

## راهنمای مدیریتی



































# نقاط مانیتورینگ و کنترل در تاسیسات مکانیکی

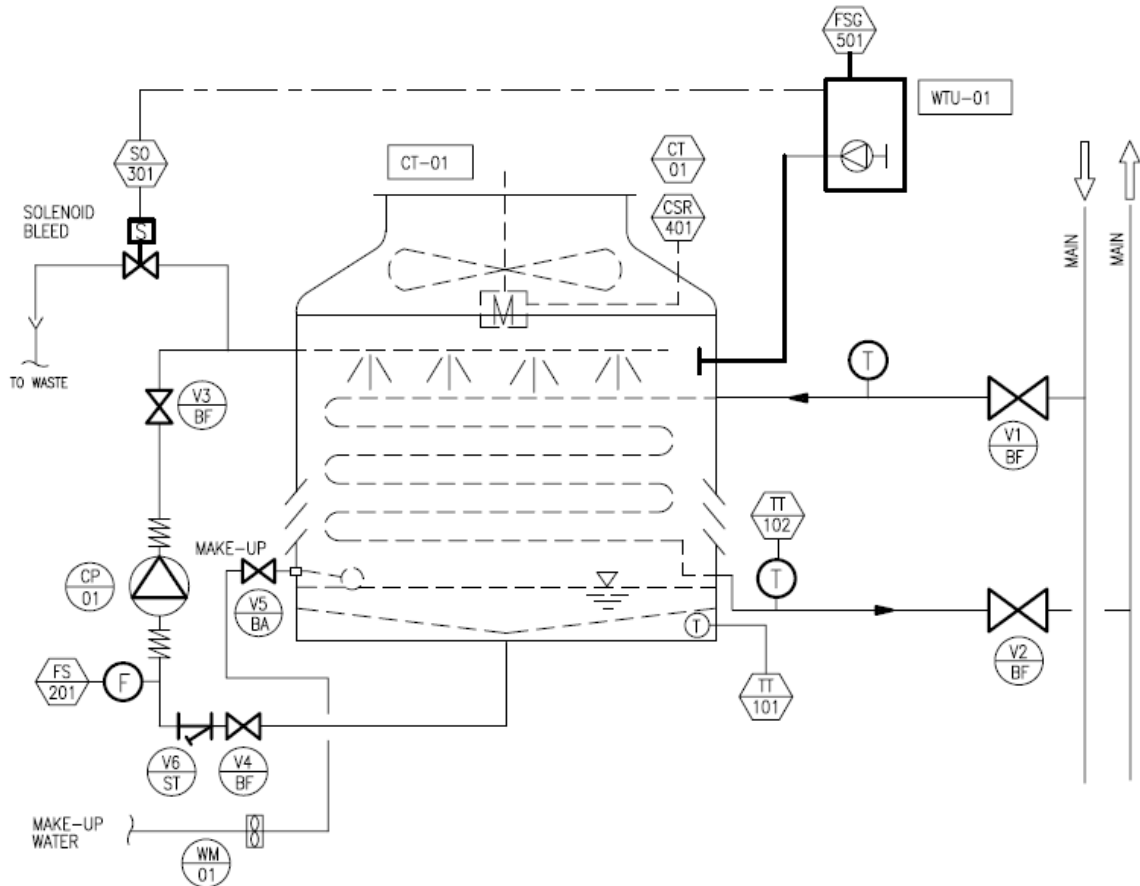


## نقاط مانیتورینگ و کنترل در تاسیسات مکانیکی

در این راهنما نقاط کنترل و مانیتورینگ که در سیستم BMS به آن توجه می شود به تفکیک هر دستگاه در تاسیسات مکانیکی آورده شده است.

