



Hengyi Industries Sdn Bhd  
恒逸实业（文莱）有限公司

HYBN-T3-07-0020-2024-2



## Measuring Equipment Traceability Management System

## 测量设备校准（量值溯源）管理制度



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## Version Information 版本信息

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2 Rev 2 released on April 1, 2024.

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 <b>HENGYI</b>	<b>Hengyi Industries Sdn Bhd 恒逸实业（文莱）有限公司</b>			
	<b>Measuring Equipment Calibration (Measurement Tracing) Management Provisions</b> <b>测量设备校准（量值溯源）管理制度</b>			
	Doc No.	HYBN-T3-07-0020-2024-2	Ver No.	2

## 1 Purpose 目的

To standardize the Company's measuring equipment (measurement tracing) management, ensure that measuring equipment meet expected requirement for use, this system is hereby formulated.

为规范公司测量设备校准（量值溯源）管理，确保测量设备符合预期的使用要求，特制定本制度。

## 2 Application Scope 适用范围

This system is applicable to departments managing and using measuring equipment.

本制度适用于管理和使用测量设备的部门。

## 3 Terms and Definitions 术语和定义

3.1 Measurement: refers to the activities to realize unified units and accurate and reliable measurements.

计量：指实现单位统一、量值准确可靠的活动。

3.2 Measuring equipment (also referred to as measuring equipment, instruments tools, measuring instruments): refers to measuring instruments, software, measuring standards, reference materials or auxiliary instruments and machineries necessary in the measuring process to realize production process control, safety and environmental protection, devices & materials, product quality and trade handover, or their combination.

测量设备（也称计量设备、计量器具、仪器仪表）：指为实现生产过程控制、安全环保、装置物料、产品质量、贸易交接等方面测量过程所必需的测量仪器、软件、测量标准、标准物质、辅助器械或它们的组合。

3.3 Measuring standard (also referred to as measurement reference, measurement standard): refers to the material measure, measuring instrument, reference substance or measuring system used as the reference to define, realize, save and reproduce the unit of a quantity or one or multiple measured values. It is a general term for measurement reference and measurement standard.

测量标准(也称计量基准、计量标准)：指为了定义、实现、保存、复现量的单位或一个（多个）量值，用作参考的实物量具、测量仪器、参考物质或测量系统。它是计量基准和计量标准的统称。

3.4 The highest measuring standard (of an enterprise): the measuring standard established by an enterprise for its internal use according to its own production and business needs. The

instruments for measurement standard is in charge of the verification or calibration of the instruments and meters within the scope of their capability. To guarantee the accuracy and reliability, the instruments shall be sent to a qualified calibration institution for traceability in a regular manner, in addition to strict operation and daily maintenance in accordance with the operating procedures.

(企业)最高计量标准: 企业根据自身生产和经营的需要而建立的供本企业内部使用的计量标准, 该计量标准器具承担其所能开展的仪器仪表的检定或校准。为确保计量标准器具的准确可靠, 除严格按操作规程进行操作和日常维护外, 需定期送至有资质的校准机构进行量值溯源。

**3.5 Traceability (dissemination):** A property of the result of a measurement or the value of a standard whereby it can be related to stated references (usually national or international standards) through an unbroken chain of comparisons all having stated uncertainties. Dissemination is reverse to traceability.

量值溯源 (量值传递): 通过一条具有规定不确定度的不间断的比较链, 使测量结果或测量标准的值能够与规定的参考标准 (通常是国家计量基准或国际计量基准) 联系起来, 称为量值溯源, 它的逆过程称为量值传递。

**3.6 Verification:** The activities in which the error of the indication value of the measuring equipment meets the specified requirements as determined by the legal measuring department or the legal authorized organization in accordance with the verification regulations and through experiments. In China, verification is generally an activity of national legal measurement.

检定: 中国相关标准定义为“由法制计量部门或法定授权组织按照检定规程, 通过实验, 提供证明来确定测量设备的示值误差满足规定要求的活动”。

**3.7 Calibration:** a set of operations that establish, under specified conditions, the relationship between values of quantities indicated by a measuring instrument or measuring system or values represented by a material measure or a reference material, and the corresponding values realized by standards. The calibration results may be used to assess the indication error of the measuring equipment, measuring system or material measure, or to assign values to marks on any scale.

