



"DAT6000 SERIES": A/D interface modules for PLC

The DAT6000 series devices are an evolution in the connection techniques of the analog signals to the PLC.

Each device amplify, linearise, filter and isolate the analog signal coming from the sensors on field and convert it in an high resolution 16 bits length "word" digital signal that is transferred to the PLC by the data line of the controller.

The data transfer is controlled by the PLC trough a clock signal generated on its digital port; at each pulse of clock is transferred a bit of the data.

By few and simple instructions the PLC is able to acquire more analog signals on a single digital input. Moreover each module has an Enable signal, that allows the controller to multiplexing more devices to one data line and one clock signal.

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DAT6000 A/D interface modules
SERIES for PLC

DAT 6011



GENERAL DESCRIPTION

The devices of the DAT6000 series are an evolution in the techniques of connection of analog signals to PLC. The devices of this series amplify, linearise, isolate, filter and convert the analog signals coming from various sensors in a high resolution. The digital signal can be connected to any input of the PLC.

FEATURES

- Acquisition of analogue signals on PLC's digital I/O
- Analogue input to any PLC or micro PLC
- Up to 16-bit resolution with Full Scale high accuracy
- 2 input channels
- Configurable input for voltage up to ± 1V or Tc type J, K, R, S, B, E, T, N
- Configurable by DIP-switch
- Galvanic isolation at 2000 Vac on three ways
- EMC compliant – CE mark
- Suitable for DIN rail mounting in compliance with EN-50022 and EN-50035



Application areas



POWER SUPPLY

Power supply voltage	18 .. 30 Vdc
Current consumption	30 mA @ 24 Vdc
Rever. polarity protection	60 Vdc max

ISOLATION VOLTAGE

INPUT – PLC	2000 Vac 50 Hz, 1 min.
Power supply– INPUT	
Power supply– PLC	

TEMPERATURE AND HUMIDITY

Operative temperature	-10°C .. +60°C
Storage temperature	-40°C .. +85°C
Humidity (not cond)	0 .. 90 %

EMC (for industrial environments)

DIRECTIVE 2004/108/EC

Immunity	EN 61000-6-2
Emission	EN 61000-6-4

HOUSING

Material	Self-extinguishing plastic
Dim. (mm)	W x L x H : 90 x 112 x 12.5
Weight	about 90 g.

INPUT

Input type	Min	Max
Voltage		
50 mV	-50 mV	+50 mV
100 mV	-100 mV	+100 mV
500 mV	-500 mV	+500 mV
1000 mV	-1000 mV	+1000 mV
Thermocouple		
J	-210 °C	+1200 °C
K	-210 °C	+1372 °C
R	-50 °C	+1767 °C
S	-50 °C	+1767 °C
B	+400 °C	+1825 °C
E	-210 °C	+1000 °C
T	-210 °C	+400 °C
N	-210 °C	+1300 °C

INPUT CHANNELS

Input calibration (1)	±0.05% f.s.
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Linearity (1)

mV	± 0.1 % f.s.
Tc	± 0.2 % f.s.

Cold junction compensation	± 0.5 °C
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Input impedance

mV, Tc	>= 1 MΩ
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Thermal drift (1)

Full Scale	± 0.005 % / °C
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Thermal drift CJC

Full Scale	± 0.02 % / °C
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Line resistance influence

mV, Tc	< 0.8 uV/Ohm
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DIGITAL INTERFACE

Voltage on terminals	typical 24 Vdc (30 Vdc max.)
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ON state	>9 Vdc
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Input impedance

(ENABLE, CLK)	4.7 KOhm
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Minimum output load

(DATA)	560 Ohm (2)
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Max. frequency

Clock signal	500 Hz
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Rise / Fall time

(Tr)	< 0.2 ms
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(1) referred to input Span (difference between max. and min. values)

(2) The load on the output DATA is controlled with the current taken from the ENABLE signal.

DAT 6000 SERIES

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A/D INTERFACE FOR PLC 2 INPUT CHANNELS FOR RTD, Res

DAT 6012



GENERAL DESCRIPTION

The devices of the DAT6000 series are an evolution in the techniques of connection of analog signals to PLC. The devices of this series amplify, linearise, isolate, filter and convert the analog signals coming from various sensors in a high resolution. The digital signal can be connected to any input of the PLC.

