



*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

1	RESPONSIBLE ORGANIZATION		TEMPERATURE DEVICE			6	SPECIFICATION IDENTIFICATIONS			
2			Operating Parameters			7	Document no			
3						8	Latest revision	Date		
4						9	Issue status			
5						10				
11	ADMINISTRATIVE IDENTIFICATIONS					39	SERVICE IDENTIFICATIONS Continued			
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				
67	PROCESS VARIABLES		MATERIAL FLOW CONDITIONS			100	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				
133	MATERIAL PROPERTIES					138	MATERIAL PROPERTIES Continued			
134	Name					139	Ratio sp heat factor			
135	Composition					140	Emissivity			
136	Density at ref temp		At			141	NFWA health hazard		Flammability	Reactivity
137						142				
Rev	Date	Revision Description	By	Appv1	Appv2	Appv3	REMARKS			

1	RESPONSIBLE ORGANIZATION		THERMOCOUPLE ASSEMBLY				6		SPECIFICATION IDENTIFICATIONS	
2			w/wo THERMOWELL				7		Document no	
3			Device Specification				8		Latest revision	
4							9		Date	
5							10		Issue status	
5										
11 PROTECTIVE SHEATH AND FITTING					60 THERMOWELL OR PROTECTING TUBE					
12	Housing type				61	Construction type				
13	Pad/Collar type				62	Shank style				
14	Fitting conn nominal size		Style		63	Process conn nominal size		Rating		
15	Mounting fitting type				64	Process conn term type		Style		
16	Sheath alignment				65	Internal conn nom size		Style		
17	Sheath outside diameter		Length		66	Bore diameter				
18	Spring loading				67	Outside dia at support				
19	Sheath/Braid material				68	Outside dia at tip				
20	Fitting material				69	Insertion length "U"				
21					70	Lagging extension lg "T"				
22	SENSING ELEMENT				71	Thermowell/Tube material				
23	Sensor type		Quantity		72	Sheath material-thickness				
24	Wire nominal size				73					
25	Thermocouple type				74					
26	Tolerance class				75 PERFORMANCE CHARACTERISTICS					
27	Measuring junction				76	Max press at design temp		At		
28	Thermocouple wire matl				77	Min working temperature		Max		
29	Insulator material				78	Max fluid velocity limit		At temp		
30					79	Temp Lower Range-Limit		URL		
31					80	Min ambient working temp		Max		
32	LEAD WIRE AND HEAD EXTENSION				81					
33	Extension type				82					
34	Ext wire nom size-type				83					
35	Extension/Lead length				84	ACCESSORIES				
36	Nipple-union nom size		Rating		85	Moisture seal style				
37	Nipple pipe sched no				86	Bayonet adapter size				
38	Transition type				87					
39	Termination style				88					
40	Connecting wire length				89					
41	Shield - ground wire				90					
42	Nipple material				91	SPECIAL REQUIREMENTS				
43	Union/Coupling material				92	Custom tag				
44	Coating-armor material				93	Reference specification				
45	Extension wire material				94	Compliance standard				
46	Ext wire insulation matl				95	Construction code				
47					96	Calculation report				
48					97	Calibration report				
49	CONNECTION HEAD				98					
50	Housing type				99					
51	Cover style				100					
52	Element conn nominal size		Style		101 PHYSICAL DATA					
53	Signal conn nominal size		Style		102	Estimated weight				
54	Enclosure type no/class				103	Overall length				
55	Grounding terminal lct				104	Removal clearance				
56	Enclosure material				105	Mfr reference dwg				
57	Terminal block material				106					
58	Terminal material				107					
59					108					
110 CALIBRATIONS AND TEST			INPUT OR TEST			OUTPUT				
111	TAG NO/FUNCTIONAL IDENT	MEAS/SIGNAL/TEST	LRV	URV		LRV	URV			
112		Temp-Output signal								
113		Test pressure								
114										
115										
116										
117										
118 COMPONENT IDENTIFICATIONS										
119	COMPONENT TYPE	MANUFACTURER								
120										
121										
122										
123										
124										
125										
Rev	Date	Revision Description	By	Appv1	Appv2	Appv3	REMARKS			



# 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](http://www.megaflex.com).
- For information about the ISA20 committee or about the ISA-20 and TR-20 forms, contact:

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# Questions?

