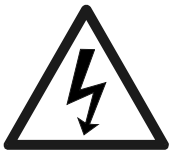
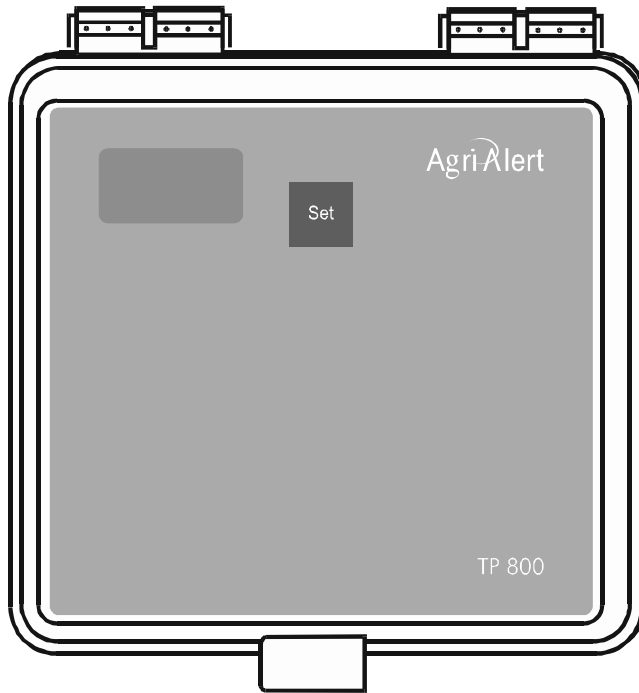


AGRI-ALERT 9600 TP-800



TECHNICAL NOTE

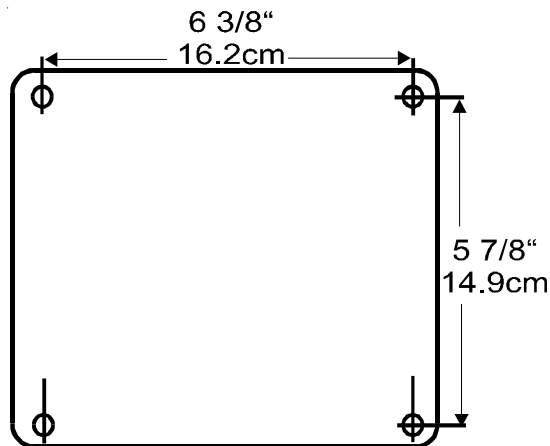
WARNING: If the controller does not operate properly, disconnect the unit for 10 seconds then reconnect it.



MOUNTING THE UNIT

Open the TP-800 by pulling on the latch below the enclosure. Mount the enclosure on the wall using 3/16" diameter screws.

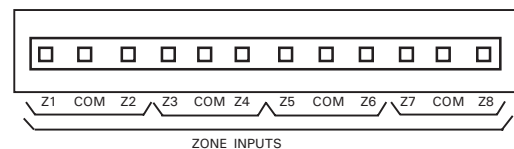
Mounting Holes:



CONNECTIONS

Strip the wires as little as possible (about 1/4") to avoid electrical shorts when connecting the equipment to the terminals provided. Once the wires are connected, run them through the electrical knockouts provided on the bottom of the enclosure and use a cable holder. Additional holes made in the enclosure will void the warranty.

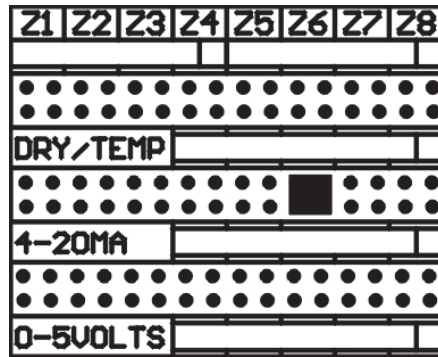
Sensors — The terminals used for sensor inputs are numbered Z1, Z2, Z3, etc. Connect each sensor to a Z terminal and to a COM terminal. Each COM terminal is used by two zones: for example, Z1 and Z2 use the same COM.



