

# Holy Trinity, Parkfield



Design and Access Statement  
May 2023

## Version history

Project name: Holy Trinity, Parkfield

Project number: 9221

Client: Matthew Pilkington and Tina Pilkington

| Rev: | Date:    | Status   | Name                                              | Description                  |
|------|----------|----------|---------------------------------------------------|------------------------------|
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| P2   | 16-08-23 | PLANNING | Lauren Gabbitas I Part II Architectural Assistant | Planning and LBC Update      |
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View from Nave looking towards the west end.

# 1.0 Introduction

## 1.1 Background

Buttress have been appointed to submit the planning application and listed building consent for the conversion of Holy Trinity, Church into a single residential dwelling.

This Design and Access Statement has been prepared by Buttress Architects to support the Planning Application and Listed Building Consent for the restoration and refurbishment of Holy Trinity Parkfield, Middleton.

The purpose of this report is to set site context, heritage asset and design proposal for the site and building.

It is acknowledge the church has been vacant for some years and its condition is continuing to deteriorate with evidence of dry rot. It is also understood that previous attempts to find a commercial viability or community use have not been successful.

This scheme now proposes to consider the re-use of the church into a single residential dwelling.

Pre-application advice has been obtained that states any works necessary for the conversion of the church to residential property is likely to result in *'less than substantial harm to the significance of the designated heritage asset'*. However, any loss of features and subdivision of the space should be justified to support the application. Therefore, where possible, the church's historic assets should be retained and incorporated into the proposed scheme.

## 1.2 Scope

This report will describe the refurbishment outlined in the proposal. It is intended as a narrative, to be read in conjunction with the drawings and heritage impact assessment by Buttress, bat survey by Echo Calls, arboricultural and ecological assessments by TEP and timber survey by BAR Preservation, which together form the Planning Application and Listed Building Consent.

These works include:

- Restoring the existing fabric of the church.
- Creation of a mezzanine floor to the existing nave and transept.
- Landscaping to the site with double garage.
- Removal and adaptation of pews.
- Installation of conservation roof skylights.
- Sustainable technology, materials and strategies.
- 

This report should be read in conjunction with the following drawings:

- 9221 (01)001 Site Plan as Existing
- 9221 (01)002 Ground Floor Plan as Existing
- 9221 (01)003 Roof Plan as Existing
- 9221 (01)100 Location Plan
- 9221 (01)200 Ground Floor Demolitions and Alterations Plan
- 9221 (01)201 Roof Demolitions and Alterations Plan
- 9221 (02)001 Elevations as Existing
- 9221 (03)001 Sections as Existing
- 9221 (04)001 Ground Floor Plan as Proposed
- 9221 (04)002 Mezzanine Floor Plan as Proposed
- 9221 (04)003 Roof Plan as Proposed
- 9221 (04)004 Site Plan as Proposed
- 9221 (05)001 Elevations as Proposed
- 9221 (06)001 Sections as Proposed
- 9221 (06)010 Site Sections as Proposed
- 9221 (20)001 Garage Plan and Elevations as Proposed
- 9221 (20)100 Door Types and Partition Screen as Proposed
- 9221 (50)001 Proposed Drainage Strategy

### 1.3 Client Brief

**About the Clients:** Matthew runs Pilkington Joinery and Building Contractors, manufacturing timber products for conservation areas in the past, examples can be provided and approved. Strong knowledge in construction and building trade.

Tina works as a Production Designer, enabling design and planning ideas. Tina also runs Kaleidoscope prop store for TV productions, which also provides antiques and collectables.

**Brief:** The scheme proposes the conversion of the Grade II listed church Holy Trinity, Parkfield to a single residential dwelling to accommodate living spaces and bedrooms with keeping as much of the church's original integrity.

The proposal seeks to respect, conserve and enhance the existing fabric. Where possible, heritage and architectural assets are to be retained and incorporated into the proposal.

While it is recognised the sensitivity surrounding future development of the building, the proposal for change of use to a single dwelling represents a sustainable future for Holy Trinity Church. Balancing preservation with future development, the proposal commits to finding a solution that ensures the building's longevity while also meeting the needs of the community.

