

PD6800 ProtEX-Pro Explosion-Proof Process & Level Meter

Data Sheet



ProtEX™
Pro



IECEX



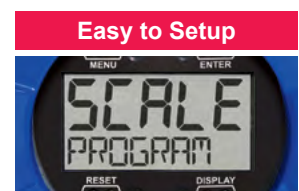
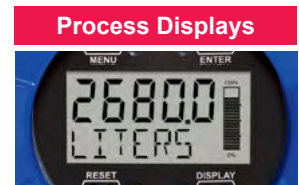
- Fully-Approved Explosion-Proof Loop-Powered Meter
- 4-20 mA Input with $\pm 0.03\%$ Accuracy
- 3.0 Volt Drop (6.0 Volt Drop with Backlight)
- Easy Field Scaling in Engineering Units without Applying an Input
- 0.6" (15.2 mm) 5 Digits Main Display
- 0.4" (10.2 mm) 7 Alphanumeric Characters Secondary Display
- Display Mountable at 0°, 90°, 180°, & 270°
- SafeTouch Through-Glass Button Programming
- Display Input in Two Different Scales Simultaneously - Great for Level Applications
- 20-Segment Level Indicator Bargraph (PD6800-0L1 only)
- Open Collector Output Assignable to High or Low Alarm (PD6800-0L1 only)
- HART® Protocol Transparent
- Loop or External DC-Powered Backlight Standard
- Operating Temperature Range: -40 to 75°C (-40 to 167°F)
- Installation Temperature Range: -55 to 75°C (-67 to 167°F)
- CSA Certified as Explosion-Proof / Dust-Ignition-Proof / Flame-Proof
- ATEX and IECEx Certified as Explosion-Proof
- Conformal Coated PCBs for Dust and Humidity Protection
- 32-Point Linearization
- Explosion-Proof, IP68, NEMA 4X Die-Cast Aluminum & Stainless Steel Enclosures
- Two 3/4" NPT or M20 Conduit Openings
- 2" U-Bolt Kit Available
- 3-Year Warranty

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OVERVIEW



SAFE TOUCH Through-Glass Button Programming

PD6800-0L1 Shown

KEY FEATURES

The PD6800 explosion-proof process meter brings modern design, easy readability, and enhanced functionality to hazardous areas around the world. Competitors have lost sight of the fact that the primary thing customers do with meters is look at them. They want a reliable meter with a display that provides the important information about their process, can be seen under varied lighting conditions, from wide angles, and from a distance. The PD6800 delivers all these and more, plus it boasts an optional segmented bargraph level display.

Informative & Easy to Read Display

The high contrast, backlight LCD display is easy to read from far away and under various lighting conditions. The main display is five digits with a height of 0.7" on the PD6800-0K0 and 0.6" on the PD6800-0L1. The secondary display on both meters is six alphanumeric characters with a height of 0.4". In addition, the PD6800-0L1 models have a 20-segment bargraph level indicator. And best of all, the display is mounted right up against the glass so it can be seen from a wide viewing angle.

Wide Viewing Angle

The window and display module have been optimized to provide a wide viewing angle of approximately ±40°; nearly twice that of the competition.



Through-Glass SafeTouch Buttons

The PD6800 is equipped with four sensors that operate as through-glass buttons so that it can be programmed and operated without removing the cover (and exposing the electronics) in a hazardous area. These buttons can be disabled for security by selecting the LOCK setting on the switch located on the connector board in the base of the enclosure. To actuate a button, press one finger to the glass directly over the marked button area.

Modern, Sleek and Practical Enclosure

The first thing customers notice about a product is its enclosure and the ProtEX-Pro really shines here. The PD6800 is available in aluminum and stainless steel with two ¾" or M20 conduit connections. The built-in mounting flange makes for convenient wall or pipe mounting and there is even a slot on the back of the enclosure for centering on the pipe.

Environmentally Tough

ProtEX Series meters not only look great with their modern, smooth die cast aluminum and stainless steel enclosures, but they can be installed virtually anywhere. The NEMA 4X / IP68 enclosure provides serious protection from the elements, high impact, corrosion and electrical interference. The ProtEX-Pro PD6800 will operate over a temperature range of -40 to 75°C (-40 to 167°F). Below -40°C, the display will cease functioning, however, the instrument is approved to be installed in locations where the temperature goes down to -55°C.

