By

Gerald V Barta

Senior Instrumentation Specialist

June, 2022



**Instrument Specs and Index**

INTEGRATED OR STANDALONE INSTRUMENT INDEX TUTORIAL

# Table of Contents

[Table of Contents 1](#_Toc107320064)

[1 OVERVIEW 1](#_Toc107320065)

[1.1 WHAT IS AN INSTRUMENT INDEX? 1](#_Toc107320066)

[1.2 WHAT IS AN INTEGRATED INSTRUMENT INDEX? 1](#_Toc107320067)

[1.3 INTENSION AND OBJECTIVES 1](#_Toc107320068)

[1.3 HISTORICAL PERSPECTIVE 2](#_Toc107320069)

[1.5 LIFE-CYCLE DOCUMENTATION ACTIVITIES 2](#_Toc107320070)

[1.6 EFFECTIVE USE OF ELECTRONIC FILES 2](#_Toc107320071)

[1.6.1 Data Validation 3](#_Toc107320072)

[1.7 INTEGRATED FORM LOADER DASHBOARD 3](#_Toc107320073)

[1.7.1 Standalone Instrument Index Loader 4](#_Toc107320074)

[2 INSTRUMENT INDEX DATA SPREADSHEET INTERFACE 4](#_Toc107320075)

[2.1 INSTRUMENT INDEX DATA WORKSHEET 4](#_Toc107320076)

[2.1.1 Instrument Specification Document Sourced Data 5](#_Toc107320077)

[2.1.2 Extended Manual Data Entry Instrument Index Fields 5](#_Toc107320078)

[2.1.3 Manual Data Entry Sourced Data 5](#_Toc107320079)

[2.1.4 Custom Views of Instrument Index Data 5](#_Toc107320080)

[2.1.5 Data Groups with Alternating Color Coded Header Names 6](#_Toc107320081)

[2.1.6 Sorted Integrated Multi-Sourced Spreadsheet 7](#_Toc107320082)

[2.1.7 Sort and Filter Options for Each Field 8](#_Toc107320083)

[2.1.8 Calculated % Complete for Each Field 9](#_Toc107320084)

[2.1.9 Review for Inconsistencies 9](#_Toc107320085)

[2.2 VIEW ADMINISTRATIVE USERFORMS WORKSHEET 9](#_Toc107320086)

[2.3 VIEW USERFORMS WORKSHEET 10](#_Toc107320087)

[2.4 DROP-DOWN LIST WORKSHEET 11](#_Toc107320088)

[2.5 INSTRUMENT INDEX CUSTOM REPORTS FOR DELIVERABLES 11](#_Toc107320089)

[ANNEX A INSTRUMENT INDEX DATA LIST 12](#_Toc107320090)

[Table 1 Instrument Specification Forms Integrated Data 12](#_Toc107320091)

[Table 2 Extended Manual Data Entry Properties of Instrument Index 16](#_Toc107320092)

[Table 3 – Typical Manual Entry Instrument Index Property Dropdown List 19](#_Toc107320093)

# OVERVIEW

## WHAT IS AN INSTRUMENT INDEX?

Index Definition: “an alphabetical list of names, subjects, etc., with references to the places where they occur.”

An “**Instrument Index**” (Instrument schedule) can refer to a simple report document of very limited fixed content, or an extensive database of instrument devices and software functions cross-referenced to their related work activities and the milestones and status of such activities.

## WHAT IS AN INTEGRATED INSTRUMENT INDEX?

An Integrated Instrument Index (database) is a single file and user interface which consolidates (several data sources) into a single more effective or coherent whole, designed to meet the data management requirements of multiple stakeholders over the consecutive and interlinked stages of instrument devices or functions.

The terminology “Integrated” in this context, generally implies software automated work processes that automatically manage data entry or copying of major portions of the data to ensure completeness and accuracy between a work process data entry source and the content of the instrument index file.

