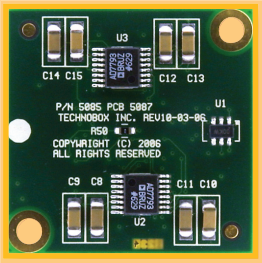
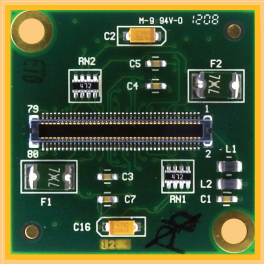
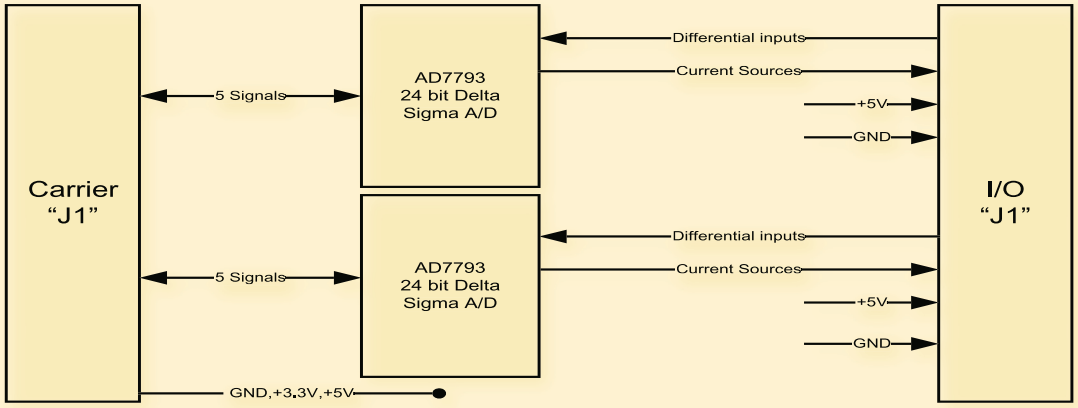
Conversion Module

2-channel, High-resolution, Low-speed A/D Converter





5085



- Analog input high resolution low speed ECM
- Bridge circuits, Thermocouples, RTD and voltage measurements
- Analog Devices 24 bit AD7793 ADCs
- Instrumentation Amp gains of 1, 2, 4, 8, 16, 32, 64 and 128
- Differential or ground referenced inputs
- Input impedance 100Meg buffered mode
- Input impedance 2.5Meg un-buffered mode
- 4.17 to 500 samples per second, programmable
- 159Hz low pass analog input filters
- 80dB 60/50Hz rejection
- 100dB common mode rejection
- Internal 1.17V reference
- Fused +5V drive output
- Selectable 10uA, 210uA or 1mA current source
- On board serial identification circuit
- Industrial temperature range
- RoHS compliant
- Patent pending

Specifications

Temperature (Operating): -40 to +85 degrees C

Temperature (Storage): -55 to +100 degrees C

Altitude: Not Specified or Characterized. Typical similar equipment is at 15,000 ft.

Humidity (Operating/Storage): 5% to 90% non-condensing.

Vibration: Not specified or Characterized.

Shock: Not specified or Characterized.

MTBF: Available on request.

Weight: 3 grams.

Power: TBD

Ordering Information

5085: 2-channel, High-resolution, Low-speed Delta-Sigma A/D Converter

Technobox, inc.

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The Technobox P/N 5085 ECM module provides two channels of 24 bit A/D conversion suitable for high resolution low speed applications.

For bridge applications each channel provides a fused +5 Volt or a current source drive. The current source is selectable for 10uA, 210uA or 1mA. A differential reference input allow use with 6 wire bridges. For voltage measurement applications the internal 1.17V reference, provides a 0 to 1.17V input range. An on chip Instrumentation Amp with gains of 1, 2, 4, 8, 16, 32, 64 and 128 allows use with low level signals.

For temperature measurement application an on chip bias network simplifies use with thermocouples.

