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Find the *Micro Technic Micronix PV-2019-S* at our website: ***Click HERE***

MICRONIX PC/104
DATA ACQUISITION BOARD

PV-2019

24 CH.12-BIT ANALOGUE INPUT
2 CH.12-BIT ANALOGUE OUTPUT
8-BIT DIGITAL INPUT
8-BIT DIGITAL OUTPUT
2 X 32-BIT COUNTERS

User Manual
&
Installation Guide

VERS. 1.06

DOC: M5126DM.DOC

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Description

Micronix PV-2019 is a highly compact 5V only PC/104 board containing:

- 16 analogue voltage inputs with 12-bit resolution with software controlled fullscale:0-1V, 0-2.5V, 0-5V & 0-10V input impedance = 1MΩ//100pF.
- 8 analogue current inputs with 12-bit resolution 0-20mA, input impedance = 50Ω//100pF.
- 2 x 12-bit analogue outputs, 0-10V & 0-20mA / 4-20mA
- 8 opto-isolated digital inputs
- 8 opto-isolated digital outputs
- 2 opto-isolated 32-bit counters
- 2 on-board DC/DC converters generate +12V and –2.5V
- On-board microcontroller(MPU) for software calibrating offset and gain.
- The digital inputs and outputs are directly controlled by reading and writing I/O ports.

PV2019 programming documentation

The PV2019 adapter is an I/O mapped device. It appears as a block of 8 addresses in the I/O map.
The digital inputs and outputs are directly controlled by reading and writing I/O ports.
The analogue inputs, the analogue outputs, and the counters are handled by a local microcontroller (MPU) on the PV2019 adapter.

This microprocessor also handles the calibrating system which needs no potentiometer adjustment.

Further technical information concerning the software interface can be found at our web site:

http://www.micro-technic.com/pv2019

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FEATURES AND SPECIFICATION

Analogue voltage inputs
- # Channels: 16, single ended
- Resolution: 12 bits
- Conversion time: 22µs typ.
- Ranges: 0-1V, 0-2.5V, 0-5V or 0-10V
- Max. input voltage: ±35V
- Input impedance: 1 MΩ//100pF
- Accuracy: ±0.25%

Analogue current inputs
- # Channels: 8, single ended
- Resolution: 12 bits
- Conversion time: 22µs, typ
- Ranges: 0-20mA
- Max. input voltage: ±35V
- Input impedance: 50Ω//100pF
- Accuracy: ±0.25%

Analogue outputs
- # Channels: 2+2
- Resolution: 12 bits
- Speed: 25 µs, typ
- ch 0: 0-10V (max 8mA) and 0-20mA / 4-20mA
- ch 1: 0-10V (max 8mA) and 0-20mA / 4-20mA
- Accuracy: ±0.25%
- Settling time: 15µs

Digital inputs
- # Channels: 8
- Logic "1": Uin > ±10V
- Logic "0": Uin < ±1V
- Max. input voltage: ±30V
- Input current (mA): (Uin – 1.1V)/10kΩ
- Isolation voltage: 1000Vrms

Digital outputs
- # PNP-channels: 8
- Max. output voltage: 80V
- Max. saturation voltage: 400mV
- Max. output current/chn: 10mA
- Isolation voltage: 1000Vrms

Counters
- # Channels: 2
- Number of bits: 32
- Input frequency: 10kHz max.
- Logic "1": Uin > + 10V
- Logic "0": Uin < + 1V
- Input current (mA): (Uin – 1.1V)/10kΩ
- Max input breakdown voltage: -5V
- Isolation voltage: 1000Vrms

Power Consumption, 5V:
- Max: 260mA, all outputs off.
- Full load on analogue current outputs: +220mA.
- Full load on analogue voltage outputs: +70mA.
- All digital outputs on: +150mA.

Environmental
- Operating temperature: -20° to 70°C
- Storage temperature: -40° to 85°C
- Humidity: 0 to 90% non-condensing

