIN2+	CN1.4	VIN2-
CN1.5	VIN3+	CN1.6	VIN3-
CN1.7	VIN4+	CN1.8	VIN4-
CN1.9	VIN5+	CN1.10	VIN5-
CN1.11	VIN6+	CN1.12	VIN6-
CN1.13	VIN7+	CN1.14	VIN7-
CN1.15	VIN8+	CN1.16	VIN8-

Table2 – ADC 2 Connection List

Pin Number	Pin Name	Pin Number	Pin Name
CN1.17	VIN9+	CN1.18	VIN9-
CN1.19	VIN10+	CN1.20	VIN10-
CN1.21	VIN11+	CN1.22	VIN11-
CN1.23	VIN12+	CN1.24	VIN12-
CN2.1	VIN13+	CN2.2	VIN13-
CN2.3	VIN14+	CN2.4	VIN14-
CN2.5	VIN15+	CN2.6	VIN15-
CN2.7	VIN16+	CN2.8	VIN16-

CONNECTION TABLE

Table1 – ADC 1 Connection List

Pin Number	Pin Name	Pin Number	Pin Name
CN1.1	VIN1+	CN1.2	VIN1-
CN1.3	VIN2+	CN1.4	VIN2-
CN1.5	VIN3+	CN1.6	VIN3-
CN1.7	VIN4+	CN1.8	VIN4-
CN1.9	VIN5+	CN1.10	VIN5-
CN1.11	VIN6+	CN1.12	VIN6-
CN1.13	VIN7+	CN1.14	VIN7-
CN1.15	VIN8+	CN1.16	VIN8-

Table2 – ADC 2 Connection List

Pin Number	Pin Name	Pin Number	Pin Name
CN1.17	VIN9+	CN1.18	VIN9-
CN1.19	VIN10+	CN1.20	VIN10-
CN1.21	VIN11+	CN1.22	VIN11-
CN1.23	VIN12+	CN1.24	VIN12-
CN2.1	VIN13+	CN2.2	VIN13-
CN2.3	VIN14+	CN2.4	VIN14-
CN2.5	VIN15+	CN2.6	VIN15-
CN2.7	VIN16+	CN2.8	VIN16-

CONNECTION TABLE

Table3 – ADC 3 Connection List

Pin Number	Pin Name	Pin Number	Pin Name
CN2.9	VIN17+	CN2.10	VIN17-
CN2.11	VIN18+	CN2.12	VIN18-
CN2.13	VIN19+	CN2.14	VIN19-
CN2.15	VIN20+	CN2.16	VIN20-
CN2.17	VIN21+	CN2.18	VIN21-
CN2.19	VIN22+	CN2.20	VIN22-
CN2.21	VIN23+	CN2.22	VIN23-
CN2.23	VIN24+	CN2.24	VIN24-

Table4 – ADC 4 Connection List

Pin Number	Pin Name	Pin Number	Pin Name
CN3.1	VIN25+	CN3.2	VIN25-
CN3.3	VIN26+	CN3.4	VIN26-
CN3.5	VIN27+	CN3.6	VIN27-
CN3.7	VIN28+	CN3.8	VIN28-
CN3.9	VIN29+	CN3.10	VIN29-
CN3.11	VIN30+	CN3.12	VIN30-
CN3.13	VIN31+	CN3.14	VIN31-
CN3.15	VIN32+	CN3.16	VIN32-

CONNECTION TABLE

Table5 – ADC 5 Connection List

Pin Number	Pin Name	Pin Number	Pin Name
CN3.17	VIN33+	CN3.18	VIN33-
CN3.19	VIN34+	CN3.20	VIN34-
CN3.21	VIN35+	CN3.22	VIN35-
CN3.23	VIN36+	CN3.24	VIN36
CN4.1	VIN37+	CN4.2	VIN37-
CN4.3	VIN38+	CN4.4	VIN38-
CN4.5	VIN39+	CN4.6	VIN39-
CN4.7	VIN40+	CN4.8	VIN40-

Table6 – ADC 6 Connection List

Pin Number	Pin Name	Pin Number	Pin Name
CN4.9	VIN41+	CN4.10	VIN41-
CN4.11	VIN42+	CN4.12	VIN42-
CN4.13	VIN43+	CN4.14	VIN43-
CN4.15	VIN44+	CN4.16	VIN44-
CN4.17	VIN45+	CN4.18	VIN45-
CN4.19	VIN46+	CN4.20	VIN46-
CN4.21	VIN47+	CN4.22	VIN47-
CN4.23	VIN48+	CN4.24	VIN48-

