

COMMUNITY RADIO BROADCASTING

Setting up a Community Station

The skills and talents of volunteers are needed when setting up and later operating the average small Community Radio Station

They come from all walks of life, some are born Politicians and Managers some are born Actors and Performers while others are 'Doers'

They are all needed, except for 'Self Proclaimed Experts and Dictators'

Large sums of money can be saved by using the skills and talents of available volunteers, particularly those with skills in the Building and Electrical Trades

Apart from the obvious need for people with Administrative ability, and others with the talents making them suitable as Radio Presenters, skills are also needed in Architecture, Carpentry, Cabinet Making, Glazing, Plastering, Painting, Carpet Laying, Air Conditioning, Electrical Installation, Telephone Installation, Broadcast Systems Installation and many more

Working together on a common project such as a small Community Radio Station promotes a feeling of satisfaction and solidarity where the end result, the Radio Station is a bit of everyone

Facilities and Equipment required in a typical FM Stereo Community Radio Broadcast Station Studio Complex

Ideally, a Single Service Radio Station should have two identical On-Air Studios to facilitate Training, Cleaning and Maintenance

An On-Air Studio is quite suitable for basic Audio Production and for Transferring Recorded Material on to PC Based Audio Delivery Systems

A dedicated Production Studio or Recording Studio is a Nice Luxury Facility to have but is generally not suitable for On-Air work and is not discussed here

In addition to On-Air Studios, the station should have an area set aside as a Control Room to house essential Technical Equipment, not located in the Studio

The following is a very general list of requirements, as no two Radio Broadcast Stations are exactly alike

On-Air Studios

Studio Rooms

Sound Proofing

Required to stop Sound from outside getting into the Studio, and Sound from inside the Studio getting out, and best achieved by heavy construction. Not to be confused with Acoustic Treatment. Pay particular attention to the Ceiling

Acoustic Treatment

Acoustically Absorbing Materials arranged to prevent or reduce unpleasant sound reflections from walls and ceiling

Studio Doors

Solid Core Exterior Type Doors fitted with Rubber Seals and special "Heavy Duty" locks are suitable, best if arranged with an "Air-Lock" and two sets of doors between the Studios and the General Office area. "Heavy Duty" Door Closers should be avoided as they pose a problem to small and elderly people

Studio Window

Double Glazing is essential, use fairly heavy Glass of two different thicknesses, 8 mm and 12mm. Laminated Glass is ideal as it does not "Ring" like normal Glass, the panels should be angled slightly to prevent, or rather deflect sound reflections away from the Microphones

Mains Power Wiring

Arrange separate Technical and General Power Wiring. Technical Power for the Studio Equipment should preferably be routed via the Control Room and must be protected by an Earth Leakage Breaker of suitable rating. Routing Technical Power through the Control Room reduces the chances of Earth Loops in the Audio Circuitry, and makes it easy to install UPS equipment at a later date. General Power Wiring for Appliances such as Vacuum Cleaners etc should follow normal domestic practise and kept separate from Technical Power

Lighting

Incandescent Lamps arranged in two or three groups of adjustable 'Downlights' fed by Light Dimmers provide pleasant Studio 'Mood Lighting'. Low Voltage Halogen Lighting is unpleasant causing Eye Strain and also unreliable. Fluorescent Lighting, excellent when cleaning and performing technical maintenance work is unpleasant to the Presenter, and also often Buzz or start flashing at inopportune times

Air Conditioning

The Modern 'Split System' Air Conditioners are highly suitable being Quiet and relatively Inexpensive. Attention must be given to Condensate Drainage and Air Renewal. Ducted Systems are also suitable but expensive, special attention must be given to the Ducting to prevent Air Movement Noise and external noise travelling through it. Evaporative Air Conditioning Systems are completely unsuitable

Air Renewal

'Stale Air' is not a problem with Ducted Systems. Unfortunately, 'Split System' Air Conditioners installed in a confined space such as a Studio do require some means of Air Renewal. A simple and inexpensive solution is to install one or more AC Powered Computer Fans arranged to lightly pressurise the Studio with Air from outside the Studio and rely on leakage in various places for air escape. Some ingenuity is required to mount these fans so that noise is not introduced by them or carried in through ducting

Furniture

Presenters or Announcers Desk can range from a basic Office Desk large enough to accommodate a Tabletop Mounting On-Air Mixer such as the Elan Audio Falcon-10 or Hawk-12 to elaborate Ergonomically Designed Custom Built Desks suitable for the Kestrel or Harrier Mixers. Such Desks are usually "U or L Shaped" and feature Built-In below desk Rack Space for equipment, and above desk cabinets for "Source Equipment" as well as Cable Trays, Modesty Panel, and if required, especially rigid side tables for mounting Record Playing Turntables

On-Air Studio Technical Equipment

On-Air Audio Mixer

The On-Air Mixer is the central piece of equipment in the On-Air Studio. An On-Air Mixer is specially designed to be forgiving and simple to operate and provides all of the features required for Radio Broadcasting. All of the On-Air Mixers in the Elan Audio range are capable of true High Fidelity performance, and differ only in the number of input channels and other facilities offered. They are all capable of being used effectively for basic Audio Production Work

