

### **General Description**

The Rane Model SM 26B Splitter Mixer is one of the most useful, yet unusual audio products available. In its most basic configuration, it is a six-to-two line level mixer. It will accept six balanced or unbalanced line level inputs which are applied to six Level and Pan controls. An additional stereo Master Input allows a total of eight inputs. The result of the mix is sent to an overall Master Output Level control and appears at the Left and Right Output jacks on the rear. In its splitter mode, the SM 26B can take one or two line level inputs and split these to any of the six Mono Outputs on the rear. The Mix/Pan controls in this mode control the level from each of the two input buses to be applied to each Output. Internal header blocks allow the Mix Output jacks to become an independent stereo out, allowing a total of eight outputs. The SM 26B may also be used as a six input, six output buffer amplifier in which case signal applied to Input 1 is delivered to Output 1, and so on.

The SM 26B may also be used in a combination of modes at once. For instance, Inputs 1 through 3 may be mixed to the left and/or right output busses while at the same time Outputs 4 and 5 are delivering signal originally applied to the Left and Right Master Inputs while at the same time Output 6 is being driven from Input 6 in the straight through mode.

The front of the SM 26B comprises a Master Input Level control, six Channel Level controls, six Mix/Pan controls and a Master Output Level control. The rear of the SM 26B provides two Master Left and Right Inputs, six Channel Mono Inputs, six Channel Mono Outputs and two Master Mix Output. All Inputs and Outputs on the SM 26B are ½ TRS active balanced.

See RaneNote 108, "The SM 26B Swiss Army Mixer" for additional application information.

#### **Features**

- -10 dBV to +4 dBu Shifter
- +4 dBu to -10 dBV Shifter
- Six Balanced Mono Inputs, Six Balanced Mono Outputs
- Two Main Balanced Inputs, Two Main Balanced Outputs
- Six Input Level Controls and Six Mix/Pan Controls
- Master Input and Output Level Controls
- UL/CSA Remote Power Supply (120 VAC)
- CE (Low Voltage & EMC) Remote Power Supply (230 VAC)

### **Applications**

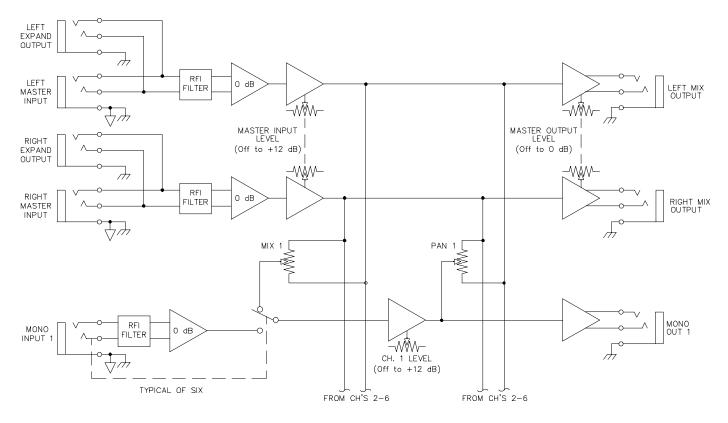
- 6 Mono Inputs, Stereo Output Line Mixer
- 4 Stereo Inputs. Stereo Output Line Mixer
- Stereo Input, 6 Mono Output Line Splitter
- 1 Stereo Input, 4 Stereo Output Splitter
- 6-In, 6-Out Booster Amplifier
- Configurable to Eight Outputs



