# INR16A – 16A Single Phase Inrush Limiter


- Prevents unintended triggering of circuit breakers
- Allows the use of smaller and faster circuit breakers on heavily capacitive loads
- Increases power switch life
- 16A Single Phase
- 80-265V AC Operation, 50-60Hz
- Fully Protected
- 400J Maximum Energy Absorption
- DIN-mount Enclosure

## Overview

The INR16A is designed to limit inrush current in AC circuits. It is ideal for connecting heavily inductive or capacitive loads to type-B MCBs, or to allow an otherwise heavy load to be connected to a standard breaker.

The unit can also increase the life of the pain power switch in an application by significantly reducing contact arcing caused by heavy inrush currents.

## Operation

The unit works by adding a series resistance between the LIN and LOUT terminals for a pre-determined period of time. After a small delay once the inrush has passed, an internal relay activates, bypassing the resistor and allowing full current to the load.

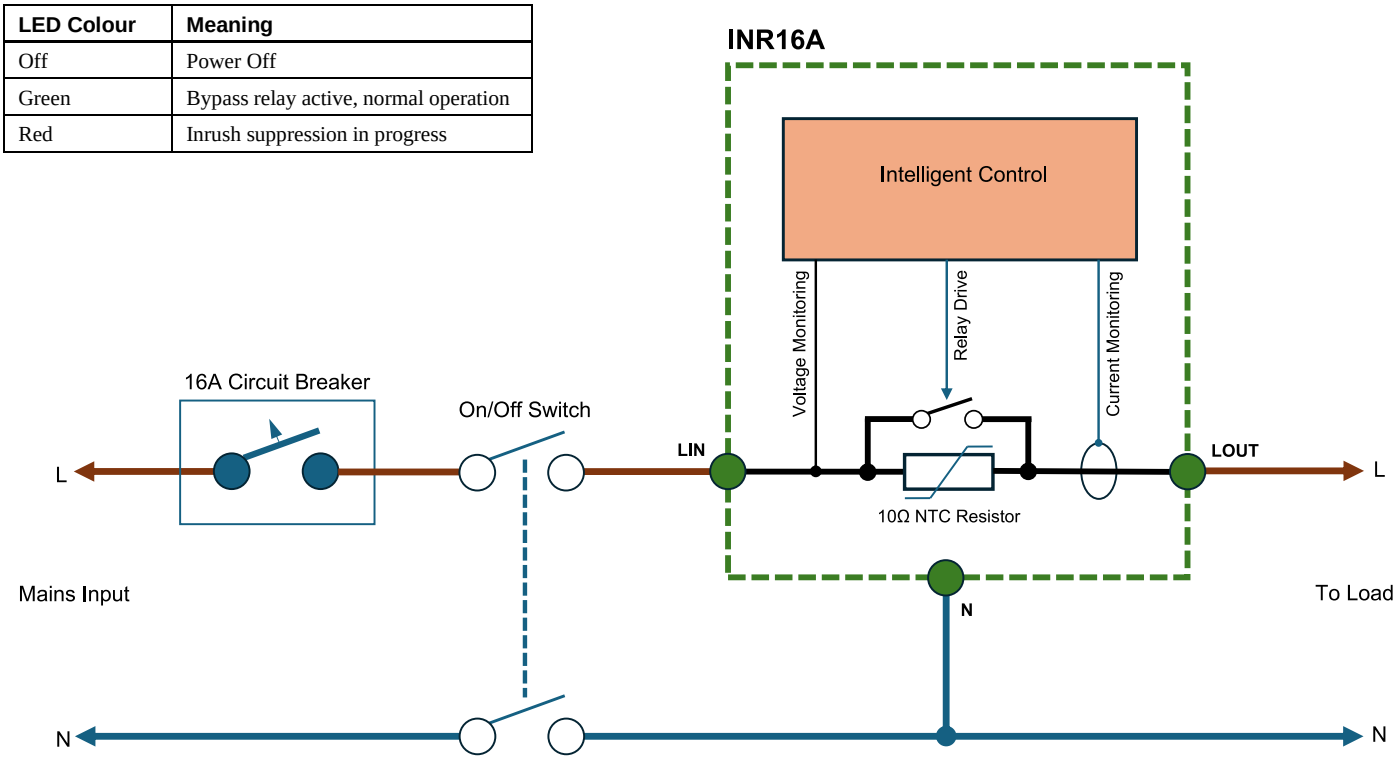
The unit switches the relay on the zero-voltage crossing under normal operation to ensure longevity.