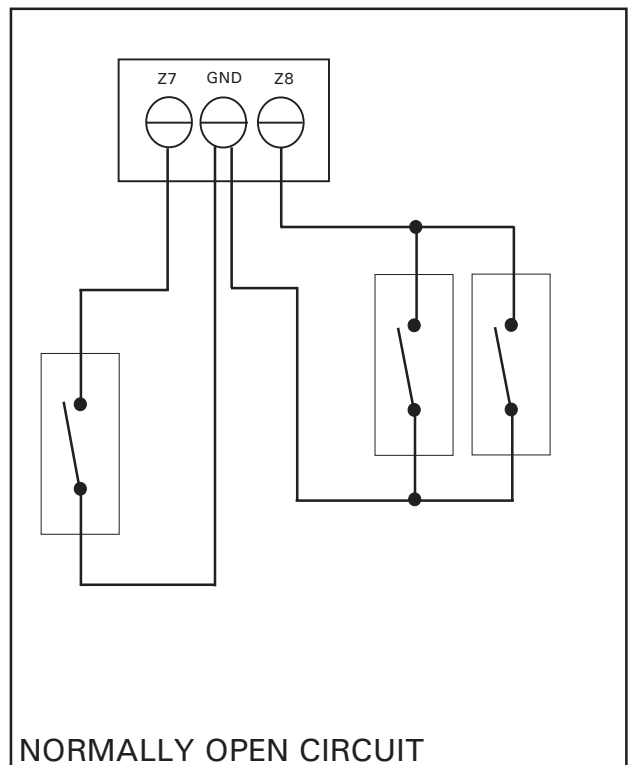
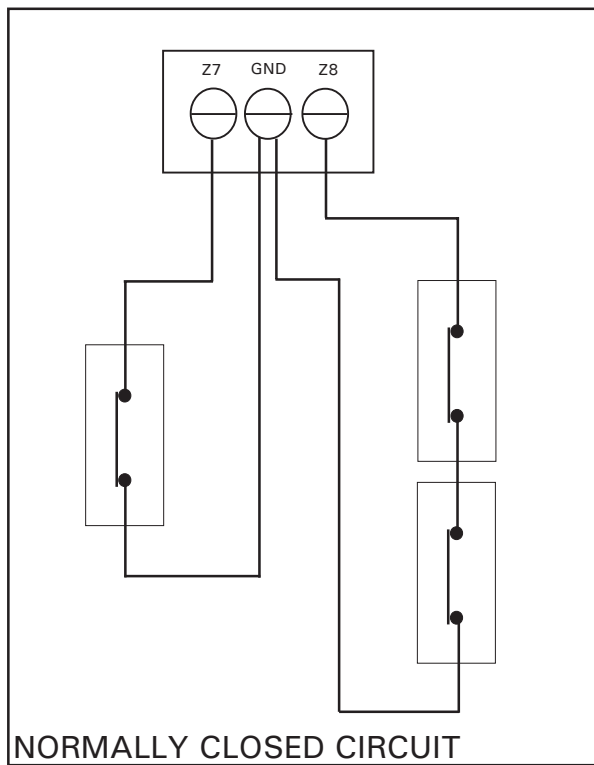
Make sure each sensor is connected to the proper COM terminal. False alarms can result if wires are not properly connected.

To configure a zone: Place the corresponding jumper in the correct position for the sensor being used. There are three jumper positions for each zone. The first position, called DRY/TEMP, is for dry contact (normally closed with or without EOLR/ DEOLR; normally open with or without EOLR/ DEOLR) and temperature inputs. The second position is for 4-20mA inputs and the third is for 0-5V and AC current sensor inputs. Only one jumper is used to configure each zone. Initially, all zones are configured for DRY/TEMP. The zone numbers are printed on the main board. Use caution when prying the jumpers loose.

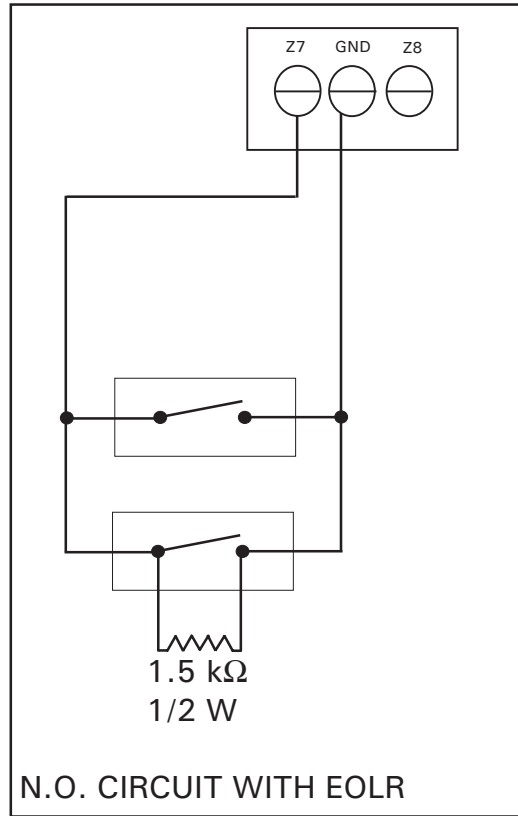
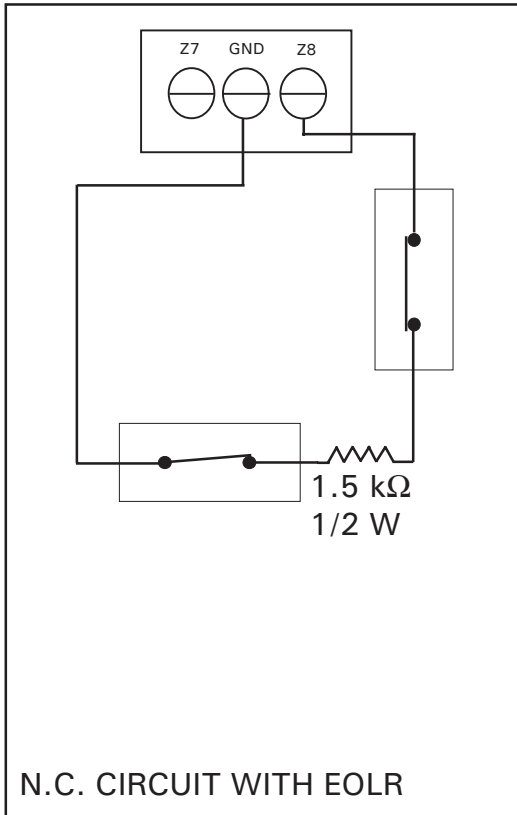
Zone Jumpers: In the following example, the jumper for zone 6 is configured as a 4-20mA input.



