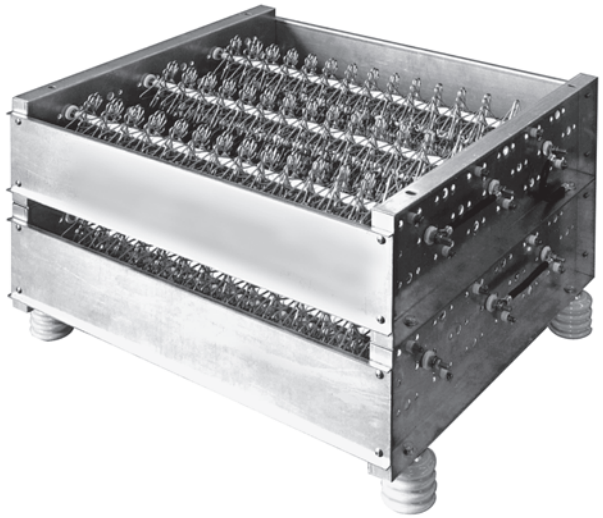
Avtron Neutral Grounding Resistors

Type ANG

- Designed in strict accordance with IEEE Standard 32-1972
- Reliable, all stainless steel Helidyne™ resistor elements
- Elements are triple insulated from ground for added safety

Part Number ANG24-4-C2 (with safety enclosure)



Part Number ANG24-4-O (open frame mounted)

- Corrosion resistant aluminized steel enclosures
- Fully factory assembled – no field assembly required
- Internal bushings eliminate the need for costly elevating stands

AVTRON LOADBANK, INC.

誥鑫企業有限公司
ARITH COMPANY LTD.
地 址： 台北市復興北路427巷30號
電 話： (02)2717-5038
傳 真： (02)2717-5039
e-mail: taipei@arith.com.tw
網 址： http://www.arith.com.tw

