



Maestro Wizard Config Tool User Manual

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New: Is used to prepare a new signal program

Open: Is used for opening an existing signal program file.

<u>Connection</u>: Is used for connection settings of program with controller

✓ USB

✓ Serial port

After selecting connection type click "Connect" button.

<u>Download</u>: Used for downloading the program form controller

<u>Events</u>: Is used for downloading all error and event records from controller to the computer.

Connection Status Indicator: Shows the status of connection to the computer "Green" connected, "Red" no connection, "Yellow" computer try to connect to the controller, try to connect again if it takes more than three minutes.





Language: Selection of language for Config Tool. Turkish, English or French can be chosen.

Save: Is used for saving changes made.

Save As: Is used for saving changes in a different file.

Upload: Used for sending program to the controller.

2. Intersection & Connection Information

Intersection Information 2.1

In intersection information part, information related to the location of the intersection, device type, and time zone entered.

Last edit ID taken automatically by program and saved.

Remote Connection Information 2.2

Necessary information for MCTS connection entered to this part, user name and password is optional and not mandatory. Domain URL and APN must be entered in order to connect to system.





"Invalid Supply Voltage Action" selected by user, if "Turn off Signals" choice is selected controller device will close signals for all voltages out of 175V-275V.

3. Intersection Layout & Signal Groups

3.1 **Upload layout**

To upload intersection layout, click "Upload Layout" button. After clicking the button, sample intersection layouts will be open. User can select from samples or any other layout from another file. "SG 1" will be added automatically, other signal group should be drag and drop over intersection layout. (user also can drag and drop signal group icons without uploading layout). The Maestro IC has 96 signal outputs. With this output, a maximum of 36 signal groups can be defined.





Intersection Layout

Intersection Information > Intersection Layout





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When you click the signal group icon, a panel which includes several features will be open.



In order to change some necessary information, click the "Details" part.









For opening advanced settings click "Details >>" button.

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		in		SG 1									
1		0.0		Signa	al Group								
11				Nam	e			SG	1				
_				Ope	ning Sig	nal			KIR	M. SARI			~
G 1		SG 1		Ope	ning Du	ration (s)		2					
-	€	FS 🖲 YF	O RF	Clos	ing Sign	al			SAF	શ			~
•	50	R 1 🖨 🗆	FA	Clos	ing Dura	tion (s)		3			-		
	X	SRLC 0	₽ FA	Flash Signal			-	SARI FLAŞ 1S				~	
	2	G 1 🛊] FA	Failu	ire Flash	Signal			SARI FLAŞ 1S				~
E di	SPR 10	Aynntilar	»>	End Of Open Duration (s)			0	0					
	9- 25 M		0	Min.	Safe Re	d Lamp Count		0					•
			0	Red	Failure A	ction		No	Acti	on			~
			D I	Last	Red Fail	ure Action		No	Acti	on			\sim
			J	Signa	al Outpu	ts							
				#	SSM	SSM Outpu Number	ut	Туре		Lamp Type	Lamp Count		Lamp Failure Action
ar ar			1	1	1 `	/ 1	~	Red	~	LED ~	1	\sim	No Action 🗸 🗸
				2	1 、	/ 2	~	Yellow	~	LED ~	1	×	No Action 🗸 🗸
-	0 0			3	1 `	/ 3	~	Green	\sim	LED ~	1	\sim	No Action 🗸 🗸
						-	-	- and -	120		<u> </u>	-	

Inputs 3.2

In this part input devices to be connected to the maestro intersection controller are defined. Adding a new input is accomplished via drag and dropping of related icon over intersection layout. A maximum of 32 digital and 32 loop inputs can be defined. The signal group the input is assigned to, is important, because requests received from the inputs are





evaluated differently dependent on the current color of the assigned signal group.

Digital inputs 6, 7 and 8 can't be used in program as they are used for heater, lamp dimming and police button purposes respectively.

Puelerrอ-Walk Button 1			
i Q	Push-To-Walk Button 1		
Q 💛	Active Level	O Low	🔘 High
50	Owner Signal Group	SG 1	~
×	Green Duration Per Demand (s)	0	
:	Max Red Duration If Failed (s)	0	
**			
Boşluk: Os		100	
Meşguliyet: Os Os Talen: O O			and the state state
Loop 1	0 0		
Q	Loop 1		
C	Active Level	Low	🔿 High
50	Owner Signal Group	SG 1	~
×	Green Duration Per Demand (s)	0	
*	Max Red Duration If Failed (s)	0	





For deleting, click "Delete layout" button.