## 1.3 INTENSION AND OBJECTIVES

[**InstrumentSpecsandIndex.com**](http://instrumentspecsandindex.com/) is a website which aims to publish and solicit FREE crowdsourced information about:

* Instrument Index integration with ISA TR20 style specification forms
* ISA-5.1-2009/2022 Instrument Identifications Number administration and generation
* Standalone instrument index with fields and drop-down list equivalent to those in ISA TR20 forms
* Coordinated Instrument Index fields including typical P&ID properties such as:
	+ Drawing number, Tag number, Failure mode, and Line number properties
	+ International standard location properties and relative location description
	+ Related Equipment number and Service description
	+ Drawing status and data checking status
* Documented Safety classifications such as Hazardous Area Classification and Criticality Classification
* OSHA required Design Operating conditions and Device performance ratings
* Instrument Calibration ranges and signal Action mode
* Loop and additional tag properties
* Cross reference to related drawings, systems and packages used for sorting information
* Milestone and Status fields to analyze work requirements and completion status
* Maximized default amalgamation of proven index content which can be easily simplified by HIDING columns that are not going to be used for specific projects
* Default Custom Views of Instrument Index data to facilitate efficient work processes and reviews
* Capability to easily revise or add new Custom Views by users

## HISTORICAL PERSPECTIVE

In My experience:

* Initially projects maintained a cross-reference ledger book of reserved instrument numbers, subjects, etc., with references to the places where they occur.
* Availability of electronic files of Instrument Index cross-references with alphabetical ordering based on Tag Number, was instrumental to the index inclusion of records unrelated to data sheets.
* Index content was soon expanded to include documentation of control loops and all their tagged child instrument devices
* With the advent of Computer Aided Engineering (CAE) applications, their Instrument Index content was expanded to cross-reference all tagged devices or software functions and their related work products.
* Efficient data retrieval in CAE applications generally requires Relational Database technology preceded by standardizing/normalizing and enforcing many work processes and naming conventions.
* Significant demand still exist for a simpler flat file data structures to cross-reference index data without the structured procedures required for automatically establishing complex data relationships
* Our previously published Integrated Instrument Index Data file, addressed the content and viewing of the data. The addition of standardized Instrument Identification numbers allows data retrieval and editing in an efficient user interface.

## 1.5 LIFE-CYCLE DOCUMENTATION ACTIVITIES

An instrument index (database) is typically managed over the “Life Cycle of an Engineering Project” and frequently is turned over to the client for integration into a much wider scoped database of physical hierarchy and timeline. Environmental and Safety regulations may require “cradle-to-grave” documentation for some physical instrument devices.

## 1.6 EFFECTIVE USE OF ELECTRONIC FILES

The Instrument Index column names and data types are coordinated with those of the Instrument Specification Forms Content Controls, such that Electronic Data Exchange will occur during saving operations whenever matching names are identified in both applications. Therefore, additional exchange data can be implemented by simply adding a new column to the Excel spreadsheet with the coordinated name, without the need for any VBA code changes.

### 1.6.1 Data Validation

Electronically Data Interchange (EDI) with external files requires coordinated data names and data types. Consistency of data values can significantly enhance the effectiveness of data sorting and searching.

ANNEX A INSTRUMENT INDEX DATA LIST identifies the property names and validation criteria used in the Excel spreadsheet to maximize compatibility with EDI effectiveness.

## 1.7 INTEGRATED FORM LOADER DASHBOARD

A *Form Loader Dashboard* is included as the common interface for access to all templates, forms, Instrument Index files and their data storage folders.

Use the *Form Loader Dashboard* by double clicking the  Desktop shortcut to activate the dashboard interface.

When the integrated interface opens, scroll through the list of **Instrument Index Data** files, and click the window row for the Excel® spreadsheet of interests:

* Common index for normal operations
* Import Temp index for processing files returned form external parties
* Project 1…. Indexes for separate data files per project
* Typical Forms index used to copy consistent default data into a specification form



* Note: See Quick Start Tour document paragraph 3 for step-by-stem actions to work with these spreadsheets!

### 1.7.1 Standalone Instrument Index Loader

Drag-and-drop or copy the *Instrument Index Data.xlsm* shortcut to the desktop for standalone Instrument Index applications. Double click the  Desktop shortcut to activate the Excel spreadsheet application.

# 2 INSTRUMENT INDEX DATA SPREADSHEET INTERFACE

The Instrument Index Data spreadsheet opens with a pop-up window to select a Custom View or Close the window.



If the intent for this user’s session is to:

* Add new records, then the default “Add Components UserForm” should be enabled by clicking the **Show** Button. This will allow the appropriate viewing of the data that will be added with the UserForm.
* Edit or review existing records, then highlight the view name for the appropriate work process, and then click the **Show** Button to open that view
* The other configuration or administration activities can click the Close button

The spreadsheet will open showing the Instrument Index Data worksheet and the 4 workbook tabs.