# **Features and Specifications**

|  | Parameter                        | Specification            | Limit | Units | Conditions/Comments                  |
|--|----------------------------------|--------------------------|-------|-------|--------------------------------------|
| Impedance  | Inputs: Type                     | Active Balanced          |       |       |                                      |
| Maximum Level  | Connectors                       | 1/4" TRS                 |       |       |                                      |
| Outputs: Type  | Impedance                        | 20k                      | 1%    | Ohms  |                                      |
|  | Maximum Level                    | 22                       | 1     | dBu   |                                      |
| Impedance  | Outputs: Type                    | Active Balanced          |       |       |                                      |
|  | Connectors                       | 1/4" TRS                 |       |       |                                      |
| Overall Gain Range RFI Filters Frequency Response 10-56 kHz 110-56 kHz 110-50 | Impedance                        | 200                      | 1%    | Ohms  |                                      |
| RFI Filters  | Maximum Level                    | 26                       | 1     | dBu   | 1k Ohms or Greater                   |
| Trice   Tric   | Overall Gain Range               | Off to +12               | -0/+6 | dB    | Any Input to Any Output              |
| Description (SMPTE)   Constraints   Constr   | RFI Filters                      | Yes                      | 5%    |       | 240 kHz                              |
| M Distortion (SMPTE)   0.009   .002   %   60 Hz /7 kHz, 4:1, +4 dBu Unity Gain re +4 dBu, 20 kHz Noise Bandwidth   93   90   2 dB   Mix Outputs, Unity Gain   Mix Outputs   Mi   | Frequency Response               | 10-56 kHz                | +0/-3 | dB    |                                      |
| Signal-to-Noise Ratio  | THD+Noise                        | 0.006                    | .002  | %     | +4 dBu, 20-20 kHz Unity Gain         |
| 93   90   2   dB   Mono Outputs, Unity Gain   Mix Outputs, Unity Gain   Any Input to Mix Outs   May Input to Mix Outputs, Unity Gain   Mix Outputs, Unity Gain   Mix Outputs, Unity Gain   Mix Outputs, Unity Gain   May Input to Mix Outs   May Input to Mi   | IM Distortion (SMPTE)            | 0.009                    | .002  | %     | 60 Hz /7 kHz, 4:1, +4 dBu Unity Gain |
| State  | Signal-to-Noise Ratio            |                          |       |       | re +4 dBu, 20 kHz Noise Bandwidth    |
| Crosstalk         72 (1 kHz)         2         dB         Any Input to Mix Outs          Channel-Channel         78 (1 kHz)         2         dB         Any Input to Mix Outs           Mean Time Between Failure         35,500         Wil-Hdbk-217D, Section V           Unit: Agency Listing         Class 2 Equipment         W.L. 813 Exempt         National Electrical Code           U.L. 813 Exempt         CSA Exempt         VDE, SELV         Class 2         Class 2           CSA Exempt         CSE (EMC)         CE (EMC)         Article 1 of LVD 73/23/EEC         Article 1 of LVD 73/23/EEC           Power Supply: Agency Listing         UL listed         CSA Certified         CE (EMC)         Class 2 Equipment  |                                  | 93                       | 2     | dB    | Mono Outputs, Unity Gain             |
|  |                                  | 90                       | 2     | dB    | Mix Outputs, Unity Gain              |
| Mean Time Between Failure Unit: Agency Listing Llass 2 Equipment U.L. 813 Exempt CSA Exempt VDE, SELV CE (EMC) CE (safety) Power Supply: Agency Listing Llisted CSA Certified CE (safety) Power Supply Requirement Maximum Current Maximum Current Maximum Current Unit: Construction Mil-Hdbk-217D, Section V  National Electrical Code Class 2 Class 2 Class 2 Class 2 Safety Extra Low Voltage EMC directive 89/336/EEC Article 1 of LVD 73/23/EEC Class 2 Equipment File no. E88261 File no. LR58948 Meets EMC directive 89/336/EEC LV directive 89/336/EEC LV directive 73/23/EEC  Vrms MA  RMS Current from Remote Supply 19" 1U Rackmount (4.4 cm x 48.3 cm x 13.5 cm) (2.3 kg) Shipping: Size L.25" x 20.3" x 13.75" Jib (w/o power supply) Note: 0 dBu=0.775 Vrms   | Crosstalk                        |                          | İ     | İ     |                                      |
