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# **TISSUES Implementation Conformance Statement for the IEC 61850 Interface in SEL Real-Time Automation Controllers**

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UCA International Users Group Testing Sub Committee

Template Ed2 for TPCL 1.0



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## 1 INTRODUCTION

This document specifies the TISSUES Implementation Conformance Statement (TICS) of the IEC 61850 interface for the SEL Real-Time Automation Controllers (RTAC).

This document applies specifically to the following RTAC models and firmware versions.

| Model           | Firmware Version                      |
|-----------------|---------------------------------------|
| SEL-3530 RTAC   | SEL-3530- R139-V1-Z001001-D20170628   |
| SEL-3530-4 RTAC | SEL-3530-4- R139-V1-Z001001-D20170628 |
| SEL-2241 RTAC   | SEL-2241- R139-V1-Z001001-D20170628   |
| SEL-3505 RTAC   | SEL-3505- R139-V1-Z001001-D20170628   |
| SEL-3505-3 RTAC | SEL-3505-3- R139-V1-Z001001-D20170628 |
| SEL-3532 RTAC   | SEL-3532-N- R139-V1-Z001001-D20170628 |
| SEL-3555 RTAC   | SEL-3555- R139-V1-Z001001-D20170628   |
| SEL-3560 RTAC   | SEL-3560- R139-V1-Z001001-D20170628   |

## 2 MANDATORY EDITION 2 TISSUES

The following tables list the applicable mandatory TISSUES.

| Part 6 Tissue | Description  | Implemented Y/na |
|---------------|--|------------------|
| 658           | Tracking related features  | na               |
| 663           | FCDA element cannot be a "functionally constrained logical node" | Y                |
| 668           | Autotransformer modeling   | na               |
| 687           | SGCB ResvTms   | na               |
| 719           | ConfDataSet - maxAttributes definition is confusing              | Y                |
| 721           | Log element name   | na               |
| 768           | bType VisString65 is missing                                     | Y                |
| 779           | object references  | na               |
| 788           | SICS S56 from optional to mandatory                              | na               |
| 789           | ConfLdName as services applies to both server and client         | na               |
| 804           | valKind and IED versus System configuration                      | Y                |
| 806           | Max length of log name inconsistent between -6 and -7-2          | na               |
| 807           | Need a way to indicate if Owner is present in RCB                | na               |



|      |  |    |
|------|--|----|
| 822  | Certain IED capabilities cannot be defined in an SCL file (services element) | Y  |
| 823  | ValKind for structured data attributes                                       | Y  |
| 824  | Short addresses on structured data attributes                                | na |
| 825  | Floating point value   | Y  |
| 845  | SGCB ResvTms   | na |
| 853  | SBO and ProtNs   | na |
| 855  | Recursive SubFunction  | na |
| 856  | VoltageLevel frequency and phases  | na |
| 857  | Function/SubFunction for conducting equipment                                | na |
| 886  | Missing 8-1 P-types  | na |
| 901  | tServices as AP or as IED element  | Y  |
| 936  | SupSubscription parameter usage is difficult                                 | na |
| 1168 | doName and daName of ExtRef; doName may have one dot (DO.SDO)                |    |
| 1175 | IPv6 address lowercase only  | na |

| <b>Part 7-1<br/>Tissue</b> | <b>Description</b>   | <b>Implemented<br/>Y/na</b> |
|----------------------------|--|-----------------------------|
| 828                        | Data model namespace revision IEC 61850-7-4:2007[A]                  | Y                           |
| 1129                       | Rules for extending nameplate information (new CDC VSD)              | na                          |
| 1151                       | Simulated GOOSE disappears after 1st appearance when LPHD.Sim = TRUE | na                          |
| 1196                       | Extensions to standardized LN classes made by third parties          | Y                           |

| <b>Part 7-2<br/>Tissue</b> | <b>Description</b>                                      | <b>Implemented<br/>Y/na</b> |
|----------------------------|---|-----------------------------|
| 778                        | AddCause values—add value not-supported                 | Y                           |
| 780                        | What are unsupported trigger option at a control block? | Y                           |
| 783                        | TimOper Resp—add Authorization check                    | na                          |
| 786                        | AddCause values 26 and 27 are switched                  | Y                           |
| 820                        | Mandatory ACSI services (use for PICS template)         | Y                           |
| 858                        | Typo in enumeration ServiceType                         | na                          |
| 861                        | dchg of ConfRev attribute                               | na                          |



