Officina Turini

User Manual

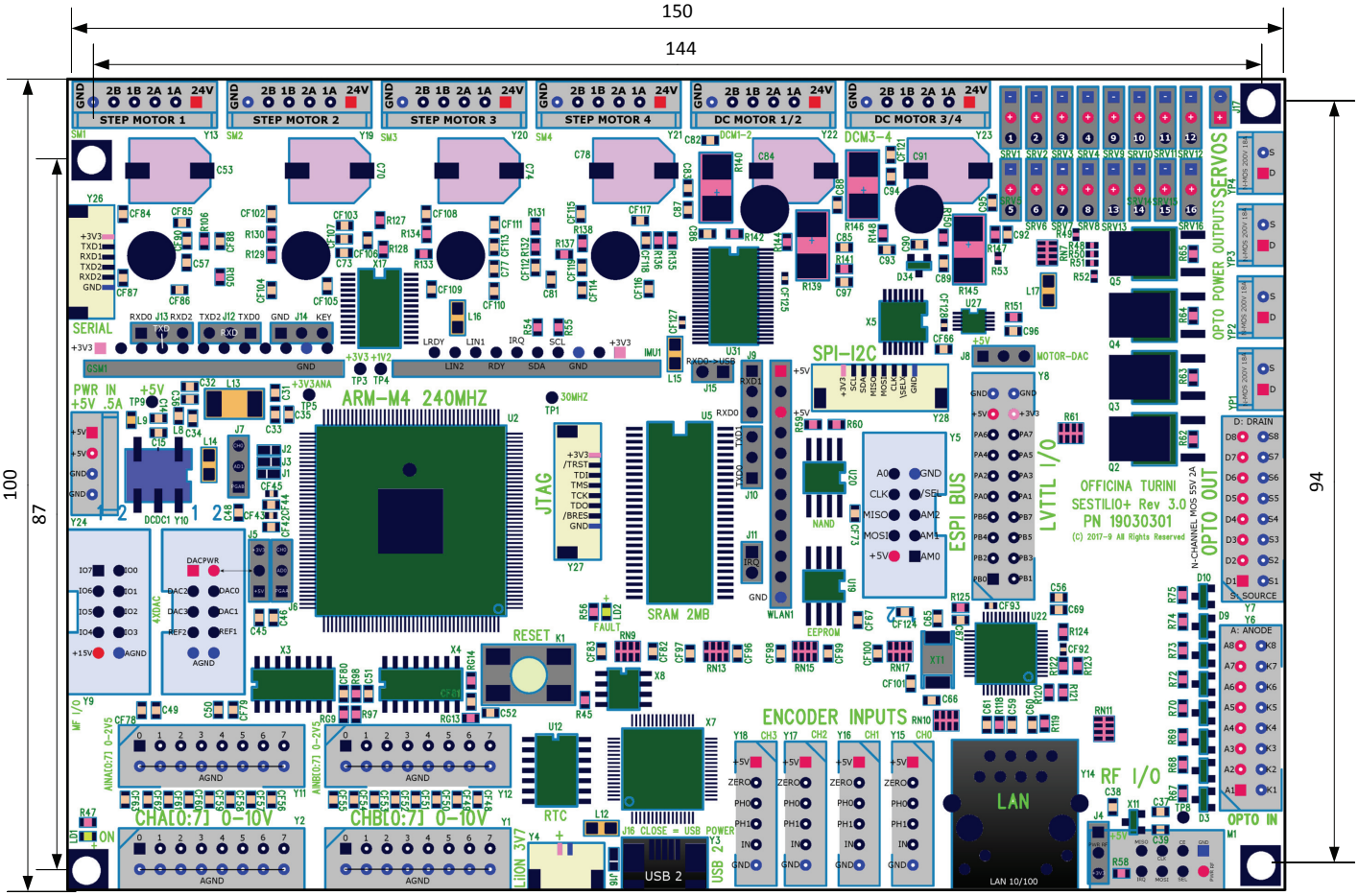
SESTILIO-PLUS

Sestilio plus is an SBC based on the ADSP-CM408F ideal for measuring analog inputs and for motor control. For communication it uses a USB 2 connection but it has connectors where it is possible to use BlueTooth interfaces or WiFi. It is certainly a complete acquisition system but also an excellent solution for automation and robotics applications.
Is a system ready to use, simply you must a DC source and with our free development system (GNU Toolchain) or with Analog Device CROSSCORE you can start the development.

