



RoHS 

All our cables are manufactured with materials which are compliant with RoHS and WEEE directives.

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ERA
TECHNOLOGY
PERFORMANCE TESTED

**BASEC
APPROVED!**

GUARDIAN™
MECHANICALLY PROTECTED CABLES

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OVERVIEW

IDH-Guardian™ is a new fixed cable concept that has been specifically developed against the ever-changing requirements and pressures place upon the Electrical Services Engineer within the building service installation business.

Guardian, manufactured under IDH's Quality System certified by BASEC and LPCB, is constructed with recognised British Standard Materials. However, it sets new cable performance standards including impact and nail penetration capabilities. These capabilities have been independently assessed by the nationally recognized cables division of ERA Technology.

Guardian is very user friendly, easy to install lightweight cabling system. It is a robust yet pliable multi-purpose cable, including a full sized circuit protective conductor for electrical circuit protection; it uses the latest in Low Smoke, Halogen free material technology. Amongst its many benefits, Guardian offers greatly reduced electrical interference through the use of an aluminium screen, which also insists on giving the cable a good level of impact resistance.

With the speed and ease of installation when compared to traditional cabling systems, e.g. small armoured cables and cables within a conduit, Guardian offers a solution which, in the right applications, will greatly reduce installation times and minimize installed costs.

Guardian is a BASEC approved product.

Guardian sets new cable performance standards including impact and nail penetration capabilities.

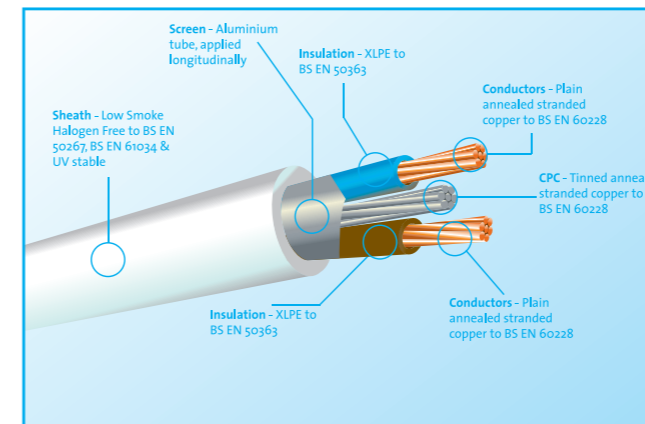
These capabilities have been independently assessed by the nationally recognised cables division of ERA Technology.

RANGE OF AVAILABILITY

Guardian is available in 2, 3 and 4 cores, 1.0mm² to 6.0mm², each having a circuit protective conductor, CPC, of equal cross sectional area to its respective phase conductor. Guardian is offered in white and black as standard, other colours available on request and can be supplied on 100m or 500m reels.

Recent changes in building design and construction practices has seen the use of thin partition walls. The latest wiring regulations in the UK 17th Edition of IEE Wiring Regulations clause 5226.5 and the Irish Wiring Regulations ET 101:2009 4th Edition clause 5226.3 and 5226.6 recognized these changes and now allow the use of metal screen cables, such as Guardian, where cables cannot be buried 50mm or more within such walls.

CABLE CONSTRUCTION AND STANDARDS



Voltage Grade:	600/1000volts
Core Colours:	2 core – Brown & Blue 3 core – Brown, Black & Grey 4 core – Blue, Brown, Black & Grey

Guardian™ is manufactured under Irish Driver – Harris' Quality Management BS EN ISO 9001–2008 System which is certified by BASEC and LPCB

Guardian™ Cables are BASEC approved to I.S 273 – BS8436.

Guardian™ Cables meet the following performance standards:

Smoke Emissions	IEC 61034-2
Acid Gas Emissions	BS EN 50267-1-2
Flame Retardant	BS EN 60332-1, IEC 60332-1

APPLICATIONS

IDH Guardian is suitable for a wide range of applications. These include:

- Lighting and ring main small power wiring
- Outside lighting
- Perimeter and concourse lighting circuits
- Stadium floodlighting
- Air-conditioning
- Ventilation circuits and controls
- Computerised checkouts
- Call systems
- Data networks
- Landlords' services
- Motor fans
- Compressor supplies
- Signage supplies
- Sub-mains

FEATURES & BENEFITS

Guardian, when used in the right application, can help to save up to 30% on installation times when compared to traditional cable.