Signal Grou	p Cont	flicts								
Intersection Info	rmation :	> <u>Interse</u>	ection Lay	<u>/out</u> > 9	Signal Gr	roup Co	nflicts			
F-11 4										
Failure Actio	ons									
Green - Green Co	nflict Action						۲) No Actio	on 🔿 Display Fla	shing Signals
	Grup 1	Grup 2	Grup 3	Grup 4	Yaya 4	Yaya 3	Yaya 1	Yaya 2	1'den 3'e Flaşör	3'den 2'ye Flaşö
Grup 1		5	5	5	5	5		5		
Grup 2	5		5	5		5	2			
Grup 3	5	5		5	5		2	2		
Grup 4	5	5	5				5	2		
Yaya 4	5		5 V	1						
Yaya 3	5	5	2	1						
Yaya 1		5	4	5						
Yaya 2	5		2	5						
1'den 3'e Flaşör										
3'den 2'ye Flaşör										
4'den 1'e Flaşör										
4'den 1'e Ok										

This matrix is called the conflict matrix. Its columns represent the closing, its rows the opening signal groups. The durations in the conflict matrix also determine the transition times between the states in phase operation mode. Using this duration, the controller automatically calculates the state transitions and creates the signal plan. When conflict matrix is active, we can let conflicts happen between minimum 2 and maximum 5

second. For example, when user select 2, after 2 second failure action will happen.





"Green-Green Conflict" selected by user, if "Display flashing signals" choice is selected controller device will change all signal groups mode to flash.

5. Signal Sequences

The Maestro intersection controller supports operation according to two different traffic technologies. One of these is the sequence (step) method. In this method, the signals to be displayed by the controller or completely user controlled. The user can select the color of each group in each step from previously defined signals.





In the sequence method, the user adjusts the signal of each step and group with the mouse. Multiple selections are possible. By right-clicking on the selected cell the required signal can be chosen from the defined signals. The step durations can be adjusted via drag and drop by mouse or rightclick on the related column.

Signal Sequences <u>Add New</u>	Signal Sequence 1 Signal Steps	
Signal Sequence	Add New	
	11 s	Step 1. 11
	Grup 1	Set Duration
	Grup 2	Сору
	Grup 3	Delete
	Grup 4	
	Yaya 4	
	Yaya 3	

- ✓ <u>Add Signal Sequence</u>: Click on "Add New" button.
- ✓ <u>Copy Signal Sequence:</u> Right click on "Signal Sequence" and click "Copy". The signal sequence that user right clicked on it will be copied with all details
- ✓ <u>Delete Signal Sequence:</u> Right click on "Signal Sequence" button and click "Delete"







6. Phases

6.1 Phases

The second operation method of the Maestro intersection controller, from the viewpoint of traffic technology, is the phase operation method. In this method those parts of the signal program being prepared, where the signal groups are only including closed (red) or open (green) are called phases. User should select signal groups related to every phase, the selected signal groups show open signal and those that not selected will show closed signal. In the same page, minimum and maximum duration of the phase is also entered.





Phases		
Phase	Add New Delete	
Phase 1	Phase 1	
Phase 2		
Phase 3	Minimum Duration 1 🖨 Maximum Duration (40	+
Phase 4	Signal Groups	
	Grup 1	
	Grup 2	
	Grup 3	
	Grup 4	

<u>Minimum duration</u>: Minimum duration which should be run by phase

<u>Maximum duration</u>: Maximum duration which should be run by phase

<u>Signal Groups</u>: List of all defined signal groups, user should select and assign for each phase

For adding new phase user can click "Add New". In the same way for deleting, select any phase and click "Delete" button. Maximum 16 phases can be defined.