FEATURES

- Core ADSP-CM408F @ 240MHz, FLASH 2 Mbyte, RAM 384KByte 2x 16bit A/D @ 2.5Ms
- 2 Mbyte optional static RAM
- 16 analog input channel 0-10V with PGA, 14 analog input channel 0-2.5V with fixed gain (optional)
- 4x 16bit DAC 0-5V
- 4x Microstepping driver 3.6A 24VDC @ 25600 steps/revolution
- 4x DC motor driver 3.6A 24VDC with current control e encoder input
- 16x Servo motor drivers or PWM outputs
- Opto-coupled I/O, 8x OUT 55V 2A, 4x 200V 18A, 8x IN. Also is available 16x bidirectional LVTTL port.
- I/O on USB2, SERIAL, SPI, I2C, WiFi, BlueTooth
- Power supply 5VDC 0.5A
- Step-up +15V for analog inputs (optional)

MECHANICAL DIMENSION (mm)



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CONNECTORS

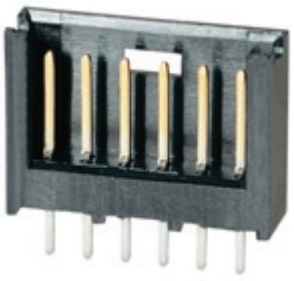
MAIN POWER SUPPLY Y24 (Through Hole)		
PIN	**SIGNAL**	**DESCRIPTION**
1	**+5V**	Power supply +5V .5A Max 50mVpp ripple
2	**+5V**	Power supply +5V .5A Max 50mVpp ripple
3	**GND**	Power supply return
4	**GND**	Power supply return

DC-MOTORS Y22-Y23 (Through Hole)		
PIN	**SIGNAL**	**DESCRIPTION**
1	**VSS**	Power supply 8:24V Max 5.6A
2	**OUT1A**	To DC motor 1 coil
3	**OUT2A**	To DC motor 1 coil
4	**OUT2B**	To DC motor 2 coil
5	**OUT1B**	To DC motor 2 coil
6	**VSSRET**	Power supply return

STEP-MOTORS Y13-Y19-Y20-Y21 (Through Hole)		
PIN	**SIGNAL**	**DESCRIPTION**
1	**VSS**	Power supply 8:24V Max 5.6A
2	**OUT1A**	Step motor PHASE A
3	**OUT2A**	Step motor PHASE A return
4	**OUT1B**	Step motor PHASE B
5	**OUT2B**	Step motor PHASE B return
6	**VSSRET**	Power supply return

ROTARY ENCODERS INPUTS Y15-Y16-Y17-Y18 (Through Hole)		
PIN	**SIGNAL**	**DESCRIPTION**
1	**+5V**	Power supply source +5V 200mA max (use with very short cable)
2	**#ZERO**	Zero marker (active low)
3	**#PHASE A**	PHASE A (active low)
4	**#PHASE B**	PHASE B (active low)
5	**#IN**	User input (active low)
6	**GND**	Power supply return