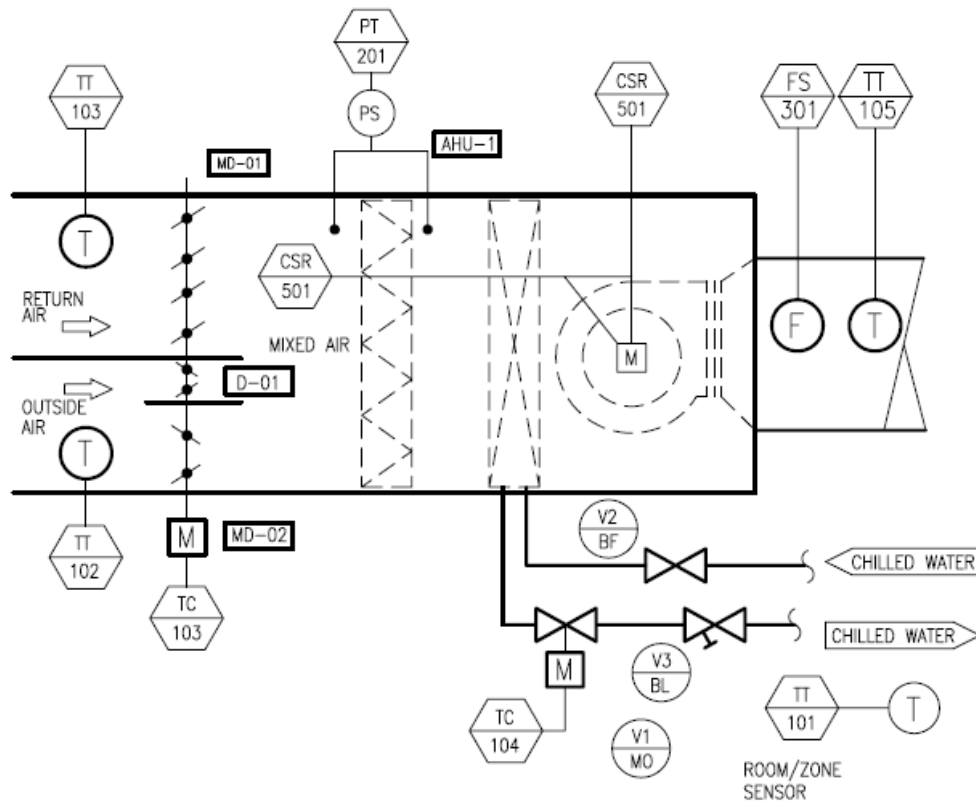
علائم اختصاری استفاده شده در شکل ها به شرح زیر می باشد:

 DIFFERENTIAL PRESSURE GAUGE	 FLOW SWITCH	 TX VALVE (TX)	 UNIVERSAL TEST POINT
 DIFFERENTIAL PRESSURE SWITCH	 CURRENT SENSOR RELAY	 BUTTERFLY VALVE (BF)	 FLEXIBLE CONNECTION
 FLOW SWITCH	 SWITCH	 BALL VALVE (BA)	 CHECK VALVE (CH)
 TEMPERATURE TRANSMITTER	 HIGH LEVEL SWITCH	 BALANCING VALVE (BL)	 NORMAL OPENED RELAY
 PRESSURE TRANSMITTER	 PRESSURE INDICATOR & TRANSMITTER	 CONDENSATE PUMP	 NORMAL CLOSED RELAY
 TEMPERATURE INDICATOR & TRANSMITTER	 PRESSURE TRANSMITTER	 MOTORIZED CONTROL VALVE (MO)	 TIMER
 TEMPERATURE TRANSMITTER	 FAULT SIGNAL	 MOTORIZED THREE WAY CONTROL VALVE (MO)	 LOCKED OUTPUT
 TEMPERATURE CONTROL		 SOLENOID VALVE (SO)	 UNLOCKED OUTPUT
 VALVE OPEN/CLOSE CONTROL		 STRAINER (ST)	 ENERGIZED RELAY



