

## ProtoMCM

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## DAC

The DAC is used to set reference voltages and decay value for the SALTRO16 via an I2C bus. Alternatively can these values be set with a potentiometer. The source, either DAC or potentiometers, can be set with help of the jumpers X3-X7. The version for Brussels has no DAC mounted, and the source must be selected to be potentiometers. The board is delivered with jumpers set to select potentiometers.

## Settings of SALTRO16

The Charge Shaping Amplifier requires the 8 digital + 1 analogue voltage levels which define its configuration as listed below:

- Polarity (digital): set high when input charge is positive, low when negative.
- PreampEnable (digital): set high when the first shaper has to be bypassed, low otherwise.
- Shutdown (digital): set high to enter shutdown mode, low otherwise.
- DecayBias (analogue): this analogue level (0V-1V) determines the time constant of the discharge transistors in the CSA.
- Gain1, Gain2 (digital): these pins determine the overall voltage/charge gain of the read-out chain.
- Shaper1, Shaper2, Shaper3 (digital): these pins determine the shaping time of the output semi-gaussian pulse.

The ADC references are RefP, RefN, InCM, CmOut. RefP, RefN, InCM which are the references for the comparators and the MDACs; CmOut is the output common mode voltage of the operational amplifiers. The BiasResistor I/O must be connected to an off-chip resistor (i.e. outside the SALTRO chip) to ground with a resistance between 3k $\Omega$ -7k $\Omega$ .

The table 1 describes how the different signals can be set.

Signal	CPLD	DAC	Potentiometer	Value	Jumper
Polarity	Yes	-	-	Low/high	-
PreampEnable	Yes	-	-	Low/High	-
Shutdown	Yes	-	-	Low/High	-
DecayBias	-	Yes	R59	0-1V, set to 0.3	X7
Gain1,2	Yes	-	-	Low/High	-
Shaper1,2,3	Yes	-	-	Low/High	-
RefP	-	Yes	R58	1.25V	X6
InCM	-	Yes	R57	0.75V	X5
RefN	-	Yes	R56	0.25V	X4
CmOut	-	Yes	R55	0.75V	X3

Table 1

The Bias resistor is R60 + potentiometer R61. It can only be adjusted by the potentiometer R61. The Bias resistor is normally connected to ground, but can with BiasCtrl from the CPLD be disconnected from ground. This will reduce the power of the SALTRO16, to be used during power pulsing.

## Temperature sensor

The temperature sensor is controlled via I2C. It is not mounted on the Brussel version.

## Power

### *Power connector X2 pins*

1	Not Connected
2	Ground
3	VCC (ca 4.3V is needed)
4	Ground

### *Voltage regulators*

The output voltages can be adjusted with potentiometers, except the 3.3V for DAC and temperature sensor.

Voltage	Nominal value set	For
IOPWR	2.5V	IOPins
DIGPWR	1.5V	Digital part
ADCDPWR	1.5V	ADC digital
ADCAPWR	1.5V	ADC analog
PASAPWR	1.5V	PASA

The individual power lines can be disabled by removing jumpers. The board is delivered with jumpers inserted.

## JTAG programming

Can be selected with the jumper JTAGEN X15. Board is delivered with jumper selected to JTAG programming.

## SALTRO16 address

Set by jumpers X12,X13,X14 as:

x = jumper, - = no jumper

X14	X12	X13	Address
x	x	x	0
x	x	-	1
x	-	x	2
x	-	-	3
-	x	x	4
-	x	-	5
-	-	x	6
-	-	-	7

The jumpers are not mounted on the Brussels version. The reason is that the SALTRO-chip should be mounted first, since this will simplify the mounting procedure.

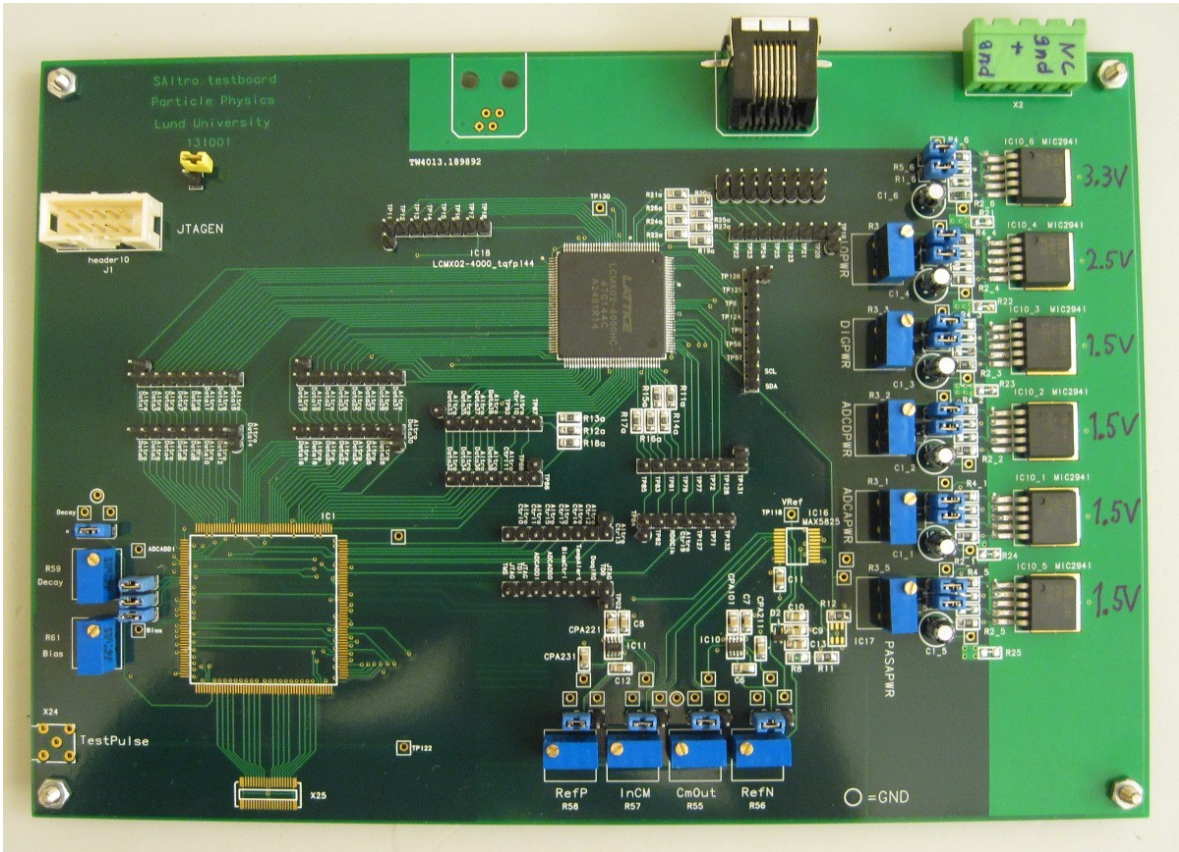
## RJ45 connector

To be connected to the SRU.

### Pins

1	T2	DTC_clockp
2	R2	DTC_clockn
3	T3	DTC_trigger/controlp
4	R1	DTC_data1p
5	T1	DTC_data1n
6	R3	DTC_trigger/controln
7	T4	DTC_data2p
8	R4	DTC_data2n

Picture of protoMCM



# Drawing of protoMCM

