

The module M83200 converts AC signal inputs into Pulse outputs and provides configurable 5 V outputs.

The module M83200 contains:

- 4 independent AC signal converters
  - To adapt low amplitude AC (e.g. sinusoidal) signals of various sensors to the Counter Inputs of Meteo-40 data loggers. The sinusoidal signal is converted in a **rectangular pulse signal with the same frequency**.
- 2 individually configurable ports with the following configuration options:
  - Current limit to 10 mA (470  $\Omega$ )
  - Pull-up resistor 5.1 k $\Omega$  with current limit 1 mA
  - Stabilised and ripple-free 5 V output with active current limit 110 mA

### List of proposed sensors

#### 1. Devices for use with AC converter

- In general anemometers with AC output (magnetically induced AC)
- Anemometers with AC output signal (e.g. NRG 40C)
- Vaisala SWI C3
- WindSensor P2546-OPR anemometer
- Young Wind Monitor (Wind speed AC)

#### 2. Potentiometric wind vanes with current limit 10 mA, e.g.,:

- Wind vane Thies First Class (2 k $\Omega$ )
- Wind vane Vector W200P (1 k $\Omega$ )
- Wind vane Vaisala PV1 (10 k $\Omega$ )
- Wind vane NRG #200P (10 k $\Omega$ )
- Wind monitor Young (Wind direction 10k $\Omega$ )

#### 3. Potentiometric wind vanes with current limit 1 mA, e.g.,:

- Wind vane Thies Compact (2 k $\Omega$ )

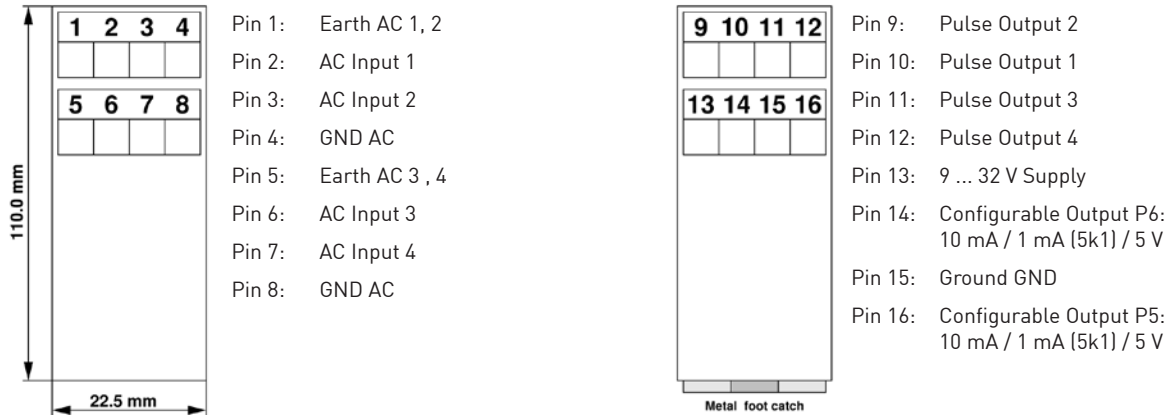
#### 4. Counter, switch or open-collector: Pull-up resistor 5.1 k $\Omega$ , e.g.,:

- Precipitation sensor Thies
- Precipitation sensor Young
- Anemometer Vento (Open Collector Output)
- Anemometer NRG #40H (Hall Effect)
- Anemometer Risø P2546A (Reed switch)
- Anemometer Thies (if open drain output is used)

#### 5. Supply: Stabilised 5 V output, e.g.,:

- Control switch
- Monitoring
- Status button
- Wind vanes with internal electronic protection circuit (Thies)

## Pin Assignment



## Electrical characteristics (Default settings)

Parameter	Pin / Ports	Min	Typical	Max
Supply voltage (DC)	13	9 V		32 V
Quiescent current		11 mA		16 mA
Ground GND	15			
Configurable Outputs				
Output (5 V DC) ( $\vartheta = 25^{\circ}\text{C}$ )	14, 16	5.2 V 110 mA		5.8 V 130 mA
Pull-up current limit 1 mA (Low current configuration 5.1 k $\Omega$ )	14, 16	0.97 mA		1.05 mA
Pull-up current limit 10 mA (High current configuration)	14, 16	10.5 mA		11.4 mA
AC Voltage Converters				
Input sensitivity of converter	2, 3, 6, 7	115 mV		120 mV
Ground GND	4, 8			
Output level low	9, 10, 11, 12	0 V		0.01 V
Output level high	9, 10, 11, 12	5 V		5.8 V
Operating temperature		-40°C		+75°C
Fuse T0.8A (time lag, slow-blow): 5 x 20 mm				