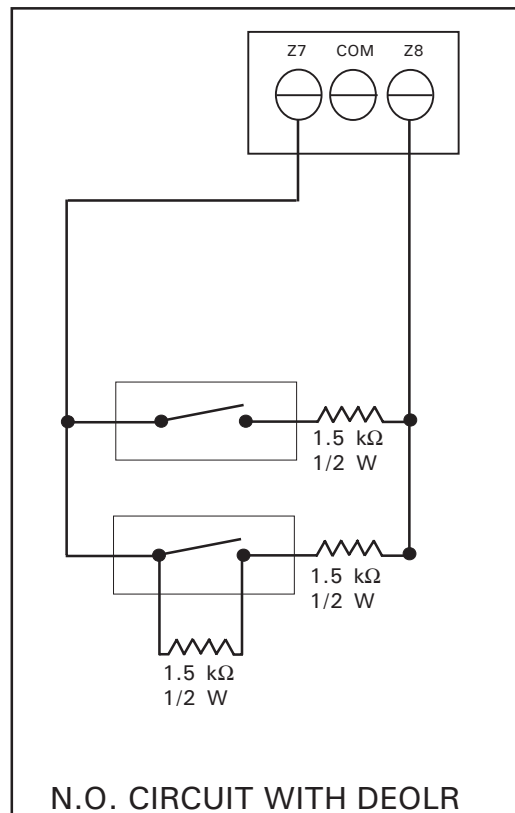
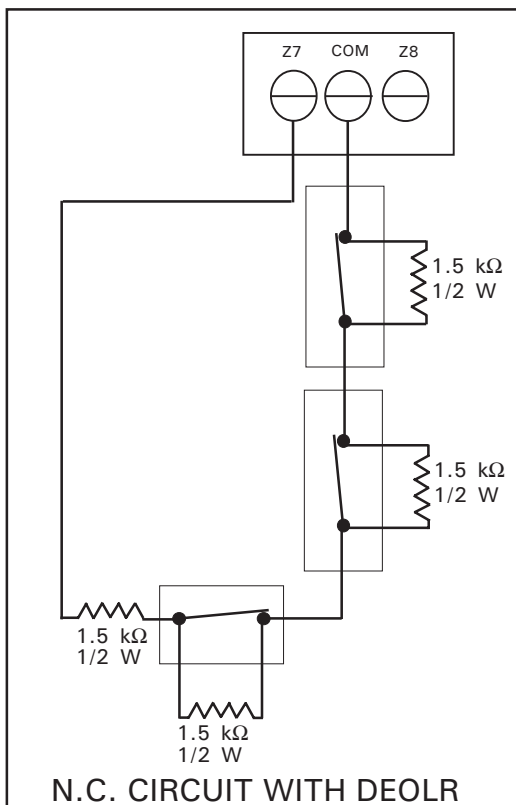
Examples of Zone Connections Without EOLR