By re-purposing the church into a single dwelling, the proposal aims to provide the building with a practical and meaningful use that benefits the public. This vision has garnered support not only through public consultation but also on social media platforms, indicating a positive reception from the wider community.

Holy Trinity, Parkfield project seeks to achieve the following objectives:

- **Conserve:** To deliver conservation work needed to ensure the historic fabric of the church does not progressively deteriorate and provide a viable asset back to the local area.
- **Celebrate:** To minimise the volume of any proposed work and retain principal views to preserve the existing spatial character of the church.
- **Creative:** To propose a dynamic design that sensitively sits within a historic context.
- **Heritage:** To minimise its impact to the to heritage assets and retain original features where possible.

## 2.0 History

### 2.1 Historic Description

Holy Trinity Church is a mid-19th century Church designed by architect George Shaw. It is listed grade II for its architectural and historic interest.

The plan and general arrangement of the church is five bay nave with south porch and two bay south aisle, north choir vestry and vestry. The Chapel has an apsidal chancel with south organ chamber and west facing bell turret. A small boiler house is located beneath both vestries.

The exterior appears in good condition with no major issues evident other than requiring general redecoration. The roof is believed to have been re-slatted in 1991.

Internally, the church is richly decorated with good quality liturgical features. The stain glass windows are of architectural interest, in particular the main south transept and apse. The nave is entered through an oak door from the southwest corner. The area to the west has been cleared of pews and the area immediately to the west of the font is encaustic floor tiles. In the apex of the west wall, stone corbels can be seen which provide support to the exterior west bell turret.

The walls are plastered and painted with some areas of exposed stone surrounds. . Simple arch braced timber roof trusses rest on stone corbels. The main nave floor is wood with softwood pews to either side.

Since the church has been redundant, the war memorials have been removed and relocated to a safe place.



Historic Photograph of holy Trinity Church, August 1899

### 2.2 Setting

The church is located on the east of Archer Park Road. The surrounding area is highly populated with residential property of mostly detached and semi detached property.

The churchyard sits on a steeply sloped site up from the south boundary. There are no burials.

A tarmac drive rises to the right of the churchyard and there is a pedestrian gateway with partial stone slab footpath. A stone retaining wall with overgrown hedgerow marks the west boundary. Other boundaries are a mix of overgrown hedgerows and fences.

Further information on the history and setting of the church can be found in the project Heritage Impact Assessment.

### 3.0 Context

It has been acknowledged the church has been vacant for several years and its condition is continuing to deteriorate including evidence of dry rot.

In May 2022, dry rot was identified in and around the organ chamber, necessitating the removal and disposal of what remained of the organ, leaving an 18 inch void below floor level. The affected areas were promptly treated, with acro props supporting the remaining sections of the leaking roof.

By September 2022, dry rot had spread to the exterior of the organ chamber and within the hot water pipe ducting. Treatment was undertaken, yet recurring occurrences necessitated additional treatment.

In November 2022, the Church Commissioners arranged for extensive spray treatment, covering all timber floors and pews. Despite these efforts, dry rot persisted, requiring ongoing treatments throughout 2023. The most recent instance, in January 2024, involved treating a cupboard storing banners.

On January 28th, an external inspection by a stone mason contractor revealed continued deterioration, with cement pointing causing spalling of the stone, slippage of coping stones, and detachment of kneeler stones from gable ends. These issues exacerbate water ingress and structural deterioration.

Internally, plaster deterioration has become increasingly evident, indicating further structural decline.

A survey conducted by BAR Preservation in January 2023 confirms the church's continued deterioration over the past year. Immediate and comprehensive measures are warranted to address these ongoing challenges and preserve the integrity of the historic structure.



Remaining part of the Organ in Organ Chamber.



View from Nave looking towards the Chancel.

## 4.0 Proposal

### 4.1 Summary of Proposal

The scheme proposes the conversion of the Grade II listed Holy Trinity Church, Parkfield to a single residential dwelling.

The design proposal aims to balance creating a new dynamic space with the sensitivity of the historic architecture. The proposal removes a number of the existing pews in the nave allowing to install new walls and mezzanine floors with a connected balcony landing and staircases. Existing liturgical items will be retained and/or adapted into the proposal where feasible.

