Number of vertices $n = 12$.
Adjacencies of Graph

1. vertex 1 adjacent to 2 6 7
2. vertex 2 adjacent to 1 3 8
3. vertex 3 adjacent to 2 4 9
4. vertex 4 adjacent to 3 5 10
5. vertex 5 adjacent to 4 6 11
6. vertex 6 adjacent to 1 5 12
7. vertex 7 adjacent to 1 8 12
8. vertex 8 adjacent to 2 7 9
9. vertex 9 adjacent to 3 8 10
10. vertex 10 adjacent to 4 9 11
11. vertex 11 adjacent to 5 10 12
12. vertex 12 adjacent to 6 7 11

Size of automorphism group of the graph=24
Full group: $|Aut(polytope)| = 49152$
Restricted group: $|Aut(G) \times switch| = 49152$
Number of orbits for the full group : 6
List of orbits of facets for the full group: Total number of orbits = 6 Total number of facets = 2452

1. Inequality 1 with incidence 1024 and stabilizer of size 1024. Orbit size is 48 nature: 4-cycle inequality, C=[7, 12, 6, 1] F=[7, 12]

(1,2) : 0	(1,6) : 1	(1,7) : 1	(2,3) : 0	(2,8) : 0	(3,4) : 0
(3,9) : 0	(4,5) : 0	(4,10) : 0	(5,6) : 0	(5,11) : 0	(6,12) : 1
(7,8) : 0	(7,12) : -1	(8,9) : 0	(9,10) : 0	(10,11) : 0	(11,12) : 0

2. Inequality 2 with incidence 1024 and stabilizer of size 2048. Orbit size is 24 nature: edge inequality e=[7, 8]

(1,2) : 0	(1,6) : 0	(1,7) : 0	(2,3) : 0	(2,8) : 0	(3,4) : 0
(3,9) : 0	(4,5) : 0	(4,10) : 0	(5,6) : 0	(5,11) : 0	(6,12) : 0
(7,8) : 1	(7,12) : 0	(8,9) : 0	(9,10) : 0	(10,11) : 0	(11,12) : 0

3. Inequality 3 with incidence 1024 and stabilizer of size 4096. Orbit size is 12 nature: edge inequality e=[3, 9]

(1,2) : 0	(1,6) : 0	(1,7) : 0	(2,3) : 0	(2,8) : 0	(3,4) : 0
(3,9) : 1	(4,5) : 0	(4,10) : 0	(5,6) : 0	(5,11) : 0	(6,12) : 0
(7,8) : 0	(7,12) : 0	(8,9) : 0	(9,10) : 0	(10,11) : 0	(11,12) : 0

4. Inequality 4 with incidence 384 and stabilizer of size 768. Orbit size is 64 nature: 6-cycle inequality, C=[7, 8, 9, 10, 11, 12] F=[7, 8]

(1,2) : 0	(1,6) : 0	(1,7) : 0	(2,3) : 0	(2,8) : 0	(3,4) : 0
(3,9) : 0	(4,5) : 0	(4,10) : 0	(5,6) : 0	(5,11) : 0	(6,12) : 0
(7,8) : -1	(7,12) : 1	(8,9) : 1	(9,10) : 1	(10,11) : 1	(11,12) : 1

5. Inequality 5 with incidence 128 and stabilizer of size 32. Orbit size is 1536 nature: 8-cycle inequality, C=[5, 11, 10, 9, 3, 2, 1, 6] F=[5, 11]

(1,2) : 1	(1,6) : 1	(1,7) : 0	(2,3) : 1	(2,8) : 0	(3,4) : 0
(3,9) : 1	(4,5) : 0	(4,10) : 0	(5,6) : 1	(5,11) : -1	(6,12) : 0
(7,8) : 0	(7,12) : 0	(8,9) : 0	(9,10) : 1	(10,11) : 1	(11,12) : 0

6. Inequality 6 with incidence 128 and stabilizer of size 64. Orbit size is 768 nature: 8-cycle inequality, C=[4, 5, 6, 12, 7, 8, 9, 3] F=[4, 5]

(1,2) : 0	(1,6) : 0	(1,7) : 0	(2,3) : 0	(2,8) : 0	(3,4) : 1
(3,9) : 1	(4,5) : -1	(4,10) : 0	(5,6) : 1	(5,11) : 0	(6,12) : 1
(7,8) : 1	(7,12) : 1	(8,9) : 1	(9,10) : 0	(10,11) : 0	(11,12) : 0