## 2.1 INSTRUMENT INDEX DATA WORKSHEET

If a Custom View has been selected, the Instrument Index Data worksheet tab will be highlighted and the data for that view will be displayed.



### 2.1.1 Instrument Specification Document Sourced Data

Integrated or Standalone Instrument Index Excel Template Supports all 258+ Instrument Specification Forms

Over 100 fields from each instrument specification form are automatically copied to the Excel **Instrument Index Data** spreadsheet, whenever a specification document is saved. The Instrument Index Data table has one record for each specification document number and that record will be updated with the latest data at each saving of the specification document.

### 2.1.2 Extended Manual Data Entry Instrument Index Fields

Over 50 additional typical Instrument Index Fields, related to the specification form’s tagged device, are provided, and can be managed if desired. They can be easily accessed by selecting the “Manual Data Entry of Index” custom view. This data will **NOT** be overwritten when specification documents are revised and saved.

### 2.1.3 Manual Data Entry Sourced Data

Records can also be created within the spreadsheet using the Excel UserForm or directly entering data on the next available empty line of the spreadsheet.

### 2.1.4 Custom Views of Instrument Index Data

Seventeen default custom views of the Instrument Index Data are provided.

* Any view can easily be simplified by hiding unused columns and resaving the modified view.
* New views can be added by modifying any similar view and saving the Custom View with a new name.

Note: The “Normal View (All for design)” contains all fields and can be used to ensure that hidden fields of other views are not overlooked when considering creating a new view.

Note: Do not delete any column because that deletes the data and will result in all other views failing to retrieve their data.

|  |
| --- |
| **CUSTOM VIEW NAME** |
| Add Component UserForm |
| Additional Loop or Tag Properties |
| Administrative Identifications |
| Calibration Data |
| Component Design Criteria |
| Component Identifications |
| Document Identifications |
| Drawing References |
| Instrument Index Report testing |
| Instrument Specification Form Data |
| Manual Data Entry of Index |
| Milestones and Status |
| Modeling Physical Data |
| Normal View (All for design) |
| Process Data Comparison |
| Process Specification Form Operating Parameters |
| Procurement Properties |
| Safety Classifications |
| System Properties |

 Note: Any additional Custom View can be added to the Excel file columns.

### 2.1.5 Data Groups with Alternating Color Coded Header Names

The spreadsheet fields are identically sequenced for all views where they are present in data groups of related work process activities or subject matter.

|  |  |
| --- | --- |
| **Data Group Title** | **Data Group Description** |
| Frozen Critical Columns (Always present) | 4 Fields frozen to always be present for all views, Document Number, Loop Name, Keywords, and Component type1 |
| Document Identifications | 11 Fields identifying document Meta Data, Responsible Organization, File name and location, and any Reference Specification |
| Administrative Identifications | 8 Fields identifying Project and hierarchical location modeling data |
| Service Identifications | 12 Fields identifying main component Tag no/Functional ID, Related equipment, Service, P&ID reference number and Line properties |
| Safety Classifications | 13 Fields identifying Hazardous Area classification, Testing/Listing agency, Criticality classification, Signal failure modes, GHS Health hazard and Type of protection |
| Component Design Criteria | 14 Fields identifying process limit pressure and temperature design conditions and corresponding component maximum working conditions |
| Modeling Physical Data | 7 Fields identifying component weight and dimensions suitable for preliminary loading and modeling volume interference analysis |
| Calibration and Test | 8 Fields identifying input measurement range, control action, output signal range for component's primary signal and test pressure requirements |
| Component Identifications | 3 Fields identifying the primary component's instrument type, Manufacturer and robust intelligent model number |
| Location Properties | 4 Fields identifying relative locations as visible on P&ID drawings plus three fields identifying specific locations, generally within the hierarchical locations. |
| Additional Loop or Tag Properties some text | 6 Fields identifying Loop properties, alternate tag ID, Interlock number and external power requirement |
| Milestones and Status | 23 Fields identifying major deliverable required dates and status used to quantify work activities and progress completions |
| Procurement Properties | 6 Fields identifying parties responsible for supplying components the requestion and purchase order identification and package assignments and expected delivery date |
| Drawing References | 13 Fields identifying drawing numbers for major deliverables |
| System Properties | 5 Fields identifying instrument system and I/O assignments, plus turnover and commissioning system assignments |

### 2.1.6 Sorted Integrated Multi-Sourced Spreadsheet

All existing records originating from either data entry source, should by default be sorted by Loop Name and Keywords (Formatted Identification/Tag Number).



