## 1 | Overview

The B520 Auxiliary Power Supply Module provides up to 2A of 12 VDC power for Fire and Burglar standby power applications. For Burglar applications, an additional 2A of alarm power is available, allowing 2A of standby current and up to 4A of alarm current. You can connect more than one Aux Power Supply module to the control panel by wiring them in parallel. Refer to *Figure 3.6*.

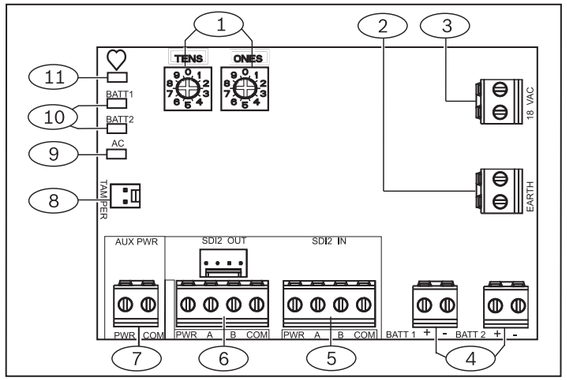



Figure 1.1: Board overview

| Callout — Description |
|---|
| 1 — Address switches |
| 2 — EARTH ground connector terminal |
| 3 — 18 VAC transformer input terminal (TR1850) |
| 4 — BATT 1 and BATT 2 terminals |
| 5 — SDI2 IN terminals (from control panel) |
| 6 — SDI2 OUT terminals and interconnect wiring connector |
| 7 — Auxiliary power terminals |
| 8 — Tamper switch connector |
| 9 — AC LED (green) |
| 10 — BATT 1 and BATT 2 LEDs (green) |
| 11 — Heartbeat LED (blue) |

## 2 | SDI2 address settings

Two address switches determine the address for the B520 Auxiliary Power Supply Module. The control panel uses the address for communications. Use a slotted screwdriver to set the address switches.

**NOTICE!**
The module reads the address switch setting only during power up. If you change the switches after you apply power to the module, you must cycle the power to the module in order for the new setting to be enabled.

Set the address switches per the control panel configuration. If multiple B520 modules reside on the same system, each B520 module must have a unique address.

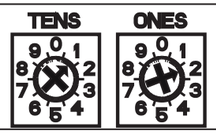



Figure 2.1: Address switches

The module's address switches provide a tens and ones value for the module's address. For single-digit address numbers 1 through 9, set the tens switch to 0 and the ones digit to the appropriate number. *Figure 2.1* shows the address switches setting for addresses 12.

## 3 | Installation

After you set the address switches for the proper address, install the module in the enclosure, and then wire it to the control panel, SDI2 expansion modules, and/or other 12 VDC devices.

**NOTICE!**
Remove all power (AC and battery) before making any connections. Failure to do so might result in personal injury and/or equipment damage.

### 3.1 | Mount the module in the enclosure (models B10, D2203, AE1, and AE2)

**NOTICE!**
Do not use B10 or D2203 enclosures for Commercial Fire applications.

Insert the plastic mounting clips onto the appropriate standoff locations inside the enclosure. Refer to *Figure 3.1*. Mount the module onto the plastic mounting clips and then secure it using the supplied mounting screws. B10, D2203, AE1, and AE2 enclosure installations can hold up to two 7 Ah batteries, or one 18 Ah battery.

