



Laboratory for Fire Safety

Classification of fire resistance in accordance with EN 13501-2:2016 of a timber floor construction made of Staircraft TFSi I-joists, chipboard flooring and gypsum plasterboard ceiling incorporating four JCC downlights

Classification report

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Classification of fire resistance in accordance with EN 13501-2:2016 of a timber floor construction made of Staircraft TFSi I-joists, chipboard flooring and gypsum plasterboard ceiling incorporating four JCC downlights

Sponsor	Staircraft Group Colliery Lane North Bayton Road Industrial Estate Coventry, CV7 9NW United Kingdom
Prepared by	Peutz bv Lindenlaan 41, NL-6584 AC Molenhoek Postbus 66, NL-6585 ZH Mook The Netherlands
Notified body	NB 2264
Product name	Timber floor construction with JCC downlights
Report number	YA 2183-3E-RA-001
Date of issue	February 10, 2020
Reference	JZ/TBr//YA 2183-3E-RA-001
Representative	J. Zwart, MSc.
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All orders are accepted and executed according to 'De Nieuwe Regeling 2011' (The New Rules)

BTW NL004933837B01 KvK: 12028033

mook – zoetermeer – groningen – düsseldorf – dortmund – berlijn – leuven – parijs – lyon – sevilla

1 Introduction

This classification report defines the fire resistance classification assigned to a timber floor construction made of Staircraft TFSi I-joists, chipboard flooring and gypsum plasterboard ceiling incorporating four JCC downlights. The system was tested in the Peutz Laboratory for Fire Safety in Mook using the standard heating curve and in accordance with the procedures given in EN 13501-2:2016.

The JCC downlights were tested in combination with other fitting elements incorporated in the ceiling. The other elements are not part of this classification report and had no influence on the test results.



For performing the testing and classification, the Laboratory for Fire Safety is recognized by the "Stichting Raad voor Accreditatie" (RvA).

The RvA is member of the EA MLA (**EA MLA: European Accreditation Organisation MultiLateral Agreement**: <http://www.european-accreditation.org>).

EA: "Certificates and reports issued by bodies accredited by MLA and MRA members are considered to have the same degree of credibility, and are accepted in MLA and MRA countries."

2 Details of the classified system

2.1 General

The element, is defined as a loadbearing floor with fire separating function according to EN 13501-2:2016, paragraph 7.3.3. The floor has been classified for the fire applied from below only.

2.2 Product description

The element, a timber floor construction made of Staircraft TFSi I-joists, chipboard flooring and gypsum plasterboard ceiling incorporating four JCC downlights is fully described in the test report listed in table 3.1.

The Staircraft TFSi I-joists are 220 mm high, made of two rectangular timber flanges of 47 mm x 47 mm connected to each other with 11 mm thick OSB4 board. The Staircraft TFSi I-joists were positioned at 600 mm centres. The web at the end of the Staircraft TFSi I-joists was filled from both sides with MDF 'end blocks' (48 mm x 123 mm x 18 mm).

On the top of the Staircraft TFSi I-joists a flooring of chipboard 22 mm thick (full board 1800 mm x 600 mm) has been applied.

Under the Staircraft TFSi I-joists a ceiling of gypsum plasterboard (12.5 mm, British Gypsum, GYPROC Wallboard, type A) has been mounted (full board 2400 mm x 1200 mm). The joints between the boards were filled with joint filler which was also used to cover the heads of the screws. The perimeter joints (bearing sides) between the floor construction and the supporting construction were filled with intumescent sealant.

Four JCC (2 x JC94113Wh, 2 x JC1001/WH) downlights were incorporated in the gypsum plasterboards fitted through 70 mm diameter apertures drilled in the ceiling.

At the request of the sponsor an extra load of 106 kg/m² has been applied during the test. For the purpose of the supporting construction a frame work made of aerated concrete (class G4/600), respectively 200 mm thick in the vertical direction (bearing sides) and 150 mm thick in the longitudinal direction (free edges), has been used.

For more details of the layout of the construction please refer to the drawing in Appendix 1.

