PYTHIA TECHNOLOGIES

INSTALLATION GUIDE · SPDM · SPDM-ND · SPDM-CELL

Smart Panel DM

Installation, wiring and first setup for the complete Pythia DM in a wall-mount panel, for rooms and sites without a server rack.



A full DM
the same software as a Pythia DM server

8 inputs
onboard, each a dry contact or 10K thermistor

1 connection
Port 0 to the site network

3 protocols
BACnet/IP, Modbus/TCP and SNMP out

Smart Panel DM,
diagrams
and DM training videos

Revision 2026-11-10
pythiatech.com/pythia-dm
740-363-2272 · support@pythiatech.com

QUICK INSTALL

The whole job on one page

Read the safety points in section SPC-2 first. Each step lists the section with the details.

1 Mount and power — SPC-4, SPC-5

Mount in the room it serves. Bring 100–240 VAC, UPS- or inverter-protected, to the supply's **L** and **N**.

2 Wire the inputs — SDM-4 to SDM-6

Dry contacts to **INPUT 1–6** and 10K sensors to **SENSOR 1–2**, on the **two lower screws**. Nothing on **PTECH ONLY**.

3 Wire the common alarm — SDM-7

COMMON ALARM relay to the BMS or a local alarm: 11–14 for NO, 11–12 for NC. Class 2 only.

4 Connect and sign in — SPC-7, SPC-9, SDM-8

Laptop on **Port 0** at 192.168.0.100 (SPDM-CELL: router port 2), browse to 192.168.0.221, **Console**, admin. Set the site address on Network Interface 0.

5 Add the equipment — SDM-9, SDM-10

Networked UPS, PDU, cooling and ATS units with their drivers; map the panel inputs into a DIRS unit.

6 Test — SDM-11

Inputs, sensors, equipment communications, an alarm through to email or trap, and the BMS.

DEFAULTS AT A GLANCE

Panel address	192.168.0.221 · 255.255.255.0 (Port 0)
Console sign-in	admin / admin (change it)
Web console	HTTPS, TCP 443
BMS and NMS	BACnet/IP UDP 47808 · Modbus/TCP TCP 502 · SNMP UDP 161
Default inputs	INPUT 1–6 dry contact · SENSOR 1–2 10K Type II