- Housing dimension (width x height x depth): 22.5 x 110 x 115 mm
- Mounting on DIN-rail (35 x 7.5 mm)
- Terminal: wire cross section from 0.25 to 1.5 mm<sup>2</sup>
- **Terminal Earth: recommended wire cross section 1.5 mm<sup>2</sup>  
(Keep wire length as short as possible)**

## Principle of operation

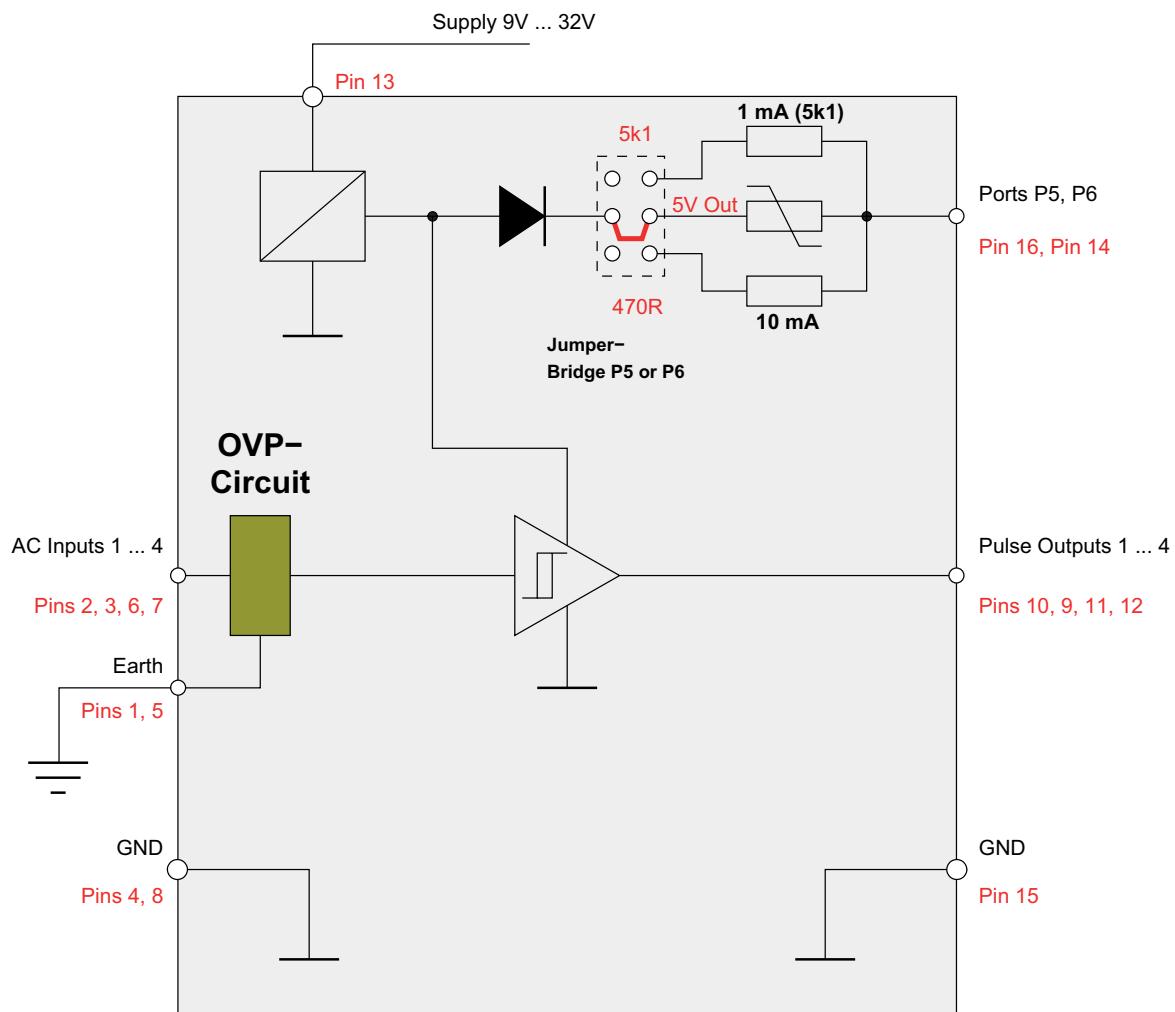
The figure below shows the principle of the circuit of the module for AC Converter. It consists of the following units:

- Configurable current / voltage outputs:** With ports P5 and P6 (Pin 16 and Pin 14) it is possible to select between three sources:
  - 1 mA
  - 10 mA
  - 5 V output with current limit 110 mA
 The outputs can be selected by jumper setting.

