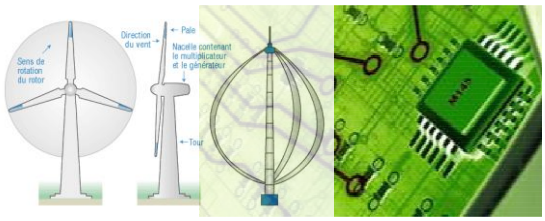
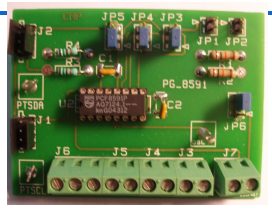


MISE EN ŒUVRE CAN CNA I2C

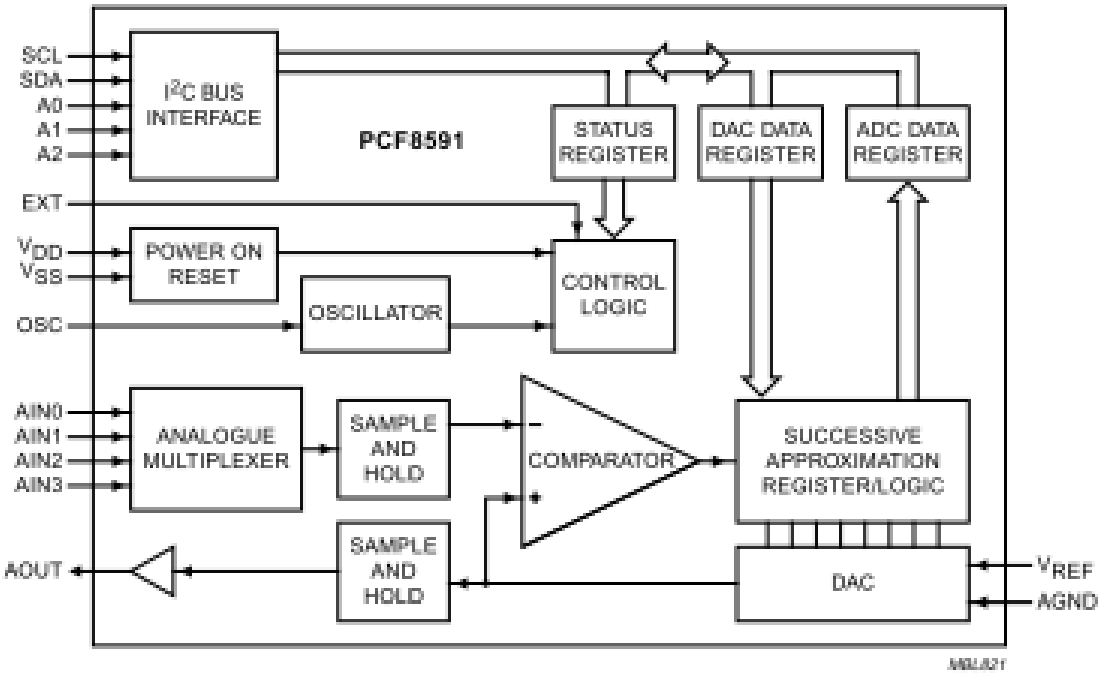


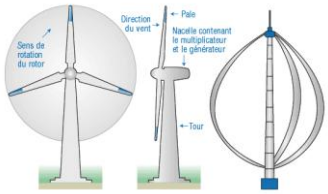
1 Présentation du PCF8591 8-bit convertisseur A/D D/A

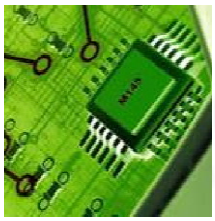
1.1 Caractéristiques générales

- Single power supply
- Operating supply voltage 2.5 V to 6 V
- Low standby current
- Serial input/output via I2C-bus
- Address by 3 hardware address pins
- Sampling rate given by I2C-bus speed
- 4 analog inputs programmable as single-ended or differential inputs
- Auto-incremented channel selection
- Analog voltage range from VSS to VDD
- On-chip track and hold circuit
- 8-bit successive approximation A/D conversion
- Multiplying DAC with one analog output.