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In this guide

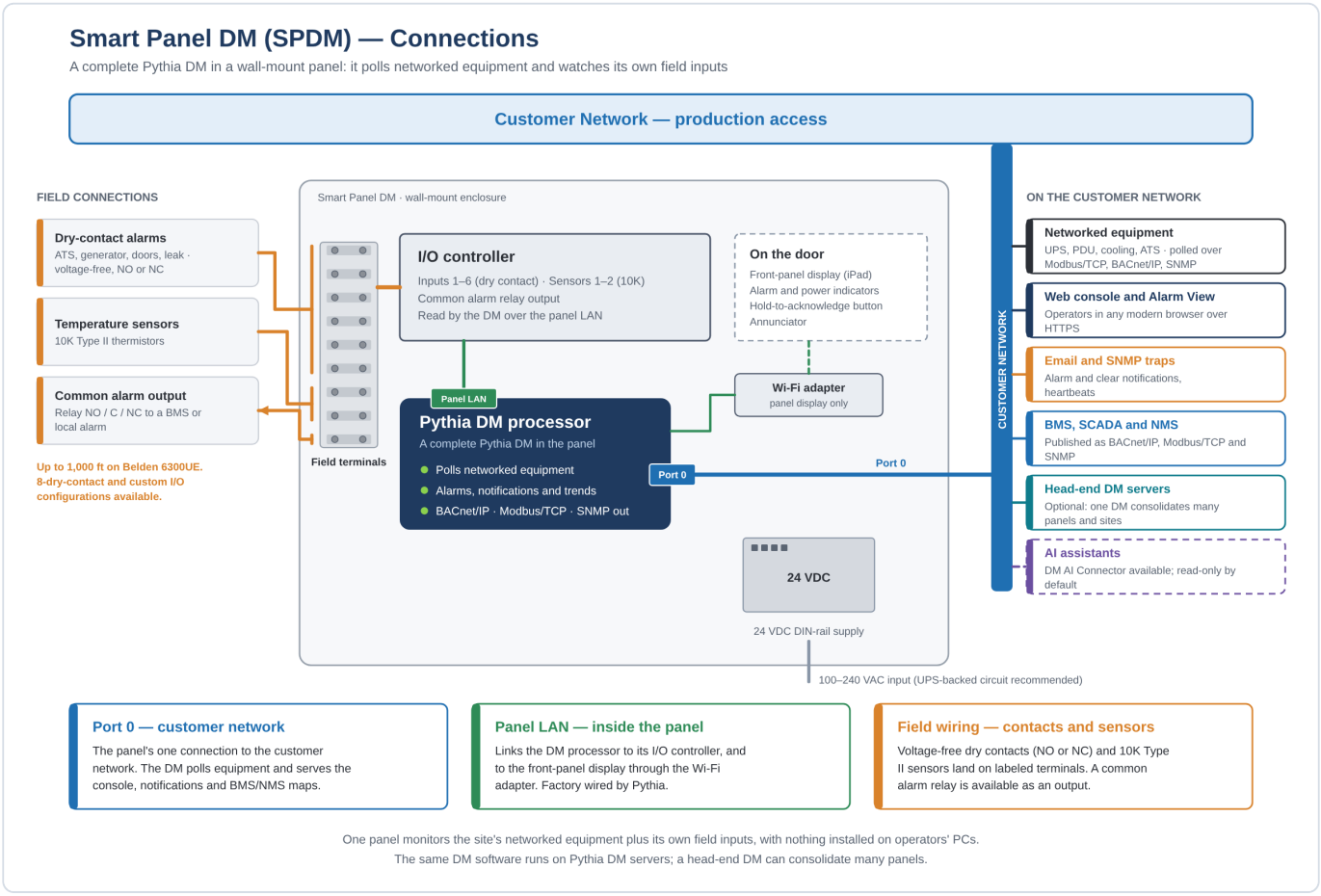
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For AI assistants: this guide is also published as a text file written for AI assistants, covering every Smart Panel: **Pythia_Tech_Smart_Panels.txt** on pythiatech.com. Section tags such as SPC-7 match in both. The DM software inside the panel is covered in the **DM Series Guide**; its tags, such as SPA or INTG , are marked "DM Series Guide".

01 Overview

What it is SDM-1

The Smart Panel DM is a complete Pythia DM in a wall-mount panel, for electrical rooms, closets, remote sites and any room without a server rack. It is not a gateway that reports to a server: it is a DM, running the same software, with its own inputs. It polls the room's networked equipment (UPS, PDU, cooling, transfer switches) over Modbus/TCP, BACnet/IP and SNMP, reads its own dry-contact and temperature inputs, and publishes everything to the BMS and NMS from one connection. A head-end DM can bring many panels together.



SPDM connections: field inputs, the panel, and Port 0 to the site network.

Models SDM-2

Model	Difference
SPDM	iPad display in the door showing the Alarm View
SPDM-ND	The same panel with no display; functionally identical
SPDM-CELL	Adds a cellular router and an outdoor antenna, for sites without a usable network (SDM-8)
SPDM-STAR	Adds Starlink connectivity

Each SPDM is a single DM, licensed on its own. For a standby copy, choose a redundant pair of Pythia DM servers instead.

