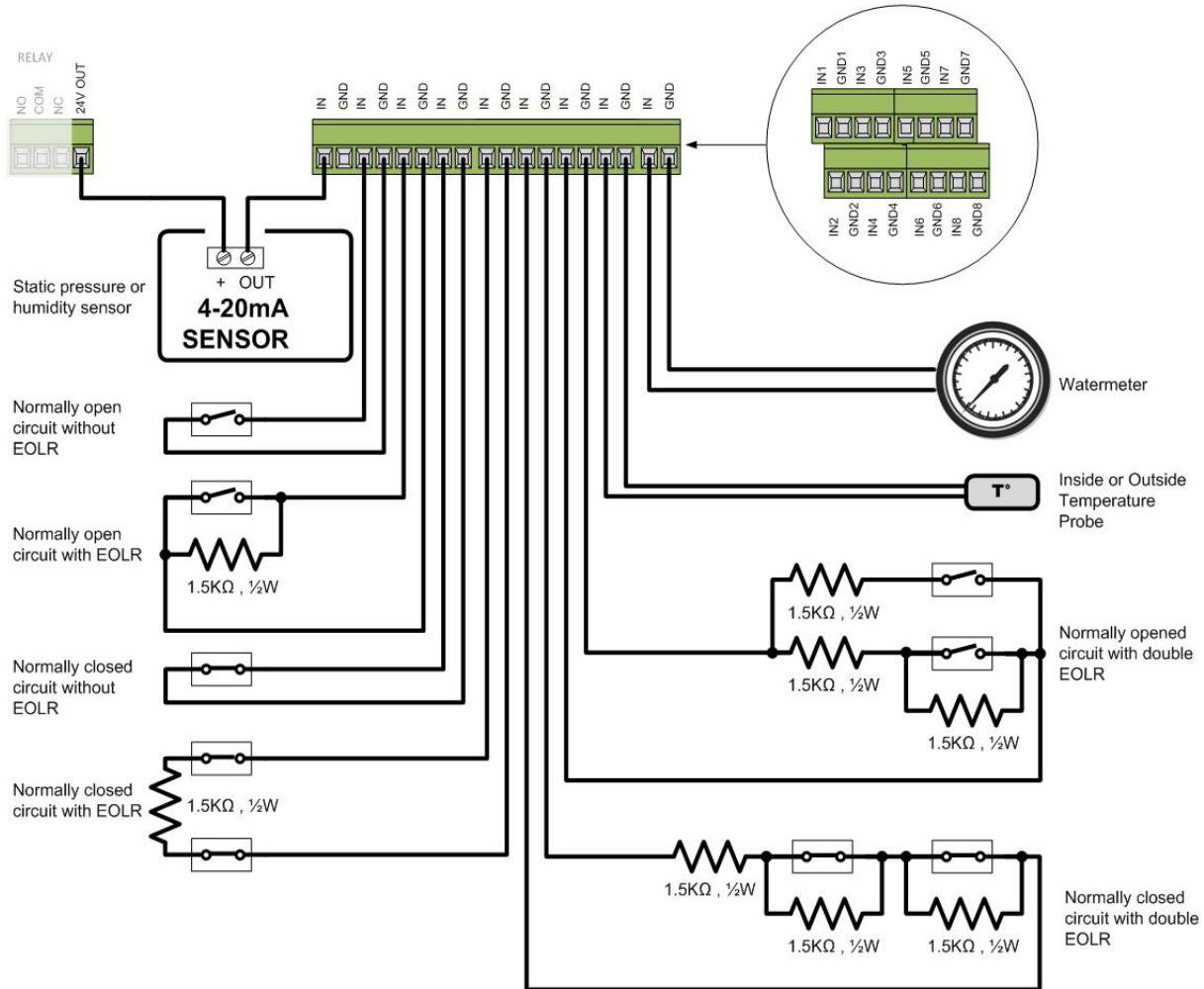


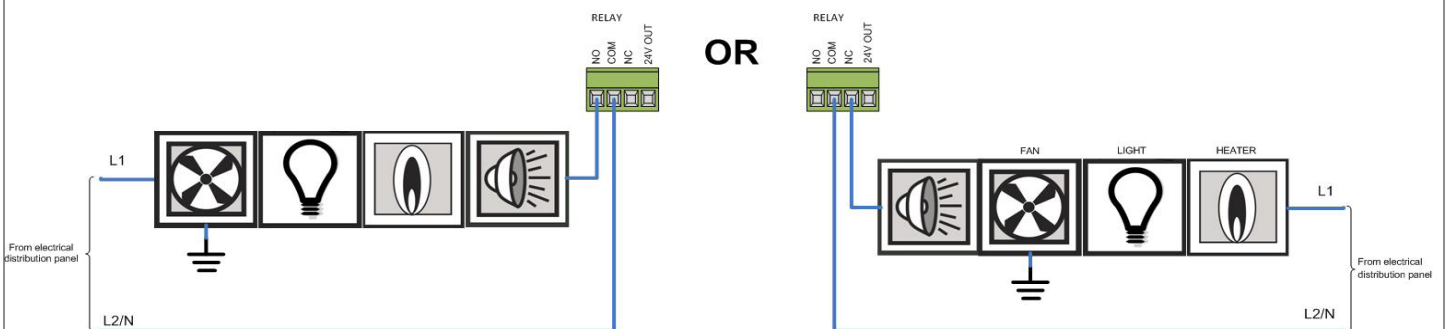
NOTE: For more complete information on the product, please refer to the manual on the USB key provided with your Agri Alert 128 Touch or go to the following web sites :

Munters website: <https://www.munters.com/en/munters/products/combined-temperature--humidity-control/agrialert-control-series/>

ANALOG INPUTS Scheme



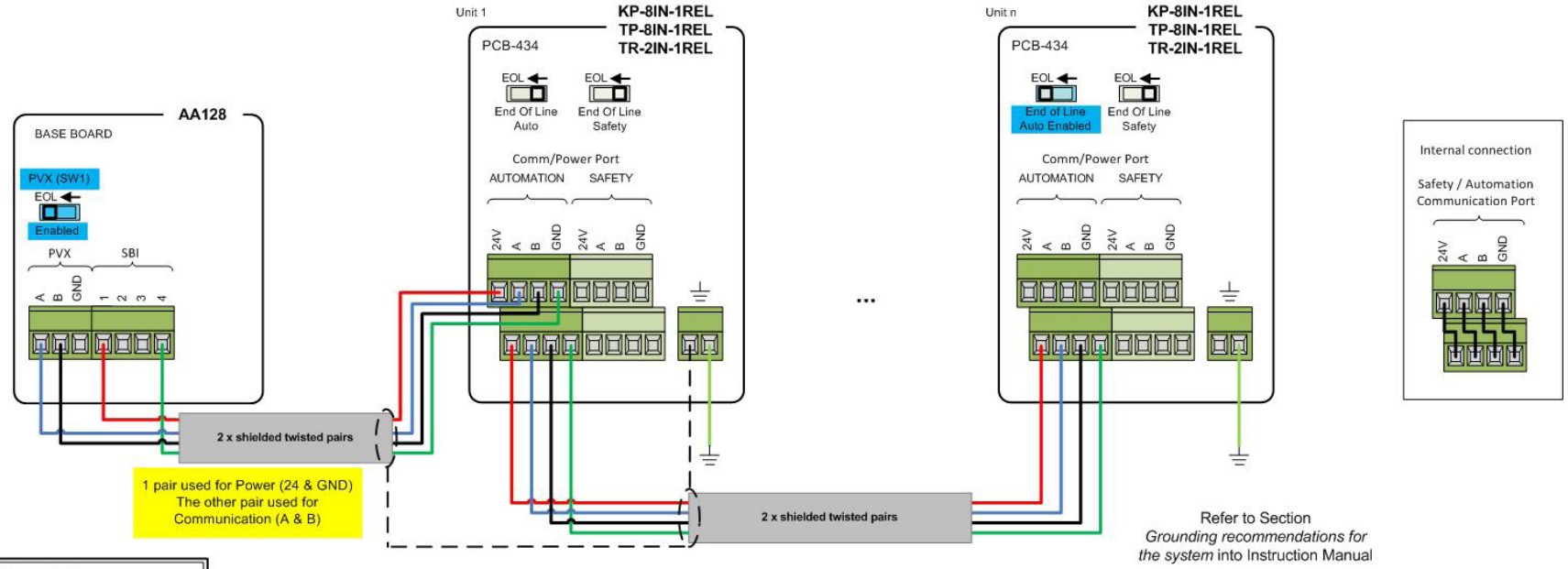
RELAY OUTPUT Scheme



POWER SUPPLY and COMMUNICATION Scheme in an AA128 TOUCH SYSTEM

Communication 1200 m (4000 ft) max
18 AWG twisted pair shielded cable
Terminals A & B

Power 300 m (1000 ft) with 16 AWG *



Refer to Section Grounding recommendations for the system into Instruction Manual

| Power Cable | |
|------------------|-------------------|
| Distance | Minimum wire gage |
| 150 m (500 ft) | 18 AWG |
| 300 m (1000 ft) | 16 AWG * |
| 600 m (2000 ft) | 14 AWG |
| 900 m (3000 ft) | 12 AWG |
| 1200 m (4000 ft) | 10 AWG |