校准: 在规定条件下, 为确定测量设备或测量系统的示值、实物量具或标准物质所代表的值, 与相对应的被测量的已知值之间关系的一组操作。校准结果可用于评定测量设备、测量系统或实物量具的示值误差, 或给任何标尺上的标记赋值。

**3.8 Intermediate check:** the operation performed to verify whether the measuring standard, reference material and measuring instrument remain in their original status in accordance with specified procedures.

期间核查: 根据规定程序, 为了确定计量标准、标准物质或其他测量仪器是否保持其原有状态而进行的操作。

**3.9 Comparison:** the process of comparing the reproduced values of the same measuring instrument with the same accuracy level or within a specified range of uncertainty under specified conditions.

比对: 在规定条件下, 对相同准确度等级或指定不确定度范围的同种测量仪器复现的量值之间比

较的过程。

3.10 Metrological confirmation: a set of operations required to ensure that measuring equipment conforms to the requirements for its intended use. Metrological confirmation generally includes metrological verification/calibration, debugging (adjustment), testing, comparison, inspection, metrological certification, metrological status identification and record confirmation.

计量确认：指为确保测量设备处于满足预期使用要求的状态所需要的一组操作。计量确认一般可包括：测量设备的计量检定/校准、调试(校)、测试、比对、检查、计量验证、计量状态标识、确认记录等。

#### 4 Management Responsibilities 管理职责

##### 4.1 Specified management department 归口管理部门

The Equipment Management Dept. is the specified management department for measuring equipment calibration (measurement tracing), is in charge of and is in charge of planning and establishing measurement standard equipment of the highest standard in the Company as well as its measurement tracing system, and ensuring the accuracy of measurement tracing of the standard instruments; developing measuring equipment calibration principles, and assisting relevant departments in developing reasonable measuring equipment calibration cycle is in charge of Reviewing the Company's measuring equipment calibration plan, and carrying out measuring equipment calibrations; in charge of verification of key measuring equipment involved in trade custody transfer such daily correlation and review through the duration; in charge of technical review of measuring equipment used in custody transfer involved in engineering projects, and ensure feasibility and economic feasibility of its calibration; in charge of promotion and application of new measuring technology and equipment.

机械动力部是测量设备校准（量值溯源）的归口管理部门，负责策划和建立公司最高计量标准装置及其量值溯源体系，并确保标准仪器量值溯源准确；负责制定测量设备校准原则，并协助各相关部门制定合理的测量设备校准周期；负责审核公司测量设备校准计划，开展测量设备的校准工作；负责对涉及贸易交接及其比对用等重要测量设备进行日常比对和期间核查等计量确认工作；负责工程项目中涉及贸易交接测量设备的技术审查，确保其校准的可行性和经济合理性；负责计量新技术、新设备的推广应用。

##### 4.2 Coordinated management departments 协同管理部门

4.2.1 The HSE Dept. is in charge of developing plan for calibration of safety and environment measuring equipment.

HSE 管理部负责提出安全环保测量设备的校准计划。

4.2.2 The IT Dept. is in charge of construction, maintenance, credential configuration of the

measurement calibration information transfer network, and shall provide technical support  
信息管理部负责公司计量校准信息传输网络的建设、维护、权限配置并提供技术支持。

#### 4.3 Executive departments 执行部门

4.3.1 As implementation departments, the operation departments is in charge of setting reasonable calibration periods for their respective measuring equipment; in charge of declaring their department's measuring equipment calibration plan, and be responsible for confirming and coordinating the field conditions during the calibration of measuring equipment, and assisting in carrying out calibrations of their departments' measuring equipment.

运行部为执行部门，负责根据校准原则合理确定本部门测量设备的校准周期；负责本部门测量设备校准计划的申报；负责确认和协调测量设备校准时的现场条件，配合完成本部门测量设备的校准工作。

4.3.2 The Electrical Operation Dept. and the Instrument Control Dept. shall help with instrument/electrical wiring, parameter configuration, etc. for trade custody transfer measuring equipment calibration.