### 2.1.7 Sort and Filter Options for Each Field

The spreadsheet header row (1) identifies the field names and provides an icon to open the Sort and Filter options for that field, such as:



Clicking the  icon will open the Sort & Filter options for convenience in reviewing the list of unique values or limiting the view for review.



### 2.1.8 Calculated % Complete for Each Field

The status of data entry activities of blank cells cannot generally be ascertained. Therefore, calculating the percentage of cells with data approximates the % completion when we assume that all record fields should contain values. This assumption is particularly valid for text fields when the recommended practice of entering “NA” (Not Applicable) is used to document when data is not expected to be provided. This recommended practice has been made available for specification form drop-down list and for most text fields in this spreadsheet.

Notes: If filter criteria is activated as identified previously, the calculated % completion will represent the query result set of values.

### 2.1.9 Review for Inconsistencies

This tabular data presentation can be instrumental in review for inconsistencies

Notes: See Quick Start Tour document, paragraph 8.6 *Integrated Instrument Index Data Browser* for step-by- step usage.

Note: Data changes made in the Instrument Index Data table are NOT propagated to the Specification Form documents. Therefore, any changes identified by review of the index table must be corrected on the individual document, which when saved will update the Instrument Index Data file.

## 2.2 VIEW ADMINISTRATIVE USERFORMS WORKSHEET

If the Close Custom View buton was enabled, the User can select the Administrative UserForms worksheet tab, unless it has been hidden subsequent to completion of the configuration of the Identification Number Enabler.



This enabler configuration MUST be completed before the Add Components UserForms of either the Instrument Specification forms or the Excel Instrument Index Data are used to enter project data.

[ISA-5.1-2009\_2022 Instrument Identification Number Enabler Administration Tutorial.docx](ISA-5.1-2009_2022%20Instrument%20Identification%20Number%20Enabler%20Administration%20Tutorial.docx) provides detailed procedure for managing this critical activity.

## 2.3 VIEW USERFORMS WORKSHEET

If the Close Custom View buton was enabled, the User can select the View UserForms worksheet tab



The View UserForm tab opens and displays the command button to open the Add Components UserForm.



Click this button to access the Add Components UserForm for data Entry



[ISA-5.1-2009\_2022 Instrument Identification Number Enabler Tutorial.docx](ISA-5.1-2009_2022%20Instrument%20Identification%20Number%20Enabler%20Tutorial.docx) provides detailed procedures for using the UserForm to enter data into the Excel spreadsheet.

## 2.4 DROP-DOWN LIST WORKSHEET

If the Close Custom View buton was enabled, the User can select the Drop-down List worksheet tab, unless it has been hidden subsequent to completion of the configuration of the data validation drop-down list configuration.

Named-Ranges of values and their descriptions used for drop-down list can be manged in this worksheet. Editing of the values in these named-ranges will immediately result in the changes being available at all spreadsheet locations using that named-range.

See example below:



See TABLE 3 - Manual Entry Instrument Index Property Dropdown List Details

## 2.5 INSTRUMENT INDEX CUSTOM REPORTS FOR DELIVERABLES

Although no custom reports are presently included, such reports can be designed to produce special listings of data, such as:

* Calibration data report
* Safety instrument report
* Document status report
* Reports filtered by Physical Model properties such as Unit number
* etc.

# ANNEX A INSTRUMENT INDEX DATA LIST

## Table 1 Instrument **Specification** Forms Integrated Data

About 104 fields are automatically copied from the ISA TR20 style instrument specification Form to an Excel **Instrument Index Data s**preadsheet, whenever a specification document is saved.

