भारतीय मानक **IS 19028 : 2023**

Indian Standard

स्मार्ट बायोमेट्रिक बैटन — विशिष्टि

Smart Biometric Baton — Specification

ICS 13.310

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI - 110002
www.bis.gov.in www.standardsbis.in

December 2023 **Price Group 4**

Security Equipment Sectional Committee, MED 24

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Security Equipment Sectional Committee had been approved by the Mechanical Engineering Division Council.

Smart biometric baton is a device that combines biometric technology with essential law enforcement tools. This multifunctional baton serves as a force multiplier for law enforcement agencies, providing officers with the ability to quickly and accurately identify individuals in the field using fingerprint and facial recognition. In addition to its biometric capabilities, the baton acts as a communication hub, equipped with GPS tracking, real-time messaging. Its rugged design ensures durability in challenging environments, making it an indispensable tool for enhancing officer safety, improving response times, and ensuring accountability in law enforcement operations.

It can be used in a wide range of applications, from criminal identification and locating missing persons to evidence collection and search and rescue operations. The integration of biometric authentication and real-time communication capabilities allows officers to make informed decisions more quickly and efficiently. This not only enhances public safety but also aids in the prevention and resolution of crimes. The smart biometric baton represents a crucial technological advancement that empowers officers with the tools they need to perform their duties effectively and responsibly.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SMART BIOMETRIC BATON — SPECIFICATION

1 SCOPE

This standard lays down the requirements regarding materials, sizes and details of construction and performance parameters of smart biometric baton with geo tagged attendance management system used to ensure proper attendance of police constable/home guards/local security service provider deployed in the specific region

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards:

IS No./Other Standards	*Title*
IS 13252 (Part 1) : 2010/IEC 60950-1 : 2005	Information technology equipment — Safety: Part 1 General requirements (*second revision*)
IEC 13252-2 : 2006	Information technology — Topic map : Part 2 Data model

3 TERMINOLOGY

For the purpose of this standard the following definition shall apply.

3.1 Baton — A stick or rod carried as a compliance tool and defensive weapon by law-enforcement officers, correctional staff, security guards and military personnel.

3.2 Biometrics — Biological measurements or physical characteristics that can be used to identify individuals.

3.3 False Acceptance Rate (FAR) — The percentage of verification instances in which unauthorised persons are incorrectly accepted.

3.4 False Rejection Rate (FRR) — The percentage of verification instances in which authorised persons are incorrectly rejected.

4 TYPES

The baton is made from metal/hard wood/plastic. It is 15 mm to 35 mm in diameter, rounded at both ends, and will vary in length from 304.8 mm to 914.4 mm.

a) Short baton (billy) — This baton varies in length from 304.8 mm to 457.2 mm;
b) Medium baton (nightstick) — This baton ranges in length from 508 mm to 660.4 mm; and
c) Long baton (riot stick) — This baton ranges in length from 711.2 mm to 914.4 mm and is used predominately in the control of mobs and riots.

5 MATERIAL

5.1 Material of baton can be high resistance polymer such as polypropylene, HDPE etc. The baton holder material can be of unbreakable polyamide (nylon) with nylon textile strap.

5.2 The critical quality parameters of the materials used for the components shall be declared by the manufacturer at the time of type approval and records of details of material shall be maintained for conformity during routine production.

6 CONSTRUCTION AND GENERAL REQUIREMENTS

6.1 Smart biometric baton shall constitute a baton with a biometric based attendance management system shall be mounted on the handle of the baton.

6.2 Biometric scanner shall be a robust industrial grade fingerprint scanner for fingerprint enrolment, identification and verifications.

6.2.1 *Authorization Module*

6.2.1.1 The module shall store pre-registered/enrolled templates in non-volatile memory with the provision to store minimum 5 templates.

6.2.1.2 Stored templates shall be used to match against template captured for access.

6.2.1.3 Only if access template matches with stored template, authorization module shall authorize to register the attendance of the user along with location.

6.2.1.4 Authorisation module shall not take more than 1 s to match the template and provide the output.

FAR of the device must be less than 0.01 percent and FRR of the devise must be less than 2 percent.