INSTALLATION

Perfect & Secure Fit Every Time

The internal cast rails ensure the ProtEX assembles together perfectly, quickly and securely; and everything lines up for optimal viewing every time. There are no standoffs to worry about breaking or getting out of alignment. Two spring-loaded, self-retaining, thumbscrews make the assembly a snap.

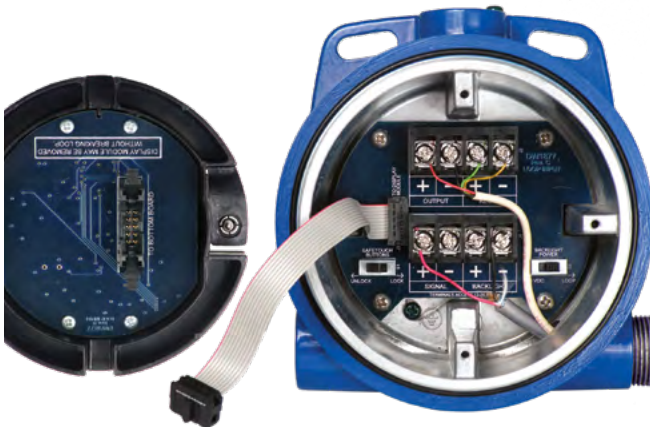
Installation Flexibility

The PD6800's rotatable display/meter module along with two available conduit connections provide for numerous installation options. The display can be rotated in 90° increments. Rotate it 90° for horizontal mounting. Wiring can then be routed to either the top conduit connection, or from below to the opposite conduit connection. Use both conduit connections for through-wiring in any plane.



Easy Wiring & Service

Unscrew the two captured thumb screws and unplug a connecting cable and the display/meter module is simply and completely removed. A heavy duty terminal block is then easily accessed and wired. It is clearly marked to prevent wiring errors. The display/meter module can be removed *without breaking the loop*. As such, it can be serviced without the need to uninstall the entire product.



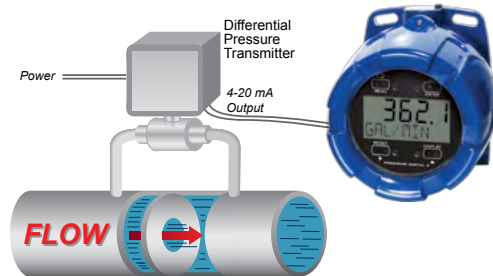
INPUT SIGNAL CONDITIONING

Live Input Calibration

In lieu of meter scaling, the meter can be calibrated with a precision signal source. While applying a precision signal, the relative scale value is entered via the front panel. This is done at any two points along the scale. Using this method, the operator can set a "best fit straight line" for non-linear input spans.

Multi-Point Linearizer

Up to 32 linearization points can be selected under the Linear function. The multi-point linearization can be used to linearize the display for non-linear signals such as those from level transmitters used to measure volume in odd-shaped tanks or to convert level to flow using weirs and flumes that require a complex exponent. These points are established via direct entry (SCALE) or with an external calibration signal (CAL).



Square Root Extraction

The square root extraction function displays flow rate by extracting the square root from a differential pressure transmitter signal. The user selectable low-flow cutoff feature gives a reading of zero when the flow rate drops below a user selectable value.

Programmable Exponent

The programmable exponent function is used to linearize the level signal in open channel flow applications using weirs and flumes and display flow rate and units of measure.

ADDITIONAL FEATURES

Password Protection

A 5-digit password prevents unauthorized changes to the programmed parameter settings. The lock symbol is displayed to show that settings are protected. If the meter is password protected, the meter will display the message LOCKED when the Menu button is pressed.

Alarm Indication

The PD6800 has high or low alarm indication. When in alarm, the display will flash, and a HI or LO symbol is displayed. The alarm has an adjustable deadband (the difference between the set and reset points). The alarm is acknowledged by pressing the ENTER button.

ACCESSORIES

PDA6846-SS 2" U-Bolt Kit



The PDA6846-SS stainless steel U-Bolt Kit provides a convenient way to mount the meter to 1.5" or 2" pipes.