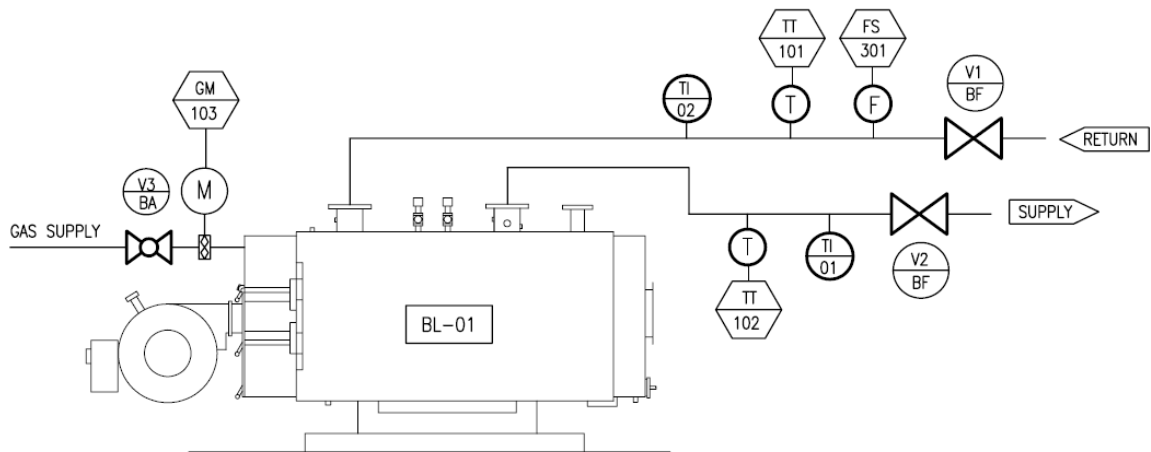
### Cooling Tower

کاربرد		بازه اندازه گیری	توضیحات	نوع I/O	نقطه کنترلی	نوع	کد
مانیتورینگ	کنترل						
✓		0-50C	Water Temperature Cooling Tower Sump	0-10V 4-20mA	AI-1	Temperature Transmitter	TT-101
✓		0-50C	Water Temperature Cooling Tower Outlet	0-10V 4-20mA	AI-1	Temperature Transmitter	TT-102
✓		ON/OFF	Flow Switch	ON/OFF	DI-1	Water Flow Switch	FS-201
✓		ON/OFF	Exhaust Fan Status	ON/OFF	DI-2	Current Sensor Relay	CSR-401
	✓	Open/Close	Water Bleed Valve	ON/OFF	DO-1	Solenoid Valve	SO-301
	✓	ON/OFF	Cooling Tower Exhaust Fan Run	ON/OFF	DO-2	Cooling Tower Exhaust Fan Run	CT-01
	✓	ON/OFF	Pump Run Signal	ON/OFF	DO-3	Circulation Pump	CP-01
✓		ON/OFF	Common Fault	ON/OFF	DI-3	Fault Signal From Water Treatment	FSG-501
✓		ON/OFF	Circulation Pump Status	ON/OFF	DI-4	CP-01 Fault Signal	FSG-502