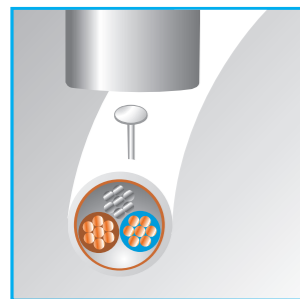
Ease and speed of installation including simple termination techniques.	Reduced installation times when compared to traditional cabling systems.
Pliable yet robust.	Offers impact resistance, retains it's shape when bent and dressed.
TECHNICAL SOLUTIONS There are times when it is not possible or extremely difficult to use trunking or conduit as a means of offering cable protection as called up in BS7671, 'Requirements to Electrical Installations' – IEE Wiring Regulations – 16th Edition, e.g. low ceiling voids.	Guardian by nature of it's design can withstand a short circuit fault current – e.g. if a nail or screw should accidentally penetrate the cable and a live phase conductor. It will successfully operate and 40A Type B current breaker, to BS EN 60898, instantaneously.
Lightweight, up to 60% less weight and 20% less space required than traditional small armoured cables.	Easy to handle and install, lighter cable tray could be used for multiple layers of cables.
Aluminium screen.	Reduced electrical interference and compatible with EMC requirements.
Can be installed with many surfaces and within different bulking structures.	Flexible in the applications it can be used for.
Full sized CPC.	Compliance with BS7671 earthing requirements.
Compatible with expanded Polystyrene thermal insulation.	PVC-sheathed cables must be in a conduit when adjacent to Polystyrene.
Under new wiring regulations Guardian screen cables can be installed in all locations in thin partition walls.	There are restrictions on the location of PVC house wiring cables when used in thin partition walls.

APPROVALS

Guardian is approved by BASEC - British Approval Service for Cables

Earthing capabilities of the screen under nail penetration test condition.

A sample of Guardian, 1m long, was connected to a 230V circuit, the cable screen earthing was left purely to it's contact with the CPC, it was not earthed directly. The circuit impedance was adjusted to achieve the prospective fault current required to operate at 40 A type B MCB in 1 second.



A 40mm panel pin was driven into the live core, missing the CPC, the fault current and the voltage was recorded, if the nail it remained live after 1 second the cable would have failed the test. If failure occurred the prospective fault current was reduced by 10% and the test repeated until the nail was shown not to be live after 1 second. The cable only passed if six consecutive samples passed the test and there were no failures at a give fault current.

The results have shown the screen on Guardian can withstand a fault current with over 200A, which is the fault current required to operate a 40 A Type B circuit breaker instantaneously.



The test used is the impact test called up in the recognized BS6387 standard, 'Performance requirements for cables required to maintain circuit integrity under fire conditions'. The requirement in this standard is that a fire performance cable should withstand a 500g weight dropped from 0.25m onto a chisel edged former resting on the cable. The cable then had to withstand 3.5kv for one minute, the conductor was also continually checked after each test. A cable only passed when 10 consecutive samples passed the test.

Guardian passed these conditions and eventually reached the level of 1.0kg weight dropped from a height of 0.8m, at ambient temperature, thus exceeding the requirements of fire performance cables.

TECHNICAL DATA

Maximum continuous conductor operating temperature: +90°C

Minimum installation temperature: -10°C

Minimum bending radius: 6D, where D is the Nominal Cable Diameter.

PHYSICAL DATA

Area mm ²	Conductor No. of Strands /mm	CPC No. of Strands /mm	Nominal Insulation Thickness mm	Nominal Cable Diameter			Approx. Weight of Cable kg/1000		
				2 Core	3 Core	4 Core	2 Core	3 Core	4 Core
1.5	7 / 0.53	7 / 0.53	0.7	9.6	10.2	11.0	105	140	160
2.5	7 / 0.67	7 / 0.67	0.8	10.7	11.0	13.2	137	184	258
4.0	7 / 0.85	7 / 0.85	0.8	11.0	13.2	13.8	209	267	320
6.0	7 / 1.04	7 / 1.04	0.8	13.2	14.2	-	260	330	-

ELECTRICAL DATA

Area mm ²	Maximum DC Resistance ohm/km@20°C	Nominal AC Resistance ohm/km@90°C at 50Hz	Inductive Reactance ohm/km@Hz	Maximum Continuous Conductor Operating Temperature °C	Short Circuit Rating in kA for 1 second*
1.5	12.1	15.3	0.100	90	0.21
2.5	7.41	9.43	0.097	90	0.35
4.0	4.61	5.86	0.092	90	0.57
6.0	3.08	3.93	0.088	90	0.85

*Based on a K value of 143, taken from BS7671 Table 43A. For short circuit durations of other than 1 second, divide the tabulated rating by \sqrt{t} where t is the duration in seconds. This calculation is valid for values of t between 0.2 and 5 seconds.

