Model VAA/VQA

AC Voltage Monitor, AC Powered
50/60/400 Hz, Single or Three-Phase

GENERAL

The North Atlantic Industries Type VAA/VQA Voltage Monitors are used to monitor voltage on single or three-phase power lines, allowing normal operation of system loads when the voltage characteristics are within its predetermined limits. In the event that the voltage (any phase) is not within specification limits the relay de-energizes to operate alarm indicators or system shut down contactors. Voltage sensing is accomplished with the use of an "RMS" type detector and is relatively insensitive to line distortion.

OPERATION

With operating power applied, if the voltage of the single or three-phase signal is within the prescribed high and low limits, the output relay is energized after the specified pick-up time delay. If the high or low voltage limits are exceeded by any phase for a time greater than the specified drop-out time delay, the relay de-energizes and remains de-energized until all phase voltages return within their prescribed limits and remain at their normal levels for longer than the specified pick-up time delay.

STANDARD SPECIFICATIONS

ELECTRICAL:

Input (operating)

- Voltage (nominal)..... 115, 220Vrms ±20% 4-wire wye
- Frequency (nominal)..... 50/60/400 Hz ±20%
- Voltage Transients..... MIL-STD-704

Input (sense)

- Voltage Band..... As required*
- Accuracy [1]..... ±1%
- Hysteresis..... 0.25% typical
- Time Delay (pick-up) [2]..... 250ms to 10 sec.*
- Time Delay (drop-out) [2]..... 250ms to 10 sec.*

OUTPUT CONTACTS:

Contact Form..... DPDT or 3PDT
Contact Rating @ 28Vdc..... 2.0A Res. (0.75A Ind.) / 10A Res. (6A Ind.)
@115V, 60Hz…..... 3.0A Res. (2.0A Ind.)
@115V, 400Hz..... 5.0A Res. (2.5A Ind.)
Contact Life..... 50,000 operations min.
Contact Resistance..... .075 ohms max.
Dielectric Strength..... 1000 Vrms @ 60 Hz, all terminals to case
Insulation Resistance..... 100 Megohms @ 500Vdc, all terminals to case
Dissipation..... 6 watts maximum

ENVIRONMENTAL:

Temperature..... Per MIL-STD-810C, Methods 501.1, 502.2
Operating.....…VAA: -55°C to +125°C
VQA: -40°C to +85°C
Storage..... -65°C to +150°C
Vibration..... Per MIL-STD-810C, Method 514.2, Procedure I, 10-2000 Hz 20g's
Acceleration..... Per MIL-STD-810C, Method 513.2, Procedures I and II, ±10g's
Shock..... Per MIL-STD-810C, Method 516.2, Procedure I, 50g's 11 ±1ms any axis
Humidity…..... Per MIL-STD-810C, Method 507.1 Procedure II
Altitude..... Per MIL-STD-810C, Method 504.1, Category 6 Equipment, Sea level to 70,000 ft.

PHYSICAL:

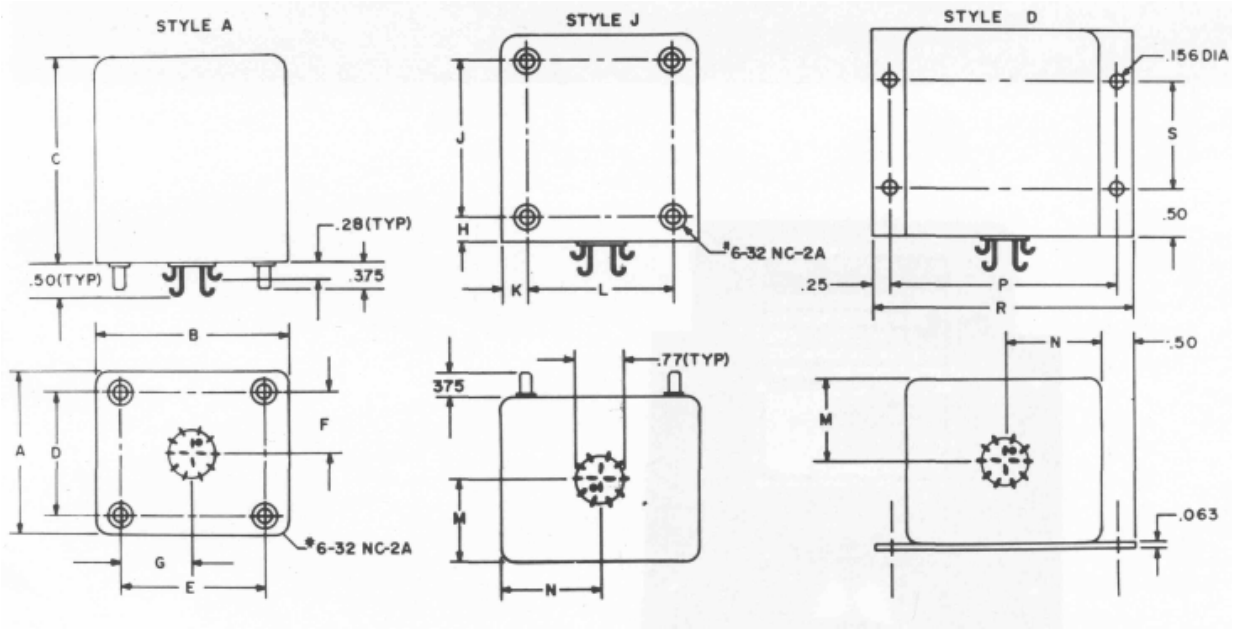
Finish..... Electro Tin Plate per ASTM-B545
Connectors..... Glass-to-metal seal, solder hooks or MS 3113H-20-16PN type connector (optional)
Marking..... Model number, date code, operating voltage and wiring diagram
Enclosure..... Hermetically sealed and encapsulated
Weight..... 19 oz. maximum

