



LAYOUT DESIGN AND CABLE REQUIREMENT

(This document is aimed at sales system designers and installers)

PLEASE READ CAREFULLY BEFORE ATTEMPTING TO QUOTE OR INSTALL FARFISA INTERCOMS.

CABLE IS A VERY IMPORTANT ASPECT of any Farfisa intercom installation. Using the correct cable is essential for system reliability.

This document will help you decide on how to lay out your installation and what type of cable you should use. When inspecting a proposed installation site, it is important that you note and advise on the following:

System Layout

- Do a block diagram of the site showing position of equipment

Measurements

- Measure all the distances and note them on your block diagram

Existing Buildings

- Find a suitable central Distribution Board (DB) for power supplies switchers etc.
- Find the shortest possible cable run to join the system
- Will the cable be surface fixed or in surface conduit?
- Gate / door Station, will it be Surface. Flush, gooseneck mounted?
- Handset / Monitor, will it be wall or desk/table mount?
- Is there 220VAC at the DB?

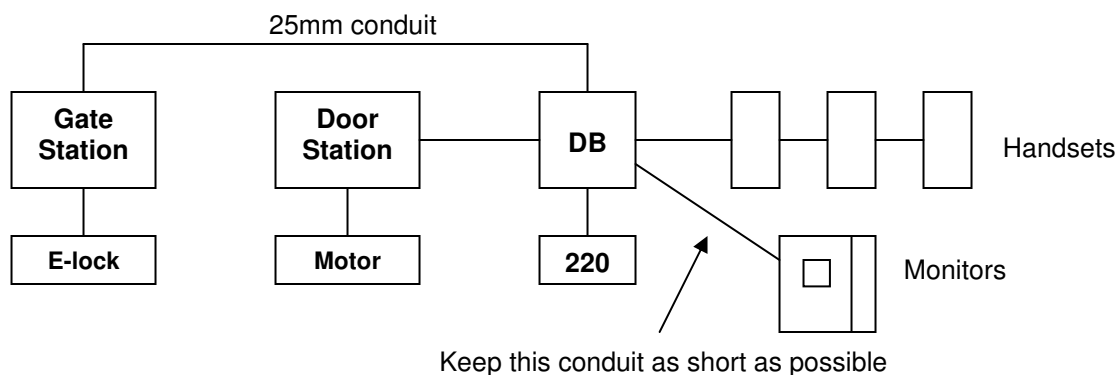
New Buildings

- Has conduit suitable for the installation been provided?
- Is there a suitable DB large enough for power supplies switchers etc?
- Gate / door Station, will it be Surface. Flush, gooseneck mounted?
- Handset / Monitor, will it be wall or desk/table mount?
- Is there 220VAC at the DB?

Conduit layout

A specified conduit reticulation needs to be fitted by the electrician in the walls of the building to suit the specific installation. The installation will be done professionally ensuring protection of cables, ease of future maintenance, no visible cables glued along walls etc. Remember to fit extra conduits to allow for future expansion! Note that most intercom systems require 220VAC at a central source, which can be at Distribution Box to house power supplies and service modules. The central Distribution Box should be placed in an easily accessible area (not in the roof space). Here are some pointers to help you design your system layout:

Example: 1 or more door stations with 1 or more handsets



Sizes of Distribution Boxes (DB) depend on the installation and should be discussed in detail with the intercom supplier. Operation of electric locks and or opening and closing of motor gates is an important part of the installation and conduits to the respective devices should be included in the reticulation. The intercom supplier usually supplies termination boxes for gate stations that must be given to the electrician. The electrician supplies other termination boxes for standard surface mount handsets and monitors. When installing a video door station ensure that the back box is installed at the correct height so that proper viewing is obtained. Video monitors consume more energy than standard handsets therefore conduit runs should be kept as short as possible back to the central DB

WE DO NOT RECOMMEND THE USE OF parallel multi core cable commonly known as COMMS CABLE (CC)

CC is a multi core parallel cable used mainly for Burglar alarm installations CC has a diameter (Ø) of 0.4mm. With the aid of a simple formula πr^2 you can calculate a cross section of 0.13mm² Compared to Twisted Pair Ø =.64 (22AWG) 0.32 mm². You can see this cable has almost 3 times the surface area.