1.2 Bloc diagram







1.3 Brochage

SYMBOL	PIN	DESCRIPTION
AINO	1	analog inputs (A/D converter)
AIN1	2	
AIN2	3	
AIN3	4	
A0	5	hardware address
A1	6	
A2	7	
V_{SS}	8	negative supply voltage
SDA	9	I²C-bus data input/output
SCL	10	I²C-bus clock input
OSC	11	oscillator input/output
EXT	12	external/internal switch for oscillator input
AGND	13	analog ground
V_{REF}	14	voltage reference input
AOUT	15	analog output (D/A converter)
V_{DD}	16	positive supply voltage

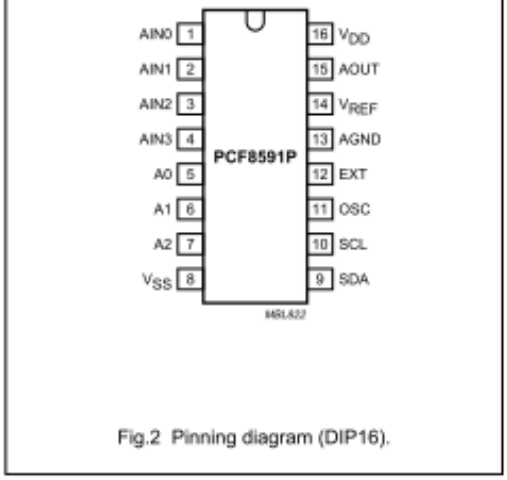
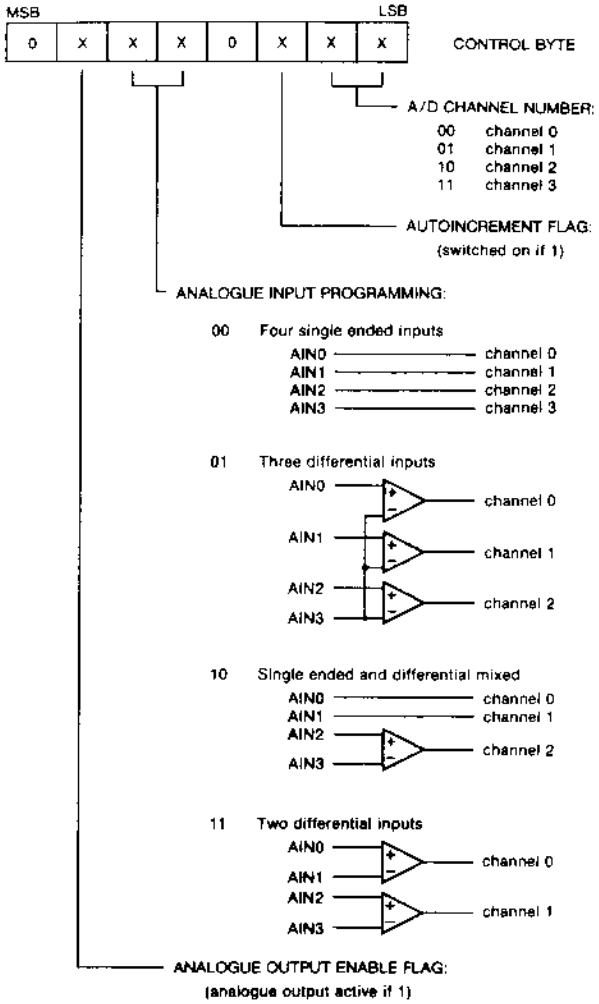


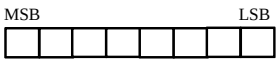
Fig.2 Pinning diagram (DIP16).

1.4 Configuration du circuit



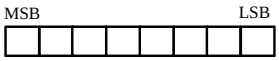
Configuration n° 1

Conversion A/D du canal 3
Auto Increment OFF
Quatre canaux
en entrées analogiques
Analogue output OFF



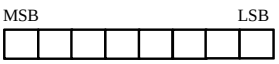
Configuration n° 2

Conversion A/D du canal 1
Auto Increment ON
Deux canaux différentiels
en entrées analogiques
Analogue output OFF