FEATURES

- Acquisition of analog signals on PLC's digital I/O
- Analog input to any PLC or micro PLC
- Up to 16-bit resolution with Full Scale high accuracy
- 2 input channels
- Configurable input for Pt100, Pt1000, Ni100, Ni1000, Resistance and Potentiometers up to 2 Kohm
- Configurable by DIP-switch
- Galvanic isolation at 2000 Vac on three ways
- EMC compliant – CE mark
- Suitable for DIN rail mounting in compliance with EN-50022 and EN-50035



Application areas



POWER SUPPLY

Power supply voltage	18 .. 30 Vdc
Current consumption	30 mA @ 24 Vdc
Rever. polarity protection	60 Vdc max

ISOLATION VOLTAGE

INPUT – PLC	2000 Vac 50 Hz, 1 min.
Power supply– INPUT	
Power supply– PLC	

TEMPERATURE AND HUMIDITY

Operative temperature	-10°C .. +60°C
Storage temperature	-40°C .. +85°C
Humidity (not cond)	0 .. 90 %

EMC (for industrial environments)

DIRECTIVE 2004/108/EC

Immunity	EN 61000-6-2
Emission	EN 61000-6-4

HOUSING

Material	Self-extinguishing plastic
Dim. (mm)	W x L x H : 90 x 112 x 12.5
Weight	about 90 g.

INPUT

Input type	Min	Max
RTD		
Pt100	-200 °C	+850 °C
Pt1000	-200 °C	+200 °C
Ni100	-80 °C	+180 °C
Ni1000	-60 °C	+150 °C
Resistance		
500 Ω	0 Ω	500 Ω
2 KΩ	0 Ω	2000 Ω
Potentiometer		
< 500 Ω*	0 %	100 %
< 2 KΩ*	0 %	100 %

Input channels

	2
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Input calibration (1)

	±0.1% f.s.
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Linearity (1)

Res, Pot.	± 0.1 % f.s.
RDT	± 0.2 % f.s.

RTD / Res. excitation current	0.350 mA typ.
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Thermal drift (1)

Full Scale	± 0.005 % / °C
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Line resistance influence

RTD, Res	< 0.05%/Ohm
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(50 Ω max , 3 wires connection)

DIGITAL INTERFACE

Voltage on terminals	typical 24 Vdc (30 Vdc max.)
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ON state	>9 Vdc
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Input impedance

(ENABLE, CLK)	4.7 KOhm
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Minimum output load

(DATA)	560 Ohm (2)
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Max. frequency

Clock signal	500 Hz
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Rise / Fall time

(Tr)	< 0.2 ms
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(1) referred to input Span (difference between max. and min. values)

(2) The load on the output DATA is controlled with the current taken from the ENABLE signal

* nominal value

A/D INTERFACE FOR PLC 2 INPUT CHANNELS FOR V, mA

DAT 6013



GENERAL DESCRIPTION

The devices of the DAT6000 series are an evolution in the techniques of connection of analog signals to PLC. The devices of this series amplify, linearise, isolate, filter and convert the analog signals coming from various sensors in a high resolution. The digital signal can be connected to any input of the PLC.

FEATURES

- Acquisition of analog signals on PLC's digital I/O
- Analog input to any PLC or micro PLC
- Up to 16-bit resolution with Full Scale high accuracy
- 2 input channels
- Configurable input for ± 10 V and ± 20 mA

- Configurable by DIP-switch
- Galvanic isolation at 2000 Vac on three ways
- EMC compliant – CE mark
- Suitable for DIN rail mounting in compliance with EN-50022 and EN-50035



Application areas



POWER SUPPLY

Power supply voltage	18 .. 30 Vdc
Current consumption	30 mA @ 24 Vdc
Rever. polarity protection	60 Vdc max

ISOLATION VOLTAGE

INPUT – PLC	
Power supply– INPUT	2000 Vac 50 Hz, 1 min.
Power supply– PLC	

TEMPERATURE AND HUMIDITY

Operative temperature	-10°C .. +60°C
Storage temperature	-40°C .. +85°C
Humidity (not cond)	0 .. 90 %

EMC (for industrial environments)

DIRECTIVE 2004/108/EC

Immunity	EN 61000-6-2
Emission	EN 61000-6-4

HOUSING

Material	Self-extinguishing plastic
Dim. (mm)	W x L x H : 90 x 112 x 12.5
Weight	about 90 g.

