

# Easergy MiCOM P445

Fast Multifunction Distance Protection Relay

P445/EN TC/Ld2 – Ed. 2

Software Version	K3
Hardware Suffix	L
IEC61850 Edition	2
Issue Date	03/2021

Tissues Conformance Statement (TICS)

**Note**

The technical manual for this device gives instructions for its installation, commissioning, and operation. However, the manual cannot cover all conceivable circumstances or include detailed information on all topics. In the event of questions or specific problems, do not take any action without proper authorization. Contact the appropriate Schneider Electric technical sales office and request the necessary information.

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**TISSUES CONFORMANCE  
STATEMENT (TICS)**

Date (month/year):	03/2021
Products covered by this chapter:	This chapter covers the specific versions of the MiCOM products listed below. This includes <b>only</b> the following combinations of Software Version and Hardware Suffix.
Hardware suffix:	L
Software version:	K3
Connection diagrams:	This includes a list of the Connection Diagrams for the Products covered by this document. 10P445xx (xx = 01 to 04)

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# Notes:

**1 INTRODUCTION**

According to the UCA IUG QAP, the Technical Issues Conformance Statement is required to perform a conformance test and is referenced on the certificate.

This document specifies the conformance level of MiCOM P445 with firmware version K3 to the logged Technical Issues (TISSUES) against the IEC 61850 set of standards.

For more details on the logged Technical Issues, refer to the website:

<http://www.tissues.iec61850.com>

## 2 MANDATORY INTOP TISSUES

During the October 2006 meeting, IEC TC57 Working Group 10 decided that:

- Green Tissues with the category "IntOp" are mandatory for IEC 61850 Edition 1
- Green Tissues with the category "IntOp2" are mandatory for IEC 61850 Edition 2.

The below table gives an overview of the implemented IntOp Tissues and testing status.

Part	Tissue	Description	Category	Implemented Y/NA	Notes
6	658	Tracking related features	IntOp2	NA	
	663	FCDA element cannot be a "functionally constrained logical node"	IntOp2	Y	IED Configurator update
	668	Autotransformer modeling	IntOp2	Y	
	687	SGCB ResvTms	Ed2	NA	
	719	ConfDataSet - maxAttributes definition is confusing	IntOp2	Y	
	721	Log element name	IntOp2	NA	Log not supported.
	768	bType VisString65 is missing	IntOp2	Y	SCL3.1 solved this
	779	object references	IntOp2	Y	SCL3.1 solved this
	788	SICS S56 from optional to mandatory	IntOp2	NA	
	789	ConfLdName as services applies to both server and client	IntOp2	NA	LD name could not be configurable
	804	valKind and IED versus System configuration	IntOp2	Y	SCL3.1 solved this
	806	Max length of log name inconsistent between -6 and -7-2	Ed2	Y	SCL3.1 solved this
	807	Need a way to indicate if "Owner" present in RCB	Ed2	Y	
	823	ValKind for structured data attributes	IntOp2	Y	IED Configurator update
	824	Short addresses on structured data attributes	IntOp2	Y	SCL3.1 solved this
	825	Floating point value	IntOp2	Y	
	845	SGCB ResvTms	Ed2	NA	
	853	SBO and ProtNs	IntOp2	Y	
	855	Recursive SubFunction	IntOp2	NA	
	856	VoltageLevel frequency and phases	Ed2	NA	Need new Schema
	857	Function/SubFunction for ConductingEquipment	IntOp2	NA	
	886	Missing 8-1 P-types	IntOp2	NA	
	901	tServices as AP or as IED element	IntOp2	Y	
	936	SupSubscription parameter usage is difficult	IntOp2	NA	
	1147	tServices – FileHandling not consistent with -7-2	Ed2	NA	
	1185	Valkind value Conf for EX FC data	IntOp2	NA	
	1284	SCSM mapping may require a communication section in an ICD file	Ed2	Y	
	1328	Limitation on the size of data type templates identifiers	IntOp2	Y	
	1395	Client LN attributes	IntOp2	NA	
	1402	ExtRef during engineering	Ed2	NA	
	1415	SICS-S110 IID import mandatory for Edition2	Ed2	NA	
	1419	Support of IdName on other IEDs	Ed2	NA	
	<a href="#">1444</a>	Need to support fixed and SCT controlled Datasets	IntOp2	NA	
	<a href="#">1445</a>	ConfReportControl and a fixed ReportSettings	IntOp2	NA	



