

Mode G Flashing Yellow Arrow Configuration

This document will provide information on how to set up G mode or "Compact" mode for FYA operations. By default, Omni[®] eX is set up to use B mode when FYA is programmed. G mode provides the 4 FYA channel pairs without using up 4 additional load switches. This can be useful if overlap channels are already being used by something else. Step 1 is to make sure the controller is set up for normal 8 phase 2 ring quad intersections. Step 2 is to program the overlaps for FYA. Step 3 is to remap and modify the outputs to get the controller to use the unused (yellow) portion of the ped load switches as one of the indications.

The following steps are for a TS-2 cabinet with 16 load switch positions, and an MMU2. Pages used in these instructions are from *Omni* 1.11.3. In the upper left corner of every page is a clue to which page is being presented. Page 1.4 is found by entering 1 and 4 from the main menu, 2 then 1 then 1 gets to page 2.1 Phase Timing Set #1 as seen below in the first two examples.

• Step 1 Program the controller for standard operation (8 phase 2 ring operations)

1.4	CHANNEL SETUP
	111111111222222222333
CHAN#	12345678901234567890123456789012
TYPE	VVVVVVVPPPP0000VVVVVVVVVVVVVVVVV
SOURCE	1234567824681234
ALT1/2HZ	.
FLSHRED	XXXXXXXX XXXX
FLSHYEL	
Press Q	to exit
y=YES n=	NO X=NEXT

Phase set up is the standard set up. This will consist of 2 rings running 8 phases in a standard quad intersection. Phases 2, 4, 6, 8 are through phases and 1, 3, 5, 7 are the protected / permissive turn movements that will utilize the Flashing Yellow Arrow (FYA)

SE TIN	IINGS	SET	1		DR
2 3	3 4	5	6	7	8
4 4	4	4	4	4	4
2 2	2 2	2	2	2	2
5 5	5 5	5	5	5	5
6 6	56	6	6	6	6
40 30) 40	30	40	30	40
20 10) 20	10	20	10	20
t					
EXT					
	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 3 4 4 4 4 2 2 2 5 5 5 6 6 6 40 30 40 20 10 20	SE TIMINGS SET 2 3 4 2 3 4 4 4 4 2 2 2 5 5 5 6 6 6 40 30 40 30 20 10 20 10	SE TIMINGS SET 1 2 3 4 5 6 4 4 4 4 2 2 2 2 2 5 6 6 6 6 6 6 6 6 6 40 20 10 20 20 20 20 20 20 10 20	SE TIMINGS SET 1 2 3 4 5 6 7 4 4 4 4 4 4 2 2 2 2 2 2 5 5 5 5 5 5 5 6 6 6 6 6 6 40 30 40 30 40 30 20 10 20 10 20 10

For testing, it may be advisable to set the min Green, Passage, Max 1 and ped times to something considerably less than the default times.

2.2	PHASE	OPTIONS	SET	1		D
PHASE# PHASE OMIT PED OMIT MIN VEH RE MAX VEH RE SOFT VEH R Press Q tc y=YES n=NC	- CALL RECALL exit x=NE>	1234 	56789 xxxxx	11112 901234	111 456 	

2.3 PHASE SEQUENCE



Press Q to exit y=YES n=NO x=NEXT Navigate to page 2.3 and make sure that the rings are set to the NEMA standard

In page 2.2 Set min recalls on all phases to test all phases and overlaps. At a minimum phase 1 - 8 need to be turned on.

R1 – 1, 2, 3, 4 R2 – 5, 6, 7, 8

A 11 A	nhases ar	e enabled	as shown	on the	left in	nage 24
All O	phases ar	e enableu		onthe		page 2.4

	1111111
PHASE#	1234567890123456
ENABLE	XXXXXXXXX
RING 1	XXXX
RING 2	XXXX
RING 3	
RING 4	
Press Q	to exit
y=YES n=	NO X=NEXT

2.4

2.5	PHASE CONCURRENCY
	1111111
PHASE#	1234567890123456
PHASE 1	XX
PHASE 2	XX
PHASE 3	XX
PHASE 4	XX
PHASE 5	XX
Press Q 1	to exit
y=YES n=l	NO X=NEXT

PHASE ENABLE AND RINGS

Page 2.5 is to verify the concurrency is standard for 8 phase quad intersection.