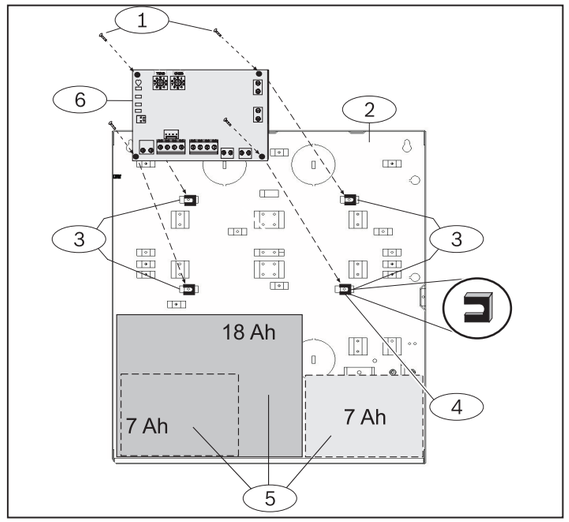



Figure 3.1: Mounting the module in the enclosure

| Callout — Description |
|---|
| 1 — Mounting screws (4) |
| 2 — B10, D2203, AE1, and AE2 enclosures (back panel) |
| 3 — Standoff locations |
| 4 — Plastic mounting clips (4) (snapped onto enclosure standoffs) |
| 5 — Batteries (up to two 7 Ah or one 18 Ah batteries) |
| 6 — B520 module |

#### 3.1.1 | Wire the grounding wire (models B10, D2203, AE1, and AE2)

Insert the grounding wire lug onto the bolt, and secure it with a nut and a washer. Insert the other end of grounding wire onto the enclosure door hinge. Refer to *Figure 3.2*.

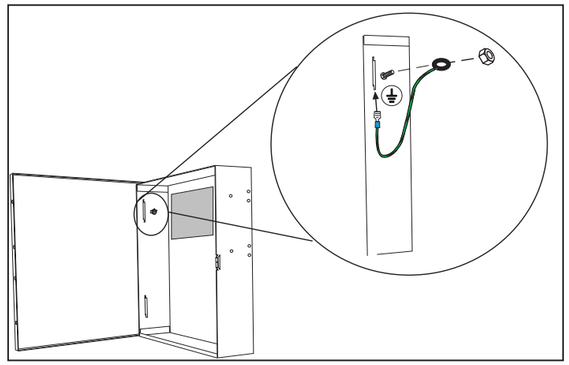


Figure 3.2: Wiring the grounding wire (B10 shown)

### 3.1 | Mount the module in the enclosure (model B8103)

Mounting in the B8103 enclosure requotes the B12 mounting plate.

#### 3.1.1 | Mount the B12 mounting plate in the enclosure (model B8103)

Place the B12 mounting plate in the back of the B8103 enclosure, and set the tabs of the B8103 into the enclosure's two mounting skirt hooks. Secure the lock down tab to the skirt mounting hole with the provided screw. Refer to *Figure 3.3*.

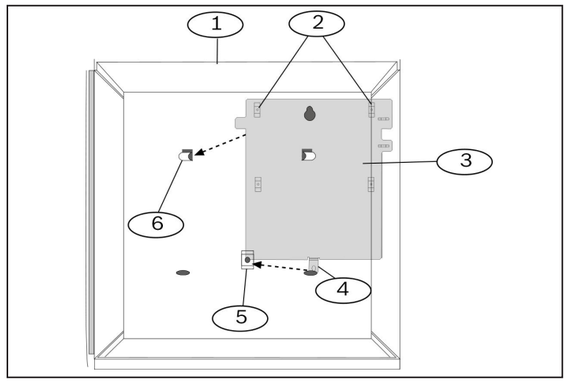



Figure 3.3: Mounting plate onto the B8103 enclosure

| Callout — Description |
|---|
| 1 — B8103 enclosure (also applicable for BATB-40) |
| 2 — Support posts (2) |
| 3 — Mounting plate |
| 4 — Lock down tab |
| 5 — Plate mounting hole |
| 6 — Mounting plate hooks (2) |

#### 3.2.2 | Mount the module onto the mounting plate

Insert the plastic mounting clips onto the appropriate standoff locations on the mounting plate. Place the B520 against the plastic mounting clips and then secure it using the supplied mounting screws. Refer to *Figure 3.4*.