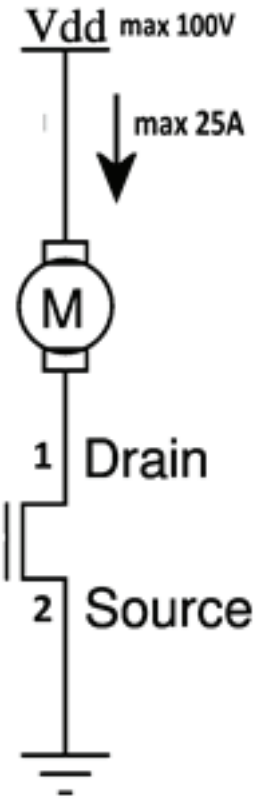
Used connector on board: AMPMODU Mod II 280372-1, DIGIKEY: A106402-ND
6 Positions Header, Shrouded Connector 0.100" (2.54mm) Through Hole Tin
Mating connectors: 280360



CONNECTORS

OPTO-POWER OUTPUT YP1-YP2-YP3-YP4 (Through Hole)		
PIN	**SIGNAL**	**DESCRIPTION**
1	**DRAIN**	N-MOSFET DRAIN 100V 25A, connect to LOAD
2	**SOURCE**	N-MOSFET SOURCE 100V 25A, connect to user GND

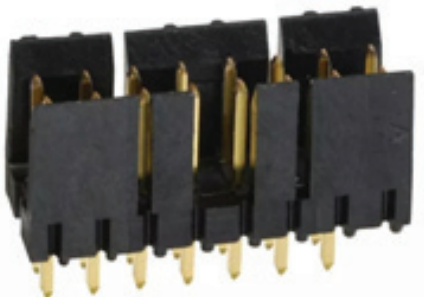
TYPICAL USE



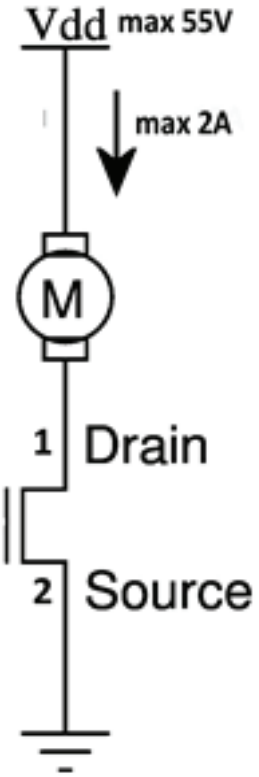
CONNECTORS

OPTO-OUTPUTS Y7 (Through Hole)		
PIN	**SIGNAL**	**DESCRIPTION**
1	**DRAIN 1**	N-MOSFET DRAIN 55V 2A, connect to LOAD
2	**SOURCE 1**	N-MOSFET SOURCE 55V 2A, connect to user GND
3	**DRAIN 2**	N-MOSFET DRAIN 55V 2A, connect to LOAD
4	**SOURCE 2**	N-MOSFET SOURCE 55V 2A, connect to user GND
5	**DRAIN 3**	N-MOSFET DRAIN 55V 2A, connect to LOAD
6	**SOURCE 3**	N-MOSFET SOURCE 55V 2A, connect to user GND
7	**DRAIN 4**	N-MOSFET DRAIN 55V 2A, connect to LOAD
8	**SOURCE 4**	N-MOSFET SOURCE 55V 2A, connect to user GND
9	**DRAIN 5**	N-MOSFET DRAIN 55V 2A, connect to LOAD
10	**SOURCE 5**	N-MOSFET SOURCE 55V 2A, connect to user GND
11	**DRAIN 6**	N-MOSFET DRAIN 55V 2A, connect to LOAD
12	**SOURCE 6**	N-MOSFET SOURCE 55V 2A, connect to user GND
13	**DRAIN 7**	N-MOSFET DRAIN 55V 2A, connect to LOAD
14	**SOURCE 7**	N-MOSFET SOURCE 55V 2A, connect to user GND
15	**DRAIN 8**	N-MOSFET DRAIN 55V 2A, connect to LOAD
16	**SOURCE 8**	N-MOSFET SOURCE 55V 2A, connect to user GND