Examples of Zone Connections with EOLR



Examples of Zone Connections with DEOLR

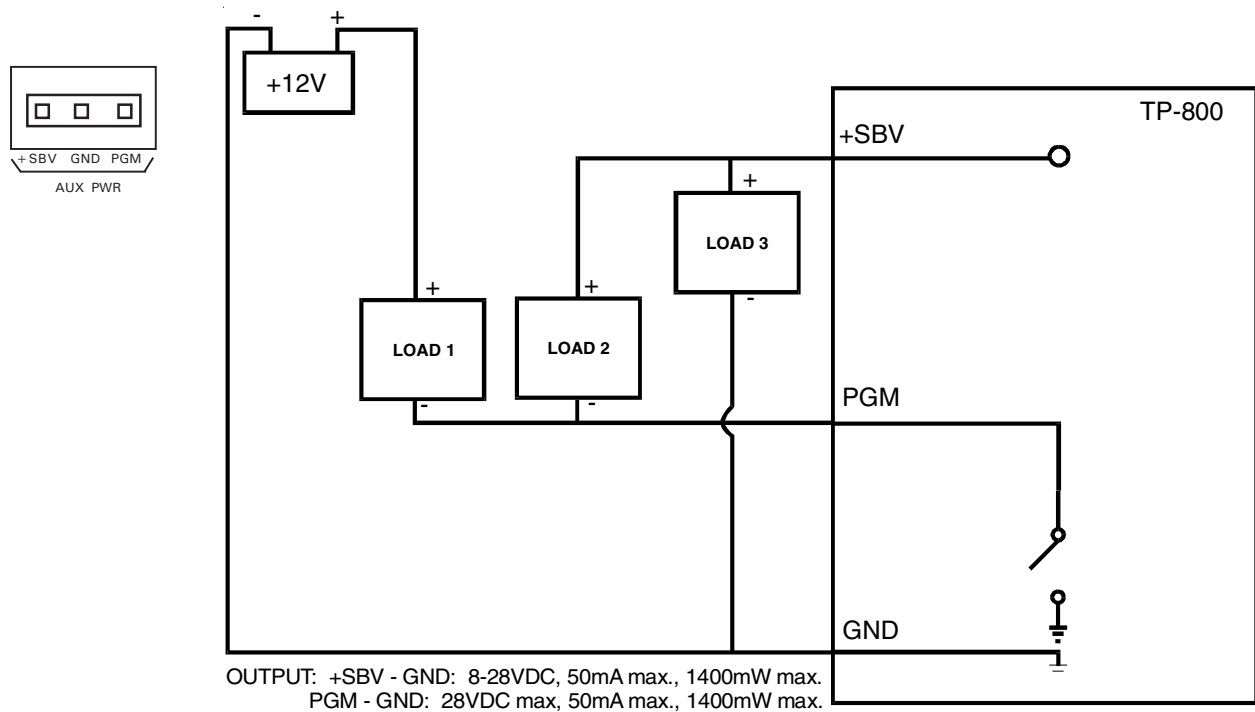


Note that when you add an EOLR to a circuit, the resistor must be connected to the sensor that is furthest from the Agri-Alert system.

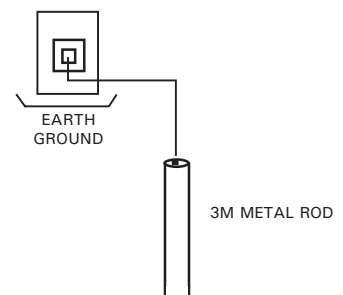


When using a double end of line resistor, a maximum of three zones can be connected on the same circuit.

Programmable Outputs — The TP-800 has one programmable output that can be activated from the front panel or on an alarm condition. The following diagram shows three examples of load hookups.



Connecting the Earth Ground – The earth ground terminal provides a ground for the TP-800. Use a rod at least 5/8" (1.6cm) in diameter and at least 10' (3m) long. The rod must have a clean metal surface free of paint, enamel or other non-conducting substances. Drive the rod at least 10' (3m) into the ground. If the bedrock is more than 47" (1.2m) deep, drive the rod into the ground to bedrock level and bury any remainder horizontally at least 2' (600mm) below ground level. If the bedrock is less than 47" (1.2m) deep, bury the rod horizontally at least 2' (600 mm) below ground level.



This rod must be connected to a 12 AWG gauge, insulated or bare, copper conductor.



It is extremely important that the earth ground terminal be connected to a proper ground to protect the electronic components from damage due to lightning surges and electrostatic discharges. Do not use the electrical ground for this purpose.

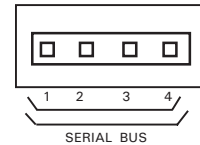


IF OUTDOOR CONNECTIONS ARE USED, MOUNT THE ENCLOSURE AS CLOSE AS POSSIBLE TO THE ENTRY POINT OF THE OUTDOOR WIRING.

