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Delivers Outstandingly Precise, Safe, and Reliable Aircraft Guidance.

FMT - pioneers in aircraft docking guidance:

FMT pioneered Visual Docking Guidance Systems.

We developed the first system with pneumatic sensors back in the 70's.

Since then, we have through continuous development explored new techniques and gathered extensive knowledge in this field, making FMT world leading in aircraft docking guidance.

APIS++ is the latest version of the successful concept introduced in 1992.

It builds on the reliability and ease of use of the previous unit, of which nearly 500 units are in operation around the world.

APIS++ is a concentration of knowledge and experience gathered over many years.

The result is a compact, light and easy to set and manage system with a LADAR that provides both increased impulse frequency and scanning frequency,

thereby enabling APIS++ to provide real-time azimuth guidance as well as minimised timed delay to provide closing rate and stopping guidance.

Compliance with ICAO Annex 14:

A VDGS is an important safety device at the aircraft stand with very high requirements concerning precision, safety, and reliability.

Throughout the history of FMT's docking systems, full attention is and has always been paid to make our products fully compliant with ICAO Annex 14 regulations concerning Visual Docking Guidance Systems.

Naturally, APIS++ is also fully compliant with the regulations of ICAO Annex 14.

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Digital Camera (optional):

A digital camera can be implemented as an option.

A separate network should be considered if digital cameras implemented.

Control Computer:

The industrial computer FMT Inline MU800 monitors and controls the operation of APIS++ and communicates with external systems such as FIDS, AODB, or similar, as applicable.

Parameters in MU800 are easily managed via a laptop or stationary PC with a standard web browser.

Azimuth Guidance:

Unambiguous and self-explanatory Azimuth Guidance is provided by means of patentd Moiré technique.

Light passing through superimposed gratings create a Moiré pattern.

When viewed at, from an aircraft on centerline, a straight vertical line is shown in the center of the Azimuth Guidance display.

If the aircraft turns off the centerline, the straight vertical line continuously changes to take the shape of an arrow, pointing in the direction to steer to hit the centerline.

The density of the arrow pattern gives a clear indication of how far off the centerline the aircraft is.

Azimuth Guidance is provided over 200 m or more, thus normally providing Azimuth Guidance all the way from the main taxi line.

LADAR:

The LADAR measures the distance to the approaching aircraft. With a pulse frequency of 9.6 kHz and a scanning frequency of 10 Hz, the LADAR provides measuring values at minimised time delay. The time for one complete scan to collect measuring values, send the values to MU800, process the data and show it on the display takes no more than 0.2 seconds.

Operator Panel:

APIS++ is manually controlled by simple navigation in text menus.

Simply select the aircraft type, and series if applicable, and the system will activate.

APIS++ interfaced to central databases via Atlantis allows fully automatic operation.

Interface to FMT PBB provides accurate information to the PBB about the aircraft position and for interlocking of the PBB.

Text Row:

Actual aircraft type and series is displayed to confirm to the pilot that the system is set for the correct type.

If connected to FIDS or similar databases (and while not in use for aircraft docking), APIS++ can display information such as flight number, destination, ETA, ATA, ETD, etc.

During the last phase of docking, the Text Row can provide closing rate information in digital format.

When the aircraft has reached its stopping position, the Text Row will show STOP.

Closing Rate:

As standard, Closing Rate information is provided over the last 15m of aircraft travel in steps of 0.75m.

These values can be set by the user to any metric value, for example to provide Closing Rate information over 20 steps of 1m, or over 10m in steps of 0.5m.

Stopping position is reached when the Closing Rate "thermometer" is all black.

At the same time, the Text Row will show STOP.

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Systems Integration - Efficiency and Economy through Safe and Rapid Turnarounds. (FMT Passenger Boarding Bridge)

Improved Efficiency through Integration:

APIS++ can operate as a stand-alone system, but in order to take full advantage of its potential, it should be interfaced to the airport central database(s), for example AODB and/or FIDS.

When interfaced to AODB/FIDS through Atlantis, information is received, which enables Atlantis to automatically activate and set APIS++ for the arriving aircraft type and series.

When interfaced to an FMT PBB, Atlantis will communicate information to the PBB about the arriving aircraft type and series to allow automatic pre-setting of the PBB, or semi-automatic pre-setting by means of a simple push of a button.

Interface between APIS++ and PBB allows APIS++ to lock the PBB for operation after pre-setting and until the aircraft is Block-On.

After Block-On, APIS++ will communicate information to the PBB for automatic adjustment of the PBB's position and for automatic or semi-automatic connection of the PBB to the aircraft.

APIS++ Technical Data (Standard Version):

Display Unit:

Dimensions   1220 x 930 x 250 mm

Weight   69 kg

Control Unit:

Type   FMT Inline MU800

Processor   Motorola 68376 / 16 MHz

Memory   12 MB Flash, 2 MB RAM, 64 kB EEPROM

Input, Output   32 digital input

32 digital output

2 RS-232, 1 RS-422,

1 Ethernet 10BaseT

1 Ethernet AUI, 1 CAN bus

Operator panel:

Type   FMT Inline OP5

LADAR:

Type   LADAR LD-ADS

Scan frequency   10 Hz

Pulse frequency   9.6 kHz

Resolution   1 cm

Laser Class   Class 1 acc. to EN60825-1

Protection Ratings:

Display Unit   IP54

LADAR   IP64

Operator Panel   IP65

Standards, Certificates, and International Approvals:

ICAO Annex 14, ICAO Aerodrome Design Manual, Low voltage directive LVD73/23/EEC, Electromagnetic Compatibility EN50082-1,2,

Safety of Machinery EN60204-1, Electrical Installations of Buildings IEC364, Certified by TÜV, Approved by Swedish CAA, MAB and other users.

Conformity Marking: CE

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