|  |  |  |
| --- | --- | --- |
|  **Property Name** | **Data Description** | **Data Validation** |
| **Document Identifications (11)** |  |
| Document\_Number | Specification Document number (**must be unique**) | Any value |
| Form\_rev | Specification form number plus revision | Any value |
| Latest revision | Document latest revision identification | Any value |
| Publish Date | Date of document publish | Date >1/1/2000 |
| Status | Status of document issue | Document status-Warning |
| Spec Id attri1value | Specification Identifications section definable field name | List-Warning |
| Spec id attribute 1 value | Specification Identifications section definable field value | List (NA) |
| Subject | Specification form title (document Subject description) | Any value |
| Company | Responsible Organization company identification | Any value |
| Comments | Word/SharePoint document comment | Any value |
| File Name | Document full path or file name | Any value |
| Reference specification | External document that applies to device requirements | List (NA) |
| **Administrative Identifications (8)** |  |
| Project number | Project number | List (NA) |
| Sub project no | Sub project number | List (NA) |
| Project | Project title | List (NA) |
| Enterprise | Enterprise identification | List (NA) |
| Site | Site name | List (NA) |
| Area | Area identification acronym | List (NA) |
| Unit | Unit identification acronym | List (NA) |
| Admin Def attribute 1 name | Administrative Identifications section definable field name | List-Warning |
| Admin Def attribute 1 value | Administrative Identifications section definable field value | List (NA) |
| **Service Identifications (12)** |  |
| Keywords (Tag no/Functional ID) | Primary Tag no/Functional identification | Any value |
| Related equipment | Related equipment identification | List (NA) |
| Service | Service description | Any value |
| Application service | Service description using manufacturer’s terminology | List (NA) |
| P\_ID\_Reference dwg number | P&ID or Reference drawing number | List (NA) |
| Upstr line\_nozzle number | Upstream line or nozzle number | List (NA) |
| Upstr line pipe spec | Upstream line pipe spec | List (NA) |
| Upstr line nom rating | Upstream line nominal rating | List (NA) |
| Upstr line conn type | Upstream line connection type | List-Warning |
| Upstr line termn style | Upstream line termination style | List (NA) |
| Upstr line material type | Upstream line material type | List-Warning |
| Primary construction material | Material of pressure containing shell component | Any value |
| **Safety Classifications (13)** |  |
| Inline hazardous area cl | Inline or Local Hazardous Area Class | List-Warning |
| Inline hazardous Div\_Zone | Inline or Local Hazardous Area Division or Zone | List-Warning |
| Inline hazardous gr | Inline or Local Hazardous Area Group | List-Warning |
| Inline T Code | Inline or Local Hazardous Area Temperature Code | List-Warning |
| Environmental area | Description of environmental conditions at site of device | List-Warning |
| Testing/Listing agency | Suitable 3rd party listing agency identification | Any value |
| Criticality classification | Criticality classification | List-Warning |
| Safety integrity level | Safety integrity level for Safety Class devices | List-Warning |
| Safety category | Safety category for Safety Class devices | List-Warning |
| Signal loss failure mode | Signal loss failure mode | List-Warning |
| Supply loss failure mode | Supply loss failure mode | List-Warning |
| Material name | Process Material name | Any value |
| GHS health hazard | International ratings of material Health Hazards | List-Warning |
| Compliance standard | Compliance standard identification | Any value |
| Type of protection | Type of protection classification | List-Warning |
| **Component Design Criteria (14)** |  |
| Design Inlet press max | Design Inlet pressure maximum value | Decimal <1000000 |
| Design inlet press units | Design Inlet pressure maximum value units | List-Warning |
| PC Max press at design temp | Performance Characteristics Max pressure at design temp | Decimal <1000000 |
| PC Max press at design temp units | Performance Characteristics Max pressure at design temp units | List-Warning |
| Design Inlet temp max | Design Inlet temperature maximum value | Decimal <1000000 |
| Design inlet temp units | Design Inlet temperature maximum value units | List-Warning |