| Mean Time Between Failure Unit: Agency Listing Llass 2 Equipment U.L. 813 Exempt CSA Exempt VDE, SELV CE (EMC) CE (safety) Power Supply: Agency Listing Llisted CSA Certified CE (safety) Power Supply Requirement Maximum Current Maximum Current Maximum Current Unit: Construction Mil-Hdbk-217D, Section V  National Electrical Code Class 2 Class 2 Class 2 Class 2 Safety Extra Low Voltage EMC directive 89/336/EEC Article 1 of LVD 73/23/EEC Class 2 Equipment File no. E88261 File no. LR58948 Meets EMC directive 89/336/EEC LV directive 89/336/EEC LV directive 73/23/EEC  Vrms MA  RMS Current from Remote Supply 19" 1U Rackmount (4.4 cm x 48.3 cm x 13.5 cm) (2.3 kg) Shipping: Size L.25" x 20.3" x 13.75" Jib (w/o power supply) Note: 0 dBu=0.775 Vrms   | L-R Panning                      | 72 (1 kHz)               | 2     | dB    | Any Input to Mix Outs                |
| Unit: Agency Listing120 VAC model U.L. 813 Exempt CSA Exempt VDE, SELV CE (EMC) CE (safety) Exempt  UL listed CSA Certified CIass 2 Class 2 Cars Cars Cars Cars Cars Cars Cars Cars  | Channel-Channel                  | 78 (1 kHz)               | 2     | dB    | ·                                    |
| 120 VAC model  Class 2 Equipment U.L. 813 Exempt CSA Exempt VDE, SELV CE (EMC) CE (safety) Exempt  UL listed CSA Certified CSA Certified CE (safety)  CE (EMC) CE (safety)  Weight  National Electrical Code Class 2 Class 2 Safety Extra Low Voltage EMC directive 89/336/EEC Article 1 of LVD 73/23/EEC Class 2 Equipment File no. E88261 File no. LR58948 Meets EMC directive 89/336/EEC LV directive 89/336/EEC LV directive 73/23/EEC  Vrms MAXIMUM Current 300 Unit: Construction All Steel 1.75" H x 19" W x 5.3" D Lunit: Construction Size 1.75" H x 19" W x 5.3" D Lunit: Construction Size 4.25" x 20.3" x 13.75" Shipping: Size 4.25" x 20.3" x 13.75" Mote: 0 dBu=0.775 Vrms  National Electrical Code Class 2 Safety Extra Low Voltage EMC directive 89/336/EEC Article 1 of LVD 73/23/EEC  Olass 2 Safety Extra Low Voltage EMC directive 89/336/EEC LV directive 89/336/EEC LV directive 73/23/EEC  Vrms MA RMS Current from Remote Supply 19" 1U Rackmount (4.4 cm x 48.3 cm x 13.5 cm) (2.3 kg) (11 cm x 52 cm x 35 cm) (4.1 kg)  Note: 0 dBu=0.775 Vrms   | Mean Time Between Failure        | 35,500                   |       | Hrs   | * *                                  |
| U.L. 813 Exempt CSA Exempt VDE, SELV CE (EMC) CE (safety) Exempt  UL listed CSA Certified CSE (safety) CE s 2 Class 2 Cas et vicle 1 of LVD 73/23/EEC Class 2 Class 2 Cas et vicle 1 of LVD 73/23/EEC Class 2 Cas et | Unit: Agency Listing             |                          | İ     | İ     |                                      |
| U.L. 813 Exempt CSA Exempt VDE, SELV CE (EMC) CE (safety) Exempt  UL listed CSA Certified CSA Certified CSA Certified CSA Certified CSA Certified CSA Certified CSA Certified CSA Certified CSE (safety) Cass 2 Class 2 Cas C Class 2 Class 2 Cas C Class 2 Class 2 Cas C Cas C Class 2 Cas C Cas C Class 2 Cas C Cas C Class 2 Cas C Cas C Class 2 Cas C Cas C Cas C Class 2 Cas C  | 120 VAC model                    | Class 2 Equipment        |       |       | National Electrical Code             |
| 230 VAC model  VDE, SELV CE (EMC) CE (safety) Exempt  Power Supply: Agency Listing120 VAC model  UL listed CSA Certified CE (EMC) CE (safety)  CE (EMC) CE (safety)  UL listed CSA Certified CSA Certified CSE (EMC) CE (safety)  Power Supply Requirement Maximum Current  Maximum Current  Maximum Current  Maximum Current  Maximum Current  Maximum Current  Maximum Current  Maximum Current  Maximum Current  Maximum Current  Maximum Current  Maximum Current  Maximum Size  1.75" H x 19" W x 5.3" D  Safety Extra Low Voltage EMC directive 89/336/EEC Class 2 Equipment File no. LR58948  Meets EMC directive 89/336/EEC LV directive 73/23/EEC  Vrms  MA  RMS Current from Remote Supply  19" 1U Rackmount (4.4 cm x 48.3 cm x 13.5 cm) (2.3 kg) (11 cm x 52 cm x 35 cm) (4.1 kg)  Note: 0 dBu=0.775 Vrms  |                                  |                          |       |       | Class 2                              |
| CE (EMC) CE (safety) Exempt  Power Supply: Agency Listing120 VAC model  UL listed CSA Certified CE (safety)  CE (EMC) CE (safety) Exempt  UL listed CSA Certified CSA Certified CE (safety)  Power Supply Requirement  Maximum Current  Maximum Current  Unit: Construction All Steel 1.75" H x 19" W x 5.3" D  Shipping: Size 1.75" X 20.3" x 13.75"  Mote: 0 dBu=0.775 Vrms  Article 1 of LVD 73/23/EEC  Article 1 of LVD 73/23/EEC  Article 1 of LVD 73/23/EEC  Class 2 Equipment File no. LR58948  Meets EMC directive 89/336/EEC LV directive 73/23/EEC  Vrms  MARMS Current from Remote Supply 19" 1U Rackmount (4.4 cm x 48.3 cm x 13.5 cm) (2.3 kg) (11 cm x 52 cm x 35 cm) (4.1 kg)  Note: 0 dBu=0.775 Vrms   |                                  | CSA Exempt               |       |       | Class 2                              |