Part	Tissue	Description	Category	Implemented Y/NA	Notes
	<a href="#">1450</a>	originalSciXxx computation rules	IntOp2	NA	
	<a href="#">1485</a>	Need to supersede Tissue 1398 to clarify SCT behavior	IntOp2	NA	
7-1	828	Data model namespace revision IEC 61850-7-4:2007[A]	Ed2	Y	
	948	Enumeration (string) values format	IntOp2	NA	
	1151	simulated GOOSE disappears after 1st appearance when LPHD.Sim = TRUE	Ed2	Y	
	1396	The use and configuration flow of LGOS and LSVS is unclear	Ed2	NA	
	<a href="#">1447</a>	Restriction on ENUMtypes in SCL	Ed2	NA	
	<a href="#">1457</a>	Multiple DOI nodes with the same name	Ed2	NA	
	<a href="#">1468</a>	Re-use DO from other LN	IntOp2	NA	
	<a href="#">1491</a>	CmdBlk blocks itself?	Ed2	NA	
	<a href="#">1495</a>	GetVariableAccessAttributes error code	Ed2	NA	
7-2	728	BRCB: could PurgeBuf be set when RptEna=TRUE?	Ed2	NA	
	778	AddCause values – add value not-supported	IntOp2	Y	
	780	What are 'unsupported trigger option at a control block?	IntOp2	Y	data update not supported
	783	TimOper Resp-	IntOp2	NA	TimOper not supported
	786	AddCause values	IntOp2	Y	
	820	Mandatory ACSI services (use for PICS template)	Ed2	Y	
	858	typo in enumeration ServiceType	Ed2	Y	
	861	dchg of ConfRev attribute	Ed2	Y	
	1050	GTS Phycomaddr definition in SCL	Ed2	NA	
	1071	Length of DO name	Ed2	Y	
	1127	Missing owner attribute in BTS and UTS	Ed2	NA	No BTS/UTS CDC
	1202	GI not optional	Ed2	Y	
	<a href="#">1202</a>	GI not optional	Ed2	Y	
	1232	EntryID needs clarification	IntOp2	Y	
	1242	NTS definition	IntOp2	NA	
	1307	Segmented report with Buffer overflow	Ed2	Y	
	<a href="#">1428</a>	MTS and NTS should use svOptFlds	Ed2	NA	
	<a href="#">1630</a>	Attributes in CDC=LTS do not match 8-1 definition	Ed2	NA	
7-3	697	persistent command / PulseConfig	IntOp2	NA	
	698	Wrong case is BAC.dB attribute	IntOp2	NA	
	711	blkEna freeze data update while setting its quality to operaterBlocked	Ntp	NA	
	722	Units for 'h' and 'min' not in UnitKind enumeration.	IntOp2	Y	
	919	Presence Condition for sVC	IntOp2	NA	No sVC
	925	Presence of i or f attribute - Problem with writing	IntOp2	NA	
	926	Presence Conditions within RangeConfig	IntOp2	Y	