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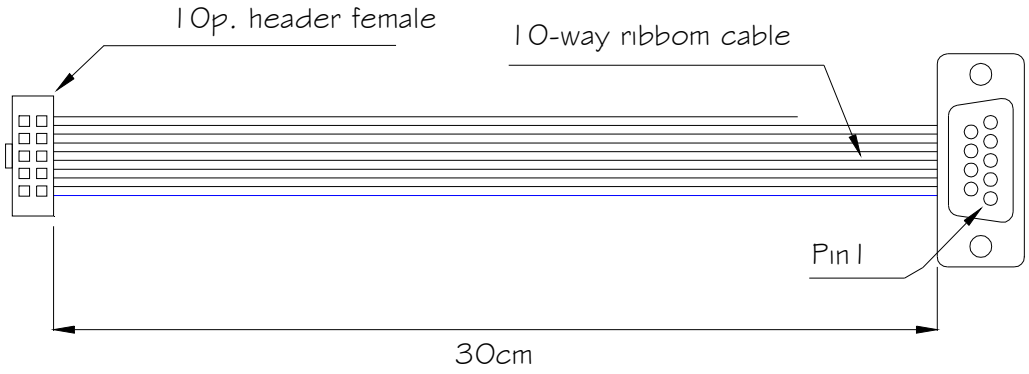
MODEL SELECTION

PV – 2019X - S

X = cut-down version
S = Stack-through

AVAILABLE MODELS

Model no.	Description/Type
PV-2019	PV2019 with non stack-through connector
PV-2019-S	PV2019 with stack-through connector
PV-2019A-S	PV2019 cut-down version with stack-through connector – see page 9
PV-2019B-S	PV2019 cut-down version with stack-through connector – see page 9
CDB-9F	1 ribbon cable.
CDB-9F/2019	Cable kit (7 x CDB-9F).



Ribbon cable for PV2019 (CDB-9F).

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INSTALLATION GUIDE

PRECAUTIONS TO ESD

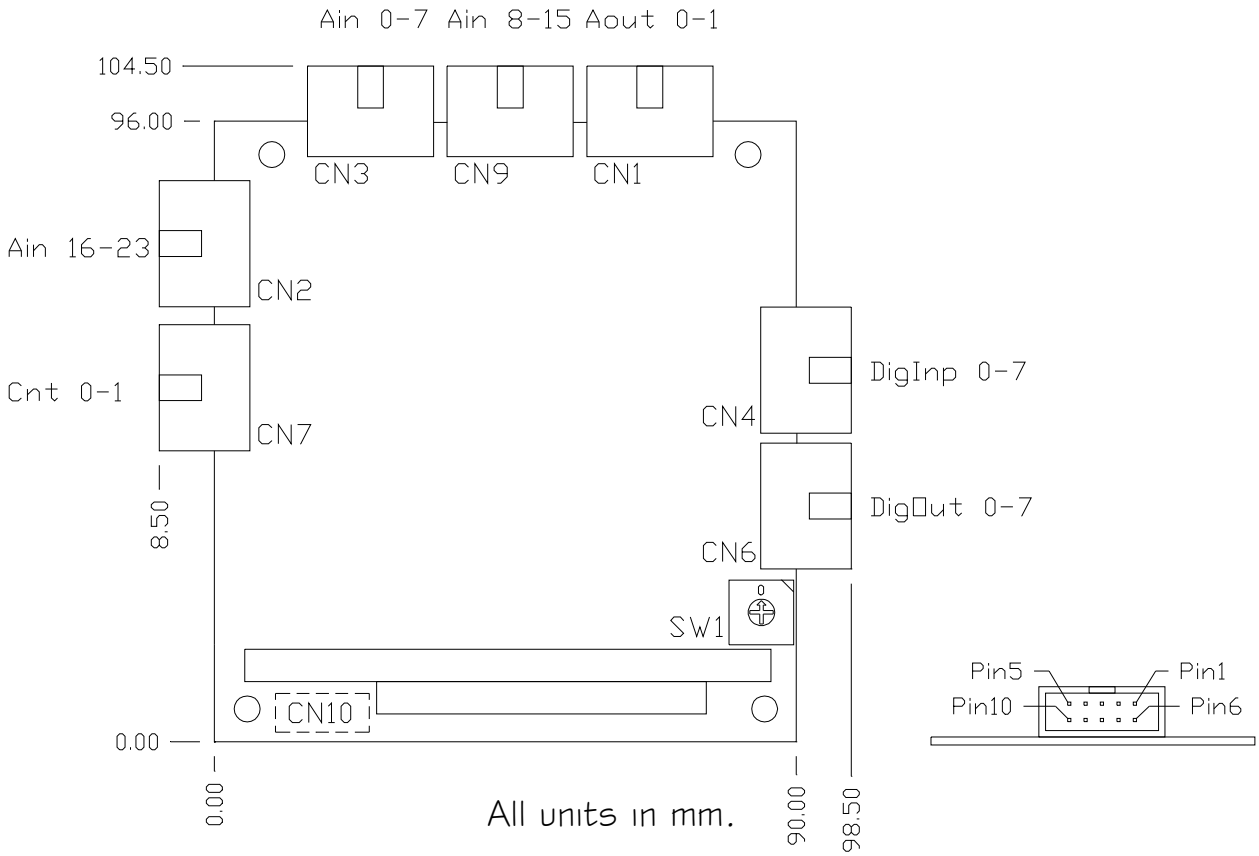
Please note, that the Micronix PV modules must be handled with respect to ESD (Electrostatic Discharge). Electrostatic Discharge to the PV modules must be avoided.
Before removing the module from the protection bag, the user must be discharged using a grounded wrist ribbon.