Used connector on board: Mini-PV™, Basics+ 69168-116HLF,
DIGIKEY: 609-2428-ND
16 Positions Header, Shrouded Connector 0.100" (2.54mm)
Through Hole Gold or Gold, GXT™
Mating connectors: 69176-016LF, 65043-029LF, 65846-011LF



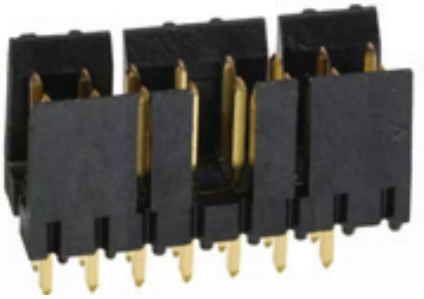
TYPICAL USE



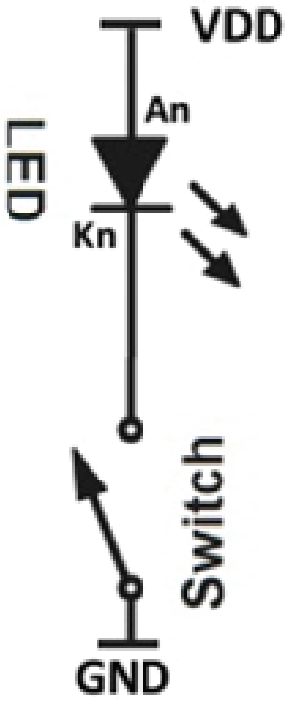
CONNECTORS

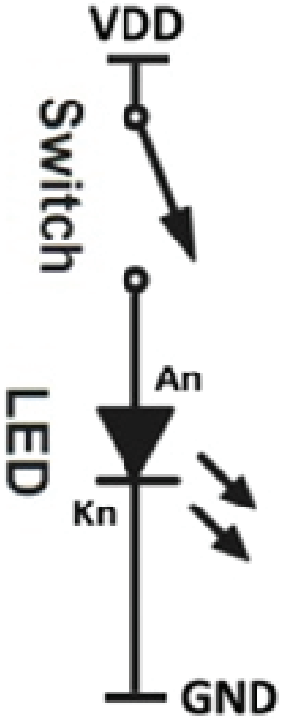
OPTO-INPUTS Y6 (Through Hole)		
PIN	**SIGNAL**	**DESCRIPTION**
1	**A1**	Opto-coupler Anode
2	**K1**	Opto-coupler Cathode
3	**A2**	Opto-coupler Anode
4	**K2**	Opto-coupler Cathode
5	**A3**	Opto-coupler Anode
6	**K3**	Opto-coupler Cathode
7	**A4**	Opto-coupler Anode
8	**K4**	Opto-coupler Cathode
9	**A5**	Opto-coupler Anode
10	**K5**	Opto-coupler Cathode
11	**A6**	Opto-coupler Anode
12	**K6**	Opto-coupler Cathode
13	**A7**	Opto-coupler Anode
14	**K7**	Opto-coupler Cathode
15	**A8**	Opto-coupler Anode
16	**K8**	Opto-coupler Cathode

Used connector on board: Mini-PV™, Basics+ 69168-116HLF,
DIGIKEY: 609-2428-ND
16 Positions Header, Shrouded Connector 0.100" (2.54mm)
Through Hole Gold or Gold, GXT™
Mating connectors: 69176-016LF, 65043-029LF, 65846-011LF