6.3 The response time of fingerprint scanner shall be less than a second.

6.4 The resolution of fingerprint scanner shall be minimum 500 dpi.

6.5 The baton shall have a GPS device to capture the current location of the user once successfully authenticated using fingerprint scanner. The location accuracy of the GPS shall be better than 10 m.

6.6 The device shall have status indications to indicate user authentication, and low battery status.

6.7 The device may be powered by built-in rechargeable battery.

6.8 The device shall have geo fencing feature to define geographical boundaries (trigger alert in case of movement outside fencing area).

6.9 The weight of the smart biometric baton should not be more than 600 g.

6.10 System shall have real time clock for recording date and time which is updated from GPS system.

6.11 For transferring the logged data from device to server, device shall be equipped with APN configured SIM cards and use 2G/3G/4G technology for data transfer.

7 TESTS AND CRITERIA FOR CONFORMITY

7.1 Operational Test

The device shall be tested for successful operation as mentioned below. The tests shall be performed for at least 10 times and shall be satisfied all times.

7.1.1 *Fingerprint Registration*

Register the 5 no. of fingerprints of the different users.

7.1.2 *Test the Working of Device when it is Intended to Work*

Test with authorized (registered) user that the device shall successfully log the attendance of the user with geo tagging.

7.1.3 *Test the Working of Device when it is Intended not to Work*

Test with un-authorized (not registered) user that the device shall not accept the fingerprints and should trigger wrong finger indication.

7.2 Impact Test

7.2.1 The impact test shall be carried out as per **4.2.5** of IS 13252 (Part 1)/IEC 60950-1.

7.2.2 After the impact test no crack or damage shall be observed, and the device shall be fully operational.

7.3 Drop Test

7.3.1 The drop test shall be carried out as per **4.2.6** of IS 13252 (Part 1)/IEC 60950-1, and the requirements specified for handheld equipment.

7.3.2 After the impact test no crack or damage shall be observed, and the device shall be fully operational.

7.4 Temperature Test

7.4.1 The device is subjected to repeated exposure to high and low temperatures (– 20 °C and + 75 °C) in forced draught chamber.

7.4.2 After the test no deformation shall be observed, and the device shall be fully operational.

FIG. 1 SMART BIOMETRIC BATON (FOR REFERENCE PURPOSE ONLY)

7.5 Rain/Water Test

7.5.1 The device shall be tested in rainfall rate minimum 1.7 mm/min (4 in/h). Test procedure shall use 276 kPa nozzle pressure that should produce water droplets travelling at approximately 64 km/h.

7.5.2 After the test, and the device shall be fully operational.

7.6 Electronic Test

EMI EMC tests to be carried out as per IEC 13252-2.

8 RE-TESTING FREQUENCY

8.1 All the tests specified above shall be considered as type tests and shall be carried out for initial approval of design or when any subsequent change in the design of the device is made.

8.2 Subsequent to the type approval, these tests shall be carried out once in 7 year.

9 MARKING

9.1 Each device shall be marked with:

a) The manufacturer's (or other party responsible for the product) name, trademark, or other identifying mark;
b) The model, style, or catalogue designation; and
c) The date of manufacture by month and year in a location that is visible after installation.

9.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Security Equipment Sectional Committee, MED 24