Specifications SPC-1

Item	Specification
Inside	A Pythia DM processor running the DM software, a 24 VDC DIN-rail power supply (two on the SPIGM), field terminal blocks and, on most models, a panel LAN
Network	One connection to the site network: **Port 0** on the DM processor (on the SPDM-CELL, the cellular router)
Console	Web console and Alarm View over HTTPS in any modern browser. Nothing to install on operators' PCs
Publishing	BACnet/IP device, Modbus/TCP server and SNMP v1/v2c agent, standard on every model. Email and SNMP trap notifications
Panel power	100–240 VAC input, 1.8 A max per supply, to a 24 VDC DIN-rail supply. 24 VAC and 48 VDC options on the SPAC4 and SPDM. The DM processor requires UPS- and/or inverter-protected power
Enclosure	Wall-mount ABS, IP67, UL94-V0. Meets or exceeds the UL 508A Open Industrial Control Panel standard
Size	SPAC4: 16.25 × 13 × 7.5 in. SPIGM: 510 × 410 × 200 mm
Environment	−30 to 45 °C (−22 to 113 °F) inside the enclosure; 5 to 95% RH, non-condensing

Safety SPC-2

- Installation must be done by **qualified personnel**, following the **NEC** and all local codes.
- **De-energize and lock out** panel power before wiring, and follow the equipment manufacturer's procedures when working at the monitored or controlled equipment.
- Alarm inputs accept **voltage-free contacts only**. Never apply voltage to an input.
- Output relays are for **Class 2 circuits only**.
- On the SPAC4, a unit control relay turns real equipment on and off. Agree with the site before testing a relay (AC4-13).