### 4.2 Internal

**Nave:** Main access into the building will remain through the nave from the southwest corner. A new glazed frameless door is proposed to replace the existing metal gate into the entrance and a timber frame door with glazed panels to replace the existing door into the church.

The west end proposes a free-standing kitchen and dining space without impacting the existing fabric. 2no. existing pews will be retained and repurposed as dining seating.

Electrical services will route from the porch area where the kitchen unit is located. Additionally, the hot and cold water feeds, as well as the waste, will run from the utility room. This location ensures the closest feasible access point to supply the kitchen island before being routed below floor level.

Alterations to the nave propose levelling the floor and installation of new walls and a new first floor mezzanine to the north side of the church. On ground level, this space will inhabit a utility, bathroom and office with storage on either side of the new walls. On first level, two bedrooms with separate en suites.

The mezzanine will be free-standing. However, due to the necessary U values to improve the building's energy efficiency and facilitating the operation of the air source heat pump, details from the rafters would be lost.

The subdividing walls will be constructed as freestanding studded partitions, facilitating easy removal if necessary at any point in the future. The walls will be constructed using insulated plasterboard, ensuring both thermal efficiency and sound insulation. All necessary services will be routed internally within the walls. Any steel structures will be encased with fire-rated plasterboard for enhanced safety measures.

New internal walls will be clear of obstruction including trusses and corbels. As a result, any division of space will sit either side of the buttresses and architectural features will be retained.

**Transept:** In the south transept an additional first floor mezzanine is proposed at a lower level. On ground level this will occupy an enclosed living space with a full height void adjacent to the key stained glass window to minimise obstruction. On first level, a master bedroom with en suite, dressing room and balcony with views looking over the nave.

An internal window in the master bedroom and bathroom proposes to minimise the visual impact where the new walls obstructs the stained glass window on the first floor level.

**Chancel:** A new glazed screen proposes to separate the chancel from the main space within the church without obstructing the view from the east to west end. This space proposes minimal alteration to the church's original appearance to celebrate its heritage in its full integrity.

The proposal retains a number of the choir stalls pews and pew seats and to be located against the walls in the library, contributing to both the historic and architectural interest of the church.

**Vestry and Organ Chamber:** The scheme proposes to adapt the vestry and organ chamber into two bedrooms with en suites with minimal structural alternations to these spaces.

Due to dry rot, the existing organ chamber screen will be removed and replaced with a new decorative screen.

**Circulation:** Two angular staircases provide access to the first-floor mezzanines proposing a dynamic plan to the axial grid of the existing building. The main staircase is accessed from the northwest of the nave providing access to the main mezzanine. The second staircase is accessed from the southeast of the nave, framing the entrance to the living room, providing access to the bedroom on the lower mezzanine level.

A small balcony landing across the nave will connect the two mezzanines at first floor level to offer views of the west-end stained glass window and library. Glazing will be used on the balcony to minimise the visual impact of the first-floor structure.

**Fixtures and Fittings:** A number of pews will be adapted to accommodate different purposes throughout the building, including bespoke shelving in the office. A minimum 2no. pews will remain as existing in new locations TBC. 2no. choir stalls will be retained in the library to conserve the heritage significance of the church's heritage. Communion rails to remain in place.

The font in the west end to remain in place with interior bowl removed or alternatively the lid permanently fixed in place as requested by the Church Commissioners. Altar to be removed under Bishops instruction at the point of sale with the reredos to be retained. Pulpit to be replaced due to ingress of dry rot. Wooden Carved Lectern to remain in place and treated once roof leaks and moisture levels have been resolved.

The large embroidered banners hung on the west elevation to remain in place and the small embroidered banners to be hung on the other side of the west end stained glass window.

Brass War Memorial Plaques have been offered to All Saints and Martyrs Church Langley.

The organ has been identified as in not working order. The existing organ workings have since been removed due to the ingress of dry rot. The organ screen is to be removed and the decorative organ pipes are to be carefully removed and reinstated on a new timber screen to match the existing.

**Lighting:** Existing lighting fixtures to be retained and relocated to balance the internal appearance between the existing and proposed, prior to being checked for working condition. 2no. Chandeliers in the hall are proposed to provide sufficient lighting to the main space of the church.