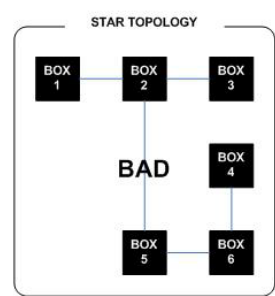
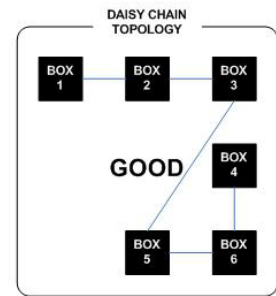
* Recommended

| Power | | |
|-------------|-------|---------------|
| Module | Power | Load on 24VDC |
| TR-2IN-1REL | 4.3 W | 180 mA |
| TP-8IN-1REL | 4.7 W | 196 mA |
| KP-8IN-1REL | 5.6 W | 233 mA |
| | | |
| | | |

Some Rules:

- The cable's shield shall be connected to EARTH only at one end.
- Safety communication bus is not used with AA128.
- END of LINE shall be enabled at both ends of the communication bus. All others END of LINE shall be disabled.
- Maximum load on SBI is 2A, see power table at the left to determine the maximum number of unit the AA128 can power.

Communication wiring



Technical Specifications

| Weight and dimensions | | |
|--------------------------------|-------------------------|--------------------|
| KP-8IN-1REL Weight | 861,83 grams (1.90 lbs) | |
| TP-8IN-1REL Weight | 861,83 grams (1.90 lbs) | |
| TR-8IN-1REL Weight | 816.47 grams (1.80 lbs) | |
| Enclosure dimensions | Height | 178 mm (7 inches) |
| | Width | 229 mm (9 inches) |
| | Depth | 76.2 mm (3 inches) |
| Clearance around the enclosure | Top | 152mm (6 inches) |
| | Bottom | 152mm (6 inches) |
| | Sides | 152mm (6 inches) |

Table 1 Safety ratings

| Inputs: | |
|---|---|
| KP-8IN-1REL Supply Input | 24/28Vdc, 5.62W |
| TP-8IN-1REL Supply Input | 24/28Vdc, 4.72W |
| TR-2IN-1REL Supply Input | 24/28Vdc, 4.3W |
| Outputs: | |
| Motor/inductive loads | <p>5 A MAX</p> <p>(Nb of Units = Max current rating divide by the max current of the fan multiply by its service factor will give you the number of this fan type the relay can drive)</p> <p>For example, $5A / (2.5 A * 1.5 SF) = 1.3$, relay can drive up to 1 fan Minimum load of 0.2A</p> <p>50/60Hz 120Vac ,1/6HP (124W)</p> |
| Resistive loads (electric heating element) | 150Vac Max. / 28/24 VAC/DC, 5A max. Minimum load of 0.2A |
| Tungsten loads loads (incandescent and heat lamp) | <p>120 Vac, 2A max.</p> <p>Minimum load of 0.2A</p> |
| DC loads | <p>24Vdc, 5A max.</p> <p>(The current reading is not available in DC) Minimum load of 0.2A)</p> |

Table 2 Functional ratings

| | |
|--|---|
| Inputs: | |
| Temperature | Compliant to GSIE temperature probes, Accuracy of $\pm 0.1^{\circ}\text{C}$ in a normal operation, Allowable loss of performance in a noisy environment: Accuracy of $\pm 0.65^{\circ}\text{C}$ from initial reading with a fixed resistor of 1% precision used for testing purpose. |
| Analog 0-5 Volts | Sensor must be able to drive a 2k Ohms load, which means the sensor must drive at least 2.5mA to ensure correct readings. Accuracy of $\pm 30\text{mV}$ in a normal operation, Allowable loss of performance in a noisy environment: Accuracy of $\pm 80\text{mV}$ from initial reading with a voltage source of 1% precision used for testing purpose. |
| Analog 4-20mA | Sensor must be able to drive a 120 Ohms load Maximum rating: 20.8mA, 2.5V Accuracy of $\pm 0.2\text{mA}$ in a normal operation Allowable loss of performance in a noisy environment: Accuracy of $\pm 0.4\text{mA}$ from initial reading with a current source of 1% precision used for testing purpose. |
| Dry contact | Close contact resistance must be lower than 200 Ohms Open contact resistance must be higher than 100k Ohms |
| Water meter, Pulse speed | Max 100Hz, pulse width minimum of 3.2ms Max 100 Ohms (close contact) and min. 100k Ohms (open contact) including the value of the wire resistance |
| Relay outputs with current sensing input | Accuracy of $\pm 0.5\text{A}$ for AC load $< 5\text{A}$ in a normal environment Allowable loss of performance in a noisy environment: Accuracy of $\pm 0.75\text{A}$ from initial reading with a load of 1% precision used for testing purpose |
| Outputs: | |
| 24Vdc | 24 Vdc, 50 mA max |
| Operational ratings | |
| Operating Temperature | -40 to 40°C (-40 to 104°F) |
| Storage Temperature | -20 to 50°C (-4 to 122°F) |
| Environment Type | Indoor and outdoor use |
| Pollution Degree | 2 |
| Installation Category | 2 |
| Altitude | 2000 Meters Max. (6561 Ft. Max) |