INPUT

Input type	Min	Max
Voltage		
10 V	-10 V	+10 V
Current		
20 mA	-20 mA	+20 mA
Input channels		
		2
Input calibration (1)		
		± 0.1 % f.s.
Linearity (1)		
		± 0.1 % f.s.
Input impedance		
V	≥ 100 K Ω	
mA	≤ 50 Ω	
Thermal drift (1)		
Full Scale	± 0.005 % / °C	

DIGITAL INTERFACE

Voltage on terminals	typical 24 Vdc (30 Vdc max.)
ON state	>9 Vdc
Input impedance	
(ENABLE, CLK)	4.7 K Ω m
Minimum output load	
(DATA)	560 Ohm (2)
Max. frequency	
Clock signal	500 Hz
Rise / Fall time	
(Tr) < 0.2 ms	

(1) referred to input Span (difference between max. and min. values)

(2) The load on the output DATA is controlled with the current taken from the ENABLE signal

A/D INTERFACE FOR PLC 4 INPUT CHANNELS FOR mV, TC

DAT 6021



GENERAL DESCRIPTION

The devices of the DAT6000 series are an evolution in the techniques of connection of analog signals to PLC. The devices of this series amplify, linearise, isolate, filter and convert the analog signals coming from various sensors in a high resolution. The digital signal can be connected to any input of the PLC.

FEATURES

- Acquisition of analogue signals on PLC's digital I/O
- Analogue input to any PLC or micro PLC
- Up to 16-bit resolution with Full Scale high accuracy
- 4 input channels
- Configurable input for ± 1 V or Tc type J,K, R,S,B,E,T,N
- Configurable by DIP-switch

- Galvanic isolation at 2000 Vac on three ways
- EMC compliant – CE mark
- Suitable for DIN rail mounting in compliance with EN-50022 and EN-50035



Application areas



POWER SUPPLY

Power supply voltage	18 .. 30 Vdc
Current consumption	30 mA @ 24 Vdc
Rever. polarity protection	60 Vdc max

ISOLATION VOLTAGE

INPUT – PLC	
Power supply– INPUT	2000 Vac 50 Hz, 1 min.
Power supply– PLC	

TEMPERATURE AND HUMIDITY

Operative temperature	-10°C .. +60°C
Storage temperature	-40°C .. +85°C
Humidity (not cond)	0 .. 90 %

EMC (for industrial environments)

DIRECTIVE 2004/108/EC

Immunity	EN 61000-6-2
Emission	EN 61000-6-4

HOUSING

Material	Self-extinguishing plastic
Dim. (mm)	W x L x H : 90 x 112 x 12.5
Weight	about 90 g.

INPUT

Input type	Min	Max
Voltage		
50 mV	-50 mV	+50 mV
100 mV	-100 mV	+100 mV
500 mV	-500 mV	+500 mV
1000 mV	-1000 mV	+1000 mV
Thermocouple		
J	-210 °C	+1200 °C
K	-210 °C	+1372 °C
R	-50 °C	+1767 °C
S	-50 °C	+1767 °C
B	+400 °C	+1825 °C
E	-210 °C	+1000 °C
T	-210 °C	+400 °C
N	-210 °C	+1300 °C
Input channels		
		4
Input calibration (1)		
		± 0.05 % f.s.
Linearity (1)		
mV	± 0.1 % f.s.	
Tc	± 0.2 % f.s.	
Cold junction compensation		
		± 0.5 °C

Input impedance

mV, Tc	≥ 1 M Ω
Thermal drift (1)	
Full Scale	± 0.005 % / °C
Thermal drift CJC	
Full Scale	± 0.02 % / °C
Line resistance influence	
mV, Tc	< 0.8 uV/Ohm

DIGITAL INTERFACE

Voltage on terminals	typical 24 Vdc (30 Vdc max.)
ON state	>9 Vdc
Input impedance	
(ENABLE, CLK)	4.7 K Ω m
Minimum output load	
(DATA)	560 Ohm (2)
Max. frequency	
Clock signal	500 Hz
Rise / Fall time	
(Tr) < 0.2 ms	

(1) referred to input Span (difference between max. and min. values)

(2) The load on the output DATA is controlled with the current taken from the ENABLE signal

DAT 6023-I



GENERAL DESCRIPTION

The devices of the DAT6000 series are an evolution in the techniques of connection of analog signals to PLC. The devices of this series amplify, linearise, isolate, filter and convert the analog signals coming from various sensors in a high resolution. The digital signal can be connected to any input of the PLC.