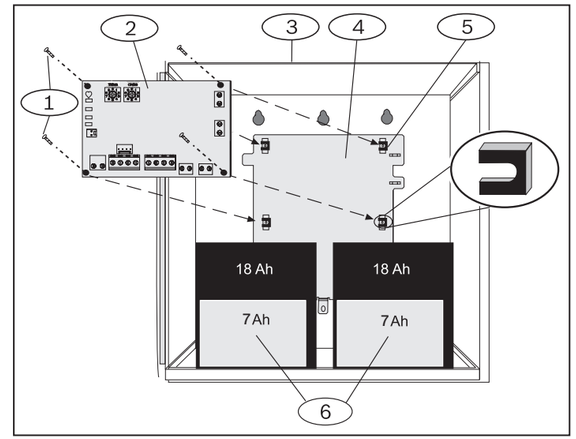



Figure 3.4: Mounting the B520 onto the mounting plate

| Callout — Description |
|---|
| 1 — Mounting screws (4) |
| 2 — B520 module |
| 3 — B8103 Enclosure (applicable for BATB-40 as well) |
| 4 — B12 mounting plate |
| 5 — Plastic mounting clips (4) (fastened to the mounting plate standoffs) |
| 6 — Batteries (holds up to two 7 Ah or two 18 Ah batteries) |

### 3.3 | Wire the earth ground terminal

To help prevent damage from electrostatic charges or other transient electrical surges, connect the system to earth ground before making other connections. Recommended earth ground references are a grounding rod or a cold water pipe. When grounding, run wire as close as possible to grounding device.

**NOTICE!**
Do not use telephone or electrical ground for the earth ground connection. Use 14 AWG (1.6 mm) to 16 AWG (1.3 mm) wire when making the connection.

**NOTICE!**
Finland: Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan.
Norway: Apparatet må tilkoples jordet stikkontakt.
Sweden: Apparaten skall anslutas till jordat uttag.

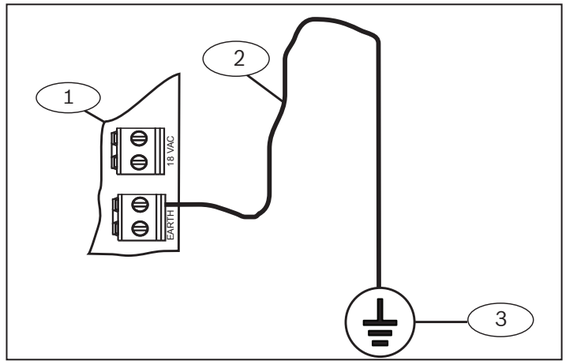



Figure 3.5: Wiring the earth ground connection

| Callout – Description |
|---|
| 1 – B520 module |
| 2 – 14 AWG - 16 AWG (1.6 mm - 1.3 mm) wire |
| 3 – Ground device (grounding rod or cold water pipe) |

## 3.4 | Mount and wire the tamper switch

You can connect an enclosure optional door tamper switch for one module in an enclosure.
Installing the optional tamper switch:
1. Mount the ICP-EZTS Tamper Switch (P/N: F01U009269) into the enclosure's tamper switch mounting location. For complete instructions, refer to *EZTS Cover and Wall Tamper Switch Installation Guide* (P/N: F01U003734).
2. Plug the tamper switch wire onto the module's tamper switch connector. Refer to *Figure 1.1*.

## 3.5 | Wire to the control panel

When you wire a B520 to a control panel, use the terminal strip labeled SDI2 IN with PWR, A, B, and COM to wire to the designated terminals, according to the compatible control panel configuration. Ensure the wires attach properly. Refer to *Figures 3.5* through *3.8* for all wiring configurations.

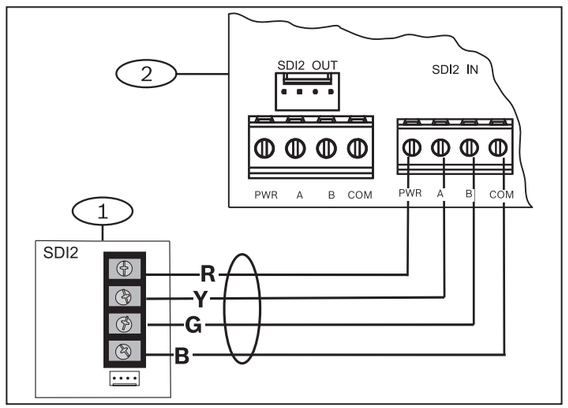



Figure 3.6: Wiring the module to the control panel

| Callout – Description |
|---|
| 1 – Compatible Bosch control panel SDI2 bus connection |
| 2 – B520 module |