* Specify in Part Number.

[1] Defined as maximum difference between factory set points and specified set point including temperature drift and repetitive operations.

[2] Specified time delay does not include input filter response time. Refer to "TABLE 1" for the typical delay which must be added to the specified time delay to account for input filter response.

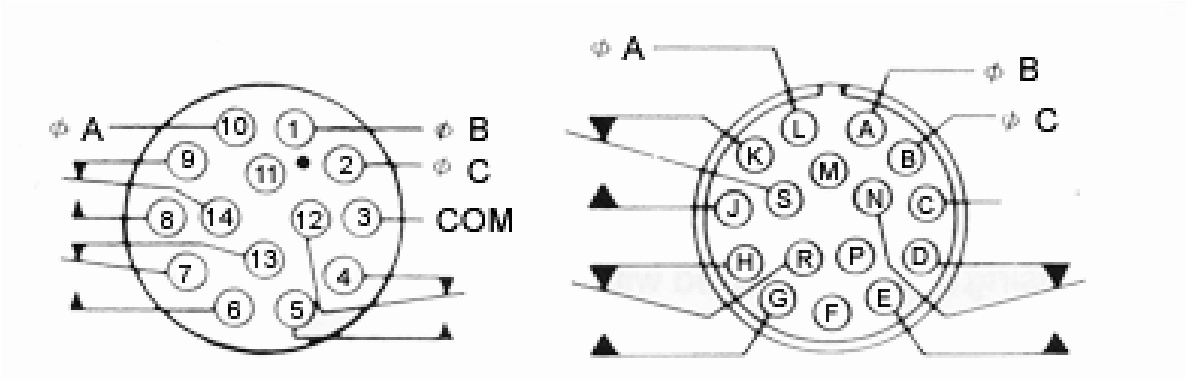
CASE STYLES



Note: MS connector protrusion .62 inches max

WIRING DIAGRAM

SOLDER HOOKS



1. For Single Phase Operation, use Pins 2 & 3
2. For DPDT Operation, Delete Pins 4, 5 & 12

MS CONNECTOR

1. For Single Phase Operation, use Pins B & C
2. For DPDT Operation, Delete Pins D, E & N

Diagrams shown above depict the output contacts in the de-energized position

TABLE 1

% VOLTAGE CHANGE (VΔ)	SET PT. %	TYPICAL 50/60/400 HZ FILTER RESPONSE MSEC.
+20	+5	60
+20	+10	110
+20	+15	175
+10	+5	100
-10	-5	90
-20	-5	80
-20	-10	110
-20	-15	210