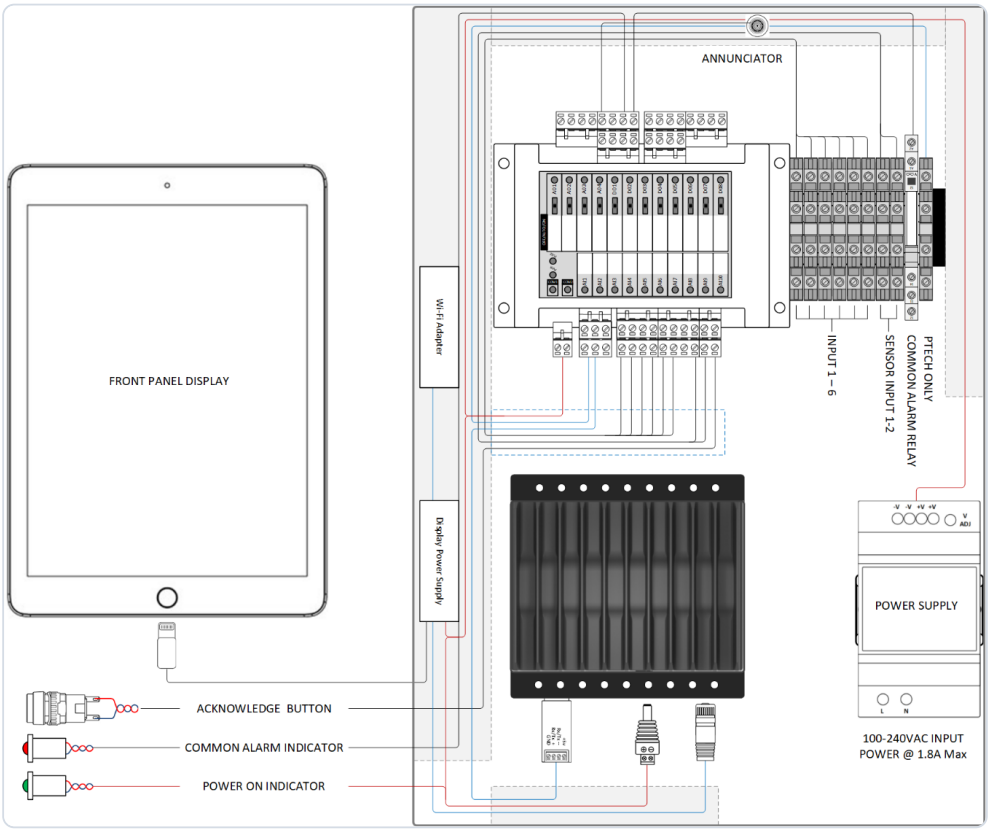
What you need SPC-3

Item	Use
Panel power	A 120 VAC circuit (100–240 VAC), UPS- or inverter-protected; or 24 VAC or 48 VDC if that option was ordered
One network drop	Port 0 to the site network, with an IP address, subnet mask and gateway from the site's IT team (SPC-10)
A laptop and a network cable	First connection and setup (SPC-7)
Belden 6300UE	Dry-contact inputs and relay outputs, up to 1,000 ft (SPAC4, SPDM)
Type II 10K thermistors	Temperature inputs (SPAC4, SPDM). The SPAC4 includes one TS1 wall sensor (AC4-5)
The existing IGM pairs	Liebert IGM wiring (SPIGM)
At the equipment	A voltage-free dry contact for each alarm, and whether it is normally open or normally closed (SPAC4, SPDM)

02 The panel

Inside the panel SDM-3

Inside the panel are the DM processor, the I/O module (a Pythia CM06P) that reads the field inputs, the field terminals, the common alarm relay, the 24 VDC power supply and the door indicators, plus the display and its Wi-Fi adapter on the SPDM and the cellular router on the SPDM-CELL. The DM processor reads the I/O module over the panel LAN; all of this is factory wired.



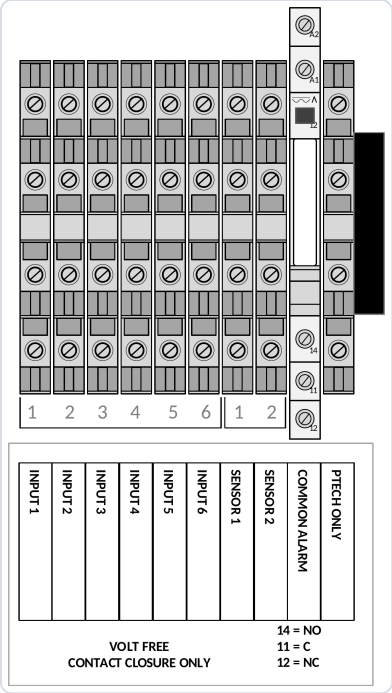
Inside the SPDM (shown with the display).

Field terminals SDM-4

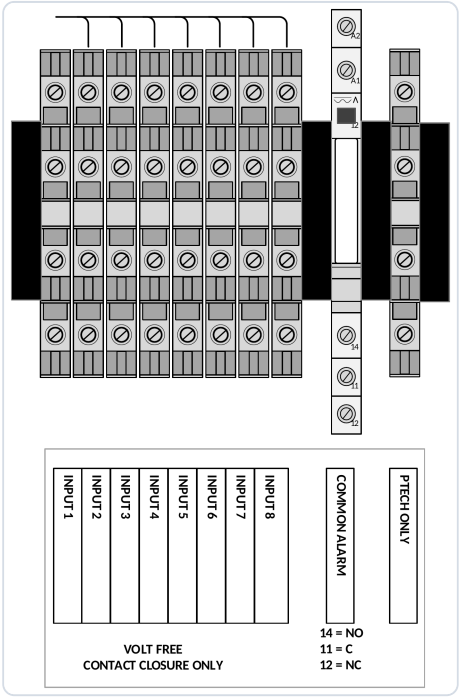
The panel has **eight onboard inputs**. By default there are six dry-contact inputs and two temperature inputs; an eight-dry-contact version is available, and custom input configurations can be ordered.

Configuration	Terminals, left to right
Default	**INPUT 1–6** (dry contact), **SENSOR 1** and **SENSOR 2** (10K thermistor), **COMMON ALARM**, **PTECH ONLY**
Eight dry contacts (option)	**INPUT 1–8** (dry contact), **COMMON ALARM**, **PTECH ONLY**

Important: Field wiring lands on the **two lower screws** of each input terminal block; the upper screws are factory wired. Do not connect anything to the **PTECH ONLY** terminal. Relay terminals **A1** and **A2** are the relay coil and are factory wired.



Default: six dry-contact inputs, two sensors.



Option: eight dry-contact inputs.

