

Product Details and Certifications

Cross Reference RA Part Number: 1321-RWR12-EP A

 Product: **1321-RWR12-EP**

Description: Reflective Wave Filter, 600 V, 12A



Representative Photo Only (actual product may vary based on configuration sections)

REACTOR DATA

| | |
|--------------------|------------------------------|
| Bulletin Number | 1321- Reflective Wave Filter |
| Fundamental Rating | 12 Amps |
| Impedance | 3% |
| Voltage | 600V AC |
| Enclosure Type | Panel Mount |

CERTIFICATIONS AND APPROVALS

| | |
|----------------------------------|---|
| UL | UL-508-IP00, IP20, and IP11 |
| International | Conforms to VDE 0550 |
| CE | Not Certified |
| For UL Certifications Directory: | http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm |

1321 Reflective Wave Reduction (RWR) Devices

Description of Reflected Wave Phenomenon

The inverter section of a drive does not produce sinusoidal voltage, but rather a series of voltage pulses created from the DC bus. These pulses travel down the motor cables to the motor and then reflected back to the drive. The reflection is dependant on the rise time of the drive output voltage, cable characteristics, cable length and motor impedance. If the voltage reflection is combined with another subsequent pulse, peak voltages can be at a destructive level. A single IGBT drive output may have reflected wave transient voltage stresses of up to twice (2 pu or per unit) the DC bus voltage between its own output wires. Multiple drive output wires in a single conduit or wire tray further increase output wire voltage stress between multi-drive output wires that are touching. Drive #1 may have a (+) 2 pu stress while drive #2 may simultaneously have a (-) 2 pu stress.

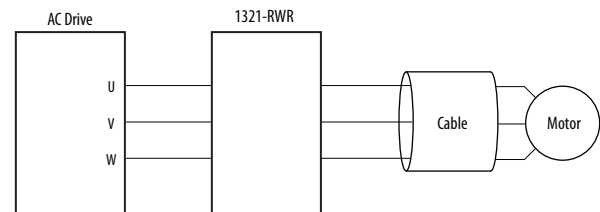
For more details, see the Wiring and Grounding Guidelines for PWM Drives, publication DRIVES-IN001.

Applying RWR Devices

At the Output of the Drive

In long motor lead applications, an Allen-Bradley 1321 RWR located between the drive and motor helps to reduce dv/dt and motor terminal peak voltages. The use of an RWR device also helps protect the drive from surge currents caused by rapid changes in the load.

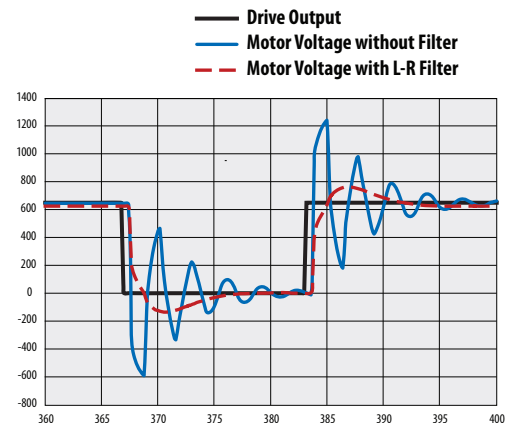
- Protect Motors from Long Lead Effects
- Reduce Output Voltage dv/dt
- Extend Semiconductor Life
- Reduce Surge Currents
- Reduce Motor Temperature
- Reduce Audible Motor Noise



