



Product Type: ASC/3

Reference: AN2074B

Date: 28 January 2010

MUTCD ASC/3 Four-Section PPLT Arrow Signal for Type 12 Mode

Purpose

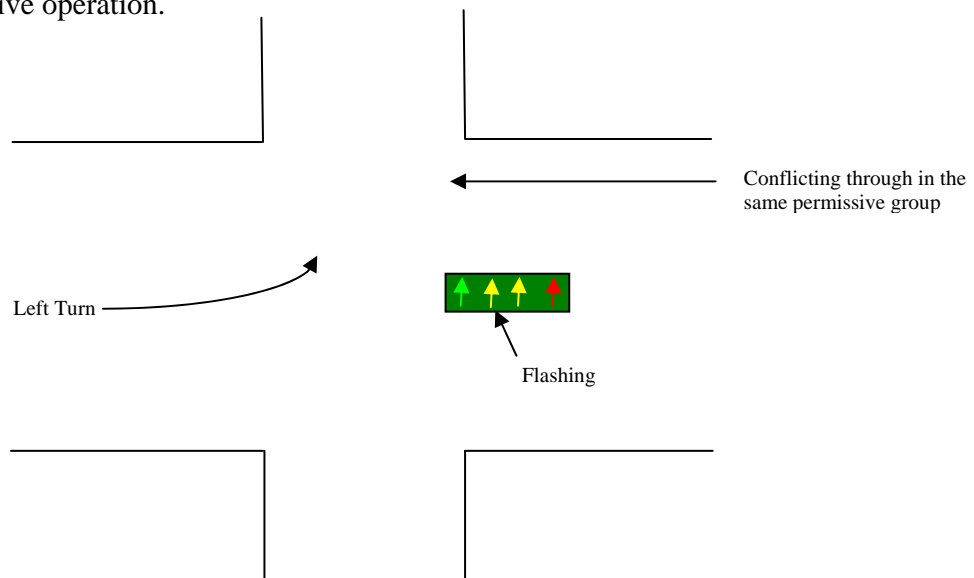
Program the ASC/3 Logic Processor to provide MUTCD¹ Type 12 mode-flashing left yellow left turn signal indication.

Note: This Rev. B of this Application Note updates the logic processor statements to the latest wording.

Introduction

This operation is used for Protected-Permissive Left Turns (PPLT) that are equipped with a four-section left turn arrow signal, as described and illustrated below:

- Red Arrow is on top and is illuminated when the Green, Yellow or Flashing Yellow is not illuminated.
- Yellow arrow is second from the top and is illuminated when the left turn or the conflicting through in the same permissive group is yellow.
- Flashing yellow arrow is third from the top and flashes when:
 - The left turn next and the conflicting through in the same permissive group is timing.
 - The conflicting through in the same permissive group is green.
- Green arrow is on the bottom and is illuminated when the left turn is green.
- The PPLT operation is selected by time-of-day and, when disabled, the left turn signal will only use the protected green, yellow and red arrows associated with the left turn. During the through movement, the signal will display red.
- Backing up from the through movement to the left turn phase is prohibited during the protected/permissive operation.



¹ MUTCD = Manual on Uniform Traffic Control Devices



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Applications

Controller Programming

Program the controller as follows:

Normal 8-phase quad sequence

Enable phase 1-8 (MM-1-2)

Program Overlaps A thru D (MM-2-2), as shown below:

- Overlap A (OLA) = Included phase 2. The green will be used by the Logic Processor for the flashing yellow arrow for phase 1
- Overlap B (OLB) = Included phase 4. The green will be used by the Logic Processor for the flashing yellow arrow for phase 3
- Overlap C (OLC) = Included phase 6. The green will be used by the Logic Processor for the flashing yellow arrow for phase 5
- Overlap D (OLD) = Included phase 8. The green will be used by the Logic Processor for the flashing yellow arrow for phase 7

| TWG VEH OVLP... | [A] | TYPE- | OTHER |
|-----------------|---------------------|-------------|---------------------|
| PHASES | 1 2 3 4 5 6 7 8 9 0 | 1 2 3 4 5 6 | |
| INCLUDED | . X | | |
| PROTECT | | | |
| MODIFIER | | | |
| PED PRTC | | | |
| NO SERVE | | | |
| FLSH GRN | | | |
| LAG X PH | | | |
| LAG 2 PH | | | |
| LAG GRN | 0.0 | YEL 0.0 | RED 0.0 ADV GRN 0.0 |

MM-2-2

Overlap A Programming (overlaps B thru D are similar)

Logic Processor Programming

Use screen MM-1-8-2 to program the Logic Processor for Step 1 thru Step 16 (LP1 thru LP16), as shown on the subsequent pages.

You can use other LP steps (for example, LP21 thru LP36) as an alternative to LP1 thru LP16.



