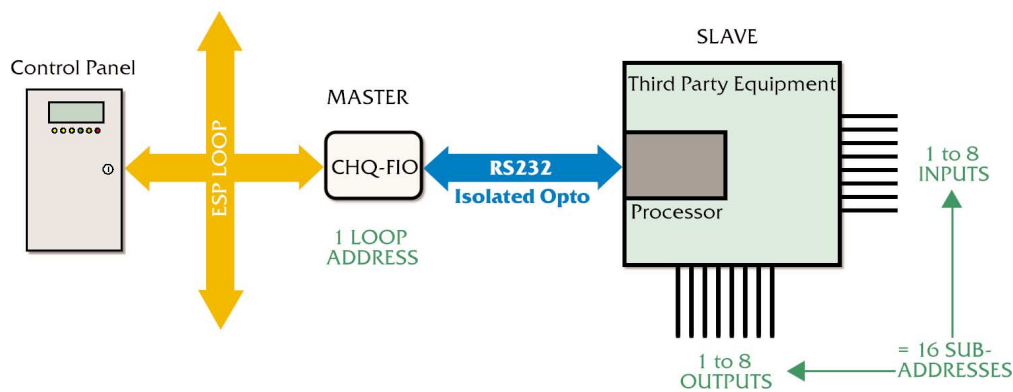


# CHQ-FIO Field Input/Output Module Technology Guide

## Introduction

The CHQ-FIO Field Input Output Module is intended to be incorporated into equipment such as fire damper panels, aspirated fire detection panels etc, to allow their connection onto loops using the Hochiki Europe ESP communication protocol. The CHQ-FIO in effect acts as a protocol translator, communicating with the fire alarm control panel using ESP, and communicating with the Third Party Equipment (TPE) using a serial communication protocol as defined in Hochiki Europe's TPE Documentation.



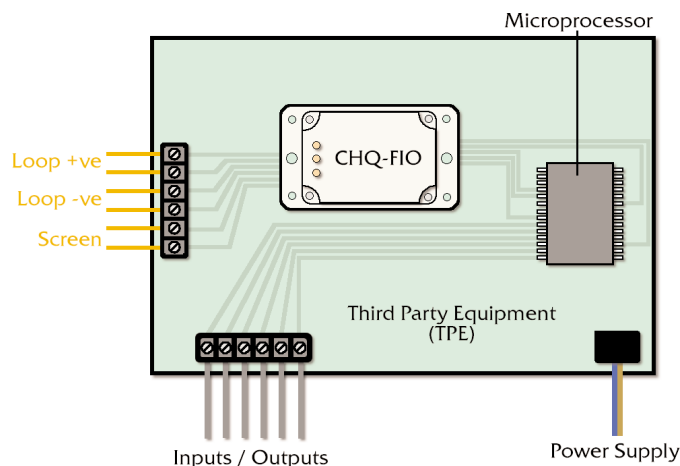
The CHQ-FIO is supplied as a module that the customer can incorporate into their equipment during manufacture or on site, giving it the identity of a custom ESP device.

## Integration

The CHQ-FIO is installed directly onto the TPE circuit board utilising a connector plug located on the base of the unit. This in effect connects the CHQ-FIO directly to the TPE's microprocessor and to any loop cabling connected to an appropriate terminal block.

The unit then translates the loop's ESP signal to a serial signal that the TPE's microprocessor can utilise in its control of input and output equipment.

Inputs can be digital, with or without monitoring, or analogue (up to three channels) or a mixture of both.



## Features

- 16 sub-addresses from 1 main address
- Third Party Equipment can be designed for any number of inputs/outputs to a total maximum of 16
- Equipment can be developed for non-fire applications
- Existing equipment can be adapted to become ESP compliant
- Fully isolates third party equipment from loop

## Typical Applications

The CHQ-FIO can be used in any number of applications involving the interfacing of a fire detection system loop and any ancillary, microprocessor controlled equipment, although this equipment need not be directly associated with fire protection.

### Linear Heat Interface

### Addressable Emergency Lighting

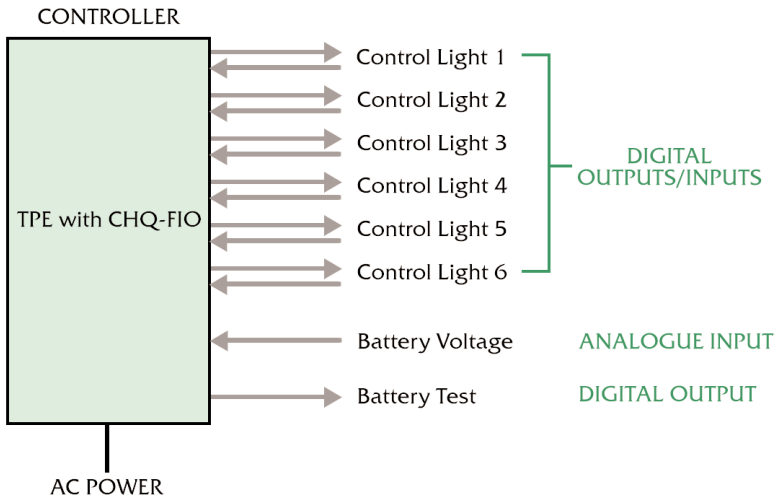
### Air Sampling Interface

### Flat Signalling

The unit can be developed for the specific requirements of the customer, and to this end Hochiki Europe will allocate a MANUFACTURER'S CODE and a TYPE CODE for each interface. To optimise the flexibility of the CHQ-FIO the TPE developer will need to work closely with the intended panel manufacturer to ensure complete compatibility.