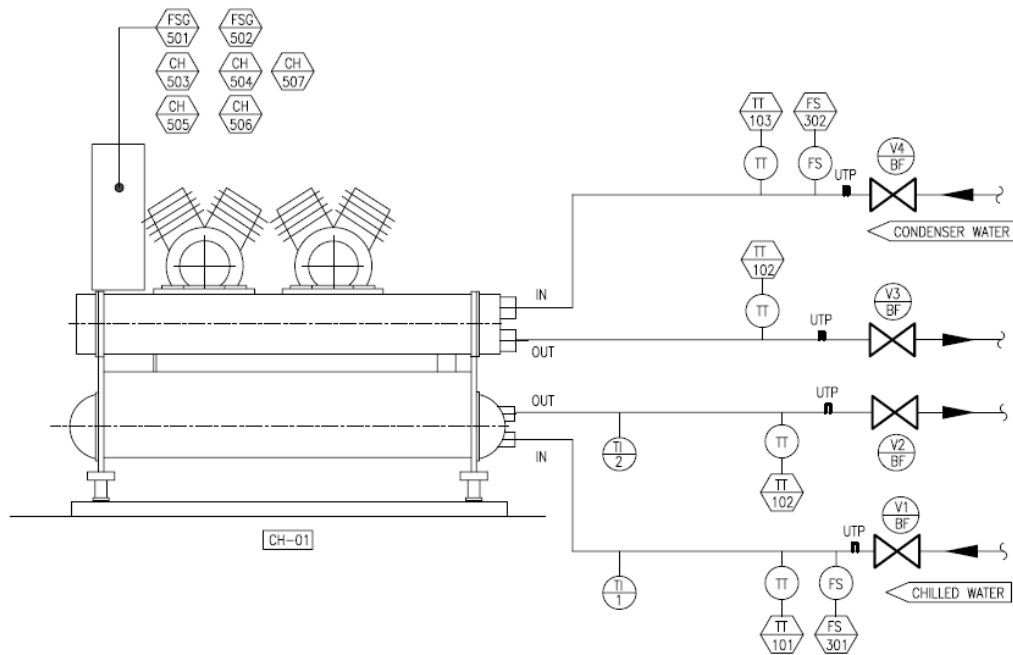
AHU

کاربرد		بازه اندازه گیری	توضیحات	نوع I/O	نقطه کنترلی	نوع	کد
مانیتورینگ	کنترل						
✓		0-50 C	Room/Zone Air Temperature	4-20mA 0-10V	AI-1	Temperature Transmitter	TT-101
✓		0-50 C	Outside Air Temperature	4-20mA 0-10V	AI-2	Temperature Transmitter	TT-102
✓		0-50 C	Return Air Temperature	4-20mA 0-10V	AI-3	Temperature Transmitter	TT-103
✓		0-50 C	Supply Air Temperature	4-20mA 0-10V	AI-4	Temperature Transmitter	TT-105
	✓	0-100%	Damper Position	4-20mA 0-10V	AO-1	Motorised Damper	TC-103
	✓	0-100%	Valve Position	4-20mA 0-10V	AO-2	Motorised Valve	TC-104
✓		0-200 Pa	Air Filter Pressure Drop	ON/OFF	DI-1	Differential Pressure Switch	PT-201
✓		ON/OFF	Supply Air	ON/OFF	DI-2	Air Flow Switch	FS-301
	✓	0-100%	Chilled Water Modulating Valve	4-20mA 0-10V	AO-3	Motorised Valve	TC-104
✓		ON/OFF	Fan Status	ON/OFF	DI-3	Current Sensor Relay	CSR-501



## Gas Fired Boiler

کاربرد	بازه اندازه گیری	توضیحات	نوع I/O	نقطه کنترلی	نوع	کد	مانیتورینگ	کنترل
							✓	✓
✓	0-120 C	Water Temperature at Boiler INLET	0-10 V 4-20mA	AI-1	Temperature Transmitter	TT-101	✓	
✓	0-120 C	Water Temperature at Boiler OUTLET	0-10 V 4-20mA	AI-2	Temperature Transmitter	TT-102	✓	
✓	Pulse Type Output	Gas Consumption Meter	ON/OFF	DI-1	Gas Meter	GM-103	✓	
✓	ON/OFF	Hot Water Flow Status	ON/OFF	DI-2	Water Flow Switch	FS-301	✓	
✓	Operating Fault	Boiler Fault	ON/OFF	DI-3	Boiler Fault Signal	FSG-501	✓	
	ON/OFF	Boiler Run Signal	ON/OFF	DO-1	Gas Fired Boiler	BL-502		✓
✓	ON/OFF	Boiler Status	ON/OFF	DI-4	Boiler Status	BL-503	✓	