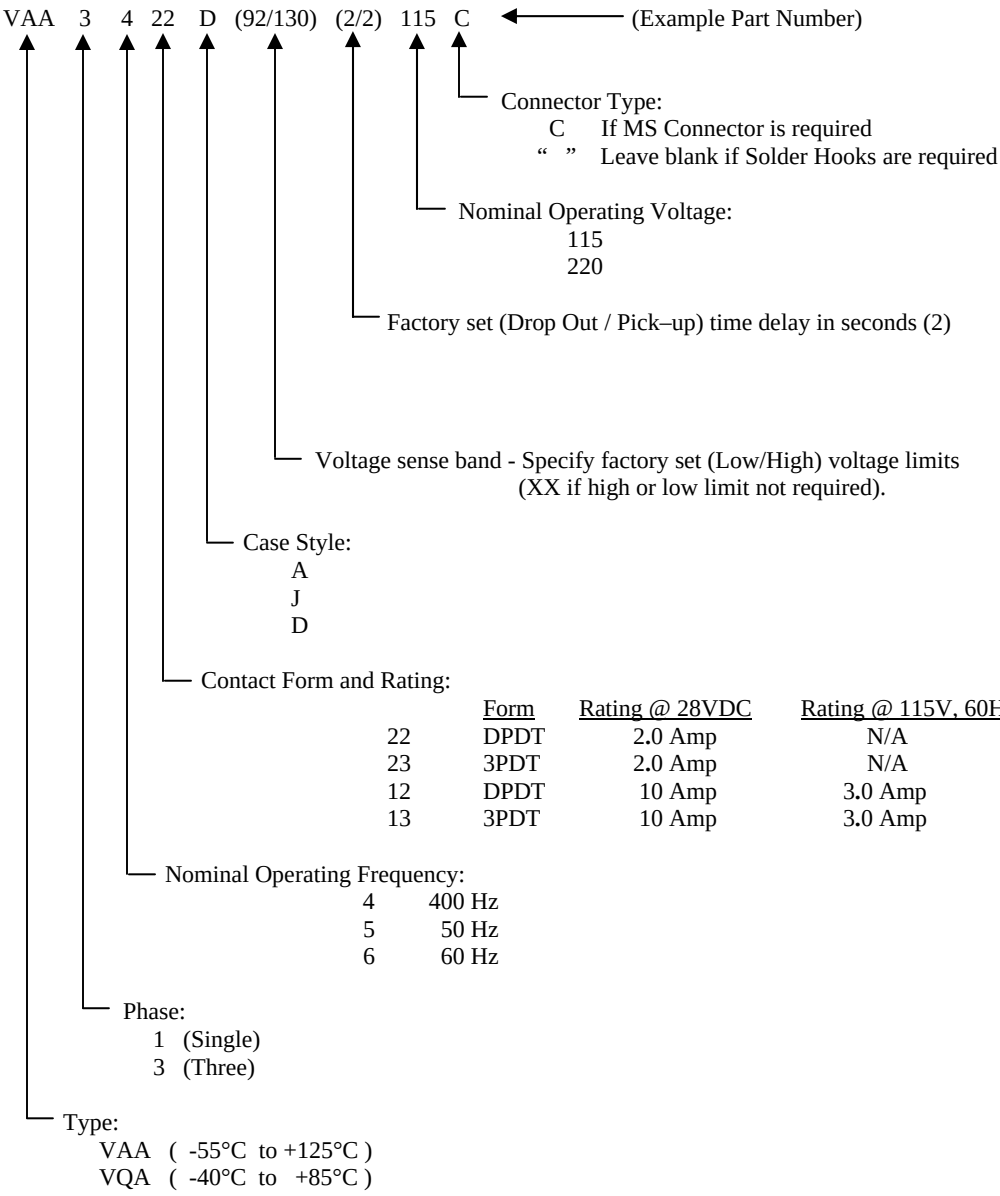
CASE DIMENSIONS

SYMBOL	115Vrms, 2A, 50/ 60Hz 2A & 10A 400Hz	115Vrms, 10A, 50/ 60Hz & ALL 220Vrms
A	2.14″ (54.36mm)	2.56″ (65.02mm)
B	2.27 ″ (57.66mm)	2.94″ (74.68mm)
C	3.19″ (81.03mm)	3.17″ (80.52mm)
D	1.625″ (41.275mm)	1.875″ (47.625mm)
E	1.750″ (44.450mm)	2.250″ (57.150mm)
F	.812″ (20.625mm)	.656″ (16.662mm)
G	.875″ (22.225mm)	1.125″ (28.575mm)
H	.41″ (10.41mm)	.39″ (9.91mm)
J	2.375″ (60.325mm)	2.375″ (60.325mm)
K	.32″ (8.12mm)	.39″ (9.91mm)
L	1.625 ″ (41.275mm)	2.156″ (54.763mm)
M	1.07″ (27.18mm)	1.00″ (25.40mm)
N	1.13″ (28.40mm)	1.47″ (37.33mm)
P	2.765″ (70.231mm)	3.437″ (87.299mm)
R	3.27″ (83.06mm)	3.9″ (100.07mm)
S	2.187″ (55.549mm)	2.171″ (55.143mm)

TOLERANCES: .XX ± .03 (± .762mm) .XXX ± 0.010 (± .254mm)

ORDERING INFORMATION

(To order, specify all parameters using the part numbering system shown below)



	Form	Rating @ 28VDC	Rating @ 115V, 60Hz	Rating @ 115V, 400Hz
22	DPDT	2.0 Amp	N/A	N/A
23	3PDT	2.0 Amp	N/A	N/A
12	DPDT	10 Amp	3.0 Amp	5.0 Amp
13	3PDT	10 Amp	3.0 Amp	5.0 Amp