

# Easergy MiCOM P445

**Fast Multifunction Distance Protection Relay**

**P445/EN PC/Ld2 – Ed. 2**

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

**Protocol Implementation Conformance Statement (PICS)**

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**PROTOCOL IMPLEMENTATION  
CONFORMANCE STATEMENT  
(PICS)**

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**

The following ACSI conformance statements are used to provide an overview and details about MiCOM P445 with firmware K3:

- ACSI basic conformance statement,
- ACSI models conformance statement,
- ACSI service conformance statement

The statements specify the communication features mapped to IEC 61850-8-1 and IEC 61850-9-2.

**2 ACSI BASIC CONFORMANCE STATEMENT**

The basic conformance statement is defined in Table 1:

		Client/ Subscriber	Server/ Publisher	Value/ Comments
<b>Client-Server roles</b>				
B11	<b>Server</b> side (of TWO-PARTY-APPLICATION-ASSOCIATION)		Y	
B12	<b>Client</b> side of (TWO-PARTY-APPLICATION-ASSOCIATION)			
SCSMs supported				
B21	<b>SCSM</b> : IEC 61850-8-1 used		Y	
B22	<b>SCSM</b> : IEC 61850-9-1 used			Deprecated Ed2
B23	<b>SCSM</b> : IEC 61850-9-2 used	Y		
B24	<b>SCSM</b> : other			
Generic substation event model (GSE)				
B31	<b>Publisher</b> side		Y	
B32	<b>Subscriber</b> side	Y		
Transmission of sampled value model (SVC)				
B41	<b>Publisher</b> side			
B42	<b>Subscriber</b> side	Y		
– = not applicable Y = supported N or empty = not supported				

**Table 1 - Basic Conformance Statement**



**3 ACSI MODELS CONFORMANCE STATEMENT**

The ACSI models conformance statement is defined in Table 2.

		Client/ Subscriber	Server/ Publisher	Value/ Comments
If Server side (B11) and/or Client side (B12) supported				
M1	Logical device		Y	c1
M2	Logical node		Y	c1
M3	Data		Y	c1
M4	Data set		Y	c2
M5	Substitution			
M6	Setting group control		Y	
	Reporting			
M7	Buffered report control		Y	
M7-1	sequence-number		Y	
M7-2	report-time-stamp		Y	
M7-3	reason-for-inclusion		Y	
M7-4	data-set-name		Y	
M7-5	data-reference		Y	
M7-6	buffer-overflow		Y	
M7-7	entryID		Y	
M7-8	BufTm		Y	
M7-9	IntgPd		Y	
M7-10	GI		Y	
M7-11	conf-revision		Y	
M8	Unbuffered report control		Y	
M8-1	sequence-number		Y	
M8-2	report-time-stamp		Y	
M8-3	reason-for-inclusion		Y	
M8-4	data-set-name		Y	
M8-5	data-reference		Y	
M8-6	BufTm		Y	
M8-7	IntgPd		Y	
M8-8	GI		Y	
M8-9	conf-revision		Y	
	Logging			
M9	Log control			
M9-1	IntgPd			
M10	Log			
M11	Control		Y	
M17	File Transfer		Y	
M18	Application association		Y	c1
M19	GOOSE Control Block	Y	Y	
M20	Sampled Value Control Block			
c1 Server must be Y if B11=Yes; Client must be Y if B12=Y				
c2 Server must be Y if M7=Y or M8=Y or M9=Y or M19=Y or M20=Y				

		Client/ Subscriber	Server/ Publisher	Value/ Comments
If GSE (B31/32) is supported				
M12	GOOSE	Y	Y	
M13	GSSE			Deprecated Ed2
If SVC (B41/42) is supported				
M14	Multicast SVC	Y		
M15	Unicast SVC			
For all IEDs				
M16	Time	Y	Y	Time source with required accuracy shall be available. Only Time Master are SNTP (Mode 4 response) time server. All other Client / Server devices require SNTP (Mode 3 request) clients
Y = service is supported N or empty = service is not supported				

**Table 2 - ACSI Models Conformance Statement**

## 4 ACSI SERVICE CONFORMANCE STATEMENT

The ACSI service conformance statement is defined in Table 3 (depending on the statements in Table 1).

	Ed.	Services	AA: TP/MC	Client (C)	Server (S)	Comments
<b>Server: if B11=Y or B12=Y</b>						
S1	1,2	GetServerDirectory (LOGICAL-DEVICE)	TP		Y	S must be Y if B11=Yes
<b>Application association: if B11=Y or B12=Y</b>						
S2	1,2	Associate			Y	S must be Y if B11=Yes
S3	1,2	Abort			Y	C must support S3 if S4=N
S4	1,2	Release			Y	C must support S4 if S3=N
<b>Logical device: if M1=Y</b>						
S5	1,2	GetLogicalDeviceDirectory	TP		Y	S must be Y if B11=Yes
<b>Logical node: if M2=Y</b>						
S6	1,2	GetLogicalNodeDirectory	TP		Y	S must be Y if B11=Yes
S7	1,2	GetAllDataValues	TP		Y	
<b>Data: if M3=Y</b>						
S8	1,2	GetDataValues	TP		Y	
S9	1,2	SetDataValues	TP		Y	
S10	1,2	GetDataDirectory	TP		Y	
S11	1,2	GetDataDefinition	TP		Y	
<b>Data set: if M4=Y</b>						
S12	1,2	GetDataSetValues	TP		Y	
S13	1,2	SetDataSetValues	TP			Deprecated in Ed2
S14	1,2	CreateDataSet	TP			
S15	1,2	DeleteDataSet	TP			
S16	1,2	GetDataSetDirectory	TP		Y	
<b>Substitution: if M5=Y</b>						
S17	1,2	SetDataValues	TP			
<b>Setting group control: if M6=Y</b>						
S18	1,2	SelectActiveSG	TP		Y	
S19	1,2	SelectEditSG	TP			
S20	1,2	SetEditSGValues	TP			
S21	1,2	ConfirmEditSGValues	TP			
S22	1,2	GetEditSGValues	TP			
S23	1,2	GetSGCBValues	TP		Y	
<b>Reporting: If M7=Y or M8=Y</b>						
Buffered report control block (BRCB); If M7=Y						

