

LX Voice Module

v1.13

User manual



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1 Generally

The LX Voice Module was developed to make LX 7007 pro IGC even more user friendly by providing voice warnings and information generated by the voice synthesizer. The **LX Voice Module** comes in two variants: The LX 7007 system bus connectable device or as a stand alone unit. As **LX system bus participant**, the LX Voice Module does not require the external power supply. There are also no additional speakers necessary, as the built in audio mixer makes the existing vario speaker also available for the voice. Both LX 7007 and Flarm information and warnings are expressed by voice.

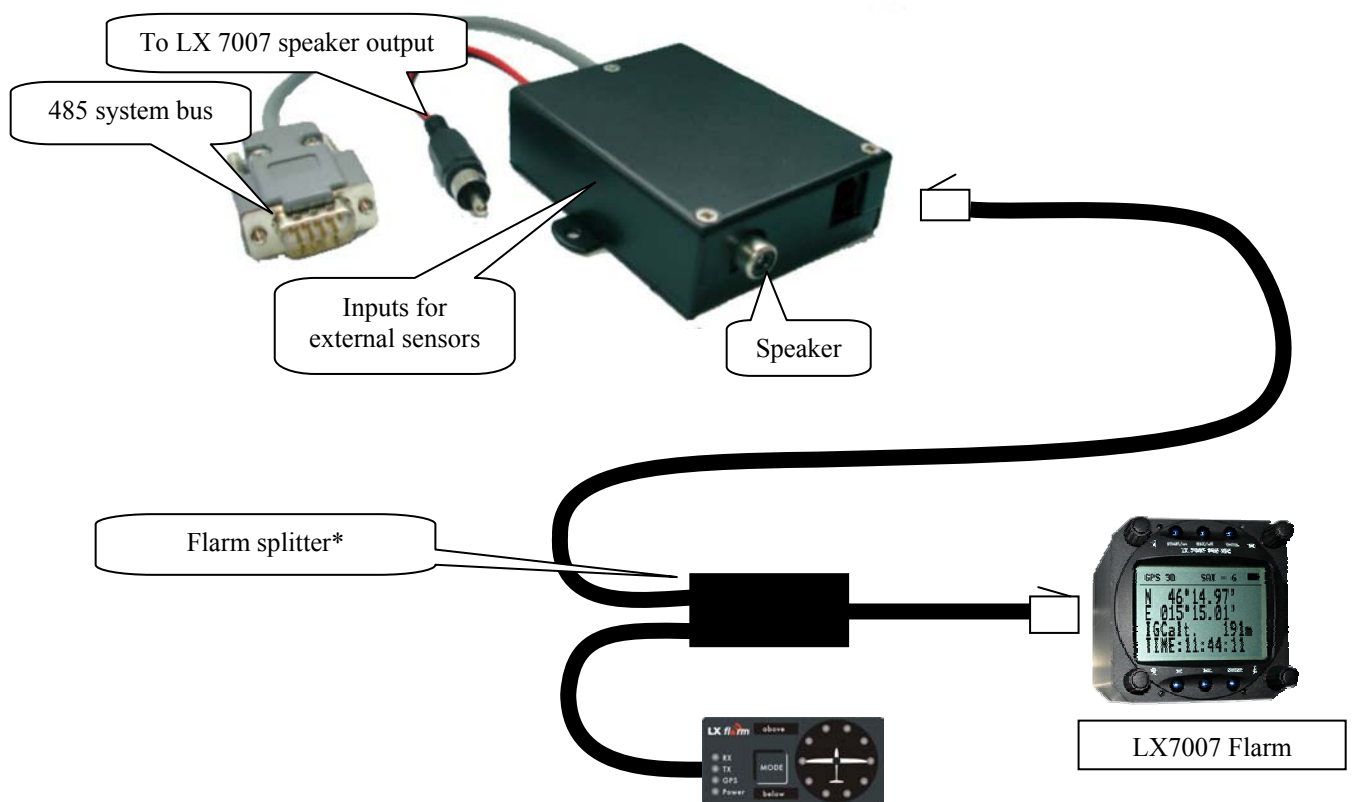
The **stand alone version** has also a Flarm compatible input and three inputs for external sensors which functionality can be custom defined.