				Delete	dd New	Ac							
				ole 1	ed Time Ta	- Fix				Fixed			
					d Row	Ad							
B Phase	Phase 3	e 2	Phas	Phase 1	Time								
7	7	\sim	7	7	00:00	1							
1	1	^	7	1	00:01	2							
			9										
			10										
			11										
			13										
			14										
			15										
			16										
			18										
			19										
			17 18 19 20										

The fixed time table menu is only meaningful for phases and not used with sequences. If the duration of phases shall change at certain times during the day, the durations requested at these hours are defined in the fixed time tables. A maximum of 8 fixed time tables can be defined. No value lower than the minimum phase duration can be entered into the fixed time tables.

- ✓ <u>Add Row</u>: Using "Add Row "button a maximum of 16 entries can be entered to a fixed time table. Hours and minutes in the entry are adjusted by mouse click. The first entry must have 00:00 as time value.
- ✓ <u>Delete Row</u>: Right click on any row and click
 "Delete Row", the related row will be deleted.





✓ <u>Add Fixed Time Table</u>: Click on "Add New" button.
 ✓ <u>Delete Fixed Time Table</u>: Click on any "Fixed Time Table" menu on the left side and then click "Delete" button.

7. Signal Programs

How the signal plans in the controller shall be processed is determined by programs. Programs are assembled from sequences, phases or both sequences and phases.



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After adding transition between defined phases and sequences, related rules will be added automatically and showed in the top-right part of the page.

Rules (5)
✓ Rules (5)
Edit
Rule1:Constant(0) < Constant(1)
Rule2:Signal sequence(1).lf sequence
Rule3:Phase(1).Elapsed duration > =
Rule4:Phase(2).Elapsed duration > =
Rule5:Phase(3).Elapsed duration > =

Desired rule can be selected from rule list then "Edit" button should be clicked for editing.





Y .	Rules	(5



Rule number and its expression can be learned by moving the mouse over transition lines as follows:



Rules works according to the contents of related expressions, expression for every rule can be selected from the expression list:





Rule 2	×
Operands Expressions Statements	
Expression	
Expression 2: Signal sequence(1).If sequence duration	elapsed == Constant(1) ~
Expression 1: Constant(0) < Constant(1)	
Expression 2: Signal sequence(1).If sequence duration	elapsed == Constant(1)
Expression 3: Phase(1).Elapsed duration > = Fixed time	(1).Phase duration
Expression 4: Phase(2).Elapsed duration > = Fixed time	(2).Phase duration
Expression 5: Phase(3).Elapsed duration > = Fixed time	(3).Phase duration
Statement2: Start phase(1, 0, 0)	

If the expression list does not include desired expression; "Expressions" button can be clicked for adding new expressions. For adding new expressions, you may need new operands and it can be added by clicking "Operands" button as follows:





Rule 2

Operands Expressions Statements
Expression
Expression 2: Signal sequence(1).If sequence duration elapsed == Constant(1)
If true do Operands
Statement1: Add New Edit Delete
Add New Constant(0)
Statemer Constant(1)
Signal sequence(1).If sequence duration elapsed
Phase(1).Min duration
Phase(1).Max duration
Phase(1).Elapsed duration
Phase(2).Max duration
Phase(2).Min duration
Phase(3).Max duration
Phase(3).Min duration
Fixed time(1).Phase duration
Phase(2).Elapsed duration

After selecting operand type, data and function; by closing operand window new can be added to the operand list.





Operands Expressions Statements							
Expression							
Expression 2: Signal sequence(1).If sequence duration elapsed == Constant(1)							
If true do Operands							
Statement1: Add New Edit Delete							
Add New Constant(0) Statemer Constant(1) Constant(0)	x						
Signal sequence Operand Type	Phase \vee						
Phase(1).Min dt Phase(1).Max di Data	Phase1 ~						
Phase(1).Elapse Function	×						
Phase(2).Max duration	Min duration						
Phase(2).Min duration	Elapsed duration						
Phase(3).Max duration	IT elapsed Max duration						
Phase(3).Min duration	max defation						
Fixed time(1).Phase duration							
Phase(2).Elapsed duration							
Fixed time(2).Phase duration							
Phase(3).Elapsed duration							
Fixed time(3).Phase duration							
Constant(0)							

After selecting proper parameters and operation, new expression will be added.