|      |   |    |
|------|---|----|
| 876  | GenLogicINodeClass and SGCB, GoCB, MsvCB, UsvCB   | Y  |
| 1038 | Loss of info detection after resynch  | Y  |
| 1050 | GTS Phycomaddr definition in SCL  | na |
| 1062 | Entrytime not used in CDC   | na |
| 1071 | Length of DO name   | Y  |
| 1091 | The sentence "The initial value of EditSG shall be 0", must be stated in part 7.2, not in 8.1 | na |
| 1127 | Missing owner attribute in BTS and UTS  | na |
| 1163 | Old report in URCB  | Y  |
| 1202 | GI not optional   | Y  |

| <b>Part 7-3<br/>Tissue</b> | <b>Description</b>                                  | <b>Implemented<br/>Y/na</b> |
|----------------------------|---|-----------------------------|
| 697                        | Persistent command/PulseConfig                      | na                          |
| 698                        | Wrong case is BAC.dB attribute                      | na                          |
| 722                        | Units for 'h' and 'min' not in UnitKind enumeration | na                          |
| 919                        | Presence Condition for sVC                          | na                          |
| 925                        | Presence of i or f attribute—problem with writing   | na                          |
| 926                        | Presence conditions within RangeConfig              | na                          |

| <b>Part 7-4<br/>Tissue</b> | <b>Description</b>  | <b>Implemented<br/>Y/na</b> |
|----------------------------|---|-----------------------------|
| 671                        | Mistake in definition of Mod & Beh                            | Y                           |
| 674                        | CDC of ZRRC.LocSta is incorrect                               | Y                           |
| 676                        | Same data object name used with different CDC                 | Y                           |
| 677                        | MotStr is used with different CDC in PMMS and SOPM LN classes | Y                           |
| 679                        | Remove CycTrMod Enum  | na                          |
| 680                        | SI unit for MHYD.Cndct  | na                          |
| 681                        | Enum PIDAlg   | na                          |
| 682                        | ANCR.ParColMod  | na                          |
| 683                        | Enum QVVR.IntrDetMth  | na                          |
| 685                        | Enum ParTraMod  | na                          |
| 686                        | New annex H—enums types in XML                                | Y                           |
| 694                        | Data object CmdBlk  | na                          |



|      |  |    |
|------|--|----|
| 696  | LSVS.St (status of subscription)   | na |
| 712  | Interpretation of quality operatorBlocked                                  | na |
| 713  | DO Naming of time constants in FFIL  | na |
| 724  | ANCR.Auto  | Y  |
| 725  | Loc in LN A-group  | Y  |
| 734  | LLN0.OpTmh vs. LPHD.OpTmh  | Y  |
| 736  | PFSign   | na |
| 742  | GAPC.Str, GAPC.Op, and GAPC.StrVal   | Y  |
| 743  | CCGR.PmpCtl and CCGR.FanCtl  | Y  |
| 744  | LN STMP, EEHealth, and EEName  | Y  |
| 773  | Loc, LocKey, and LocSta YPSH and YLTC                                      | Y  |
| 774  | ITCI.LockKey   | Y  |
| 800  | Misspelling in CSYN  | na |
| 802  | CCGR and Harmonized control authority                                      | Y  |
| 808  | Presence condition of ZMoT.DExt and new DOs                                | Y  |
| 831  | Setting of ConfRevNum in LGOS  | Y  |
| 838  | Testing in Beh=Blocked   | na |
| 844  | MFLK.PhPiMax, MFLK.PhPiLoFil, MFLK.PhPiRoot DEL->WYE                       | Y  |
| 849  | Presence conditions reassessing in case of derived statistical calculation | na |
| 877  | QVUB—settings should be optional   | na |
| 909  | Remove ANCR.ColOpR and ColOpL  | Y  |
| 912  | Clarification of PwrRtg/VARtg  | na |
| 920  | Resettable counter is NOT resettable                                       | Y  |
| 932  | Rename AVCO.SptVol to AVCO.VolSpt  | Y  |
| 939  | Change CDC for ANCR.FixCol   | na |
| 991  | LGOS: GoCBRef (as well as LSVS.SvCBRef) should be mandatory                | na |
| 1007 | PTRC as fault indicator—update of description required                     | Y  |
| 1044 | TapChg in AVCO   | Y  |
| 1077 | Rename DOnames within LTIM   | na |



| <b>Part 8<br/>Tissue</b> | <b>Description</b>                                       | <b>Implemented<br/>Y/na</b> |
|--------------------------|--|-----------------------------|
| 784                      | Tracking of control (CTS)                                | na                          |
| 817                      | Fixed-length GOOSE float encoding                        | na                          |
| 834                      | File dir name length 64                                  | Y                           |
| 951                      | Encoding of Owner attribute                              | na                          |
| 1040                     | More associate error codes                               | Y                           |
| 1178                     | Select response+ is non-null value                       | na                          |
| 1324                     | The response- for DeleteNamedVariableList is not defined | na                          |

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