A suitable aluminium black box (55x22x75mm) may be installed anywhere in the cockpit. Three digital inputs also allow connection of other external sensors providing e.g. landing gear or air brakes status signals.

The built in SD card interface makes possible some custom functionality adaptations via SD card. Every unit is delivered with one already formatted SD card. Nearly every SD card can be used. It is to respect that the card must be **FAT formatted**, **FAT 32** formatted cards will not work.

1.1 Connection to LX 7007

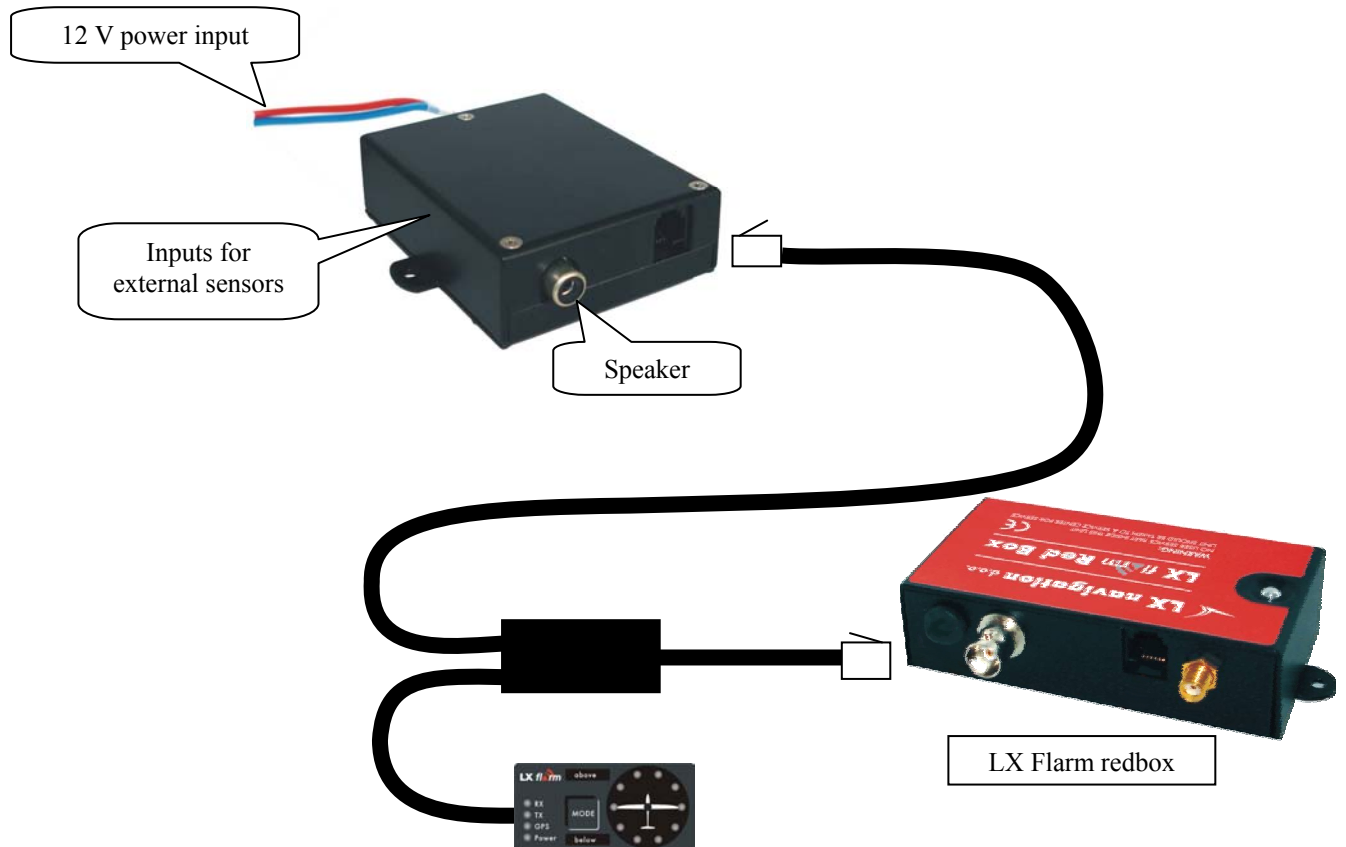
Units working in conjunction with LX 7007 don't need additionally speaker. The already installed speaker should be only reconnected. Power and data exchange LX 7007 – LX Voice Module is arranged via 485 system bus. A bus compatible 9P connector is a part of delivery (having no free plugs order 485 splitter). To avoid any delays the Flarm output data is send directly from LX 7007 Flarm output to LX Voice module via cable. All cables are clearly marked.



