

(Effective until July 1, 2023)

WAC 51-11C-40349 Section C403.4.11—DDC systems.

C403.4.11 Direct digital control systems. Direct digital control (DDC) shall be required as specified in Sections C403.4.11.1 through C403.4.11.3.

C403.4.11.1 DDC applications. DDC shall be provided in the applications and qualifications listed in Table C403.4.11.1.

C403.4.11.2 DDC controls. Where DDC is required by Section C403.4.11.1, the DDC system shall be capable of all of the following, as required to provide the system and zone control logic required in Sections C403.2, C403.5, C403.6.8 and C403.4.3:

1. Monitoring zone and system demand for fan pressure, pump pressure, heating and cooling.
2. Transferring zone and system demand information from zones to air distribution system controllers and from air distribution systems to heating and cooling plant controllers.

C403.4.11.3 DDC display. Where DDC is required by Section C403.4.11.1 for new buildings, the DDC system shall be capable of trending and graphically displaying input and output points.

**Table C403.4.11.1
DDC Applications and Qualifications**

Building Status	Application	Qualifications
New building	Air-handling system and all zones served by the system	All air-handling systems in buildings with building cooling capacity greater than 780,000 Btu/h
	Air-handling system and all zones served by the system	Individual systems supplying more than three zones and with fan system bhp of 10 hp and larger
	Chilled-water plant and all coils and terminal units served by the system	Individual plants supplying more than three zones and with design cooling capacity of 300,000 Btu/h and larger
	Hot-water plant and all coils and terminal units served by the system	Individual plants supplying more than three zones and with design heating capacity of 300,000 Btu/h and larger
Alteration or addition	Zone terminal unit such as VAV box	Where existing zones served by the same air-handling, chilled-water, or hot-water system have DDC
	Air-handling system or fan coil	Where existing air-handling system(s) and fan coil(s) served by the same chilled- or hot-water plant have DDC
	New air-handling system and all new zones served by the system	Individual systems with fan system bhp of 10 hp and larger and supplying more than three zones and more than 75 percent of zones are new
	New or upgraded chilled-water plant	Where all chillers are new and plant design cooling capacity is 300,000 Btu/h and larger
	New or upgraded hot-water plant	Where all boilers are new and plant design heating capacity is 300,000 Btu/h and larger

[Statutory Authority: RCW 19.27A.020, 19.27A.025, 19.27A.160 and chapter 19.27 RCW. WSR 19-24-040, § 51-11C-40349, filed 11/26/19, effective 7/1/20.]

(Effective July 1, 2023)

WAC 51-11C-40349 Sections C403.4.11 and C403.4.12.

C403.4.11 Direct digital control systems. Direct digital control (DDC) shall be required as specified in Sections C403.4.11.1 through C403.4.11.4.

C403.4.11.1 DDC applications. DDC shall be provided in the applications and qualifications listed in Table C403.4.11.1 and for load management measures where installed to meet the requirements of Section C406.3.

C403.4.11.2 DDC controls. Where DDC is required by Section C403.4.11.1, the DDC system shall be configured to perform all of the following functions, as required to provide the system and zone control logic required in Sections C403.2, C403.5, C403.6.8 and C403.4.3:

1. Monitor zone and system demand for fan pressure, pump pressure, heating and cooling.
2. Transfer zone and system demand information from zones to air distribution system controllers and from air distribution systems to heating and cooling plant controllers.

C403.4.11.3 DDC display. Where DDC is required by Section C403.4.11.1 for new buildings, the DDC system shall be configured to gather and provide trending data and graphically displaying input and output points.

C403.4.11.4 DDC demand response setpoint adjustment. Where DDC is required by Section C403.4.11.1 for new buildings and serve mechanical systems with a cooling capacity exceeding 780,000 Btu/h (2,662 kW), the DDC system shall be capable of demand response setpoint adjustment. The DDC system shall be configured with control logic to increase the cooling zone setpoints by at least 2°F (1°C) and reduce the heating zone setpoints by at least 2°F (1°C) when activated by a demand response signal. The demand response signal shall be a binary input to the control system or other interface approved by the serving electric utility.

**Table C403.4.11.1
DDC Applications and Qualifications**

Building Status	Application	Qualifications
New building	Air-handling system and all zones served by the system	Individual systems supplying more than three zones and with fan system bhp of 10 hp and larger
	Chilled-water plant and all coils and terminal units served by the system	Individual plants supplying more than three zones and with design cooling capacity of 300,000 Btu/h and larger
	Hot-water plant and all coils and terminal units served by the system	Individual plants supplying more than three zones and with design heating capacity of 300,000 Btu/h and larger
Alteration or addition	Zone terminal unit such as VAV box	Where existing zones served by the same air-handling, chilled-water, or hot-water system have DDC
	Air-handling system or fan coil	Where existing air-handling system(s) and fan coil(s) served by the same chilled- or hot-water plant have DDC
	New air-handling system and all new zones served by the system	Individual systems with fan system bhp of 10 hp and larger and supplying more than three zones and more than 75 percent of zones are new
	New or upgraded chilled-water plant	Where all chillers are new and plant design cooling capacity is 300,000 Btu/h and larger
	New or upgraded hot-water plant	Where all boilers are new and plant design heating capacity is 300,000 Btu/h and larger

C403.4.12 Pressure independent control valves. Where design flow rate of heating water and chiller water coils is 5 gpm or higher, modulating pressure independent control valves shall be provided.

[Statutory Authority: RCW 19.27A.020, 19.27A.025, 19.27A.160 and chapters 19.27A and 19.27 RCW. WSR 22-14-091, § 51-11C-40349, filed 7/1/22, effective 7/1/23. Statutory Authority: RCW 19.27A.020, 19.27A.025, 19.27A.160 and chapter 19.27 RCW. WSR 19-24-040, § 51-11C-40349, filed 11/26/19, effective 7/1/20.]