3 Report and test results in support of the classification

3.1 Used report

An overview of the report used is given in Table 3.1. The client has stated that the report provided may be used for this classification report.

t3.1 Used report

Name of laboratory	Name of sponsor	Reports reference number and date	Used methods
Peutz bv	Staircraft Group Ltd	Test report Y 2183-3E-RA-001 dated February 4, 2020	EN 1365-2:2014 EN 1363-1:2012

3.2 Test results

The construction has been tested using the standard heating curve as defined in EN 1363-1:2012 with heating from below.

The summary of the test results achieved is shown in Table 3.2. The test was finished after 45 minutes, all criteria has been attained.

t3.2 Test results

Test standard	Parameter	Result
EN 1363-1:2012	Loadbearing capacity (R)	45 min
EN 1365-2:2014	Integrity (E)	45 min (due to reaching R)
	Thermal insulation (I)	45 min

4 Classification and field of application

4.1 Reference of classification

This classification has been carried out in accordance with Clause 7.3.3 of EN 13501-2:2016.

4.2 Classification

The element, a timber floor construction, is classified according to the following combinations of performance parameters and classes as appropriate.

Fire resistance classification

REI 45
RE 30*

*A classification RE 45 is not possible according to EN 13501-2:2016

4.3 Field of application

This classification is valid for the construction given on the drawings in Appendix 1 and the description given in Chapter 2.2. The field of application is based on the direct field of application in accordance with the test standard EN 1365-2:2014. The test results are directly applicable to a similar untested floor or roof construction with the following end use applications.

4.3.1 Construction element

The span of the construction may be increased or decreased, the spacing of the Staircraft TFSi I-joists may be decreased, or the depth and flange size of the Staircraft TFSi I-joists increased, provided that the maximum moments and shear forces on the Staircraft TFSi I-joists, considering the load applied in practise, are not greater than those tested (106 kg/m²), when calculated on the same basis in the fire condition.

4.3.2 The dimension crosswise to the span direction

The dimension perpendicular to the span direction may be increased or decreased provided that the spacing of the Staircraft TFSi I-joists is not greater than 600 mm.

4.3.3 Boards of the ceiling

The maximum size of boards of the ceiling is 2450 mm x 1250 mm, provided that the number of fixings per square meter remains at least the same as tested. The boards shall be of the type British Gypsum, Gyproc Wallboard, Type A, 12.5 mm.

4.3.4 Cavity

The height of the cavity between the ceiling and the flooring may be increased but with a minimum Staircraft TFSi I-joists height of 220 mm. No extra material may be added to that cavity.

4.3.5 Fittings

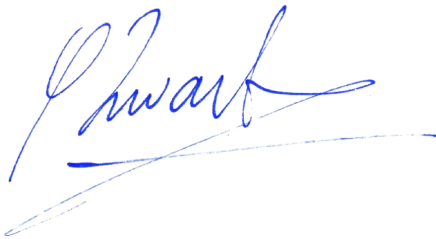
JCC downlights

The centre-to-centre distance between 2 random fittings shall be no less than 600 mm in the direction parallel to the joists and no less than 600 mm in the direction perpendicular to the joists. Alternatively the downlights may be spaced closer than 600 mm perpendicular to the joists provided that the spacing is adjusted accordingly in the parallel direction such that the density of downlights per m² is no greater than one downlight per ca. 1.5 m² for the entire ceiling area. The distance between a downlight and a joint of the gypsum board shall be at least 200 mm measured from the centre of the downlight. The diameter of the holes in the gypsum boards for the installation of the downlights shall not exceed 70 mm.

5 Limitations

This classification document does not represent type approval or certification of this product.