- **One splitter*** to split Flarm data toward Voice Module and Flarm external display is delivery included.

1.2 Stand alone version

This configuration operates as a stand alone and may be connected to any Flarm unit. The unit requires 12V DC from glider power supply bus. **Speaker** is a part of delivery.



Note!

There is no fuse in the unit, use an **external fuse 1,0 A**

1.3 Inputs for external sensors

The unit has three inputs (each two contacts) for external sensors (switches). Switch closed means input active and vice versa. Default configuration offers following:

- **Input 1** active gear warning (voice: check gear)
- **Input 3** Voice **volume increasing/decreasing** and **Flarm voice** information adjustments, it is recommended to use a push button
-every **short press** will **circularly decrease/increase** volume for one step

Note!

The volume of LX 7007 information and warnings voices and also Flarm voices will be adjusted at the same time.

The setting will remain active until power down and will correspond to LX 7007 Voice Module setting after new power on. A new selection of Voice volume in LX 7007 will overwrite push button setting immediately.

-2 second press will **deactivate/activate Near mode** (voice: **near mode off/on**). During deactivated period, no **traffic information** will be expressed by voice, **only warnings**.

-5 second press will deactivate all voice information connected to Flarm for **next 5 minutes** (voice: **Flarm off for five minutes**). LX 7007 voice information and warnings are excluded. See LX 7007 manual for details (System setup, Voice Module).

Note!

Respect label on LX Voice Module, to get informed how to connect external sensors.

- **Input 2** isn't active and may be used after its functionality has been defined in **Configuration Settings**. The file is available on SD card.

Functions described in this capture are **valid for both** versions.

1.4 Mechanical installation

There are no controls on the unit an exception are inputs for sensors which are normally wired and the actuators are positioned somewhere else. Therefore the unit can be placed anywhere in the cockpit. There is also no periodic maintenance works anticipated, as the SW update runs via 6P telephone type connector and voice update via SD card exchange, respect this situation by installing.

Stand alone version requests installation of **1A fuse** between power source and the unit.

1.4.1 Insertion of SD card

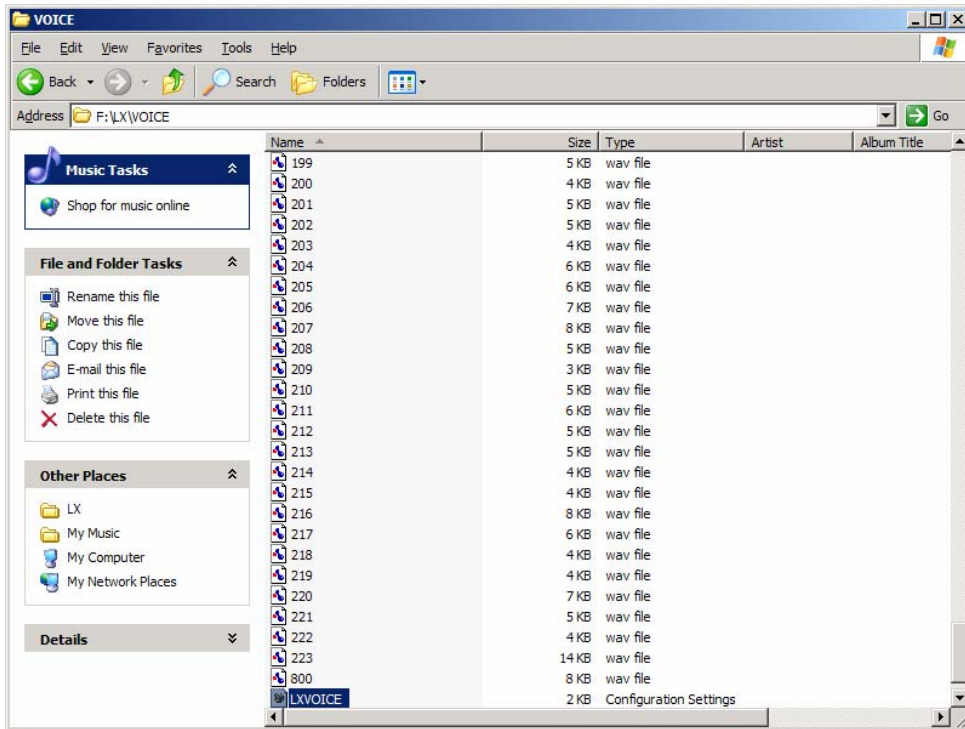
The SD card may be in some cases inserted wrong way, some types of SD cards allow such a situation. The contacts of SD card should be oriented toward top of the unit (label). After correct insertion a typical "bang" is heard. The card may be inserted any time, even if LX Voice Module is under power.