| PC Max design temp | Performance Characteristics Max design temp | Decimal <1000000 |
| PC Max design temp units | Performance Characteristics Max design temp units | List-Warning |
| Inlet temp min cond | Inlet temperature minimum flow condition | Decimal >-1000000 |
| Inlet temp max cond | Inlet temperature max flow condition | Decimal <1000000 |
| Inlet temperature units | Inlet temperature units | List-Warning |
| PC Min working temp | Performance Characteristics Min working temperature | Decimal >-1000000 |
| PC Min working temp units | Performance Characteristics Min working temperature units | List-Warning |
| PC Max working temp | Performance Characteristics Max working temperature | Decimal <100000 |
| PC Max working temp units | Performance Characteristics Max working temperature units | List-Warning |
| Minimum ambient temp | Minimum ambient working temperature | Decimal >-1000000 |
| Minimum ambient temp units | Minimum ambient working temperature units | List-Warning |
| PC Min ambient working temp | Performance Characteristics Min ambient working temperature | Decimal >-1000000 |
| PC Min ambient working temp units | Performance Characteristics Min ambient working temperature units | List-Warning |
| Maximum ambient temp | Maximum ambient working temperature | Decimal <100000 |
| Maximum ambient temp units | Maximum ambient working temperature units | List-Warning |
| PC Max ambient working temp | Performance Characteristics Max ambient working temperature | Decimal <100000 |
| PC Max ambient working temp units | Performance Characteristics Max ambient working temperature units | List-Warning |
| Operating Def attribute 1 name | Operating Parameters section definable field name | Any value |
| Operating Def attribute 1 value | Operating Parameters section definable field value | Any value |
| Signal power source | Signal power source required for the device | Any value |
| Digital communication std | Digital communication standard for device | Any value |
| **Modeling Physical Data (7)** |  |
| Estimated weight | Modeling Data Estimated weight | Decimal <100000 |
| Estimated weight units | Modeling Data Estimated weight units | List-Warning |
| Face-to-face dimension | Modeling Data Face-to-face dimension | Decimal <100000 |
| Face-to-face dimension units | Modeling Data Face-to-face dimension units | List-Warning |
| Overall width | Modeling Data Overall width | Decimal <100000 |
| Overall width units | Modeling Data Overall width units | List-Warning |
| Overall height | Modeling Data Overall height | Decimal <100000 |
| Overall height units | Modeling Data Overall height units | List-Warning |
| Overall depth | Modeling Data Overall depth | Decimal <100000 |
| Overall depth units | Modeling Data Overall depth units | List-Warning |
| Removal clearance | Modeling Data Removal clearance | Decimal <100000 |
| Removal clearance units | Modeling Data Removal clearance units | List-Warning |
| Mfr reference dwg | Identification of manufacturers drawing showing dimensional data | List (NA) |
| **Calibration and Test (8)** |  |
| Prim Tag no Input\_Output | Tag number or functional identification of the primary input or output signal | Any value |
| Prim\_CAL\_Input\_Output Desc | Primary Calibration Input-Output Description | Any value |
| Prim\_CAL\_Input\_LRV | Primary Calibration Input LRV | Decimal >-1000000 |
| Prim\_CAL\_Input\_LRV units | Primary Calibration Input LRV units | Any value |
| Prim\_CAL\_Input\_URV | Primary\_CAL\_Input\_URV | Decimal <100000 |
| Prim\_CAL\_Input\_URV units | Primary\_CAL\_Input\_URV units | Any value |
| Prim\_CAL\_Action | Primary Calibration Action | List-Warning |
| Prim\_CAL\_Output LRV | Primary Calibration Output LRV | Decimal >-1000000 |
| Prim\_CAL\_Output LRV units | Primary Calibration Output LRV units | Any value |
| Prim\_CAL\_Output URV | Primary Calibration Output URV | Decimal <100000 |
| Prim\_CAL\_Output URV units | Primary Calibration Output URV units | Any value |
| Test pressure Input URV | Test pressure value | Decimal >-1000000 |
| Test pressure Input URV units | Test pressure units | List-Warning |
| **Component Identifications (3)** |  |
| Component type 1 | Primary Component type name | Text length <= 27 |
| Component Manufacturer 1 | Primary Component Manufacturer name | List (NA) |
| Component Model number 1 | Primary Component Model number | Any value |

