

# cai<sup>®</sup>

## ACADEMY



**ASPIRE**

**LEARN**

**ACHIEVE**

**SUCCEED**

## Introduction

CAI was formed in 1978 to represent and establish standards in the rapidly growing TV signal reception industry. Although the technologies in the industry have developed beyond anyone's expectations since we formed, our core strengths remain the same.

At a time of increasing change within our industry, training and education is essential if you want to keep abreast of the latest technology, design and installation techniques.

CAI offers a comprehensive portfolio of programmes with the objective of ensuring that companies can keep themselves and their employees fully up to date with the latest technological advances and techniques. It also benefits the customer by providing them with the best possible standard of service. CAI's portfolio of programmes are designed to develop skills and competencies necessary to meet the demands of the aerial and systems installation industry.

CAI's programmes are delivered by professionals with real hands-on experience in our industry at well-equipped centres around the United Kingdom.

### CAI programmes give you:

- Practical applications, not just the theory
- Understanding of best practice
- Industry recognised qualifications
- No commercial bias

A number of programmes that CAI offer have achieved City & Guilds Accredited Programme Status. This recognises the process and delivery of a bespoke training programme.



**ACCREDITED  
PROGRAMME**

Please note that CAI's training processes and systems have been accredited, not the content of CAI's training programmes themselves nor CAI as an organisation.

Scan this QR code



for further details

# Fibre Optics in Signal Distribution

**SUITABILITY** - This programme is suitable for participants involved in the TV/RF distribution industry with a desire to learn the developments of Fibre Optic technology focusing on Fibre Integrated Systems (FIRS) and who wish to progress to a higher level of competence and practical ability in this area. A reasonable understanding of conventional IRS would be desirable but not absolutely necessary.

**AIMS** - This programme will enable participants to understand the working and planning of a typical sized Fibre IRS. Participants will design, build and analyse Fibre Optic systems used for Signal Distribution.

**OBJECTIVES** - Over this 2-day programme participants will become practically familiar with all the components of a working Fibre IRS. Participants will become familiar and confident with Fibre technology. They will be able to design, test, commission and fault find on Fibre IRS and other basic optical networks.

## CONTENT (P) indicates inclusive practical elements'

- The history and development of fibre optic technology.
- Single Mode & Multimode Fibre principles.
- Health and Safety when working with fibre optics (P)
- Types of cables and connectors used in Fibre systems.
- Components contained within FIRS and their practical application.
- FIRS Sky Q components, upgrade, planning and testing.
- Basic Passive Optical Network (PON) design.
- HDMI over fibre.
- Wavelength Division Multiplexing (WDM)
- Multiple Sat Fibre Systems
- GEAPON and EDFA. Principles of operation
- System testing using VFL, OLTS and OTDR
- Practical Cable management and Blown Fibre
- Fibre connector inspection, cleaning & analysis of the effects of contamination (P)
- Repair and termination of fibre optic cables by Fusion and Mechanical Splicing (P)
- Measurement and calculation of signal losses within a typical fibre network (P).
- Termination at Customer Premise (P)
- Advanced test commission and fault finding on FIRS (P)

**LEARNING OUTCOMES** - This 2-day programme will enable all participants to;

- |                                             |                                                                  |                                                                 |
|---------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------|
| ■ Work with main components of a Fibre IRS. | ■ Connect and terminate fibre cables.                            | ■ Manage Fibre containment and terminations                     |
| ■ Carry out fusion splice of optical fibre. | ■ Specify, design and build a Fibre Integrated Reception System. | ■ Troubleshoot, test and commission Fibre IRS and basic GEAPON. |

# TCP/IP Networking & Connectivity

**SUITABILITY** - This programme is suitable for participants with a basic level understanding of electronics, frequency bandwidths and signal distribution techniques in single dwelling properties.

It is assumed participants have practical experience in the installation of terrestrial and satellite antennas as well as signal measurement parameters associated with both these areas.

**AIMS** - This programme delivers a basic/Intermediate understanding and insight into the various methods of home network distribution.

**OBJECTIVES** - This 2-day programme will enable participants to deliver signal around the home via correctly terminated category cables. Understand the Basic set up and control of a router within a domestic and small business environment.

To understand the various types of computer networks and what they mean for use within the working day. With a goal to being more comfortable when setting up a router for various IP based systems, such as CCTV, IPTV, streaming etc.

They will understand the difference between Multicast and Unicast which is going to become extremely prevalent within their working world.