TYPICAL USE

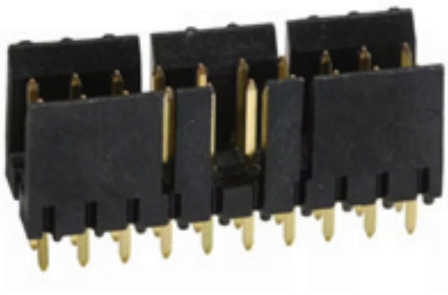




CONNECTORS

LVTTL-BI-DIRECTIONAL PORT Y8 (Through Hole)		
PIN	**SIGNAL**	**DESCRIPTION**
1	**PB0**	Bit 0 PB port
2	**PB1**	Bit 1 PB port
3	**PB2**	Bit 2 PB port
4	**PB3**	Bit 3 PB port
5	**PB4**	Bit 4 PB port
6	**PB5**	Bit 5 PB port
7	**PB6**	Bit 6 PB port
8	**PB7**	Bit 7 PB port
9	**PA0**	Bit 0 PA port
10	**PA1**	Bit 1 PA port
11	**PA2**	Bit 2 PA port
12	**PA3**	Bit 3 PA port
13	**PA4**	Bit 4 PA port
14	**PA5**	Bit 5 PA port
15	**PA6**	Bit 6 PA port
16	**PA7**	Bit 7 PA port
17	**+5V**	Power supply source +5V 100mA max (use with very short cable)
18	**+3.3V**	Power supply source +3.3V 200mA max (use with very short cable)
19	**GND**	Power supply return
20	**GND**	Power supply return

Used connector on board: Mini-PV™, Basics+ 69168-120HLF, DIGIKEY: 609-2430-ND
20 Positions Header, Shrouded Connector 0.100" (2.54mm) Through Hole Gold or Gold, GXT™
Mating connectors: 65846-006LF, 65043-027LF, 69176-020LF



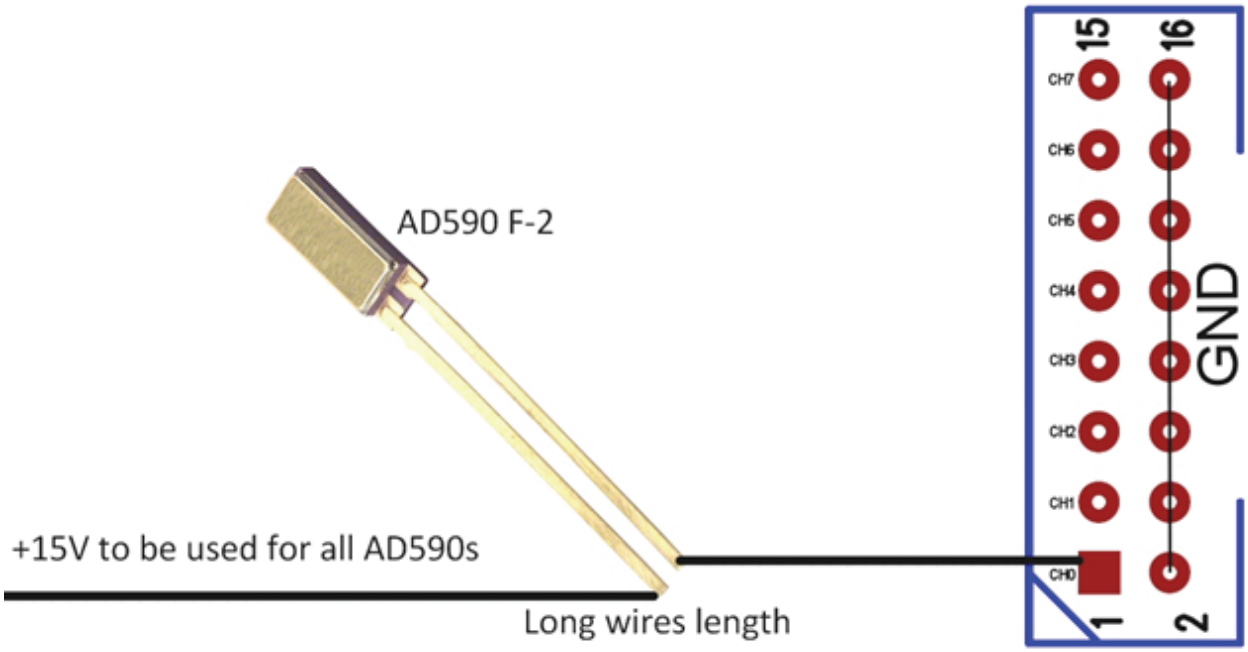
These port have an internal programmable PULL-UP or PULL-DOWN resistors, a switch can be directly connected, but switching voltage can’t exceed +5V.

