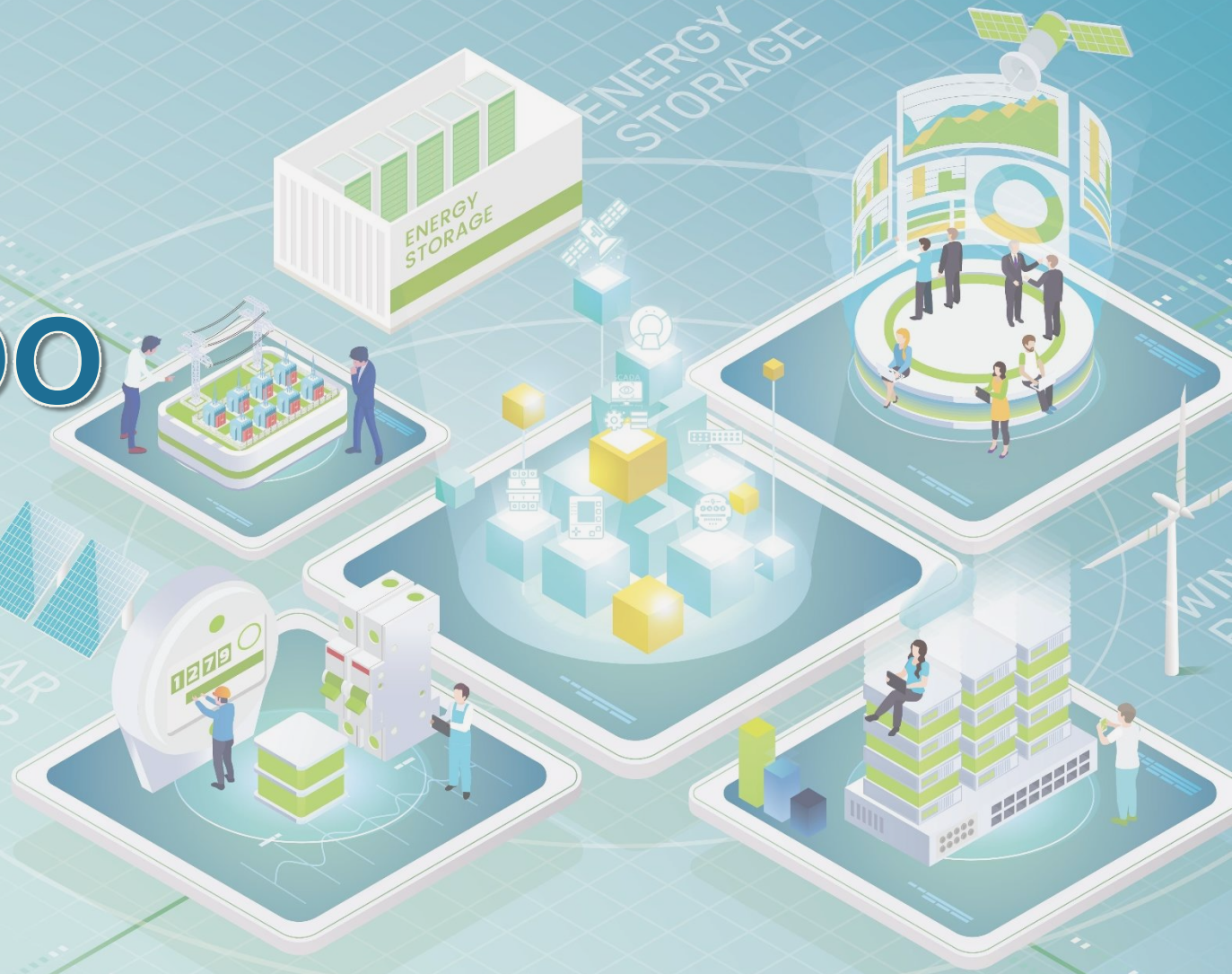
台灣電力公司 TPRI

互操作性試驗LN/DO測試參數

Interoperability Testing LN/DO Test Parameters



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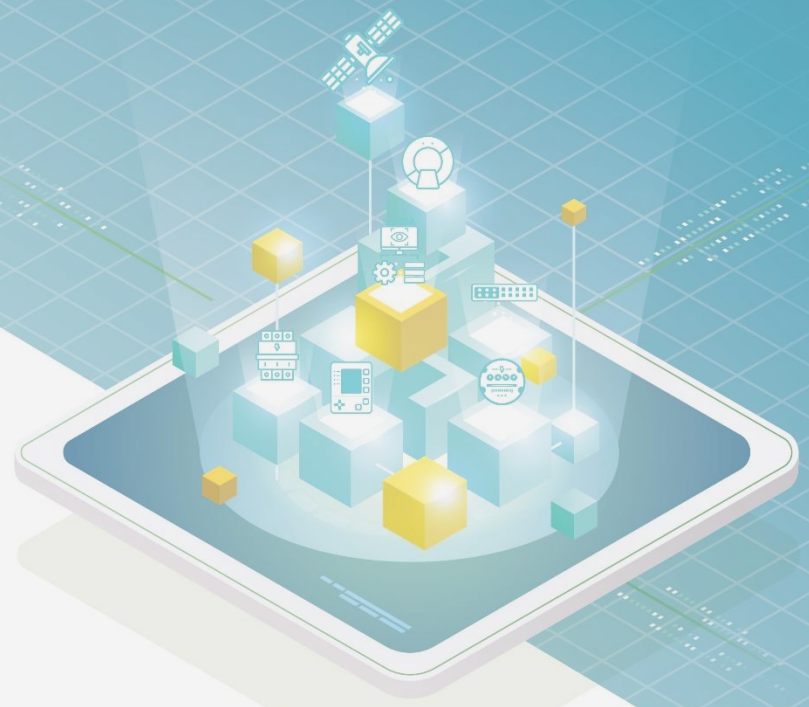
TPRI



互操作性試驗LN/DO測試參數

Mod、Beh

- 須依本所要求填寫Signal List, 所有DO及所有DA都要填寫，詳見p.13
- 須依最新版TPC Profile填寫各LN.Beh路徑
- LLN0依序切換 ON/TEST mode
- PTOC/PIOC/RREC/PTUF依序切換 ON/TEST/OFF mode
- 各Beh依右表進行查證

LNMode or nested **LDMode** XXXX.Mod	**LDMode** LLN0.Mod	**LNBeh** (read only) XXXX.Beh
on	on	on
on	blocked	blocked
on	test	test
on	test/blocked	test/blocked
on	off	off
blocked	on	blocked
blocked	blocked	blocked
blocked	test	test/blocked
blocked	test/blocked	test/blocked
blocked	off	off
test	on	test
test	blocked	test/blocked
test	test	test
test	test/blocked	test/blocked
test	off	off
test/blocked	on	test/blocked
test/blocked	blocked	test/blocked
test/blocked	test	test/blocked
test/blocked	test/blocked	test/blocked
test/blocked	off	off
off	on	off
off	blocked	off
off	test	off
off	test/blocked	off
off	off	off