Input impedances are 100Meg ohms in buffered mode and 2.5Meg ohms in un-buffered mode, which is software selectable. Inputs can be ground referenced or differential, but must be positive voltages.

Programmable from 4.17 to 500 samples per second. With 159Hz low pass analog input filters, 80dB 60/50Hz rejection and 100dB common mode rejection.

Usage P/N 5085

Resistive temperature device circuit, current source IOUT2 is used to drive an RTD creating a voltage on AIN1(+) and AIN(-). Reference resistance REF creates a voltage on REFIN(+) and REFIN(-). Since both the RTD and REF voltage track the current source this arraignment will reduce error due to current source fluctuations. Select the reference resistance for low drift or keep at a constant temperature.

Thermocouple circuit, uses a built in circuit on AIN1 to bias the small thermocouple voltages in the common mode of the A/D converter. rangeit has a special vice circuit,

The current source IOUT2 is used to drive an RTD creating a voltage on AIN2(+) and AIN2(-). Reference resistance REF creates a voltage on REFIN(+) and REFIN(-). Since both the RTD and REF voltage track the current source this arraignment will reduce error due to current source fluctuations. Select the reference resistance for low drift or keep at a constant temperature.

The RTD sub-circuit measures cold junction temperature to compensate the thermocouple readings..

Bridge circuit, uses the 5V and GND available as an IO signal to power the bridge. This is a six wire configuration where the reference is created by the bridge.

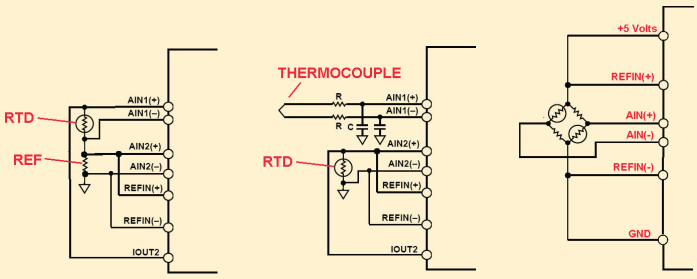


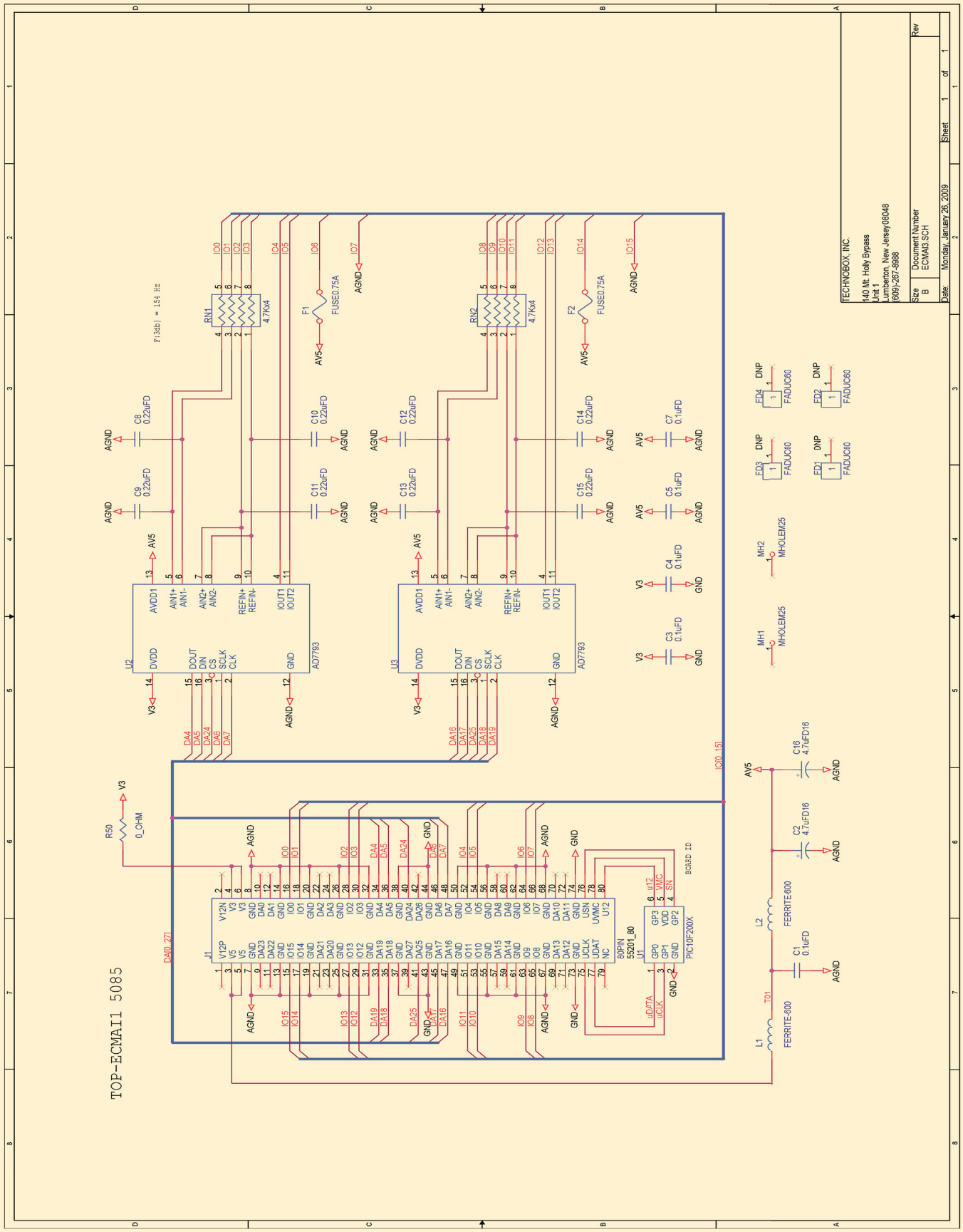
Figure 1 RTD, Thermocouple, and bridge applications