1.4.1.1 Using of non original SD cards

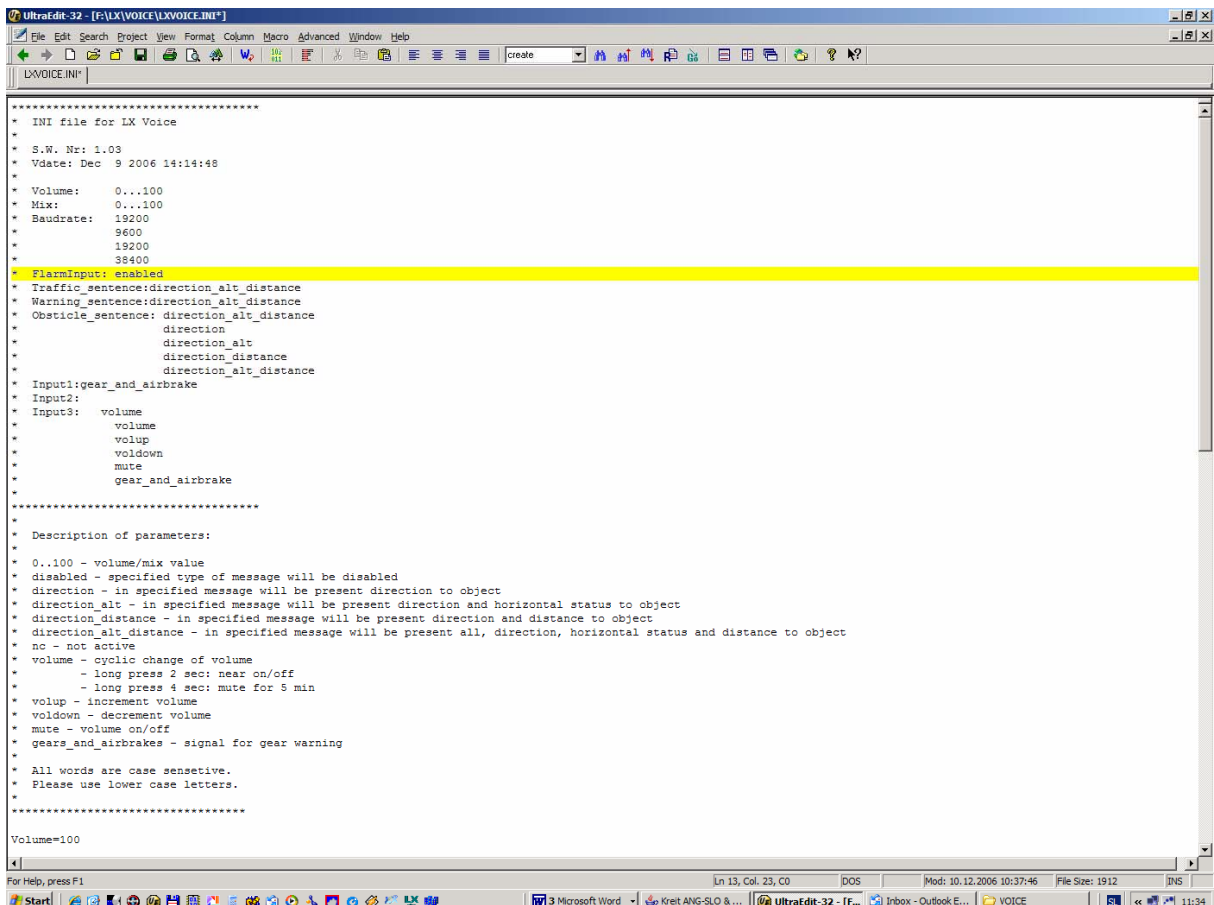
Practically every SD card can be used. The only important fact is that it shouldn't be formatted as FAT 32, if not formatted doesn't matter. Insert such an "empty" card into LX Voice Module and a short voice message "Card not formatted" will follow. During this procedure the SD card will be formatted and INI file copied. The user should copy **.wav** files into the same directory using PC.