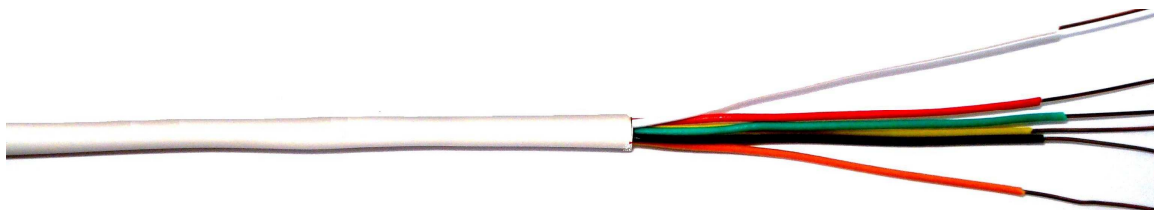


Figure 1: Comms Cable (NOT RECOMMENDED)

SECTION 1 (APPLIES TO ALL FARFISA INTERCOM SYSTEMS)

DO'S and DON'T'S

1. It is imperative that you choose the correct type cable for the system
2. The thickness of the wires depends on distance between points and the current consumption. Video systems use more current, therefore require thicker wires.
3. **Never run cables together with 220, 24 & 12 Volts alternating current (AC)** as this will induce noise on the audio (AC 50Hertz HUM)
4. **DO NOT** use indoor cable in an outdoor situation without protection
5. **DO NOT USE** indoor cable in underground manhole ducting. There is a good chance that your cables will be laying in water. With time, the characteristic impedance of the cable will change and there will be problems with the intercom system.
6. **DO USE WATERPROOF CABLE** in underground manhole ducting.
7. **AVOID UN-NECESSARY JOINTS.** If you have to make a joint ensure the following:
 - Use proper jointing material
 - Do the joint in a sealed waterproof enclosure
 - Do not do joints in the ceiling or roof space, this will end up as a birds nest
 - The enclosure should have a water proof inspection cover
 - Keep the same colour coding
 - Do a block diagram showing all jointing and keep it for future reference
8. **COLOUR CODING** Standardise on your colour coding for all your FARFISA intercom installations. With time you will find that your installation will be much simpler and you will immediately be able to recognise each wire connection.
9. **MARKING OF CABLE** For future reference, mark the cables at the central DB. I.e. "door station", "Flat", "main bed room" etc. this will help when future servicing is done.
10. **DO NOT MOUNT** power supplies and service modules in the ceiling.
11. **DO NOT CONNECT** 220VAC to the 127Volts terminal on the FARFISA power supplies
12. **TOOLS** Ensure that have the proper tools for this type of work. You will need a small flat and star screwdriver and a small set of side cutters. The screwdrivers should fit into the connectors on the Farfisa equipment without damaging the sides of the connector.
13. **DO NOT OVERTIGHTEN THE SCREWS** as you will also damage the connector.
14. **DO NOT USE** large side cutters and pliers for stripping twisted pair, there is a good chance you will nick the cable reducing its bending resistance and it will break off.

SECTION 2

Analogue Audio for distances up to **250 Meters** -----

Twisted Pair 22AWG $\varnothing = 0.64$

The number of twisted pairs will depend on how many stations are in the system. This is covered in the INTERCOM section of the FARFISA MANUAL 11. If operating an electric lock or motorized gate over long cable distances; you will require a relay and possibly a separate suitable transformer. For greater distances and information please consult our technical department

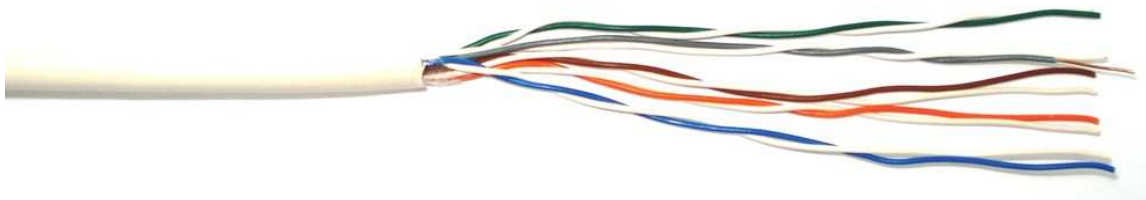


Figure 2: 0.64 (22AWG) Twisted Pair

SECTION 3

Analogue Audio and video with Coax for distances up to **250 meters**-----

Twisted Pair 22AWG $\varnothing = .64$ + RG-59 Coaxial Cable + 2 core $\varnothing = 1.2\text{mm}$ (H & F)

The number of twisted pairs will depend on how many stations are in the system. This is covered in the VIDEO INTERCOM section of the FARFISA MANUAL 11. For video applications, try and keep cable runs to the monitors as short as possible. If operating an electric lock or motorized gate over long cable distances, you will require a relay and possibly a separate suitable transformer. For greater distances and information please consult our technical department.