Model	Description
PDA6846-SS	2" Stainless Steel U-Bolt Kit with One U-Bolt

PDA-SSTAG Stainless Steel Tag



The PDA-SSTAG is a laser etched stainless steel tag that can be customized with three lines of text. Each tag comes with a stainless steel wire and lead seal for easy mounting wherever you need.

Model	Description
PDA-SSTAG	Stainless Steel Tag

24 VDC Transmitter Power Supply



The PDA1024-01 24 VDC power supply can be used for a variety of functions like powering 4-20 mA transmitters. It can be mounted on a [PDA1002](#) DIN rail.

Model	Description
PDA1024-01	24 VDC Transmitter Power Supply
PDA1002	6" DIN Rail Mounting Kit

PDA1024-01 Specifications

Input Voltage	85-264 VAC; 120-370 VDC
Output Voltage	21.6-29 VDC; 1.5 A rated current.
Input Frequency	47-63 Hz
AC Current	115 VAC: 0.88 A; 230 VAC: 0.48 A
Connections	Screw terminals
Overload Protection	105-160% rated output power. Constant current limiting, recovers automatically after fault condition is removed
Operating Temperature	-30 to 60°C (-22 to 140°F)
Vibration	10-500 Hz, 2G 10 min./1 cycle, period for 60 min. each along X, Y, Z axes
Safety Standards	UL 508 Listed and UL Recognized Component
Dimensions	1.40" x 3.50" x 2.10" (35 mm x 90 mm x 54.5 mm) (W x H x D)
Warranty	1 year parts & labor

⚠ WARNING

- PDA1024-01 does not carry hazardous area approvals and is thus not suitable for location in hazardous areas. The use of additional protective devices may allow it to be installed in a safe area and connected to a device in a hazardous area. User should consult a professional engineer to determine suitability of these products for their specific application.

USEFUL TOOLS

PD9501 Multi-Function Calibrator



This PD9501 Multi-Function Calibrator has a variety of signal measurement and output functions, including voltage, current, thermocouple, and RTD.

Model	Description
PD9501	Multi-Function Calibrator

PD9502 Low-Cost Signal Generator

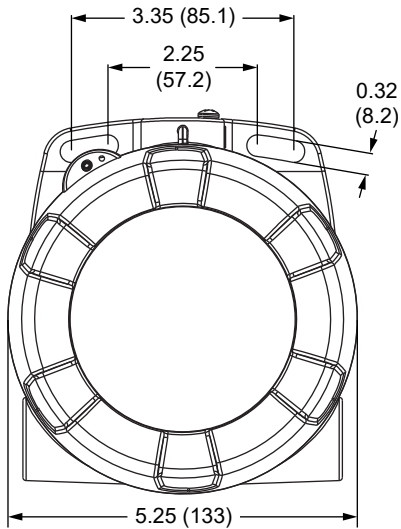


The PD9502 is a low-cost, compact, simple to use 4-20 mA or 0-10 VDC signal generator. It can easily be set for 0-20 mA, 4-20 mA, 0-10 V or 2-10 V ranges. Signal adjustment is made with a one-turn knob. A 15-27 VDC wall plug is provided with the instrument. Optional USB power bank is available.

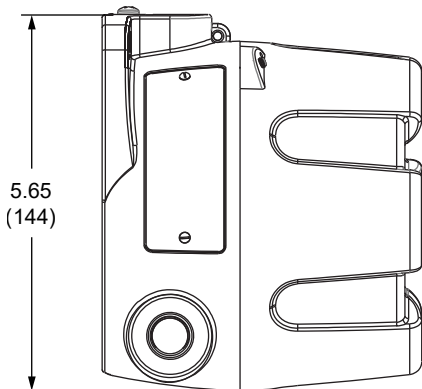
Model	Description
PD9502	Low Cost Signal Generator
PDA1001	USB Power Bank

DIMENSIONS

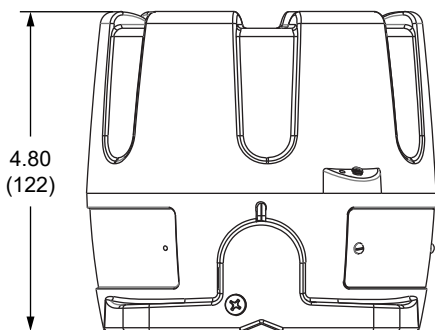
Units: Inches (mm)