**Windows:** The proposal will restore the church's windows and create new openings in all leaded windows to allow for natural ventilation and airflow through the church.

Motorised conservation rooflights and blinds to the north pitch of the main roof, transept and vestry roofs to mitigate any visual impact from the principal elevation. Rooflights to be installed to introduce natural light and ventilation into the bedrooms and the kitchen/dining area, enhancing the overall comfort and livability of these spaces.

Providing sufficient airflow is important not only for maintaining healthy living conditions but also for preserving the integrity of the building. Insufficient airflow can lead to adverse effects on both the occupants and the structure, as evidenced by the current spread of dry rot.

Rooflights casement sits flush to the roofline and reduce visual impact to the north elevation that is 2.5m from the north boundary which backs onto a neighbouring property. This is the only property which is able to view the full north elevation.

**Upgrade Services:** The proposal includes an upgrade to an energy efficient boiler, with full rewire.

Underfloor heating to be installed.

Installation of a MVHR system to provide fresh filtered air to all areas of the church due to the lack of windows that would be able to open due to the significance of the stained glass. This would also retain any heat loss through the tall ceilings and underfloor heating, making the building a lot more energy efficient. We would be able to regulate the moisture and temperature.

### 4.3 External

**External Landscape:** The site proposes for a double garage and off-street parking cutting into the sloping landscape of the churchyard to minimise visual obstruction from Sunny Brow Road and Archer Park.

The garage serves multiple purposes within the context of the proposal. It will primarily function as storage for work equipment, including a car and van which are essential for the client's operations. Keeping vehicles parked away in the garage rather than on an open drive enhances the overall aesthetic appeal of the church grounds.

Additionally, the garage will serve as the "engine room" of the church, accommodating equipment, such as air source heat pumps. Given the size of the church, it is necessary to accommodate two air source pumps, hence the choice of locating the plant room within the garage. This strategic positioning ensures efficient functionality while preserving the integrity and minimise any potential harm to the existing building.

The garage proposes a Bekstone stone laid with concrete with a domestic pitch roof in concrete roof tiles.

The driveway will consist of natural stone gravel with edging, enough for a turning point for two vehicles. A natural timber fence to the perimeter grounds to provide additional security.

Existing trees will be retained where possible and a minimum of 8no. new plants and trees planted to enhance the natural environment and increase biodiversity on site.

**Lighting and CCTV:** External LED recessed ground lighting will illuminate the key routes through the site. This will prevent the need for additional fixtures to the historic fabric.

CCTV to fix onto the building to avoid free standing poles that would be visually intrusive. The locations have been designed to

provide adequate views of main access routes through the site.

Existing street lamp to be restored.

**Waste Provision and Collection:** Adequate bin storage has been created within close proximity to the garage with easy external access onto the public realm for collections.

The bin store has capacity for 4no. bins for different types of items.

**Sustainability:** The proposal suggests incorporating as much sustainable technology, materials and strategies where possible.

The proposal of solar panels are located to prevent any visual impact to the existing building whilst positioned on the garage roof to provide an adequate supply of energy to offset energy consumption.

The proposal of air source heat pumps will provide a low-carbon method to heating the church. Additionally, an electrical vehicle charging point located within the garage to mitigate the visual impact to the principal entrance of the site

**Access, Cleaning and Maintenance:** The church is easily accessed by a vehicle route from Archer Park.

As the church is at a single level, all glazing can be maintained with a reach and wash system from ground level. This will eliminate hazards created by high-level cleaning.

Metal framed roof windows are manufactured from folded and welded steel construction, protected with a primer and paint coating to ensure a long low-maintenance service life.



Existing Stained Glass Windows and Chandelier in Transept.

## 4.4 Fabric Repairs

**Design Approach for Conservation of Fabric:** In line with the church's Heritage Impact Assessment, a considered approach to conserving historic fabric has been adopted. A detailed restoration specification will be produced, and proven methodologies and techniques will be followed.

Sound historic fabric will generally be retained in situ as far as practicable and where repair is required will follow a principle of 'minimum work necessary' to ensure an approach of minimal intervention and reversibility as far as possible. Replacement materials used in any repair will always be carefully sourced to match the existing and all repairs will follow a principle of fitting new to old, rather than old to new.