## **CONTENT** '(P) indicates inclusive practical elements'

- Health & Safety considerations
- An overview of Intermediate home/small Commercial network methods
- Terminology associated with networking be it Domestic or Small Commercial Installations
- What is TCP/IP
- Elements of IP addresses IPV4 and IPV6
- How and what an IP address actually is
- A brief outline of Binary and Hexadecimal Communications
- Introduction to MAC Addresses
- Topologies of Networks within Domestic and Small Commercial Networks
- Give an Understanding of Computers and how they Communicate
- Where and when the Infrastructure of Networks Began
- Practical RJ45 connections
- Practical CAT 5e Patch Panel Terminations
- HDMI & HDBaseT distribution
- Basic Requirements and Installation of CCTV systems
- Introduction to DYNDNS and why it is required
- Practical Set up Of A Router for New IP address, Password
- Practical Setting up Fixed IP addresses and Relevance
- Practical Set up of Wifi networks
- Tools required.
- Interconnection to ancillary equipment.
- Best practice explained.

**LEARNING OUTCOMES** - At the conclusion of this programme participants will;

- Have an understanding of structured cable distribution techniques.
- Understanding of Computer Terminologies and Implementation of Levels of security within Networks
- Be able to competently terminate RJ45 connections on category cable.
- Set up of a Domestic Router for Basic Control.
- Wifi Management and Restrictions
- LAN restrictions and deployments
- Understanding of DYNDNS and why
- Assess Dwellings for the installation of CCTV and Quote.

## IRS Networks

**SUITABILITY** - This programme is designed for participants who have prior experience in the installation of simple TV reception equipment (TV Aerial & Satellite) and who wish to update their knowledge of basic IRS techniques.

**AIMS** - This programme delivers an overview of all aspects of TV and radio signal delivery via an IRS.

**OBJECTIVES** - This programme defines the basic principles of IRS and enables the participants to engage in team project planning. It is not necessary to bring tools.

**CONTENT** '(P) indicates inclusive practical elements'

- MATV basics
- SMATV basics
- IPTV basics
- Fibre requirements for IRS over Fibre
- Coaxial requirements for IRS over Coaxial Cable
- Copper signal level requirements
- Fibre budget calculations for IRS
- Impact of various elements to an IRS system
- 4G & 5G impact
- System design requirements copper
- System design requirements fibre
- Surge Protection
- LPS and Equipotential bonding
- 5 cable backbone legacy and Sky Q systems
- IRS cable layout concepts
- LNB types
- Hybrid IRS systems

**LEARNING OUTCOMES** - At the conclusion of this programme all participants will be able to conceive, plan, install and service a typical IRS for up to 100 locations to current best practice.



# CAI FOUNDATION DIPLOMA IN **SIGNAL RECEPTION** QUALIFIES YOU FOR A SKILLS CARD

## Route 1

Must have more than 2 years' experience.

### Requirements:

Making the Bond Course  
Safe Working at Heights Certificate  
CITB Health Safety & Environment  
'Specialist Work at Height' Test  
Work Based Assessment



## Route 2

Must have 2 years' or less experience.

### Requirements:

Making the Bond Course  
Safe Working at Heights Certificate  
CITB Health Safety & Environment  
'Specialist Work at Height' Test  
Work Based Assessment  
Essential Principles for Installers

&

### Complete 2 of the following:

Basic Aerial & Satellite Installation Course  
An Introduction to IRS Course  
Home Networking & Connectivity Course  
Fibre Optics in Signal Distribution Stage 1

Contact the CAI Training team on: **01923 803030**  
or email: **[amanda.ward@cai.org.uk](mailto:amanda.ward@cai.org.uk)** for a quote.

# Essential Principles for Installers

**SUITABILITY** - An ideal 'starting' point for those entering the industry. Professional installers of media reception systems. Any person involved in the installation, design, maintenance and specification of TV, Satellite, Data and Audio Video systems in both the domestic and commercial sectors. Architects, Designers, Engineers, Consultants, and those involved in the industry with a desire to learn or refresh basic principles. The course is designed to form part of an individual's Continual Professional Development portfolio. A reasonable understanding of basic mathematics would be desirable but not necessary.

**AIMS** - To teach the fundamentals principles that are essential to the professional installation of media reception systems.

**OBJECTIVES** - On completion of the 2-day course, candidates will have a broad-based underpinning knowledge and competence in the subject.