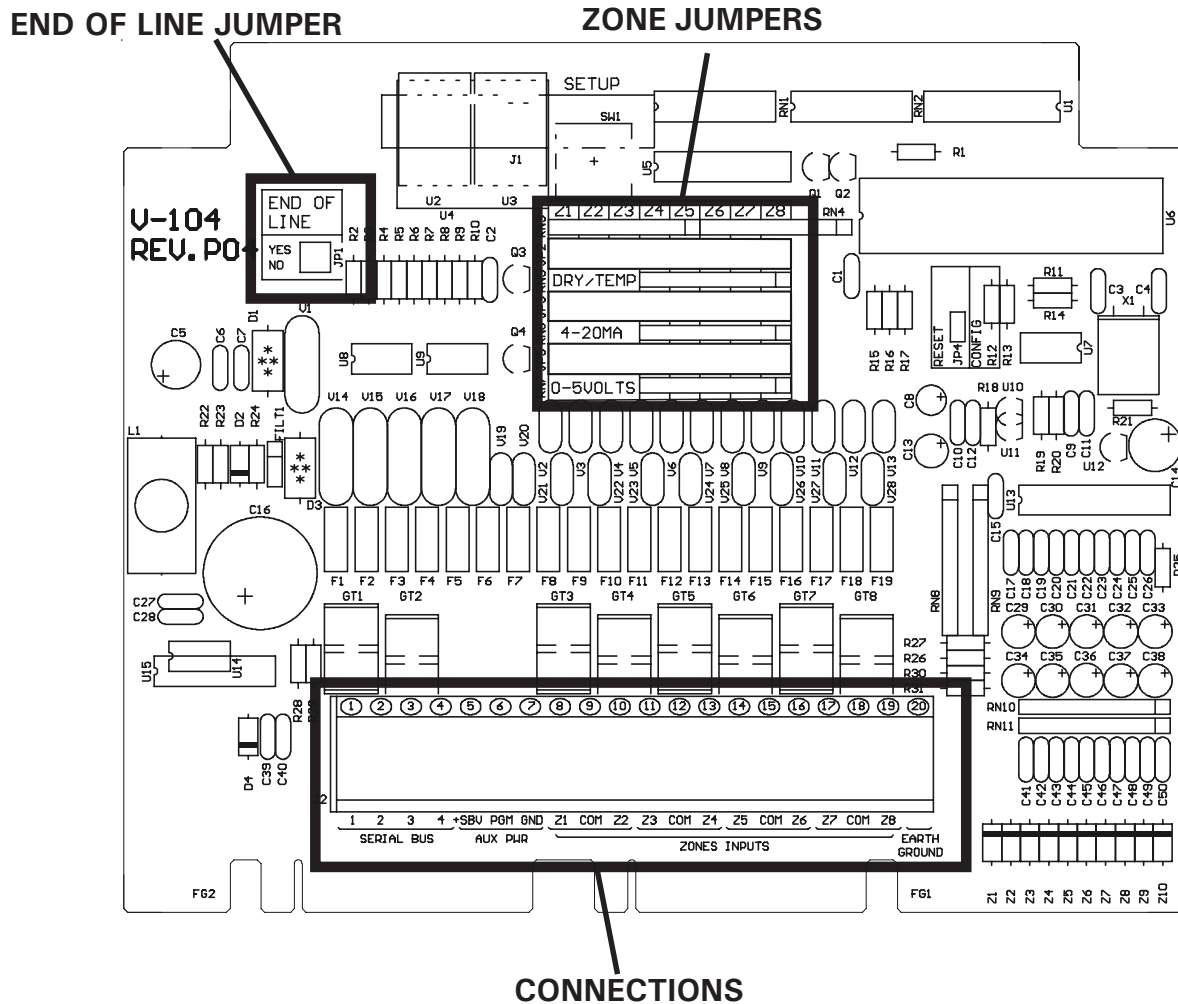


AN IMPROPER EARTH GROUND CONNECTION IMMEDIATELY VOIDS THE SYSTEM WARRANTY WITHOUT FURTHER NOTICE.