| Power Supply: Agency Listing120 VAC model  UL listed CSA Certified CE (safety)  UL listed CSA Certified CSA Certified CE (safety)  Power Supply Requirement  Maximum Current Maximum Current  Maximum Current  Maximum Current  Maximum Current  Maximum Current  Maximum Current  Meight  Shipping: Size  Mote: 0 dBu=0.775 Vrms   CE (safety) Exempt  Article 1 of LVD 73/23/EEC  Class 2 Equipment File no. E88261 File no. LR58948  Meets EMC directive 89/336/EEC LV directive 73/23/EEC  Vrms  mA  RMS Current from Remote Supply 19" 1U Rackmount (4.4 cm x 48.3 cm x 13.5 cm) (2.3 kg) (11 cm x 52 cm x 35 cm) (4.1 kg)  | 230 VAC model                    | VDE, SELV                |       |       | Safety Extra Low Voltage             |
| Power Supply: Agency Listing120 VAC model  UL listed CSA Certified CSA Certified CE (EMC) CE (safety)  Power Supply Requirement Maximum Current Maximum Current Unit: Construction Initiation Size Initiation Initi          |                                  | CE (EMC)                 |       |       | EMC directive 89/336/EEC             |
|  |                                  | CE (safety) Exempt       |       |       | Article 1 of LVD 73/23/EEC           |
| CSA Certified CE (EMC) CE (safety)  Power Supply Requirement Maximum Current Unit: Construction  Size  1.75" H x 19" W x 5.3" D  Shipping: Size Weight  Note: 0 dBu=0.775 Vrms  CE (EMC) CE (safety)  18-24 VAC w/center tap 300  All Steel 1.75" H x 19" W x 5.3" D  5 lb (w/o power supply)  4.25" x 20.3" x 13.75"  9 lb  File no. LR58948  Meets EMC directive 89/336/EEC  LV directive 73/23/EEC  Vrms  mA  RMS Current from Remote Supply  19" 1U Rackmount (4.4 cm x 48.3 cm x 13.5 cm) (2.3 kg) (11 cm x 52 cm x 35 cm) (4.1 kg)   | Power Supply: Agency Listing     |                          |       |       | Class 2 Equipment                    |
|  | 120 VAC model                    | UL listed                |       |       | File no. E88261                      |
| CE (safety)   18-24 VAC w/center tap   300   Maximum Current   300   All Steel   1.75" H x 19" W x 5.3" D   5 lb (w/o power supply)   4.25" x 20.3" x 13.75"   Shipping: Size   9 lb   Note: 0 dBu=0.775 Vrms   CE (safety)   LV directive 73/23/EEC   LV directive 73/23/EEC   Vrms   MA   RMS Current from Remote Supply   19" 1U Rackmount   (4.4 cm x 48.3 cm x 13.5 cm)   (2.3 kg)   (11 cm x 52 cm x 35 cm)   (4.1 kg)   (   |                                  | CSA Certified            |       |       | File no. LR58948                     |
| Note: 0 dBu=0.775 Vrms   18-24 VAC w/center tap   18-24 VAC w/center tap   300   | 230 VAC model                    | CE (EMC)                 |       |       | Meets EMC directive 89/336/EEC       |
| Maximum Current       300       mA       RMS Current from Remote Supply         Unit: Construction       All Steel       19" 1U Rackmount        Size       1.75" H x 19" W x 5.3" D       (4.4 cm x 48.3 cm x 13.5 cm)        Weight       5 lb (w/o power supply)       (2.3 kg)         Shipping: Size       4.25" x 20.3" x 13.75"       (11 cm x 52 cm x 35 cm)        Weight       9 lb         Note: 0 dBu=0.775 Vrms   |                                  | CE (safety)              |       |       | LV directive 73/23/EEC               |
| Unit: Construction  All Steel  1.75" H x 19" W x 5.3" D Weight  Shipping: Size Weight  Note: 0 dBu=0.775 Vrms  All Steel  1.75" H x 19" W x 5.3" D  (4.4 cm x 48.3 cm x 13.5 cm)  (2.3 kg)  (11 cm x 52 cm x 35 cm)  (4.1 kg)  | Power Supply Requirement         | 18-24 VAC w/center tap   | 0.1   | Vrms  |                                      |
| Size 1.75" H x 19" W x 5.3" D 5 lb (w/o power supply)  Shipping: Size 4.25" x 20.3" x 13.75"  Weight  Note: 0 dBu=0.775 Vrms  1.75" H x 19" W x 5.3" D (4.4 cm x 48.3 cm x 13.5 cm) (2.3 kg) (11 cm x 52 cm x 35 cm) (4.1 kg)  | Maximum Current                  | 300                      |       | mA    | RMS Current from Remote Supply       |
|  | Unit: Construction               | All Steel                |       |       | 19" 1U Rackmount                     |
| Shipping: Size  4.25" x 20.3" x 13.75"  (11 cm x 52 cm x 35 cm)  (4.1 kg)  Note: 0 dBu=0.775 Vrms  | Size                             | 1.75" H x 19" W x 5.3" D | İ     | İ     | (4.4 cm x 48.3 cm x 13.5 cm)         |
|  | Weight                           | 5 lb (w/o power supply)  |       |       | (2.3 kg)                             |
|  | Shipping: Size                   | 4.25" x 20.3" x 13.75"   |       | İ     | (11 cm x 52 cm x 35 cm)              |
|  | Weight                           | 9 lb                     |       |       | (4.1 kg)                             |
| Unity Gain = Master Levels Set to ~ "7" Position   | Note: 0 dBu=0.775 Vrms           |                          |       |       |                                      |
| omity came interest 20,000 control   | Unity Gain = Master Levels Set 1 | to ~ "7" Position        |       |       |                                      |