Source Equipment

All items of equipment located in or controlled from the Studio, capable of producing an Audio Signal for Broadcasting are considered as Source Equipment. These are roughly counted as Microphones, CD Players, Mini Disks, Cassette Decks, Reel To Reel Tape Recorders, R-DAT Machines, Record Playing Turntables and PC Based Digital Audio Delivery Systems. Other related items of audio Source Equipment are Telephone Hybrids for Phone-In's, Outside Broadcast Facilities, Network and Satellite Feeds

Monitoring

Normally, the Presenter or Announcer Monitor the Transmission from the Station by listening to the Transmitted Off-Air signal through a good quality Monitor Receiver, Monitor Amplifier and Wide Range Loudspeaker System to allow him to accurately judge Transmission Quality and immediately notice any quality problems or faults. In addition, he is provided with high quality Headphones to allow him to continue this process with the Microphone Switched "On" and the Loudspeaker Monitoring system muted. Individual Guests in the Studio are also provided with Headphones for Monitoring

Talkback.

All Elan Audio On-Air Mixers are provided with Talkback or Intercom facilities to allow communication to the second Studio or other areas in the station equipped with Talkback Facilities

On-Air Light

The On-Air Light is a warning light fixture, usually mounted outside the Studio Door, and wired to illuminate whenever a Microphone is turned "On" in the Studio, a second On-Air Light are often mounted on the wall behind the Presenter to indicate to Studio Guests that a Microphone is On

Control Room

The Room

This need not be very large in a Community Station, and can be combined with the station's Technical Maintenance Area or Workshop or even be located in the Reception area

Power Wiring

Each Equipment Rack in the Control Room should be fed Technical Power separately and protected by an Earth Leakage Breaker of suitable rating. Technical Power Supply Wiring to the Studios should ideally be wired through the Control Room with each Studio protected by a suitably rated ELB. Again as in the Studios, General Power Outlets separate from Technical Power should be available for ordinary use

Lighting

Adequate lighting must be provided. Fluorescent Lighting is perfectly acceptable in this area

Air Conditioning

Adequate Cooling for Equipment must be provided. Personal Computers and Hard Disk Drives are particularly sensitive to excessive heat. Split System Air Conditioners are very suitable. Condensate Drainage is important, but Air Renewal is not a serious issue in the Control Room

Equipment Racks

Allow space for at least two, preferably three 19" Equipment Racks. A good size is around 38 RU. You will need more Rack Space than you think you require during initial planning. Professional Quality Steel Racks are the best but the low cost "Knock Down" Aluminium Racks from Altronics and Jaycar are acceptable. Front and Back Doors are not required and are in fact undesirable as they impede ventilation. Side Panels are only required on the Outside of the End Racks. Build a 100 mm tall Plinth from Dressed Pine with a Plywood or MDF Floor to allow Cable Access under the Racks. Allow adequate access space to the rear of the racks to comfortably work on the Wiring

Cable Termination.

Fit Plywood or MDF Panels on the Wall behind the Racks, and install Krone Swing Frames and Krone Blocks for the Cable termination to create a readily accessible Cable Terminating Field. Allow a separate area for each Studio and for Equipment in the Racks. Use the well-established Telephone Company Jumper Wire Technique to enable you to interconnect everything required. With this method, it is very easy to troubleshoot and change wiring later if required. We suggest you wire everything in the Control Room via the Krone Blocks and Jumper Wires. The exception is the Studio Microphones, which must be wired direct Point to Point and never via Krone Blocks

Cabling

The majority of Audio and Control wiring can be done perfectly well and safely in 10 Pair Indoor Telephone Cable and 8 Wire Cat 5 Cable. Only exception being Microphone Cables which must be wired direct Point to Point using High Quality (Expensive) Microphone Cable. Keep Studio Cabling in logical groups. Keep Inputs, Outputs, Control and Talkback in separate cables and on separate Krone Blocks where possible. Always allow extra cabling between Studios and Control Room, you will need them at some stage later, and above all, make and keep accurate Cable and Wiring Records

Patchfields or Jackfields.

These are expensive to purchase, and very labour intensive to wire and install. Despite this, they are also a very valuable Trouble-Shooting and Trouble-Bypass facility. Their use should be seriously considered at least in the Main Program Path

Control Room Technical Equipment

One Rack should preferably be reserved for equipment essential to the operation of the station. Other items of equipment can mount in the other Racks. Equipment is listed below

Equipment essential for operation of station

Delegation Switcher. Audio Processor. Stereo Generator. Studio to Transmitter Link (STL). Off-Air Receiver. Off-Air Monitor Distribution System. Control Room Monitor System. Audio Level Metering System

Other Essential Equipment

Logging System as Required by Law

Desirable equipment

Patch or Jackfield. Program Fail Detection System. Transmitter Remote Control System. Audio Distribution System. Control Room Talkback System

Other Control Room Equipment

Outside Broadcast Line equalisers. ISDN Codecs. Tie-Line Units. Satellite Receivers. Tuneable 'Spy- Receivers'. Rack Mounted Cassette Recorders. Telephone Delay System. Public Address Amplifier. GPS Based SMPTE Time Code Generator. Back Door Intercom System. PC Based Digital Automation System. PC Based Digital Announcer Assist Systems. File Servers for Digital Audio Systems. Video Monitors and Etc, the list is almost endless

Individual Items of Equipment is discussed in detail in separate sections

Transmission System

This is discussed in a separate section