J. Zwart, MSc.



Deputy Head of Laboratory for Fire Safety

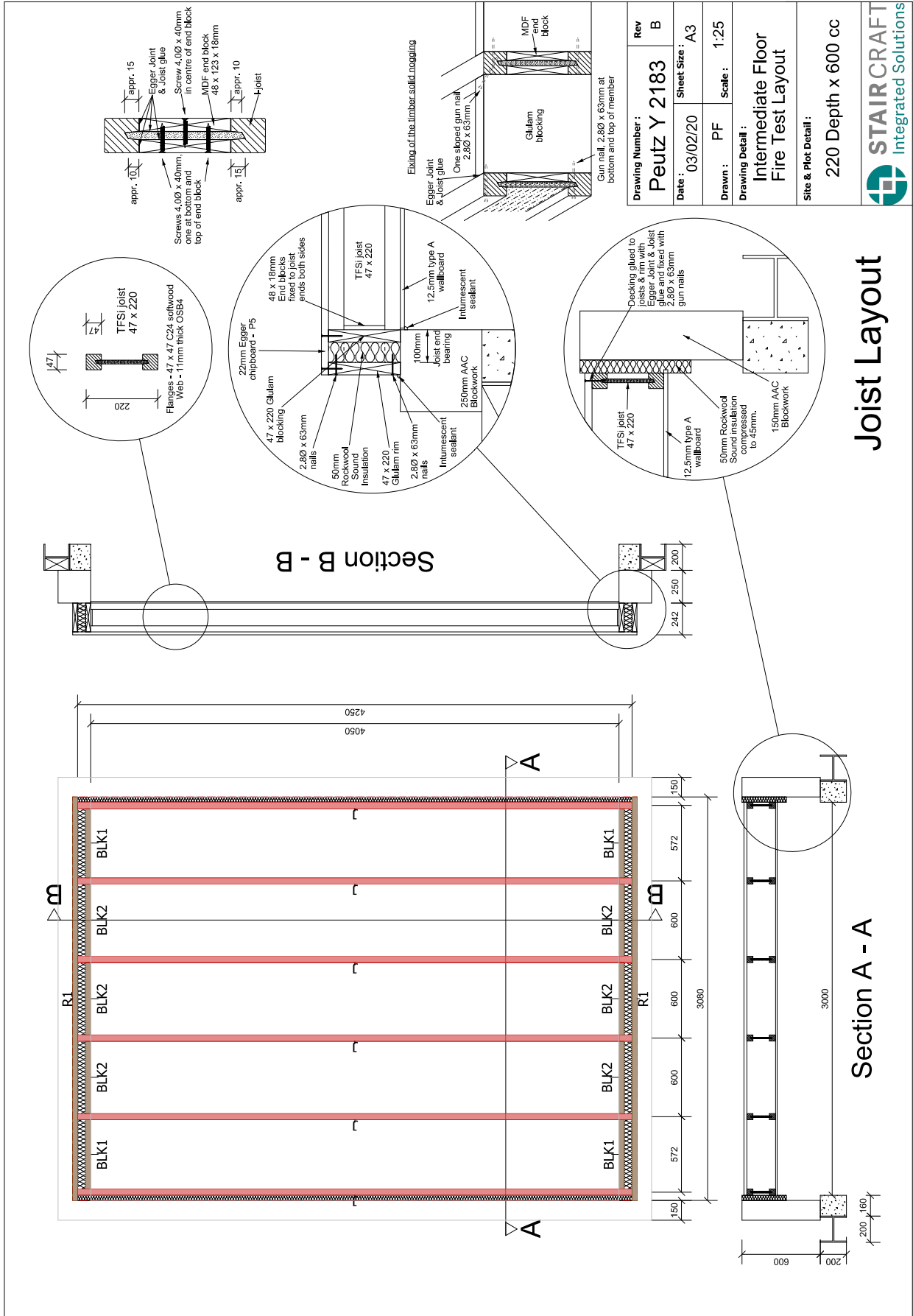