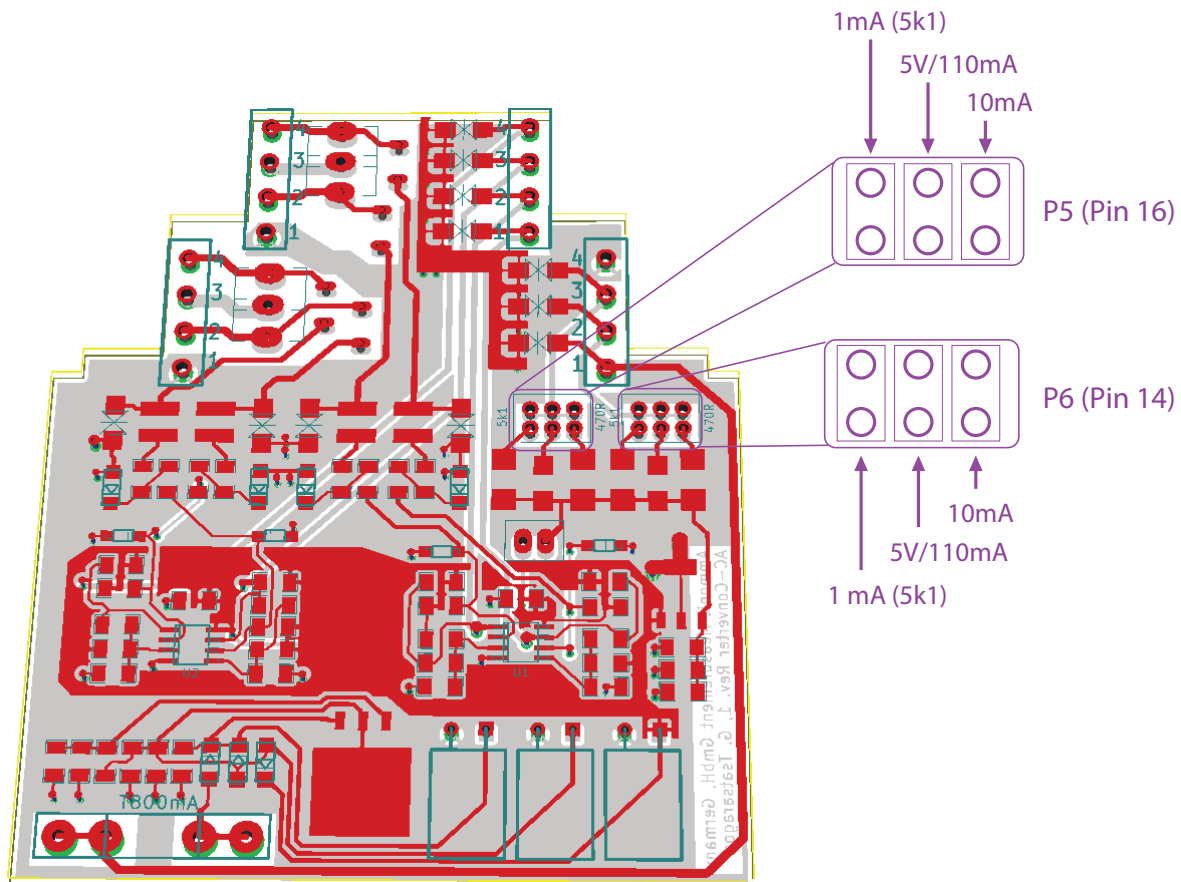
- AC Converters:** The Pins 2, 3, 6 and 7 are the inputs of four independent AC signal converters. The pins correspond to the Pins 10, 9, 11 and 12 for the output of the converters (see table below).

Input Pin	2	3	6	7
Output Pin	10	9	11	12

Each input of the signal converters is individually protected against overvoltage (OVP).