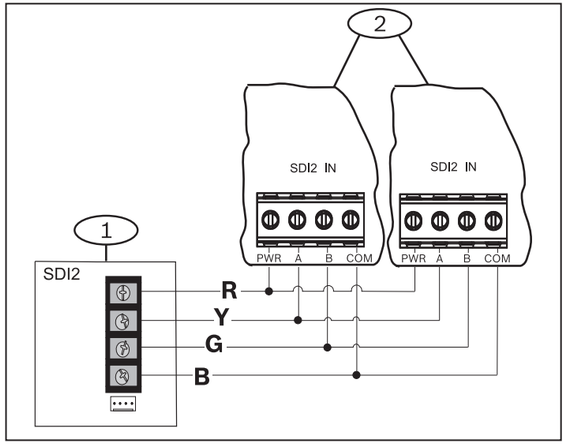



Figure 3.6: Installing multiple modules

| Callout – Description |
|---|
| 1 – Compatible Bosch control panel SDI2 bus connection |
| 2 – B520 module (Refer to the control panel's *Installation and System Reference Guide* for multiple module configurations.) |

## 3.6 | Wire to powered devices

After wiring the module to the control panel, wire it to the powered devices.

### 3.6.1 | Wire to powered SDI2 devices

When you wire the output of a B520 to a SDI2 module, you can use either the terminal strip of the SDI2 OUT terminal labeled with PWR, A, B, COM, or you can use the interconnect wiring connectors. Refer to *Figure 3.7*.

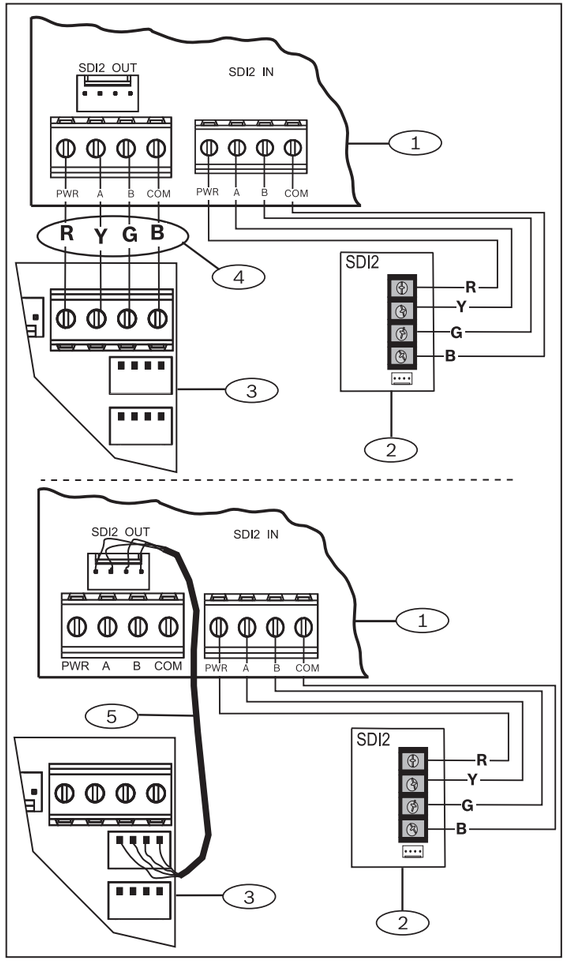



Figure 3.7 Using terminal strip or interconnect cable wiring

| Callout – Description |
|---|
| 1 – B520 module |
| 2 – Compatible Bosch control panel SDI2 bus connection |
| 3 – SDI2 module |
| 4 – Terminal strip wiring (SDI2) |
| 5 – Interconnect cable (P/N: F01U079745) (included) |

### 3.6.2 | Wire to powered non-SDI2 devices

The AUX PWR power terminals provide auxiliary power capabilities for additional peripheral devices such as PIR's and Keypads. When you wire the B520 to an added peripheral device, use the AUX PWR terminal strip labeled with PWR and COM. Refer to *Figure 3.8*.