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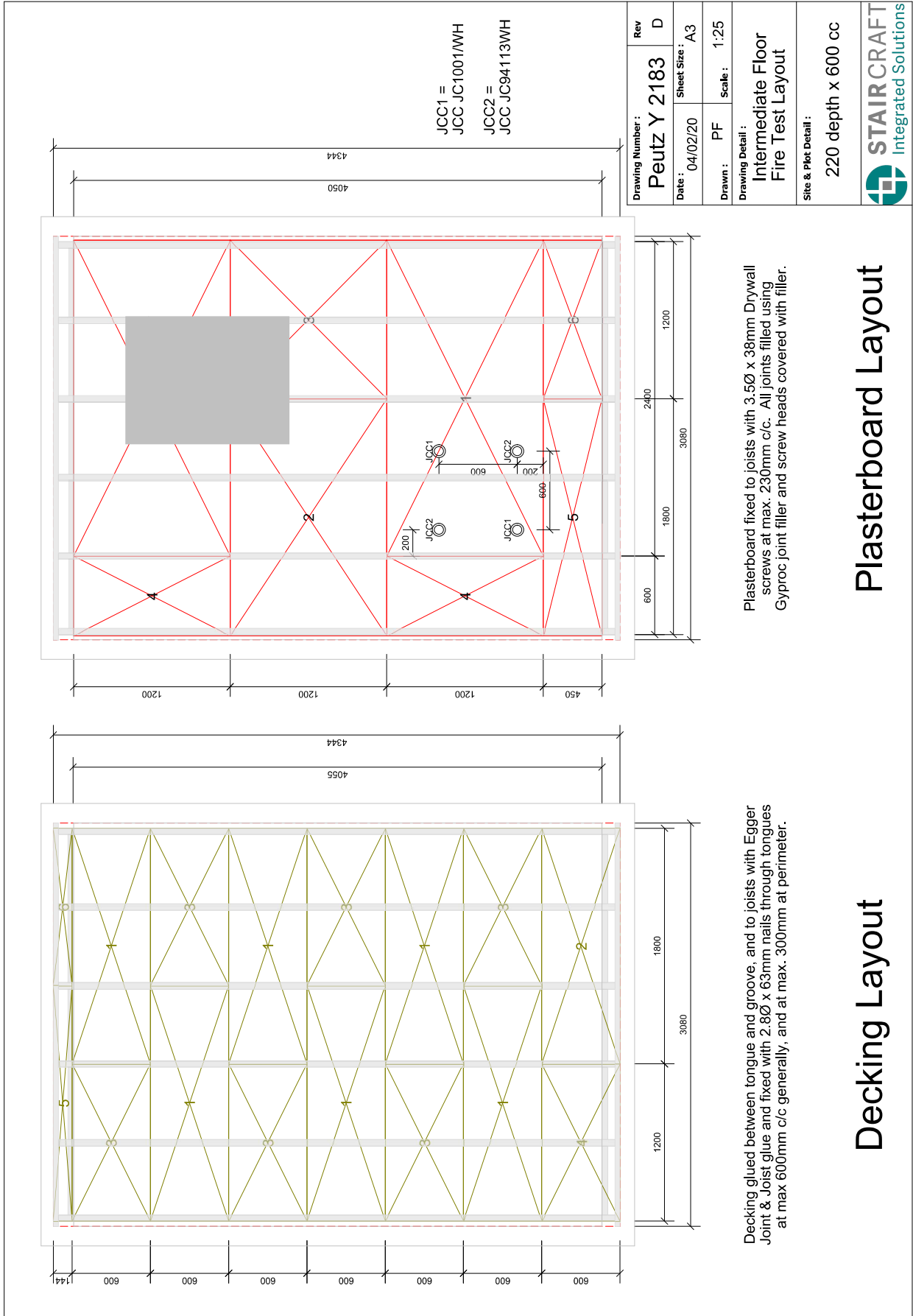
D.J. den Boer, BSc.