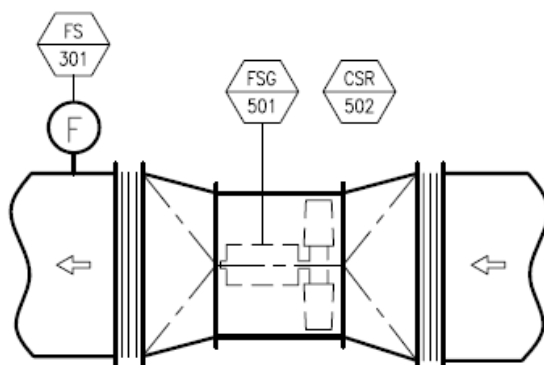


**Chiller**

کاربرد		بازه اندازه گیری	توضیحات	نوع I/O	نقطه کنترلی	نوع	کد
مانیتورینگ	کنترل						
✓		0-50C	Temperature At Chilled Water Inlet	0-10V 4-20mA	AI-1	Temperature Transmitter	TT-101
✓		0-50C	Temperature At Chilled Water Outlet	0-10V 4-20mA	AI-2	Temperature Transmitter	TT-102
✓		0-50C	Temperature At Condenser Water Inlet	0-10V 4-20mA	AI-3	Temperature Transmitter	TT-103
✓		0-50C	Temperature At Condenser Water Outlet	0-10V 4-20mA	AI-4	Temperature Transmitter	TT-104
✓		High level Fault – Chiller Stops	Chiller Fault	ON/OFF	DI-1	Chiller Fault Signal High Level	FSG-501
✓		High level Fault – Chiller Continues	Chiller Fault	ON/OFF	DI-2	Chiller Fault Low Level	FSG-502
✓		0-100%	Chiller Run Current	0-10V 4-20mA	AI-5	Chiller Run Current	CH-503
✓		ON/OFF	Chiller Status ON/OFF	ON/OFF	DI-3	Chiller Run Status	CH-504
	✓	5-20C	Chiller Leaving Water Setpoint	0-10V 4-20mA	AO-1	Chiller Water Setpoint	CH-505
	✓	0-100%	Chiller Load Limit	0-10V 4-20mA	AO-2	Chiller Load Limit	CH-506
✓		ON/OFF	Chilled Water Flow Status	ON/OFF	DI-4	Flow Switch	FS-301
✓		ON/OFF	Condenser Water Flow Status	ON/OFF	DI-5	Flow Switch	FS-302
	✓	ON/OFF	Switch Chiller ON/OFF	ON/OFF	DO-1	Chiller Run Signal	CH-507

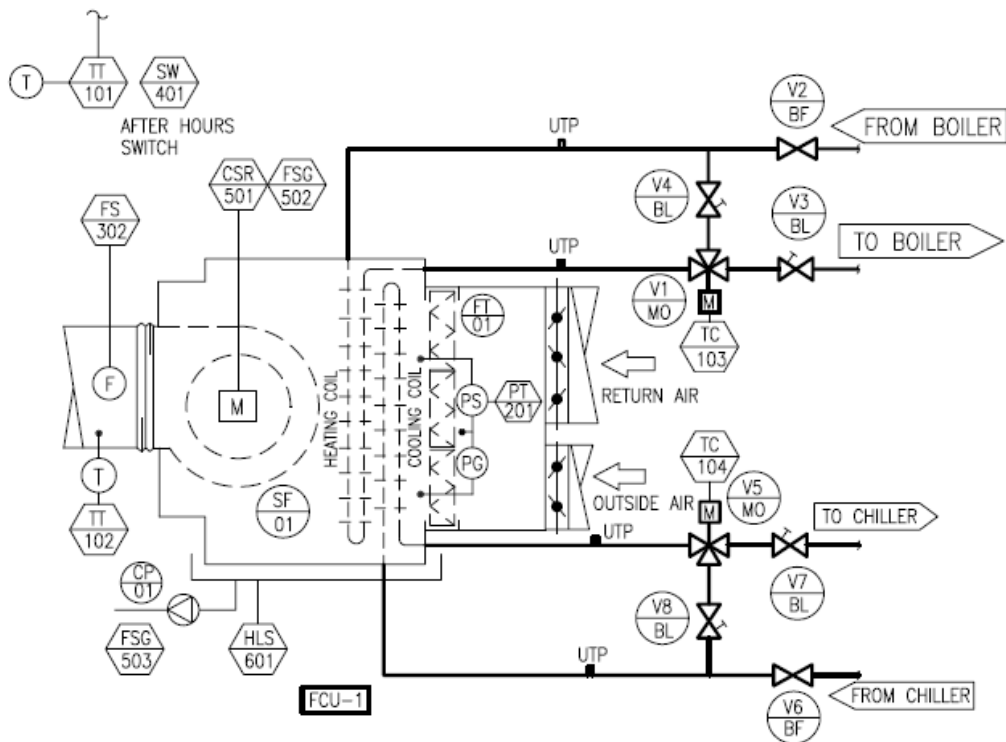
مشهد - بلوار سجاد - نبش مولوی (مقابل کنسولگری عربستان) - پلاک ۲۳۹ - واحد ۱- صندوق پستی: ۹۱۷۷۵-۱۳۷۷