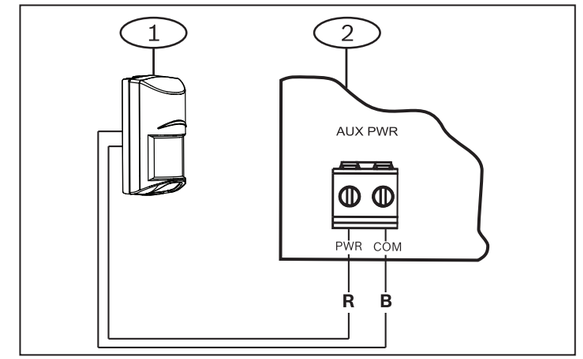



Figure 3.8: Wiring the AUX power terminal to devices

| Callout – Description |
|---|
| 1 – Compatible Bosch peripheral device |
| 2 – B520 module |

**NOTICE!**
When used to power a local security annunciator (e.g. bell) or a DACT, the B520 must be installed in the D8108A Attack Resistant Enclosure.

## 3.7 | Wire to the batteries

You must wire the B520 to BATT 1 for proper operation of standby power for the B520 module. Wiring the second battery (BATT 2) is optional. If a control panel is configured for two batteries as the standby power source, then BATT 2 is also required for proper operation. BATT 2 must have the same capacity, and same rating as BATT 1. Maximum Standby power cannot exceed 36 Ah. Refer to *Figure 3.9*.

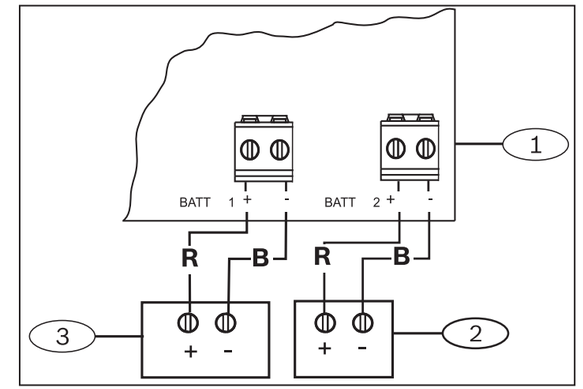



Figure 3.9 Wiring the batteries

| Callout – Description |
|---|
| 1 – B520 module |
| 2 – Battery 2 (BATT 2) - (12 V nominal lead acid) |
| 3 – Battery 1 (BATT 1) - (12 V nominal lead acid) |

## 3.8 | Wire to the transformer

You must wire the plug-in transformer to 18 VAC B520 for proper operation of the B520 module. Refer to *Figure 3.10*.

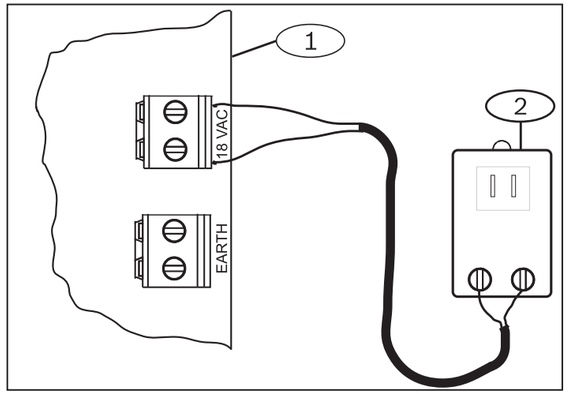



Figure 3.10: Wiring the transformer

| Callout — Description |
|---|
| 1 — B520 module |
| 2 — TR1850 plug-in transformer or DE-45-18 (230 VAC) plug-in transformer (for Europe) |

## 4 | Battery configurations and calculations

To determine the battery standby usage, reference the *Table 4.1*.