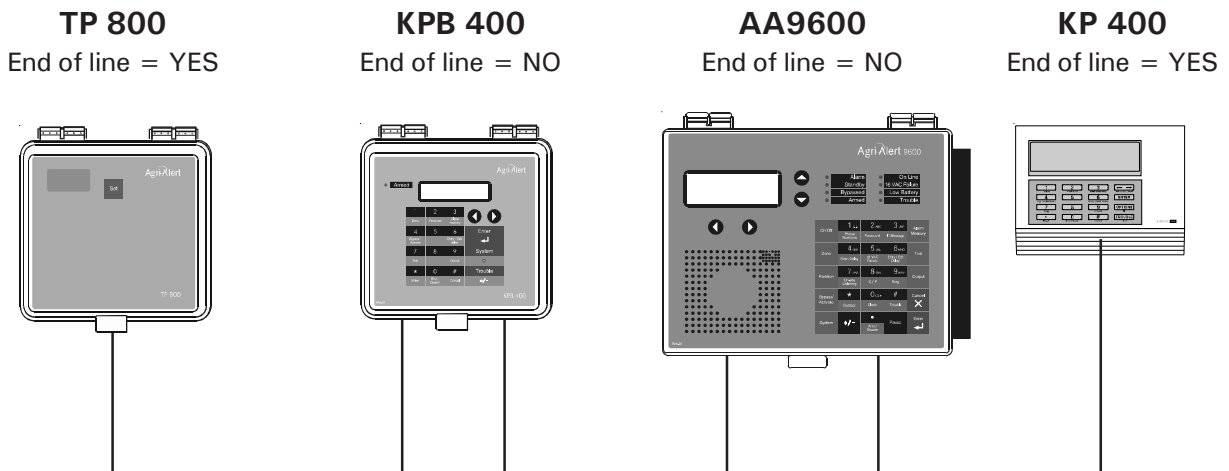
Serial Bus Interface (SBI): The serial bus interface is used to connect the different Agri-Alert devices together. Four wires are needed for this purpose. Use a shielded twisted pair cable (see the appendix for maximum length and wire gauge recommendations). Each device includes four terminals marked SERIAL BUS and numbered from 1 to 4. Connect all the number 1 terminals together, all the number 2 terminals together, etc. Each device includes an end of line jumper to identify the end of the communication line. When a device is located at the end of the communication loop, the end of line jumper must be at the YES position. For the other devices, place the jumper at the NO position.



The following diagram shows the location of the end of line jumper and the communication terminals on the TP-800.



The figure below shows an example of how the end of line jumpers are configured for an Agri-Alert network installation.



Assigning an ID Number to the TP-800 –When the connections have been made, close the enclosure and apply power to the unit. The display should show “ID 55” which is the default device id number. Press the **Set** button twice to change the device id number. The number “2” should flash on the display. Press the button as many times as required to set the id number. To record the id number in memory, press and hold the button for 5seconds. The id number should stop flashing.

Display Codes

Code	Meaning
Lz ##	Local zone ## has an alarm.
Gz ##	System zone ## has an alarm.
Er	Error - Contact your distributor. A trouble on a TP800's zone

COMMUNICATION CABLE GAUGE AND MAXIMUM LENGTH RECOMMENDATIONS

On the following pages, maximum distances are given for connecting TP-800 and KPB-400 devices to the AA-9600. Note that each device has an auxiliary load. For example, if you connect 2 TP-800 devices and 2 KPB-400 devices to the Agri-Alert, the maximum length for a 22 AWG wire is 1468 feet where each TP-800 and KPB-400 has an auxiliary load of 20mA.

The maximum resistance in Ohms is given by the formula: $R_{\max} = 196 / P_{\text{load}}$ where P_{load} is the load power rating in Watts.

The following chart gives the Ohms ratings for different wire gauges:

22 AWG	32.4 Ω /1000ft
20 AWG	20.2 Ω /1000ft
18 AWG	12.78 Ω /1000ft
16 AWG	8.04 Ω /1000ft

22 AWG GAUGE - MAXIMUM DISTANCE FROM AA-9600 IN FEET						
# OF TP-800's	AUX - 0 mA	AUX - 10 mA	AUX - 20 mA	AUX - 30 mA	AUX - 40 mA	AUX - 50 mA
1 TP-800	10000	9452	7756	6575	5707	5041
2 TP-800	6049	4726	3878	3288	2853	2521
3 TP-800	4033	3151	2585	2192	1902	1680
4 TP-800	3025	2363	1939	1644	1427	1260
5 TP-800	2420	1890	1551	1315	1141	1008
6 TP-800	2016	1575	1293	1096	951	840
7 TP-800	1728	1350	1108	939	815	720
8 TP-800	1512	1182	969	822	713	630
9 TP-800	1344	1050	862	731	634	560
10 TP-800	1210	945	776	658	571	504
# OF KPB-400's	AUX - 0 mA	AUX - 10 mA	AUX - 20 mA	AUX - 30 mA	AUX - 40 mA	AUX - 50 mA
1 KPB-400	6049	5306	4726	4260	3878	3558
2 KPB-400	3025	2653	2363	2130	1939	1779
3 KPB-400	2016	1769	1575	1420	1293	1186
4 KPB-400	1512	1327	1182	1065	969	890
5 KPB-400	1210	1061	945	852	776	712
6 KPB-400	1008	884	788	710	646	593
7 KPB-400	864	758	675	609	554	508
8 KPB-400	756	663	591	533	485	445
9 KPB-400	672	590	525	473	431	395
10 KPB-400	605	531	473	426	388	356
# OF KPB-400's AND TP-800's	AUX - 0 mA	AUX - 10 mA	AUX - 20 mA	AUX - 30 mA	AUX - 40 mA	AUX - 50 mA
1 TP-800 / 1 KPB-400	4033	3399	2937	2585	2309	2086
2 TP-800 / 2 KPB-400	2016	1699	1468	1293	1154	1043
3 TP-800 / 3 KPB-400	1344	1133	979	862	770	695
4 TP-800 / 4 KPB-400	1008	850	734	646	577	521
5 TP-800 / 5 KPB-400	807	680	587	517	462	417
6 TP-800 / 6 KPB-400	672	566	489	431	385	348
7 TP-800 / 7 KPB-400	576	486	420	369	330	298
8 TP-800 / 8 KPB-400	504	425	367	323	289	261
9 TP-800 / 9 KPB-400	448	378	326	287	257	232
10 TP-800 / 10 KPB-400	403	340	294	259	231	209

