**united automation**
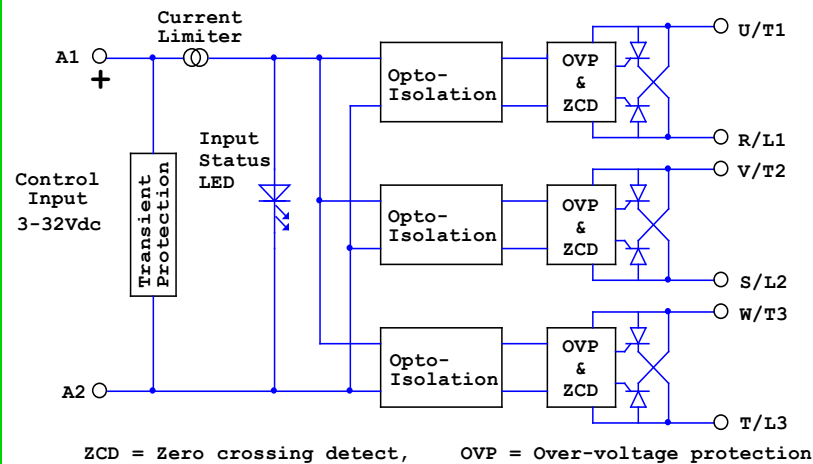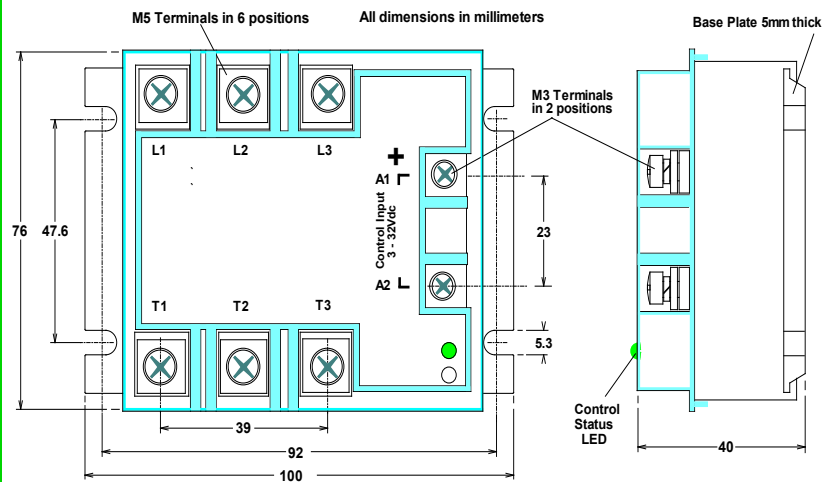
The LN3P100**, *EMC Compliant** Solid State Relays are designed to provide switching of high current loads at 530Vac with a minimum of conducted electrical noise - well within the EN50081-1 EN50082-2, EN61000-6-3 and EN60945 Conducted Emission Standards, plus immunity to EN61000-3-2 Standard.  Using a combination of Mosfet and Thyristor switching* reduces the requirement for EMC line filters to comply with **EMC Directive 2014/30/EU** at high load currents.

The efficient switching also minimises power loss allowing the device to run cooler at a higher loading. The use of high-grade thyristors plus TVS and Varistor components ensures long life and reliability. The relay is suitable for inductive and resistive loads.

## MECHANICAL SPECIFICATION:



M5 Terminals in 6 positions
All dimensions in millimeters
Base Plate 5mm thick
M3 Terminals in 2 positions

L1  L2  L3
A1
Control Input 3 - 32Vdc
A2
T1  T2  T3

76  47.6
23
5.3
39
92
100
40

Control Status LED

## SPECIFICATION:

| | | |
|---|---|---|
| Switching for Three phase ac loads | | |
| Switching type | | **True zero crossing** |
| Output switching | | Thyristor, (back-to-back) |
| Mounting | | Chassis/Heat sink |

## INPUT CIRCUIT:

| | | |
|---|---|---|
| Control voltage | $V_{dc}$ | 3.0 to 28 |
| Control Current, (Max) | mA | 85 |
| Turn-off voltage, (Min) | $V_{dc}$ | 1 |
| | | |
| Turn-on Time, (Max) | - | 1 cycle |
| Turn-off Time, (Max) | - | 1 cycle |

## OUTPUT CIRCUIT:

| | | |
|---|---|---|
| Operating Voltage, (Load) | $V_{rms}$ | **48 ~ 530** |
| Load Current, (Max @ 25°C) | $A_{rms}$ | **15 ~ 65** |
| Load Current, (Min) | mA | 40 |
| Transient Over-voltage | $V_{pk}$ | 1,200 |
| Surge Current for 10mS | $A_{pk}$ | 1,200 |
| On-state Voltage Drop, (Max) | $V_{rms}$ | 1.55 |
| Off-state Leakage Current | mA | 3 |

## GENERAL:

| | | |
|---|---|---|
| Operational Temperature | | -20 ~ +85 |
| Storage Temperature | °C | -40 ~ +110 |
| Operating Frequency Range | Hz | 50 ~ 400 |
| Input – Output Capacitance | pF | <130 |
| Isolation, Output – Base-plate | $V_{ac}$ | 2,500 |
| Isolation, Input - Output | °C | 2,500 |
| Control status indication | | Green LED |

## TYPICAL APPLICATIONS:

Switching of 3 phase high power electrical apparatus, e.g.