Organization	*Representative(s)*
Reserve Bank of India, Mumbai	SHRI PUSHKAR EKKA **(*Chairperson*)**
Bank of India, Mumbai	CAPT AKHILESH KUMAR
Central Bank of India, Mumbai	COL A. K. JHA
CSIR - Central Building Research Institute, Roorkee	DR HARPAL SINGH DR SHORAB JAIN (*Alternate*)
EMTAC Laboratories Private Limited, Secunderabad	SHRI GATTA VENKATA JAGADEESH BABU
Godrej & Boyce Manufacturing Company Limited, Mumbai	SHRI DEVIDAS THORAT SHRI SUSHANT BHATT (*Alternate*)
Guardwel Industries Private Limited, Mumbai	SHRI LEON GEORGE SHRI NESTER HENRIQUES (*Alternate*)
Gujarat Test House, Ahmedabad	SHRI A. N. BARUA SHRI R. D. VAGHELA (*Alternate*)
Gunnebo India Private Limited, Thane	SHRI ANIRBAN MUKHUTI SHRI AJAY KUMAR M. JADHAV (*Alternate*)
Indian Institute of Technology Bombay, Mumbai	PROF P. P. DATE
Indian Overseas Bank, Chennai	CAPT DEVENDER KUMAR
Insurance Regulatory and Development Authority, New Delhi	SHRI T. S. NAIK
International Gemmological Institute (India) Private Limited, Mumbai	SHRI TEHMASP PRINTER MS KAREENA SHAHANI
Methodox Systems Limited, Indore	SHRI SAMEER KISHORE SINGH SHRI KARAN KATARIYA (*Alternate*)
NCR Corporation India Pvt Ltd, Mumbai	SHRI ASHOK SHANKAR
Punjab National Bank, New Delhi	COL TEJINDER SINGH SHAHI SHRI MANEESH RAJ (*Alternate*)
Safeage Security Products Private Limited, Mumbai	SHRI RAJAN VASANOI SHRI NARESH PANCHAL (*Alternate*)
Sherni Locks Manufacturers Private Limited, Pune	SHRI FAROKH KUTAR SHRIMATI ARTI GUPTA (*Alternate*)
Shriram Institute for Industrial Research, Delhi	DR D. P. JAIN SHRI ALOK KUMAR (*Alternate*)

Organization	*Representative(s)*
State Bank of India, Mumbai	CAPTAIN SUSHIL SINGH SHRI PRAMOD KUMAR (*Alternate*)
Tata Consultancy Services Limited, Mumbai	SHRI AJIT MENON SHRI R. K. RAGHAVAN (*Alternate*)
Union Bank of India, Mumbai	LT COLONEL SANJAY KUMAR
Voluntary Organisation in Interest of Consumer Education (VOICE), New Delhi	SHRI M. A. U. KHAN
In Personal Capacity (*A-104, Mahindra Splendour, LBS Road, Bhandup (West), Mumbai - 400078*)	SHRI PRASHANT CHOUTHKANTHIWAR
In Personal Capacity (*Plot No. 41, Block No. 5, Mehta cottage, Dr Raut Road, Shivaji Park, Dadar, Mumbai - 400028*)	SHRI AJIT G. NARAVANE
BIS Directorate General	SHRI NAVINDRA GAUTAM, SCIENTIST 'E'/ DIRECTOR AND HEAD (MECHANICAL ENGINEERING) [REPRESENTING DIRECTOR GENERAL (*Ex-officio*)]

Member Secretary
SHRI SANDEEP KESHAV
SCIENTIST 'C'/DEPUTY DIRECTOR
(MECHANICAL ENGINEERING), BIS

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 2016 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.in.

This Indian Standard has been developed from Doc No.: MED 24 (18125).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices:		*Telephones*
Central	: 601/A, Konnectus Tower -1, 6th Floor, DMRC Building, Bhavbhuti Marg, New Delhi 110002	2323 7617
Eastern	: 8th Floor, Plot No 7/7 & 7/8, CP Block, Sector V, Salt Lake, Kolkata, West Bengal 700091	2367 0012 2320 9474
Northern	: Plot No. 4-A, Sector 27-B, Madhya Marg, Chandigarh 160019	265 9930
Southern	: C.I.T. Campus, IV Cross Road, Taramani, Chennai 600113	2254 1442 2254 1216
Western	: Plot No. E-9, Road No.-8, MIDC, Andheri (East), Mumbai 400093	2821 8093

Branches : AHMEDABAD. BENGALURU. BHOPAL. BHUBANESHWAR. CHANDIGARH. CHENNAI. COIMBATORE. DEHRADUN. DELHI. FARIDABAD. GHAZIABAD. GUWAHATI. HIMACHAL PRADESH. HUBLI. HYDERABAD. JAIPUR. JAMMU & KASHMIR. JAMSHEDPUR. KOCHI. KOLKATA. LUCKNOW. MADURAI. MUMBAI. NAGPUR. NOIDA. PANIPAT. PATNA. PUNE. RAIPUR. RAJKOT. SURAT. VISAKHAPATNAM.

Published by BIS, New Delhi