## Example Application One

In this example the CHQ-FIO is used as part of a controller for an emergency lighting system. The TPE could operate in a similar method to that shown in the following diagram:

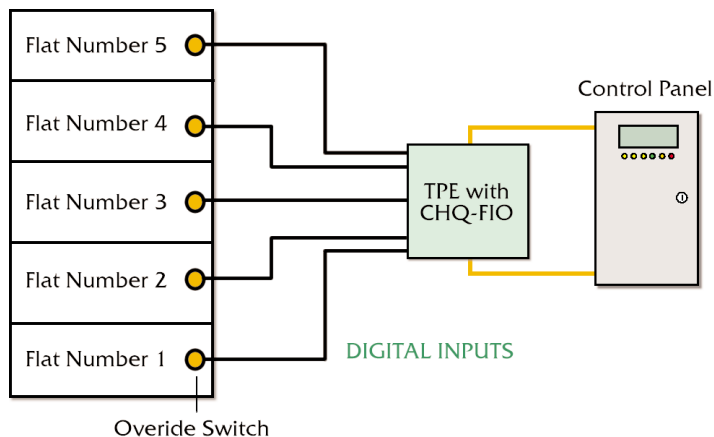


### Advantages

- Full monitoring of battery
- Full monitoring of each light unit
- Full control of each light unit
- Activation of any light unit under a Fire Condition, in other words full Cause & Effect functionality.

## Example Application Two

In this example the CHQ-FIO is used as part of a fire-alarm control system within a block of flats, specifically to operate sounder override buttons within each flat. The TPE could operate in a similar method to that shown in the following diagram:



### Advantages

- When sensor in flat detects smoke/heat, Sounder in flat is activated.
- Delay for activating other Sounders in whole block is in place.
- If alarm is generated accidentally, occupant is able to override the rest of the blocks' sounders from activating.
- This therefore saves unnecessary evacuation of whole block.

## Application Development

For developers and designers of TPE's, Hochiki Europe also provides the following tools allowing for the customisation of the use of the CHQ-FIO to suit any specific equipment or scenario:

### Reference Circuit Diagram for a Typical TPE

This 'template' Circuit diagram details the recommended base layout of any TPE circuit board. This template can be added to or adapted by the developer to suit any application.



### Reference Source Code for a TPE microprocessor

This processor source code is a basis from which most TPE application source codes can be adapted and developed.

```
// threshold for anal
// state of inputs waiti
// steady state of digital
// debounce timer for di
// 20ms debounce
// alarm flag for interrup
```

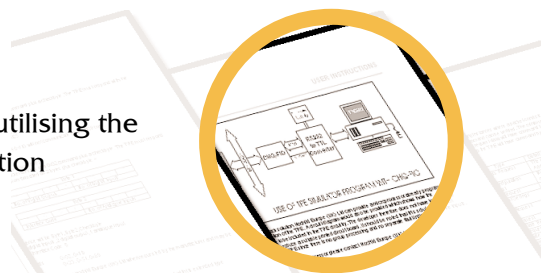
### Software Development Tool for PC

To aid in the design and development of control equipment using the CHQ-FIO there is a software tool available that can be used to simulate the relationship between an analogue panel, a CHQ-FIO module and a TPE chain on a PC before manufacture of the TPE commences.

```
Interrupt Level : 1111
Interrupt Level : 2
Interrupt Level : 2
Interrupt Level 1 : ENAB
Interrupt Level 2 : ENAB
Interrupt Level 3 : ENAB
Interrupt Level 3 : ENAB
Interrupt Level 3 : ENAB
```

### User Documentation

Also to aid in the design and development of control equipment utilising the CHQ-FIO module Hochiki Europe will supply full user Documentation explaining the unit's specification, functionality and applications.



**NOTE:** All of the above tools can only be supplied subject to a Confidentiality Agreement between the the TPE developer and Hochiki Europe (UK) Ltd.

## Specification



Ordering code	CHQ-FIO
Operating voltage	17-31V
Low Power Mode current (loop)	<150µA
Quiescent current (loop)	<350µA
Communication current (loop)	<1mA
Transmission method	Digital communication using ESP (Enhanced Systems Protocol)
Operating temperature range	-10 °C to +50 °C
Storage temperature range	-30 °C to +70 °C
Maximum humidity	95%RH - Non condensing (at 40 °C)
Colour	Ivory White
Case material	ABS
Dimensions (mm)	80 (L) x 52 (W) x 17 (H)
Weight	22g

  
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