Figure 3: Mil Spec RG-59 COAXIAL CABLE

SECTION 4

Analogue Audio and video with Twisted Pair for distances up to **200 meters**-----

Twisted Pair 22AWG $\varnothing = 0.64$ + 2 core $\varnothing = 1.2\text{mm}$ (H & F)

The number of twisted pairs will depend on how many stations are in the system. This is covered in the VIDEO INTERCOM section of the FARFISA MANUAL 11. The limiting distance factor in

this section is the video over twisted pair. Farfisa have designed their video transmission to work over NON SHIELDED standard telephone twisted pair with a maximum distance of 200 meters. For video applications, try and keep cable runs to the monitors as short as possible The monitors consume 300mw, therefore require thicker wires. If operating an electric lock or motorised gate over long cable distances, you will require a relay and possibly a separate suitable transformer. For greater distances and information please consult our technical department

SECTION 5

Analogue Audio and video Combining Coax and Twisted Pair for video for distances up to **250 meters** -----

Twisted Pair 22AWG $\varnothing = 0.64 + 2$ core $\varnothing = 1.2\text{mm}$ (H & F)

The number of twisted pairs will depend on how many stations are in the system This is covered in the VIDEO INTERCOM section of the FARFISA MANUAL 11. For long driveways of ± 100 plus, we recommend that RG-59 Coax is used from the gate / door station to the central DB at the house. The video signal can then be amplified and converted to twisted pair. Farfisa have designed their video transmission to work over NON SHIELDED standard telephone twisted pair with a maximum distance of 200 meters. For video applications, try and keep cable runs to the monitors as short as possible. If operating an electric lock or motorised gate over long cable distances, you will require a relay and possibly a separate suitable transformer. For greater distances and information please consult our technical department.

SECTION 6

FN-4000 5 wire Digital Audio

This system requires standard NON SHIELDED 1mm² 5 core electrical cable for a maximum distance of **200 meters**. Additional line power supplies can be added to increase the distance of the system. The system should be wired and configured as per FARFISA MANUAL 10 FN-4000 INTERCOM. For greater distances and information please consult our technical department

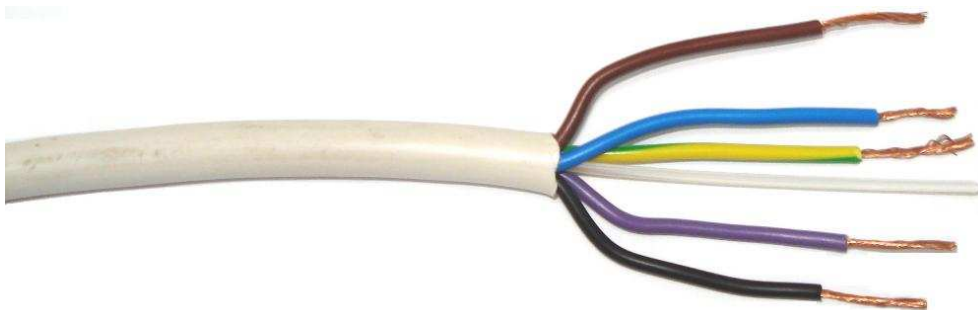


Figure 4: 5 Core 1mm² electrical cable.

SECTION 7

FN-4000 5 wire Digital Audio and Video

This system requires standard NON SHIELDED 1mm² 5 core electrical cable for a maximum distance of **100 meters, (Audio & Data)**. The Video signal can be run on standard NON SHIELDED twisted pair up to 200 meters. For video runs exceeding 200 meters, use RG-59 COAX. Additional line power supplies can be added to increase the distance of the system. The system should be wired and configured as per FARFISA MANUAL 10 FN-4000 VIDEO INTERCOM. For greater distances and information please consult our technical department

SECTION 8

DF-6000 2 wire Digital Audio

This system requires NON SHIELDED 1mm² ripcord (flex) for a maximum distance of 600 meters See FARFISA MANUAL10 DF-6000.



Figure 5: 1 mm² ripcord DF-6000 cable

SECTION 9

DUO Audio/video DIGITAL 1 TWISTED PAIR (NON POLAR)

The standard system requires 1mm² (Cable 2302) for a maximum distance of 200m Greater distances can be achieved by adding in line amplifiers. The system must be wired and configured as per FARFISA MANUAL 13.



Figure 6: 2302 1mm² twisted pair DUO cable