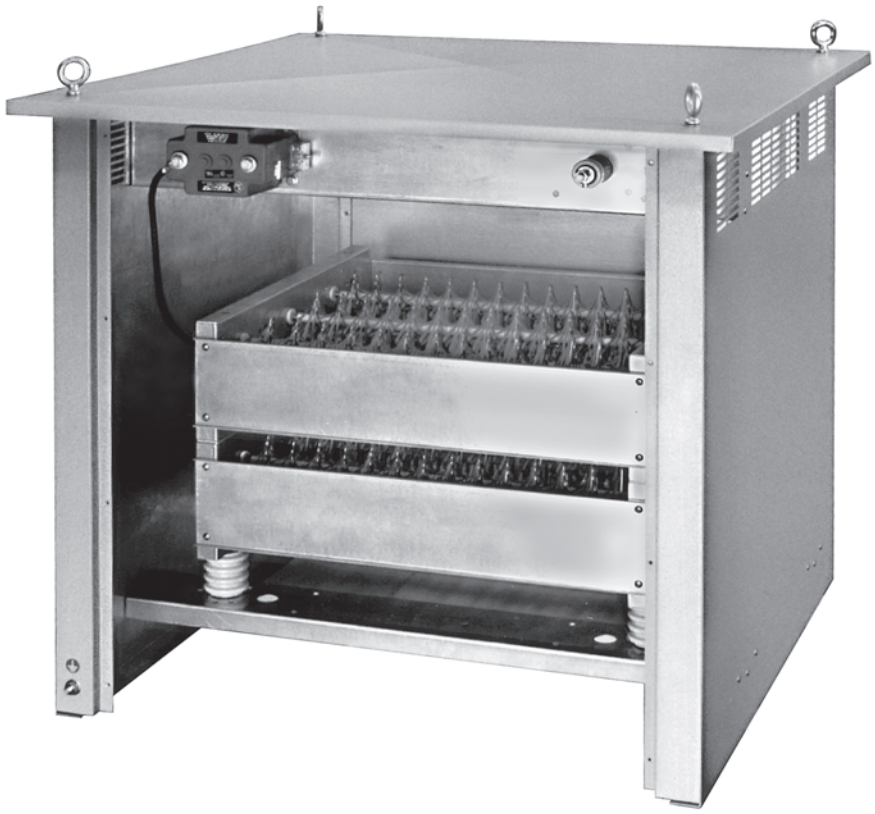
QUALITY • RELIABILITY • SERVICE • VALUE

QUALITY SYSTEM CERTIFIED TO ISO 9001

Neutral Grounding Resistors

Avtron Neutral Grounding Resistors are designed to provide added safety to industrial distribution systems by limiting ground fault current to reasonable levels. In a typical solidly grounded four wire system, the neutral is tied directly to earth ground. This can cause high ground fault current (typically 10,000 to 20,000 amps) and excessive damage to transformers, generators, motors, wiring, and associated equipment. Inserting an Avtron Neutral Grounding Resistor between neutral and ground limits fault current to a safe level (typically 25 to 400 amps) while still allowing sufficient current flow to operate fault clearing relays. Limiting fault current also reduces the problem of transient overvoltages (up to six times normal voltage) which can occur during arcing type ground faults.

Avtron Neutral Grounding Resistors are engineered with reliability, safety, and ease of installation as top priorities. Resistor elements, terminals, support rods and exterior fasteners are made from stainless steel for added durability. Enclosures are manufactured from corrosion resistant aluminized steel finished with ASA-61 gray polyurethane enamel paint. Multi-lingual voltage warning signs are provided for increased safety. Forged lifting eyes are furnished for easy handling. Internal connection points eliminate conventional "live" external bushings and the need for expensive elevating stands or towers.



Grounding Resistor rated 2400 volts L-N, 400 amps, 10 seconds, with 200:5 C.T.

Avtron Neutral Grounding Resistors are designed and tested in strict accordance with IEEE Standard 32-1972. This standard specifies maximum allowable temperature ratings for neutral grounding devices for various duty cycles as follows:

DUTY CYCLE	MAX. TEMP. RISE	TYPICAL CURRENT
Continuous	385°C	1 to 25 amps
Extended *	610°C	15 / 25 / 50 amps
60 seconds or less	760°C	100 to 2000 amps

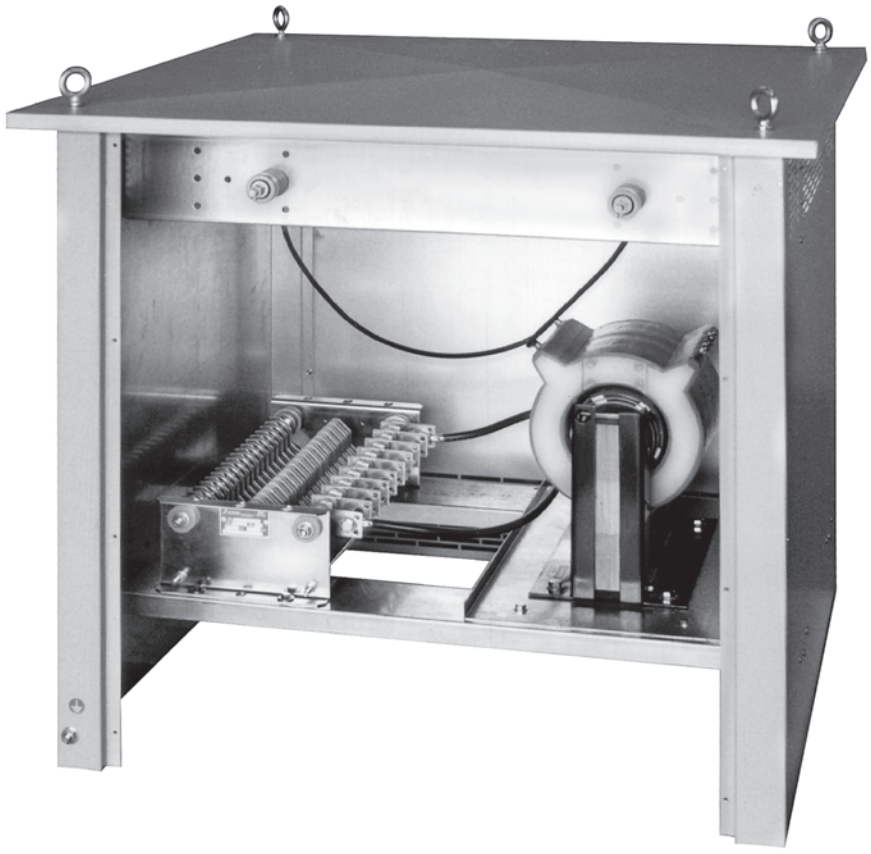
** Defined as 10 minutes or greater, no more than 90 days total per year. Also referred to as "Mining Duty".*