SETTING THE I/O ADDRESS

The I/O base address is selected by the SW1 rotary switch like shown in this table:

SW1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Base address (hex)	200	208	210	218	220	228	230	238	300	308	310	318	320	328	330	338

SCHEMATIC OUTLINE



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I/O – CONNECTOR LAYOUT

Analogue Inputs					
Voltage Inputs				Current Inputs	
Input No	Pin No: CN3 / DB9	Input No	Pin No: CN9 / DB9	Input No	Pin No: CN2 / DB9
Ain0	1	Ain8	1	Ain16	1
Ain1	2	Ain9	2	Ain17	2
Ain2	3	Ain10	3	Ain18	3
Ain3	4	Ain11	4	Ain19	4
Ain4	5	Ain12	5	Ain20	5
Ain5	6	Ain13	6	Ain21	6
Ain6	7	Ain14	7	Ain22	7
Ain7	8	Ain15	8	Ain23	8
Agnd	9, 10	Agnd	9,10	Agnd	9,10

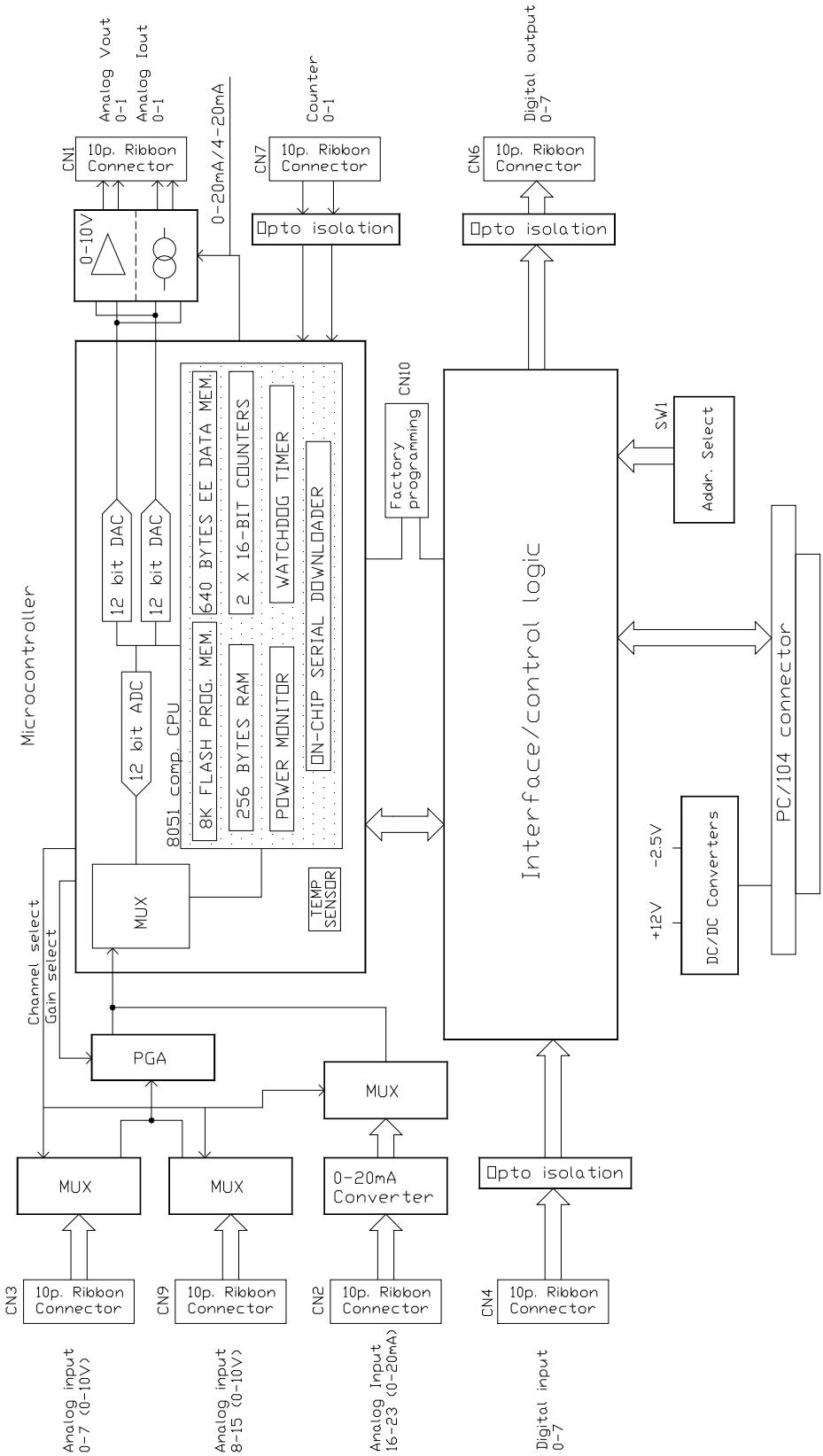
Analogue Outputs	Voltage Outputs	Current Outputs
Output No	Pin No: CN1 / DB9	Pin No: CN1 / DB9
0	8	9
1	6	7
Agnd	1,2,3,4,5,10	1,2,3,4,5,10