20 AWG GAUGE - MAXIMUM DISTANCE FROM AA-9600 IN FEET						
# OF TP-800	AUX - 0 mA	AUX - 10 mA	AUX - 20 mA	AUX - 30 mA	AUX - 40 mA	AUX - 50 mA
1 TP-800	10000	10000	10000	10000	9154	8086
2 TP-800	9703	7580	6220	5273	4577	4043
3 TP-800	6469	5054	4147	3516	3051	2695
4 TP-800	4851	3790	3110	2637	2288	2021
5 TP-800	3881	3032	2488	2109	1831	1617
6 TP-800	3234	2527	2073	1758	1526	1348
7 TP-800	2772	2166	1777	1507	1308	1155
8 TP-800	2426	1895	1555	1318	1144	1011
9 TP-800	2156	1685	1382	1172	1017	898
10 TP-800	1941	1516	1244	1055	915	809
# OF KPB-400	AUX - 0 mA	AUX - 10 mA	AUX - 20 mA	AUX - 30 mA	AUX - 40 mA	AUX - 50 mA
1 KPB-400	9703	8511	7580	6833	6220	5708
2 KPB-400	4851	4256	3790	3417	3110	2854
3 KPB-400	3234	2837	2527	2278	2073	1903
4 KPB-400	2426	2128	1895	1708	1555	1427
5 KPB-400	1941	1702	1516	1367	1244	1142
6 KPB-400	1617	1419	1263	1139	1037	951
7 KPB-400	1386	1216	1083	976	889	815
8 KPB-400	1213	1064	948	854	777	713
9 KPB-400	1078	946	842	759	691	634
10 KPB-400	970	851	758	683	622	571
# OF KPB-400 AND TP-800	AUX - 0 mA	AUX - 10 mA	AUX - 20 mA	AUX - 30 mA	AUX - 40 mA	AUX - 50 mA
1 TP-800 / 1 KPB-400	6469	5451	4710	4147	3703	3346
2 TP-800 / 2 KPB-400	3234	2726	2355	2073	1852	1673
3 TP-800 / 3 KPB-400	2156	1817	1570	1382	1234	1115
4 TP-800 / 4 KPB-400	1617	1363	1178	1037	926	836
5 TP-800 / 5 KPB-400	1294	1090	942	829	741	669
6 TP-800 / 6 KPB-400	1078	909	785	691	617	558
7 TP-800 / 7 KPB-400	924	779	673	592	529	478
8 TP-800 / 8 KPB-400	809	681	589	518	463	418
9 TP-800 / 9 KPB-400	719	606	523	461	411	372
10 TP-800 / 10 KPB-400	647	545	471	415	370	335

