FLAME

TALKING SYNTH MODULE

MANUAL

Version 1.00

Contents

1. Short description

The TALKING SYNTH is a small-sized sound module based on the Speakjet ™ chip, produced by the U.S. company Magnevation LLC, which produces idiosyncratic sounds: from more or less sick robot speech to obscure synthesizer sounds. The variety ranges from speech-like sounds and synthetic robot voices (as well as beeps and alarms), to retro-style sci-fi sounds. Due to the structure of the Speakjet ™ (with its complex sound synthesizer, preset sounds and serial interface) it offers an impressive range of possibilities. The SpeakJet is not sample based as you might think, it has its own sound engine.
The module offers three modes: SYNTH - internal synthesizer sounds, PHONEMES - speech phonemes and effect sounds, WORDS - ready-made words/phrases/sentences.
With the switch in the 'HOLD' position the sounds can be played continuously. In the 'TRIGGER' position the sounds can be triggered manually with a pushbutton or with an external trigger input. Four parameters can be controlled with pots or four external CV inputs (0..+10v), then the pots serve as offset controls.
Following updates are loadable per USB (jack and jumper on PCB).

2. Hardware / Connections

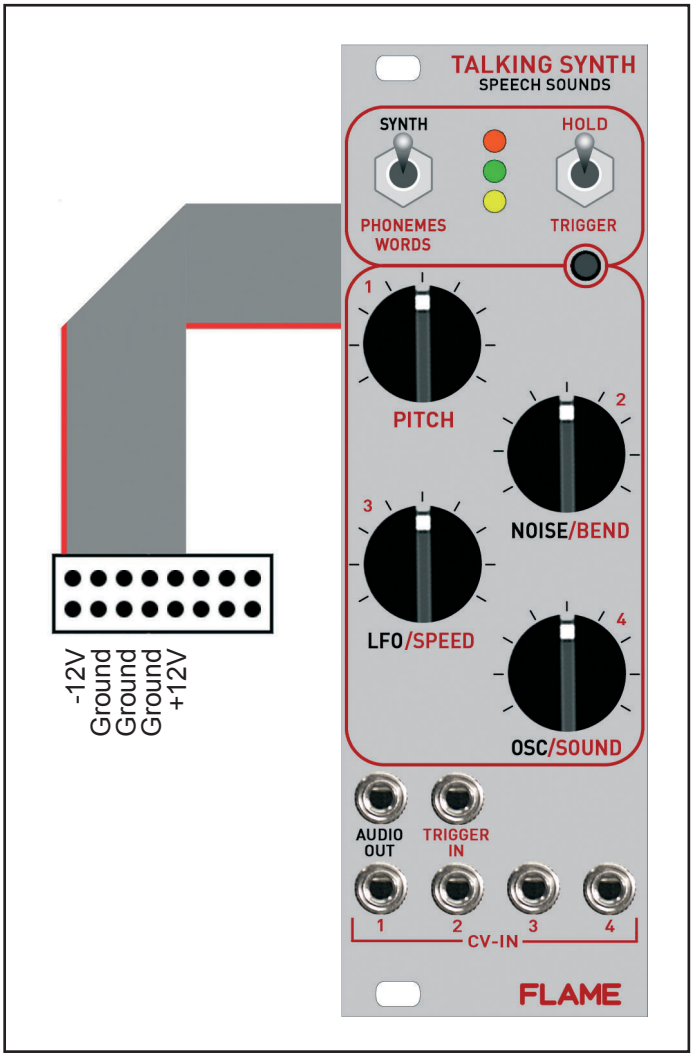
2.1 Connection to the modular system (Doepfer Bus)

The module is delivered with a connected ribbon cable for the Doepfer bus. The red lead marks -12 volt. Connecting the module please note the right polarity!

