

1	GENERIC CONTROL SYSTEM, APPARATUS OR PROCESS	41	...Proportional-Integral (P-I)
2	.Plural processors	42	....Proportional-Integral-Derivative (P-I-D)
3	..Master-slave	43	...Proportional-Derivative (P-D)
4	..Parallel	44	..Feed-forward (e.g., predictive)
5	...Shared memory	45	...Combined with feedback
6	..Hybrid types (analog, digital)	46	..Rate control
7	..Including sequence or logic processor	47	..Trainable system (e.g., self-learning, self-organizing)
8	.Cascade control	48	...Neural network
9	.Supervisory control	49	..Expert system
10	..Of analog controllers	50	..Fuzzy logic
11	..Sequential or selective	51	..Statistical process control (SPC)
12	..State of condition or parameter (e.g., on/off)	52	..Parameter estimation or identification
13	...Position responsive	53	..Multiple input-multiple output (MIMO) system feature (e.g., decoupling)
14	...Time responsive (duration)	54	..Having particular compensation or stabilization feature
15	....Having display	55	...Filtering
16	....Clock-calendar (e.g., time of day)	56	.Digital positioning (other than machine tool)
17	..Operator interface (e.g., display with control)	57	..Alignment or registration
18	...Specific programming (e.g., relay or ladder logic)	58	...Having position marking
19	..Plural controlled systems, mechanisms, or elements	59	...Having optical sensing (e.g., image projection)
20	..Plural controllers	60	..Support positioning (e.g., table, stage)
21	..Failure protection or reliability	61	..Multiple axis motion or path control
22	..Electrical power distribution	62	...Orientation (e.g., posture, pose)
23	..Sequence program response	63	...Including velocity or acceleration control
24	...Addressing	64	...Position recording
25	...I/O table	65	..Operator control of remotely located element
26	...Diagnostics or debugging	66	..Having particular position determining apparatus (e.g., portable or handheld)
27	...Having status indication	67	.Plural variables
28	.Optimization or adaptive control	68	..Ratio
29	..Having model	69	..Positional (e.g., velocity, acceleration)
30	...Comparison with model (e.g., model reference)	70	...Positional with nonpositional
31	..Having adjustment of model (e.g., update)	71	.Specific compensation or stabilization feature
32	..Specific criteria of system performance	72	..Lag (e.g., deadtime)
33	...Constraint or limit (e.g., max/min)	73	.Sampled data system
34	....Variable	74	..Variable rate
35	....Bidirectional (e.g., oscillatory)		
36	....Economic (e.g., cost)		
37	...Gain (e.g., tuning)		
38	..Having perturbation		
39	...Test signal		
40	..Plural modes		

75	.Multiple modes (e.g., digital/ analog)	111	...Worker or work station efficiency
76	..Manual/automatic	112	..Having particular work transport control between manufacturing stations
77	..Fine/coarse		
78	.Having specific error signal generation (e.g., up/down counter)	113 114	...Mobile transport ..Work positioning
79	.Having protection or reliability feature	115	..Product tracking (e.g., having product or carrier identification)
80	..Warning or alarm		
81	..Self-test	116	...Having identification controlled manufacturing operation
82	..Backup/standby		
83	.Having operator control interface (e.g., control/ display console)	117	..Particular manufactured product or operation
84	..Keyboard	118	...Three-dimensional product forming
85	..Positional (e.g., joystick)		
86	.Having preparation of program	119	...Rapid prototyping (e.g., layer-by-layer, material deposition)
87	..Editing/modifying		
88	..Playback		
89	.Having specific algorithm	120	....Stereolithography
90	SPECIFIC APPLICATION, APPARATUS OR PROCESS	121	...Integrated circuit production or semiconductor fabrication
91	.Contest or contestant analysis, management, or monitoring (e.g., statistical analysis, handicapping, scoring)	122 123	...Continuous material having indeterminate length (e.g., web, strand, strip, or sheet) ...Material deposition or application (e.g., spraying, coating)
92	..Scoring		
93	..Probability determination or handicapping	124	...Registration control
94	.Digital audio data processing system	125	....Having a reference mark or pattern
95	.Product assembly or manufacturing	126 127	...Winding ...Sheet making (e.g., paper product)
96	..Integrated system (Computer Integrated Manufacturing (CIM)	128	....Paper machine or subsystem control
97	..Design or planning		
98	...3-D product design (e.g., solid modeling)	129	....Profile analyzer or controller
99	...Resource allocation	130	...Textile
100	....Job scheduling	131	....Pattern design
101	....Priority ordering	132	....For a garment
102	....Job release determination	133	....Having particular pattern producing operation (e.g., dyeing)
103	...Constraints or rules		
104	....Knowledge based (e.g., expert system)	134	....Pattern cutting
105	...Rework or engineering change	135	....Pattern matching or positioning
106	...Material requirement		
107	....Bill of material	136	....Sewing
108	..Performance monitoring	137	....Having particular input data (e.g., stitch)
109	...Quality control		
110	....Defect analysis or recognition	138 139	....Embroidering ...Spinning or winding (e.g., yarn)