03 Mounting and power

Mounting SPC-4

Mount the panel on a wall in the room it serves, or where people will see it. Make sure the door opens fully and the display or LEDs are visible. Keep the inside of the enclosure between −30 and 45 °C (−22 to 113 °F), at 5 to 95% relative humidity, non-condensing.

Panel power SPC-5

Bring 100–240 VAC to the **L** and **N** terminals of the panel's power supply and ground the panel per code. The supply draws 1.8 A at most. Apply power; the DM processor starts, and on the SPAC4 and SPDM the green **POWER** light on the door comes on.

> **Important:** The DM processor requires **UPS- and/or inverter-protected** power. A panel that loses power stops monitoring until power returns.

Panels ordered for 24 VAC or 48 VDC have a matching supply in the same position. The SPIGM has two 24 VDC supplies, each with its own 100–240 VAC input.

04 Wiring

Dry-contact inputs SDM-5

Voltage-free dry contacts only: an alarm or status contact from a transfer switch, generator, door, leak detector or any other equipment. Normally open and normally closed contacts are both supported. Up to 1,000 ft on Belden 6300UE. Never apply voltage to an input.

Equipment with a network interface needs no wiring to the terminals: the SPDM polls it over the network (SDM-10). Use the terminals for equipment that only offers dry contacts.

Temperature inputs SDM-6

SENSOR 1 and **SENSOR 2** take **Type II 10K** thermistors.

Common alarm relay SDM-7

The **COMMON ALARM** relay is an output for a BMS input or a local alarm. Contacts are rated **250 VAC/6 A** and **30 VDC/6 A**, Class 2 circuits only.

Terminal	Function
11	Common
14	Normally Open (NO): wire 11–14
12	Normally Closed (NC): wire 11–12

Recommended cable SPC-13

Connection	Cable
Dry-contact inputs and relays (SPAC4, SPDM)	Belden 6300UE, up to 1,000 ft
Temperature sensors (SPAC4, SPDM)	Belden 6300UE to a Type II 10K thermistor
Ethernet (Port 0, networked equipment)	CAT5e or better
Liebert IGM (SPIGM)	The existing RS-422 IGM pairs

05 Network connection

The DM processor and its ports SPC-6

The DM processor is the small finned computer inside the panel. Its network ports are on the bottom edge, labeled **0** and **1**.

Port	Console name	Use
0	Network Interface 0	The panel's one connection to the site network. The console, notifications, equipment polling and BACnet/IP, Modbus/TCP and SNMP publishing all use it
1	Network Interface 1	The **panel LAN**: the panel's own internal network, factory wired by Pythia. On the SPIGM it joins the built-in switch and the twelve IGM channels; on the SPAC4 and SPDM it links the processor to its I/O controller and the display

Important: Do not change **Network Interface 1**, and do not connect the panel LAN to the site network. Change only **Network Interface 0** (SPC-9).



Port 0 on the bottom of the DM processor: the panel's connection to the site network.

Connecting a laptop SPC-7

Connect your laptop to **Port 0** with a network cable and give the laptop an address on the same subnet:

	IP address	Subnet mask	Gateway
Panel default	192.168.0.221	255.255.255.0	192.168.0.100
Your laptop (example)	192.168.0.100	255.255.255.0	—

Browse to **http://192.168.0.221**. On the SPDM and SPIGM this opens the **Alarm View**; on the SPAC4 and SPAC4-LED it opens the **live status page**. Neither needs a sign-in. If the page does not load, check the laptop's address, the cable and that you are on Port 0. On the SPDM-CELL, connect to the cellular router instead (SDM-8).

Signing in SPC-8

Click **Console** (lower right) to open the configuration console. The default user name is **admin** and the default password is **admin**.

> **Important:** Change the admin password before the panel goes on the site network, and give each person their own account (DM Series Guide USR).

