Irish Standard
I.S. EN 50549-2:2019&AC:2019-03

Requirements for generating plants to be connected in parallel with distribution networks - Part 2: Connection to a MV distribution network - Generating plants up to and including Type B

I.S. EN 50549-2:2019&AC:2019-03

Incorporating amendments/corrigenda/National Annexes issued since publication:

EN 50549-2:2019/AC:2019-03

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National Foreword

I.S. EN 50549-2:2019&AC:2019-03 is the adopted Irish version of the European Document EN 50549-2:2019, Requirements for generating plants to be connected in parallel with distribution networks - Part 2: Connection to a MV distribution network - Generating plants up to and including Type B

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EN 50549-2:2019/AC:2019-03

Corrigendum to EN 50549-2:2019

English version

Replace the incomplete Table B.1, Table B.2 and Table F.1 by the following complete tables:

Table B.1 — Remote monitoring - Information sent by the generating plant to the control centre(s)

T5–1	Information	Type of signal	Purpose	Maximum refresh time	Reference to CLC/TS 50549-2 or Relevance for	Logical nodes (for information 61850 applies)
T5–2	voltage measurement at the point of connection	measurement	network monitoring	1 s	Relevant for DSO/TSO	
T5–3	active power injected at the point of connection	measurement	generation program monitoring	1 s	Relevant for DSO/TSO	
T5–4	reactive power injected at the point of connection	measurement	generation program monitoring	1 s	Relevant for DSO/TSO	
T5–5	availability / unavailability of the remote monitoring and operation parameters setting system	simple Logic: - “remote monitoring and control unavailable”	This function gathers all unavailability possibilities. It may trigger narrow frequency range in some protection schemes.	1 s	F.2 (switch to narrow frequency range)	
T5–6	generating plant connected to the network	double Logic: - “one generating unit coupled” - “all generating units decoupled”	monitoring of the connection to the network of one or more generating units	1 s	Relevant for DSO/TSO	61850–7–4 CSWI, Pos, stVal
T5–7	reception of the authorization for the generating plant to connect	double logic: - “authorization to connect received” - “waiting for the authorization to connect”	acknowledgement of authorization to connect	1 s	Communication verification	61850–7–420 ECPClsAuth
T5–8	reception of the request for disconnection or for end of disconnection	double logic: - “disconnection request received” - “end of disconnection request received”	acknowledgement of disconnection request or end of disconnection request	1 s	Communication verification	
T5–9	reception of request for fast disconnection or for end of fast disconnection	double logic: - “fast disconnection request received” - “end of fast disconnection request received”	acknowledgement of fast disconnection request or end of fast disconnection request	1 s	Communication verification F.2 (transfer trip)	

T5–1	Information	Type of signal	Purpose	Maximum refresh time	Reference to CLC/TS 50549-2 or Relevance for	Logical nodes (for information 61850 applies)
T5–10	reception of request for active power limitation and end of active power limitation	double logic: - “active power limitation request received” - “end of active power limitation request received”	acknowledgement of reception of request for active power limitation and end of active power limitation	1 s	Communication verification Relevant for DSO	61850–7–420
T5–11	reception of request for fixed reactive power setting and end of fixed reactive power setting	double logic: - “fixed reactive power setting request received” - “end of fixed reactive power setting request received”	acknowledgement of reception of request for fixed reactive power setting and end of fixed reactive power setting	1 s	Communication verification 4.7.2.3.2 (Q fix)	61850–7–420 DEROpMode OpModeConVar
T5–12	reception of request for fixed cos φ setting and end of fixed cos φ setting	double logic: - “fixed cos φ setting request received” - “end of fixed cos φ setting request received”	acknowledgement of reception of request for cos φ setting and end of fixed cos φ setting	1 s	Communication verification 4.7.2.3.2 (Cos φ fix)	61850–7–420 DEROpMode OpModeConPF
T5–13	reception of request for reactive power amplitude limitation and end of reactive power amplitude limitation	double logic: - “reactive power amplitude limitation request received” - “end of reactive power amplitude limitation request received”	acknowledgement of reception of request for reactive power amplitude limitation and end of reactive power amplitude limitation	1 s	Communication verification Communication verification	61850–7–420 DEROpMode OpModeMaxVar