Motors, Heating, Air conditioning, Humidifiers, UPS's, Lighting, Solenoid valves, Signalling, Industrial process control, Building services, etc.



Current Limiter
A1 +
Control Input 3-32Vdc
Transient Protection
Input Status LED
A2

Opto-Isolation
OVP & ZCD
U/T1
R/L1

Opto-Isolation
OVP & ZCD
V/T2
S/L2

Opto-Isolation
OVP & ZCD
W/T3
T/L3

**ZCD = Zero crossing detect,     OVP = Over-voltage protection**



ISO 9001
Certificate No. GB2005065

* *Patent No.* **1130777B**

# LN Series Low Noise Solid State Relays

## ELECTRICAL CHARACTERISTICS   Typical at +45°C Ambient

### Input Specification

| Control voltage | 3.0 to 28Vdc |
|---|---|
| Max. reverse voltage | -32Vdc |
| Impedance, (nominal) | 1,500Ω |
| On voltage, (Max) | +3.0Vdc |
| Off voltage, (Min) | +1Vdc |
| Input current, (typical @ 12Vdc) | 11mA |
| (typical @ 5Vdc) | 4mA |
| On threshold | 2mA |
| Isolation, Input-Output | 2,500Vac |
| Input status LED | Optional |

### Output Specification

| | 120V, 1 phase | | | 240V, 1 phase | | | | | 440V, 1 phase | | | | 530V, 3 phase | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SSR Type: **LN** | 3025 | 3040 | 3075 | 6025 | 6030 | 6040 | 6050 | 6075 | 10015 | 10025 | 10040 | 10050 | 3P10015 | 3P10030 | 3P10050 |
| Operating Voltage $V_T$ @ 47-63hz, V rms | 24 to 120V | | | 24 to 240V | | | | | 48 to 530V | | | | 48 to 530V | | |
| Max. Average Forward Current, $I_{T,(AV)M}$ Amps | 25 | 40 | 75 | 25 | 30 | 40 | 50 | 75 | 15 | 25 | 40 | 50 | 15 | 30 | 50 |
| Min. Load Current, mA rms | 130 | 130 | 130 | 140 | 140 | 140 | 140 | 140 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Transient Over-voltage, **V pk** V | 500 | 500 | 500 | 600 | 600 | 600 | 600 | 600 | 900 | 900 | 900 | 900 | 1200 | 1200 | 1200 |
| Max On-state Surge Current for 10mSec, A pk | 300 | 300 | 300 | 520 | 520 | 520 | 520 | 520 | 520 | 520 | 520 | 520 | 520 | 520 | 520 |
| Max. On-state volt drop @ rated current | 1.55V | 1.55V | 1.55V | 1.55V | 1.55V | 1.55V | 1.55V | 1.55V | 1.35V | 1.35V | 1.35V | 1.35V | | | |
| Max. Off-state leakage current @ rated voltage | 3mA | 3mA | 3mA | 3mA | 3mA | 3mA | 3mA | 3mA | 5.5mA | 5.5mA | 5.5mA | 5.5mA | | | |
| Max $I^2t$ at 45ºC (t = 10mS) A²s | 1310 | 1310 | 1310 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 | 1350 |
| Internal over-voltage protection | - | - | - | - | - | - | - | - | | | | | TVS & VDR | | |
| Input status LED | | | | | | | | | | | | | Green LED | | |
| Max. Turn-On time | 1 cycle maximum | | | | | | | | | | | | | | |
| Max. Turn-Off time | 1 cycle maximum | | | | | | | | | | | | | | |
| Operational Temperature range | -20 to +85°C | | | | | | | | | | | | | | |
| Storage Temperature range | -40 to +110° | | | | | | | | | | | | | | |
| Operating frequency range | 50 to 400Hz | | | | | | | | | | | | | | |
| Input – Output Capacitance | <130pF | | | | | | | | | | | | | | |
| Case Material | Flame Retardant to UL94V-0 | | | | | | | | | | | | | | |
| Conducted Emission | Within **EN55022 Class B** Quasi-Peak and Average Emission Limits at 80 amps rms, (peak noise below 60dbuV) | | | | | | | | | | | | | | |