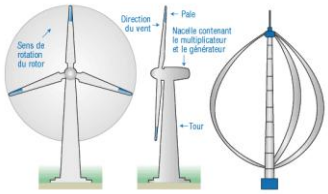


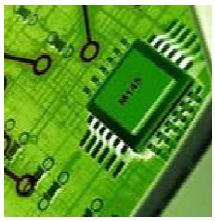
Configuration n° 3

Conversion A/D du canal 2
Auto Increment OFF
Trois canaux différentiels
en entrées analogiques
Analogue output OFF



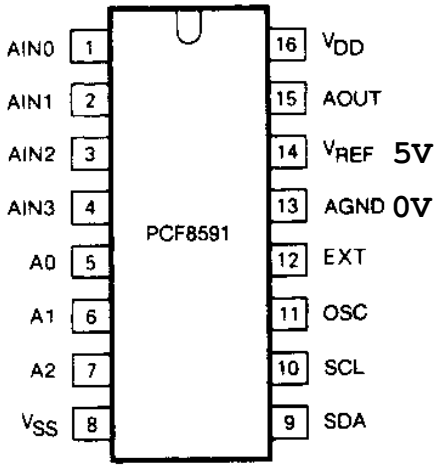
STI2D SIN






Conversion D/A ou N/A

$$VAOUT = VAGND + \frac{VREF - VAGND}{256} \sum_{i=0}^{7} Di \times 2^{i}$$



MSB LSB

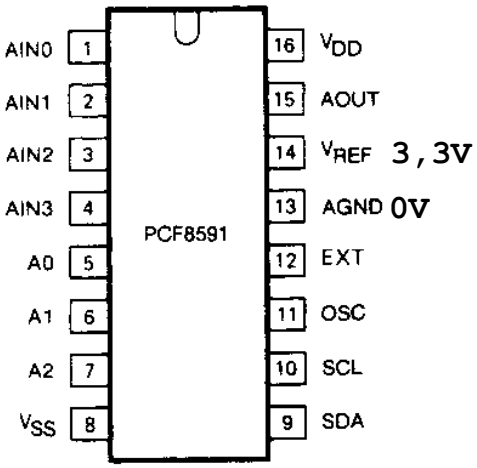
0	1	1	1	0	0	1	1

VAOUT =