Table B.2 — Remote operation parameters setting – Information and settings received by the generating plant from the control centre(s)

T6–1	Operation parameter	Type of signal	Purpose	Maximum operate time[1]	Reference to CLC/TS 50549-2 or Relevance for	Logical nodes (for information 61850 applies)
T6–2	authorization for coupling	simple logic: - “coupling authorized”	authorization for the generating plant to connect to the network	1 s	Relevant for DSO/TSO	61850–7–420 ECPClsAuth
T6–3	decoupling request and end of decoupling request	double logic: - “decoupling request” - “end of decoupling request”	disconnection of the generating plant from the network end of requirement for disconnection of the generating plant from the network	1 s		
T6–4	fast decoupling request and end of fast decoupling request	Double logic: - “fast decoupling request” - “end of fast decoupling request”	disconnection of the generating plant from the network as fast as technically possible end of requirement for fast disconnection of the generating plant from the network	100 ms (as fast as technically feasible)	F.2 (transfer trip)	
T6–5	active power limitation request and end of request	Double logic: - “active power limitation request” - “active power limitation end of request”	This command signals to the generating plant limitation of the active power it is allowed to produce	1 s	Relevant for DSO	61850–7–420
T6–6	active power limitation value	- “value of active power limitation”	Setting of the maximum allowed active power to be produced by the generating plant	1 s	Relevant for DSO	61850–7–420
T6–7	fixed reactive power setting request and end of request	Double logic: - “fixed reactive power setting request” - “fixed reactive power setting end of request”	This command signals to the generating plant a setting for the reactive power it shall produce	1 s	4.7.2.3.2 (Q fix)	61850–7–420 DEROpMode OpModeConVar
T6–8	fixed reactive power value	- “value of fixed reactive power”	Setting of the reactive power to be produced by the generating plant	1 s	4.7.2.3.2 (Q fix)	61850–7–420 DEROpMode OpModeConVar
T6–9	fixed cos φ setting request and end of request	Double logic: - “fixed cos φ setting request” - “fixed cos φ setting end of request”	This command signals to the generating plant a setting for the cos φ it shall deliver	1 s	4.7.2.3.2 (cos φ fix)	61850–7–420 DEROpMode OpModeConPF

T6–1	Operation parameter	Type of signal	Purpose	Maximum operate time[1]	Reference to CLC/TS 50549-2 or Relevance for	Logical nodes (for information 61850 applies)
T6–10	fixed cos φ value	- “value of cos φ”	Setting of cos φ to be delivered by the generating plant	1 s	4.7.2.3.2 (cos φ fix)	61850–7–420 DEROpMode OpModeConPF
T6–11	reactive power limitation request and end of request	Double logic: - “reactive power limitation request” - “reactive power limitation end of request”	This command signals to the generating plant a limitation of the reactive power amplitude it is allowed to produce	1 s	Relevant for DSO	61850–7–420 DEROpMode OpModeMaxVar
T6–12	reactive power limitation value	- “value of reactive power limitation”	Setting of the maximum allowed reactive power to be produced by the generating plant	1 s	Relevant for DSO	61850–7–420 DEROpMode OpModeMaxVar
T6–13	Define curve	“Code of curve” “Curve points” “Input units” “Output ref” “Ramp rates”	Definition of curve for reactive power regulation, dependent on voltage or active power.	1 s	Relevant for DSO 4.7.2.3.3 and 4.7.2.3.4	TR 61850-90-7 LN: FMAR (new)
T6–14	Select curve	“Code of curve” “Activate/Deactivate” “Type of operation” “Transition time”	Change to new curve or activation or deactivation of regulation after curve	1 s	Relevant for DSO 4.7.2.3.3 and 4.7.2.3.4	TR 61850-90-7 LN: DGSM (new)
T6–15	Voltage unlock signal for narrow frequency window	Double logic: - “narrow frequency window on” - “narrow frequency window off”	Activate or deactivate the narrow frequency protection window	1 s 100 ms (as fast as technically feasible)	F.2 (switch to narrow frequency range)	

1 The maximum operate time is the maximum duration between reception of the command by the generating plant and the beginning of the actuation.