Mod、Beh

	q.Validity	q.Test
On Mode	good	False
Test Mode	good	True
Off Mode	Invalid	False

Table A.2 – Definition of mode and behaviour

MODE/BEHAVIOUR	on	on-blocked	test	test/blocked	off
Function behind LN	ON	ON	ON	ON	OFF
Output to the Process (Switchgear) via a non-IEC 61850 link for example wire (typical for X...,Y... and GGIO LNs)	YES	NO	YES	NO	NO
Output of FC ST, MX (issued independently from Beh)	value is relevant q is relevant	value is relevant q = operatorBlocked	value is relevant q = test	value is relevant q = test +operator-Blocked	value is irrelevant q = invalid
Response to (Normal) Command from Client (a+ / a- acknowledgement)	a+ pos. ack.	a- neg. ack.	a- neg. ack.	a- neg. ack.	a- neg. ack.
Response to TEST Command from Client (a+ / a- acknowledgement)	a- neg. ack.	a- neg. ack.	a+ pos. ack.	a+ pos. ack.	a- neg. ack.
Incoming data with q=normal	Processed as valid	Processed as valid	Processed as valid	Processed as valid	Not Processed
Incoming data with q=operatorBlocked	Processed as blocked	Processed as blocked	Processed as blocked	Processed as blocked	Not Processed
Incoming data with q=test	Processed as valid	Processed as invalid	Processed as valid	Processed as valid	Not Processed
Incoming data with q=test+operatorBlocked	Processed as invalid	Processed as invalid	Processed as blocked	Processed as blocked	Not Processed
Incoming data with q=invalid	Processed as invalid	Processed as invalid	Processed as invalid	Processed as invalid	Not Processed
Non-IEC 61850 binary (relay, contact) inputs and analogue (instrument transformer) inputs	Processed	Processed	Processed	Processed	Not Processed

NOTE A precondition of the use of different modes (Mod/Beh) is the processing of the quality status (q) of the receiving information.

CILO、CSWI、XSWI、XCBR

CB	DS	ES	CB EnaOpn	CB EnaCls	DS EnaOpn	DS EnaCls	ES EnaOpn	ES EnaCls
Opn	Opn	Opn	X	O	X	O	X	O
Opn	Cls	Opn	X	O	O	X	X	X
Cls	Cls	Opn	O	X	X	X	X	X
Opn	Cls	Opn	X	O	O	X	X	X
Opn	Opn	Opn	X	O	X	O	X	O
Opn	Opn	Cls	X	X	X	X	O	X
Opn	Opn	Opn	X	O	X	O	X	O
Cls	Opn	Opn	O	X	X	X	X	X
Opn	Opn	Opn	X	O	X	O	X	O

- O:True X:False
- 受測廠商須先依上述表格完成互鎖邏輯規劃, 並進行實測驗證

MMTR、MMXU

- 須將所屬DO規劃於Report DataSet，並提供點位表。
- 依照簡報最後提供的PT ratio、CT ratio進行換算，MMS讀到的數值須顯示為primary(一次側)
- 採用Wye接ABC(正相序)設定
- 讀值需要乘以pulsQty的IED廠商須於測試前提供，填寫於Point list欄位中，未提供或數值有誤導致fail, 由IED廠商自行負責
- Deadband設定至最小

PTOC、PIOC、PTOV、PTUV、 PTUF、PTRC

- 須將所屬DO規劃至GOOSE DataSet，並提供點位表。
- PIOC pick up: 15A(測試送20A) , operation time: 0.02s
- PTOC 依IEC Very Inverse pick up: 4.5A (測試送9A)，operation time: 4.32s
- PTOV pick up: 130V operation time: 0.5s
- PTUV pick up: 100V operation time: 0.5s
- 觸發條件:單相過流、相電壓(Phase-ground)過/欠壓
- PTUF pick up:59.5Hz operation time: 3s BlkV: 50V
- PTOC/PIOC/PTOV/PTUV/RSYN 的Blk規劃於統一的一組DI點位，由DI點位進行Blk測試
- 於IED面板規劃按鈕 啟用/關閉PTUV功能

$$t_{operation} = \left(\frac{13.5}{\frac{I}{I_{pickup}} - 1} \right) \times TD$$

RREC、RDRE

- 將RREC所屬DO規劃至GOOSE DataSet，並提供點位表。
- 將RDRE所屬DO規劃至Report DataSet，並提供點位表。
- RREC 復閉次數:2次 復閉條件:PTOC/PIOC 等待時間: 5s
- RDRE 錄波條件:PIOC/PTOC/PTUV/PTOV/PTUF operate
- 保護功能operate 前錄波 15cycle, operate後錄波 120cycle
- 須將RcdTrg加入到Report Dataset(用client/server控制錄波)
- RecCyc從0或1開始計數皆可