**External Works:** The external walls are in a good quality sandstone with a hewn finish. The stone is generally in a good condition and has weathered well considering its exposed location despite at low level, where wet/dry and freeze/thaw actions have eroded the mortar that will need repointing.

Existing stonework to be repointed where necessary.

Copping stones are generally in poor condition and that will need lifting and re-bedded.

The chimney to the vestry is in a poor condition and will need to be reconstructed and gable capping re-bedded.

The main roof of the church is in satisfactory condition with the exception of lead flashing, valleys and guttering that will need repairing or replacing. Existing plastic rainwater pipes are to be replaced with metal pipes and hoppers throughout.

The roof to the South Transept valley contains dry rot. The valley supporting timbers will need to be replaced and as a minimum the bottom of the rafters to the first purlin.

The flat roof to the Organ room to be removed and replaced.

All external doors are solid oak doors and would benefit from a treatment of oil and to paint the ironmongery.

Some of the diamond leaded windows and stained glass windows are damaged and boarded over that will need to be restored and/or replaced, including leadwork.

Cages require further review to understand scope of repair works and could benefit to be replaced with poly carbonate sheeting set 6mm from the exterior of the church.

The churchyard is overgrown and existing trees will require attention so future growth will be sustained. 8 individual trees are to be removed, with 7 of these being unsuitable for retention. In addition, 3 trees will need to be pruned and/or crown lifted where they overhang or are interfering with the church building. A minimum of 8 trees capable of reaching a medium to large mature size will be planted to enhance the southern boundary and south-east corner of the site. The stone flag path to the south porch and vestries have been stolen, with the majority of the large sandstone slabs missing, will be replaced.

At ground floor level perimeter channel drains are to be installed to take rain water away from the building, at present it looks to be saturating the ground, and without a damp proof course or cavity is causing rising damp internally.

**Internal Works:** The internal fabric is generally in satisfactory condition with the exception of evidence of dry rot and wet rot that is continuing to deteriorate.

Organ to be removed and boarded out due to the ingress of dry rot. The organ pipes to be carefully removed and reinstated on a new timber screen to preserve the heritage significance of the space. Timber floor to the chancel and organ chamber to be removed, joists replaced and installation of new floorboards. Dry rot has also been discovered in a much closer proximity to the floor within the nave than initially anticipated. A section of

flooring must be removed to access and treat the affected area.

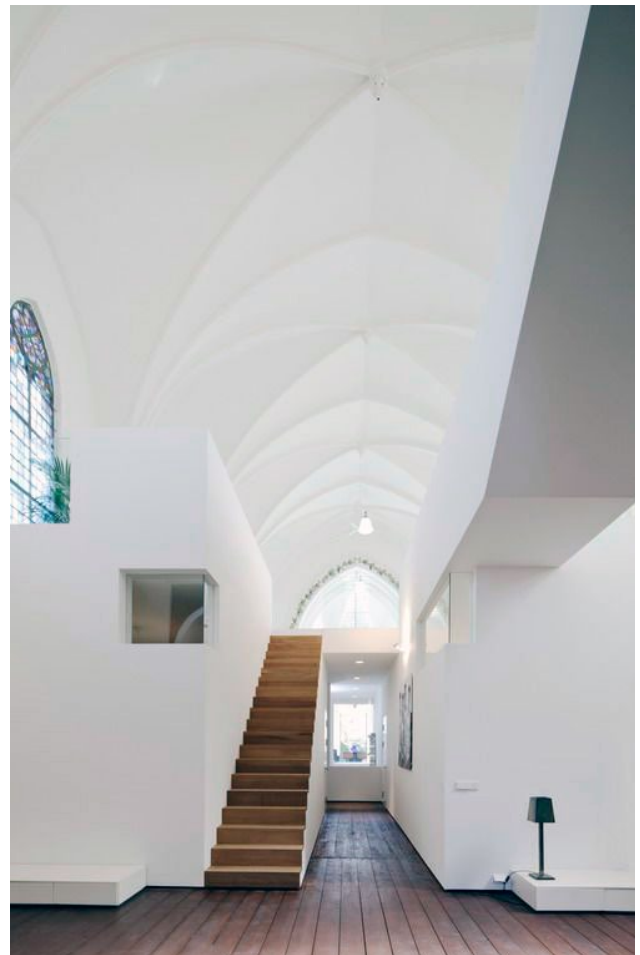
All areas affected by the rot will undergo treatment, and any new timber installed will also be treated to prevent future issues. This ensures the preservation of both the decorative elements and the structural integrity of the building.

