PLC = Programmable Logic Control

Robust electronic equipment for industrial automation control applications.

Could be programmed in the **C-language**, but often the **ISaGRAF** programming tools are used.

Theese tools can be used by industrial electricians, so they can reprogram and correct simple but unexpected problems directly at the plant.

William Sandqvist william@kth.se

PEP SMART I/O PLC

Power 24 V
(18…36V)

GND - +

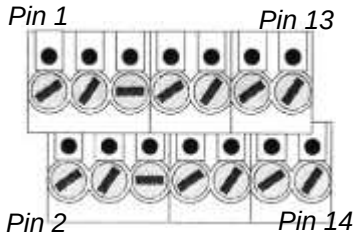
Serial Download

Slot Nr = `logical_address`

Slot 1 Slot 2 Slot 3

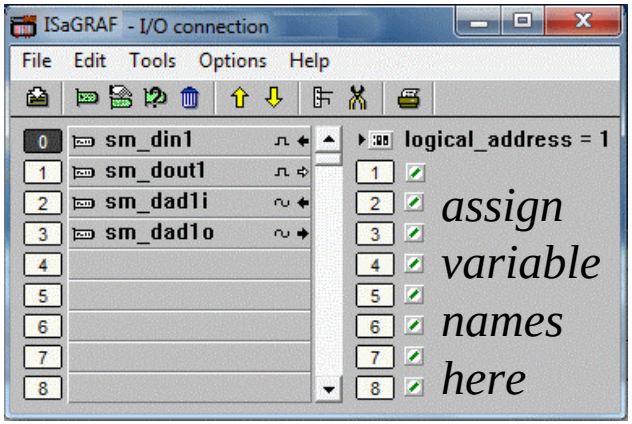
William Sandqvist william@kth.se

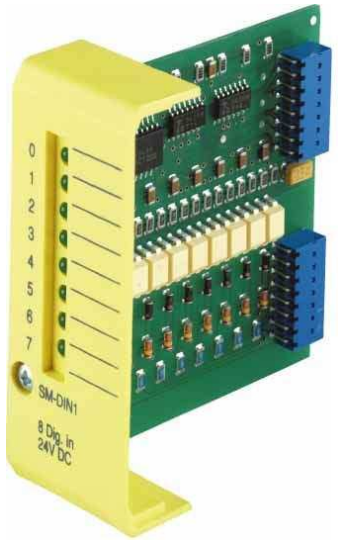
• Slot 1 SM-DIN1



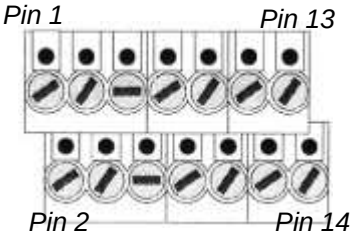
Digital input

Pin Nr.	Signal	LED	Pin Nr.	Signal	LED
1	GND 1		2	GND 5	
3	1	0	4	5	4
5	2	1	6	6	5
7	GND 2		8	GND 6	
9	3	2	10	7	6
11	4	3	12	8	7
13	GND 3, 4		14	GND 7, 8	



