

Protection and control REX600

Supporting digitalization of substations



01. Protection and control device REX600

Supporting digitalization of substations

REX600 integrates seamlessly into modern digital substations. It supports IEC 61850 Edition 2 for standardized communication and interoperability, along with IEC 61869-9 and IEC 61850-9-2 LE for process bus applications. IEEE 1588 v2 ensures precise time synchronization across devices.

Fully compliant with IEC 61869-13 Stand-Alone Merging Unit standard, REX600 works seamlessly with ABB's SSC600, forming a complete solution for evolving power distribution needs.

REX600 offers extensive protection functions including over-current, earth-fault, voltage, and frequency protection. Advanced capabilities include multifrequency admittance-based earth-fault protection and current-based fault passage indication for backup and stand-alone applications.

Compact and optimized design

DIN rail mounting is ideal for compact installations. The optimized design reduces cabling and engineering time, streamlining installation and maintenance.

Measurement system flexibility

REX600 works with sensors, including low-power passive current transformers, Rogowski coils, and voltage dividers. This flexibility creates adaptable measurement systems that deliver

REX600 is ABB's next-generation protection and control device with merging unit functionality and back-up protection, designed to meet the demands of today's grids and tomorrow's challenges. It delivers flexibility, precision, and cyber security in one device. Seamlessly integrating with ABB's Smart Substation Solution SSC600, REX600 ensures reliable operations in utility and industrial environments.

energy-efficient and accurate monitoring in various electrical environments. Optimized sensor selection improves safety, performance, and cost efficiency.

Built-in cyber security

Cyber security is embedded in REX600's design, following IEC 62443-4-1 for secure development and IEC 62443-4-2 Security Level 1 for device security. Features include secure boot, TLS-encrypted communication, role-based access control, and audit trail logging. Supported protocols include HTTPS and FTPS.

User-friendly configuration with PCM600

ABB's PCM600 tool streamlines configuration. It enables full REX600 setup: application configuration, parameter setting, WHMI single-line diagram editing, and IEC 61850 communication configuration.

Secure device access via WebHMI (WHMI)

WHMI enables secure local or remote access via standard web browsers with HTTPS and TLS encryption. It offers system monitoring, parameter configuration, and data visualization tools, including fault records, power quality history, and customizable single-line diagrams. Configuration backups and device self-supervision ensure system reliability.

Functions, version 1.0	IEC 61850	IEC 60617	ANSI
Protection			
Directional earth-fault protection, high stage	DEFHPDEF	lo>> ->	67G/N-1 51G/N-2
Directional earth-fault protection, low stage	DEFLPDEF	lo> ->	67G/N-1 51G/N-1
Non-directional earthfault protection, high stage	EFHPTOC	lo>>>	51G/51N-2
Non-directional earthfault protection, instantaneous stage	EFIPTOC	lo>>>>	50G/50N
Non-directional earthfault protection, low stage	EFLPTOC	lo>	51G/51N-1
Multifrequency admittance-based earth- fault protection	MFADPSDE	lo> ->Y	67NYH
Frequency protection	FRPFRQ	f>/f<,df/dt	81
Multipurpose protection	MAPGAPC	MAP	MAP
Three-phase directional overcurrent protection, high stage	DPHHPDOC	3l>> ->	67P/51P-2
Three-phase directional overcurrent protection, low stage	DPHLPDOC	3l> ->	67P/51P-1
Three-phase non-directional overcurrent protection, instantaneous or definite time stage	PHIPTOC	3l>>>>	50P
Three-phase non-directional overcurrent protection, low stage	PHLPTOC	3l>	51P-1
Three-phase overvoltage protection	PHPTOV	3U>	59
Three-phase undervoltage protection	PHPTUV	3U<	27
Residual overvoltage protection	ROVPTOV	Uo>	59G/59N
Master trip	TRPPTRC	Master Trip	94/86
Fault passage indicator (FPI)	FPIPTOC	lo>->FP	67NFPI
Control			
Circuit-breaker control	CBXCBR	I <-> O CB	I <-> O CB
Disconnecter position indication	DCSXSWI	I <-> O DC	I <-> O DC
Disconnecter control	DCXSWI	I <-> O DCC	I <-> O DCC
Earthing switch indication	ESSXSWI	I <-> O ES	I <-> O ES
Earthing switch control	ESXSWI	I <-> O ESC	I <-> O ESC
Measurement			
Three-phase current measurement	CMMXU	3I	3I
Sequence current measurement	CSMSQI	I1, I2, I0	I1, I2, I0
Frequency measurement	FMMXU	f	f
Three-phase power and energy measurement	PEMMXU	P, E	P, E
Residual current measurement	RESCMMXU	Io	In
Residual voltage measurement	RESVMMXU	Uo	Vn
Three-phase voltage measurement	VMMXU	3U	3V
Sequence voltage measurement	VSMSQI	U1, U2, U0	V1, V2, V0
IED configuration			
Phase current preprocessing	ILTCTR	ILTCTR	ILTCTR
Residual current preprocessing	RESTCTR	RESTCTR	RESTCTR
Phase and residual voltage preprocessing	UTVTR	UTVTR	UTVTR
Time master supervision	GNRLLTMS1	TSYNC	TSYNC
Logging			
Fault recorder	FLTRFRC1	FAULTREC	FR
Disturbance recorder binary channel	RBDR		
Disturbance recorder	RDRE1		