The total energy absorption is measured by the unit during the inrush period. If the total energy exceeds 400J (for example if the unit starts up in to a short-circuited load) the internal relay activates on the next zero-current crossing. This action protects the INR16A and ensures the upstream breaker trips if there is a fault with the downstream load.

The unit is also fully thermally protected, and protected from transient overvoltage and undervoltage conditions.

An internal LED indicates the status of the unit and can be seen through the top vent cover.

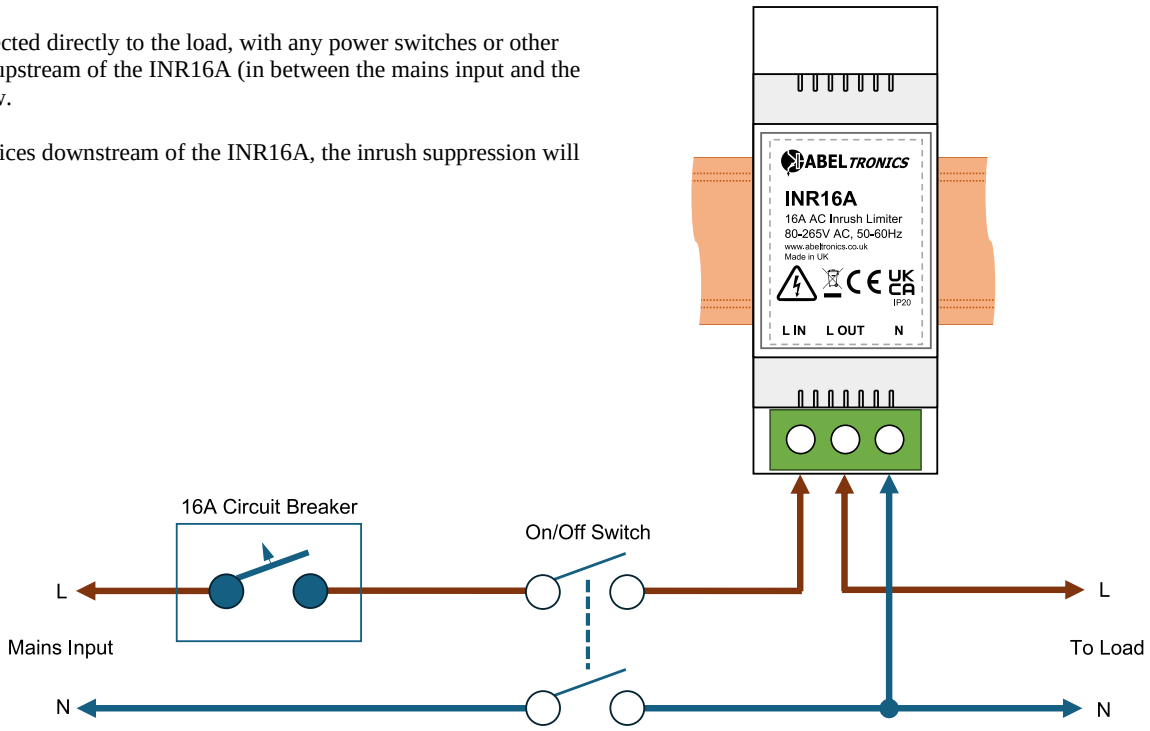
| LED Colour | Meaning |
|---|---|
| Off | Power Off |
| Green | Bypass relay active, normal operation |
| Red | Inrush suppression in progress |



## Connection Diagram

The INR16A should be connected directly to the load, with any power switches or other switching devices connected upstream of the INR16A (in between the mains input and the LIN terminal) as shown below.

If there are any switching devices downstream of the INR16A, the inrush suppression will be negated.