MSB LSB

1	0	0	1	0	1	0	0

VAOUT =



MSB LSB

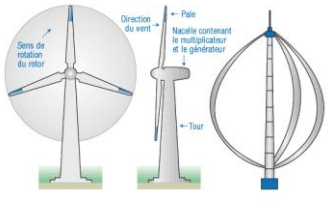
0	0	0	1	1	0	0	1

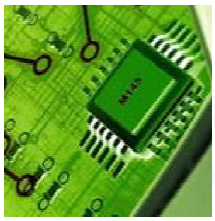
VAOUT =

MSB LSB

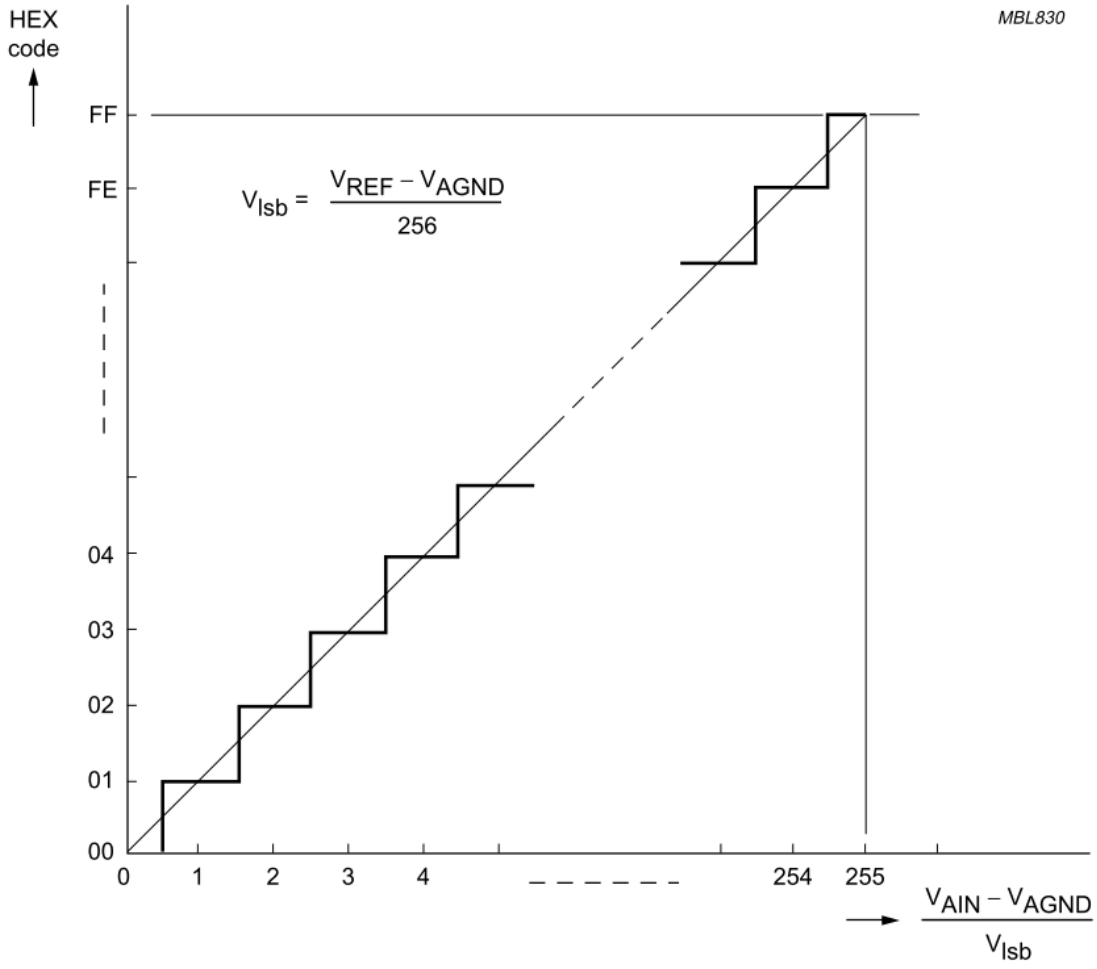
1	1	1	0	1	0	1	0

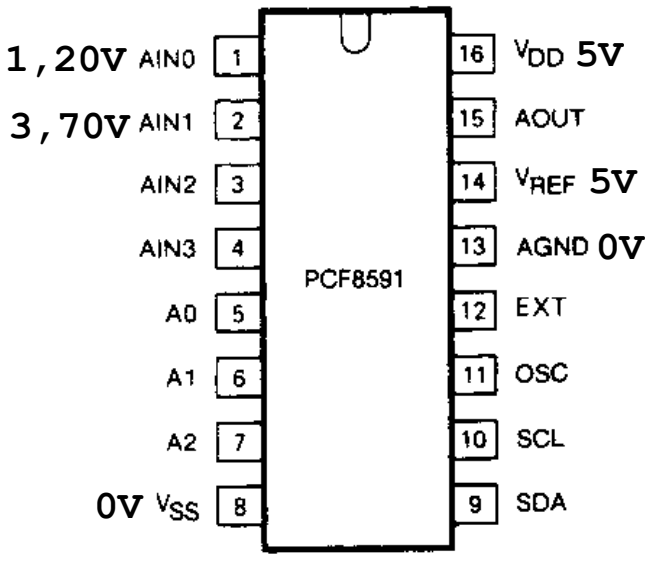
VAOUT =





Conversion A / N

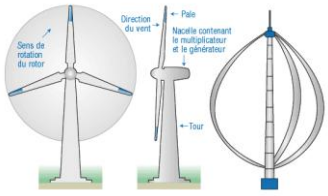


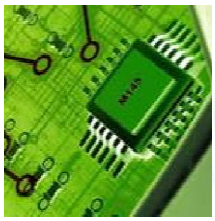


Codes numériques de :

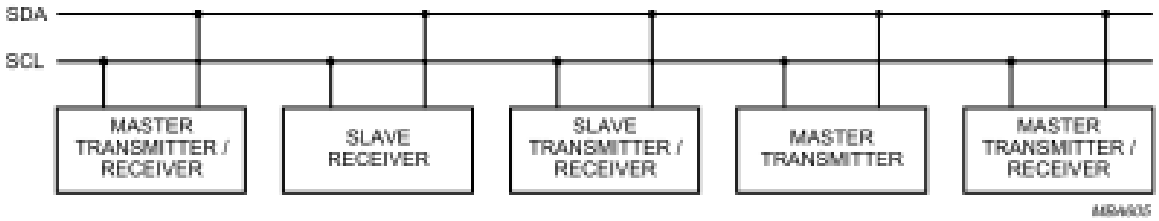
AIN0 :