Functions, version 1.0	IEC 61850	IEC 60617	ANSI
Communication			
Received GOOSE binary information	GOOSERCV_BIN	GOOSERCV_BIN	GOOSERCV_BIN
Received GOOSE measured value (phasor) information	GOOSERCV_CMV	GOOSERCV_CMV	GOOSERCV_CMV
Received GOOSE double binary information	GOOSERCV_DP	GOOSERCV_DP	GOOSERCV_DP
Received GOOSE enumerator value information	GOOSERCV_ENUM	GOOSERCV_ENUM	GOOSERCV_ENUM
Received GOOSE 32-bit integer value information	GOOSERCV_INT32	GOOSERCV_INT32	GOOSERCV_INT32
Received GOOSE 8-bit integer value information	GOOSERCV_INT8	GOOSERCV_INT8	GOOSERCV_INT8
Received GOOSE interlocking information	GOOSERCV_INTL	GOOSERCV_INTL	GOOSERCV_INTL
Received GOOSE measured value information	GOOSERCV_MV	GOOSERCV_MV	GOOSERCV_MV
SMV stream sender (IEC 61850-9-2LE)	SMVSENDER	SMVSENDER	SMVSENDER
SMV stream sender (IEC 61869-9)	SVSENDER_61869		
IEC 61850-1 GOOSE	GSELPRT1	GSE	GSE
IEC 61850-8-1 MMS	MMSLPRT1	MMS	MMS
Local HMI			
Programmable LED	LED1	LED1	LED1
Programmable LED	LED2	LED2	LED2
Programmable LED	LED3	LED3	LED3
Programmable LED	LED4	LED4	LED4
Programmable LED	LED5	LED5	LED5
Programmable LED	LED6	LED6	LED6
Programmable LED	LED7	LED7	LED7
Programmable LED	LED8	LED8	LED8
Programmable LED	LED9	LED9	LED9
LED indication control	LEDPTRC1	LEDPTRC1	LEDPTRC1
Others			
Boolean value event creation	MVGAPC	MV	MV
Integer value event creation	MVI4GAPC	MVI4	MVI4
Pulse timer, eight channels	PTGAPC	PT	PT
Analog value event creation with scaling	SCA4GAPC	SCA4	SCA4
Generic control points	SPCGAPC	SPC	SPC
SR flip-flop, eight channels, nonvolatile	SRGAPC	SR	SR
Time delay off, eight channels	TOFGAPC	TOF	TOF
Time delay on, eight channels	TONGAPC	TON	TON
Minimum pulse timer, two channels	TPGAPC	TP	TP
Minimum pulse timer minutes resolution, two channels	TPMGAPC	TPM	TPM
Minimum pulse timer second resolution, two channels	TPSGAPC	TPS	TPS

Cyber security

Compliant with IEC 62443-4-1 for secure development practices.

Meeting IEC 62443-4-2 Security Level 1 requirements.

Secure boot to verify firmware authenticity and integrity ensuring only trusted ABB-signed software runs.

Firmware updates managed via ABB's PCM600 tool, only authorized administrators can access security settings.

Stores up to 2048 audit trail events in nonvolatile memory without battery backup.

File transfers and WebHMI use TLS encryption, protocols include FTPS and HTTPS.

Role-Based Access Control (RBAC) for user authentication and authorization.

Engineering tools and HMIs require password-protected access.

Communication ports and optional services can be disabled based on system setup.

Hardware**Details**

Rogowski and Low Power Instrument Transformer inputs (according to IEC 61869)	3 x combisensor input for phase current and voltages Residual current sensor input
Binary outputs	3 x signal output with high make and carry Make and carry (cont./3 sec./0.5 sec.): 5A / 15A / 30A
Binary inputs	6 x binary input in two groups Operating range 16...300 VDC Programmable threshold 16...176 VDC
Self-supervision contact	Signal output NO+NC Make and carry (cont./3 sec./0.5 sec.): 5A / 10A / 15A
Communication ports	3 x RJ-45 LAN ports (Ethernet, 100 Mbit/s)
Dimensions (W x H x D), mm	91 x 133 (137) x 100
Weight, kg	0,850
Operating voltage	24 VDC (80 - 120%)
Power consumption	Pq <4W / operating <6W
Protection indicators	ready, start and trip LEDs
Programmable LEDs	9 single color LEDs
Degree of protection	IP30
Operating temperature range	-25...+55 °C / -40...+70 °C (<16h)