18 AWG GAUGE - MAXIMUM DISTANCE FROM AA-9600 IN FEET						
# OF TP-800's	AUX - 0 mA	AUX - 10 mA	AUX - 20 mA	AUX - 30 mA	AUX - 40 mA	AUX - 50 mA
1 TP-800	10000	10000	10000	10000	10000	10000
2 TP-800	10000	10000	9831	8335	7234	6390
3 TP-800	10224	7988	6554	5557	4823	4260
4 TP-800	7668	5991	4916	4168	3617	3195
5 TP-800	6135	4793	3932	3334	2894	2556
6 TP-800	5112	3994	3277	2778	2411	2130
7 TP-800	4382	3423	2809	2381	2067	1826
8 TP-800	3834	2995	2458	2084	1809	1598
9 TP-800	3408	2663	2185	1852	1608	1420
10 TP-800	3067	2396	1966	1667	1447	1278
# OF KPB-400's	AUX - 0 mA	AUX - 10 mA	AUX - 20 mA	AUX - 30 mA	AUX - 40 mA	AUX - 50 mA
1 KPB-400	10000	10000	10000	10000	9831	9021
2 KPB-400	7668	6727	5991	5400	4916	4511
3 KPB-400	5112	4484	3994	3600	3277	3007
4 KPB-400	3834	3363	2995	2700	2458	2255
5 KPB-400	3067	2691	2396	2160	1966	1804
6 KPB-400	2556	2242	1997	1800	1639	1504
7 KPB-400	2191	1922	1712	1543	1404	1289
8 KPB-400	1917	1682	1498	1350	1229	1128
9 KPB-400	1704	1495	1331	1200	1092	1002
10 KPB-400	1534	1345	1198	1080	983	902
# OF KPB-400's AND TP-800's	AUX - 0 mA	AUX - 10 mA	AUX - 20 mA	AUX - 30 mA	AUX - 40 mA	AUX - 50 mA
1 TP-800 / 1 KPB-400	10000	8616	7445	6554	5854	5288
2 TP-800 / 2 KPB-400	5112	4308	3722	3277	2927	2644
3 TP-800 / 3 KPB-400	3408	2872	2482	2185	1951	1763
4 TP-800 / 4 KPB-400	2556	2154	1861	1639	1463	1322
5 TP-800 / 5 KPB-400	2045	1723	1489	1311	1171	1058
6 TP-800 / 6 KPB-400	1704	1436	1241	1092	976	881
7 TP-800 / 7 KPB-400	1461	1231	1064	936	836	755
8 TP-800 / 8 KPB-400	1278	1077	931	819	732	661
9 TP-800 / 9 KPB-400	1136	957	827	728	650	588
10 TP-800 / 10 KPB-400	1022	862	744	655	585	529

16 AWG GAUGE - MAXIMUM DISTANCE FROM AA-9600 IN FEET						
# OF TP-800's	AUX - 0 mA	AUX - 10 mA	AUX - 20 mA	AUX - 30 mA	AUX - 40 mA	AUX - 50 mA
1 TP-800	10000	10000	10000	10000	10000	10000
2 TP-800	10000	10000	10000	10000	10000	10000
3 TP-800	10000	10000	10000	8833	7666	6772
4 TP-800	12189	9523	7813	6624	5750	5079
5 TP-800	9751	7618	6251	5300	4600	4063
6 TP-800	8126	6348	5209	4416	3833	3386
7 TP-800	6965	5442	4465	3785	3285	2902
8 TP-800	6095	4761	3907	3312	2875	2539
9 TP-800	5417	4232	3473	2944	2555	2257
10 TP-800	4876	3809	3125	2650	2300	2032
# OF KPB-400's	AUX - 0 mA	AUX - 10 mA	AUX - 20 mA	AUX - 30 mA	AUX - 40 mA	AUX - 50 mA
1 KPB-400	10000	10000	10000	10000	10000	10000
2 KPB-400	10000	10000	9523	8584	7813	7170
3 KPB-400	8126	7128	6348	5723	5209	4780
4 KPB-400	6095	5346	4761	4292	3907	3585
5 KPB-400	4876	4277	3809	3434	3125	2868
6 KPB-400	4063	3564	3174	2861	2604	2390
7 KPB-400	3483	3055	2721	2453	2232	2049
8 KPB-400	3047	2673	2381	2146	1953	1793
9 KPB-400	2709	2376	2116	1908	1736	1593
10 KPB-400	2438	2138	1905	1717	1563	1434
# OF KPB-400's AND TP-800's	AUX - 0 mA	AUX - 10 mA	AUX - 20 mA	AUX - 30 mA	AUX - 40 mA	AUX - 50 mA
1 TP-800 / 1 KPB-400	10000	10000	10000	10000	9305	8406
2 TP-800 / 2 KPB-400	8126	6848	5917	5209	4652	4203
3 TP-800 / 3 KPB-400	5417	4565	3945	3473	3102	2802
4 TP-800 / 4 KPB-400	4063	3424	2959	2604	2326	2102
5 TP-800 / 5 KPB-400	3250	2739	2367	2084	1861	1681
6 TP-800 / 6 KPB-400	2709	2283	1972	1736	1551	1401
7 TP-800 / 7 KPB-400	2322	1957	1691	1488	1329	1201
8 TP-800 / 8 KPB-400	2032	1712	1479	1302	1163	1051
9 TP-800 / 9 KPB-400	1806	1522	1315	1158	1034	934
10 TP-800 / 10 KPB-400	1625	1370	1183	1042	930	841