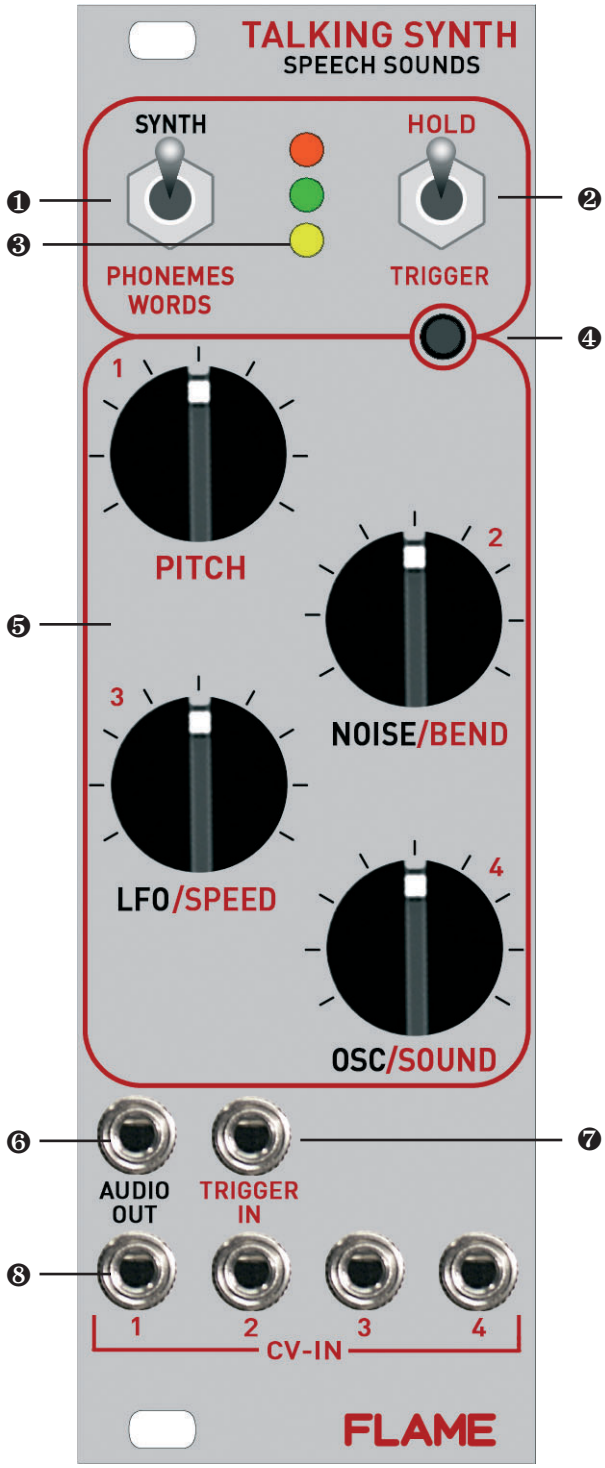
If the module is poled accidentally wrong safety diodes avoid the immediate destruction of the module but further damages cannot be excepted.

So please pay attention: Check the connection various times before switching on!

The red LED on = Power on!



2.2 Module overview



❶ Switch S1 Mode

❷ Switch S2 Trigger continuous / manual

❸ LED's red - Power on
green - Trigger
yellow - "Speaking"

❹ Push button manually trigger

❺ 4 knobs:
1 - pitch
2 - noise / bend
3 - LFO / speed
4 - select sounds

❻ Audio output jack (mono)

❼ Trigger/gate input

❽ CV inputs 1-4 (0..10V)

3. Trigger / Gate

With the switch S2 "Trigger / Hold" you select between manually Trigger and continuously Trigger (HOLD). Please trigger short for onetime speaking words or phonemes. The sounds will be played in loop while you hold down the push button.

As well you can trigger the sounds via external trigger input with different lenghts of gate impulses: short = play sound onetime, long (Gate on) = play sounds in loop.

4. Mode SYNTH (internal synthesizer)

In Mode “SYNTH” you control and play directly the internal synthesizer. In this mode the layout of the knobs is as follows: 1=Pitch, 2=Noise, 3=LFO, 4=Osc.

1 PITCH

Here you can set the pitch of the oscillators from 0..3999Hz in semitone steps. The CV input 1 has the 1volt per octaves characteristic. If the pot 1 is in position zero then the input range is 0..10volt. You can turn on the pot 1 to offset the input CV in semitone steps.
Please select the oscillators (monophon or chords) with knob 4.

Please note: The sound of the first octaves is very low and noisy (hissing).

2 NOISE

Add to the oscillator sound a noise. Two independent oscillators and a distortion build the noise variations, controlled by the pot 2 or the CV input 2.