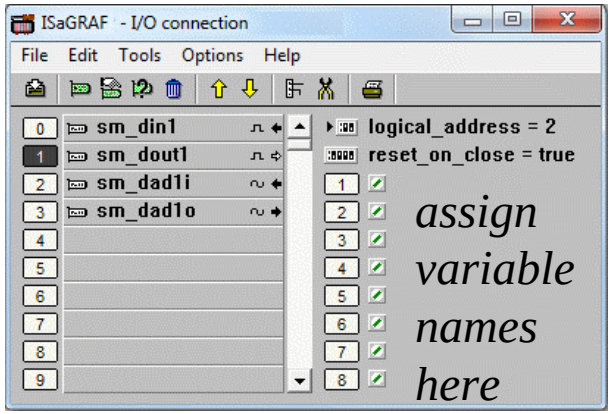


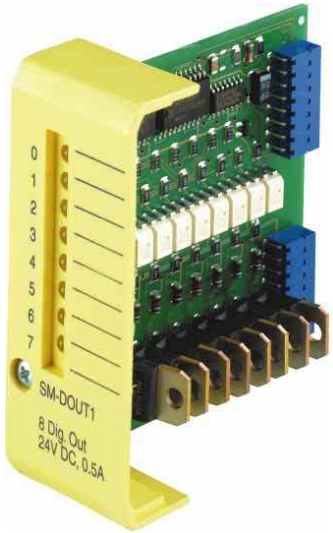
• Slot 2 SM-DOUT1



Digital output

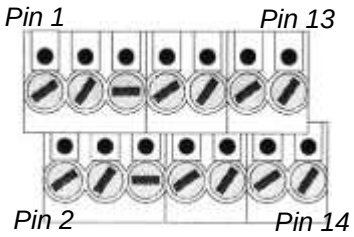
Pin Nr.	Signal	LED	Pin Nr.	Signal	LED
1	V+ 1, 2		2	V+ 5, 6	
3	1	0	4	5	4
5	2	1	6	6	5
7	V+ 3, 4		8	V+ 7, 8	
9	3	2	10	7	6
11	4	3	12	8	7
13	GND 1…4		14	GND 5…8	





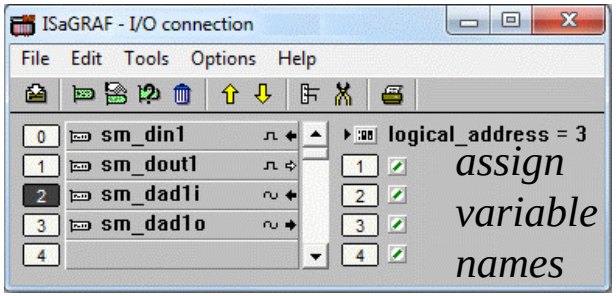
William Sandqvist william@kth.se

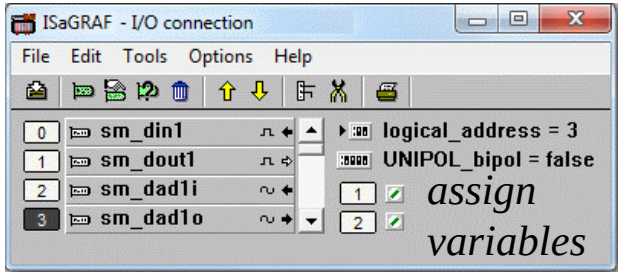
• Slot 3 SM-DAD1



Analog input/output

Pin Nr.	Signal	Pin Nr.	Signal
1	IN1(+)	2	IN3(+)
3	IN1(-)	4	IN3(-)
5	AGND	6	AGND
7	IN2(+)	8	IN4(+)
9	IN2(-)	10	IN4(-)
11	OUT1	12	OUT2
13	AGND	14	AGND