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Phase 1

LP 1

| | | |
|------|----------------------|-------------|
| IF | VEH OVERLAP GREEN | 1 IS ON |
| AND | CTR PHASE TIMING | 2 IS ON |
| AND | CTR PHASE TIMING | 5 IS OFF |
| AND | LP FLAG | 1 IS ON |
| | | |
| THEN | SIG SET PH PED CLR 2 | ON |
| | LP DELAY FOR | 0.5 SECONDS |
| | LP SET LOGIC FLAG | 1 OFF |
| | | |
| ELSE | SIG SET PH PED CLR 2 | OFF |
| | LP DELAY FOR | 0.5 SECONDS |
| | LP SET LOGIC FLAG | 1 ON |

LP 2

| | | |
|------|-------------------|------------|
| IF | VEH OVERLAP YLW | 1 IS ON |
| | | |
| THEN | SIG SET PH YELLOW | 1 ON |
| | SIG SET PHASE RED | 1 OFF |

LP 3

| | | |
|------|-------------------|------------|
| IF | VEH OVERLAP GREEN | 1 IS ON |
| OR | CTR OL GRN EXT | 1 IS ON |
| AND | CTR PHASE TIMING | 5 IS OFF |
| | | |
| THEN | SIG SET PHASE RED | 1 OFF |

LP 4

| | | |
|------|------------------|-----------|
| IF | CTR PHASE TIMING | 2 IS ON |
| | | |
| THEN | CTR OMIT PHASE | 1 ON |



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Phase 3

LP 5

| | | |
|------|--------------------|-------------|
| IF | VEH OVERLAP GREEN | 2 IS ON |
| AND | CTR PHASE TIMING | 4 IS ON |
| AND | CTR PHASE TIMING | 7 IS OFF |
| AND | LP FLAG | 2 IS ON |
| THEN | SIG SET PH PED CLR | 4 ON |
| | LP DELAY FOR | 0.5 SECONDS |
| | LP SET LOGIC FLAG | 2 OFF |
| ELSE | SIG SET PH PED CLR | 4 OFF |
| | LP DELAY FOR | 0.5 SECONDS |
| | LP SET LOGIC FLAG | 2 ON |

LP 6

| | | |
|------|-------------------|---------|
| IF | VEH OVERLAP YLW | 2 IS ON |
| THEN | SIG SET PH YELLOW | 3 ON |
| | SIG SET PHASE RED | 3 OFF |

LP 7

| | | |
|------|-------------------|---------|
| IF | VEH OVERLAP GREEN | 2 IS ON |
| OR | CTR OL GRN EXT | 2 IS ON |
| AND | CTR PHASE TIMING | 7 OFF |
| THEN | SIG SET PHASE RED | 3 OFF |

LP 8

| | | |
|------|------------------|---------|
| IF | CTR PHASE TIMING | 4 IS ON |
| THEN | CTR OMIT PHASE | 3 ON |



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Phase 5

LP 9

| | | |
|------|--------------------|-------------|
| IF | VEH OVERLAP GREEN | 3 IS ON |
| AND | CTR PHASE TIMING | 6 IS ON |
| AND | CTR PHASE TIMING | 1 IS OFF |
| AND | LP FLAG | 3 IS ON |
| | | |
| THEN | SIG SET PH PED CLR | 6 ON |
| | LP DELAY FOR | 0.5 SECONDS |
| | LP SET LOGIC FLAG | 3 OFF |
| | | |
| ELSE | SIG SET PH PED CLR | 6 OFF |
| | LP DELAY FOR | 0.5 SECONDS |
| | LP SET LOGIC FLAG | 3 ON |

LP 10

| | | |
|------|-------------------|---------|
| IF | VEH OVERLAP YLW | 3 IS ON |
| | | |
| THEN | SIG SET PH YELLOW | 5 ON |
| | SIG SET PHASE RED | 5 OFF |

LP 11

| | | |
|------|-------------------|----------|
| IF | VEH OVERLAP GREEN | 3 IS ON |
| OR | CTR OL GRN EXT | 3 IS ON |
| AND | CTR PHASE TIMING | 1 IS OFF |
| | | |
| THEN | SIG SET PHASE RED | 5 OFF |

LP 12

| | | |
|------|------------------|---------|
| IF | CTR PHASE TIMING | 6 IS ON |
| | | |
| THEN | CTR OMIT PHASE | 5 ON |



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Phase 7

LP 13

| | | |
|------|--------------------|-------------|
| IF | VEH OVERLAP GREEN | 4 IS ON |
| AND | CTR PHASE TIMING | 8 IS ON |
| AND | CTR PHASE TIMING | 3 IS OFF |
| AND | LP FLAG | 4 IS ON |
| | | |
| THEN | SIG SET PH PED CLR | 8 ON |
| | LP DELAY FOR | 0.5 SECONDS |
| | LP SET LOGIC FLAG | 4 OFF |
| | | |
| ELSE | SIG SET PH PED CLR | 8 OFF |
| | LP DELAY FOR | 0.5 SECONDS |
| | LP SET LOGIC FLAG | 4 ON |

LP 14

| | | |
|------|-------------------|---------|
| IF | VEH OVERLAP YLW | 4 IS ON |
| | | |
| THEN | SIG SET PH YELLOW | 7 ON |
| | SIG SET PHASE RED | 7 OFF |

LP 15

| | | |
|------|-------------------|----------|
| IF | VEH OVERLAP GREEN | 4 IS ON |
| OR | CTR OL GRN EXT | 4 IS ON |
| AND | CTR PHASE TIMING | 3 IS OFF |
| | | |
| THEN | SIG SET PHASE RED | 7 OFF |

LP 16

| | | |
|------|------------------|---------|
| IF | CTR PHASE TIMING | 8 IS ON |
| | | |
| THEN | CTR OMIT PHASE | 7 ON |

MMU Monitoring

The MMU must be configured for the FYA Type 12 mode of operation with the MMU monitoring the Flashing yellow arrow on the yellow output of the pedestrian load switches.