Motor Protection

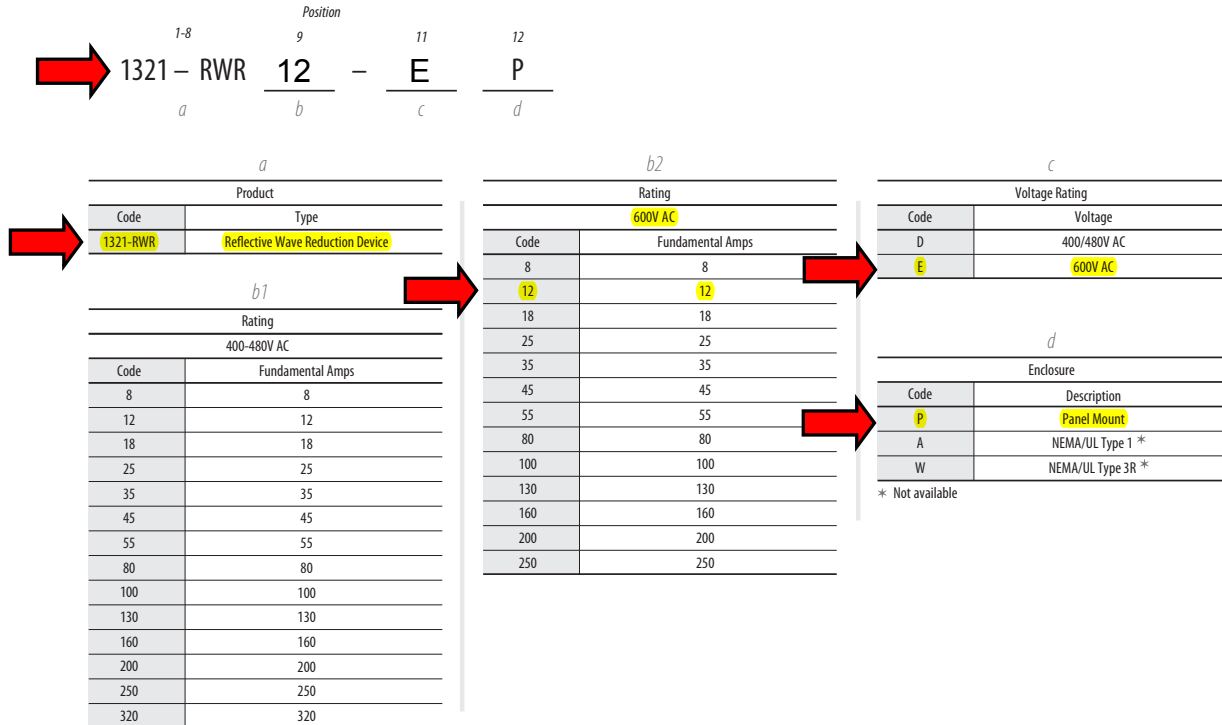
Allen-Bradley Reflective Wave Reduction devices can help protect motors from high peak voltages.

For IGBT drive applications with long drive-to-motor lead lengths, Allen-Bradley RWR devices can help protect against fast dv/dt rise times.



Catalog Number Explanation

IMPORTANT 1321-RWR products replace existing 1204-RWR products. However, 1204-RWRC modules (RWR and Common Mode Choke assembly) are still available.



Specifications

| Specification | Rating | |
|-----------------------|--|---|
| Material | Enclosures | IP00 (Open) |
| | Terminations | 1...45 Amp (fundamental) Ratings – Finger guard IP20 terminal block |
| | | 80...160 Amp (fundamental) Ratings – Solid copper box lugs |
| | | 200...400 Amp (fundamental) Ratings – Copper tab terminals ⁽¹⁾ |
| | 401 Amps and above – Copper tab terminals ⁽¹⁾ | |
| Harmonic Compensation | All line reactors are compensated for the additional currents and high frequencies caused by the presence of harmonics | |
| General Protection | Impedance | 3% |
| | Overload Rating | 300% of fundamental current for (1) minute |
| IGBT Protection | First turn triple insulated offering protection up to 16 kV | 16,000 Volts per microsecond dv/dt protection 20 kHz maximum switching frequency |
| Electrical | Max. Rated Voltage | 600V AC, 50/60 Hz frequency |
| | Max. Switching Freq. | 4 kHz |
| | Temperature Rise | 115 °C |
| | Dielectric Strength | 4000 Volts rms (5600 volts peak) |
| | Inductance Curve | 100% at 100% current, 100% at 150% current, 50% at 350% current |
| | Insulation System | Class H (180 °C or better) |
| | Impregnation | High bond strength epoxy impregnation, 4000V high dielectric strength |
| Environmental | Ambient Temperature | 45 °C |
| | U.L. Listed | UL-508 - IP00, IP20, and IP11 |
| | International | Conforms to VDE 0550 |
| | CE | Not certified |

(1) For applications with Reflective Wave Reduction devices rated 200 Amps or more, cable-style connections are recommended.