User IO	J1 Pin number	J1 Direction	Description
IO0	16	IN	U2 IN1+
IO1	18	IN	U2 IN1-
IO2	28	IN	U2 IN2+/Ref+
IO3	30	IN	U2 IN2-/Ref-
IO4	52	OUTPUT	U2 Current source 1
IO5	54	OUTPUT	U2 Current source 2
IO6	64	POWER	+5V source 0.75Amp fused
IO7	66	POWER	GND
IO8	65	IN	U3 IN1+
IO9	63	IN	U3 IN1-
IO10	53	IN	U3 IN2+/Ref+
IO11	51	IN	U3 IN2-/Ref-
IO12	29	OUTPUT	U3 Current source 1
IO13	27	OUTPUT	U3 Current source 2
IO14	17	POWER	+5V source 0.75Amp fused
IO15	15	POWER	GND

Table 1 User IO signal connections

Carrier Data	J1 Pin number	J1Direction	Description
DA0	10	N/C	
DA1	12	N/C	
DA2	22	N/C	
DA3	24	N/C	
DA4	34	OUTPUT	U2 serial data out
DA5	36	INPUT	U2 serial data in
DA6	46	INPUT	U2 serial data clock
DA7	48	BIDIR	U2 conversion clock , in/out depends on configuration
DA8	58	N/C	No connection
DA9	60	N/C	No connection
DA10	70	N/C	No connection
DA11	72	N/C	No connection
DA12	71	N/C	No connection
DA13	69	N/C	No connection
DA14	59	N/C	No connection
DA15	57	N/C	No connection
DA16	47	OUTPUT	U3 serial data out
DA17	45	INPUT	U3 serial data in
DA18	35	INPUT	U3 serial data clock
DA19	33	BIDIR	U3 conversion clock , in/out depends on configuration
DA20	23	N/C	No connection
DA21	21	N/C	No connection
DA22	11	N/C	No connection
DA23	9	N/C	No connection
DA24	40	INPUT	U2 Chip select when low
DA25	41	INPUT	U3 Chip select when low
DA26	42	N/C	No connection
DA27	39	N/C	No connection

Table 2 Carrier DA signal connections



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