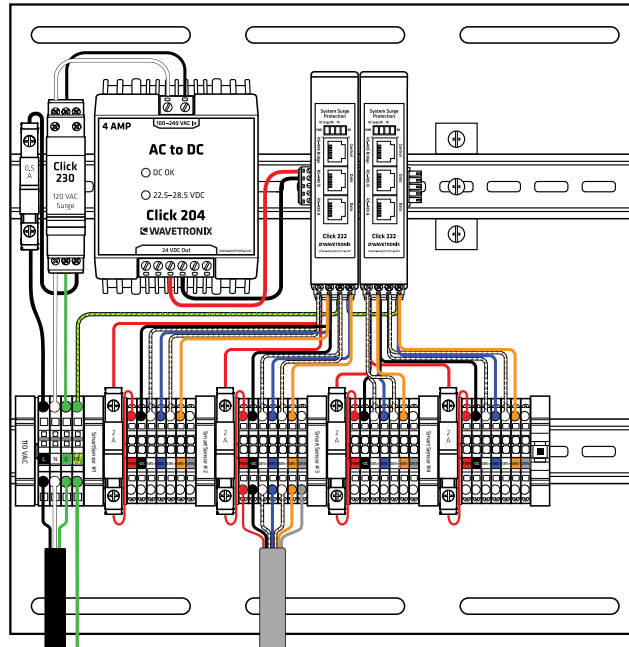


The standard four-approach intersection preassembled backplate is 11 in. (28 cm) wide and 11.5 in. (29.2 cm) high. All wiring on the rack and backplates is done using stranded wires with wire ferrules for screw terminal connections.



Mounting the backplate

Use the following steps to mount the backplate in the traffic cabinet:

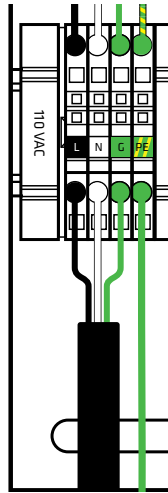
1. Locate the area planned for mounting the backplate. The backplate can usually be mounted on the side panel of a NEMA-style cabinet.
2. Attach the backplate with the U-channel mounting screws.

Note. If you have a 330 series (170/2070 style cabinet) with a 19-inch EIA rack, please contact support@wavetronix.com for assistance. Wavetronix can provide modified backplates that attach to a 19-inch rack.

Connecting AC power

Since SmartSensor Matrix operates on 10–28 VDC, the standard preassembled backplates provide an AC power conversion option. The backplate includes an AC to DC power converter, power surge, and circuit breaker.

Warning. Make sure power to AC mains is disconnected while wiring the AC input. If your installation does not require AC power, you will need to use surplus DC power inside the traffic cabinet. In this case, we recommend you use the Click 221 (8 A DC surge protector) to protect the backplate and SmartSensor Matrix units from DC surges.



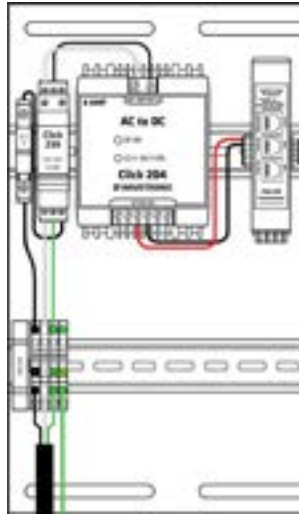
Use the following steps to connect power to the AC terminal block on the bottom DIN rail (see figure above):

1. Connect a neutral wire (usually a white wire) to the bottom side of the terminal block labeled “N” for neutral.
2. Connect a ground wire (usually a green wire) to the bottom of the terminal block labeled “G” for ground. (see the Wiring Protective Earth Ground section below).
3. Connect a line wire (usually a black wire) to the bottom of the terminal block labeled “L” for line.
4. Turn on AC mains power.
5. Press the circuit breaker switch on the left side of the top DIN rail to switch power to the backplate. The switch is on if the button is below the level of the device housing; the switch is off if the button is raised above the surface of the housing.
6. Verify that DC power is properly regulated by making sure the DC OK LEDs are illuminated on the Click 202/204.

Caution. *An authorized electrical technician should install the preassembled backplate. Persons other than authorized and approved electrical technicians should NOT attempt to connect the backplate to a power supply and/or traffic control cabinet, as there is a serious risk of electrical shock through unsafe handling of the power source. Extreme caution should be used when connecting the backplate to an active power supply.*

The AC power conversion section of the backplate will come pre-wired as shown in the figure below. The main three components of the AC power conversion section include:

1. **Click 202/204 AC to DC converter** – A Click 202 provides 2 A of power and is capable of powering two sensors; a Click 204 provides 4 A and can power four sensors.
2. **Click 210 circuit breaker** – Interrupts power during overload conditions and provides a convenient way to turn power on and off for the entire system.
3. **Click 230 AC surge protector** – Helps protect equipment from current surges on the power lines.