The majority of the suspended timber flooring and all parquet flooring to be removed and replaced with a concrete base to offer a sustainable solution to offer breathability around the perimeter of the building and remove a source for the dry rot to exist.

The existing internal walls to the church to be insulated using a breathable thermal insulation. Internal walls to be replastered and repainted with a lime plaster paint.

## 4.5 Materiality

The proposal will aim to use a muted palette with natural materials to celebrate the church's historic fabric and architectural features. Where new intervention intersect with the historic fabric the use of glazing and shadows gaps will create a sympathetic and lightweight connection.



## 5.0 Product Data Sheets

### 4.6 CCTV Cameras

#### rekor HD Technical Specification

**Product Code:** RHD8KB4G4TB

**Description:** 8 Channel HD 4TB DVR & Grey Bullet Camera CCTV Kit



##### 8 Channel HD 4TB DVR

|                           |                                                                                        |
|---------------------------|----------------------------------------------------------------------------------------|
| System                    |                                                                                        |
| Operating System          | Linux                                                                                  |
| Video & Audio             |                                                                                        |
| Video Input               | 8 Channel BNC                                                                          |
| Audio Input               | 4 RCA Inputs                                                                           |
| Audio Output              | 1 Channel RCA                                                                          |
| Construction              |                                                                                        |
| Material                  | Steel - Body<br>ABS - Faceplate                                                        |
| Display                   |                                                                                        |
| Video Output              | 1 x HDMI, 1 x VGA & 1 x BNC                                                            |
| Display Split             | Single / Quad                                                                          |
| Resolution                | 1024 x 768, 1280 x 720, 1280 x 1024, 1440 x 900, 1920 x 1080, 1080 x 1440, 3840 x 2160 |
| Recording                 |                                                                                        |
| Video/Audio Compression   | H.265                                                                                  |
| Resolution                | 1080P @15fps                                                                           |
| Record Rate (Main Stream) | 4ch 1080P recording                                                                    |
| Recording Mode            | Manual/Motion Detection/Schedule                                                       |
| Playback & Backup         |                                                                                        |
| Sync Playback             | 8ch 1080P playback                                                                     |
| Backup Mode               | USB2.0 devices                                                                         |
| Networking                |                                                                                        |
| Network Connection        | Ethernet (RJ45 10M/100M)                                                               |
| Network Functions         | HTTP, IPv4/IPv6, TCP/IP, UPNP, RTSP, UDP, SMTP, NTP, DHCP, DNS, PPPoE, DDNS, FTP       |
| Network Monitoring        | CMS Windows & Mac, Android & iPhone apps                                               |
| Storage                   |                                                                                        |
| Internal HDD              | 1 SATA 4TB HDD                                                                         |
| Auxiliary Interface       |                                                                                        |
| USB                       | 2 (1 Front & 1 Back)                                                                   |
| General                   |                                                                                        |
| Power Consumption         | <10W (without hard disk)                                                               |
| Operation Condition       | 0°C – +55°C / 10% – 90%                                                                |
| Dimensions                | 300mm x 227mm x 53mm                                                                   |
| Power                     |                                                                                        |
| Operating Voltage         | 12V DC                                                                                 |