TEMPERATURE CORRECTING FACTORS Correction for ambient temperature

Ambient Temperature °C	25	35	40	45	50	55	60	65	70	75	80	85
Fuse to BS88 or BS1361 or circuit breakers to BS3871 or BS60898	1.02	0.96	0.91	0.87	0.82	0.76	0.71	0.65	0.58	0.50	0.41	0.29
Semi-enclosed fuse to BS3036	1.02	0.98	0.95	0.93	0.91	0.89	0.87	0.85	0.79	0.69	0.56	0.39

Correction for grouping

No. of cables	2	3	4	5	6	8	10	12
Clipped direct	0.80	0.70	0.65	0.60	0.57	0.52	0.48	0.45
On cable tray	0.86	0.81	0.77	0.75	0.74	0.73	0.71	0.70

CURRENT RATINGS Ambient temperature at 30°C, conductor operating temperature 90°C as BS7671

Clipped direct - ref method 1

Area mm ²	Two core cable, single phase AC or DC		Three or four core cable, three phase AC	
	Current Rating amp	Volt drop mV per amp per metre	Current Rating amp	Volt drop mV per amp per metre
1.5	24	31	22	27
2.5	33	19	30	16
4.0	45	12	40	10
6.0	58	7.9	52	6.8

On cable tray - ref method 11

Area mm ²	Two core cable, single phase AC or DC		Three or four core cable, three phase AC	
	Current Rating amp	Volt drop mV per amp per metre	Current Rating amp	Volt drop mV per amp per metre
1.5	26	31	23	27
2.5	36	19	32	16
4.0	49	12	42	10
6.0	63	7.9	54	6.8

The above current ratings are based on a 'single circuit' in accordance with IEE Wiring Regulations BS7671, Table 4E2A. Where a conductor operates at a temperature exceeding 70°C it shall be ascertained that the equipment connected to the conductors is suitable for the conductor operating temperature, (BS7671, reg 512-02). The above tabulated current ratings should be multiplied by the rating factor (0.8) when conductor operating temperature has not to exceed a recommended terminal temperature of 70°C.

INSTALLATION GUIDELINES

TERMINATION

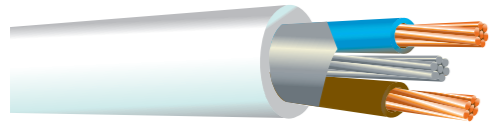
Guardian can be simply terminated by scoring the outer sheath and with slightly bending at the score point the sheath and bonded aluminium screen will separate and pull away. The insulated cores can then be stripped.

IDH recommend using standard low smoke zero halogen or brass glands of a relevant IP rating for the applications. For totally dry conditions ordinary grommets can be used as an entry into fittings, complying with IEE regulations BS7671, 523-21.

FITTING AND FIXINGS

Guardian can be fixed by using standard cable fixing systems.

It is recommended that installation of Guardian be in accordance to BS7671.



PROJECTS

Guardian has been used in a number of prestigious projects in the United Kingdom and Ireland. These include:

SAVOY HOTEL

LONDON

Hotel refurbishment

LANSDOWNE HOUSE OFFICES

DUBLIN

Third and fourth floor refurbishment

Applications: Final circuits, lighting and general utilities

HULL ROYAL HOSPITAL

KINGSTON-UPON-HULL

Applications: General power circuits in clinics

Required screen cable to be used within the Special Strokes Unit and Gamma Camera Suite

GALWAY CLINIC, CANCER CARE UNIT

GALWAY

For use in the highly sensitive radiological department

MARKS & SPENCER

VARIOUS LOCATIONS IN THE UK

General circuit data sensitive drop down to check-outs etc

CASTLE HILL HOSPITAL

EAST YORKSHIRE

Applications: General power circuits

BENETTON RETAIL OUTLETS

BRENT CROSS & BIRMINGHAM

LEISURE AND INDOOR SPORTS CENTRES

Applications: General utilities

Purple cable to signify Low Smoke Zero Halogen sheaths

OTHER IDH PRODUCTS

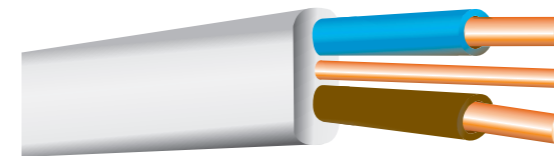
IDH
KILFLAM™



KILFLAM HIGH PERFORMANCE FIRE RESISTANT CABLES

Single core conduit wire and multi-core cables available in standard and enhanced grades.

IDH
FUMEGUARD™



FUMEGUARD LOW SMOKE ZERO HALOGEN CABLES

Low and medium voltage cables. Available in low smoke, zero halogen materials.

IDH
PVC CABLE



PVC CABLES

Standard Heat Resisting and Low temperature types.