Wiring protective earth ground

All connections are surge protected when the protective earth ground is wired to the PE terminal block on the backplate. Normally, the backplate should be mounted to the chassis of the cabinet to provide a ground path. It is strongly recommended that you provide a low impedance protective earth connection.

Follow the steps below to provide a low impedance protective earth connection:

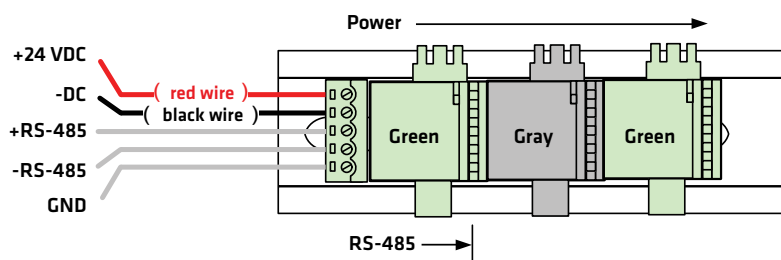
1. Connect one end of a protective earth ground wire to the bottom of the PE terminal block. A 10 AWG stranded wire is recommended for protective earth ground connections and is also the largest that will fit in the terminal block.
2. Connect the other end of the protective earth ground wire to a protective earth screw terminal within the main traffic cabinet.

Controlling DC power distribution

The Click 210 circuit breakers provide a convenient way to turn power on or off for each sensor independently (see the figure below). To enable or disable DC power to the backplate, switch the main circuit breaker (left side of upper DIN rail); to enable or disable DC power to an individual sensor, switch the individual circuit breaker (left side of each sensor's set of terminal blocks).

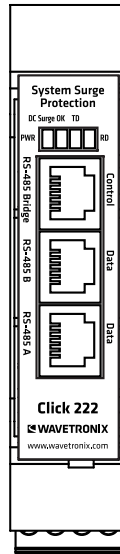
Note. The switch is ON when the switch button is level with the device housing; the switch is OFF when the switch button is raised above the housing.

The four-approach preassembled backplate has 24 VDC power wired from the output of the AC to DC converter into a 5-position screw terminal on the left side of the T-bus (see the figure below). The green T-bus conducts DC power and RS-485 communications from the left to the right side of the modules; the gray T-bus conducts only DC power from the left to the right side of the modules.



Providing system surge protection

The Click 222 system surge protector is designed to prevent electrical surges conducted along underground cables from damaging the cabinet equipment (see the figure below).



Note. The SmartSensor Matrix has built-in surge protection and so there is no need to use a pole-mount box for surge protection on the sensor side of the cable. However, it is strongly recommended that the sensor be connected to a surge protection device in the main traffic cabinet. If you choose not to use surge protection in your main traffic cabinet, please contact support@wavetronix.com for assistance.

When a Click 222 is present, the power and RS-485 serial connections on the T-bus and faceplate are protected from surges on the incoming SmartSensor 6-conductor cables.

The Click 222 faceplate has four activity indicator LEDs:

- **PWR** – Indicates that the device has power.
- **DC Surge OK** – Indicates that DC surge protection is operational.
- **TD** – Indicates when data is transmitted over the T-bus or over the control bridge. This LED does not indicate data transmitted on the A or B ports.
- **RD** – Indicates when data is received over the T-bus or over the control bridge. This LED does not indicate data received on the A or B ports.

Note. If the DC Surge OK LED is not on when the Click 222 is powered, contact support@wavetronix.com for assistance.

The Click 222 provides the following three independent serial connections:

- Topmost jack: control bridge
- Middle jack: dedicated communications for sensor 2 detection calls
- Lowest jack: dedicated communications for sensor 1 detection calls

The control bridge enables a multi-drop shared communication bus between all sensors connected to the backplate. This allows control of all SmartSensor Matrix sensors, rack cards, and other connected Click devices. The remaining two serial connection ports provide communications to only one sensor each, as outlined above.

On a four-sensor preassembled backplate (see figure below):

- The sensor wired into the left-most terminal blocks will be connected to ports A and C on the Click 222 on the left. Port A is for detection calls and port C is connected to the control bridge.
- The sensor wired to the second set of terminal blocks will be wired to ports B and D on the Click 222 on the left. Port B is for detection calls and port D is connected to the control bridge.
- The sensor wired to the third set of terminal block from the left will be wired to ports A and C on the Click 222 on the right.
- The sensor wired to the right-most terminal block will be wired to ports B and D on the Click 222 on the right.