William Sandqvist william@kth.se

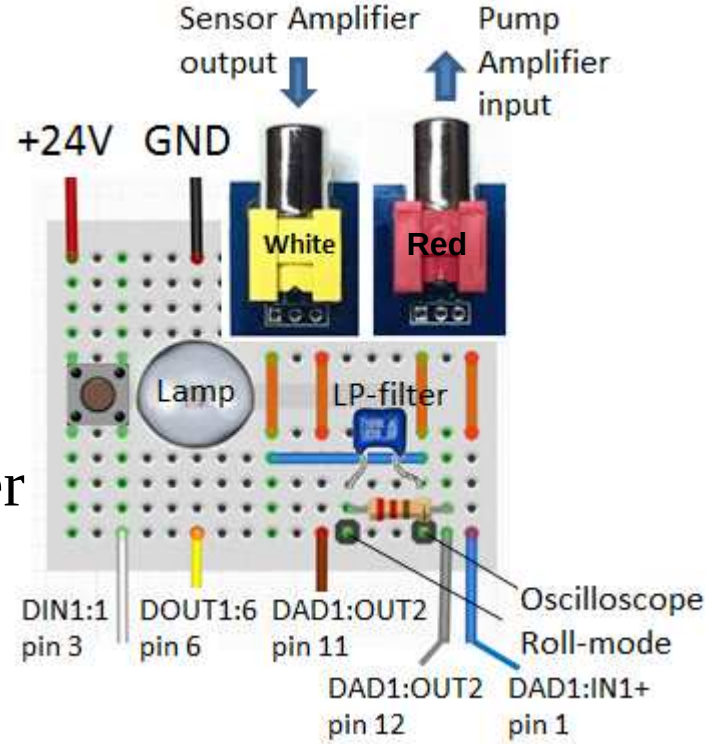
William Sandqvist william@kth.se

Connections to our lab equipment

- PLC

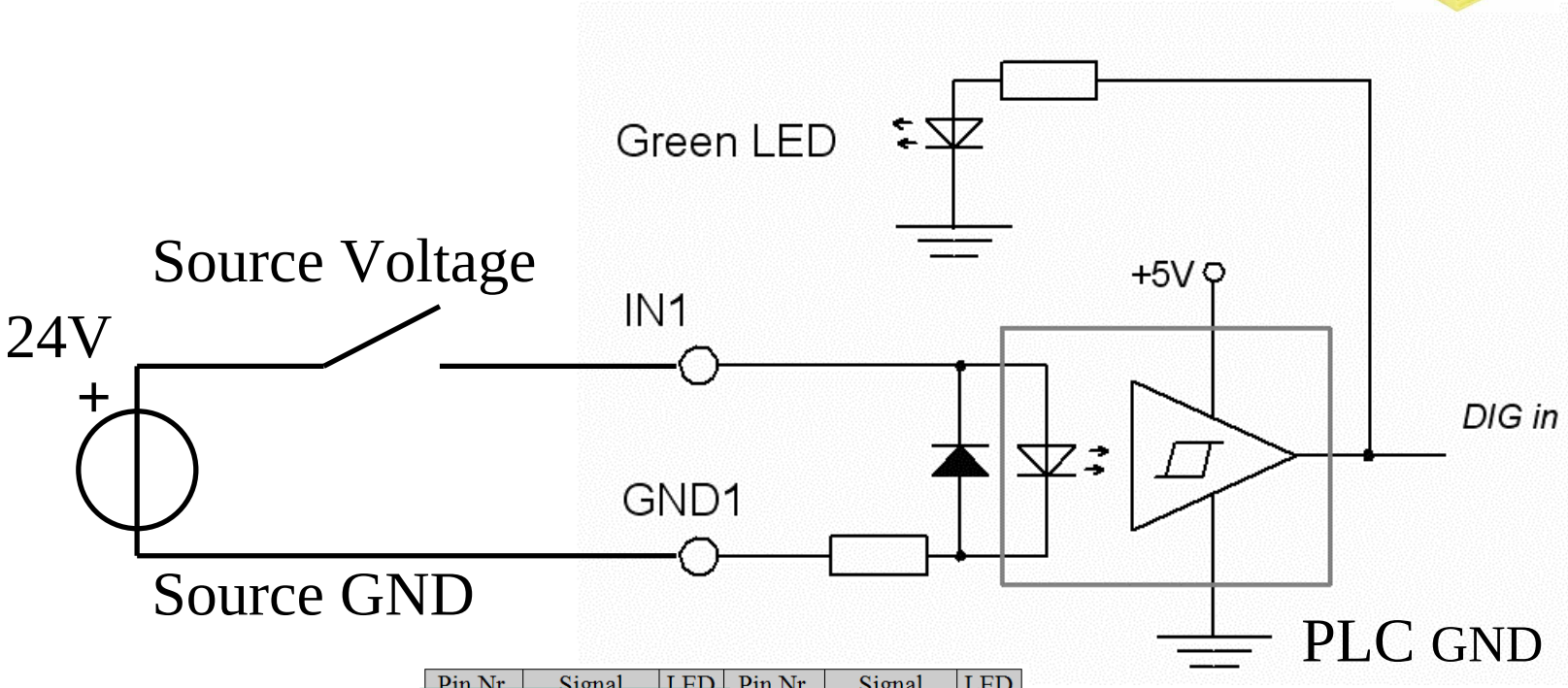
- Sensor amplifier
- Pump Power amplifier