3 LFO

With this knob you can add an envelope modulation (amplitude modulation) to the oscillators. As well you can control the LFO with external CV from CV input 3, then the pot 3 serves as offset controller. You have following pot setups (if no CV input):

Pot position	Function
0	modulation = off
1...5,5	wave=Saw, speed=0..max
5,5...max	wave=Sin, speed=max...0

4 OSC (oscillators)

This knob selects the tuning (chords) of the oscillators. As well you can control the oscillators with external CV from CV input 4, then the pot 4 serves as offset controller. Select one of this following 17 chords (if no CV input):

Pot position	chord name	Pot position	chord name
1	monophon	5,5	minor 7
1,5	major triad chord	6	fourths
2	major triad 1 invers	6,5	augmented
2,5	major triad 2 invers	7	diminished
3	major 6	7,5	sus 4
3,5	major 7	8	sus 2
4	minor triad chord	8,5	7 sus 4
4,5	minor triad 1 invers	9	octaves 0 +2 +4
5	minor 6		

5. Mode PHONEMES

In Mode “PHONEMES” you control and play the allophone and effect components. In this mode the layout of the pots is as follows: 1=Pitch, 2=Bend, 3=Speed, 4=Sound.

1 PITCH

Here you can set the pitch of the sounds in semitone steps. The CV input 1 has the 1volt per octaves characteristic. If the pot 1 is in position zero, then the input range is 0..10volt. You can turn on the pot 1 to offset the input CV in semitone steps. Please select the phonemes or effect sounds with pot 4.

Please note that the sounds of the first octaves start to sound like clicks instead of a voice.

2 BEND

The frequency Bend adjusts the output frequencies of the oscillators. This will change the voicing from a deep-hollow sounding voice to a High-metallic sounding voice. Bends can range from 0 to 15. As well you can control the BEND with external CV from CV input 2, then the pot 2 serves as offset controller.

3 SPEED

This pot sets the play speed. As well you can control the SPEED with external CV from CV input 3, then the pot 3 serves as offset controller.

4 SOUND

This pot selects the sounds: Phonemes and effect sounds. As well you can select the sounds with external CV from CV input 4, then the pot 4 serves as offset controller. The CV input 4 has the 1volt per octaves characteristic over 10 octaves (= 120 sounds).

Advice:

Please look at the appendix to found the complete list of sounds.

6. Mode WORDS

In Mode “WORDS” you control and play the preset words, phrases and randomized sentences. In this mode the layout of the pots is as follows: 1=Pitch, 2=Bend, 3=Speed, 4=Sound.

1 PITCH

Here you can set the pitch of the sounds in semitone steps. The CV input 1 has the 1volt per octaves characteristic. If the pot 1 is in position zero, then the input range is 0..10volt. You can turn on the pot 1 to offset the input CV in semitone steps. Please select the words or phrases with pot 4.

Please note that the sounds of the first octaves start to sound like clicks instead of a voice.

2 BEND

The frequency Bend adjusts the output frequencies of the oscillators. This will change the voicing from a deep-hollow sounding voice to a High-metallic sounding voice. Bends can range from 0 to 15. As well you can control the BEND with external CV from CV input 2, then the pot 2 serves as offset controller.

3 SPEED

This pot sets the play speed. As well you can control the SPEED with external CV from CV input 3, then the pot 3 serves as offset controller.

4 SOUND

This pot selects the sounds: Words, Phrases and randomized sentences. As well you can select the sounds with external CV from CV input 4, then the pot 4 serves as offset controller.. The CV input 4 has the 1volt per octaves characteristic over 10 octaves (= 120 pages).

Examples:

Position Pot 4 = min > speaking count up from “one” to “ten”
Position Pot 4 = max > speaking randomized sentences

Advice:

Please look at the appendix to found the complete list of words and phrases.