Part	Tissue	Description	Category	Implemented Y/NA	Notes
	954	Data attributes with FC=CF should have trgOp=dchg	Ed2	Y	
	1078	CMV.t update if rangeAng changed	Ed2	NA	
	1565	db = 0 behaviour	Ed2	Y	
	1578	dataAttribute NameSpace content	Ed2	NA	
7-4	671	mistake in definition of Mod & Beh	IntOp2	Y	
	674	CDC of ZRRCLocSta is wrong	IntOp2	NA	
	675	SIML LN	IntOp2	NA	
	676	Same data object name used with different CDC	IntOp2	NA	
	677	MotStr is used with different CDC in PMMS and SOPM LN classes	IntOp2	NA	
	679	Remove CycTrMod Enum	IntOp2	NA	
	680	SI unit for MHYD.Cndct	IntOp2	NA	
	681	Enum PIDAlg	IntOp2	NA	
	682	ANCR.ParColMod	IntOp2	NA	
	683	Enum QVVR.IntrDetMth	IntOp2	NA	
	685	Enum ParTraMod	IntOp2	NA	
	686	New annex H - enums types in XML	IntOp2	NA	
	694	Data object CmdBlk	IntOp2	NA	
	696	LSVS.St (Status of subscription)	IntOp2	NA	
	712	interpretation of quality operatorBlocked	IntOp2	NA	partly supported will not update
	713	DO Naming of time constants in FFIL	IntOp2	NA	
	714	Enums for ShOpCap and SwOpCap	Ed2	NA	
	715	RBDR.ChNum1	Ed2	NA	
	716	TAXD text for condition	Ed2	NA	
	724	ANCR.Auto	IntOp2	NA	
	725	Loc in LN A-group	IntOp2	NA	
	734	LLN0.OpTmh vs. LPHD.OpTmh	IntOp2	NA	
	736	PFSign	IntOp2	NA	
	742	GAPC.Str, GAPC.Op and GAPC.StrVal	IntOp2	NA	
	743	CCGR.PmpCtl and CCGR.FanCtl	IntOp2	NA	
	744	LN STMP, EEHealth and EEName	IntOp2	NA	
	772	LPHD.PwrUp/PwrDn shall be transient	IntOp2	NA	
	773	Loc, LockKey and LocSta YPSH and YLTC	IntOp2	NA	
	774	ITCI.LockKey	IntOp2	NA	
	775	KVLV.CisLim and OpnLim	IntOp2	NA	
	776	LPHD.OutOv/InOv and LCCH.OutOv/InOv	IntOp2	NA	
	800	Misspelling in CSYN	IntOp2	NA	
	802	CCGR and Harmonized control authority	IntOp2	NA	
	808	Presence condition of ZMOT.DExt and new DOs	IntOp2	NA	
	831	Setting of ConfRevNum in LGOS	IntOp2	NA	
	838	Testing in Beh=Blocked	IntOp2	NA	

Part	Tissue	Description	Category	Implemented Y/NA	Notes
	844	MFLK.PhPiMax, MFLK.PhPiLoFil, MFLK.PhPiRoot DEL->WYE	IntOp2	NA	
	877	QVUB -seetings should be optional	IntOp2	NA	
	908	ARIS.StrSeq – transient	Ed2	NA	
	909	Remove ANCR.ColOpR and ColOpL	IntOp2	NA	
	912	Clarification of PwrRtg/VARtg	IntOp2	NA	
	920	Resetable Counter is NOT resettable	IntOp2	NA	
	932	Rename AVCO.SptVol to AVCO.VolSpt	IntOp2	NA	
	933	Presence of LCCH.RedFerCh and RedRxCnt			
	939	Change CDC for ANCR.FixCol	IntOp2	NA	
	991	LGOS: GoCBRef (as well as LSVS.SvCBRef) should be Mandatory	IntOp2	NA	
	1007	PTRC as fault indicator - Update of description required	IntOp2	Y	
	1044	TapChg in AVCO	IntOp2	NA	
	1077	Rename DOnames within LTIM	IntOp2	Y	
	1256	New DO for LTIM to set time "manually"	Ed2	NA	
	1331	Mod, Beh and Health with q=TEST, client can't receive their states	IntOp2	NA	
	1426	Add two DO for leap seconds in LTIM	Ed2	NA	
	1456	Annex A and Mod/Beh/Health	IntOp2	Y	
	1568	ISAF.AlmReset ->transient	Ed2	NA	
8-1	770	GOLD type mismatch 18.1.1 and 18.1.2.5.2			
	784	Tracking of control (CTS)	Ed2	NA	
	817	Fixed-length GOOSE float encoding	IntOp2	NA	
	827	Mandatory ACSI services (Part of 7-2 TISSUE resolution)	Ed2	Y	
	834	File dir name length 64	Ed2	Y	
	951	Encoding of Owner attribute	IntOp2	Y	
	1040	More associate error codes	Ed2	NA	
	1178	Select Response+ is non-null value	IntOp2	Y	
	1324	The response- for DeleteNamedVariableList is not defined	IntOp2	NA	
	1345	Fixed-length GOOSE ASN.1 length encoding	IntOp2	NA	
	1441	Optonal fields in buffered reports	IntOp2	Y	
	1442	Journal variableTag for ReasonCode	IntOp2	NA	
	1453	Purge buffer on write to BRBC	Ed2	Y	
	1454	Reports can be transmitted before write(RptEna=true) is confirmed	IntOp2	NA	
	1500	the response for DeleteNamedVariableList with a non-existent LN is not specified	Ed2	NA	