Note: Any additional Content Control property titles can be added to the Excel file columns and subsequent document savings will copy such additional data to the modified Instrument Index table.

## Table 2 Extended Manual Data Entry Properties of Instrument Index

About 56 additional manual data entry properties can be managed in the **Instrument Index Data** table:

|  |  |  |
| --- | --- | --- |
| **Extended Index Property Title** | **Data Description** | **Validation** |
| **Location Properties (4)** |  |
| Relative instrument location | Relative location such as field, local panel, remote panel, I/O building, etc. | List-Warning |
| Building number | Location building number | Any value |
| Floor/Elevation | Location Floor/Elevation | Any value |
| Storage location | Storage Location identification | Any value |
| **Additional Loop or Tag Properties (6)** |  |
| Loop\_Name | Loop name identifying parent common to all members of the Loop | Any value |
| Sequence order | Loop sequence order of individual member of a loop | Whole number =>0 |
| Identification\_Tag\_Number | Unformatted Instrument Identification/Tag Number | Any value |
| Functional\_Identification\_Letters | Functional Identification letters subset of Tag number | Any value |
| Alternate tag ID | Alternate tag identification of a device such as assigned by package equipment manufacturer, electrical interface equipment number or of a renamed device | Any value |
| Interlock number | Name/number common to all members of the interlock | Any value |
| Requires power supply | Requires power independent of their signal wiring | List-Stop |
| Installation package number | Construction installation package number | Any value |
| Loop check package | Construction loop check package number | Any value |
| **Milestones and Status (23)** |  |
| P&ID status | Status of P&ID activity such as future work, work on hold, pending deletion or pending scope change | List (Data issued status)-Warning |
| P&ID Checked date | Date of latest approval of P&ID Index data for completeness and consistency | Date >1/1/2000 |
| Instrument status | Status of device such as existing, new, spare, abandoned in place, to-be-removed, etc | List-Warning |
| Process data owner | Organization responsible for providing process data such as Process, Mechanical, Vessel, Electrical or packaged equipment | List-Warning |
| Process data required | Date for required process data specifications | Date >1/1/2000 |
| Process data status | Status of process data | List (Document status)-Warning |
| Requisition required | Date for issuing specification requisition | Date >1/1/2000 |
| Specification package status | Status of specification package | List (Package issued status)-Warning |
| Required on site | Date for receiving device on site | Date >1/1/2000 |
| Purchase order status | Status of purchase order | List (Package issued status)-Warning |
| Cause & Effect diagram status | Status of Cause & Effect diagram | List (Document status)-Warning |
| Logic diagram status | Status of Logic diagram drawing | List (Document status)-Warning |
| Junction box drawing status | Status of Junction box wiring drawing | List (Document status)-Warning |
| 3D model status | Status of 3D model activity | List (Data issued status)-Warning |
| Location drawing status | Status of location drawing | List (Data issued status)-Warning |
| Loop diagram status | Status of loop diagram activity | List (Document status)-Warning |
| Air/Purge connection status | Status of Air/Purge connection detail | List (Document status)-Warning |
| Electrical/Signal con status | Status of Electrical/Signal connection detail | List (Document status)-Warning |
| Environmental protect status | Status of Environmental protection detail | List (Document status)-Warning |
| Process connection status | Status of process connection detail | List (Document status)-Warning |
| Support/Mounting status | Status of Air/Purge connection detail | List (Document status)-Warning |
| Piping isometric status | Status of isometric drawing | List (Data issued status)-Warning |
| Construction package status | Status of construction package | List (Package issued status)-Warning |
| **Procurement Properties (6)** |  |
| Supply responsibility | Organization responsible to supply the device such as instrumentation. piping, electrical, packaged equipment, etc. | List-Warning |
| Requestion number | Requisition number | Any value |
| Purchase order number | Purchase order number | Any value |
| Specification package | Specification package ID | Any value |
| Expected delivery date | Date of expected delivery | Date >1/1/2000 |
| Construction package date | Date of expected construction package | Date >1/1/2000 |
| **Drawing References (16)** |  |
| 3D model drawing | 3D drawing number | Any value |
| Air/Purge connection | Air/Purge connection detail drawing | Any value |
| Cause & Effect diagram | Cause & Effect diagram or chart document | Any value |
| Control strategy diagram | Control strategy diagram for complex loops | Any value |
| Electrical location drawing | Electrical location drawing primarily for instruments needing external power provided by others | Any value |
| Electrical/Signal connection | Electrical/Signal connection detail drawing | Any value |
| Environmental protection | Environmental protection detail drawing | Any value |
| Instrument Location drawing | Location drawing number showing the device relative location | Any value |
| Junction box | Junction box detail drawing | Any value |
| Logic diagram | Logic diagram number for process operations | Any value |
| Loop diagram | Loop diagram drawing | Any value |
| Piping isometric | Piping isometric drawing number  | Any value |
| Process connection | Process connection detail drawing | Any value |
| Process data sheet | Process data sheet/specification number | Any value |
| Process Flow Diagram | Process Flow Diagram number | Any value |
| Support/Mounting | Support/Mounting detail drawing | Any value |
| **System Properties (5)** |  |
| Instrument system | Abbreviation for the digital system which the device signal is connected to, such as DCS, PLC, ANALYZER, ESD, etc. | List-Warning |
| Associated I/O type | Associated digital system I/O component such as AI. AO, DI. DO, HART®, etc. | List-Warning |
| Associated I/O location | Location of associated I/O component such as building number, cabinet/rack number, panel number, etc. | Any value |
| Turnover System | Data packaging identification for transfer to the owner | List (Package issued status)-Warning |
| Commissioning system | Construction and startup commissioning system | List (Package issued status)-Warning |

Note: Any additional manual entry property titles can be added to the Excel file columns.