- RCA Breakout breadboard



William Sandqvist william@kth.se

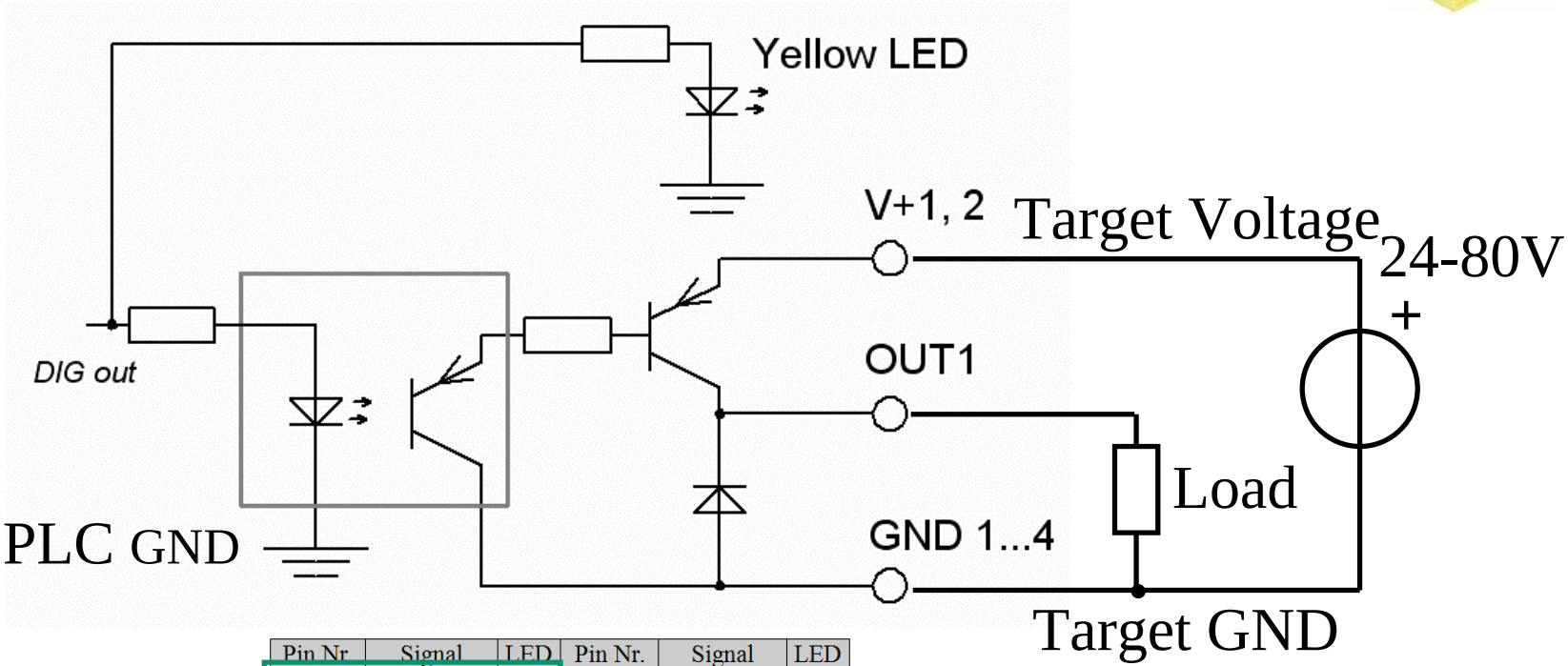
Connecting to digital input



Pin Nr.	Signal	LED	Pin Nr.	Signal	LED
1	GND 1		2	GND 5	
3	1	0	4	5	4
5	2	1	6	6	5
7	GND 2		8	GND 6	
9	3	2	10	7	6
11	4	3	12	8	7
13	GND 3, 4		14	GND 7, 8	