Note      *Tissue\** = Tissue is not clarified in enough detail for testing.  
*Tissue\*\** = Tissue status is not green, but is clarified in enough detail for testing

**3 OTHER TISSUES**

Complete below table of other implemented tissues, these tissues with the category "IntOp" or "Ed2" should have no impact on interoperability.

Part	Tissue	Description	Category IntOp/IntOp2	Implemented Y/NA	Notes
6	1	Syntax	IntOp	Y	
	5	tExtensionAttributeNameEnum is restricted	IntOp	Y	
	8	SIUnit enumeration for W	IntOp	Y	
	10	Base type for bitstring usage	IntOp	Y	
	17	DAI/SDI elements syntax	IntOp	Y	
	169	Ordering of enum differs from 7-3	IntOp	NA	angRef is Optional in WYE, not included in P64x products
	245	Attribute RptId in SCL	IntOp	Y	
	529	Replace sev - Unknown by unknown	IntOp	Y	
	6	ReportControl/OptFields	Ed2	Y	
	7	Duplication of attributes	Ed2	Y	
	9	Data Set reference in CBs Y	Ed2	Y	
	243	RCB Naming	Ed2	Y	
	272	Private section type	Ed2	Y	
	285	Inconsistent uniqueness constraints	Ed2	Y	
	307	Flag buffered/unbuffered reporting in element service	Ed2	Y	
	315	Number of client associations	Ed2	Y	
	425	SCL does not support VisString65	Ed2	Y	
7-1	250	Trigger option used, if not defined	Ed2	Y	
7-2	30	control parameter T	IntOp	Y	
	31	Typo	IntOp	Y	Documentation only
	32	Typo in syntax	IntOp	Y	
	35	Typo Syntax Control time	IntOp	Y	
	36	Syntax parameter DSet-Ref missing	IntOp	Y	
	37	Syntax GOOSE "T" type	IntOp	Y	
	39	Add DstAddr to GoCB	IntOp	Y	
	40	GOOSE Message "AppID" to "GoID"	IntOp	Y	
	41	GsCB "AppID" to "GsID"	IntOp	NA	GSSE not implemented
	42	SV timestamp: "EntryTime" to "TimeStamp"	IntOp	NA	SV model not implemented
	43	Control "T" semantic	IntOp	Y	
	44	AddCause - Object not sel	IntOp	Y	
	47	"." in LD Name?	IntOp	Y	
	50	LNName start with number?	IntOp	Y	
	51	ARRAY [0..num] missing	IntOp	Y	
	52	Ambiguity GOOSE SqNum	IntOp	Y	
	53	Add DstAddr to GsCB, SV	IntOp	NA	SV model not implemented
	151	Name constraint for control blocks etc.	IntOp	Y	
	166	DataRef attribute in Log	IntOp	NA	Logging not implemented
	185	Logging - Integrity period	IntOp	NA	Logging not implemented