140	....Loom control	177	.....Protective or diagnostic feature
141	....Knitting	178	.....Tool/workpiece interference prevention
142	....Fiber preparation	179	....Tool selection/change
143	....Having monitoring or inspecting (e.g., abnormality detection)	180	....Having operator interface feature
144	.....Yarn quality	181	.....Specific programming format (e.g., macro)
145	...Metal	182	.....Including CAD, CAM, or CIM technique
146	....Casting or drawing	183	.....Preset pattern
147	.....Control of metallurgical property	184	....Machining path display
148	....Rolling	185	....Prompting technique
149	.....Having schedule adjustment	186	....Digital positioning technique
150	.....Control or detection of a particular condition	187	.....For curve or contour
151	.....Speed control	188	.....Including velocity or acceleration control
152	.....Tension control (e.g., interstrand)	189	.....Interpolation
153	.....Temperature control	190	.....Specified tool feed path at entry or withdrawal
154	.....Flatness or crown control	191	.....Repeated machining passes
155	.....Thickness control	192	....Alignment of tool or workpiece (e.g., origin or path return)
156	.....Roll eccentricity compensation	193	....Positional compensation or modification compensation or mod
157	...Glassware forming	194	....Coordinate transformation technique
158	....IS (individual section) machine	195	....Having particular measuring device (e.g., probe)
159	...Machining	196	...Extruding
160	....Having particular tool or tool operation	197	...Molding
161	.....Tracing or duplicating	198	....Control of curing
162	.....Electrical discharge machining (EDM)	199	....Vulcanization
163	.....3-D sculpturing using nontracing prototype sensor	200	....Injection
164	.....Grinding	201	.....Plural molding machines or stations
165	.....Bending (e.g., press brake)	202	.....Control of temperature
166	.....Laser	203	.....Control of pressure
167	....Of elongated material (e.g., timber, veneer, web)	204	....Monitoring, inspection, or control of a particular condition
168	....Portable (e.g., handheld)	205	.....Control of temperature
169	....Supervisory control (e.g., plural tools or plural processors)	206	...Pressing
170	....Having particular control of a motor parameter	207	...Heating
171	....Material usage optimization	208	....Drying
172	....Multiple mode (e.g., rough-finish, coarse-fine)	209	....Furnace
173	....Adaptive (optimizing) system	210	.....Multizone
174	....Performance monitoring	211	....Oven
175	.....Condition of tool or workpiece (e.g., tolerance, tool wear)	212	....Sintering, soldering, or bonding
176	.....Offsetting	213	.Article handling