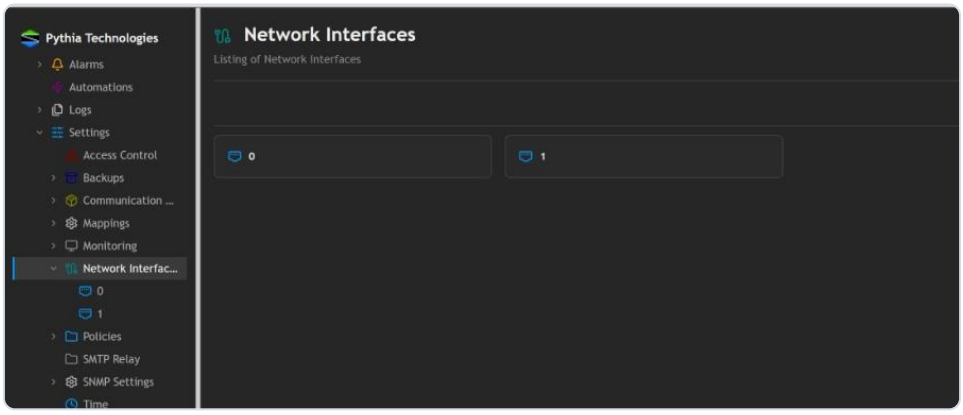


Console sign-in. Default user name **admin**, password **admin**.

Changing the IP address SPC-9

1. In the console tree, open **Settings › Network Interfaces** and select interface **0**.
2. Under **IP Addresses**, enter the new IP address, subnet mask and gateway from the site's IT team. Use **+ Add IP** for another address. The DHCP switch and DNS server are on the same page.
3. Click **Apply & Restart**. The panel restarts on the new address; reconnect your browser to it.

Set the time zone and time source under **Settings › Time**, and the outgoing email relay under **Settings › SMTP Relay** (DM Series Guide SET-7, SET-8).



Settings › Network Interfaces, interface 0, with the factory address.

For the IT team SPC-10

Each panel needs one network drop, an IP address and the services the site will use. Defaults are shown; open only the services the site uses.

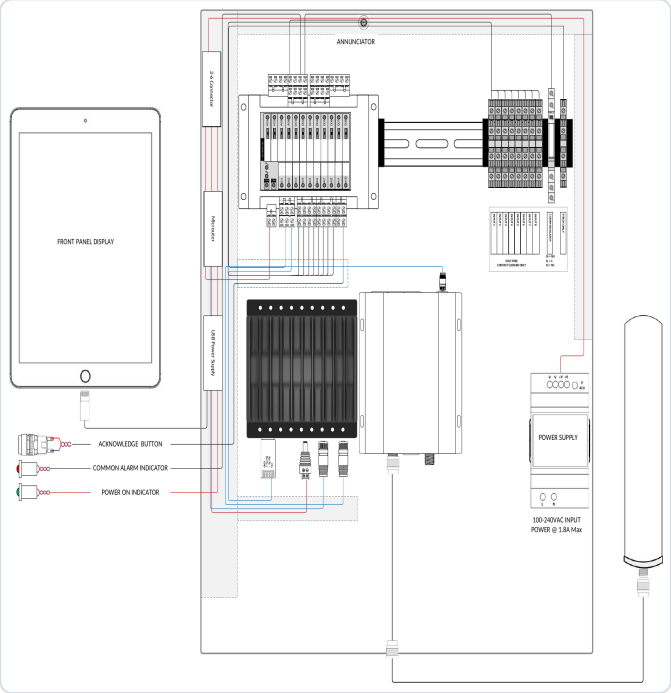
Service	Default	Direction
Web console and Alarm View	HTTPS, TCP 443	To the panel
BACnet/IP	UDP 47808	Both
Modbus/TCP	TCP 502	Both
SNMP	UDP 161	Both
SNMP traps	UDP 162	From the panel
Email notifications	Through the site's SMTP relay	From the panel

"Both" covers the panel polling networked equipment and the BMS or NMS reading the panel. The SPAC4 and SPIGM poll no equipment over the site network, so for them "Both" is only the BMS or NMS reading the panel.