Part	Tissue	Description	Category IntOp/IntOp2	Implemented Y/NA	Notes
	189	SV Format	IntOp	NA	SV model not implemented
	191	BRCB: Integrity and buffering reports	IntOp	Y	
	234	New type CtxInt	IntOp	Y	
	275	Confusing statement on GI usage	IntOp	Y	
	278	EntryId not valid for a server	IntOp	Y	
	297	BRCB: SqNum generation	IntOp	Y	
	298	BRCB: SqNum attribute data type	IntOp	Y	
	305	BufTim=0 with 2 or more data set changes	IntOp	Y	
	322	BRCB: Buffer purge when changing configuration	IntOp	Y	
	329	BRCB: Conditions for setting buffer overflow	IntOp	Y	
	335	BRCB: Clearance of BufOvl flag	IntOp	Y	
	348	TimeOfEntry is independent of EntryId	IntOp	Y	
	349	TimeOfEntry has two definitions	IntOp	Y	
	333	Enabling of an incomplete GoCB	IntOp	Y	
	453	Combination of all reporting and logging tissues	IntOp	NA	
	46	Syncro check cancel	IntOp	NA	Syncro check not supported in P64x products
	49	BRCB TimeOfEntry?	IntOp	Y	
	190	BRCB: EntryId and TimeOfEntry	IntOp	Y	GetBRCBValues when BRCB is disabled returns EntryId value of last set of events sent
	278	EntryId not valid for a server	IntOp	Y	
	236	Name length	Ed2	Y	
	300	Attribute Resv in BRCB	Ed2	Y	
	325	TimeStamp definition	Ed2	Y	
	334	Select a SBO object twice	Ed2	Y	
	391	Basic Types (STRING)	Ed2	Y	
	455	Canceling a started control sequence	Ed2	NA	The control for cancel service shall be updated according to the Ed.2 control state machine.
	509	reserved in URCB	Ed2	Y	
	520	Control model and associations	Ed2	Y	
	747	GI for URCB	Ed2	Y	
7-3	28	Definition of APC	IntOp	Y	
	54	Point def xVal, not cVal	IntOp	Y	Documentation only
	55	Ineut = Ires?	IntOp	Y	
	60	Services missing in tables	IntOp	Y	
	63	mag in CDC CMV	IntOp	Y	
	65	Deadband calculation of a Vector and trigger option	IntOp	Y	
	219	operTm in ACT	IntOp	NA	operTm is Optional in ACT, not included in P64x products.

Part	Tissue	Description	Category IntOp/IntOp2	Implemented Y/NA	Notes
	270	WYE and DEL rms values	IntOp	Y	
	62	RMS and avg Values	Ed2	NA	See tissue 256 in 7-4
	65	Deadband calculation of a Vector and trigger option	Ed2	NA	instCVal.mag and instCVal.ang not in Px40
	204	Reporting of setting values	Ed2	NA	"SP", "SG,SE" setVal sne setMag not in Px40
	205	Device name plate – missing description "d" and "dU"	Ed2	Y	
7-4	79	AutoRecSt and Lockout	Ed2	Y	
	147	Mod	Ed2	Y	
	199	Input of logical nodes	Ed2	NA	
	216	Description of LN inputs	Ed2	NA	
	263	Setting Local time or summer/winter time	Ed2	Y	LTIM is done in Ed.2 templates.
	539	Dynamic Protection Blocking	Ed2	NA	
	830	Mode/Behaviour & Quality	Ed2	Y	Partly supported
8-1	116	GetNameList with empty response?	IntOp	Y	
	165	Improper Error Response for GetDataSetValues	IntOp	Y	
	183	GetNameList error handling	IntOp	Y	
	246	Control negative response (SBOs)	IntOp	Y	
	545	File directories with no files	IntOp	NA	
	118	File directory	Ed2	Y	Only new enum value 'unsuccessful' has been implemented
	177	Ignoring OptFlds bits for URCB	Ed2	Y	
	231	ConfRev definition	Ed2	Y	
	235	Extension of Name length	Ed2	Y	
	438	EntryTime base should be GMT	Ed2	Y	
	583	Large dataset incompatible with GetDataSetDirectory	Ed2	Y	
	777	AddCause values	Ed2	Y	
	827	Mandatory ACSI services	Ed2	Y	Refer to Tissue 820





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Publisher: Schneider Electric

**Publication: Easergy MiCOM P445/EN TC/Ld2 Fast Multifunction Distance Protection Relay Software Version: K3**

**Hardware Suffix: L IEC61850 Edition: 2**

03/2021