This addendum adds Section 9: "Communication Protocol" to page 18 of the **VA-16xl** user manual, and revises footnote 1 in sections 6.1 and 6.2.

9 Communication Protocol

This RS-232 communication protocol uses four bytes of information, as defined below. For RS-232, a null-modem connection between the machine and controller is used. The default data rate is 9600 baud, with no parity, 8 data bits and 1 stop bit.

MSB							LSB
	DESTINATION	**INSTRUCTION**					
0	D	N5	N4	N3	N2	N1	N0
7	6	5	4	3	2	1	0
1st byte							
	2nd BYTE						
1	B6	B5	B4	B3	B2	B1	B0
7	6	5	4	3	2	1	0
2nd byte							
	DATA						
1	D6	D5	D4	D3	D2	D1	D0
7	6	5	4	3	2	1	0
3rd byte							
			MACHINE NUMBER				
1	Bit6	D7	M4	M3	M2	M1	M0
7	6	5	4	3	2	1	0
4th byte							

1st BYTE: Bit 7 - Defined as 0.

D – "DESTINATION": 0 - for sending information to the switchers (from the PC);
1 - for sending to the PC (from the switcher).

N5…N0 – "INSTRUCTION"
The function that is to be performed by the switcher(s) is defined by the INSTRUCTION (6 bits). Similarly, if a function is performed via the machine's front panel, then these bits are set with the INSTRUCTION NO., which was performed. The instruction codes are defined according to the table below (INSTRUCTION NO. is the value to be set for N5…N0).

2nd BYTE: Bit 7 - Defined as 1.
B4…B0 - Channel number
B5 - Left (set to 1 when referring to the left channel)
B6 - Right (set to 1 when referring to the right channel)

3rd BYTE: Bit 7 – Defined as 1.
D6…D0 – 7 least significant bits of data

4th BYTE: Bit 7 – Defined as 1.
D7 – MSB of data (7 LSBs are in 3rd byte).
M4…M0 – MACHINE NUMBER.

Table of Instruction Codes

Note: All values in the table are **decimal**, unless otherwise stated.

#	DESCRIPTION	3rd BYTE
22_{dec} (16_{hex})	SET AUDIO GAIN	Set 7 LSBs of gain value Gain (dB) = 31.5 – (0.5x(255-DATA))
24_{dec} (18_{hex})	INCREASE / DECREASE AUDIO GAIN	0 - increase gain 1 - decrease gain
25_{dec} (19_{hex})	REQUEST AUDIO GAIN	As in Instruction 22_{dec} above. When requesting both channels, the reply is: ● For equal left and right gain: bits 5 = bit 6 ● For unequal left and right gain: bits 6 = 0; bit 5 = 1 for reply for left channel

In addition to the above, instructions 15, 18, 19, 20, 61, 62 (decimal) of Kramer's Protocol 2000 are also fully implemented in the unit. For instructions 18 and 19, setups 01 to 15 (decimal) are valid.

See the examples in the table below:

COMMAND	EXAMPLES (MACHINE # 1)
16h E7h 90h 81h	Set channel 7 both left and right gain -88dB
16h AAh FFh 81h	Set channel 10 left gain -32.5dB
16h CAh COh A1h	Set channel 10 right gain 0dB
16h FOh DOh A1h	Set channel 16 both left and right gain +8dB
18h EFh 80h 81h	Increment (increase) gain on 0.5dB on left and right of Channel 15
19h CFh 80h 81h	Request gain of Channel 15 right. If the gain is 0dB for both left and right channels, then the reply would be: 59h EFh COh A1h
19h EEh 80h 81h	Request gain of Channel 14 both left and right. If the gain is different for the left and right channels, then, for +3dB gain in the left channel the reply would be: 59h AEh C6h A1h

Addition to footnote 1 in sections 6.1 and 6.2

The following text is added to the end of footnote 1 in sections 6.1 and 6.2:

"After changing a setting(s), it can take up to 30 seconds before these settings are saved"