电气运行部和仪表控制部配合贸易交接测量设备校准过程中的仪表/电气接线、参数设置等工作。

4.3.3 The Equipment Maintenance Dept. shall provide supporting equipment such as vehicles needed in measuring equipment calibration, and shall assist with works such as flange removal and installation.

设备检修部配合提供测量设备校准过程中所需车辆等辅助设备，并协助完成法兰拆装等工作。

### 5 Management Content 管理内容

5.1 The Company's measuring equipment is divided into key measuring equipment and ordinary measuring equipment. Key measuring equipment refers to measuring equipment used in measured value transfer, product quality lab test and analysis, safety and environmental protection, trade settlement and comparison, all the rest is ordinary measuring equipment.

公司测量设备分为重要测量设备和普通测量设备。重要测量设备是指用于量值传递、产品质量化验分析、安全环保、贸易结算及其比对用的测量设备，其他均属于普通测量设备。

#### 5.2 Principles for measuring equipment calibration 测量设备校准原则

5.2.1 Measuring equipment shall be calibrated during turnarounds, periodically, or casually.  
测量设备的校准周期实行检修期校准、周期校准和不定期校准。

5.2.1.1 Calibration during turnarounds is mainly applicable to measuring equipment that is not removable due to continuous unit operation or calibration of which is not normally feasible. Calibration cycle for such measuring instrument shall be "during major repairs", meaning their calibrations are carried out during equipment maintenance.

检修期校准主要针对连续运转装置上无法拆卸和平时无法开展校准的测量设备，其校准周期可定为“随大修”，在设备检修时进行校准。

5.2.1.2 Periodic calibration is mainly applicable to measuring equipment whose accuracy needs to be ensured and that can be removed during operation, or calibration of which does not interrupt its operation. For example, calibration periods of key measuring equipment can be specified as every 6~36 months; Calibration cycle for measuring equipment with stable measuring performance or required of low accuracy, can be specified as 24~36 months.

周期校准主要针对需要确保准确度、平时能够拆卸和校准时不影响使用的测量设备。例如，对于重要测量设备的校准周期可定为 6~36 个月；对于计量性能稳定或准确度要求不高的测量设备，校准周期可定为 24~36 个月。

5.2.1.3 Unscheduled calibration is applicable to measuring devices which only provide indicative information of non-production critical locations. These devices are low-value consumables and are used as tools. They have no strict requirement on accuracy. These measuring devices can be calibrated once before being used for the first time and be calibrated at any time during use according to actual conditions.

不定期校准主要针对非生产关键部位仅起指示作用、准确度无严格要求、低值易耗和作为工具使用的测量设备。该类测量设备可实行首次使用前一次性校准，以及在使用过程中根据实际情况进行校准。

5.2.2 If it is found or doubted that a certain measuring equipment may not be able to meet the use in their accuracy, stability, etc., calibration or other measuring verifications shall be conducted.

当发现或怀疑测量设备的准确性、稳定性等计量性能不能满足使用要求时，应及时进行校准或其他计量确认工作。

5.2.3 For key measuring equipment, except for periodic calibration, the department in charge of or using the equipment shall be based on the equipment's actual usage, organize and carry out intervening reviews between periodic calibrations. Intervening review can be conducted through recalibration and comparison, etc..

重要测量设备除进行定期校准外，管理或使用部门可根据实际使用情况，在校准周期内组织开展期间核查工作。期间核查可采用重新校准、比对等方式进行。

### 5.3 Management requirements 管理要求

5.3.1 In principle, all measuring equipment shall be calibrated to be qualified before installation and use, and calibration certificates shall be provided for the measuring equipment for a new project before put into service. The measuring equipment in use shall be metrologically confirmed based on the actual situation to ensure its measuring accuracy.

所有测量设备在安装和使用前都应校准合格，新建项目的测量设备投用前应提供校准合格证明；使用中的测量设备根据实际情况开展校准等计量确认工作，以保证测量准确。

5.3.2 Relevant departments shall in accordance with 5.2 "Principles for measuring equipment

calibration” raise calibration need for measuring equipment and put forward calibration plan, which shall be reviewed and arranged for implementation by the Equipment Management Dept..