Termination

Allen-Bradley 1321 RWR devices rated 45 Amps (fundamental) and below are supplied with an integral mounted terminal block. Devices rated from 55 to 160 Amps (fundamental) are supplied with box lugs. Devices rated 200 to 400 Amps (fundamental) can be supplied with box lugs or copper tabs. Above 400 Amps (fundamental), solid copper tabs are used.

Approximate Dimensions, Weights, Wire Size and Terminal Blocks

The dimensions and weights provided on the following page is for estimating purposes only. Contact your Allen-Bradley Sales Office if certified drawings are required for planning and installation.

| RWR Catalog No. x = D (400V), E (600V) | Fund. Amps | Cont. Amps | Wire Size | Watts Loss | | Figure (see page 15) | Dimensions mm (in.) | | | | | Weight kg (lb) |
|---|---------------|---------------|----------------------------------|------------|------------|-------------------------|--------------------------|--------------------------|-------------------------|-----------------------|---------------------------------|-------------------|
| | | | mm ² (AWG) | 400V | 600V | | A | B | C | D | E | |
| 1321-RWR8-xP | 8 | 12 | 2.5...4.0 (14...12) | 389 | 536 | 1 | 282.6 (11.13) | 298.5 (11.75) | 171.5 (6.75) | 7.4 (0.29) | 7.4 x 11.6 (0.29 x 0.46) | 4.8 (10.5) |
| 1321-RWR12-xP | 12 | 18 | 2.5...4.0 (14...12) | 391 | 406 | 1 | 282.6 (11.13) | 298.5 (11.75) | 174.6 (6.88) | 7.4 (0.29) | 7.4 x 11.6 (0.29 x 0.46) | 5.7 (12.5) |
| 1321-RWR18-xP | 18 | 27 | 2.5...4.0 (14...12) | 403 | 551 | 1 | 282.6 (11.13) | 298.5 (11.75) | 174.6 (6.88) | 7.4 (0.29) | 7.4 x 11.6 (0.29 x 0.46) | 7.3 (16) |
| 1321-RWR25-xP | 25 | 37.5 | 6.0 (10) | 412 | 562 | 1 | 282.6 (11.13) | 298.5 (11.75) | 193.7 (7.63) | 7.4 (0.29) | 7.4 x 11.6 (0.29 x 0.46) | 7.7 (17) |
| 1321-RWR35-xP | 35 | 52.5 | 10.0...16.0 (8...6) | 414 | 429 | 1 | 282.6 (11.13) | 298.5 (11.75) | 193.7 (7.63) | 7.4 (0.29) | 7.4 x 11.6 (0.29 x 0.46) | 8.8 (19.5) |
| 1321-RWR45-xP | 45 | 67.5 | 16.0 (6) | 422 | 572 | 2 | 319.1 (12.56) | 392.1 (15.44) | 158.8 (6.25) | 10.5 (0.41) | 10.3 x 17.9 (0.41 x 0.70) | 17.5 (38.5) |
| 1321-RWR55-xP | 55 | 82.5 | 25.0 (4) | 427 | 577 | 2 | 320.7 (12.63) | 392.1 (15.44) | 158.8 (6.25) | 10.5 (0.41) | 10.3 x 17.9 (0.41 x 0.70) | 18.4 (40.5) |
| 1321-RWR80-xP | 80 | 120 | 35.0...50.0 (2...1/0) | 446 | 341 | 2 | 322.3 (12.69) | 395.3 (15.56) | 177.8 (7.00) | 10.5 (0.41) | 10.3 x 17.9 (0.41 x 0.70) | 20.4 (45) |
| 1321-RWR100-xP | 100 | 150 | 50.0...70.0 (1/0...2/0) | 444 | 339 | 2 | 320.7 (12.63) | 393.7 (15.50) | 187.3 (7.38) | 10.5 (0.41) | 10.3 x 17.9 (0.41 x 0.70) | 22.5 (49.5) |
| 1321-RWR130-xP | 130 | 195 | 70.0...120.0 (2/0...4/0) | 630 | 495 | 2 | 317.5 (12.50) | 390.5 (15.38) | 187.3 (7.38) | 10.5 (0.41) | 10.3 x 17.9 (0.41 x 0.70) | 24.5 (54) |
| 1321-RWR160-xP | 160 | 240 | 120.0 (4/0) | 599 | 464 | 3 | 355.6 (14.00) | 438.2 (17.25) | 250.8 (9.88) | 10.5 (0.41) | 10.3 x 25.8 (0.41 x 1.02) | 30.8 (68) |
| 1321-RWR200-xP | 200 | 300 | 120.0...185.0 (4/0...350 MCM) | 618 | 612 | 2 | 317.5 (12.50) | 393.7 (15.50) | 214.3 (8.44) | 10.5 (0.41) | 10.3 x 17.9 (0.41 x 0.70) | 29.9 (66) |
| 1321-RWR250-xP | 250 | 375 | 185.0 (350 MCM) | 681 | 546 | 3 | 358.8 (14.13) | 439.8 (17.31) | 225.4 (8.88) | 10.5 (0.41) | 10.3 x 25.8 (0.41 x 1.02) | 41.7 (92) |
| 1321-RWR320-DP | 320 | 480 | 240.0 (500 MCM) | 489 | NA | 3 | 358.8 (14.13) | 438.2 (17.25) | 250.8 (9.88) | 10.5 (0.41) | 10.3 x 25.8 (0.41 x 1.02) | 52.2 (115) |