RSYN

- 須將所屬DO規劃進GOOSE DataSet
- 同步電壓用單相電壓
- 同步可投入狀態: 如表格
- 偵測條件:連續偵測

Bus	Line	Rel
115V	+-6V	True
60Hz	+-0.1Hz	True
0度	+-5度	True
115V	<30V	True
<30V	115V	True
<30V	<30V	True

SCBR

- 須將所屬DO規劃進Report DataSet
- ColOpn 為 True時，開始累積AccAbr的數值，AccAbr計算方式依各廠家規格書為主，並由陪測人員說明計算方式。
- 各廠商須提供AccAbr歸零方式
- AbrAlm設定值依各廠家規格書為主，並由陪測人員說明。
- OpTmAlm 為CB運轉服務時間警報 單位為小時

CSWI、XCBR、XSWI

- 須引接出CB(XCBR)、DS(XSWI)、ES(XSWI)之BlkOpn和BlkCls的DI接點
- 須於面板上預先規劃L/R的按鈕，將CB&DS&ES的CSWI.Loc規劃綁在同一個L/R按鈕並由該按鈕切換T/F，LocSta則由Client切換T/F
- 若IED已具備LLN0.MltLev功能者，請一律先規劃設定為False

Switch	Bay control			Manual Control at switch (process)	Command from		
					Bay	Station	NCC
	Mode of control authority for local control	Local control behaviour	Control authority at station level		orCat		
XCBR.Loc XSWI.Loc	LLN0. MltLev	CSWI. Loc	CSWI. LocSta		Local Ctl (Bay)	Station	Remote
T	F	n.a.	n.a.	AA	NA	NA	NA
F	F	T	n.a.	AA	AA	NA	NA
F	F	F	T	AA	NA	AA	NA
F	F	F	F	AA	NA	NA	AA

廠商需配合及注意事項

請各廠商自背板引出端子(端子請自備)並標示以下接點:

(1)三相電壓、電流(標示ABCN)

(2)引接出CB DS ES的DI、DO接點

(3)PTOC/PIOC/PTOV/PTUV/RSYN 的Blk規劃於統一的一組DI點位

(4)將CB DS ES的BlkOpn和BlkCls (共6點)規劃於統一的1組DI點位

(5)如果IED有LLN0.MltLev的話，請設定為False

(6)於面板上規劃L/R的按鈕， CB&DS&ES的CSWI.Loc規劃綁在同一個L/R按鈕，LocSta用IEDScout控制

廠商需配合及注意事項

須提供文件:

(1)PIXIT

(2)點位表

(3)LN的動作特性(例如:RREC需要CB Close、始動值要達到幾倍...)

(4)受測IED所有LN及DO的功能都要啟用

廠商需配合及注意事項

須提供文件:

(5)SIGNAL LIST

參考excel file將TPC Profile中所列LN、DO、DA依照IEDNameLD/LN.DO.DA之格式全部填入表格中(不用填FC)