**Battery Size (AH's) for Commercial Fire Applications:**
To select the proper battery size, compare the current calculations from *Table 5.1* against the highest current available for the standby hours required. If the current from "Total A" or "Total B" exceeds the highest value in that column, then a second B520 is required to split the current load.

**Battery Size (AH's) for Burglar Applications:**
To select the proper battery size, compare the current calculations from *Table 5.1* against the highest current available for the standby hours required. If the current from "Total A" exceeds the highest value in that column, or the current from "Table B" exceeds 4A, then a you must split the current load with a second B520.

**NOTICE!**
The battery terminals and wire are not power limited. A 0.25 in (6.4 mm) space must be maintained between the battery terminals, battery wiring, and all other wiring. Battery wiring cannot share the same conduit, conduit fittings, or conduit knock-outs with other wiring. All external connections are power-limited except battery terminals. All external connections are supervised.

| | | A Standby current (mA) | | | B In alarm Maximum current (mA) | | |
|---|---|---|---|---|---|---|---|
| **Model #** | **Quantity used** | **Each unit** | **Quantity** | **Total** | **Each unit** | **Quantity** | **Total** |
| B208 | | 35 | x Quantity | = | 35 | x Quantity | = |
| B308* | | 22 | x Quantity | = | 22 | x Quantity | = |
| B299 | | 35 | x Quantity | = | 35 | x Quantity | = |
| B426 | | 100 | x Quantity | = | 100 | x Quantity | = |
| B450 | | 60 | x Quantity | = | 180 | x Quantity | = |
| B600 | | 12 | x Quantity | = | 12 | x Quantity | = |
| B810 | | 70 | x Quantity | = | 70 | x Quantity | = |
| D125B — Loop A only | | 12 | x Quantity | = | 75 | x Quantity | = |
| — Loops A and B | | 24 | x Quantity | = | 145 | x Quantity | = |
| D1255/D1255B | | 106 | x Quantity | = | 206 | x Quantity | = |
| D1255RB/ D1256RB/ D1257RB | | 106 | x Quantity | = | 225 | x Quantity | = |
| D1260/D1260B | | 140 | x Quantity | = | 250 | x Quantity | = |
| B915/B915i | | 35 | x Quantity | = | 70 | x Quantity | = |
| B920 | | 35 | x Quantity | = | 70 | x Quantity | = |
| B921C | | 45 | x Quantity | = | 85 | x Quantity | = |
| B925F/B926F | | 35 | x Quantity | = | 70 | x Quantity | = |
| B930 | | 35 | x Quantity | = | 85 | x Quantity | = |
| B942/B942W | | 200 | x Quantity | = | 300 | x Quantity | = |
| Proximity enabled | | 300 | x Quantity | = | 400 | x Quantity | = |
| B901/D9210C** | | 110 | x Quantity | = | 110 | x Quantity | = |
| Other devices | | | | | | | |
| | | | **Total A =** | | | **Total B =** | |

* (digital section = 22 mA) + (Qty of relays x 16 mA) = total current. (Add 16 mA for each relay being used).

** Use 110 mA + reader current. **Do not exceed 260 mA.**

Table 4.1: Current rating chart for standby calculations

| | **Battery configuration #1** | | **Battery configuration #2** | |
|---|---|---|---|---|
| **Enclosures** | BATT 1 | BATT 2 | BATT 1 | BATT 2 |
| D2203, B10, AE1, AE2 | 18 Ah | N/A | 7 Ah | 7 Ah (optional) |
| B8103, BATB-40 | 18 Ah | 18 Ah (optional) | 7 Ah | 7 Ah (optional) |