AIN1 :





Echange sur le bus I2C



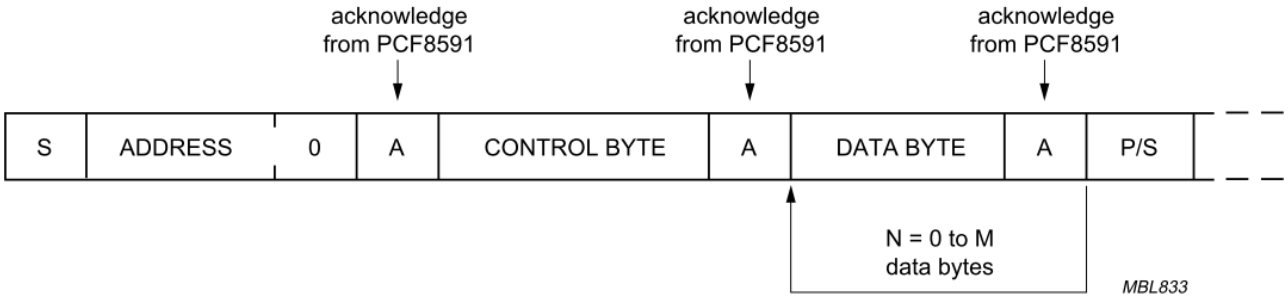
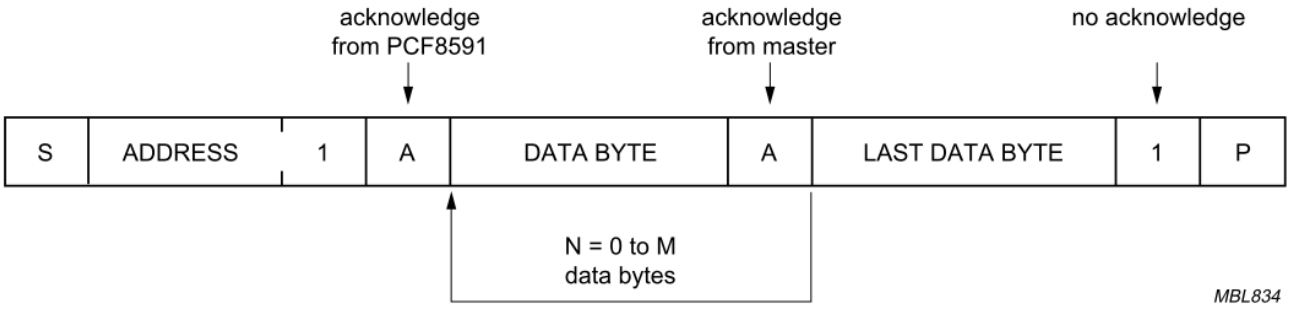
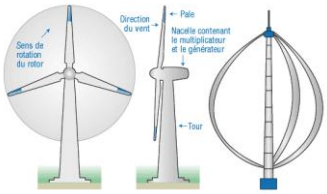
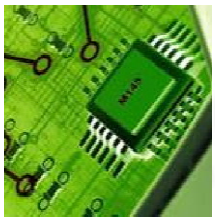


Fig.16 Bus protocol for write mode, D/A conversion.