Front View



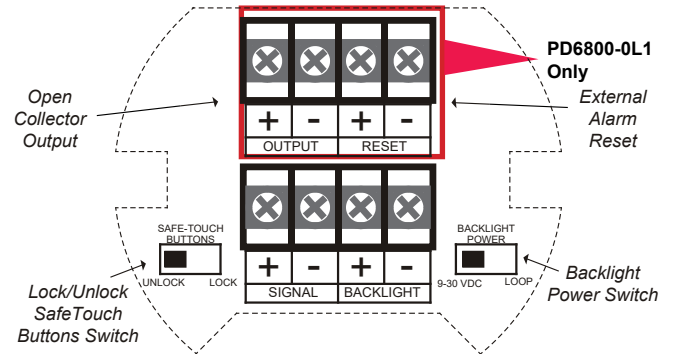
Side View



Top View

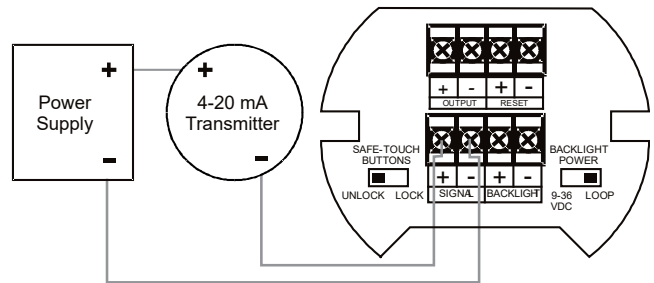
CONNECTIONS

Connectors Labeling

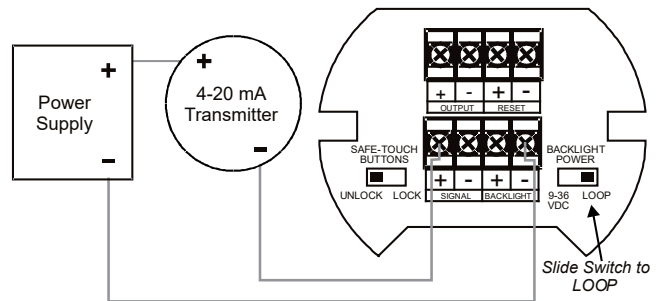


WIRING DIAGRAMS

For existing applications, one of the great benefits of loop-powered meters is that they get their power directly from the 4-20 mA loop and thus require no additional wiring. All a user has to do is break the existing loop and wire in the meter.



4-20 mA Input Connection without Backlight



4-20 mA Input Connection with Backlight

See LIM6800 manual for complete wiring instructions



Download free 3-D CAD files of these instruments to simplify your drawings!

predig.com/documentation-cad

SPECIFICATIONS

Except where noted all specifications apply to operation at +25°C.

General

Display	Five digits (-9999 to 99999)	7-segment, automatic lead zero blanking
	-0K0	0.70" (17.8 mm) high
	-0L1	0.60" (15.2 mm) high with level bargraph
	Seven characters	0.4" (10.2 mm) high, 14-segment
	Symbols	High & Low Alarm, Password Lock
Display Orientation	Display may be mounted at 90° increments up to 270° from default orientation.	
Decimal Point	Main process display has up to four decimal places or none: <i>d.dddd d.ddd, d.dd, d.d, or ddddd</i>	
Display Update Rate	Ambient > -25°C: 2 Updates/Second Ambient < -25°C: 1 Update/5 Seconds	
Backlight	White; Loop-powered or externally powered. Backlight can be enabled or disabled via alternative wiring of terminal block. Loop-powered backlight brightness will increase as the input signal current increases. Externally powered backlight has consistent brightness.	
Externally Powered Backlight	<i>Voltage Range: 9-36 VDC</i>	
	Supply V	9 VDC 12 VDC 24 VDC 36 VDC
	Max Pwr	0.2 W 0.25 W 0.5 W 0.75 W
Display Overrange	Display flashes 99999	
Display Underrange	Display flashes -9999	
Programming Method	Four SafeTouch through-glass buttons when cover is installed. Four internal pushbuttons when cover is removed.	
Noise Filter	Programmable <i>LD, n, Ed, H I, or OFF</i>	
Recalibration	Recalibration is recommended at least every 12 months.	
Max/Min Display	Max/Min readings reached by the process are stored until reset by the user or until power to the meter is turned off.	
Advanced Function	Linear, square root, or programmable exponent	
Password	Programmable password restricts modification of programmed settings.	
Non-Volatile Memory	All programmed settings are stored in non volatile memory for a minimum of ten years if power is lost.	
Normal Mode Rejection	64 dB at 50/60 Hz	
Environmental	Operating temperature range: -40 to 75°C (-40 to 167°F)	
	Storage temperature range: -55 to 75°C (-67 to 167°F)	
	Installation temperature range: -55 to 75°C (-67 to 167°F)	
	(The display ceases to function below -40°C)	
	Relative humidity: 0 to 90% non-condensing Printed circuit boards are conformally coated	
Connections	Screw terminals accept 12 to 22 AWG wire	