تلفکس: ۶۰۹۳۶۰۷ - ۶۰۶۱۶۹۲ همراه: ۰۹۱۵۳۱۷۸۷۱۱ - ۰۹۱۵۵۱۶۶۴۱۳ [www.Ariaz.ir](http://www.Ariaz.ir) [Info@Ariaz.ir](mailto:Info@Ariaz.ir)



## Fan

کاربرد		بازه اندازه گیری	توضیحات	نوع I/O	نقطه کنترلی	نوع	کد
مانیتورینگ	کنترل						
✓		ON/OFF	Air Flow Status	ON/OFF	DI-1	Air Flow Switch	FS-301
✓		ON/OFF	Fan Motor Overload	ON/OFF	DI-2	Motor Overload	FSG-501
	✓	ON/OFF	Fan Start/Stop	ON/OFF	DO-1	Fan Run Signal	FN-01
✓		ON/OFF	Current Sensor Relay	ON/OFF	DI-3	Fan Run Status Relay	CSR-502



**Fan Coil Unit**

کاربرد	کنترل	بازه اندازه گیری	توضیحات	نوع I/O	نقطه کنترلی	نوع	کد
							مانیتورینگ
✓		0-50C	Temperature in Air Conditioned Area	0-10V 4-20mA	AI-1	Temperature Transmitter	TT-101
✓		0-50C	FCU Supply Air Temperature	0-10V 4-20mA	AI-2	Temperature Transmitter	TT-102
	✓	Range: 0-100%	Valve Position	0-10V 4-20mA	AO-1	Motorized valve v1	TC-103
	✓	Range: 0-100%	Valve Position	0-10V 4-20mA	AO-2	Motorized valve v5	TC-104
✓		0-200 pa	Air Filter Pressure Drop	ON/OFF	DI-1	Differential Pressure Switch	PT-201
✓		ON/OFF	Supply Air Flow Status	ON/OFF	DI-2	Air Flow Switch	FS-302
✓		ON/OFF	S/A Fan Status	ON/OFF	DI-3	Current Sensor Relay	CSR-501
✓		ON/OFF	Condensate Level	ON/OFF	DI-4	High Level Float Switch	HLS-601
✓		ON/OFF	S/A Fan ON/OFF	ON/OFF	DI-5	After Hours Switch	SW-401
✓		Operating/Fault	SF-01 Fault	ON/OFF	DI-6	SF-01 Fault Signal	FSG-502
✓		Operating/Fault	CP-01 Fault	ON/OFF	DI-7	CP-01 Fault Signal	FSG-503



## Tank

کاربرد		بازه اندازه گیری	توضیحات	نوع I/O	نقطه کنترلی	نوع	کد
مانیتورینگ	کنترل						
✓		ON/OFF	High Level	ON/OFF	DI-1	High Level Switch	
✓		ON/OFF	Low Level	ON/OFF	DI-2	Low Level Switch	

## Electrical Panel

کاربرد		بازه اندازه گیری	توضیحات	نوع I/O	نقطه کنترلی	نوع	کد
مانیتورینگ	کنترل						
	✓	ON/OFF		ON/OFF	DO-1	Circuits On/Off Command	
✓		ON/OFF		ON/OFF	DI-1	Circuits Status	
✓		ON/OFF		ON/OFF	DI-2	Auto & Manual Status	

## Lighting Panel

کاربرد		بازه اندازه گیری	توضیحات	نوع I/O	نقطه کنترلی	نوع	کد
مانیتورینگ	کنترل						
	✓	ON/OFF		ON/OFF	DO-1	Lighting Circuits On/Off Command	
✓		ON/OFF		ON/OFF	DI-1	Lighting Circuits Status	
✓		ON/OFF		ON/OFF	DI-2	Auto & Manual Status	