2 User adaptation of Configuration Settings

This procedure should be provided with PC equipped with SD card reader. After the SD card has been inserted into PC card reader slot the SD card will be detected like "Removable Disc".



.WAV files includes voice information and can be substituted by customers. Edit of LXVOICE Configuration settings makes possible to arrange some custom functionality. LX Voice Module – LX 7007 users are able to arrange nearly all settings via LX 7007 setup menus. After click on LXVOICE configuration settings may be adjusted.



- **Volume:**

Preset of voice volume, possible also from LX 7007.

- **Mix:**

Preset of audio mixer, possible also from LX 7007, doesn't matter by stand alone users

- **Baudrate:**

An **extremely important** setting, will adapt com sped to devices (Flarm) which delivers traffic information and warning data.

Device	Baudrate to be set on LX Voice	Remarks
LX 7007	19200	
LX Flarm Red box	19200	
LX Flarm 5000 interface	19200	
Flarm power data output	The same as Flarm	Adjustable on Flarm also
Flarm extension output	The same as Flarm	

- **Horizontal distance**

The units in which the horizontal distance will be expressed can be adapted (m, ml, nm).

- **Flarm Input**

Default setting is enabled.

- **Traffic sentences**

This data informs about presence of traffic in glider vicinity. The voice message can be custom configured as:

voice: Traffic xx o'clock, above /below, x meters/kilometres (horizontal distance)

Traffic xx o'clock is a minimum and will be always expressed, if alt and distance will be enabled a complete voice message will follow.

- **Warning sentences**

Uses the same philosophy as traffic sentences.

- **Obstacle sentences**

Uses the same philosophy as traffic sentences.

- **Inputs**

Each input may get some custom functionalities and the customer is able to define them after choosing of Volume, Volup, Voldown, Mute, and Gear option. See also LXVOICE init file.

Note!

Gear warning is factory set and available as Input 3. Input 1 is set as **VOLUME**. See also label on the top of the unit.

3 Check after installation

After the installation a short functional check should be provided.

- **LX 7007 connected units**

Switch the LX 7007 on and wait until SET ELEVATION procedure will start, a voice message **set elevation** should appear. Disconnect Flarm connector and plug it again, a very typical message Flarm connected will follow.

Trouble shooting:

- Check, if the unit is connected to 485 bus and Flarm
- Check LX 7007 settings (System setup Voice Module)
- Unplug and plug the SD card, and observe, if "bang" will appear

-Short “gear” input and a warning should appear, if the input is active

- **Stand alone units**

-A “bang” will show you that the unit is under power

-Disconnect Flarm and plug it again, a very typical message Flarm connected will follow.

Trouble shooting:

-Check, if the unit is connected to power and Flarm

-unplug and plug the SD card, and observe, if “bang” will appear

-Short “gear” input and a warning should appear, if the input is active

4 Appendix

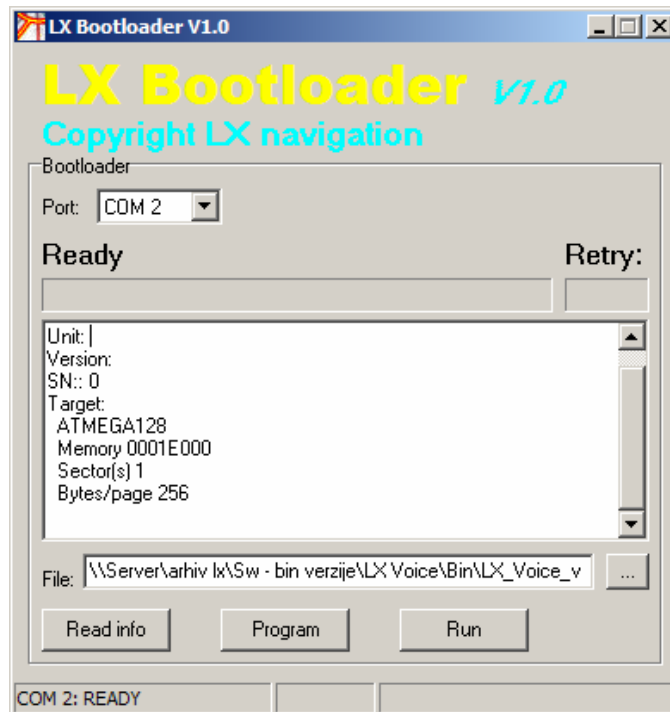
4.1 Firmware update

The update of LX Voice Module firmware is also possible after using of special LX tools (LX Bootloader). All tools are available on www.lxnavigation.si. HW requirements:

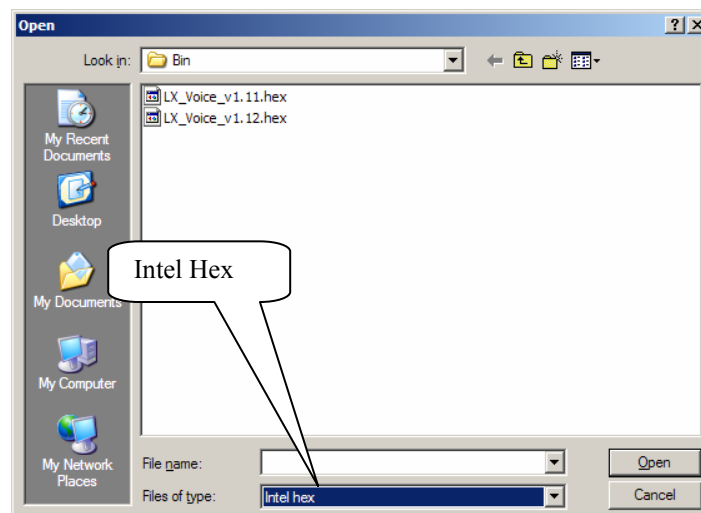
- Windows running PC (Win 98 or Win XP).
- LX Voice **update cable** or a combination of **Colibri PC adapter** extended with null modem cable or **LX 232 cross cable**.

4.1.1 The procedure

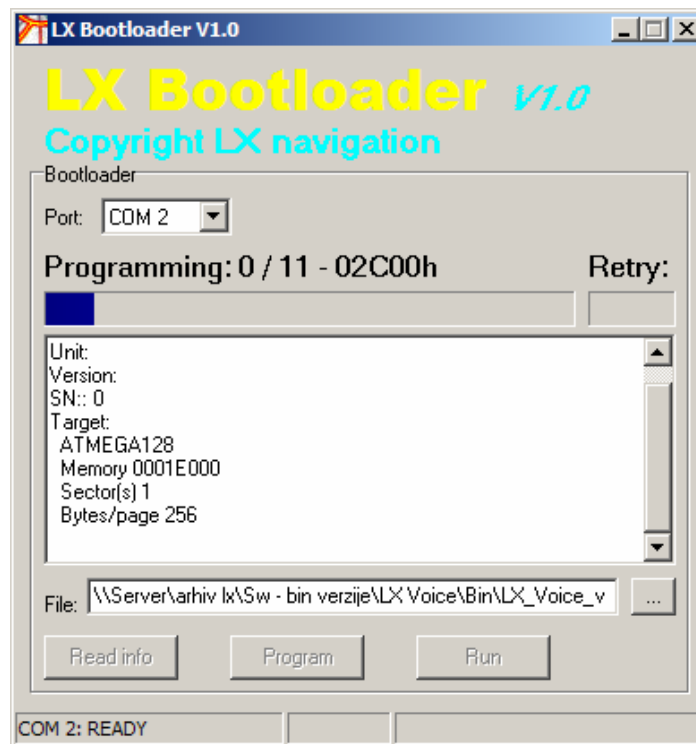
- LX Voice should be OFF
- Run LX Bootloader
- Switch LX Voice module ON and screen below should appear



