

PreciFUEL

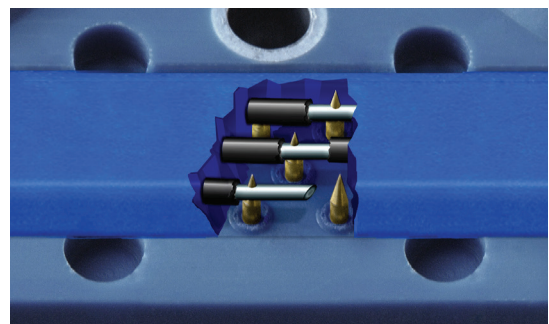
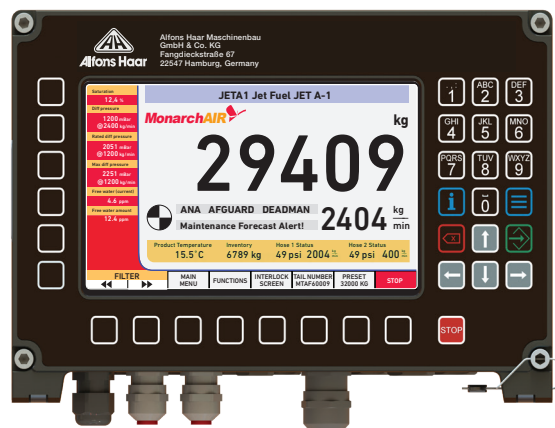
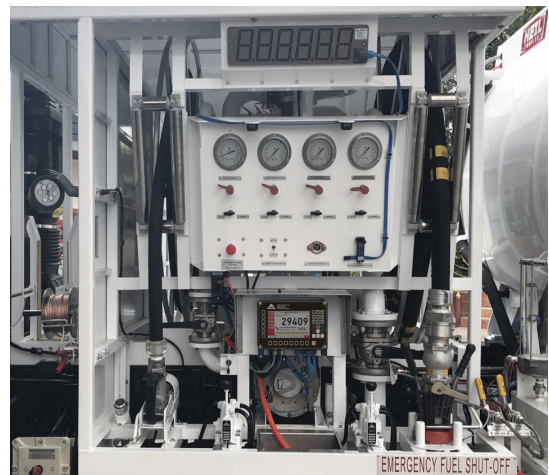
APPLICATION:
AIRCRAFT REFUELLING



PreciFUEL System

The most modern
technology available
for refuellers and
dispensers

- + ATEX/IECEx approved bus system PreciBUS (no junction boxes, no PLC necessary)
- + Error safe installation of all PreciFUEL components – "Lego for tanker builders!"
- + All electronics are 100% potted, no problems with vibration, corrosion, or humidity!
- + Maintainable by mechanics!
- + Adaptation by configuration – no software debugging required
- + Integrated Logbook
- + DP monitoring and density sensor optional
- + Automatic diagnosis on power up
- + Scalability protects the investment to meet future needs
- + Download system documentation directly from each ARU-Master
- + Public EN 15969-1 FTL interface to OBC
- + AFGUARD ready
- + Optional safety features, such as a comprehensive 360° check



APPLICATION: AIRCRAFT REFUELLING



**Suitable for
low temp.
operations**

Modes			
Inferlock state secured Inferlock state in use Actor state enabled Actor state disabled Ignore			
No.	EB004-0 Mode	EB005-0 Operation	EB011-0 Deadman
1	Fuelling u/w left	Fuelling	Yes
2	Fuelling u/w	Fuelling	Yes
3	Fuelling overwing	Fuelling	No
4	Defuelling left	Fuelling	No
5	Recirculation left	Regeneration	No
6	Recirculation right	Regeneration	No
7	Gravity discharge	Emptying of residues	No
8	Pump Station	Transfer out	No
9	Refuelling from ext	Fuelling	Yes
10	Load compartment	Loading	No

Interlocks

Interlock Name	HelpText	20021-0 Interlock Type	20021-0 Help Text
Interlock left	underwing nozzle left stowed	Secured in 'on' position	may be bypassed for time limit
Interlock left	underwing nozzle right stowed	Secured in 'on' position	may be bypassed for time limit
Cabinet door	cabinet not closed	Secured in 'on' position	may be bypassed till next loading
Ladder	ladder unstowed	Secured in 'on' position	must not be bypassed
Railing	railing unstowed	Secured in 'on' position	must not be bypassed
Coupling left	couplings not disconnected (L)	Secured in 'on' position	may be bypassed till next loading
Coupling right	couplings not disconnected (R)	Secured in 'on' position	may be bypassed till next loading

Click to add interlock

Full Lift Control
Lift up/down
Lift/platform wands
Pantograph drift
monitoring
Alarm signals
Lift interlock system
(Park position, door,
refuelling adapters)

Overhead display
PreciNODE ODIS -
Red color LED display
for better visibility

High efficiency LED illumination
PreciNODE M Lux RGB - multicolor status indicator

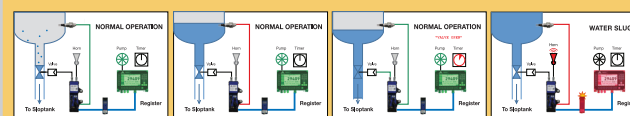
Automatic Refill **AFGUARD - free water detection!**
For each refuelling:

For each refuelling:
Check level and alarm level monitoring according to JIG Bulletin No. 130/Data Storage Function
Trend analysis for the last 50 fuellings!
Log data for all fuelling operations since FWS/FM change!

