# ADANI BV5030

## CHECKPOINT X-RAY INSPECTION SYSTEM FOR CARRY-ON BAGGAGE

The **ADANI BV 5030** is designed for visual inspection of different objects (baggage, mail, etc.) without opening them to reveal objects, materials and substances that are prohibited for import (export) or differ from declared content.

## INTENDED USE

- Its use allows to effectively inspect parcels, small baggage and personal belongings to detect dangerous objects (including identification of substances by effective atomic number) and other prohibited items.
- The system allows identification of weapons, explosives (including plastic explosives), drugs, primers and dangerous objects, which are safety hazard.

## CONFIGURATION

The basic functional components of the system are:

Device body:
- Frame
- Conveyor
- Inspection tunnel
- Distribution panel;

Digital X-ray image receiver:
- X-ray sensitive digital detector
- Electronic interface unit;

X-ray unit:
- X-ray generator (mono-block)
- Collimator (X-ray aperture);

Operator's workstation;
Set of control programs;
Set of spare parts, tools and accessories;
TIP software package;
Operational documentation;
Package.

Options:
- Exit / entry rollers;
- Operator's desk;
- Set of test objects.

## TECHNICAL DATA

### CONVEYOR BELT

| | |
|---|---|
| Maximum distributed load on the conveyor belt, kg, max | 160 |
| Conveyor speed, m / s | 0.22±0.03 |

### DIGITAL X-RAY IMAGE RECEIVER

| | | |
|---|---|---|
| Receiver type | multiunit array | |
| Type of x-ray sensitive element | scintillator coated semiconductor photodiode | |
| Wire detectability (minimum diameter of copper wire/standard operating mode) mm | 0.08 (40 AWG) | |
| Steel penetration, standard operation mode, mm | 36 | 10* |
| Steel penetration, high penetration mode, mm | 38 | - |

### X-RAY UNIT

| | | |
|---|---|---|
| Anode voltage, kV<br>- Standard operating mode<br>- High penetration mode | <br>140<br>160 | <br>90*<br>- |
| Angle of radiation | 60° | |
| Cooling system | oil cooling | |
| Anode type | stationary | |

### PHYSICAL PARAMETERS

| | |
|---|---|
| Tunnel dimensions, mm<br>- Width<br>- Height | <br>520±3<br>320±5 |
| Overall dimensions, not more than, mm<br>- Width<br>- Height<br>- Length | <br>735<br>1335<br>1250 |

* these values are applicable for the version with 90kV generator

## SOFTWARE FEATURES

The purpose of the system software is to control the operation of the Scanner as well as to provide the opportunity to acquire, visualize and process digital X-ray images. To facilitate the work of the operator, a control panel is provided. The panel makes it possible to access all the software features.

GENERAL PURPOSE FUNCTIONS:
- Password-protected logon.

SELF-TESTING AND PERFORMANCE SUPPORT FUNCTIONS:
- Automatic self-testing;
- Displaying messages about operating status of the Scanner;
- Warming up the X-ray generator (the process can be started both manually and automatically).

HARDWARE CONTROL FUNCTIONS:
- Controlling the conveyor belt drive, the protective shutter's drive, the X-ray generator;
- Automatic changing of generator's operating modes depending on the scanner idle time;
- Acquiring data from the X-ray detector;
- Automatically calibrating the X-ray detector;
- Turning off the X-ray generator in case of emergency;
- Indicating X-ray on.

DIGITAL X-RAY IMAGE ACQUISITION, VISUALIZATION, AND PROCESSING FUNCTIONS:
- Acquiring images without additional algorithmic processing;
- Highlighting optically dense objects;
- Adjusting contrast of strongly absorbing objects;
- Inverting images;
- Performing gamma–correction of images;
- Optimizing the overall contrast: combination of edge enhancement and local contrast enhancement algorithms;
- Coloring images according to calculated values of atomic numbers of substances which compose objects under inspection;
- Coloring substances with atomic numbers from a selected range;
- Pseudocoloring objects with a possibility of selection of various palettes;
- Displaying organic objects with atomic numbers equal to 7, 8, and 9;
- Displaying substances according to a selected range of signal strength;
- Magnifying one out of nine predefined areas of an image;
- Zooming images up to 96x;
- Automatically highlighting suspicious objects (which can be related to drugs, explosives, or arms).

ADDITIONAL FUNCTIONS:
- Saving X-ray images to files;
- Storing a predefined number of images;
- Browsing the image archive;
- Copying images on external storage media (CD/DVD disks and flash-drives);
- Viewing and copying images from a local area network;
- Automatic preparing, filing  and printing service reports;
- Controlling quality of operator's performance with the TIP program module;
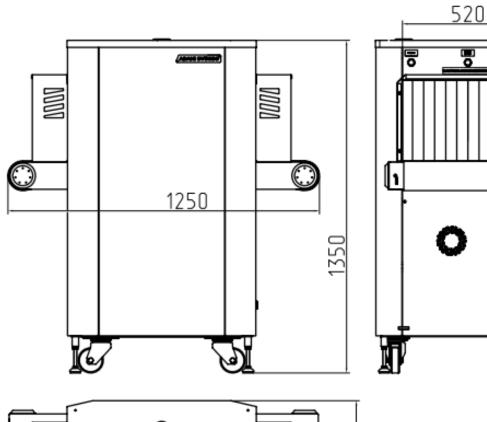- Counting inspected baggage.

- **GENERAL LAYOUT OF THE ADANI BV5030**