Rule 2 Operands Expressions Statements Expression Expressions Expression 2: Sign Add New Edit Delete If true do Expression 1: Constant(0) < Constant(1) Statement1: Start Expression 2: Signal sequence(1). If sequence duration elapsed == Constant(1) Expression 3: Phase(1).Elapsed duration >= Fixed time(1).Phase duration Add New Delete Expression 4: Phase(2).Elapsed duration >= Fixed time(2).Phase duration Statement2: St Expression 5: Phase(3).Elapsed duration >= Fixed time(3).Phase duration Expression 6: Constant(0) == Constant(0) Expression 6 Parameter 1 Signal sequence(1).If sequence duration elapsed Operation >= Parameter 2 Constant(0) Constant(0) Constant(1) Signal sequence(1).If sequence duration elapsed Phase(1).Min duration Phase(1).Max duration Phase(1).Elapsed duration Phase(2).Max duration Phase(2).Min duration Phase(3).Max duration Phase(3).Min duration Fixed time(1).Phase duration Phase(2).Elapsed duration Fixed time(2).Phase duration Phase(3).Elapsed duration Fixed time(3).Phase duration





In the Rule window related statements list also can be updated or any new statement can be added. The dropdown list shows all statement list in the signal program. Assigned statement for a rule shows at the left bottom part of the window.

Any statement can be selected from dropdown list and after clicking "Add New" button, selected statement will be assigned to rule.

Rule 2							
Operands Expressions Statements							
Expression							
Expression 2: Signal sequence(1).If sequence duration elapsed == Constant(1)							
If true do	If false do						
Statement1: Start signal sequence(1, 0, 0) 🛛 🗸 🗸	Statement1: Start signal sequence(1, 0, 0)	~					
Add New Delete	Add New Delete						
Statement2: Start phase(1, 0, 0)							
Assigned Statements for the Rule							





Rule 2						
Operands Expressions Statements						
Expression						
Expression 2: Signal sequence(1).If sequence duration elapsed == Constant(1)						
Expression 1: Constant(0) < Constant(1) Expression 2: Signal sequence(1).If sequence duration elapsed == Constant(1)						
Expression 3: Phase(1).Elapsed duration > = Fixed time(1).Phase duration						
Expression 5: Phase(3).Elapsed duration > = Fixed time(3).Phase duration Expression 6: Signal sequence(1).If sequence duration elapsed > = Constant(0)						
statement2: start phase(1, 0, 0)						

If automatically added statements by program is not enough and it is needed to add new statements, "Statements" then "Add New" buttons should be clicked as follows:



8. Program Simulation

Select program number, fixed time table and fixed time table row then click "Start" button. Simulation should work according to created program. Transition states, rules, sequences and phases durations display in program simulation page.













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For giving a digital or loop input, click the related defined icon and observe the simulation according to given input.







Program time tables determine between which times of the day the prepared programs shall work. A maximum of 20 program time tables can be created. The purpose is to have the controller work with different programs on different days of the week. Different tables can also be created for official and religious holydays. This tables will be used in the working schedule menu.

Program Time Tables	A	dd New	Delete				
Program Time Table 1 Program Time Table 2	Pro Ade	Program Time Table 1 Add Row					
		Time	Program				
	1	00:00	Program 2				
	2	06:10	Program 1				
	3	16:00	Program 3				

- ✓ <u>Add Row</u>: Using the "Add Row" button a maximum of 16 entries can be entered to a program time table. Hours and minutes in the entry are adjusted by mouse click. The first entry must have 00:00 as time value.
- ✓ <u>Delete Row:</u> Right click on any row and click "Delete Row", the related row will be deleted.
- ✓ *Add Program Time Table*: Click "Add New" button.

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✓ <u>Delete Program Time Table</u>: Select any "Program Time Table" menu on the left side and then click "Delete" button.

10. Work Schedule

The work schedule determines how controller shall work dependent on certain dates of the year or days of the week. Due to this window, the controller can be programmed specially to run according to the days of the week, official and private holidays, winter and summer months with different signal plans.

Using the "Add Row" button a maximum of 16 working schedule entries can be created. For each entry, a selection from the previously prepared fixed time tables and program time tables is made.

Work Schedule

Intersection Information > Intersection Layout > Signal Group Conflicts > Signal Sequences > Phases > Signal Programs > Add Row

	Start Date	End Date	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Fixed Time Table	Program Time Table
1	1.01.2000	31.12.2000	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	1 ~	1 ~
2	10.05.2017	10.05.2017								1 ~	1 ~
										1	1
										2	
										3	

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