Digital Input / outputs	Inputs	Outputs
Bit No	Pin No: CN4 / DB9	Pin No: CN6 / DB9
0	1	1
1	2	2
2	3	3
3	4	4
4	5	5
5	6	6
6	7	7
7	8	8
Gnd / Ext. Supply	9, 10 (Gnd)	9,10 (+External Supply)

Counters	
Input No	Pin No: CN7 / DB9
0+	1
0-	6
1+	2
1-	7

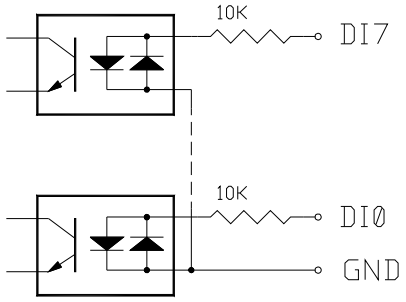
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SCHEMATIC

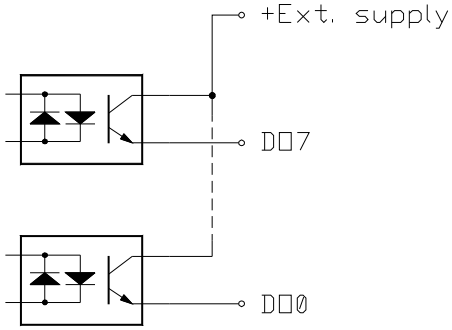


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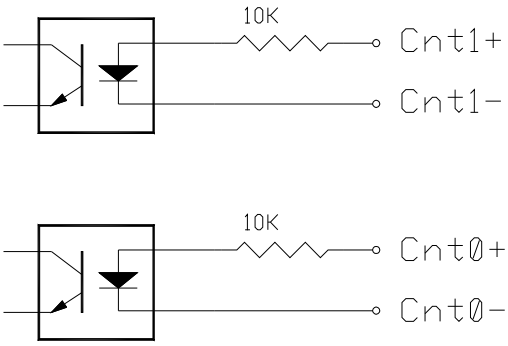
I/O CIRCUITRY SCHEMATIC



