ISO 18629-13:2006-08 (E)

Industrial automation systems and integration - Process specification language - Part 13: Duration and ordering theories

Contents

Page

1 Scope 1

2 Normative references 1

3 Terms, definitions, and abbreviations 2
3.1 Terms and definitions 2
3.2 Abbreviations 6

6 Subactivity occurrence ordering core Theory 7
6.1 Primitive Relations of the Subactivity occurrence ordering theory 8
6.2 Defined Relations of the Subactivity occurrence ordering theory 8
6.3 Relationship to other sets of axioms 8
6.4 Informal Semantics of the Subactivity occurrence ordering theory 8
6.4.1 soo 8
6.4.2 soo_precedes 9
6.4.3 soomap 9
6.5 Definitions in the Subactivity occurrence ordering theory 9
6.5.1 Definition 1 (related to root_soo) 9
6.5.2 Definition 2 (related to leaf_soo) 9
6.5.3 Definition 3 (related to next_soo) 10
6.6 Axioms of the Subactivity occurrence ordering theory 10
6.6.1 Axiom 1 10
6.6.2 Axiom 2 10
6.6.3 Axiom 3 10
6.6.4 Axiom 4 11
6.6.5 Axiom 5 11
6.6.6 Axiom 6 11
6.6.7 Axiom 7 11
6.6.8 Axiom 8 12

7 Duration theory 12
7.1 Primitive relations in the Duration theory 12
7.2 Primitive Functions and Constants 12
7.3 Defined Relations of the Duration theory 12
7.4 Relationship to other sets of axioms 13
7.5 Informal Semantics of the Duration theory 13
7.5.1 timeduration 13
7.5.2 lesser 13
7.5.3 duration 13
7.5.4 time_add 13
7.5.5 add 14
7.5.6 mult 14
7.5.7 zero 14
7.5.8 one 14
7.5.9 max+ 14
7.5.10 max- 14
7.6 Definitions of Duration theory 14
7.6.1 Definition 1 14
7.7 Axioms for the Duration theory 15
7.7.1 Axiom 1 15
7.7.2 Axiom 2 15

7.7.3 Axiom 3 15
7.7.4 Axiom 4 16
7.7.5 Axiom 5 16
7.7.6 Axiom 6 16
7.7.7 Axiom 7 16
7.7.8 Axiom 8 16
7.7.9 Axiom 9 17
7.7.10 Axiom 10 17
7.7.11 Axiom 11 17
7.7.12 Axiom 12 17
7.7.13 Axiom 13 17
7.7.14 Axiom 14 18
7.7.15 Axiom 15 18
7.7.16 Axiom 16 18
7.7.17 Axiom 17 18
7.7.18 Axiom 18 19
7.7.19 Axiom 19 19
7.7.20 Axiom 20 19
7.7.21 Axiom 21 19
7.7.22 Axiom 22 20

8 Occurrence tree automorphisms 20
8.1 Primitive Relations in the Occurrence tree automorphism theory 20
8.2 Defined Relations in the Occurrence tree automorphism theory 20
8.3 Relationship to other sets of axioms 21
8.4 Informal semantics of the Occurrence tree automorphism theory 21
8.4.1 ubiquitous 21
8.4.2 end_iso 21
8.4.3 legal_map 21
8.4.4 tree_map 22
8.5 Definitions in the Occurrence tree automorphism theory 22
8.5.1 Definition 1 22
8.5.2 Definition 2 22
8.5.3 Definition 3 23
8.6 Axioms for the Occurrence tree automorphism theory 23
8.6.1 Axiom 1 23
8.6.2 Axiom 2 24
8.6.3 Axiom 3 24

9 Activity envelope theory 25
9.1 Primitive Relations in the Activity envelope theory 25
9.2 Defined relation in Activity envelope theory 25
9.3 Relationship to other sets of axioms 25
9.4 Informal semantics of the Activity envelope theory 25
9.4.1 envelope 25
9.4.2 umbra 26
9.5 Definitions in activity envelop theory 26
9.6 Axioms of the Activity envelope theory 26
9.6.1 Axiom 1 26
9.6.2 Axiom 2 26
9.6.3 Axiom 3 27
9.6.4 Axiom 4 27
9.6.5 Axiom 5 27
9.6.6 Axiom 6 27
9.6.7 Axiom 7 27
9.6.8 Axiom 8 28

Annex A (normative) Use of ASN.1 Identifiers in SC4 standards 29

Bibliography 38

Index 39

Figures Figure B1: TOP level process for manufacturing a GT350 [8] 31

Figure B.2: PROCESS for manufacturing the 350-Engine [8] 33

Figure B.3: PROCESS for manufacturing the 350-Block [8] 34

Figure B.4: PROCESS for manufacturing the 350-Harness [8] 35

Figure B.5: PROCESS for manufacturing the harness wire [8] 36

Figure B.6 : Process for manufacturing the 350-Wire [8] 36