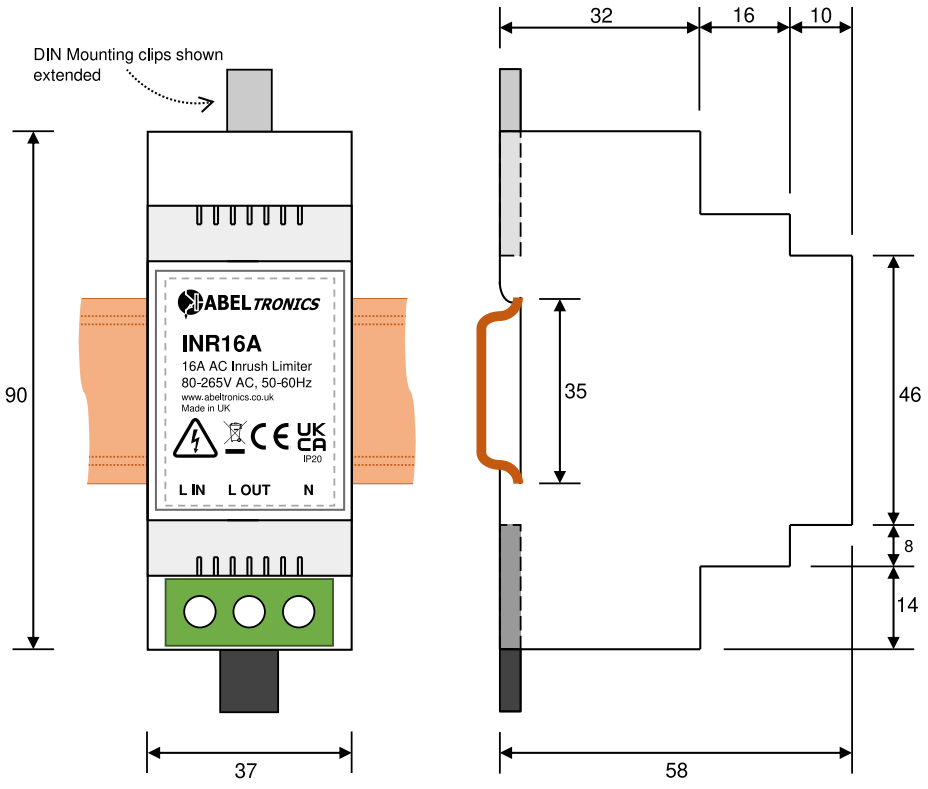



## Physical

The unit is supplied in a vented enclosure designed to be mounted to standard 35mm DIN-Rail as per EN 60715.

Do not obstruct the vents during operation.

The unit can also be mounted to a flat surface by extending the DIN mounting clips, as shown to the right, to reveal screw holes.




All dimensions in mm. ± 1mm

## Specifications

| Parameter | Value | Comments |
|---|---|---|
| **General** | | |
| Mains Supply Voltage Range | 80 – 265V AC RMS, 47-63Hz | |
| Peak Allowable Inrush Current | 23A rms Nominal, 29A max | 230V AC, 25°C |
| | 12A rms Nominal, 15A max | 120V AC, 25°C |
| Maximum Continuous Load Current | 16A rms | |
| Maximum Operating Power Consumption | 2.1 VA | |
| Inrush Delay Duration, Normal Operation | 500ms | |
| Inrush Delay Duration, Shorted Load | >30ms | |
| **Indicator LED** | | |
| Inrush Suppression in Progress | LED Red | |
| Bypass Relay Active | LED Green | |
| **Physical** | | |
| Terminal Cable Acceptance | 0.2 – 5.2mm$^2$ (26 – 10AWG) | 3x Rising Clamp Terminal Block |
| Terminal Torque | 0.5Nm | |
| Enclosure | 2-Unit DIN-Mount Polycarbonate, UL94-V0 | Fits 35mm DIN Rail to EN 60715 |
| **Environmental** | | |
| Overvoltage Category Rating | CATII 300V: ±2.5kV pk Line-Line or Line-PE | PD2 as per BS EN 60664-1-2007 |
| Protection Index | IP20 | |
| Ambient Operational Temperature Range | 0 – 40°C (32 – 104°F) | |
| Ambient Storage Temperature Range | –20 – 70°C (–4 – 158°F) | |
| Maximum Humidity | 10 – 80%RH non-condensing | |
| RoHS and REACH Compliant | Yes | |
| **Standards** | | |
| Conducted and Radiated Emissions | CISPR 32 / BS EN 55032; BS EN 55035, Class B | Preliminary |
| Harmonic Current and Flicker | BS EN 61000-3-2, Class A | |
| Radiated Susceptibility | BS EN 61000-4-3 10V/m; BS EN 55014-2 | |
| Electrostatic Discharge | BS EN 61000-4-2 Contact ±6kV; BS EN 55014-2 | |
| Electrical Fast Transients | BS EN 61000-4-4 | |
| Surge Immunity | BS EN 61000-4-5, BS EN 55014-2 | |
| Conducted Disturbances Immunity | BS EN 61000-4-6; 10Vrms; BS EN 55014-2 | |
| Voltage Variation | BS EN 61000-4-11; BS EN 55014-2 | |
| Creepage and Clearance | BS EN 60950-1 | |

## Warning

The INR16A carries live conductors connected to AC mains and must be installed in an insulated or protected enclosure which is inaccessible to end users under all conditions. Installation, servicing, adjustments, and connection or disconnection to terminals, must always be carried out by qualified personnel and with the mains power fully switched off and isolated.

Do not disassemble the product or remove any covers or lids from the enclosure.

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