Port configuration



**Configuration of output ports**

The figure above shows the jumper configuration of the configurable outputs P5 (Pin 16) and P6 (Pin 14). With both ports one of the following configurations can be selected:

- Jumper left position: 1 mA current limitation (5.1 kΩ Pull-up resistor)
- Jumper right position: 10 mA current limitation
- Jumper middle position: 5 V / 110 mA output

**Default jumper settings**

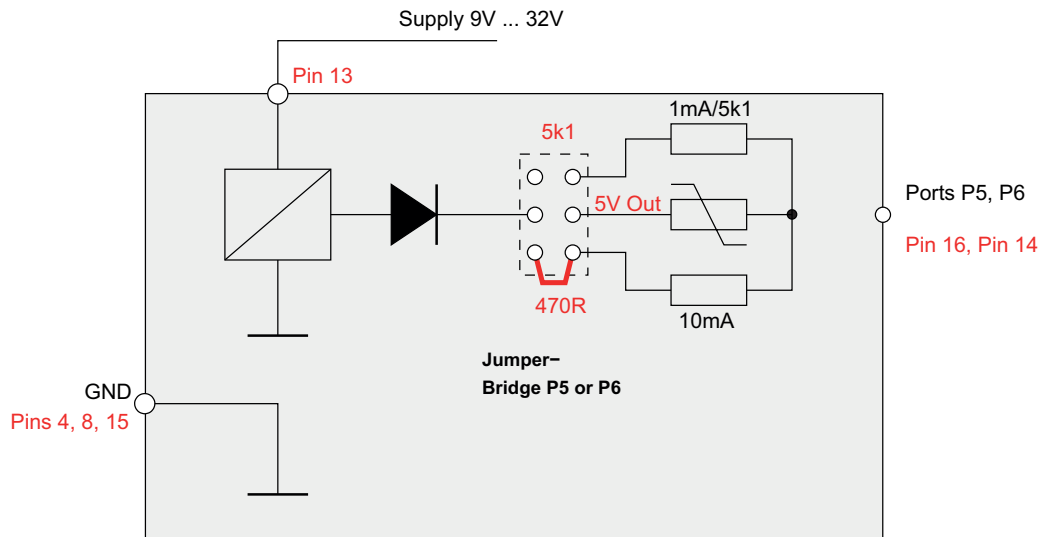
The jumpers are set to 1 mA limitation by default (factory settings).

**Note**

Individual jumper settings according to customer order preset by Ammonit possible.