# **Block Diagram**



# **Application Information**

Aptly nicknamed the "Swiss Army Mixer", the SM 26B is an extremely versatile single rack-space tool providing a number of different functions to solve a broad spectrum of line-level signal routing problems. Whether the need is for line mixing, line distribution or line matching/amplification, the SM 26B easily performs these tasks, along with additional features for even more flexibility.

One of the most popular uses is line-level mixing for keyboards, drum machines, and effects. Expanding existing console limitations is simple. Whenever a mono or stereo submix is desired, the SM 26B comes to the rescue. Up to three stereo, or six mono sources easily mix together, with panning ability on every input. Many musical instrument performers find the SM 26B indispensable for combining various effects and expanding the available loops on their signal processors.

The SM 26B capabilities also include a wide variety of functions such as live recording splitting, -10 dBV to +4 dBm

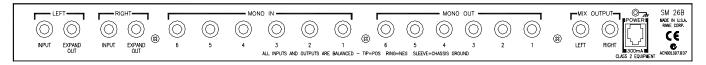
level matching, intercom splitting, line boosting, hotel and club zone management, restaurant paging systems, adding additional monitor buses for studio or stage use, and many more custom applications. Please consult Rane Note 108 for in-depth application information.

The SM 26B provides full expansion capabilities for all applications. Simple ½" TRS connectors allow expansion using patch cords. Using these provisions, an unlimited number of lines may be mixed or split upon demand. For example, three units create either an 18 input mixer or an 18 output splitter, or a combination of both.

The question arises regarding mic levels. Since the SM 26B operates only at line levels, microphone applications require separate boosting before connection. Rane offers a mic stage model MS 1 ideally suited to this application. The MS 1 is a single channel mic preamplifier with a true differential input and balanced output. This provides the ability to locate the mic preamp close to the mic's location.



### **Rear Panel**



## **Architectural Specifications**

The splitter mixer unit shall have six (6) mono inputs, six (6) mono outputs, two (2) master inputs, and two (2) master outputs. The unit shall be capable of mixing or splitting any inputs to any outputs simultaneously. Each mono input shall have a level control with a range of off to +12 dB gain. Separate +12 dB gain Master Input and Output Level controls shall be provided.

Complete expansion capabilities shall be provided to allow any number of similar units to be coupled together.

A combination Mix or Pan control shall be provided on

each of the six (6) mono channels to allow any output to be a mix of the two master inputs, or to allow any mono input to be panned between the two master outputs.

The inputs and outputs shall be active balanced designs terminated with 1/4" TRS (tip-ring-sleeve) connectors. RFI filters shall be provided. Ultrasonic filters shall be built-in.

The unit shall be exempt from agency safety requirements and powered from a UL listed / CSA certified (120 VAC), or CE approved (230 VAC) remote power supply. The unit shall be entirely constructed from cold-rolled steel.

The unit shall be a Rane Corporation SM 26B.

### **Available Accessories**

- SC 1.7 Security Cover
- MS 1 Microphone Preamplifier

### References

- 1. D. Bohn, "SM 26B Swiss Army Mixer," RaneNote 108, (1984).
- 2. T. Pennington, "Cost-Effective Noise Masking Systems," RaneNote 116, (1987).