7. Appendix

7.1 List of Phonemes and sound effects

NR	Note	Phoneme/Sound	Sample Words	NR	Note	Phoneme/Sound	Sample Words
1	c0	IY	See, Even, Feed	61	c5	SO	So, Sweet
2	c#0	IH	Sit, Fix, Pin	62	c#5	SH	Ship, Fiction
3	d0	EY	Hair, Gate, Beige	63	d5	TH	Thin, Month
4	d#0	EH	Met, Check, Red	64	d#5	TT	Part, Little, Sit
5	e0	AY	Hat, Fast, Fan	65	e5	TU	To, Talk, Ten
6	f0	AX	Cotten	66	f5	TS	Parts, Robots
7	f#0	UX	Luck, Up, Uncle	67	f#5	KE	Can't, Clown
8	g0	OH	Hot, Clock, Fox	68	g5	KO	Comb, Quick, Fox
9	g#0	AW	Father, Fall	69	g#5	EK	Speak, Task
10	a0	OW	Comb, Over, Hold	70	a5	OK	Book, October
11	a#0	UH	Book, Could	71	a#5	PE	Peaple, Computer
12	b0	UW	Food, June	72	b5	PO	Paw, Copy
13	c1	MM	Milk, Famous	73	c6	Robot 1	
14	c#1	NE	Nip, Danger, Thin	74	c#6	Robot 2	
15	d1	NO	No, Snow, On	75	d6	Robot 3	
16	d#1	NGE	Think, Ping	76	d#6	Robot 4	
17	e1	NGO	Hung, Song	77	e6	Robot 5	
18	f1	LE	Lake, Alarm	78	f6	Robot 6	
19	f#1	LO	Clock, Plus, Hello	79	f#6	Robot 7	
20	g1	WW	Wool, Sweet	80	g6	Robot 8	
21	g#1	RR	Ray, Brain, Over	81	g#6	Robot 9	
22	a1	IYRR	Clear, Hear, Year	82	a6	Robot 10	
23	a#1	EYRR	Hair, Stair, Repair	83	a#6	Alarm 1	
24	b1	AXRR	Fir, Bird, Burn	84	b6	Alarm 2	
25	c2	AWRR	Part, Farm, Yam	85	c7	Alarm 3	
26	c#2	OWRR	Corn, Four, Your	86	c#7	Alarm 4	
27	d2	EYIY	Gate, Ate, Ray	87	d7	Alarm 5	
28	d#2	OHIY	Mice, Fight, White	88	d#7	Alarm 6	
29	e2	OWIY	Boy, Toy, Voice	89	e7	Alarm 7	
30	f2	OHIH	Sky, Five, I	90	f7	Alarm 8	
31	f#2	IYEH	Yes, Yam, Million	91	f#7	Alarm 9	
32	g2	EHLL	Saddle, Angle	92	g7	Alarm 10	
33	g#2	IYUW	Cute, Few	93	g#7	Beeps 1	
34	a2	AXUW	Brown, Thousand	94	a7	Beeps 2	
35	a#2	IHWW	Two, New, Zoo	95	a#7	Beeps 3	
36	b2	AYWW	Our, Ouch, Owl	96	b7	Beeps 4	
37	c3	OWWW	Go, Hello, Snow	97	c8	Beeps 5	
38	c#3	JH	Dodge,Jet,Savage	98	c#8	Beeps 6	
39	d3	VV	Vest, Even	99	d8	Beeps 7	
40	d#3	ZZ	Zoo, Zap	100	d#8	Beeps 8	
41	e3	ZH	Azure, Treasure	101	e8	Beeps 9	
42	f3	DH	There, That, This	102	f8	Beeps 10	
43	f#3	BE	Bear, Bird, Beed	103	f#8	Biological 1	
44	g3	BO	Bone,Book,Brown	104	g8	Biological 2	
45	g#3	EB	Cab, Crib, Web	105	g#8	Biological 3	
46	a3	OB	Bob, Sub, Tub	106	a8	Biological 4	
47	a#3	DE	Deep,Date,Divide	107	a#8	Biological 5	
48	b3	DO	Do, Dust, Dog	108	b8	Biological 6	
49	c4	ED	Could, Bird	109	c9	Biological 7	
50	c#4	OD	Bud, Food	110	c#9	Biological 8	
51	d4	GE	Get, Gate, Guest	111	d9	Biological 9	
52	d#4	GO	Got, Glue, Go	112	d#9	Biological 10	
53	e4	EG	Peg, Wig	113	e9	DTMF 0	
54	f4	OG	Dog, Peg	114	f9	DTMF 1	
55	f#4	CH	Church, Feature	115	f#9	DTMF 2	
56	g4	HE	Help, Hand, Hair	116	g9	DTMF3	
57	g#4	HO	Hoe, Hot, Hug	117	g#9	DTMF 4	
58	a4	WH	Who,Whale,White	118	a9	DTMF 5	
59	a#4	FF	Food, Effort, Off	119	a#9	Sonar Ping	
60	b4	SE	See, Vest, Plus	120	b9	Pistol Shot	