CLASS 700 DATA PROCESSING: GENERIC CONTROL SYSTEMS OR SPECIFIC APPLICATIONS

214	..Article storing, retrieval, or arrangement (e.g., warehousing, automated library)	243	....Movable (e.g., rotatable)
215	...Having an identification code	244	...Monitoring or inspection
216	...Order filling	245	.Robot control
217	..Article support load management (e.g., palletizing)	246	..Combined with knowledge processing (e.g., natural language system)
218	...Particular charging or discharging apparatus	247	..Plural controlled devices or plural nonvision controlling devices
219	..Associating or disassociating plural articles	248	...Plural robots
220	...Inserting	249	...Plural processors
221	....Having an identification code	250	..Specific enhancing or modifying technique (e.g., adaptive control)
222	....Monitoring or inspection (e.g., incomplete assembly)	251	...Coordinate transformation
223	...Collating or sorting	252	...Interpolation
224	....Having an identification code	253	...Programmed data (e.g., path) modified by sensed data
225	..Having an identification code	254	...Compensation or calibration
226	...Identification code determines article destination	255	...Collision prevention
227	....Preparation of an article for an identification code (e.g., printing, encoding)	256	...Overload prevention
228	..Having particular transport between article handling stations	257	...Based on user input
229	...Transport position identification	258	..Having particular sensor
230	...Having a conveyor	259	...Vision sensor (e.g., camera, photocell)
231	..Dispensing or vending	260	..Having control of force
232	...Operator or payment initiated	261	...Having control of robot torque
233	....Customized dispensed article (e.g., operator design)	262	..Using particular manipulator orientation computation (e.g., vector/matrix calculation)
234	....Demonstration or duplication of article (e.g., software, video)	263	...Using Jacobian computation
235	....Printing on or of dispensed or vended article	264	..Having particular operator interface (e.g., teaching box, digitizer, tablet, pendant, dummy arm)
236	....Data collection or reporting (e.g., sales, inventory)	265	.Nonreactive mixing process (e.g., mixing cement, preparing solution, diluting chemical)
237	....Authorization (e.g., password, time usage limit, personal identification number (PIN))	266	.Chemical process control or monitoring system
238	....Price adjustment	267	..Titration or pH level
239	..Blending or mixing	268	..Synthesis process
240	..Condition controlled dispensing (e.g., weight or volume)	269	...Polymerization/trimerization
241	...Central control of plural dispensing units	270	..Distillation
242	...Particular supply arrangement (e.g., plural sources or compartments)	271	..Refinement or purification or rejuvenation
		272	...Of fuel
		273	..Separation process
		274	..Control of combustion or heating apparatus (e.g., kiln, furnace, autoclave, burner, combustion system)
		275	.Mechanical control system
		276	..HVAC control

- 277 ...Multiple zones
- 278 ...Specific thermally responsive controller
- 279 ..Balancing or alignment
- 280 ..Vibration or acoustic noise control
- 281 ..Control of fluid level or volume
- 282 ..Flow control (e.g., valve or pump control)
- 283 ...Dispensing management (e.g., spraying)
- 284 ...Irrigation
- 285 ...Fluid mixing
- 286 ..Electrical power generation or distribution system
- 287 ..Turbine or generator control
- 288 ...Cogenerative system
- 289 ...Adaptive valve control
- 290 ...For turbine speed control
- 291 ..Energy consumption or demand prediction or estimation
- 292 ..System protection (e.g., circuit interrupter, circuit limiter, voltage suppressor)
- 293 ...Abnormal power, current, or impedance condition
- 294 ..Abnormal phase, waveform, or polarity condition
- 295 ..Power allocation management (e.g., load adding/shedding)
- 296 ...Time based control (e.g., real time or duty cycle)
- 297 ..Power supply regulation operation
- 298 ...By voltage regulation
- 299 ..Specific application of temperature responsive control system
- 300 ..For heating or cooling
- 301 ..Specific application of pressure responsive control system
- 302 ..Specific application of positional responsive control system
- 303 ..Specific application of dimensional responsive control system
- 304 ..Specific application of speed responsive control system
- 305 ..Specific application of weight responsive control system
- 306 ..Specific application of control based on elapsed time

CROSS-REFERENCE ART COLLECTIONS

900 **SPECIAL ROBOT STRUCTURAL ELEMENT**

FOREIGN ART COLLECTIONS

FOR 000 **CLASS-RELATED FOREIGN DOCUMENTS**

Any foreign patents or non-patent literature from subclasses that have been reclassified have been transferred directly to FOR Collections listed below. These Collections contain ONLY foreign patents or non-patent literature. The parenthetical references in the Collection titles refer to the abolished subclasses from which these Collections were derived.

FOR 101 **SEQUENTIAL OR SELECTIVE DATA PROCESSING CONTROL SYSTEM, METHOD, OR APPARATUS (364/140)**

FOR 102 **OPTIMIZATION OR ADAPTIVE DATA PROCESSING CONTROL SYSTEM, METHOD, OR APPARATUS (364/148)**

FOR 103 **DIGITAL POSITIONING (OTHER THAN MACHINE TOOL) CONTROL SYSTEM, METHOD, OR APPARATUS (364/167.01)**

FOR 104 **GAME OR AMUSEMENT (364/410)**

FOR 105 .Scoring (364/411)

FOR 106 .Wagering (364/412)