## CONTENT ' (P) indicates inclusive practical elements'

- Units of Measurement
- Principles of Electricity (AC/DC) including Ohms and Watts Laws
- Basic Electronic Principles and Components – introducing Semiconductors and Integrated Circuits
- Basic electrical/electronic parameters and symbols.
- Basic mathematics, scientific notation, Trigonometry, transposition calculations of formulae.
- Binary, hexadecimal systems basics. RS232 Serial Interfaces
- Decibels for signal ratios and measurement
- Electromagnetic Spectrum, Frequency to Wavelength and vice versa conversion
- Transmission and Reception line basic principles
- Earthing overview types and requirements
- Power Supply Units (PSU) explained – SMPS also
- Electrical equipment classes explained and tested (PAT).
- Introduction to Mechanical loading and torque.
- Speaker Systems, Passive/Active & 100V Line level.
- Video display and interface formats
- Use of Multimeter & Clamp Meter (P)
- Fitting 230v Connectors – 13A & IEC Types (P)
- PAT (Portable Appliance Testing) (P)
- Construction of basic electronic circuits (P)
- Measurement of Voltages, Currents and Resistance (P)
- PSU investigation and fault finding (P)

**LEARNING OUTCOMES** - On completion, participants will have a greater understanding of the fundamentals taught and be able to apply them in their working environment. They will have a broad-based underpinning knowledge in preparation for other industry training.

# Electrical Safety for Signal Reception Systems (formerly Making the Bond)

**SUITABILITY** - This programme is suitable for anyone who is installing aerials and is not fully conversant with the current standard (BS EN 60728-11:2017 + A11 2018) and CAI Code of Practice 3 - Electrical Safety Requirements for Signal Reception Systems (Excluding CATV).

**AIMS** – This programme will give participants practical working knowledge of how to install a safe signal distribution system in the home or commercial premises.

**OBJECTIVES** - At the end of this programme all participants will be able to install a safety mechanism on a distribution system, analyse the effectiveness and record the results.

**CONTENT** ' (P) indicates inclusive practical elements'

- Background to why earthing and bonding may be necessary.
- Electrical regulations and safety.
- Single Dwelling Unit (SDU) requirements.
- Multiple Dwelling Unit (MDU) and commercial Premise requirements.
- The use of surge protection devices (SPD).
- An understanding of different lightning protection devices (LPD).

**LEARNING OUTCOMES** - Following this 1-day programme all participants will be able to:

- |                                          |                                                                        |                                                                                                        |
|------------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| ■ Test an electrical circuit for safety. | ■ Perform the necessary tests and checks that ensure a system is safe. | ■ Understand the different types of Surge Protection Devices and where and when they should be fitted. |
| ■ Make a safety bond.                    | ■ Understand the different types of Lightning Protection Systems.      |                                                                                                        |

# Risk Assessment & Method Statement (RAMS)

**SUITABILITY** - The Management of Health and Safety at Work Regulations 1999 reinforce the Health and Safety Act 1974. The regulations place a set of duties on employers and employees to maintain a safe and healthy workplace. This in-depth course is designed to provide delegates with a practical understanding of how to conduct and record Risk Assessments & Method Statements in accordance with current legislation. Ideally suitable for anyone interested in or are going to be on a risk assessment team or will be acting in accordance with a risk assessment process and will be involved in the writing of risk assessment and method statement operations.

## AIMS –

- Understand why carrying out a risk assessment is essential for improving health and safety.
- Understand the types of injuries and ill-health that occur as a result of failing to manage health and safety.
- Have an awareness of the legal responsibilities placed on employers and employees when carrying out risk assessments.
- Understand each of the five key steps of the risk assessment process.
- Feel confident carrying out suitable and sufficient risk assessments of their workplace and work activities.
- Understand what needs to be considered when completing a COVID-19 risk assessment.

**OBJECTIVES** - Employees and the self-employed have a legal duty to assess health and safety risks. This programme will allow all participants the ability to be able to contribute to the process and act to protect their own health and safety and that of others.

## CONTENT

- What is a Risk Assessment and why is it important?
- Main causes of accidents and ill health – Accident Triangle
- Implications for people in the workplace
- Legal requirements for risk assessments and enforcement
- COVID19 – CAI Risk Assessment
- Principles of Risk Assessments
  - Hazards, risks and control methods
  - The five steps of risk assessment
  - The hierarchy of control
  - Risk assessment review and record keeping
- Safe System of Works and Method Statements outlined.
- COSHH assessment
- RAMS in the Construction Industry
- Practical risk assessment writing (assessed)
- Written test (assessed)
- Summary and review

**LEARNING OUTCOMES** - After completion of this course, participants will be able to compile a generic and site-specific risk assessment.