##### Features

Line Cross Detection  
Perimeter Intrusion Detection

##### 3.6mm Lens 2MP HD Bullet Camera - Grey

|                          |                             |
|--------------------------|-----------------------------|
| Sensor Size              | 1/2.8"                      |
| Lens                     | 3.6mm Fixed                 |
| Effective Pixels         | NTSC/ PAL:1920(H) x 1080(V) |
| Resolution               | 1080p @25 fps               |
| Ingress Protection       | IP66                        |
| Minimum Illumination     | 0.05 Lux                    |
| IR Distance              | 30 Metres                   |
| Scanning System          | Progressive                 |
| Shutter Speed            | Automatic                   |
| Video Output             | 1Vpp, 75 ohms               |
| Minimum Object Distance  | 0.6m                        |
| On Screen Display (OSD)  | English                     |
| Day & Night              | Ext / Colour / B&W          |
| Backlight Compensation   | Off / User BLC              |
| Wide Dynamic Range       | D-WDR (Off/On)              |
| Digital Noise Reduction  | 2D DNR                      |
| Gain Control             | Auto                        |
| White Balance            | ATW                         |
| Remote Control Interface | ACP (AHD Coax Protocol)     |
| Power                    |                             |
| Max Consumption          | 3.5W                        |
| Dimensions               | Ø71mm x 151mm               |
| Material                 | Metal Alloy                 |
| Weight                   | 350g                        |
| Operating Temperature    | -30°C to +50°C              |

##### Supplied

8 Channel DVR  
4 x Grey Cameras  
4 x 18.3m Shotgun Cables  
User Guides  
Mounting Screws & Wall plugs

##### Compatible Products

|           |                                 |
|-----------|---------------------------------|
| RHDC36FBW | White 3.6mm Lens Full HD Camera |
| RHDC36FBG | Grey 3.6mm Lens Full HD Camera  |
| RHDC36FDW | White 3.6mm Lens Full HD Camera |
| RHDC36FDG | Grey 3.6mm Lens Full HD Camera  |

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Page 1 of 1, Rev.1  
Errors & Omissions excluded.  
Specification is subject to change without notice.

## 5.1 Solar Panels

[www.jinkosolar.com](http://www.jinkosolar.com)



# Tiger Neo N-type 54HL4R-B 420-440 Watt ALL-BLACK MODULE

## N-Type

Positive power tolerance of 0~+3%

IEC61215(2016), IEC61730(2016)

ISO9001:2015: Quality Management System

ISO14001:2015: Environment Management System

ISO45001:2018

Occupational health and safety management systems



## Key Features



### SMBB Technology

Better light trapping and current collection to improve module power output and reliability.



### Hot 2.0 Technology

The N-type module with Hot 2.0 technology has better reliability and lower LID/LETID.



### PID Resistance

Excellent Anti-PID performance guarantee via optimized mass-production process and materials control.



### Enhanced Mechanical Load

Certified to withstand: wind load (4000 Pascal) and snow load (6000 Pascal).



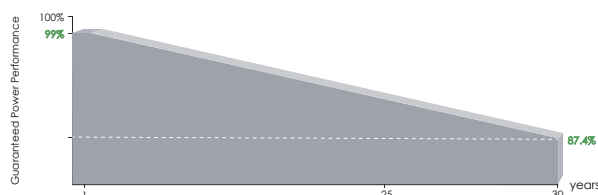
### Durability Against Extreme Environmental Conditions

High salt mist and ammonia resistance.



POSITIVE QUALITY™  
Continuous Quality Assurance

## LINEAR PERFORMANCE WARRANTY

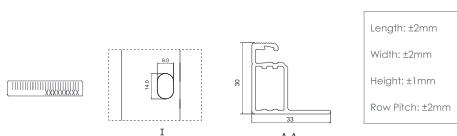
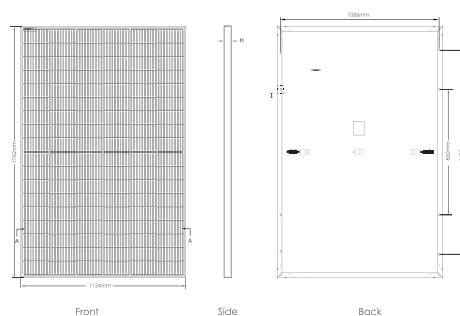


**25** Year Product Warranty

**30** Year Linear Power Warranty

**0.40%** Annual Degradation Over 30 years

## Engineering Drawings



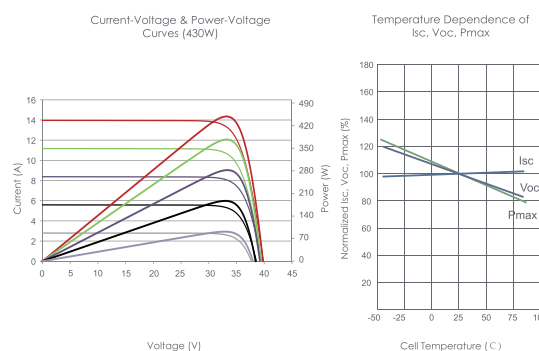
\*This tolerance range applies only to the four-angle distance of the module as indicated above.