Management

This report contains 8 pages and 1 appendix:
Appendix 1 Drawings of the classified system.







JC94113WH

Fireguard Mains IP20 Recessed Twist & Lock Downlight 50W Unlamped White



Features & Benefits

- Twist & Lock lamp retainer for easy lamp removal
- Fire-rated 240V 50W MAX downlights, maintaining the fire-rating of ceilings
- Press-fit terminal, loop-in/loop-out
- Lamp not supplied

General Information

Product Group	Fire-rated downlights
Product Range	Fireguard
Trade Name	Fireguard
Lighting Product Type	Fired Rated Downlights
Product Shape	Round
Mounting	Recessed
Product Weight	0.254kg
Color Finish	White
Overall Dimensions	103.5 x 85 mm
Recommended Product Location	indoor use only
Minimum Void Requirement	150mm
Method Of Fix	Spring clips
Product Aperture Size	74mm

JCC Lighting

Innovation Centre, Beeding Close, Southern Cross
 Trading Estate, Bognor Regis, West Sussex, PO22 9TS
 Company Registration Number: 03044848 | VAT Number: 918544112
 T: 01243 838999 | F: 01243 838998 | sales@jcc.co.uk | www.jcc.co.uk

IP Rating	IP20
Environment	Indoor
Suitable For Zones	Outside Zone 2
Lamp Supplied	No
Distance From Lighted Object	0.5m
Origin Of Manufacture	PRC
Warranty	2 year standard warranty (See Website for terms and conditions)

Electrical

Voltage Rating	220-240
Operating Frequency (Hz)	50/60Hz
Luminaire Circuit Wattage	50W max
Class	Class II, double insulated with earth provision
Input Electrical Connections	Live(Brown)Neutral(blue) with earth provision - Loop in/Loop out press fit terminal
Dimmable	Check with lamp manufacturer
Lampholder	GU10 cap

Thermals

Room Ambient Temperature Not To Exceed	26°C
Room Ambient Temperature	25°C
Insulation Coverage	see instruction sheet
Minimum Free Air Space	At least 75mm around fitting

Performance Data

Energy Rating	This luminaire is compatible with bulbs of the energy class A+ to E
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Construction

Primary Material	Steel
Rim Or Attachment	Die-cast aluminium

Packaging

Luminaire Carton Dimensions	125 x 125 x 90 mm
Quantity Per Outer Carton	40
Bar Code EAN Number	5052544047411
Packaged Weight	0.299kg

Standards & Approvals

Listings	CE
Listings	Fire Rating
Manufactured In Accordance To	BS EN 60598-2-1, 2-2
CE Marked	Yes

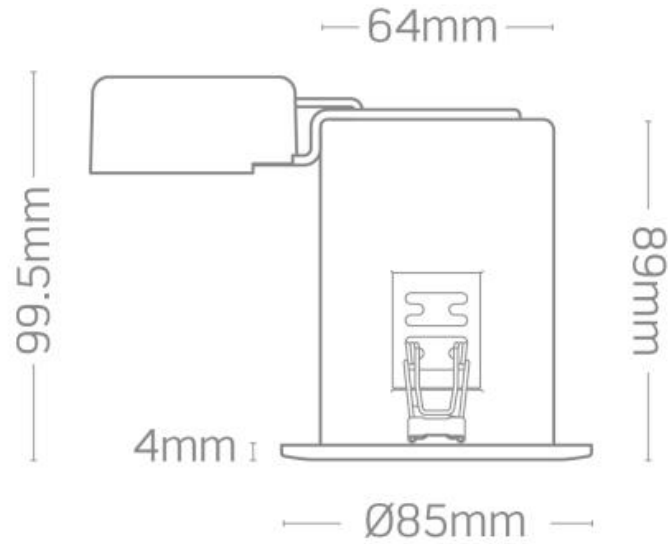
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Batch Coded	yes
WEEE Symbol	yes
Certificate Of Conformity	Available on request
Accredited Members	LIA, ISO9001:2015, ISO14001:2015

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JC1001/WH

V50 Fire-rated LED downlight 7W 650lm IP65 WH

Features & Benefits

- Two colour selectable from below the ceiling, 3000K & 4000K
- Ultra-low profile suitable for shallow 50mm ceiling voids
- Fully fire-rated for 30, 60 and 90 minute ceilings
- IP65, suitable for bathrooms (internal use only)
- Strong protected spring clips
- Fast, push-fit termination with remote driver
- Triac dimmable as standard (recommended dimmer list on JCC website)
- Twist & lock bezel design
- Available as complete fixture (JC1001) or without bezel (JC1001/NB)
- JC1001/NB requires separate bezel (JC1006)

General Information

Product Group	Fire-rated Downlights
Product Range	V50
Trade Name	V50
Light Source	LED
Light Source Features	Colour Selectable
Lighting Product Type	Fired Rated Downlights
Product Shape	Round
Mounting	Recessed
Product Weight	0.29kg