William Sandqvist william@kth.se

Connecting to digital output

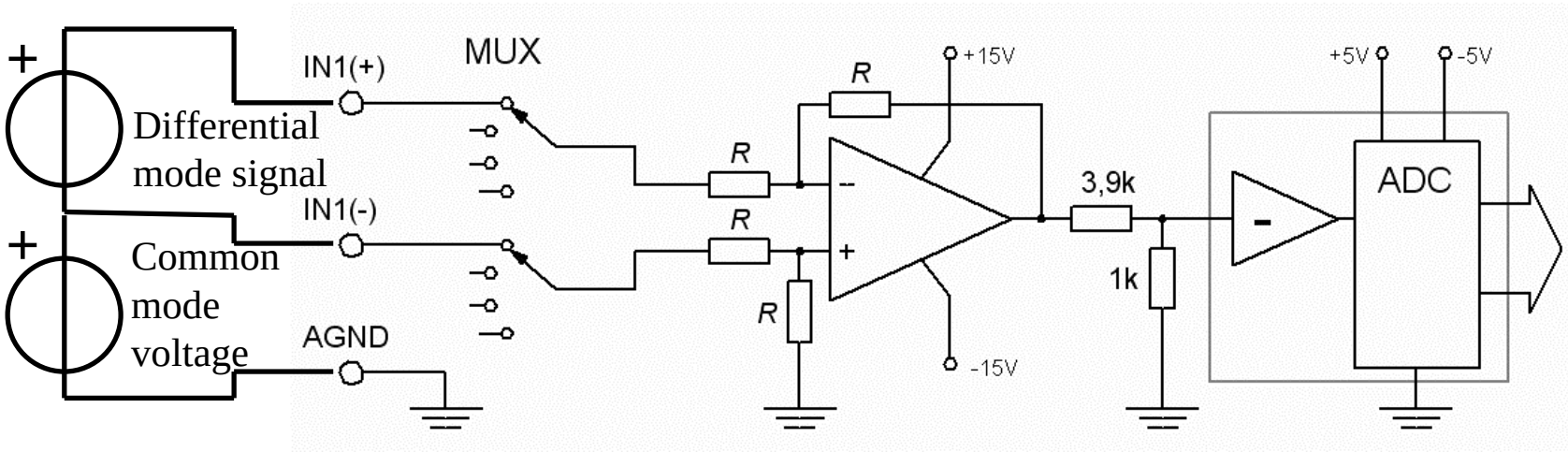


Pin Nr.	Signal	LED	Pin Nr.	Signal	LED
1	V+ 1, 2		2	V+ 5, 6	
3	1	0	4	5	4
5	2	1	6	6	5
7	V+ 3, 4		8	V+ 7, 8	
9	3	2	10	7	6
11	4	3	12	8	7
13	GND 1…4		14	GND 5…8	