相关部门根据 5.2 “测量设备校准原则” 提出测量设备的校准需求和校准计划，由机械动力部审核后组织进行校准。

5.3.3 Standards and supporting equipment used for measured value transfer shall be properly kept by a designated person. Corresponding management provisions shall be developed. Annual repeatability and stability verification shall be properly carried out and relevant records properly kept.

用于量值传递用的标准及其配套设备应由专人妥善保管，制定相应的管理规定，并做好每年的重复性和稳定性验证工作，保存好相关记录。

5.3.4 Managing Departments shall in accordance with prescribed calibration cycle calibrate key measuring equipment.

对于重要测量设备，管理和维护使用部门应按规定的校准周期及时进行校准。

5.3.5 If the calibration of measuring equipment can't be carried out on time due to some reasons, an application for delayed calibration should be applied, which will be countersigned by relevant departments and approved by the competent leader. At the same time, the accuracy of measuring equipment should be evaluated, and monitoring measures should be taken after delayed calibration.

当因某些原因无法按期开展测量设备的校准时，应进行延期校准申请，经相关部门会签和主管领导审批，同时对测量设备的准确性进行评估，并有延期校准后的监控措施。

5.3.6 Any parameter modification, zero suppression, etc. to any measuring equipment used for trade custody transfer and comparison shall be approved by relevant technical personnel and the Equipment Management Dept..

用于贸易交接及其比对用的测量设备进行重要参数修改、清零等改动时，须经相关技术人员和机械动力部确认后进行。

5.3.7 For measuring equipment with requirements for environmental conditions, the environmental conditions shall be controlled by such measures as provision of air conditioners or temperature and humidity meters.

对环境条件有要求的的测量设备，应对环境条件进行控制，如加装空调，温湿度计等。

## 6 Inspection and Supervision 检查与监督

The Equipment Management Dept. is in charge of the inspection and supervision of the implementation of this system, and give assessment opinions.

机械动力部负责对本制度执行情况进行检查、监督，并提出考核意见。

## 7 Associated Procedures and Records 关联程序及记录

## 7.1 Associated procedures 关联程序

*Measuring Equipment Calibration (Measurement Tracing) Management Procedures*  
(HYBN-T2-07-0065-2024-2)

测量设备校准（量值溯源）管理程序 HYBN-T2-07-0065-2024-2

## 7.2 Associated records 关联记录

7.2.1 *Measuring Equipment Calibration Accounts* (HYBN-T6-07-0133-001-2018)

测量设备校准台账 HYBN-T6-07-0133-001-2018

7.2.2 *Shipping flowmeters Calibration Records* (HYBN-T6-07-0134-001-2018)

装船流量计校准记录 HYBN-T6-07-0134-001-2018

7.2.3 *Loading flowmeters Calibration Records* (HYBN-T6-07-0135-001-2018)

装车流量计校准记录 HYBN-T6-07-0135-001-2018

7.2.4 *Calibration Records of Standard Weight of Electronic Belt Scale*  
(HYBN-T6-07-0136-001-2018)

电子皮带秤标准砝码校准记录 HYBN-T6-07-0136-001-2018

7.2.5 *Calibration Records of Electromagnetic Hanging Weight of Electronic Belt Scale*  
(HYBN-T6-07-0137-001-2018)

电子皮带秤电磁挂码校准记录 HYBN-T6-07-0137-001-2018

7.2.6 *Physical Calibration Records of Electronic Belt Scale* (HYBN-T6-07-0138-001-2018)

电子皮带秤实物校准记录 HYBN-T6-07-0138-001-2018

7.2.7 *Rationed Packing Scale Calibration Records* (HYBN-T6-07-0139-001-2018)

定量包装秤校准记录 HYBN-T6-07-0139-001-2018

7.2.8 *Intermediate Check Records of Electronic Truck Scale* (HYBN-T6-07-0140-001-2018)

电子汽车衡期间核查记录 HYBN-T6-07-0140-001-2018

7.2.9 *Pressure Gauge Calibration Records* (HYBN-T6-07-0141-001-2018)

压力表校准记录 HYBN-T6-07-0141-001-2018

7.2.10 *Calibration Records of Pressure Gauge with Electric Contact*  
(HYBN-T6-07-0142-001-2018)

电接点压力表校准记录 HYBN-T6-07-0142-001-2018

7.2.11 *Glass Container Calibration Records* (HYBN-T6-07-0143-001-2018)