	Ed.	Services	AA: TP/MC	Client (C)	Server (S)	Comments
S24	1,2	Report	TP		Y	
S24-1	1,2	data-change (dchg)			Y	
S24-2	1,2	quality-change (qchg)			Y	
S24-3	1,2	data-update (dupd)				
S25	1,2	GetBRCBValues	TP		Y	
S26	1,2	SetBRCBValues	TP		Y	
Unbuffered report control block (URCB) If M8=Y						
S27	1,2	Report	TP		Y	
S27-1	1,2	data-change (dchg)			Y	
S27-2	1,2	quality-change (qchg)			Y	
S27-3	1,2	data-update (dupd)				
S28	1,2	GetURCBValues	TP		Y	
S29	1,2	SetURCBValues	TP		Y	
<b>Logging: If M9=Y or M10=Y</b>						
Log control block; If M9=Y						
S30	1,2	GetLCBValues	TP			
S31	1,2	SetLCBValues	TP			
Log; If M10=Y						
S32	1,2	QueryLogByTime	TP			
S33	1,2	QueryLogAfter	TP			
S34	1,2	GetLogStatusValues	TP			
<b>Generic substation event model (GSE): If M19=Y</b>						
GOOSE						
S35	1,2	SendGOOSEMessage	MC		Y	
GOOSE-CONTROL-BLOCK						
S36	1,2	GetGoReference	TP			
S37	1,2	GetGOOSEElementNumber	TP			
S38	1,2	GetGoCBValues	TP		Y	
S39	1,2	SetGoCBValues	TP		Y	
GSSE						
S40	1	SendGSSEMessage	MC			Deprecated in Edition 2
GSSE-CONTROL-BLOCK						
S41	1	GetReference	TP			Deprecated in Edition 2
S42	1	GetGSSEElementNumber	TP			Deprecated in Edition 2
S43	1	GetGsCBValues	TP			Deprecated in Edition 2
S44	1	SetGsCBValues	TP			Deprecated in Edition 2
<b>Transmission of sampled value model (SVC): If M20=Y</b>						
Multicast SV						
S45	1,2	SendMSVMessage	MC			
Multicast Sampled Value Control Block						
S46	1,2	GetMSVCBValues	TP			
S47	1,2	SetMSVCBValues	TP			

	Ed.	Services	AA: TP/MC	Client (C)	Server (S)	Comments
Unicast SV						
S48	1,2	SendUSVMessage	TP			
Unicast Sampled Value Control Block						
S49	1,2	GetUSVCBValues	TP			
S50	1,2	SetUSVCBValues	TP			
<b>Control: If M11=Y</b>						
S51	1,2	Select			Y	
S52	1,2	SelectWithValue	TP		Y	
S53	1,2	Cancel	TP		Y	
S54	1,2	Operate	TP		Y	
S55	1,2	CommandTermination	TP		Y	
S56	1,2	TimeActivatedOperate	TP			
<b>File transfer: If M17=Y</b>						
S57	1,2	GetFile	TP		Y	
S58	1,2	SetFile	TP			
S59	1,2	DeleteFile	TP		Y	
S60	1,2	GetFileAttributeValues	TP		Y	
S61	1,2	GetServerDirectory (FILE-SYSTEM)	TP		Y	
<b>Time</b>						
T1	1,2	Time resolution of internal clock		10	10	Nearest negative power of 2 <sup>-n</sup> in seconds (number 0 .. 24)
T2	1,2	Time accuracy of internal clock		T1	T1	TL (ms) (low accuracy), T3 < 7) (c1) T0 (ms) (<= 10 ms), 7 <= T3 < 10 (c1) T1 (µs) (<= 1 ms), 10 <= T3 < 13 T2 (µs) (<= 100 µS), 13 <= T3 < 15 T3 (µs) (<= 25 µS), 15 <= T3 < 18 T4 (µs) (<= 4 µS), 18 <= T3 < 20 T5 (µs) (<= 1 µS), 20 <= T3 < 25
T3	1,2	Supported TimeStamp resolution	-	10	10	Nearest value of 2 <sup>-n</sup> in seconds (number 0 .. 24)
c1 TL may only be specified for Ed2. If Ed1 has accuracy which is better than 1 second but is not T1 then declare T0.						

**Table 3 - ACSI Service Conformance Statement**

AA: Application Association type  
 MC: Multicast (for GOOSE and SMV)  
 MMS: Manufacturing Message Specification  
 TP: Two part (for MMS)



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