

City of Reno

Traffic Signal Controller Cabinet Specifications

Revised 03/10/2021

Controllers and cabinets shall conform to the State of Nevada Department of Transportation Standard Specifications for Road and Bridge Construction (Current Edition), NEMA Standard Publication TS2 (Current Edition) and the special controller provisions defined herein.

Traffic actuated controller units shall be Trafficware Model 980 TS2, Type 2 equipped with Ethernet Module, Ethernet RJ-45 jack (*Note: RJ-11 is Telephone jack, RJ-45 is Ethernet jack*), most current firmware revision, or an approved equal capable of NTCIP compliant communication as dictated by NTCIP communications committee. Controller shall be able to communicate with and perform all functions associated with Trafficware ATMS software. Cabinet shall be able to communicate to the nearest intersection by way of fiber optic cable (see City of Reno Specifications). Fiber to Ethernet converters shall have in/out hard wire capabilities and front Ethernet RJ-45 jacks to communicate to traffic controller.

Signalized Intersection Traffic Controller Cabinet

1. Supply an electronic file of the cabinet prints in AutoCAD format.
2. The controller cabinet shall be a State of Nevada Type R44, or as specified in project special provisions.
3. The controller cabinet shall be constructed of aluminum, painted white, and include two lift rings bolted onto cabinet.
4. The controller cabinet shall be equipped with two cooling fans each with adjustable thermostatic control.
5. The cabinet shall be wired for full 8 phase operation to include four overlaps and pedestrian movements associated with vehicle phases (*16 positions*).
6. Cabinet shall be wired for twenty-four vehicle detector channels using two channel rack mount vehicle detector amplifiers (*to include 4 Intersection Development Corporation model 222C or approved equal and 2 Intersection Development Corporation model 262C or approved equal per detector rack*).
7. Cabinet field loop connections shall be to screw type terminal blocks affixed to a mounting plate attached on lower end on interior left wall.
8. Back panel shall be mounted up 15 inches from the bottom of the cabinet.
9. The detector rack shall have a JP/P2 or equivalent back panel.
10. Each detector rack shall include a detector output program card in position 1 (*Not required in TS2 operation*).
11. The detectors and isolators shall be housed in two racks which shall have a JP/P2 or equivalent back panel.

12. A detector power supply fail safe shall be provided that will place a constant vehicle call to the traffic signal controller in the event of a detector power supply failure (*Not required for TS2 operation*).
13. The cabinet shall be wired for two channels of rail preemption and four channels of emergency vehicle preemption according to NDOT specification 623.02.26 using the most recent "Opticom" card rack discriminator or an approved equal. The rack shall be wired for two dual channel preempt cards or one four channel preempt card. The rack shall be two channel dominant. The emergency vehicle discriminator shall be provided as specified in the controller special provisions. Optical detectors shall be single channel or dual channel operation. If single channel is used, mounting shall be to the outside arms approaching intersection.
14. Each cabinet shall be equipped with a EDI MMU2-16LE(ip) SmartMonitor Malfunction Management Unit (conflict monitor unit) with cable to communicate to controller unit or approved equal.
15. Connections to all terminal strips and blocks shall have a service loop to relieve strain.
16. The cabinet shall be supplied with one LED light for night operation which shall come on automatically when cabinet door is opened.
17. Cabinet shall include one hold open rod on top of door and one hold open rod on bottom of door.
18. Cabinet shall have at least four door hinges unless a piano type hinge is installed.
19. The lower door stop shall be a two position automatic type.
20. Ground bus and neutral bus shall be screw type for attachment of spade type lugs and shall be located on the lower left under the power panel.
21. Field connections shall be screw type and allow for attachment of spade lugs with a combination Philip/Flat head type screw.
22. Field flash shall be programmable either by use of terminal strip dog bones, plugs or other approved method. Initially, all phases will be programmed to flash red.
23. 16 extra red jumpers will be provided for unused phases in order to insure red remains on to CMU (*Not required for TS2 operation*).
24. "Signal flash" and "controller on/off" switches shall be protected by switch guards.
25. Interior switches will be provided for the purpose of placing vehicle and pedestrian calls. Switches shall be provided for all possible cabinet phases, not just those provided within the construction plans. Each switch shall be single pole, double throw, center off for all 8 phase vehicle and pedestrian calls, and be labeled normal, off, and test.
26. Each cabinet shall be equipped with three 120 volt 15 amp service outlets, one with GFI. Any extra equipment intended for permanent cabinet install will not be plugged into service outlet.
27. Video detection may be used if approved by the City Traffic Engineer.
28. Any extra wiring or equipment installed in the cabinet will be done in a neat and workmanship like manner. Wiring "hanging out" into open space shall not be permitted. Cables blocking access to other equipment shall not be permitted. Items exceeding reasonable weight limits on shelves shall not be permitted. Access to lighting, fans, and other equipment shall not be blocked. Stacking of

equipment on top of controllers, safety monitors, etc. shall not be permitted. Equipment shall be mounted as intended by manufacturer and according to their specifications. Conflicts shall be resolved by the City Traffic Engineer or his designee.

29. The cabinet load bay shall include front access to terminals to allow reprogramming or rerouting of outputs to load switches. The purpose is to allow conversion of say phase 2 ped to phase 1 ped without modifying the back of the load bay.
30. All controller inputs and outputs shall be available on screw type terminal strips on the load bay or on a controller termination panel mounted in the cabinet.
31. The cabinet door shall have an opening and mounting hardware for an approved air filter. The air filter shall be an Air Handler, Grainger part number (24) 6B827 or an approved equal.
32. The mercury contactor installed in the cabinet shall be normally closed. A solid state switch in lieu of mercury contactor is acceptable.
33. The cabinet shall be wired such that removal of safety monitor and/or controller will result in the signal transitioning to flash operation flash under any circumstances.
34. Cabinet shall include an external 24V voltage monitor relay.
35. Cabinet will include "signal off switch" and "signal flash switch" mounted behind a police panel door on the front of the cabinet.
36. There will be a stop time switch, controller off switch, and signal flash switch installed on the inside of the cabinet door for service use. An interval advance push button shall be provided on the tech panel on the inside of the cabinet door, and it shall be operational when the manual control switch is turned on.
37. Each cabinet will include three equipment shelves. Top shelf is open, middle shelf for controller and conflict monitor, and bottom shelf for detector rack, "Opticom" rack and power supply.
38. Cabinet mounting shall have "c" type mounting rails spaced for standard shelf and equipment mounting holes. There will be two sets of rails on each cabinet side and one set on the cabinet rear. Drilling holes in cabinet walls to mount equipment shall not be permitted.
39. Controller shall be equipped with a Tesco Model 1400XL back up power supply installed in the controller/cabinet electrical service pedestal. Batteries installed in the signal cabinet itself for backup power supplies shall not be permitted. The back up supply shall include power conditioning. If no back up supply is installed, then the cabinet shall be equipped with an Innovative Technology surge protector model HS-P-SP-120-60A-RJ. The L/N connector shall use hex nuts.