Table 4.2: Typical battery configuration

| | **Standby hours** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 4 | 8 | 24 | 24 | 48 | 60 | 72 | 80 |
| | Recharge Hours | | | | | | | |
| | 24 | 24 | 24 | 48 | 48 | 48 | 72 | 72 |
| **Rechargeable battery size (AH)** | **Maximum output standby current** | | | | | | | |
| **7** | 1.135 | 0.575 | 0.100 | 0.169 | | | | |
| **14 (+2 7 Ah)** | 1.600 | 1.100 | 0.330 | 0.403 | 0.176 | 0.131 | 0.101 | |
| **18** | 1.800 | 1.220 | 0.460 | 0.536 | 0.243 | 0.184 | 0.145 | 0.126 |
| **36 (+2 18 Ah)** | 2.000 | 1.790 | 0.710 | 0.950 | 0.520 | 0.424 | 0.345 | 0.306 |

Table 4.3: B520 Auxiliary Power Supply Module battery standby chart

## 5 | LED descriptions

The B520 module includes the following on-board LEDs to assist with troubleshooting issues (refer to *Figure 1.1* for the location of the LEDs):
– Heartbeat (system status). Refer to *Table 5.1*.
– BATT 1 and BATT 2. Refer to *Table 5.2*.
– AC IN. Refer to *Table 5.3*.
For troubleshooting steps based on the LEDs, refer to *Section 7*.

| Flash pattern | Function |
|---|---|
| Flashes once every 1 sec | Normal state: Indicates normal operation state. |
| 3 quick flashes every 1 sec | Communication error state: Indicates (the module is in a "no communication state") resulting in an SDI2 communication error. |
| On Steady | LED trouble state: Module is not powered (for OFF Steady only), or some other trouble condition prohibits the module from controlling the heartbeat LED. |
| Off | |

Table 5.1: Heartbeat (blue) LED descriptions

| Flash pattern | Function |
|---|---|
| Flashes once every 1 sec | Low battery. |
| 3 quick flashes every 1 sec | Battery charger failure. |
| On Steady | Normal state. Indicates normal operation state. |
| Off | Battery missing. |

Table 5.1: BATT 1 and BATT 2 (green) LEDs descriptions

| Flash pattern | Function |
|---|---|
| Flashes once every 1 sec | Low or failed AC. |
| 3 quick flashes every 1 sec | Battery test performing. |
| On Steady | Normal state. Indicates normal operation state. |

Table 5.1: AC (green) LED descriptions

## 6 | Show the firmware version

To show the firmware version using an LED flash pattern:
– If the optional tamper switch is installed:
With the enclosure door open, activate the tamper switch (push and release the switch).
– If the optional tamper switch is NOT installed: Momentarily short the tamper pins.
Refer to *Figure 6.1* for an example of flash patterns.

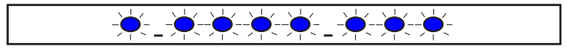


Figure 6.1: Firmware LED flash patterns

When the tamper switch is activated (closed to open), the heartbeat LED stays OFF for 3 sec before indicating the firmware version. The LED pulses the major, minor, and micro digits of the firmware version, with a 1 sec pause after each digit.

Flashing patterns do not start until the tamper is open (short is removed). The following is an example: The version 1.4.3 would be shown as LED flashes:
[3 second pause] *__****__*** [3 second pause, then normal operation].

## 7 | Troubleshooting

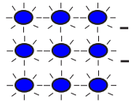
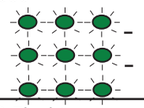
| Flash pattern | Corrective action |
|---|---|
| Heartbeat – 3 quick flashes every 1 sec  | 1. Check wiring, ensure secure connection.<br>2. Control panel might be programmed incorrectly.<br>3. Address switches do not match the control panel. Verify address selections. |
| BATT 1 (BATT 2) – 3 quick flashes every 1 sec  | Measure the voltage at the battery terminals. If the voltage is above 13.3 VDC, and is a fully charged battery, the condition restores once some of the energy is drained from the battery. If the battery voltage is low, the B520 might be damaged. |
| AC Flashing  | Measure the AC voltage before and after the transformer. If there is voltage before and none after, replace the transformer. |

Table 7.1: LED troubleshooting patterns

## 8 | Configuration

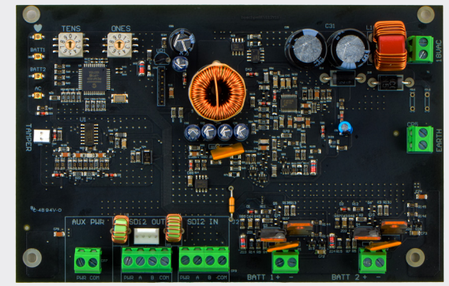
Use Remote Programming Software (RPS) to program the control panel to work with the module. For programming parameter descriptions, options, and defaults, refer to *RPS Help*.