Table 2 *Functional ratings (cont'd.)*

| | |
|---|---|
| Operating Relative Humidity (maximum) | -40 to 0°C (-40 to 32°F) Non condensing 0 to 10°C (32 to 50°F) Non condensing 10 to 30°C (50 to 86°F) 95 % (± 3 %) Non condensing 30 to 40°C (86 to 104°F) 95 % (± 3 %) Non condensing |
| IP rating (IEC 60529) | 66 |
| Nema Rating (Nema 250) | 4X |
| Flame Rating (UL94) | 5VA V-0 |
| Flame Rating (IEC 60695 or IEC 60707) | FV-0 |
| IK rating (degree of mechanical protection - impact, IEC 62262) | 08 |

Table 3 *Telecommunication ratings for RFID module (Only on KP-8IN-1REL and TR-2IN-1REL)*

| | | |
|------------------------------------|------------------|--|
| Protocol Handling | ISO15693 | |
| Output Power | +20 dBm (100 mW) | |
| System Clock Frequency Output | 13.56MHz | |
| Equipment type (ETSI EN 301 489-3) | III | Others : Identification/Access control |
| Class type (ETSI EN 301 489-3) | 2 | (Medium reliable SRD communication media; e.g. causing inconvenience to persons, which cannot simply be overcome by other means) |

Low voltage cable specifications

Communication bus

The suggested cable is AlphaWire 45374 or with very similar specifications.

Table 1 *communication bus — communication cables*

| Item | Description |
|---|--|
| Cable type | Twisted and shielded |
| Minimum gauge | 1 mm ² (18 AWG) |
| Maximum cable length (including cable extensions) | 1200 meters (4000 feet) |
| Certification and type | CSA, CMG FT4 type, 18 AWG, 600 V, 75 °C (167 °F) |
| | UL, AWM or CM ttype, 18 AWG, 600 V, 75 °C (167 °F) |
| Characteristic Impedance | 120 Ω +/- 12 |
| Inductance | 0.258 μH/ft, Nominal |
| Mutual Capacitance | 12 pf/ft @1 kHz, Nominal |
| Velocity of propagation | 75% |
| Conductor DCR | 6.9 Ω/1000ft @20°C, Nominal |
| OA Shield DCR | 1.8 Ω/1000ft @20°C, Nominal |
| Attenuation (Max dB/100ft) | 0.13 @ 125 kHz |
| | 0.25 @ 500 kHz |
| | 0.36 @ 1 MHz |
| Number of Twists | 2.4 Twists/foot (min) |

Table 2 *DC Power cables*

| Item | Description | | | | |
|--------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Wire gauge | 18 AWG | 16* AWG | 14 AWG | 12 AWG | 10 AWG |
| | 1 pair twisted shielded | 1 pair twisted shielded | 1 pair twisted shielded | 1 pair twisted shielded | 1 pair twisted shielded |
| Max. length | 150m (500 feet) | 300m (1000 feet) | 600m (2000 feet) | 900m (3000 feet) | 1200m (4000 feet) |
| Inductance Nominal | 0.17 μH/ft | 0.174 μH/ft | 0.16 μH/ft | 0.16 μH/ft | 0.14 μH/ft |

Table 2 DC Power cables (cont'd.)

| | | | | | |
|--------------------------------|--|--------------|--------------|---------------|---------------|
| ConductorDCR @20°C, Nominal | 6.1 Ω/1000ft | 3.6 Ω/1000ft | 2.6 Ω/1000ft | 1.63 Ω/1000ft | 1.09 Ω/1000ft |
| Certification and type | CSA, TEW type, 600 V, 105 °C (221 °F) UL, 1015 type, 600 V, 105 °C (221 °F) | | | | |

*The recommended cable is AlphaWire 6451- 2 pairs:

- 1 pair 18AWG twisted shielded for Communication;
- 1 pair 15AWG twisted shielded for Power

Table 3 Other Low voltage cables

| Item | Description |
|-----------------------------|----------------------------|
| Cable type | Twisted and shielded |
| Minimum gauge | 1 mm ² (18 AWG) |
| Maximum sensor cable length | 150 m (500 feet) |

- Sensor cables
- Potentiometer cables
- All other low voltage devices