• Step 2 Set up FYA overlaps (Mode B)

3.1 VEHICLE OVE	ERLAP	1/A	IN S	ET 1	D
TYPE	FYA				
TNCLUDED PHASES	.2				
MODIETER PHASES	1				
	±	• • • • •		• • •	
EXCLUDED PHASES				• • •	
EXCLUDED PEDS					
EXCLUDED WALKS					
NO TRAIL GRN PHS	5 1				
Press 0 to evit					
	/ T				
$y = t \in S$ $T = NU = NE/$					
-					
3.1 VEHICLE OVE	ERLAP	1/A	IN S	ЕТ 1	UD
3.1 VEHICLE OVE	RLAP	1/A	IN S	ET 1	UD
3.1 VEHICLE OVE NO TRAIL GRN PHS	RLAP	1/A	IN S	ET 1	UD
3.1 VEHICLE OVE NO TRAIL GRN PHS DET CALL PHASES	RLAP 5 1	1/A	IN S	ET 1	UD
3.1 VEHICLE OVE NO TRAIL GRN PHS DET CALL PHASES TRAILING GRN	RLAP 5 1 4	1/A	IN S	ET 1 	UD
B.1 VEHICLE OVE NO TRAIL GRN PHS DET CALL PHASES TRAILING GRN TRAILING YEL	RLAP 5 1 4 2.0	1/A	IN S	ET 1 	UD
3.1 VEHICLE OVE NO TRAIL GRN PHS DET CALL PHASES TRAILING GRN TRAILING YEL TRAILING RED	RLAP 5 1 4 2.0 1.0	1/A	IN S	ET 1	UD
B.1 VEHICLE OVE NO TRAIL GRN PHS DET CALL PHASES TRAILING GRN TRAILING YEL TRAILING RED START DELAY	ERLAP 5 1 4 2.0 1.0 2.0	1/A	IN S	ET 1 	UD
B.1 VEHICLE OVE NO TRAIL GRN PHS DET CALL PHASES TRAILING GRN TRAILING YEL TRAILING RED START DELAY ACTUATED ONLY	RLAP 5 1 4 2.0 1.0 2.0 NO	1/A	IN S	ET 1 	UD
3.1 VEHICLE OVE NO TRAIL GRN PHS DET CALL PHASES TRAILING GRN TRAILING YEL TRAILING RED START DELAY ACTUATED ONLY	RLAP 5 1 4 2.0 1.0 2.0 NO	1/A	IN S	ET 1	UD
B.1 VEHICLE OVE NO TRAIL GRN PHS DET CALL PHASES TRAILING GRN TRAILING YEL TRAILING RED START DELAY ACTUATED ONLY	RLAP 5 1 4 2.0 1.0 2.0 NO	1/A	IN S	ET 1 	UD
B.1 VEHICLE OVE NO TRAIL GRN PHS DET CALL PHASES TRAILING GRN TRAILING YEL TRAILING RED START DELAY ACTUATED ONLY Press Q to exit	RLAP 5 1 4 2.0 1.0 2.0 NO	1/A	IN S	ET 1	UD

The next steps are found in pages 3.1 (1 - 4) for the first 4 overlaps. Start off setting up the overlaps for FYA. The included phase is the opposing through phase of the FYA, in this example 2. The protected left turn is the Modifier phase which is 1 here. This is all that is needed to set up a Flashing Yellow arrow; but continue to read on.

For safety it is recommended to set up the Yellow arrow of the FYA (not the flashing yellow arrow), to delay coming on after the opposing through terminates. This will provide protection to the left turn movement by terminating the through movement first.

No trailing green set to "1", will prevent a trailing green on the included phase 2 but allow it on the modifier phase 1. Since this is

selected, trailing green / yellow / red times need to be provided. TG time should be set equal to or greater than the opposing through yellow time, in this case it is 4 where phase 2 yellow is 4.0. Yellow and red should match phase 1 yellow and red.

Repeat this for overlaps 2, 3, 4. Also, if there is a desire to start the opposing phase before allowing permissive movements on the turn phases add a start delay, here 1.5 seconds. This will bring up a red for the protected turn then release the opposing through then release the permissive turn movement. Adding both the trailing green time and the delay start time will require that split times in coordination reflect these additional seconds and are added to the minimum times to calculate split times. In this example 9.5 or 10 seconds will need to be added.