## Packaging Configuration

( Two pallets = One stack )

36pcs/pallets, 72pcs/stack, 936pcs/ 40'HQ Container

## Electrical Performance & Temperature Dependence



## Mechanical Characteristics

|               |                                                                             |
|---------------|-----------------------------------------------------------------------------|
| Cell Type     | N type Mono-crystalline                                                     |
| No. of cells  | 108 (6×18)                                                                  |
| Dimensions    | 1762×1134×30mm (69.36×44.65×1.18 inch)                                      |
| Weight        | 22 kg (48.50 lbs)                                                           |
| Front Glass   | 3.2mm, Anti-Reflection Coating, High Transmission, Low Iron, Tempered Glass |
| Frame         | Anodized Aluminium Alloy                                                    |
| Junction Box  | IP68 Rated                                                                  |
| Output Cables | TUV 1×4.0mm<br>(+): 400mm, (-): 200mm or Customized Length                  |

## SPECIFICATIONS

| Module Type                               | JKM420N-54HL4R-B |        | JKM425N-54HL4R-B |        | JKM430N-54HL4R-B |        | JKM435N-54HL4R-B |        | JKM440N-54HL4R-B |        |
|-------------------------------------------|------------------|--------|------------------|--------|------------------|--------|------------------|--------|------------------|--------|
|                                           | STC              | NOCT   | STC              | NOCT   | STC              | NOCT   | STC              | NOCT   | STC              | NOCT   |
| Maximum Power (Pmax)                      | 420Wp            | 316Wp  | 425Wp            | 320Wp  | 430Wp            | 323Wp  | 435Wp            | 327Wp  | 440Wp            | 331Wp  |
| Maximum Power Voltage (Vmp)               | 32.16V           | 29.95V | 32.37V           | 30.19V | 32.58V           | 30.30V | 32.78V           | 30.50V | 32.99V           | 30.73V |
| Maximum Power Current (Imp)               | 13.06A           | 10.55A | 13.13A           | 10.60A | 13.20A           | 10.66A | 13.27V           | 10.72A | 13.34A           | 10.77A |
| Open-circuit Voltage (Voc)                | 38.74V           | 36.80V | 38.95V           | 37.00V | 39.16V           | 37.20V | 39.36V           | 37.39V | 39.57V           | 37.59V |
| Short-circuit Current (Isc)               | 13.51A           | 10.91A | 13.58A           | 10.96A | 13.65A           | 11.02A | 13.72A           | 11.08A | 13.80A           | 11.14A |
| Module Efficiency STC (%)                 | 21.02%           |        | 21.27%           |        | 21.52%           |        | 21.77%           |        | 22.02%           |        |
| Operating Temperature(°C)                 | -40°C~+85°C      |        |                  |        |                  |        |                  |        |                  |        |
| Maximum system voltage                    | 1000VDC (IEC)    |        |                  |        |                  |        |                  |        |                  |        |
| Maximum series fuse rating                | 25A              |        |                  |        |                  |        |                  |        |                  |        |
| Power tolerance                           | 0~+3%            |        |                  |        |                  |        |                  |        |                  |        |
| Temperature coefficients of Pmax          | -0.29%/°C        |        |                  |        |                  |        |                  |        |                  |        |
| Temperature coefficients of Voc           | -0.25%/°C        |        |                  |        |                  |        |                  |        |                  |        |
| Temperature coefficients of Isc           | 0.045%/°C        |        |                  |        |                  |        |                  |        |                  |        |
| Nominal operating cell temperature (NOCT) | 45±2°C           |        |                  |        |                  |        |                  |        |                  |        |

# Buttress

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