7.2 List of Words / Phrases

NR	Note	Word / Phrase	NR	Note	Word / Phrase
1	c0	count up: 1..10	61	c5	“dance music”
2	c#0	count down: 10..zero	62	c#5	“concert”
3	d0	“Ich bin ein Berliner”	63	d5	“t-shirt”
4	d#0	“one”	64	d#5	“fans”
5	e0	“two”	65	e5	“show”
6	f0	“three”	66	f5	“comic”
7	f#0	“four”	67	f#5	“cigaretts”
8	g0	“five”	68	g5	“drugs”
9	g#0	“six”	69	g#5	“sex”
10	a0	“seven”	70	a5	“mystery”
11	a#0	“eight”	71	a#5	“power”
12	b0	“nine”	72	b5	“error”
13	c1	“ten”	73	c6	“dream”
14	c#1	“eleven”	74	c#6	“sunshine”
15	d1	“I”	75	d6	“flower”
16	d#1	“I am”	76	d#6	“water”
17	e1	“You”	77	e6	“rain”
18	f1	“You are”	78	f6	“ocean”
19	f#1	“it’s”	79	f#6	“clouds”
20	g1	“now”	80	g6	“sky”
21	g#1	“not”	81	g#6	“world”
22	a1	“don’t”	82	a6	“wonderfull”
23	a#1	“and”	83	a#6	“girl”
24	b1	“or”	84	b6	“woman”
25	c2	“plastic”	85	c7	“lady”
26	c#2	“electronic”	86	c#7	“boy”
27	d2	“laser”	87	d7	“man”
28	d#2	“wire”	88	d#7	“rasta man”
29	e2	“computer”	89	e7	“sister”
30	f2	“radio”	90	f7	“brother”
31	f#2	“transmission”	91	f#7	“muther”
32	g2	“robot”	92	g7	“father”
33	g#2	“gasoline”	93	g#7	“lips”
34	a2	“energy”	94	a7	“eyes”
35	a#2	“machine”	95	a#7	“hair”
36	b2	“system”	96	b7	“body”
37	c3	“atoms”	97	c8	“OK!“
38	c#3	“neutrons”	98	c#8	“yes”
39	d3	“orbit”	99	d8	“no”
40	d#3	“satellite”	100	d#8	“down”
41	e3	“rocket”	101	e8	“up”
42	f3	“beam”	102	f8	“left”
43	f#3	“fly”	103	f#8	“right”
44	g3	“moon”	104	g8	“turn”
45	g#3	“universe”	105	g#8	“on”
46	a3	“galaxy”	106	a8	“off”
47	a#3	“black hole”	107	a#8	“under”
48	b3	“lift off”	108	b8	“in”
49	c4	“guitar”	109	c9	“here”
50	c#4	“synthesizer”	110	c#9	“wrong”
51	d4	“drums”	111	d9	“nice”
52	d#4	“sticks”	112	d#9	“cool”
53	e4	“bass”	113	e9	“stormy”
54	f4	“strings”	114	f9	“free”
55	f#4	“play”	115	f#9	“old”
56	g4	“stop”	116	g9	“talk about”
57	g#4	“music”	117	g#9	“please”
58	a4	“rock’n roll”	118	a9	“I’ll be back”
59	a#4	“punk music”	119	a#9	“thank you”
60	b4	“tekkno”	120	b9	random sentences

7.3. Technical details

Connections:

Ribbon cable adapter for Doepfer bus +/-12Volt
Inputs: 4x CV (0..+10V), 1x Trigger (0/+5..10V), 1/8th inch mono jacks
Output: 1x mono audio (10Vpp), 1/8th inch mono jack

Control elements:

2 switches to select mode and trigger
4 knobs for sound parameters
3 LED's

Current consumption: + 87mA / - 31mA
Size: Euro rack format 3U / 8HP 40x128,5x38 mm

7.4 Warrenty

Beginning from the date of purchase a 2-year warranty is guaranteed for this device in case of any manufacturing errors or other functional deficiencies during runtime.The warranty does not apply in case of:
- damage caused by misuse
- mechanical damage arising from careless treatment (dropping, vigorous shaking, mishandling, etc)
- damage caused by liquids penetrating the device
- heat damage caused by overexposure to sunlight or heating
- electric damage caused by improper connecting
  (wrong power supply/ jacks/ MIDI connections/ voltage problems).

If you have any complaints please contact your dealer or send an e-mail to:
service@flame.fortschritt-musik.de

7.5 Terms of production

conformity: CE, RoHS, UL

7.6 Disposal

The device is produced with RoHS-conformity (subject to the regulations of the European Union) and is free of hazardous substances (like mercury, plumb, cadmium and hexavalent chrome). But electronical scrap is hazardous waste. Please don't add this to consumer waste. For an environment friendly disposal of waste please contact your distributor or specialist dealer.

7.7 Support

Updated and additional informations, updates, downloads and more see:
http://flame.fortschritt-musik.de

7.8 Acknowledgment

For help and assistance big thanks to: Schneiders Büro Berlin, Shawn Cleary (Analogue haven, Los Angeles), Thomas Wagner, Robert Junge, Anne-Kathrin Metzler und Lena Bünger.