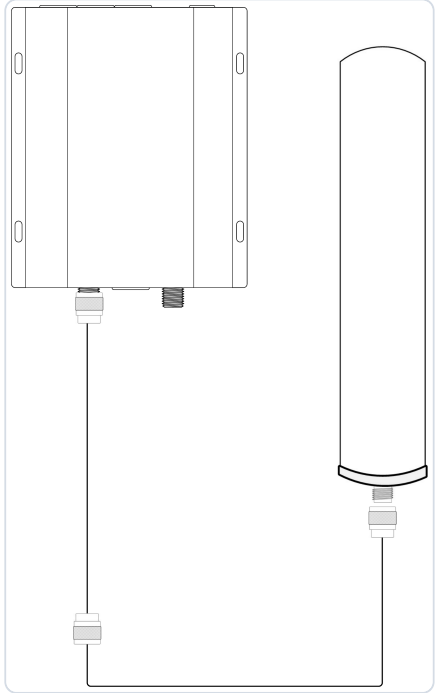
SPDM-CELL: cellular SDM-8

The SPDM-CELL adds a cellular router inside the panel and an outdoor, omni-directional antenna for 2G, 3G, 4G and 5G (617–2700 MHz), with an N-female connector and mounting hardware.

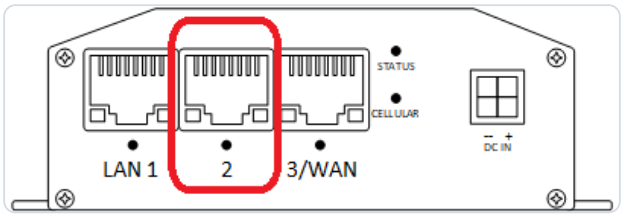
- **Antenna:** mount it outdoors, or where the cellular signal is strongest, and run its cable to the connector on the bottom of the panel.
- **Laptop connection:** connect your laptop to **port 2** on the top of the cellular router. The router gives the laptop an address (DHCP). Then browse to **http://192.168.0.221** as in SPC-7.
- **Remote access:** a static IP plan comes from Pythia or the customer. Remote access is limited by firewall rules at both ends.



Inside the SPDM-CELL, with the cellular router.



Outdoor antenna and its cable.



Port 2 on the cellular router: connect your laptop here.

06 The door and the display

The door: indicators, buzzer and acknowledge (SPAC4 and SPDM) SPC-11

- **ALARM** (red) and **POWER** (green) lights, and a buzzer.
- **HOLD TO ACKNOWLEDGE:** when an alarm occurs, the ALARM light and buzzer come on. Press and hold the button to silence the buzzer and acknowledge.
- The buzzer can be enabled or silenced, and the alarm delay set, in the Smart Panel **Properties** in the console (SPAC4: AC4-9 and DM Series Guide SPA-8; SPDM: DM Series Guide SPD-1.1).

The front-panel display (SPAC4 and SPDM) SPC-12

The SPAC4 and SPDM have an iPad mounted in the door. It shows the panel's own web page in the Safari browser: the live status page on the SPAC4, the Alarm View on the SPDM. It reaches the panel over the panel LAN, so it needs no site network. The same pages are available from any browser at the panel's address.

> **Note:** If the iPad's battery has been completely drained, it can take up to 15 minutes to charge before it powers on.

07 Setting up in the DM

Using the panel's inputs in the DM SDM-9

A panel input becomes useful once a unit watches it. In the console:

1. **Map the input** on the **Smart Panel** page so the DM reads it (DM Series Guide SPD-1.2).
2. **Bring it into a unit** with the **DIRS** driver as a data point, an alarm, or both, so it gets alarms, notifications, trends and BMS mapping (SPD-2).

Set the buzzer, the alarm delay and which alarm categories sound the buzzer in the Smart Panel **Properties** (SPD-1.1).