FEATURES

- Acquisition of analog signals on PLC's digital I/O
- Analog input to any PLC or micro PLC
- Up to 16-bit resolution with Full Scale high accuracy
- 4 input channels
- Configurable input for ± 20 mA
- Configurable by DIP-switch
- Galvanic isolation at 2000 Vac on three ways
- EMC compliant – CE mark
- Suitable for DIN rail mounting in compliance with EN-50022 and EN-50035



Application areas



POWER SUPPLY

Power supply voltage	18 .. 30 Vdc
Current consumption	30 mA @ 24 Vdc
Rever. polarity protection	60 Vdc max

ISOLATION VOLTAGE

INPUT – PLC	
Power supply– INPUT	2000 Vac 50 Hz, 1 min.
Power supply– PLC	

TEMPERATURE AND HUMIDITY

Operative temperature	-10°C .. +60°C
Storage temperature	-40°C .. +85°C
Humidity (not cond)	0 .. 90 %

EMC (for industrial environments)

DIRECTIVE 2004/108/EC

Immunity	EN 61000-6-2
Emission	EN 61000-6-4

HOUSING

Material	Self-extinguishing plastic
Dim. (mm)	W x L x H : 90 x 112 x 12.5
Weight	about 90 g.

INPUT

Input type	Min	Max
Current		
20 mA	-20 mA	+20 mA
Input channels	4	
Input calibration (1)	± 0.1 % f.s.	
Linearity (1)	± 0.1 % f.s.	

Input impedance

mA	$\leq 50 \Omega$
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Thermal drift (1)

Full Scale	± 0.005 % / °C
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DIGITAL INTERFACE

Voltage on terminals	typical 24 Vdc (30 Vdc max.)
ON state	>9 Vdc
Input impedance	
(ENABLE, CLK)	4.7 KOhm
Minimum output load	
(DATA)	560 Ohm (2)
Max. frequency	
Clock signal	500 Hz
Rise / Fall time	(Tr) < 0.2 ms

(1) referred to input Span (difference between max. and min. values)
 (2) The load on the output DATA is controlled with the current taken from the ENABLE signal

DAT 6000 SERIES

DAT 6023-V



GENERAL DESCRIPTION

The devices of the DAT6000 series are an evolution in the techniques of connection of analog signals to PLC. The devices of this series amplify, linearise, isolate, filter and convert the analog signals coming from various sensors in a high resolution. The digital signal can be connected to any input of the PLC.

FEATURES

- Acquisition of analog signals on PLC's digital I/O
- Analog input to any PLC or micro PLC
- Up to 16-bit resolution with Full Scale high accuracy
- 4 input channels
- Configurable input for ± 10 V
- Configurable by DIP-switch
- Galvanic isolation at 2000 Vac on three ways
- EMC compliant – CE mark
- Suitable for DIN rail mounting in compliance with EN-50022 and EN-50035



Application areas



POWER SUPPLY

Power supply voltage	18 .. 30 Vdc
Current consumption	30 mA @ 24 Vdc
Rever. polarity protection	60 Vdc max

ISOLATION VOLTAGE

INPUT – PLC	
Power supply– INPUT	2000 Vac 50 Hz, 1 min.
Power supply– PLC	

TEMPERATURE AND HUMIDITY

Operative temperature	-10°C .. +60°C
Storage temperature	-40°C .. +85°C
Humidity (not cond)	0 .. 90 %

EMC (for industrial environments)

DIRECTIVE 2004/108/EC

Immunity	EN 61000-6-2
Emission	EN 61000-6-4

HOUSING

Material	Self-extinguishing plastic
Dim. (mm)	W x L x H : 90 x 112 x 12.5
Weight	about 90 g.

INPUT

Input type	Min	Max
Voltage		
10V	-10 V	+10 V
Input channels	4	
Input calibration (1)	± 0.1 % f.s.	
Linearity (1)	± 0.1 % f.s.	

Input impedance

Volt	≥ 100 K Ω
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Thermal drift (1)

Full Scale	± 0.005 % / °C
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DIGITAL INTERFACE

Voltage on terminals	typical 24 Vdc (30 Vdc max.)
ON state	>9 Vdc
Input impedance	
(ENABLE, CLK)	4.7 KOhm
Minimum output load	
(DATA)	560 Ohm (2)
Max. frequency	
Clock signal	500 Hz
Rise / Fall time	(Tr) < 0.2 ms

(1) referred to input Span (difference between max. and min. values)
 (2) The load on the output DATA is controlled with the current taken from the ENABLE signal

ELECTRONIC AND CONTROL PROCESS DEVICES



**“DAT6000 SERIES”
A/D interface modules for PLC**

www.datexel.it



Application areas

DAT 6000 SERIES

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