# Basic Aerial & Satellite Installation

**SUITABILITY** - This programme is suitable for participants with no experience who wish to enter the industry and for those who have experience but want to know more about the theoretical and practical aspects of terrestrial and satellite signal reception and installation.

**AIMS** - This programme covers all aspects of TV delivered via aerial and satellite into a coaxial network around a single dwelling property.

**OBJECTIVES** - Over the 3 days this programme presents all the criteria necessary to deliver terrestrial and satellite TV programming to TV receiving equipment in the home.

## CONTENT

- Health & Safety in relation to the use of ladders. (Aerial & Satellite)
- Electrical Safety requirements for signal distribution. (Aerial & Satellite)
- Signal types & measurement. (Aerial & Satellite)
- Aerial design & choice through survey tests and Aerial alignment & recording signals. (Aerial only)
- Brackets, fixings & installing a chimney lashing kit. (Aerial & Satellite)
- Cables, certification & correct fitting of connectors. (Aerial & Satellite)
- Aerial alignment & recording signals. (Aerial only)
- 4G Interference Mitigation. (Aerial only)
- Amplifiers, diplexers, combiners & their application. (Aerial & Satellite)
- Modulation techniques & digital compression. (Aerial & Satellite)
- Surveying and testing location site/planning considerations. (Satellite only)
- Reception of other satellites. (Satellite only)
- Assembly, fixing and alignment of a standard Sky UK satellite dish. (Satellite only)
- Full installation of a Sky HD Set Top Box and setup, including an overview of SkyQ Set Top Box basic installation (course does not cover Sky wireless setup app this is only available to Sky employees and their equipment). (Satellite only)
- Received connection and interconnection to ancillary equipment. (Satellite only)
- Fault tracing and mitigation techniques. (Satellite only)
- Customer relations, conduct, documentation & insurance. (Aerial & Satellite).
- Future development of the aerial/satellite and multimedia industry.

**LEARNING OUTCOMES** - After this 3-day programme all participants will be able to:

- |                                                                     |                                                            |                                                         |
|---------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------|
| ■ Select the correct aerial for regional terrestrial TV reception.  | ■ Record signals for both terrestrial & satellite signals. | ■ Assemble a satellite dish.                            |
| ■ Select the correct dish size for regional satellite TV reception. | ■ Install a chimney lashing.                               | ■ Install & align a Sky UK satellite dish.              |
|                                                                     | ■ Fit the correct connectors to terminate coaxial cables.  | ■ Install and programme a Sky UK HD Satellite receiver. |

# Safe Working at Heights Refresher Assessment



## How to Book a Refresher Assessment?

Please email Charlene at [charlene.burke@cai.org.uk](mailto:charlene.burke@cai.org.uk) with the following information:

1. Member Company Name
2. Engineer Name/s requiring Refresher
3. Copy of SWAtHt Certificate previously completed by each engineer

Otherwise please call CAI and this information can be obtained.

This is a benefit for members only. If you would like to join CAI, please refer to our website or call the office to discuss membership further.

CAI assessment team is offering SWAtHt assessments within its on-going normal assessment process.

We offer this extra service at a cost of **£70 per refresher assessment** and upon successful completion a **5 year certificate** will be issued. Members undergoing their CAI assessment will be able to opt for an actual installation observation so that the safe working ladder practice can be checked against the CAI standards as detailed in the 'Guidelines on Safe Operating Procedures'.



There will be major advantages such as huge savings for you in respect of time and travel costs. The overwhelming complaint by members is the down-time and work lost along with travel expenses and the cost of a course that merely repeats all that was covered before.

If you have a SWAtHt certification that is nearing the end of its 5 year life and have not had a CAI company assessment for some time, or simply require the refresher, please contact CAI to co-ordinate an assessor visit or discuss further SWAtHt options.



## CAI Accessibility Policy

CAI welcomes applications from potential participants of all social and ethnic backgrounds. Its enrolment policy aims to promote equal opportunities, while at the same time selecting participants who have the ability and motivation to benefit from the programmes that they intend to follow and who will make a contribution to the Industry.

To this end, in the spirit of the Equality Act 2005, CAI will undertake reasonable adjustments for qualified applicants with disabilities to enter CAI's Education and Skills Programme, in accordance with the provisions of the Act. Any applicant who needs to report any disabilities to CAI, please can this be done at the time of booking, or shortly after for the learning programme to be adapted to cater for your needs.

**[www.cai.org.uk](http://www.cai.org.uk)**