Air monitoring

Flow rate based differential pressure monitoring

Inline water monitoring & water slug detection



ARU Master 5

Master meter head, secondary meter head, deadman, interlock display

Seamless integration of all control functions in one controller

RFID

Seal-less Pulsar

**Up to 2
vane meters /
turbines**

Alfons Haar now also implements state of the art bus technology in aircraft refuelling applications

ATEX approved bus system **PreciBUS**
for Zone 1

Reduced installation, improved transparency and maintenance simplification, no terminal boxes, plug-in wiring

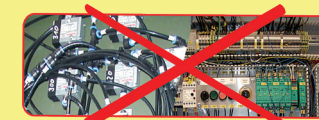
Cost and weight reduction due to reduced number of components and very light weight devices

Power and communication within one cable
Inline connections and piercing technology
results in minimum wiring effort

The PreciBUS members can be contacted at any position of the bus cable

Full scalability, easily extendable, any bus topology is possible

PreciBUS	PreciBUS	PreciBUS	PreciBUS
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No more boxes!

Density Measurement

Deadma
Wired
+
Wireless

Guided fuelling

Automatic valve control embedded into fuelling process relieves operator

Observes interlock, vent valve, overfill states etc. with plain text messages on screen

Guided draining

Verification of draining rules and electronic protocol saves overhead

Low level indicator

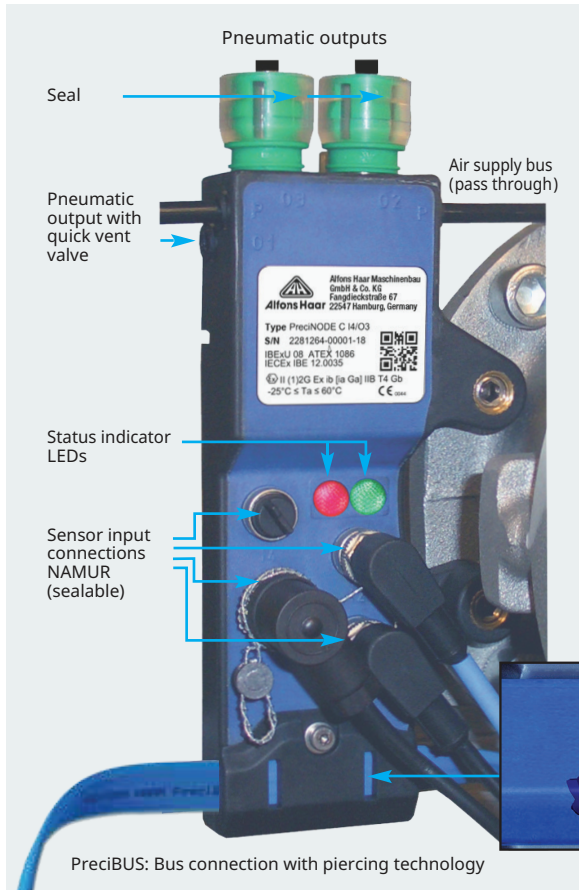
Ensures minimum level during fuelling operations without blocking draining operations

Guided loading

Automatic interlock recognition and valve control relieves operator

LED status indication
(foot valve status, overfill
warning etc.)

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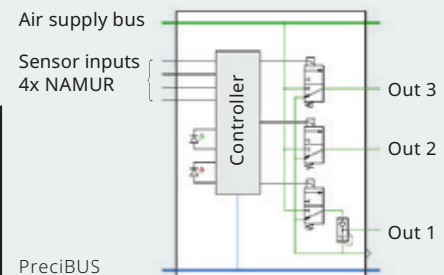
PreciNODE C I4/O3

The sensor/actor module PreciNODE monitors and controls the fittings on the truck:

- Fits on every standard flange, no drilling, no tapping (fast and safe)
- Reduced pneumatic installation by integrated solenoid valves
- 90% less power consumption conserves truck battery especially in winter
- NAMUR inputs, potted electronics, manipulation-safe

TECHNICAL DATA

Dimensions:	WxHxD 82x198x33mm
Protection class:	IP 67
NAMUR inputs	4
Solenoid valve outputs	3



PreciBUS

The AH PreciBUS offers the following advantages:

- ATEX approved for Zone 1
- In-line connections and piercing technology with minimum wiring effort, no terminal boxes, no bolting
- The PreciBUS members can be contacted at any position of the bus cable
- Special AH bus cables prevent from reverse polarity
- Power and communication within one cable
- Easily extendable, any bus topology is possible

PreciNODES

In addition to PreciNODE C I4/O3 the following PreciBUS members are offered:

Mini I/O Module (1 NAMUR input)	PreciNODE M I1
Mini I/O Module (1 pneum. output)	PreciNODE M O1
Analog Input Module (4-20mA)	PreciNODE M AI4...20mA
Overhead display	PreciNODE ODIS
LED Illumination Module/ Multicolor status indicator	PreciNODE M Lux RGB
2-Axis Inclination Sensor	PreciNODE M Inclino
RFID tag identification	PreciNODE M RFID
Density evaluation	PreciNODE M SI

WATER SLUG DETECTION

