Setting the Standard for Automation™

ISA Instrument Specification Forms

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Standards
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Three Distinct Versions of ISA Specification Forms

- Original ISA-20 forms
- An industry implementation of the ISA-20 forms
- ISA TR-20 forms

Original ISA-20 Specification Forms

- First published in 1981
- Developed for manual data entry
- Updated to Excel in 1998
- Still used in many applications, but limited by the number of forms – 26.
- Contains “instructions” for data fields on forms

An Industry Implementation of the ISA-20 Forms

- 2007 package extends ISA-20 forms to 73 instrument types
- Developed by users at a major pharmaceuticals company
- Implemented in Excel, readily adaptable to many process industry operations

ISA TR-20 Forms

- Series of forms developed by the ISA20 committee.
- First set of TR-20 forms published in 2001
- Available from ISA in Word format
- Currently 76 forms available - includes operating parameter forms and device specification forms
- Uses “pick lists” of data rather than instructions

ISA TR-20 Forms (cont.)

- Current ISA TR-20 Operating Parameter Forms include:
  - Analysis Device
  - Analysis Device Composition or Property
  - Valve or Regulator Device
  - Flow Device
  - Level Device
  - Pressure or Differential Pressure Device
  - Pressure Safety Device
  - Temperature Device
  - Weight or Force Device

#	RESPONSIBLE ORGANIZATION	TEMPERATURE DEVICE	#	SPECIFICATION IDENTIFICATIONS			
1		Operating Parameters	6				
2			7	Document no			
3			8	Latest revision		Date	
4			9	Issue status			
5			10				

#	ADMINISTRATIVE IDENTIFICATIONS				#	SERVICE IDENTIFICATIONS Continued					
11					39						
12	Project number		Sub project no		40	Inline hazardous area cl		Div/Zon		Group	
13	Project				41	Inline area min ign temp		Temp ident number			
14	Enterprise				42	Remote hazardous area cl		Div/Zon		Group	
15	Site				43	Remote area min ign temp		Temp ident number			
16	Area	Cell		Unit	44						
17					45						
18	SERVICE IDENTIFICATIONS				46	COMPONENT DESIGN CRITERIA					
19	Tag no/Functional ident				47	Component type					
20	Related equipment				48	Component style					
21	Service				49	Output signal type					
22					50	Characteristic curve					
23	P&ID/Reference dwg number				51	Type of protection					
24	Line/Nozzle number				52	Criticality code					
25	Process conn pipe spec				53	Max EMI susceptibility		Ref			
26	Line/Nozzle nominal size		Rating		54	Max temperature effect		Ref			
27	Process conn termn type		Style		55	Max response time					
28	Line/Nozzle schedule no		Wall thickness		56	Min required accuracy		Ref			
29	Connection length				57	Max dead band					
30	Connection orientation				58	Avail nom power supply		Number wires			
31	Connection material type				59	Minimum load capability					
32	Connection design code				60	Testing/Listing agency					
33	Insulation thickness				61	Test requirements					
34	Device insertion length				62	Supply loss failure mode					
35					63	Signal loss failure mode					
36					64						
37					65						
38					66						

#	PROCESS VARIABLES	MATERIAL FLOW CONDITIONS				#	PROCESS DESIGN CONDITIONS		
68	Flow Case Identification				Units	101	Minimum	Maximum	Units
69	Pressure					102			
70	Temperature					103			
71	Phase type					104			
72	Total mass flow rate					105			
73	Liquid mass flow rate					106			
74	Liquid actual flow rate					107			
75	Liquid standard flow rate					108			
76	Liquid density					109			
77	Liquid specific gravity					110			
78	Liquid viscosity					111			
79	Vapor mass flow rate					112			
80	Vapor actual flow rate					113			
81	Vapor standard flow rate					114			
82	Vapor density					115			
83	Vapor specific gravity					116			
84	Vapor molecular weight					117			
85						118			
86						119			
87						120			
88						121			
89						122			
90						123			
91						124			
92						125			
93	CALCULATED VARIABLES					126			
94	Line fluid velocity					127			
95	Line Reynolds number					128			
96	Wake/natural freq ratio					129			
97						130			
98						131			
99						132			

Row 67 / 100 are the section heading rows.