## Table 3 – Typical Manual Entry Instrument Index Property Dropdown List

|  |
| --- |
| **Supply responsibility** |
| By electrical | Furnished by electrical discipline |
| By instrument | Furnished by instrument discipline |
| By mechanical | Furnished by instrument discipline |
| By vessel | Furnished by vessel discipline |
| By others | Furnished by others |
| NA | Not applicable |
| **Instrument status** |
| By instrumentation | New instrument by instrumentation |
| By others | Furnished by others |
| NA | Not applicable |
| Relocate | Existing device to be relocated |
| Reuse in place | Existing device to be reused in place |
| Vendor package | New instrument in packed equipment |
| **Relative** **Instrument location** |
| actuator | Mounted on actuator |
| analyzer house | Located in a analyzer house |
| close coupled | Close coupled element or gauge |
| equipment mounted | Directly inserted in or on equipment |
| external mount | Mounted external to a vessel (bridle) |
| In-line | Directly inserted inline |
| in vessel | Located in vessel/connection |
| local panel | Visible on front of panel |
| MCC | Motor control center |
| main panel | Located on the front of a panel |
| NA | Not applicable |
| non-process | Field located without process connections |
| on process line | Mounted on-line (non-intrusive) |
| rear panel | Mounted rear of main panel |
| rear sec panel | Mounted rear of secondary panel |
| Remote | Remote transmitter from primary element |
| secondary panel | Mounted front of secondary panel |
| shared control | Integral to instrument system shared control |
| Shelter | Located in a local instrument shelter |
| SIS | Safety Instrumented System |
| video display | Integral to instrument system shared display |
| **Instrument system** |
| ACS | Analyzer Control System |
| AS | Alarm System (panel) |
| BMS | Burner Management System |
| BPCS | Basic Process Control System |
| CCS | Computer Control System |
| CEMS | Continuous Emissions Monitoring System |
| DCS | Distributed Control System |
| ECS | Electronic Control System |
| FGS | Fire & Gas System |
| LOCAL | Self-contained instrument or loop |
| MCS | Machinery Control System |
| NA | Not applicable |
| PLC | Programmable Logic System |
| **Associated I/O type** |
| AI | Analog input |
| AO | Analog output |
| DI | Discrete input |
| DO | Discrete output |
| FF | FOUNDATION fieldbus |
| Profibus-DP | Profibus-DP fieldbus |
| Profibus-PA | Profibus-PA fieldbus |
| FI | Frequency input |
| FO | Frequency output |
| HART AI | HART AI |
| HART AO | Hart AO |
| NA | Not applicable |
| RTD | RTD element |
| SERIAL | Serial communication |
| TC | Thermocouple element |
| **Process data owner** |
| Instrumentation | Instrumentation department |
| Line list | Line classification list |
| Mechanical | Mechanical engineering department |
| NA | Not applicable |
| Package vendor | Packaged equipment vendor |
| Process data sheet | Process design department |
| Vessel | Vessel design department |
| **Requires power supply** |
| No | No external (non-loop) is required |
| Yes | External (non-loop) is required |

|  |
| --- |
| **Package issued status** |
| Issued for Approval | Package issued for approval |
| Issued for Bid | Package issued for bid |
| Issued for Construction | Package issued forconstruction |
| Issued for Procurement | Package issued for procurement |
| Issued for Record | Package issued for record |
| NA | Not applicable |

|  |
| --- |
| **Data issued status** |
| Approved | Data revision approved |
| Future work | Data revision future work |
| Hold work | Data revision work on hold |
| NA | Not applicable |
| Pending change | Data pending change |
| Pending deletion | Drawing revision pending deletion |
| Pending scope change | Data revision pending scope change |

|  |
| --- |
| **Document status** |
| Issued for Approval | Document issued for Approval |
| Issued for Bid | Document issued for Bid |
| Issued for Construction | Document issued for Construction |
| Issued for Procurement | Document issued for Procurement |
| Issued for Record | Document issued for Record |
| NA | Not applicable |