For **total support** in selecting the right neutral grounding resistor or industrial resistor product for your application, contact your **Avtron** sales engineer at **(216) 573-7600**.

Neutral Grounding Transformers

Avtron Neutral Grounding Resistors can be supplied with open frame construction, for installation inside switchgear or similar enclosures, or fully assembled with indoor / outdoor safety enclosures. Options include:

- Current Transformers
- Potential Transformers
- Disconnect Switches (oil or air insulated)
- Overcurrent Relays
- Aluminum or Stainless Steel Enclosures
- Special Paint
- Seismic Qualified Units
- High Altitude Ratings (above 6000 feet)
- Hazardous Location Ratings (Class 1, Group D, Division II)



Grounding Transformer rated 2400 volts L-N, 10 amps, 60 seconds, with 15KVA 4160:240 P.T.

Avtron Neutral Grounding Transformers are similar in design to Avtron Neutral Grounding Resistors and provide high resistance grounding for medium voltage generators and transformers. The standard package consists of a single-phase, dry-type, Epoxycast™ transformer plus a secondary power resistor, mounted in a common enclosure. The transformer is typically selected with a primary voltage equal to or greater than the system voltage to maintain a high insulation rating for added safety. The transformer secondary is rated at 240 volts and factory wired to the resistor. The resistor is sized so the fault current reflected through the transformer produces the desired fault current on the system neutral (typically 2 to 12 amps for 60 seconds). A voltage relay connected to the secondary resistor is used to detect the presence of a ground fault. If the fault persists beyond a certain time period, the relay will send a signal to open the main circuit breaker.

The following information is required when specifying Avtron Neutral Grounding Resistors or Avtron Neutral Grounding Transformers:

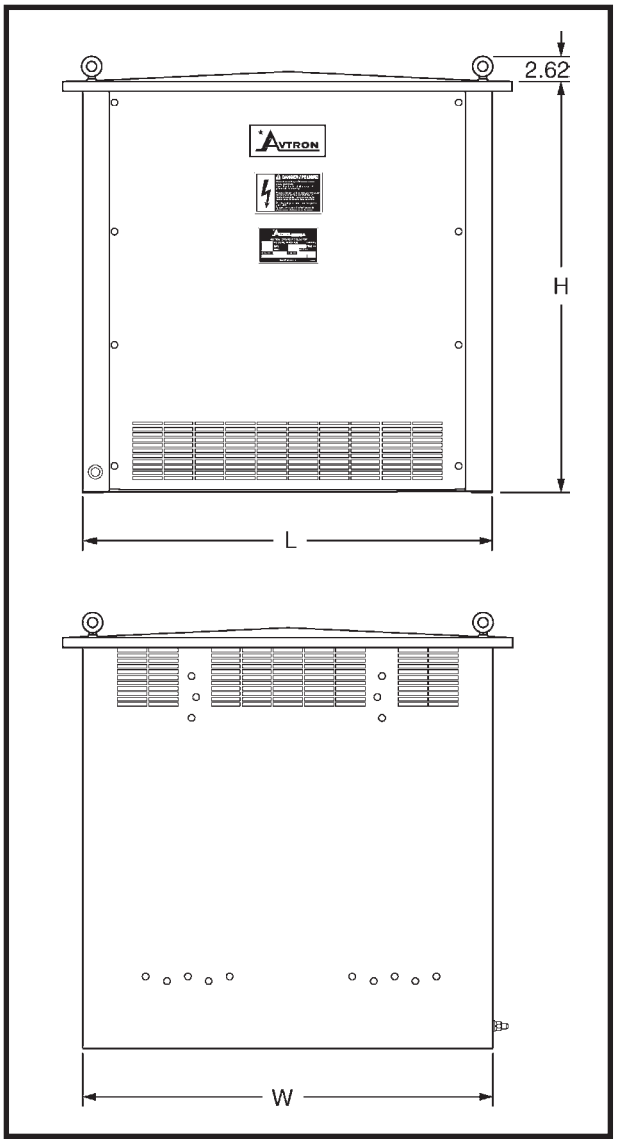
- **System Voltage**
- **Line-to-Neutral Voltage**
- **Current Rating**
- **Maximum Time On**
- **Open or Enclosed**
- **Current Transformer Ratio (if applicable)**
- **Grounding Transformer KVA Rating (if applicable)**
- **Special Options**