玻璃量器校准记录 HYBN-T6-07-0143-001-2018

7.2.12 *Bimetallic Thermometer Calibration Records* (HYBN-T6-07-0144-001-2018)

双金属温度计校准记录 HYBN-T6-07-0144-001-2018

7.2.13 *Working Thermocouple Calibration Records* (HYBN-T6-07-0145-001-2018)

工作用热电偶校准记录 HYBN-T6-07-0145-001-2018

7.2.14 *Industrial Thermistor Calibration Records* (HYBN-T6-07-0146-001-2018)

工业热电阻校准记录 HYBN-T6-07-0146-001-2018

**7.2.15 Working Liquid-in-glass Thermometer Calibration Records**

(HYBN-T6-07-0147-001-2018)

工作用玻璃液体温度计校准记录 HYBN-T6-07-0147-001-2018

**7.2.16 Weight Calibration Records** (HYBN-T6-07-0148-001-2018)

砝码校准记录 HYBN-T6-07-0148-001-2018

**7.2.17 Electronic Balance Calibration Records** (HYBN-T6-07-0149-001-2018)

电子天平校准记录 HYBN-T6-07-0149-001-2018

**7.2.18 Working Capillary Viscometer Calibration Records** (HYBN-T6-07-0150-001-2018)

工作用毛细管黏度计校准记录 HYBN-T6-07-0150-001-2018

**7.2.19 Laboratory PH Meter Calibration Records** (HYBN-T6-07-0151-001-2018)

实验室 pH(酸度)计校准记录 HYBN-T6-07-0151-001-2018

**7.2.20 Working Glass Hydrometer Calibration Records** (HYBN-T6-07-0152-001-2018)

工作玻璃浮计校准记录 HYBN-T6-07-0152-001-2018

**7.2.21 Spectrophotometer Calibration Records** (HYBN-T6-07-0153-001-2018)

分光光度计校准记录 HYBN-T6-07-0153-001-2018

**7.2.22 Three-phase Electric Energy Meter Calibration Records**

(HYBN-T6-07-0154-001-2018)

三相电能表校准记录 HYBN-T6-07-0154-001-2018

**7.2.23 Steel Measuring Tape Calibration Records** (HYBN-T6-07-0155-001-2018)

钢卷尺校准记录 HYBN-T6-07-0155-001-2018

**7.2.24 Vernier Caliper Calibration Records** (HYBN-T6-07-0156-001-2018)

游标卡尺校准记录 HYBN-T6-07-0156-001-2018

**7.2.25 Micrometer Calibration Records** (HYBN-T6-07-0157-001-2018)

千分尺校准记录 HYBN-T6-07-0157-001-2018

**7.2.26 Calibration Records of Dial Indicators (Reading in 0.01mm/0.001mm)**

(HYBN-T6-07-0158-001-2018)

百分表、千分表校准记录 HYBN-T6-07-0158-001-2018

**7.2.27 Thermostatic Bath Calibration Record** (HYBN-T6-07-0175-001-2024-1)

恒温槽校准记录 HYBN-T6-07-0175-001-2024-1

**7.2.28 Calibration Record for Diesel Fuel Dispenser** HYBN-T7-07-0176-2024-1

柴油加油机校准记录 HYBN-T7-07-0176-2024-1

**8 Supplementary Provisions 附则**

8.1 The Regulations are under the jurisdiction of Equipment Management Dept.

本制度由机械动力部归口管理。

8.2 The Regulations are drafted by the Equipment Management Dept.

本制度起草部门：机械动力部。

8.3 Equipment Management Dept. is responsible for the interpretation of the Regulations.

本制度解释权归机械动力部拥有。

8.4 Preparation and approval of the Regulations are shown in the Table below:

本制度编制和审批情况见下表:

**Table 1 Details of Document Version, Preparation and Approval**

表 1 文件版本编制和审批情况

2	2024-04-01	Ding Sichun 丁似春	ZhaoTingyun 赵挺云	Xu Ye 徐野	Chen Liancai 陈连财
Revision 版本	Issued date 颁布日期	Prepared by 编制人	Reviewed by 审核人	Authorized by 审定人	Approved by 批准人