Table F.1 — Typical protection functions and related regulations on interface protection relays in the Italian solution

Protection function	Default threshold value	Default relay operate time	Maximum opening time of the output-break circuit (interface CB with tripping command operated from a voltage absence coil)
Maximum voltage U>.S1 (ANSI CODE 59.S1), 10 minutes mean function (according to EN 61000-4-30, Class S, but adopting a moving window with refresh time ≤ 3 s)	1,10 Vn	Start time ≤ 3 s, not adjustable. Delay time setting = 0 ms Depending on voltage values during the moving window. Maximum value 603 s.	Depending on voltage values during the moving window. Maximum 603,70 s.
Maximum voltage U>.S2 (ANSI CODE 59.S2)	1,20 Vn	200 ms	270 ms
Minimum voltage U<.S1 (ANSI CODE 27.S1) (1)	0,85 Vn	1500 ms	1570 ms
Minimum voltage U<.S2 (ANSI CODE 27.S2) (1)	0,4 Vn	200 ms	270 ms
Maximum frequency f>.S2 (ANSI CODE 81.S2) (2)	50,2 Hz	150 ms	170 ms
Minimum frequency f<.S2 (ANSI CODE 81.S2) (2)	49,8Hz	150 ms	170 ms
Maximum frequency f>.S1 (ANSI CODE 81.S1) (2)	51,5 Hz	1,0 s	1,07 s
Minimum frequency f<.S1 (ANSI CODE 81.S1) (2)	47,5 Hz	4,0 s	4,07 s
Maximum residual voltage U0> (ANSI CODE 59V0) (3)	5 % Vrn (4)	For protection use: 25 s For voltmetric unlock use (ANSI CODE 81V): 0 ms (equal to start time:70 ms)	For protection use: 25,07 s For voltmetric unlock use: equal to start time (1)
Maximum inverse sequence voltage Ui> (ANSI CODE 59 Vi) (1)	15% Vn/En (5) (indicative, depending on the network)	For voltmetric unlock use (ANSI CODE 81V): 0 ms (equal to start time: 70 ms)	Equal to start time
Minimum direct sequence voltage Ud< (ANSI CODE 27 Vd) (1)	70% Vn/En (5) (indicative, depending on the network)	For voltmetric unlock use (ANSI CODE 81V): 0 ms (equal to start time:70 ms)	Equal to start time
Transfer trip		<150 ms	<220 ms

(1) Threshold active only for inverters and rotating generators connected to distribution network with AC/AC converters. For rotating generators directly connected U<.S2: operate time 70 ms, threshold value 70%, U<.S1: excluded .
(2) For voltage values below 0,2 Vn, f>.S1, f>.S2 & f<.S1, f<.S2 protections shall be disabled.
(3) Function used both for tripping and for voltmetric unlock function.
(4) Regulation in % of nominal residual voltage Vrn in case of a phase to earth fault with 0 Ω fault resistance derived directly from an open delta winding or calculated internally the IPR from phase to earth voltages derived from non iron core voltage transducers.
(5) Regulation in % of nominal phase to earth or phase to phase voltage, according to voltage measurements methods.

EUROPEAN STANDARD

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EUROPÄISCHE NORM

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English Version

Requirements for generating plants to be connected in parallel with distribution networks - Part 2: Connection to a MV distribution network - Generating plants up to and including Type B

Exigences relatives aux centrales électriques destinées à être raccordées en parallèle à des réseaux de distribution - Partie 2: Raccordement à un réseau de distribution MT - Centrales électriques jusqu'au Type B inclus

Anforderungen für zum Parallelbetrieb mit einem Verteilnetz vorgesehene Erzeugungsanlagen - Teil 2: Anschluss an das Mittelspannungsverteilnetz für Erzeugungsanlagen bis einschließlich Typ B

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