Mounting	May be mounted directly to conduit. Built-in flange for wall mounting or NPS 1½" to 2½" or DN 40 to 65 mm pipe mounting.
Overall Dimensions	5.65" x 5.25" x 4.86" (W x H x D) (144 mm x 133 mm x 124 mm)
Weight	Aluminum: 4.8 lbs (2.18 kg) Stainless Steel: 8.7 lbs (4.3 kg)
Warranty	3 years parts and labor. See Warranty Information and Terms & Conditions on www.predig.com for complete details.

Input

Input	4-20 mA	
Accuracy	±0.03% of calibrated span ±1 count, square root & programmable exponent accuracy range: 10-100% of calibrated span.	
Maximum Voltage Drop & Equivalent Resistance	Without Backlight	With Loop Powered Backlight
	3.0 VDC @ 20 mA 150 Ω @ 20 mA	6 VDC @ 20 mA 300 Ω @ 20 mA
Temperature Drift	50 PPM/°C from -40 to 75°C ambient	
Decimal Point	User selectable decimal point	
Calibration Range	An Error message will appear if input 1 and input 2 signals are too close together.	
	Input Range	Minimum Span Input 1 & Input 2
	4-20 mA	0.10 mA
Input Overload	Over current protection to 2 A max	
HART Transparency	The meter does not interfere with existing HART communications; it displays the 4-20 mA primary variable and it allows the HART communications to pass through without interruption. The meter is not affected if a HART communicator is connected to the loop. The meter does not display secondary HART variables.	

Open Collector Output (-0L1 Models Only)

Rating	Isolated open collector, sinking NPN 30 VDC @ 150 mA max.
Alarm Output	Assign to level or volume for high or low alarm trip point.
Deadband	0-100% FS, user selectable
Acknowledge	Front panel ENTER button and external RESET terminals resets output and screen indication.

Enclosure

Material	AL Models: ASTM A413 LM6 die-cast aluminum, copper-free, enamel coated SS Models: ASTM A743 CF8M investment-cast 316 stainless steel
Gasket (O-Ring)	Fluoroelastomer
Rating	NEMA 4X, IP68 Explosion-proof
Color	AL: Blue; SS: Silver
Window	Borosilicate glass
Conduits	PD6800-0K0: Two 3/4" NPT PD6800-0K0-M20: Two M20 PD6800-0K0-SS: Two 3/4" NPT PD6800-0K0-SS-M20: Two M20 PD6800-0L1: Two 3/4" NPT PD6800-0L1-M20: Two M20 PD6800-0L1-SS: Two 3/4" NPT PD6800-0L1-SS-M20: Two M20
Flange	Built-in flange for wall and pipe mounting
Tamper-Proof Seal	Cover may be secured with tamper-proof seal
ATEX & IECEx	Flame-proof protection Ⓜ II 2 G D Ex db IIC Gb Ex tb IIIC Db IP66/IP68 Tamb: -55°C to +85°C Certificate Number: Sira 19ATEX1252U Certificate Number: IECEx SIR 19.0075U
CSA	Class I, Division 1, Groups A, B, C, D Class II, Division 1, Group E, F, G Class III Ex db IIC Gb; Ex tb IIIC Db Class I, Zone 1, AEx db IIC Gb Zone 21, AEx tb IIIC Db IP66/IP68/TYPE 4X Tamb: -55°C to +85°C Certificate Number: CSA 19.80011200U
UL	Class I, Division 1, Groups A, B, C, D Class II, Division 1, Groups E, F, G Class III Class I, Zone 1, AEx db IIC Gb Zone 21, AEx tb IIIC Ex db IIC Gb; Ex tb IIIC Db IP66/IP68/TYPE 4X Tamb: -55°C to +85°C Certificate Number: E518920

Note: The above approvals are for the enclosure only. See next column for approval on the entire instrument.