Neutral Grounding Resistors

Avtron Part Number	System Voltage	Line-To-Neutral Voltage	Initial Current (AMPS)	Length L	Width W	Height H	Approx. Weight
10 Second Ratings (760°C Temperature Rise)							
ANG14-1	2400	1390	100	42	42	42	250
ANG14-2	2400	1390	200	42	42	42	250
ANG14-4	2400	1390	400	42	42	42	250
ANG14-6	2400	1390	600	42	42	42	300
ANG14-8	2400	1390	800	42	42	42	350
ANG14-10	2400	1390	1000	42	42	42	400
ANG14-12	2400	1390	1200	46	60	76	500
ANG24-1	4160	2400	100	42	42	42	300
ANG24-2	4160	2400	200	42	42	42	300
ANG24-4	4160	2400	400	42	42	42	350
ANG24-6	4160	2400	600	42	42	42	400
ANG24-8	4160	2400	800	46	60	76	500
ANG24-10	4160	2400	1000	46	60	76	550
ANG24-12	4160	2400	1200	46	60	76	600
ANG42-1	7200	4160	100	42	42	42	450
ANG42-2	7200	4160	200	42	42	42	450
ANG42-4	7200	4160	400	46	60	76	550
ANG42-6	7200	4160	600	46	60	76	550
ANG42-8	7200	4160	800	46	60	76	650
ANG42-10	7200	4160	1000	46	60	76	750
ANG42-12	7200	4160	1200	46	60	92	900
ANG80-1	13800	8000	100	46	60	76	800
ANG80-2	13800	8000	200	46	60	76	850
ANG80-4	13800	8000	400	46	60	76	900
ANG80-6	13800	8000	600	46	60	76	950
ANG80-8	13800	8000	800	46	60	92	1000
ANG80-10	13800	8000	1000	46	60	92	1100
ANG80-12	13800	8000	1200	46	60	92	1200
Extended Time Ratings (610°C Temperature Rise)							
ANG3-15E	480	277	15	30	20	31	125
ANG3-25E	480	277	25	30	20	31	150
ANG14-15E	2400	1390	15	42	42	42	250
ANG14-25E	2400	1390	25	42	42	42	300
ANG14-50E	2400	1390	50	42	42	42	350
ANG24-15E	4160	2400	15	42	42	42	350
ANG24-25E	4160	2400	25	42	42	42	400
ANG24-50E	4160	2400	50	46	60	76	550
ANG42-15E	7200	4160	15	42	42	42	550
ANG42-25E	7200	4160	25	46	60	76	750
ANG42-50E	7200	4160	50	46	60	76	900
Continuous Time Ratings (385°C Temperature Rise)							
ANG3-5C	480	277	5	30	20	31	150
ANG3-10C	480	277	10	30	20	31	175
ANG3-15C	480	277	15	30	20	31	200

NOTE: Other voltage, current, and time ratings available. Consult factory.

Outline Drawings



Current Transformer Option:

Add "-CX" to part number for optional C.T. where X is primary rating of C.T. divided by 100.

Example: 200:5 C.T. is -C2
25:5 C.T. is -C.25

Specifications subject to change without notice.
All dimensions are in inches.
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誥鑫企業有限公司
ARITH COMPANY LTD.
地 址 : 台北市復興北路427巷30號
電 話 : (02)2717-5038
傳 真 : (02)2717-5039
e-mail: taipei@arith.com.tw
網 址 : http://www.arith.com.tw