

LDARtools

phx21™

US Patent Application number:61/057124

Wirelessly Controlled Battery Operated Flame Ionization Detector (BOFID)

Design Characteristics

	phx21™	TVA**	FIDII
External PDA Control	Yes	No	*
Integrated Bluetooth	Yes	No	Yes
Dual Head Pump	Yes	No	*
Type of Diaphragm	Flat	Convuluted	*
Class 1 Div 1 Certification	Yes	Yes	Yes **
PID Mode	No	Yes	No

Ease of Use

Back-up Ignition	Yes	No	*
Response to Flameout	Wireless Re-ignition	Difficult, manual process	*
"Safefill" H ₂ fill regulator	Yes	No	Yes
Removable H ₂ Bottle	No	Yes	Yes
Time to recharge H ₂ Supply	10 seconds	3 minutes	20 min

Special Features

Hands-off Calibration	Yes	No	No
Method21 Calibration failsafe	Yes	No	No
Probe filter blockage notice to Tech	Yes	No	No
H ₂ Supply notice to Tech	Yes	No	No

Safety Features



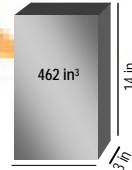
Lighter- Less strain on Technician

Smaller Profile- Less risk of snagging on ladder or equipment

H₂ fill System- Less risk during removing, filling and replacing bottle

Flame-out Response- Automatic re-ignition

Specifications

	phx21™	TVA**	FIDII
Weight	9 lbs	10.5 lbs	10.4 lbs
Size			
Response Time ⁽¹⁾	2.25 sec to T-90	3.5 - 4.5 sec	3.5
Time to T ⁽²⁾	1.25 sec	2 - 3 sec	2.5 (est.)
Accuracy	2.5ppm or 10% whichever is greater	2.5ppm or 25% whichever is greater	10%
Battery Life	12 hours	8 hours	15 hours
Hydrogen Supply	15 hours	10 hours	50 hours

Maintenance Features

Onboard Maintenance Data	Yes	No	No
Removable Battery	Yes	Yes	*
Filter System	Cup filter & probe filter	Cup filter & probe filter	*
Durable Flame Arrestor Housing	Yes	No	*
Remote Battery Check	Yes	No	*
Position of Connections	One side	Three sides	*
Hard-mounted Chips	Yes	No	*

* Information not currently available.

** Assumes TVA operation with AIMS cable or standard Bluetooth/PDA configuration

(1) With probe and sample line attached

(2) Time to register 10% of final reading

phx21™ Innovative Features

The phx21™ is designed to be the first Battery Operated Flame Ionization Detector (BOFID) with the following innovative features:



Feature	Description
Wireless interface	Unit takes its input and presents all of its output through a wireless interface to a PDA. The absence of input buttons, displays, switches, keypads or physical interface enables the phx21™ to be smaller, lighter, less susceptible to breakage and easier to modernize and upgrade.
Hands-off calibration (with Cal 3.0™)	Unit can be set for any type of calibration (daily, precision or drift) to be automatically performed. System would automatically ignite unit, monitor/confirm warm-up time, administer calibration gases and then perform electronic calibration, test results and record and store all results. This means that the phx21™ will be more efficient to operate and ensure against human error.
Method21 calibration failsafe	Unit will compare internal calendar with its calibration records and display a notice to the operator when any calibration event (such as daily calibration, quarterly precision calibration or periodic drift assessment) is required but has not been performed. Owner would have the option of setting calibration requirements in the system and creating either the option to override the failsafe notice OR disable monitoring until calibrations are performed. This means that a Technician cannot inadvertently use a phx21™ that has not been properly calibrate.
Automatic back-up ignition with failure notice	If primary ignition source fails (during warm-up or routine operation) a back-up source will ignite the detector AND display a recurring message to the operator that maintenance is required on the primary ignition source.
Onboard maintenance records	All maintenance records will be stored directly in the phx21's™ onboard computer. This will enable the owner to have a ready source of all maintenance that has been performed on each unit for its entire lifetime.
Automatic pump blockage protection	If the probe flow is blocked by moisture, water, product, dirt, dust, grease, debris, paint, the tip of a Technicians finger, the sample line is kinked, the filter is removed or a leak develops in the sample line the phx21™ will automatically shut down and notify the user.
Displays indicating status of maintenance needs and schedules	The phx21™ will automatically display notices indicating system needs or the necessity of doing routine, periodic maintenance.