#	MATERIAL PROPERTIES				#	MATERIAL PROPERTIES Continued					
134	Name				139	Ratio sp heat factor					
135	Composition				140	Emissivity					
136	Density at ref temp		At		141	NFPA health hazard		Flammability		Reactivity	
137					142						

Rev	Date	Revision Description	By	Appv1	Appv2	Appv3	REMARKS

RESPONSIBLE ORGANIZATION	THERMOCOUPLE ASSEMBLY w/wo THERMOWELL Device Specification	SPECIFICATION IDENTIFICATIONS		
		Document no		
		Latest revision		Date
		Issue status		

PROTECTIVE SHEATH AND FITTING			
Housing type			
Pad/Collar type			
Fitting conn nominal size		Style	
Mounting fitting type			
Sheath alignment			
Sheath outside diameter		Length	
Spring loading			
Sheath/Braid material			
Fitting material			
SENSING ELEMENT			
Sensor type		Quantity	
Wire nominal size			
Thermocouple type			
Tolerance class			
Measuring junction			
Thermocouple wire matl			
Insulator material			
LEAD WIRE AND HEAD EXTENSION			
Extension type			
Ext wire nom size-type			
Extension/Lead length			
Nipple-union nom size		Rating	
Nipple pipe sched no			
Transition type			
Termination style			
Connecting wire length			
Shield - ground wire			
Nipple material			
Union/Coupling material			
Coating-armor material			
Extension wire material			
Ext wire insulation matl			
CONNECTION HEAD			
Housing type			
Cover style			
Element conn nominal size		Style	
Signal conn nominal size		Style	
Enclosure type no/class			
Grounding terminal lct			
Enclosure material			
Terminal block material			
Terminal material			

THERMOWELL OR PROTECTING TUBE			
Construction type			
Shank style			
Process conn nominal size		Rating	
Process conn termn type		Style	
Internal conn nom size		Style	
Bore diameter			
Outside dia at support			
Outside dia at tip			
Insertion length “U”			
Lagging extension lg “T”			
Thermowell/Tube material			
Sheath material-thickness			
PERFORMANCE CHARACTERISTICS			
Max press at design temp		At	
Min working temperature		Max	
Max fluid velocity limit		At temp	
Temp Lower Range-Limit		URL	
Min ambient working temp		Max	
ACCESSORIES			
Moisture seal style			
Bayonet adapter size			
SPECIAL REQUIREMENTS			
Custom tag			
Reference specification			
Compliance standard			
Construction code			
Calculation report			
Calibration report			
PHYSICAL DATA			
Estimated weight			
Overall length			
Removal clearance			
Mfr reference dwg			

CALIBRATIONS AND TEST		INPUT OR TEST			OUTPUT	
TAG NO/FUNCTIONAL IDENT	MEAS/SIGNAL/TEST	LRV	URV		LRV	URV
	Temp-Output signal					
	Test pressure					

COMPONENT IDENTIFICATIONS		
COMPONENT TYPE	MANUFACTURER	

Rev	Date	Revision Description	By	Appv1	Appv2	Appv3	REMARKS

Form: 20T2301 Rev 0

Future ISA Specification Development

- ISA20 Committee to meet Thursday, Oct 7 at 10:30 AM during ISA Automation Week in Houston

- Issues to be discussed include:
  - Develop new forms?
  - Revise existing short or long forms?
  - Other…

IEC SC65E WG2 and ISA TR-20

- IEC SC65E: Devices and integration in enterprise systems
- Working Group 2: Product properties & classification. Convenor: Dr. Peter Zgorzelski, Bayer Technology Services GmbH
- Electronic product data exchange based on previous Prolist/NAMUR work
- Draws heavily on ISA TR-20 forms in development of List of Properties

ISA-20 and ISA-TR20 Information

- ISA-20 and ISA-TR20 forms are featured in database software packages available from software partner Megaflex: www.megaflex.com.

- For information about the ISA20 committee or about the ISA-20 and TR-20 forms, contact:

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Questions?