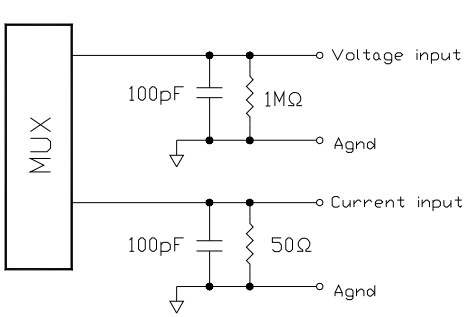
Digital Inputs



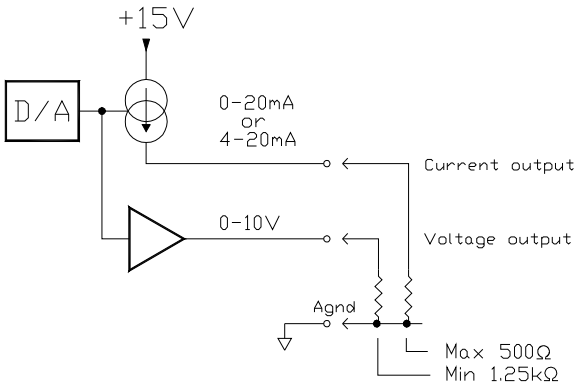
Digital Outputs



Counter Inputs



Analogue Inputs



Analogue Outputs

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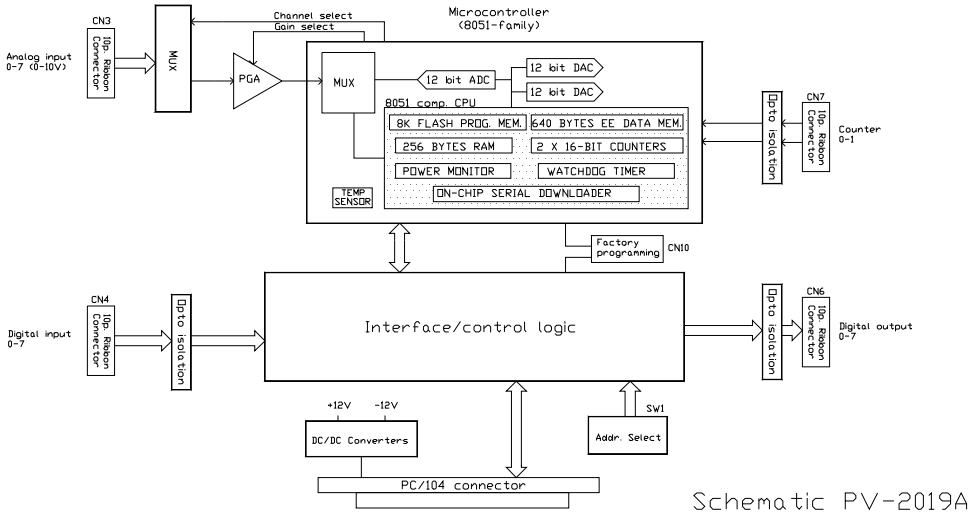
DIFFERENCES BETWEEN PV-2019, PV-2019A & PV-2019B

The PV-2019A is available in special cut-down versions in which certain functions have been omitted.

PV-2019A

In this version there are limitations on the following functions:

- there are no analogue outputs
- only the first 8 analogue voltage inputs are available
- there are no inputs for current

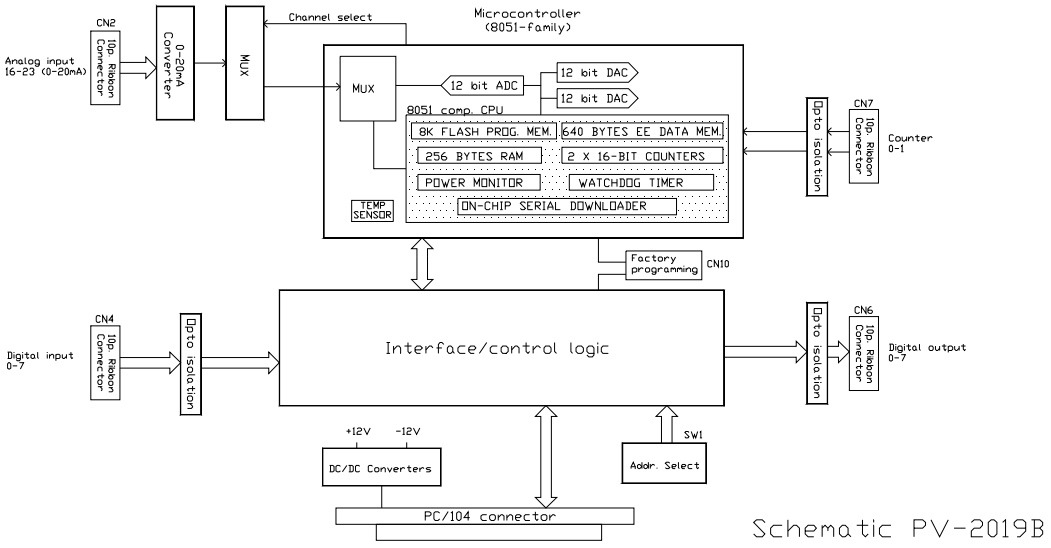


Schematic PV-2019A

PV-2019B

In this version there are limitations on the following functions:

- there are no analogue outputs
- there are no analogue voltage inputs



Schematic PV-2019B

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