Table7 - Miscellaneous Connection

Pin Number	Pin Name	Pin Number	Pin Name	Pin Number	Pin Name
J1	+24V	J2	+24_GND	CN5	FPGA Connector

ENVIRONMENTAL

The EM – A20: Multifunction Unit is intended for indoor use only but may be used outdoors if installed in a suitable enclosure. Refer to the manual for more information about meeting these specifications

Operating temperature

0 °C --+65 °C

Storage temperature

-40 °C--+85 °C

Ingress protection (IP code)

None

Operating humidity

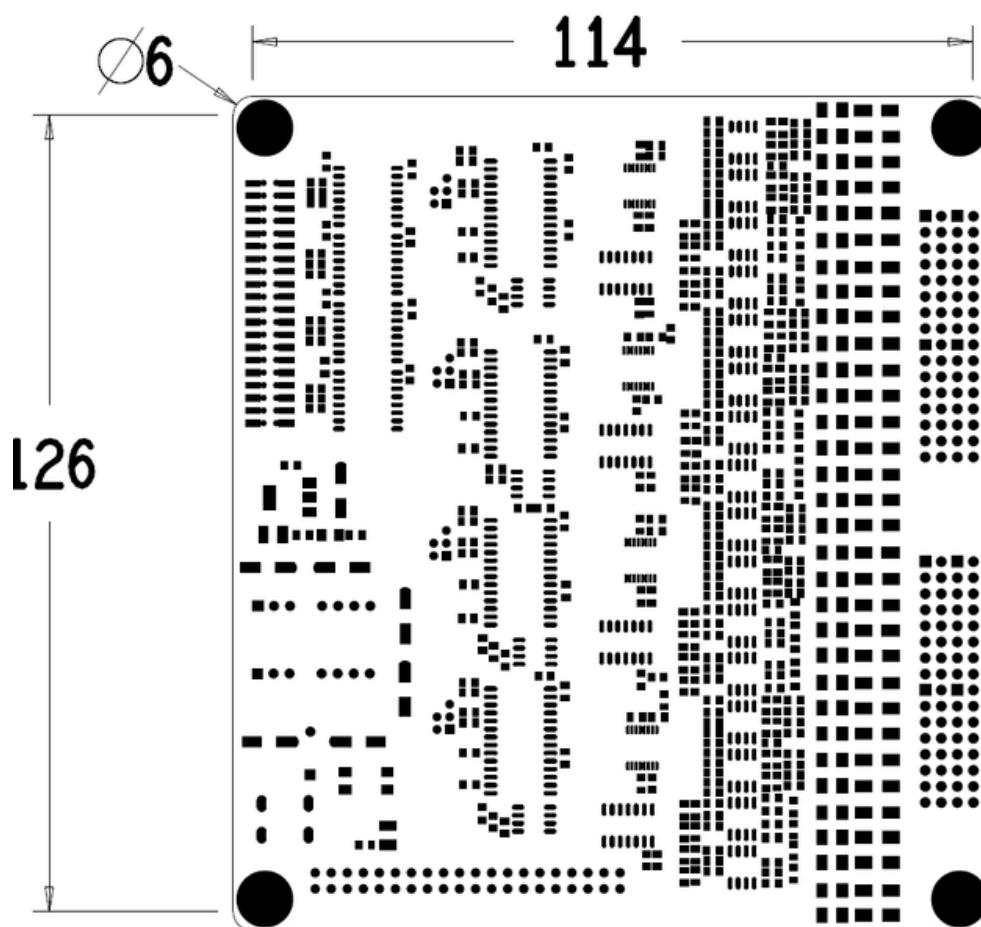
10-90% RH non condensing

Storage humidity

5-95% RH non condensing

PHYSICAL

L*W = 126mm*114mm



SUPPORT AND SERVICE

Calibration

ART logics measurement hardware is calibrated to ensure measurement accuracy and verify that the device meets its published specifications. To ensure the ongoing accuracy of the measurement hardware, ART logics offers basic or detailed recalibration service.



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