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Color Finish	White
Overall Dimensions	Ø84 x 67.7
Overall Dimensions (mm) Rim	Ø84
Recommended Product Location	Indoor use only
Minimum Void Requirement	50mm
Method Of Fix	Recessed with Spring Clips
Product Aperture Size	70mm
IP Rating	IP65
Environment	Indoor
Luminaire Accessories	Black, Brushed Brass, Brushed Nickel or Chrome Replacement Bezel; Concealer Ring; Converter Plate
Duration Of Fire Protection (mins)	30/60/90
Origin Of Manufacture	Made In China
Warranty	2 years standard warranty extends to a 3 year commercial warranty or 5 year domestic warranty when registered within the first year of purchase (See Website for terms and conditions)
Dimming Protocol Compatibility	Triac
Driver Manufacturer	JCC
LED Manufacturer/Type	Hongli

Electrical

Voltage Rating	230-240
Secondary Running Current	175mA
Operating Frequency (Hz)	50/60Hz
CC or CV	CC
Luminaire Circuit Wattage	7.5
Sec - Voltage (V)	36VDC
Class	II
Input Electrical Connections	Push Fit Terminals LEN Loop In/Loop Out
Dimmable	Yes
Max No. In Run	20

Thermals

Room Ambient Temperature Not To Exceed	30°C
Insulation Coverage	Loosely Cover with Mineral Wool Insulation

Performance Data

Energy Rating	A+
Actual Lumen Output	600/650
Lumens Per Circuit Watt	80/87
LED Life (Hours) (L70)	51000

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Hours life stated is an indication of expected L70 chip and light output calculations when operating in optimum conditions. Product warranty period supports the full product during the term given. The L70 hours expectancy is not correlated with the full product warranty term, nor is it a representation of lumen depreciation during the warranty period.

Color Rendering Index	80-89
CRI: Ra	80
Correlated Color Temperature	3000K/4000K
Light Distribution Detail	60-degree
LOR (Light Output Ratio) %	100%
Photometry Available	Yes: available on request.

Construction

Primary Material	Steel
Lens	PC
Heat Sink	Extruded Aluminium
Driver Housing	Polycarbonate
Rim Or Attachment	Die-cast Aluminium

Packaging

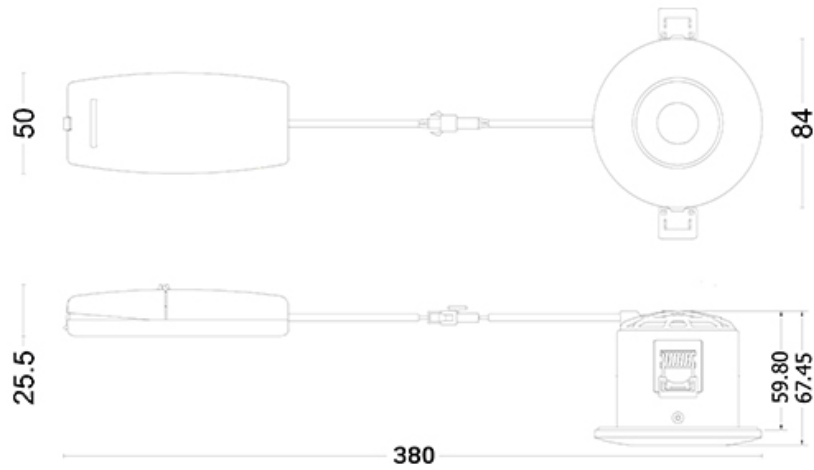
Luminaire Carton Dimensions	12 x 10 x 8.2cm
Quantity Per Outer Carton	20
Bar Code EAN Number	5052544081231
Packaged Weight	0.4kg

Standards & Approvals

Listings	CE
Listings	Fire Rating
Manufactured In Accordance To	BS EN 60598:2015, 2-1, 2-2
CE Marked	Yes
Batch Coded	Yes
Certificate Of Conformity	Yes: available on request.
Accredited Members	LIA, ISO9001:2015, ISO14001:2015

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