CONNECTORS

ANALOG-INPUTS 0-10V Y1-Y2 (Through Hole)		
PIN	**SIGNAL**	**DESCRIPTION**
1	**CH0**	Analog input 10V Z= 20K
2	**GND**	Common
3	**CH1**	Analog input 10V Z= 20K
4	**GND**	Common
5	**CH2**	Analog input 10V Z= 20K
6	**GND**	Common
7	**CH3**	Analog input 10V Z= 20K
8	**GND**	Common
9	**CH4**	Analog input 10V Z= 20K
10	**GND**	Common
11	**CH5**	Analog input 10V Z= 20K
12	**GND**	Common
13	**CH6**	Analog input 10V Z= 20K
14	**GND**	Common
15	**CH7**	Analog input 10V Z= 20K
16	**GND**	Common

Used connector on board: Mini-PV™, Basics+ 69168-116HLF, DIGIKEY: 609-2428-ND
16 Positions Header, Shrouded Connector 0.100" (2.54mm) Through Hole Gold or Gold, GXT™
Mating connectors: 69176-016LF, 65043-029LF, 65846-011LF

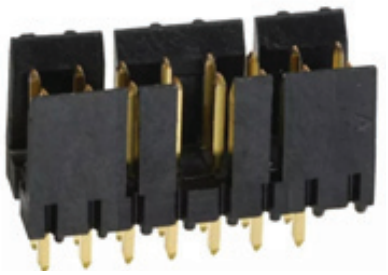
TYPICAL USAGE FOR TEMPERATURE SENSOR



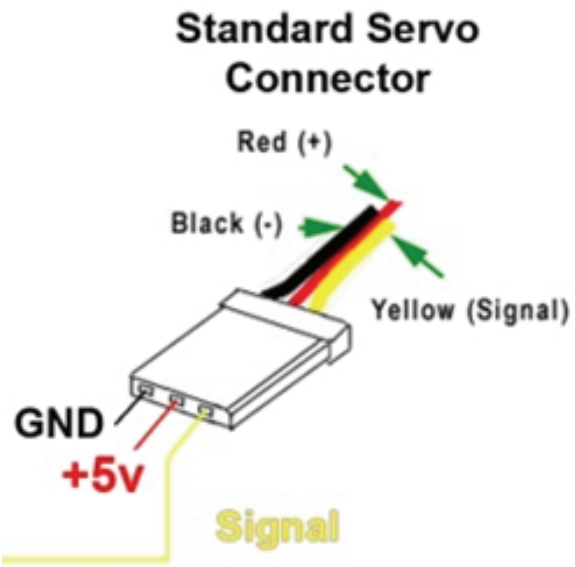
CONNECTORS

ANALOG-INPUTS 0-2.5V Y11-Y12 (Through Hole)		
PIN	**SIGNAL**	**DESCRIPTION**
1	**CH0**	Analog input 2.5V Z ≥ 5MΩ
2	**GND**	Common
3	**CH1**	Analog input 2.5V Z ≥ 5MΩ
4	**GND**	Common
5	**CH2**	Analog input 2.5V Z ≥ 5MΩ
6	**GND**	Common
7	**CH3**	Analog input 2.5V Z ≥ 5MΩ
8	**GND**	Common
9	**CH4**	Analog input 2.5V Z ≥ 5MΩ
10	**GND**	Common
11	**CH5**	Analog input 2.5V Z ≥ 5MΩ
12	**GND**	Common
13	**CH6**	Analog input 2.5V Z ≥ 5MΩ
14	**GND**	Common
15	**CH7**	Analog input 2.5V Z ≥ 5MΩ
16	**GND**	Common