1321-RWR Assembly Components

| 400/480V | | | |
|---------------|----------|-------|-----------------|
| Reactor | Resistor | | Wire Size (AWG) |
| | Ohms | Watts | |
| 1321-3R8-B | 50 | 250 | 14...12 |
| 1321-3R12-B | 50 | 250 | 14...12 |
| 1321-3R18-B | 50 | 250 | 14...12 |
| 1321-3R25-B | 50 | 250 | 10 |
| 1321-3R35-B | 50 | 250 | 8...6 |
| 1321-3R45-B | 50 | 250 | 6 |
| 1321-3R55-B | 50 | 250 | 4 |
| 1321-3R80-B | 50 | 250 | 2...1/0 |
| 1321-3R100-B | 50 | 250 | 1/0...2/0 |
| 1321-3R130-B | 50 | 300 | 2/0...4/0 |
| 1321-3R160-B | 50 | 300 | 4/0 |
| 1321-3R200-B | 50 | 300 | 4/0...350 MCM |
| 1321-3RB250-B | 50 | 300 | 350 MCM |
| 1321-3R320-B | 50 | 300 | 500 MCM |

| 600V | | | |
|---------------|----------|-------|-----------------|
| Reactor | Resistor | | Wire Size (AWG) |
| | Ohms | Watts | |
| 1321-3R8-B | 50 | 375 | 14...12 |
| 1321-3R12-B | 50 | 375 | 14...12 |
| 1321-3R18-B | 50 | 375 | 14...12 |
| 1321-3R25-B | 50 | 375 | 10 |
| 1321-3R35-B | 50 | 375 | 8...6 |
| 1321-3R45-B | 50 | 375 | 6 |
| 1321-3R55-B | 50 | 375 | 4 |
| 1321-3R80-B | 50 | 375 | 2...1/0 |
| 1321-3R100-B | 50 | 375 | 1/0...2/0 |
| 1321-3R130-B | 50 | 420 | 2/0...4/0 |
| 1321-3R160-B | 50 | 420 | 4/0 |
| 1321-3R200-B | 50 | 420 | 4/0...350 MCM |
| 1321-3RB250-B | 50 | 420 | 350 MCM |