General Compliance Information

Electromagnetic Compatibility

EMC Emissions	<ul style="list-style-type: none"> CFR 47 FCC Part 15 Subpart B Class A emissions requirements (USA) ICES-003 Information Technology emissions requirements (Canada) AS/NZS CISPR 11 Group 1 Class A ISM emissions requirements (Australia/New Zealand) EN 55011 Group 1 Class A ISM emissions requirements (EU) EN 61000-6-4 Emissions requirements for Heavy Industrial Environments - Generic
EMC Emissions and Immunity	EN 61326-1 EMC requirements for Electrical equipment for measurement, control, and laboratory use – industrial use

Product Ratings and Approvals

CSA	Explosion-proof for use in: Class I, Division 1, Groups B, C, D Class II, Division 1, Groups E, F, G Class III, Division 1, T6 Ex d IIC T6 Ta = -55°C to +75°C Enclosure: Type 4X & IP66/68 Certificate Number: CSA 11 2325749
ATEX	Explosion-proof for use in: Ⓜ II 2 G D Ex db IIC T6 Gb Ex tb IIIC T85°C Db IP68 Ta = -55 to 75°C Certificate Number: Sira 10ATEX1116X
IECEX	Explosion-proof for use in: Ex db IIC T6 Gb Ex tb IIIC T85°C Db IP68 Ta = -55 to 75°C Certificate Number: IECEx SIR 10.0056X

ORDERING INFORMATION

PD6800-0K0

PD6800 Explosion-Proof Meter • Aluminum Enclosure	
Model	Description
PD6800-0K0	Explosion-Proof Loop-Powered Process Meter with Backlight and Two 3/4" Conduit Openings
PD6800-0K0-M20	Explosion-Proof Loop-Powered Process Meter with Backlight and Two M20 Conduit Openings

PD6800 Explosion-Proof Meter • Stainless Steel Enclosure	
Model	Description
PD6800-0K0-SS	Explosion-Proof Loop-Powered Process Meter with Backlight and Two 3/4" Conduit Openings
PD6800-0K0-SS-M20	Explosion-Proof Loop-Powered Process Meter with Backlight and Two M20 Conduit Openings

PD6800-0L1 (Bargraph Display)

PD6800 Explosion-Proof Meter • Aluminum Enclosure	
Model	Description
PD6800-0L1	Explosion-Proof Loop-Powered Process Meter with Backlight and Two 3/4" Conduit Openings
PD6800-0L1-M20	Explosion-Proof Loop-Powered Process Meter with Backlight and Two M20 Conduit Openings

PD6800 Explosion-Proof Meter • Stainless Steel Enclosure	
Model	Description
PD6800-0L1-SS	Explosion-Proof Loop-Powered Process Meter with Backlight and Two 3/4" Conduit Openings
PD6800-0L1-SS-M20	Explosion-Proof Loop-Powered Process Meter with Backlight and Two M20 Conduit Openings

Accessories

Model	Description
PDAPLUG50	1/2" NPT 316 Stainless Steel Conduit Plug with Approvals
PDAPLUGM20	M20 316 Stainless Steel Conduit Plug with Approvals
PDAADAPTER-50M-75F	M-1/2" NPT to F-3/4" NPT Adapter with Approvals
PDAADAPTER-50M-M20F	M-1/2" NPT to F-M20 Adapter with Approvals
PD9501	Multi-Function Calibrator
PD9502	Low-Cost Signal Generator
PDA1001	USB Power Bank
PDA1002	6" DIN Rail Mounting Kit
PDA1024-01	24 VDC Power Supply for DIN Rail
PDA-SSTAG	Stainless Steel Tag
PDA6846-SS	2" Stainless Steel U-Bolt Kit with One U-Bolt

Note: Unless otherwise specified, the above accessories do not carry hazardous area approvals and are thus not suitable for location in hazardous areas.

WARNING

Cancer and Reproductive Harm - www.P65Warnings.ca.gov

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