IEDNameLD/LN.DO.DA	名稱
IEDNamePROT/LLN0.NamPltN.vendor	製造商
IEDNamePROT/LLN0.Health.stVal	
IEDNamePROT/LLN0.Loc.stVal	
IEDNamePROT/LLN0.Mod.Oper.ctlVal	LLN0 Mod 控制
IEDNamePROT/LLN0.Mod.stVal	LLN0 Mod 狀態
IEDNamePROT/LLN0.Beh.stVal	
IEDNamePROT/LLN0.LocSta.Oper.ctlVal	Station Remote/Local 切換
IEDNamePROT/LLN0.LocSta.stVal	Station Remote/Local 狀態
IEDNameCTRL/CB_CSWI4.Loc.stVal	CB IED Remote/Local
IEDNameCTRL/CB_CSWI4.Mod.Oper.ctlVal	
IEDNameCTRL/CB_CSWI4.Mod.stVal	
IEDNameCTRL/CB_CSWI4.Beh.stVal	
IEDNameCTRL/CB_CSWI4.LocSta.Oper.ctlVal	CB Station Remote/Local
IEDNameCTRL/CB_CSWI4.LocSta.stVal	
IEDNameCTRL/CB_CSWI4.Pos.Oper.ctlVal	
IEDNameCTRL/CB_CSWI4.Pos.stVal	
IEDNamePROT/USER51_PTOC1.Str.general	51過流保護始動
IEDNamePROT/USER51_PTOC1.Str.phsA	51過流保護A相始動
IEDNamePROT/USER51_PTOC1.Str.phsB	51過流保護B相始動
IEDNamePROT/USER51_PTOC1.Str.phsC	51過流保護C相始動
IEDNamePROT/USER51_PTOC1.Str.neut	51過流保護N相始動
IEDNameMEAS/MMXU1.PhV.phsA.cVal.mag.f	A相電壓幅值
IEDNameMEAS/MMXU1.PhV.phsA.cVal.ang.f	A相電壓角度
IEDNameMEAS/MMXU1.PhV.phsB.cVal.mag.f	B相電壓幅值
IEDNameMEAS/MMXU1.PhV.phsB.cVal.ang.f	B相電壓角度
IEDNameMEAS/MMXU1.PhV.phsC.cVal.mag.f	C相電壓幅值
IEDNameMEAS/MMXU1.PhV.phsC.cVal.ang.f	C相電壓角度
IEDNameMEAS/MMXU1.PhV.res.cVal.mag.f	N相電壓幅值(計算)
IEDNameMEAS/MMXU1.PhV.res.cVal.ang.f	N相電壓角度(計算)
IEDNameMEAS/MMXU1.PhV.neut.cVal.mag.f	N相電壓幅值(量測)
IEDNameMEAS/MMXU1.PhV.neut.cVal.ang.f	N相電壓角度(量測)

廠商需配合及注意事項

送測前需完成IED內部邏輯規劃:

1. CB、DS和ES的互鎖邏輯(本簡報p.4)
2. Report Dataset(MMXU、MMTR) (4個LN內含DO)
3. GOOSE Dataset(保護類的Str、Op) (8個LN內含DO)
4. 1個GOOSE or Report DataSet中 放置1個LN
5. 每個RCB儘可能開5個Client
6. 送測IED之IP設定為: 192.168.2.100
7. RREC. AutoRecSt規劃在RDRE的RCB中以利判讀

送測前需完成參數設定:

1. 60Hz、Wye接ABC(正相序)、
   CT Ratio：600/5=120 PT Ratio：13800/115=120、
   MMS讀到的值須為primary

Report DataSet:

1.MMTR

2.MMXU

3.RDRE

4.SCBR

GOOSE DataSet:

1.PTOC	5.PTUF
2.PIOC	6.PTRC
3.PTOV	7.RREC
4.PTUV	8.RSYN

項次	頁碼	說明
1	4	新增表格顯示q.Validity以及q.Test顯示要求
2	7	PTOV operation time設定值調整為 0.5s
3	7	詳細說明 PTOC/PIOC/PTOV/PTUV/RSYN 共5點的Blk須規劃於統一的一組DI點位，由DI點位進行Blk測試
4	12	詳細說明 PTOC/PIOC/PTOV/PTUV/RSYN 共5點的Blk須規劃於統一的一組DI點位，由DI點位進行Blk測試
5	12	將CB DS ES的BlkOpn和BlkCls (共6點)規劃於統一的1組DI點位
6	15	新增RREC. AutoRecSt規劃在RDRE的RCB中以利判讀