

ISO 16484-4:2025-08 (E)

Building automation and control systems (BACS) - Part 4: Control applications

Contents		Page
Foreword		vi
Introduction		vii
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Abbreviated terms	3
5	Functional specifications having an impact on energy performance, comfort, and operational requirements of buildings	3
5.1	Heating control	3
5.1.1	Emission control	3
5.1.2	Emission control for TABS (heating mode)	6
5.1.3	Control of distribution network hot water temperature (supply or return)	9
5.1.4	Control of distribution pumps in networks	10
5.1.5	Intermittent control of emission and/or distribution	13
5.1.6	Heat generator control (combustion and district heating)	16
5.1.7	Heat generator control (heat pump)	18
5.1.8	Heat generator control (outdoor unit)	19
5.1.9	Sequencing of different heat generators	20
5.1.10	Control of Thermal Energy Storage (TES) charging	23
5.1.11	Hydronic balancing heating distribution (including contribution to balancing to the emission side)	24
5.2	Domestic hot water (DHW) supply control	26
5.2.1	Control of DHW storage charging with direct electric heating or integrated electric heat pump	26
5.2.2	Control of DHW storage charging using hot water generation	27
5.2.3	Control of DHW storage charging with solar collector and supplementary heat generation	29
5.2.4	Control of DHW circulation pump	31
5.3	Cooling control	32
5.3.1	Emission Control	32
5.3.2	Emission control for TABS (cooling mode)	35
5.3.3	Control of distribution network chilled water temperature (supply or return)	37
5.3.4	Control of distribution pumps in hydraulic networks	38
5.3.5	Intermittent Control of Emission and/or Distribution	41
5.3.6	Interlock between heating and cooling control of emission and/or distribution	44
5.3.7	Generator control for cooling	45
5.3.8	Sequencing of different chillers (generators for chilled water)	46
5.3.9	Control of Thermal Energy Storage (TES) charging	48
5.3.10	Hydronic balancing cooling distribution (including contribution to balancing to the emission side)	49
5.4	Ventilation and air conditioning control	51
5.4.1	Supply air flow control at the room level	51
5.4.2	Room air temperature control by the ventilation system (all-air systems; combination with static systems as cooling ceiling, radiators etc.)	53
5.4.3	Coordination of room air temperature control by ventilation and by static systems	55
5.4.4	Outside air flow control	56

5.4.5	Air flow or pressure control at the air handler level	57
5.4.6	Heat recovery control (icing protection)	60
5.4.7	Heat recovery control (prevention of overheating)	61
5.4.8	Free mechanical cooling	62
5.4.9	Supply air temperature control at the air handling unit level	64
5.4.10	Humidity control	65
5.5	Lighting control	66
5.5.1	Occupancy control	66
5.5.2	Light level/Daylight control (daylight harvesting)	69
5.6	Blind control	71
5.6.1	Type 1 -- Motorized operation of blind with manual control	71
5.6.2	Type 2 -- Motorized operation of blind with automatic control	72
5.6.3	Type 3 -- Combined light/blind/HVAC control	73
6	Functional elements	74
6.1	Sensor functions	74
6.1.1	Air quality measurement	74
6.1.2	Air temperature measurement	75
6.1.3	Dewpoint monitoring	76
6.1.4	Humidity measurement	77
6.1.5	Brightness measurement	78
6.1.6	Precipitation detection	78
6.1.7	Presence detection	79
6.1.8	Window monitoring	80
6.1.9	Wind speed measurement	81
6.1.10	Real-time clock	82
6.1.11	Air volume flow measurement	82
6.1.12	Partition wall position sensor	83
6.2	Actuator functions	84
6.2.1	Solar protection actuator	84
6.2.2	Drive actuator	85
6.2.3	Lighting actuator	86
6.3	Display and user operation functions	88
6.3.1	Operate lighting	88
6.3.2	Operate solar protection	89
6.3.3	Operate Drive	89
6.3.4	Set Temperature setpoint	90
6.3.5	Display Current Temperature	91
6.3.6	Select room utilisation type	92
6.3.7	Set presence	93
6.4	Control functions	94
6.4.1	Presence evaluation	94
6.4.2	Predefined operation setting (scenario)	95
6.4.3	Schedule	96
6.4.4	Manual lighting control	97
6.4.5	Timed lighting control	98
6.4.6	Partition wall control	99
6.4.7	Occupancy dependent lighting control	100
6.4.8	Daylight-dependent lighting	101
6.4.9	Constant-light control	103
6.4.10	Twilight control	105
6.4.11	Priority control	106
6.4.12	Automatic twilight control	108
6.4.13	Automatic solar control (simple solar protection)	109
6.4.14	Slat tracking (complex solar protection)	111
6.4.15	Shadow correction	113
6.4.16	Automatic thermal control	114
6.4.17	Weather protection	115
6.4.18	Energy mode selection	117
6.4.19	Energy mode selection with start optimisation	118
6.4.20	Setpoint calculation	120

6.4.21	Function selection	122
6.4.22	Temperature control (heating/cooling)	124
6.4.23	Room supply air temperature cascade control	126
6.4.24	Fan control	128
6.4.25	Sequence control	130
6.4.26	Control value limiting	131
6.4.27	Air quality control	133
6.4.28	Night-time cooling	135
6.4.29	Volume flow control	136
6.4.30	Sun position calculation	138
6.4.31	Weather hazard assessment	138
6.4.32	Wind hazard detection	139
6.4.33	Icing hazard detection	140
6.4.34	Rain hazard detection	141
6.4.35	Solar edge tracking	141
6.4.36	Solar edge and slat tracking	142
6.4.37	Window state evaluation/Window group monitoring	143
6.4.38	Electric heating actuator	144
6.5	Data types and notation of identifiers and types used in function blocks	145
Bibliography		147