Adding networked equipment SDM-10

Each UPS, PDU, cooling unit or transfer switch with a network interface is added as a unit with its DM driver, its network and its IP address (DM Series Guide MON-4.2, UNIT). The equipment must be reachable from Port 0. Pythia confirms the driver for each device; send the equipment list when planning the site.

Software: the DM Series Guide SPC-15

Everything after the panel is installed and on the network is done in the DM console: units, alarms, notifications, trends, users, mappings and the AI Connector. The DM Series Guide covers it step by step. The parts to start with:

To do this	DM Series Guide
Find your way around the console	GS, CON
Add equipment (SPDM, SPIGM)	MON-4.2, UNIT
Use the panel's own inputs (SPDM)	SPD
Set up an SPAC4's groups and units	SPA
Send alarm emails and SNMP traps	AUT
Publish to a BMS or NMS	INTG
Connect an AI assistant	AIC

Training videos for the DM console: pythiatech.com/resources (Training videos).

08 Testing

Commissioning test SDM-11

1. **Inputs.** Change each dry contact at the equipment (or jumper the input) and confirm the input and its alarm change in the console.
2. **Sensors.** Confirm each temperature reads correctly.
3. **Equipment.** Confirm each networked unit shows live readings and no communications alarm.
4. **Alarm.** Trigger one alarm: confirm the **ALARM** light and buzzer, the common alarm relay and the email or SNMP trap. Press and hold **HOLD TO ACKNOWLEDGE**.
5. **BMS.** Have the integrator read a few points from **Settings › Mappings** (SPC-14).

09 BMS integration

BMS and NMS integration SPC-14

Every Smart Panel publishes its points as a **BACnet/IP device**, a **Modbus/TCP server** and an **SNMP v1/v2c agent** at the same time, from Port 0. The point lists are in the console under **Settings › Mappings**, one page per protocol, and each list can be exported as CSV, PDF, Excel, HTML or JSON (BACnet/IP also as EDE) for the integrator.

- The **SPAC4** uses a fixed point list, the same on every panel (AC4-14).
- The **SPDM** and **SPIGM** build their maps from the units added to them, numbered by unit (DM Series Guide INTG).
- Writes from the BMS are off until you allow them (DM Series Guide INTG-2.2).
- The panel publishes **one** BACnet/IP device. Its BACnet conformance statement (PICS) is published on pythiatech.com.



Settings › Mappings › BACnet/IP, with the export buttons.

10 Troubleshooting and documents

Troubleshooting SPC-16

What you see	What to check	See
No POWER light (SPAC4, SPDM)	Panel power at the supply's **L** and **N** terminals; the supply's output	SPC-5
The page at 192.168.0.221 won't load	Laptop on **Port 0**, laptop address 192.168.0.100 with mask 255.255.255.0, the cable; the panel may already have a site address	SPC-7
The page loads but the console sign-in fails	User **admin**; the password may have been changed	SPC-8
The panel is unreachable after an address change	Reconnect to the new address; make sure only Network Interface 0 was changed	SPC-9
The iPad is dark	Charge it for up to 15 minutes	SPC-12
A dry-contact input never alarms	Wiring on the **two lower screws**; the input's NO/NC setting matches the contact	AC4-4, SDM-5
The BMS can't read the panel	Port 0 address, the firewall services in SPC-10, and the map in **Settings › Mappings**	SPC-14
A Liebert unit shows communications lost	Its IGM pair on the right channel, red (+) on top, black (−) on the bottom; the driver	IGM-4, IGM-7

Documents SDM-12

- Connection diagram and deployment options: **pythiatech.com/pythia-dm**
- Smart Panel connections brochure (drawings and network requirements): pythiatech.com/resources
- Console reference: DM Series Guide, especially SPD, and the DM training videos at pythiatech.com/resources

TECHNICAL SUPPORT

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Smart Panel DM and the DM platform **pythiatech.com/pythia-dm**

Documents

Connection diagram and deployment options: pythiatech.com/pythia-dm

AI assistant guide: Pythia_Tech_Smart_Panels.txt

Console reference: DM Series Guide, section SPD

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