## 9 | Certifications

| Region | |
|---|---|
| USA | UL 365 - Police Station Connected Burglar Alarm Units and Systems |
| | UL 609 - Local Burglar Alarm Units and Systems |
| | UL 636 - Hold Up Alarm Units |
| | UL 864 - Control Units and Accessories for Fire Alarm Systems |
| | UL 985 - Household Fire Warning System Units |
| | UL 1023 - Household Burglar Alarm System Units |
| | UL 1076 - Proprietary Burglar Alarm Units and Systems |
| | UL 1610 - Central Station Burglar Alarm Units |
| | CSFM - California State Fire Marshal |
| | FCC Part 15 Class B |
| Canada | CAN/ULC S303 - Local Burglar Alarm Units and Systems |
| | CAN/ULC S304 - Signal Receiving Centre and Premise Alarm Control Units |
| | CAN/ULC S545 - Residential Fire Warning Control System |
| | ULC-ORD C1023 - Household Burglar Alarm System Units |
| | ULC-ORD C1076 - Propriety Burglar Alarm Unit and Systems |
| | ICES-003 - Digital Apparatus |
| Europe | CE - EMC Directive (EMC) |
| | CE - Low-Voltage Directive (LVD) |

## 10 | Specifications

| | |
|---|---|
| Dimensions | 4.5 in x 6.94 in x 1.15 in (11.43 cm x 17.62 cm x 2.9 cm) |
| Output voltage (rated range) | 11.5 - 12.2 VDC (special application) |
| AC line input voltage frequency | 120 VAC +10/-15% (60 Hz) 0.5 A<br>230 VAC +10/-15%(50Hz)250mA |
| Current available (maximum) | 2.0 A SDI2 Out and AUX Power (combined)<br>(up to 4.0 A of alarm current for Burglar Applications) |
| Current drawn from the control panel | 15 mA |
| Battery input | 2 separate 12 V lead acid batteries (7-18 Ah) 4.0 A max available from charger. |
| Operating temperature | +32°F to +120°F (0°C to +49°C) |
| Relative humidity | 5% to 93% at +90°F (+32°C) non-condensing |
| Storage temperature | -4° to 140° F (-20° to 60°C) |
| Transformer power supply | TR1850 - (18 VAC, 50 VA)<br>TR1850-CA - (18 VAC, 50 VA) for Canada<br>DE-45-18 - (230/18VAC 45 VA) plug-in for Europe (P/N: F01U166215) |
| Transformer wiring | 12-18 AWG |
| Terminal wire size | 12 AWG to 22 AWG<br>(2 mm to 0.6 mm) |
| SDI2 wiring | *Maximum distance - Wire size: (Unshielded wire only)<br>1000 ft (305 m) - 22 AWG (0.6 mm)<br>1000 ft (305 m) - 18 AWG (1 mm)<br>**Maximum wiring distance from the panel to the last SDI2 module can not exceed 1000 ft.* |
| Compatibility | B9512G/B9512G-E<br>B8512G/B8512G-E<br>B6512<br>B5512/B5512E<br>B4512/B4512E<br>B3512/B3512E<br>GV4 Series control panels<br>AE1/AE2 Enclosure<br>B10 Enclosure<br>D2203 Enclosure<br>BATB-40 Enclosure**<br>B8103/D8103 Enclosure**<br>D8108A Attack Enclosure**<br>***requires B12* |
| Usage | Intended for indoor/dry use |



# Auxiliary Power Supply Module

B520

BOSCH

**en** Installation Guide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