- **Browse** to find **LX_Voice_Vxx.hex** file



- Click on **Program** and wait until programming will finish



- Click on **RUN** after **Finish** message

4.2 Table of possible voices

ZERO	0	DANGEROUS	77	TRANSFER	141
ONE	1	RESTRICTED	//78	COMMUNICATION	142
TWO	2	PROHIBITED	79	KILO	143
THREE	3	TERMINAL	80	MILI	144
FOUR	4	CONTROL	81	METER	145
FIVE	5	ZONE	82	METERS	146
SIX	6	TRANSPONDER	83	BARS	147
SEVEN	7	MANDATORY	84	FEET	148
EIGHT	8	MILITARY	85	FEETS	149
NINE	9	OPERATION	86	NAUTIC	150
TEN	10	TYPE	87	MILES	151
ELEVEN	11	PLEASE	88	KNOTS	152
TWELVE	12	NO_TRAFFIC	89	OVERLOAD	153
THIRTEEN	13	DETECTED	90	SQUARE	154
FOURTEEN	14	BAD	91	PER	155
FIFTEEN	15	AIRSPEED	92	VOLTS	156
SIXTEEN	16	NOT	93	EVENT	157
SEVENTEEN	17	PRESENT	94	MARKED	158
EIGHTEEN	18	LOW	95	UNKNOWN	159
NINETEEN	19	BACKUP	96	AREA	160
TWENTY	20	BATTERY	97	AIRWAY	161
THIRTY	21	ERROR	98	GLIDING	162
FOURTY	22	HOUR	99	INFORMATION	163
FIFTY	23	HOURS	100	SECTOR	164
SIXTY	24	MINUTE	101	W	165
SEVENTY	25	MINUTES	102	ALFA	166
EIGHTY	26	REMAINING	103	BRAVO	167
NINETY	27	ESTIMATE	104	CHARLIE	/168
HUNDRED	28	ELAPSED	105	DELTA	169
THOUSAND	29	TIME	106	ECHO	170
TRAFFIC	30	FINISH	107	FOXTROT	171
OCLOCK	31	IN	108	GOLF	172
WARNING	32	RANGE	109	HOTEL	173
OBSTACLE	33	APPROACHING	110	INDIA	174
VERSION	34	TRAINING	111	JULIET	175
POINT	35	MAXIMUM	112	LINE	176
STALL	36	ALTITUDE	113	LIMA	177
AND	37	DECIMAL	114	MIKE	178
TASK	38	EVATION	115	NOVEMBER	179
IS	39	RUNWAY	116	OSCAR	180 PAPA
STARTED	40	NINER	117	181	
FINISHED	41	NEAR	118	QUEBEC	182
RESTARTED	42	INSIDE	119	ROMEO	183
SWITCHING	43	AIRPORT	120	SIERRA	184
TO	44	OUTLANDING	121	TANGO	185
NEXT	45	MARKER	122	UNIFORM	186
TURNPOINT	46	DISTANCE	123	VICTOR	187
CHECK	47	BEARING	124	WHISKEY	188
LANDING	48	TRACK	125	XRAY	189
GEAR	49	GROUNDSPPEED	126	YANKEE	190
AIRSPACE	50	TOTAL	127	ZULU	191
CLASS	51	WAIT	128	NORTH	192
A	52	SET	129	EAST	193
				WEST	194
				SOUTH	195

B	53	ELEVATION 130	OUTSIDE 196
C	54	NO 131	QNH 197
D	55	RESPONSE 132	PILOT 198
E	56	FROM 133	CHECKLIST 199
F	57	ANALOG 134	TRIMMER 200
G	58	DIGITAL 135	FLAPS 201
H	59	SECOND 136	CANOPY 202
I	60	REMOTE 137	LOCKED 203
J	61	COMPASS 138	AIRBRAKES 204
K	62	UNIT 139	ALTIMETER 205
L	63	DATA 140	SEAT_BELTS 206
M	64		RUDDER_PEDALS 207
N	65		RADIO 208
O	66		ON 209 DECLARED
P	67		210
R	68		POSITION 211
S	69		REPORT 212
T	70		SELECT 213
U	71		ABOVE 214
V	72		BELOW 215
Z	73		FLARM_CONNECTED 216
X	74		FREQUENCY 217
Y	75		FINAL 218
Q	76		GLIDE 219
			ESTABLISHED 220
			MODE 221
			OFF 222