Dimension Reference

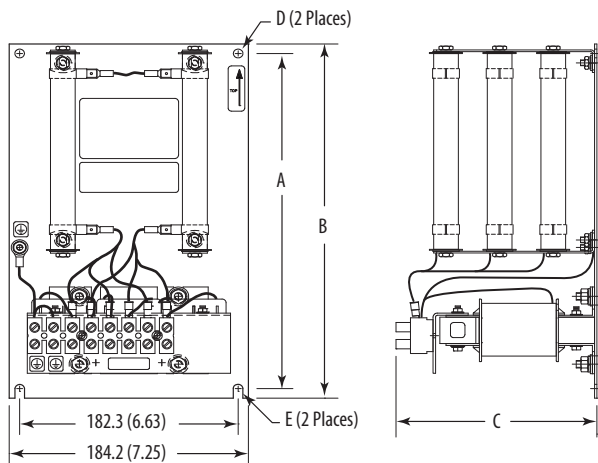


Figure 1

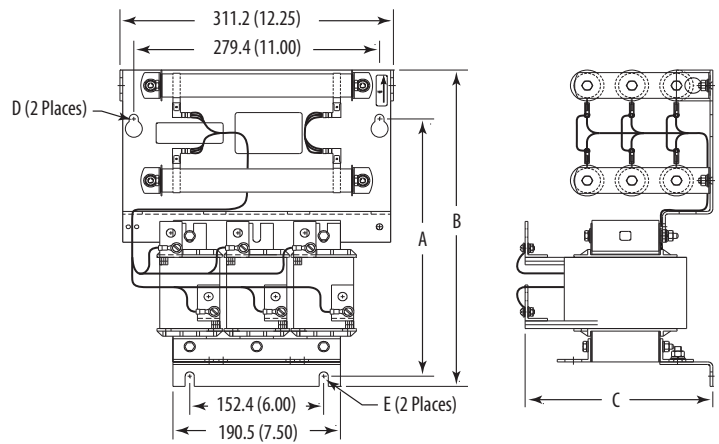


Figure 2

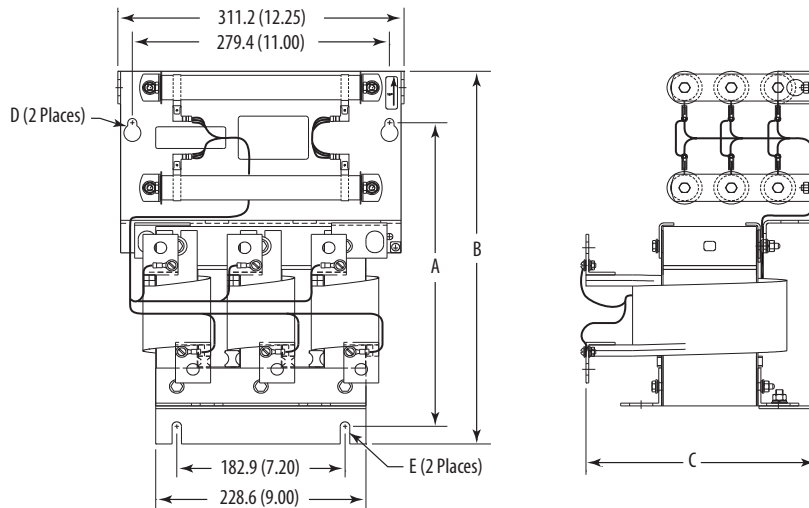
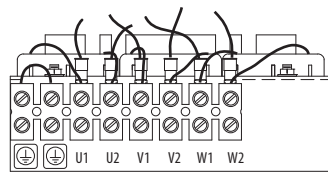
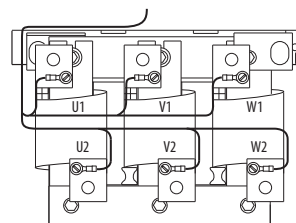


Figure 3

Terminal Block Details



Details for Figure 1



Details for Figure 2 and Figure 3