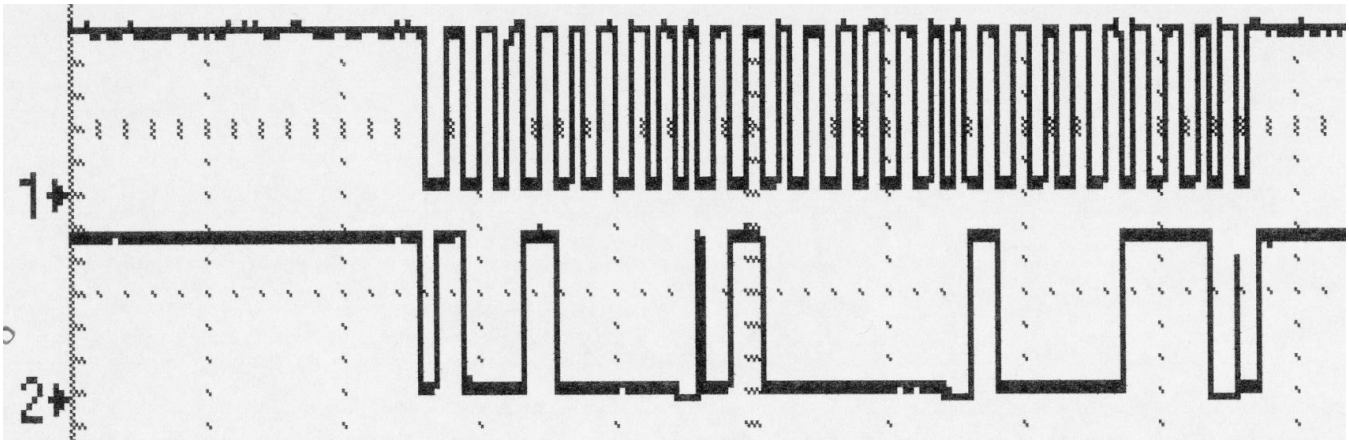






Analyse de trames

Chronologie Bus I2C échange complet



Quel est le périphériaue adressé par le Bus I2C :

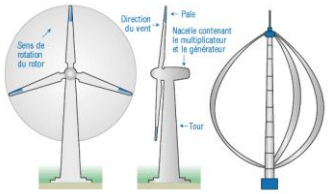
=> adresse ?

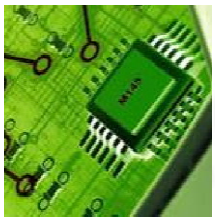
=> type de périphérique ?

=> l'échange est t'il correct ?

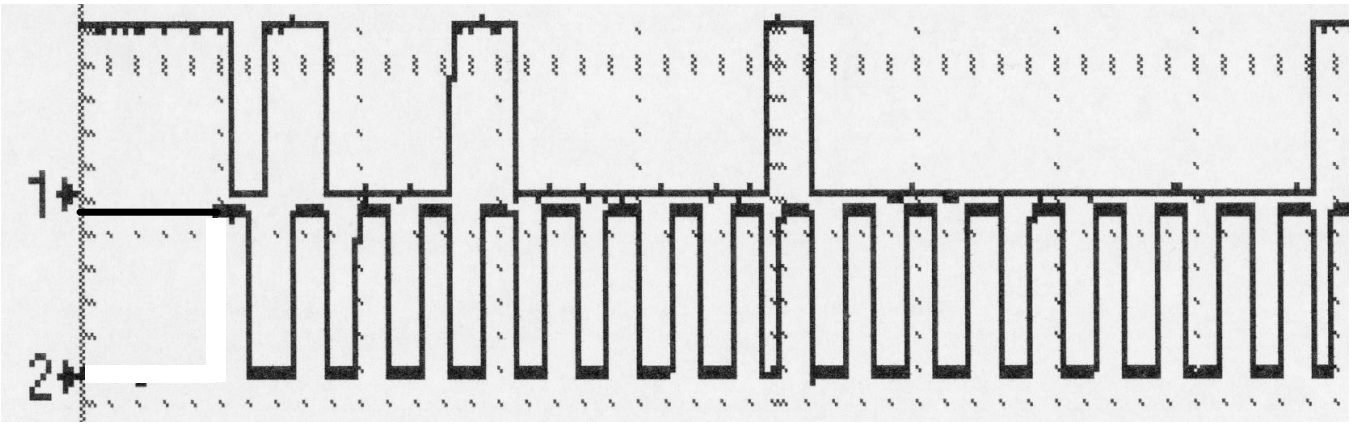
=> donner la signification précise des trois octets envoyés

STI2D SIN






Chronologie Bus I2C vue partielle du début d'un échange



Quel est le périphériaue adressé par le Bus I2C :

=> adresse ?

=> type de périphérique ?

=> l'échange est t'il correct ?

Schéma de la carte VOX