Used connector on board: Mini-PV™, Basics+ 69168-116HLF,
DIGIKEY: 609-2428-ND
16 Positions Header, Shrouded Connector 0.100" (2.54mm) Through Hole Gold or Gold, GXT™
Mating connectors: 69176-016LF, 65043-029LF, 65846-011LF



SERVO MOTOR OR PWM OUTPUT SRV1-16 (Through Hole)		
PIN	**SIGNAL**	**DESCRIPTION**
1	**GND**	Power supply return
2	**+5V**	+5V power source
3	**PWM OUT**	PWM output



CONNECTORS

MULTIFUNCTION PORT Y9 (Through Hole)		
PIN	**SIGNAL**	**DESCRIPTION**
1	**IO7**	Bit 7 AD/DAC/PORT
2	**IO0**	Bit 0 AD/DAC/PORT
3	**IO6**	Bit 6 AD/DAC/PORT
4	**IO1**	Bit 1 AD/DAC/PORT
5	**IO5**	Bit 5 AD/DAC/PORT
6	**IO2**	Bit 2 AD/DAC/PORT
7	**IO4**	Bit 4 AD/DAC/PORT
8	**IO3**	Bit 3 AD/DAC/PORT
9	**+15V**	Power source 10mA max
10	**AGND**	Common

Used connector on board: 302 Series 302-S101, DIGIKEY: ED1543-ND
10 Positions Header, Shrouded Connector 0.100" (2.54mm) Through Hole Gold
Mating connectors: 101-106

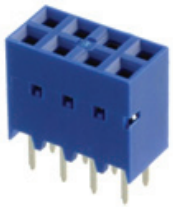
ANALOG OUTPUT Y9 (Through Hole)		
PIN	**SIGNAL**	**DESCRIPTION**
1	**PWR**	DAC power source 3.3/5 V
2	**PWR**	DAC power source 3.3/5 V
3	**DAC2**	DAC 2 output 0-2.5V
4	**DAC0**	DAC 0 output 0-2.5V
5	**DAC3**	DAC 3 output 0-2.5V
6	**DAC1**	DAC 1 output 0-2.5V
7	**REF1**	+2.5V reference output
8	**REF2**	+2.5V reference output
9	**AGND**	Common
10	**AGND**	Common

Used connector on board: 302 Series 302-S101, DIGIKEY: ED1543-ND
10 Positions Header, Shrouded Connector 0.100" (2.54mm) Through Hole Gold
Mating connectors: 101-106

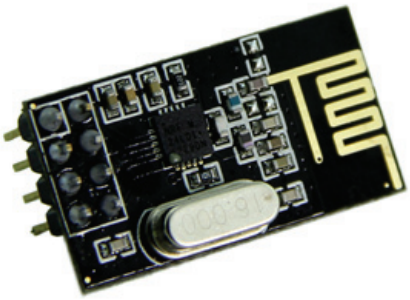
CONNECTORS

RF MODULE CONNECTOR M1 (Through Hole)		
PIN	**SIGNAL**	**DESCRIPTION**
1	**GND**	Power return
2	**PWR**	Power source 3.3/5 V
3	**CE**	Chip enable
4	**#CS**	Chip select (Active low)
5	**SCLK**	Serial clock
6	**MOSI**	Master Output Slave Input
7	**MISO**	Master Input Slave Output
8	**IRQ**	Interrupt

Used connector on board: 87606-804LF, DIGIKEY: 609-5145-ND
8 Position Receptacle Connector Gold 0.100" (2.54mm) Through Hole



This socket accept NRF24L01 modules:



SESTILIO-PLUS

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