William Sandqvist william@kth.se

Connecting to analog input

Differential signal

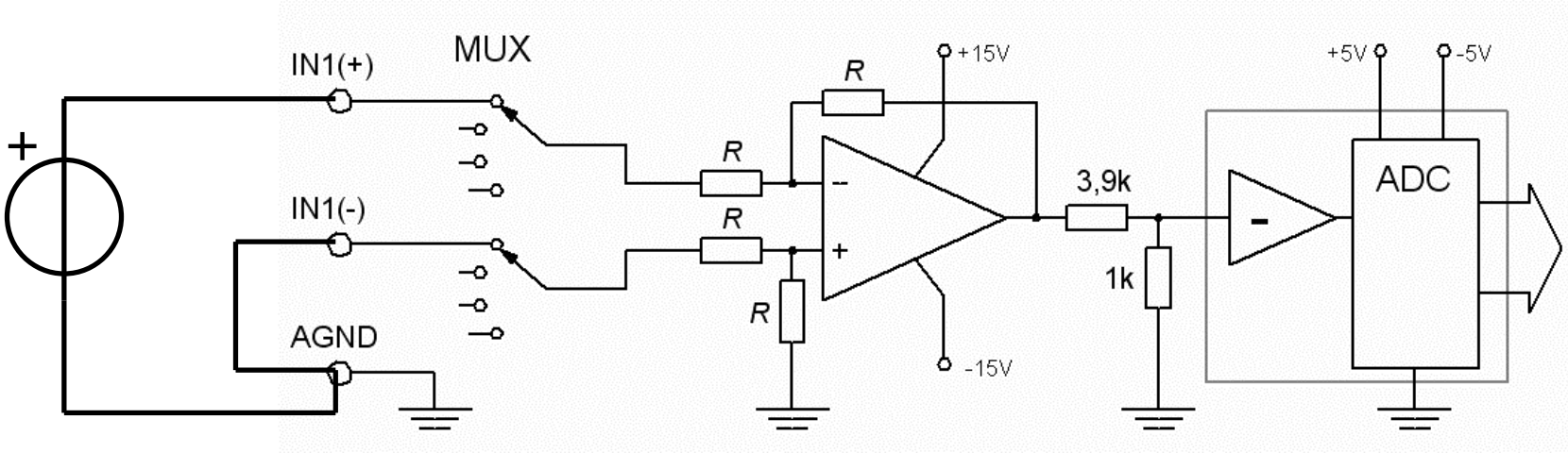


Pin Nr.	Signal	Pin Nr.	Signal
1	IN1(+)	2	IN3(+)
3	IN1(-)	4	IN3(-)
5	AGND	6	AGND
7	IN2(+)	8	IN4(+)
9	IN2(-)	10	IN4(-)
11	OUT1	12	OUT2
13	AGND	14	AGND

William Sandqvist william@kth.se

Connecting to analog input

Single ended signal

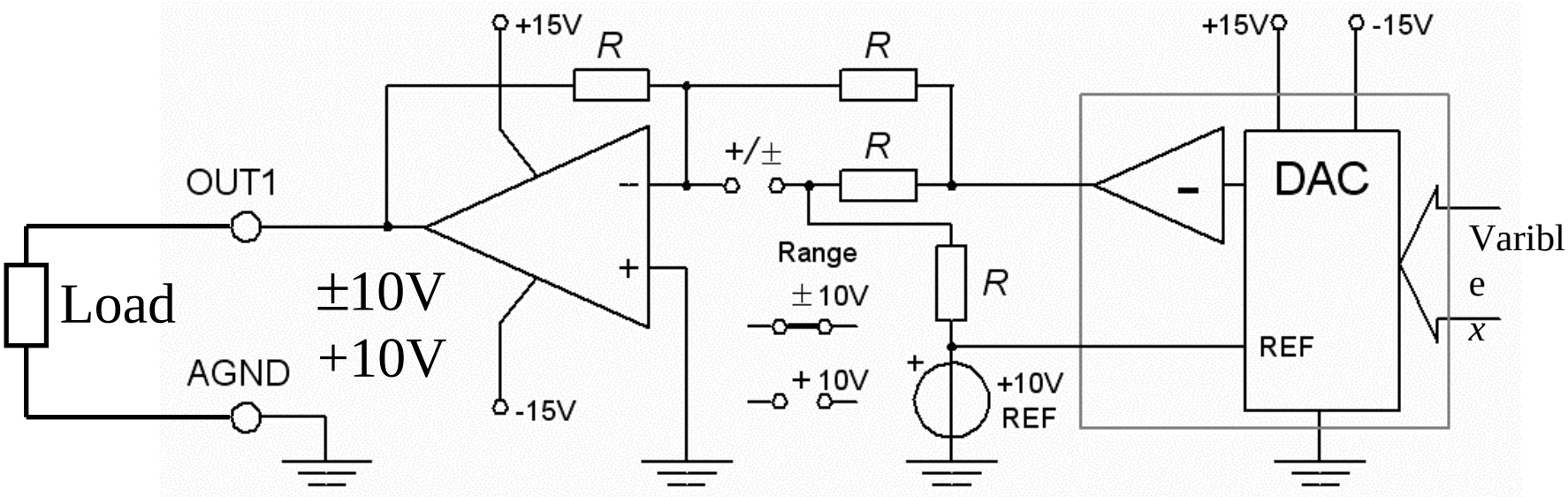


Pin Nr.	Signal	Pin Nr.	Signal
1	IN1(+)	2	IN3(+)
3	IN1(-)	4	IN3(-)
5	AGND	6	AGND
7	IN2(+)	8	IN4(+)
9	IN2(-)	10	IN4(-)
11	OUT1	12	OUT2
13	AGND	14	AGND

William Sandqvist william@kth.se

Connecting to analog output

Single ended output



- Analog output can be unipolar (+) or bipolar (±). Setting must be known by program.

Pin Nr.	Signal	Pin Nr.	Signal
1	IN1(+)	2	IN3(+)
3	IN1(-)	4	IN3(-)
5	AGND	6	AGND
7	IN2(+)	8	IN4(+)
9	IN2(-)	10	IN4(-)
11	OUT1	12	OUT2
13	AGND	14	AGND

- Two outputs can together form a differential output if driven by x and $-x$.

William Sandqvist william@kth.se

William Sandqvist william@kth.se