Overlap	Included phase	Modifier Phase	No Trail GRN	G/Y/R	Start Delay
			PHS	(seconds)	(seconds)
1	2	1	1	4/3/1	1.5
2	4	3	3	4/3/1	1.5
3	6	5	4	4/3/1	1.5
4	8	7	7	4/3/1	1.5

At this point FYA is set up to run as Mode B. Mode B is set up to run Channels 1, 3, 5, 7 at the protected green indication only for the 4 section head; channels 13 – 16 will provide the flashing yellow arrow, yellow arrow and red arrow for the 4 section head.



The next step is to modify the FYA mode to G. In G mode the Channels 1, 3, 5 and 7 provide the green arrow, yellow arrow and red arrow for the 4 section head, and the unused portion of the ped load switches on channels 9, 10, 11, and 12 provide the Flashing Yellow Arrows for phases (channels) 1, 3, 5, and 7 respectively.



• Step 3 Modify Omni FYA mode B to run as Mode G

1.5.	2.2 BIU	1	OUTPUT MAPPING	D
PIN	DEFAULT		FUNCTION	IDX
01	PHS1/CH1	R	CHANNEL RED	13
02	PHS1/CH1	Y	CHANNEL YELLOW	- 13
03	PHS1/CH1	G	CHANNEL GREEN	1
04	PHS2/CH2	R	CHANNEL RED	2
05	PHS2/CH2	Y	CHANNEL YELLOW	2
06	PHS2/CH2	G	CHANNEL GREEN	2
] Pres y=YE	s Q to exi S n=NO x=N	t IEXT	r	

2.2 BIU 2 DEFAULT PED2/CH9 R PED2/CH9 Y PED2/CH9 G PED4/CH10 R PED4/CH10 G	OUTPUT MAPPING FUNCTION CHANNEL RED CHANNEL GREEN CHANNEL RED CHANNEL GREEN CHANNEL GREEN	D IDX 9 13 9 10 14 10	Next the the overla remapped channel 1 channel 1
PED4/CHIU G s Q to exit S n=NO x=NEX ⁻	CHANNEL GREEN	10	Ped 8/ch

First, remap the overlap yellow and red indications to the protected left turn phase channel yellows and reds. Remapping is done in page 1.5.2.2 output mapping. In this example channel 1 red is remapped from channel 13 red, and channel 1 yellow is remapped from channel 13 yellow. The same will need to be done for channels 3, 5, and 7 in the same manner.

Next the unused Ped yellow outputs need to be remapped to use the overlap green indications (flashing Yellow Arrow). BIU 2 is remapped as seen here, Ped 2/ch 9 Y has been reassigned to output channel 13 green. Ped 4/ch 10 Y has been reassigned to output channel 14 green. The same needs to be done for Ped 6/ch 11 and Ped 8/ch 12.

1.5.

PIN 01

Pres v=YE The monitor permissive programming on the jumper board will need to have a couple of additional jumpers added

MMU Setup	
16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 1 1 10 9 8 7 6 5 4 3 2 2 1 <	Merimam Yelow Charge: Ch 1 desble Ch 2 desble Ch 3 desble Ch 4 desble Ch 4 desble Ch 6 desble Ch 6 desble Ch 7 desble Ch 9 desble Ch 1 desble
Disable Yellow Monitoring for the following pedestrian channels: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	Disable DR BIUs: 1 2 3 4
Predefined configurations:	Cancel

to it that are not added from the configuration in the controller. Also, yellow monitoring needs to be turned off in the monitor on the ped channels, as well as min yellow change on the ped channels. Mode G needs to be selected in the MMU2 and the appropriate programming made. This example is from the ATSI Virtual TS-2 Cabinet display.

In this example the additional jumpers are to allow phases 1 and 2, 3 and 4, 5 and 6, and 7 and 8 to be timed together as necessary. Depending on the MMU2 used this may or may not be necessary. Ped 2 needs to time with phase 1 as well as Ped 4 with 3, ped 6 with phase 5 and ped 8 with phase 7. Verify with EDI and Reno A&E how they handle Mode G in their MMU2 monitors. It may not be necessary to add the extra jumpers. As seen below with the channel permissive status screens from *Omni* the additional

jumpers show as "M" on the screen. The X indicates that both the monitor and the controller have the same permissives and are in agreement. If there are any "C"s then the monitor is missing a permissive jumper. If this is the case the cabinet and controller will not run. The controller will indicate Stop Time, the MMU2 will indicate CVM fault. The controller will not run until all the "C"s are corrected by putting a jumper on the MMU2 permissive card in the location where the C is indicated.

