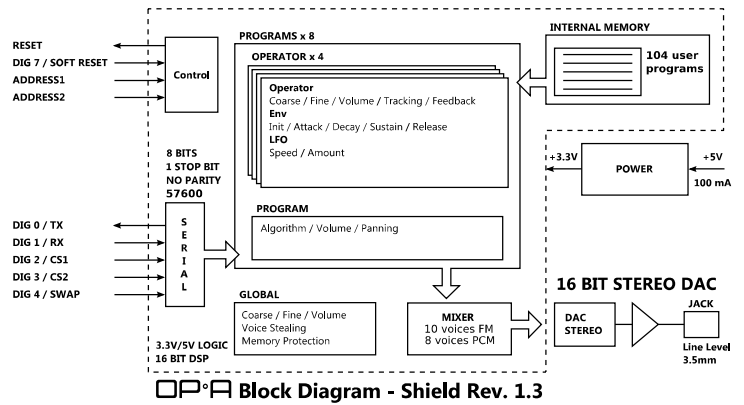


The OPA shield act as a "sound-card" for Arduino based boards and it is controlled using a simple serial communication. Baudrate is 57600 bauds, one stop bit and no parity bit.

**Basic commands:**

The OPA library handles the initialisation and communication with the shield. Only few calls are required to play notes and modify the sound parameters .



The OPA shield act as a "sound-card" for Arduino based boards and it is controlled using a simple serial communication. Baudrate is 57600 bauds, one stop bit and no parity bit.

**Basic commands:**

**opa.enable()**

start the communication with OPA must be called before any other command configure and make use of the Arduino UART

**opa.noteOn(p, n, f, v)**

play note *n* from specific program *p*  
*f* is for fraction, for notes between semitones  
*v* is for volume

**opa.noteOff(p, n, f, v)**

stop note *n* from specific program *p*  
*f* is for fraction, for notes between semitones  
*v* is for volume

**opa.loadInternal(p, s)**

recall program *p* from internal memory slot *s*  
Programs can be created using the OPA Editor or by setting individual sound parameters within your Arduino sketch.

**opa.storeInternal(p, s)**

store program *p* to internal memory slot *s*  
**Memory protection** must be disabled to store a program in internal memory

**opa.writeOperatorParam(p, o, q, v)**

write value *v* to operator parameter *q* of operator *o* of program *p* (refer to operator param list)

**opa.writeFMParam(p, q, v)**

write value *v* to program parameter *q* of program *p* (refer to program param list)

Please refer to the reference manual for more information

Program parameters:

- OPA\_PROGRAM\_NAME Operator output level
- OPA\_PROGRAM\_ALGORITHM Operator semitones
- OPA\_PROGRAM\_VOLUME Operator fine tune
- OPA\_PROGRAM\_PANNING Envelope attack time
- OPA\_PROGRAM\_FLAGS Envelope decay time

Note numbers:

	C	C#	E	E <sub>b</sub>	D	F	F#	G	G#	A	B <sub>b</sub>	B
03	36	37	38	39	40	41	42	43	44	45	46	47
04	48	49	50	51	52	53	54	55	56	57	58	59
05	60	61	62	63	64	65	66	67	68	69	70	71
06	72	73	74	75	76	77	78	79	80	81	82	83
07	84	85	86	87	88	89	90	91	92	93	93	94

Please refer to the reference manual for more information

Operators parameters:

- OPA\_OP\_VOLUME Operator output level
- OPA\_OP\_COARSE Operator semitones
- OPA\_OP\_FINE Operator fine tune
- OPA\_OP\_ENVATTACK Envelope attack time
- OPA\_OP\_ENVDECAY Envelope decay time
- OPA\_OP\_ENVSUSTAINLEVEL Envelope sustain level
- OPA\_OP\_ENVINITLEVEL Envelope init level
- OPA\_OP\_RELEASE Envelope release time
- OPA\_OP\_LFOSPEED LFO rate
- OPA\_OP\_LFOAMOUNT LFO level mod. amount
- OPA\_OP\_FEEDBACK Operator feedback level
- OPA\_OP\_FLAGS Operator special flags

Please refer to the reference manual for more information

Despite our attention, this manual still might contain errors. In order to improve it, please report them at this address:

[support@fredslab.net](mailto:support@fredslab.net)

Disclaimer:

This quick reference manual and product specifications may be updated at any time without prior notice.

**Fred's Lab** cannot be liable for erroneous information in the manual. Refer to product reference manual for more information.