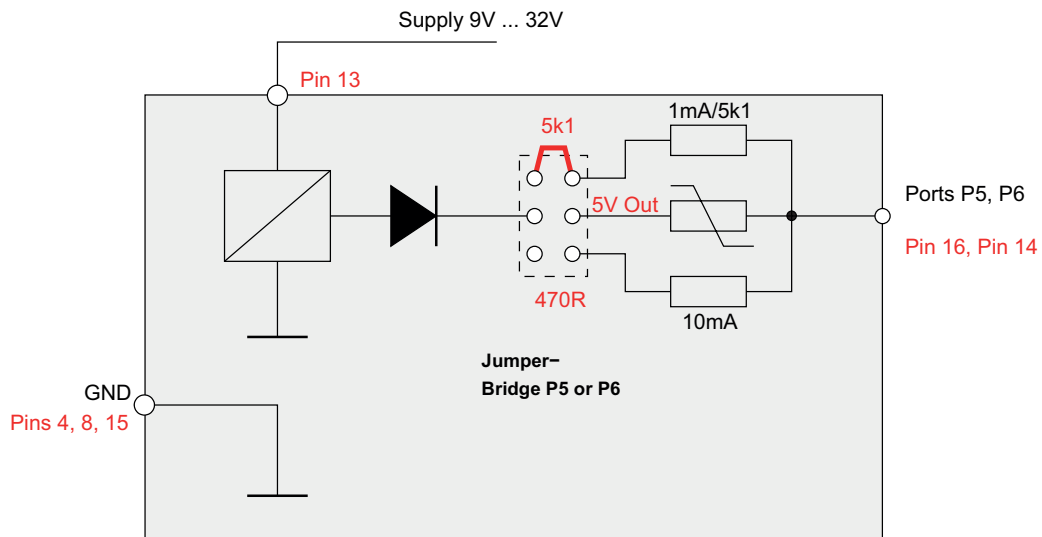
Configuration of ports

Pull-up High Current 10 mA



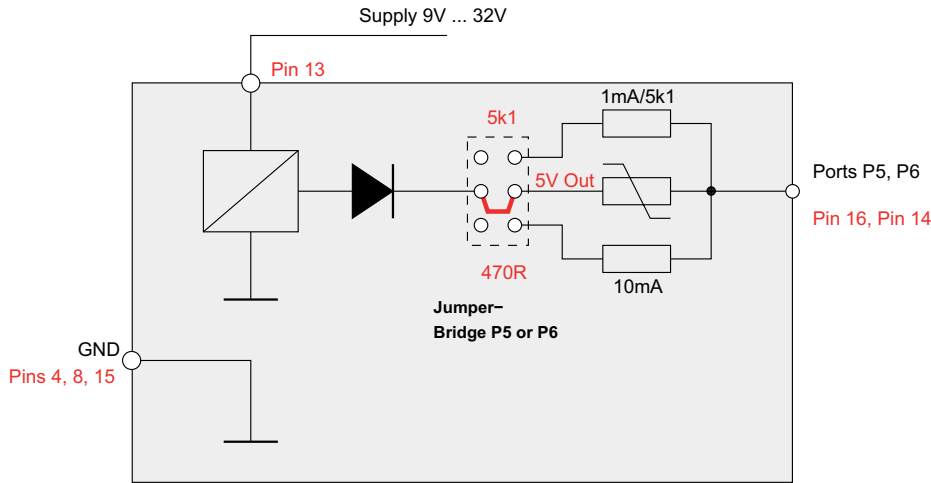
Setting of jumpers for 10 mA output: Jumper of P5 or P6 set to 10 mA.

Pull-up Low Current 1 mA (5.1 kΩ)



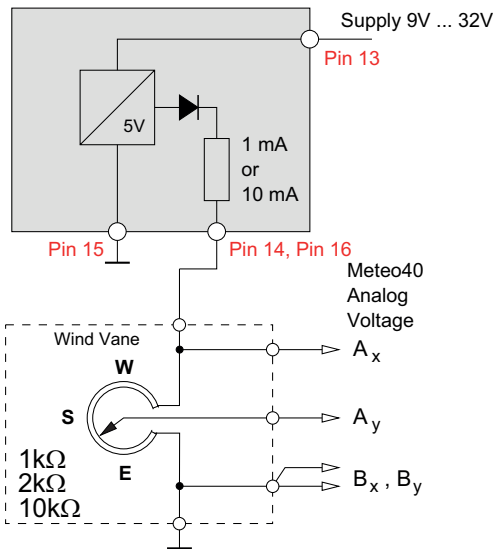
Setting of jumpers for 1 mA output: Jumper of P5 and P6 set to 1 mA (Pull-up 5.1 kΩ).

5 V output

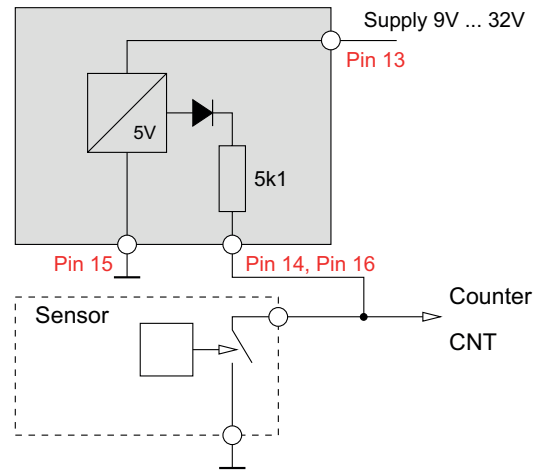


Setting of jumpers for 5 V output: Jumper of P5 and P6 set to contacts in the middle.

Protection resistor for potentiometric wind vane



Counter input with pull-up resistor



## Use of AC converters

### Connecting signal sources to the input of the AC converter

The module M83200 includes internal overvoltage protection (OVP) at the input terminals of the AC converters. This OVP contains a combination of gas discharging elements, inductors and suppressor diodes to ensure continuous working if the internal circuit.

To ensure proper behaviour of the OVP under any condition make sure that:

- Correct earthing of your system is present
- Separate wiring for the measurement ground (GND) of the system (i.e. sensors, data logger, supply) and earthing of the system / mast is implemented.

However, if a connection between Earth and GND is present / needed, make sure that there only exists one single connection between these two points to avoid ground loops.

The figure below shows a wiring proposal for correct connection of the external devices to the inputs of the AC converters of M83200 in conjunction with the overvoltage protection circuit of the M83200.