U.7.U CHANNEL PERMISSIVE STATUS D	
CHAN # 12345678901234567890123456789012	2
TYPE VVVVVVVPPPP0000	
SOURCE 1234567824681234	
CHAN 1 .MXXM.X.X.X	
CHAN 2XXX.X.X.X	
CHAN 3MXX.M.X.X.X	
CHAN 4XX.X.X.X.X	
Press Q to exit	
y=YES n=NO x=NEXT	
0.7.6 CHANNEL PERMISSIVE STATUS UD	
CHAN # 12345678901234567890123456789012	
TYPE VVVVVVVPPPP0000	
TYPE VVVVVVVPPPP0000 SOURCE 1234567824681234	
TYPE VVVVVVVPPPP0000 SOURCE 1234567824681234 CHAN 9	
TYPE VVVVVVVPPPP0000 SOURCE 1234567824681234 CHAN 9 CHAN 10	
TYPE VVVVVVVPPPP0000	
TYPE VVVVVVVPPPP0000	
TYPE VVVVVVVPPPP0000	
TYPE VVVVVVVPPPP0000	

0.7.6 (CHANNEL PERMISSIVE STATUS	UD
CHAN #	123456789012345678901234567	89012
TYPE	VVVVVVVPPPP0000	
SOURCE	1234567824681234	
CHAN 5	MX.M.X.X	
CHAN 6	X.X.X.X.	
CHAN 7	M.X.M.X.X	
CHAN 8	X.X.X.X.	
Press Q	to exit	
y=YES n=	NO X=NEXT	
0.7.6	CHANNEL PERMISSIVE STATUS	UD
0.7.6 (CHAN #	HANNEL PERMISSIVE STATUS 123456789012345678901234567	UD 89012
0.7.6 (CHAN # TYPE	CHANNEL PERMISSIVE STATUS 123456789012345678901234567 VVVVVVVPPPP0000 VVVVVVVPPPP0000	UD 89012
0.7.6 CHAN # TYPE SOURCE	HANNEL PERMISSIVE STATUS 123456789012345678901234567 vvvvvvvv vvvvvvv VVVVVVVPPPP0000. 1234567824681234. 1234567824681234.	UD 89012
0.7.6 CHAN # TYPE SOURCE CHAN 13	HANNEL PERMISSIVE STATUS 123456789012345678901234567 VVVVVVVPPPP0000. 1234567824681234. X	UD 89012
0.7.6 CHAN # TYPE SOURCE CHAN 13 CHAN 14	HANNEL PERMISSIVE STATUS 1234567890123456789012345677 VVVVVVVPPPP0000 1234567824681234 1234567824681234 X X	UD 89012
0.7.6 CHAN # TYPE SOURCE CHAN 13 CHAN 14 CHAN 15	CHANNEL PERMISSIVE STATUS 1234567890123456789012345678 VVVVVVVPPP0000 1234567824681234 1234567824681234 X X	UD 89012
0.7.6 CHAN # TYPE SOURCE CHAN 13 CHAN 14 CHAN 15 CHAN 16	HANNEL PERMISSIVE STATUS 1234567890123456789012345678 VVVVVVVPPPP0000 1234567824681234 1234567824681234 X X	UD 89012
0.7.6 CHAN # TYPE SOURCE CHAN 13 CHAN 14 CHAN 15 CHAN 16	HANNEL PERMISSIVE STATUS 123456789012345678901234567 VVVVVVVPPPP0000 1234567824681234 1234567824681234 X X	UD 89012
0.7.6 C CHAN # TYPE SOURCE CHAN 13 CHAN 14 CHAN 15 CHAN 16 Press Q	HANNEL PERMISSIVE STATUS 123456789012345678901234567 VVVVVVVPPPP0000. 1234567824681234.	UD 89012

This completes the programming of Omni to configure an intersection to operate with Mode G Flashing Yellow Arrow operations. It is advisable to verify operation on a test cabinet before implementing this configuration in a live intersection. In order to monitor any Flashing Yellow Arrow operation in a NEMA TS-2 cabinet it is required that an MMU2 Monitor be used. By NEMA TS-2 Standards Amendment #4 – 2012, all 8 modes of Flashing Yellow arrow are supported.

In a standard TS-2 cabinet with 16 load switch positions there are now 4 load switches available for use as other overlaps such as Advance Warning Beacons (AWBs) or Blank-Out Sign Control or Right Turn overlaps.

If assistance or additional help is needed please email us at support@mccain-inc.com