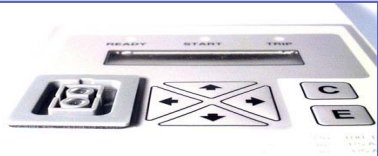


Feeder Protection Relay REX 521



REX 521 Medium Range Products



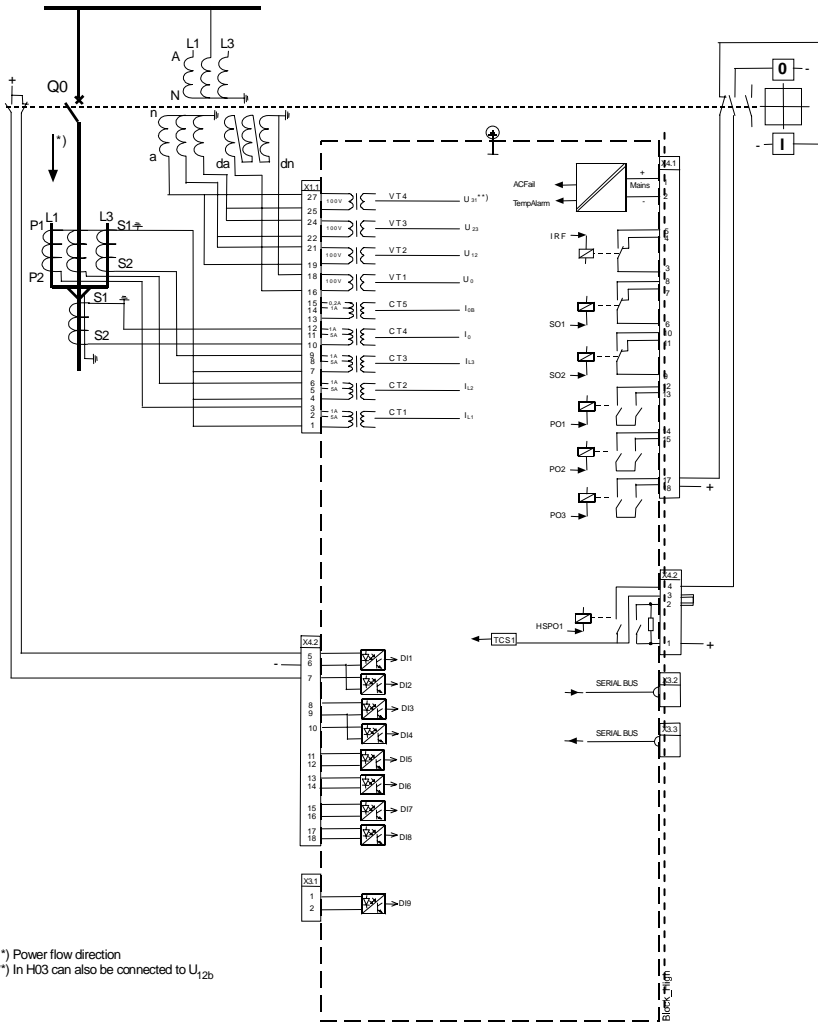
- Wide selection of single busbar applications
- Proven and reliable technology
- Part of versatile product range covering vast number of protection applications

The enhanced REX 521 now offers a number of new protection functions, and supervision functions such as motor protection and power quality supervision.



Hardware

Four different variants of HW :
Basic, Medium, High and High with sensors



All variants contain:

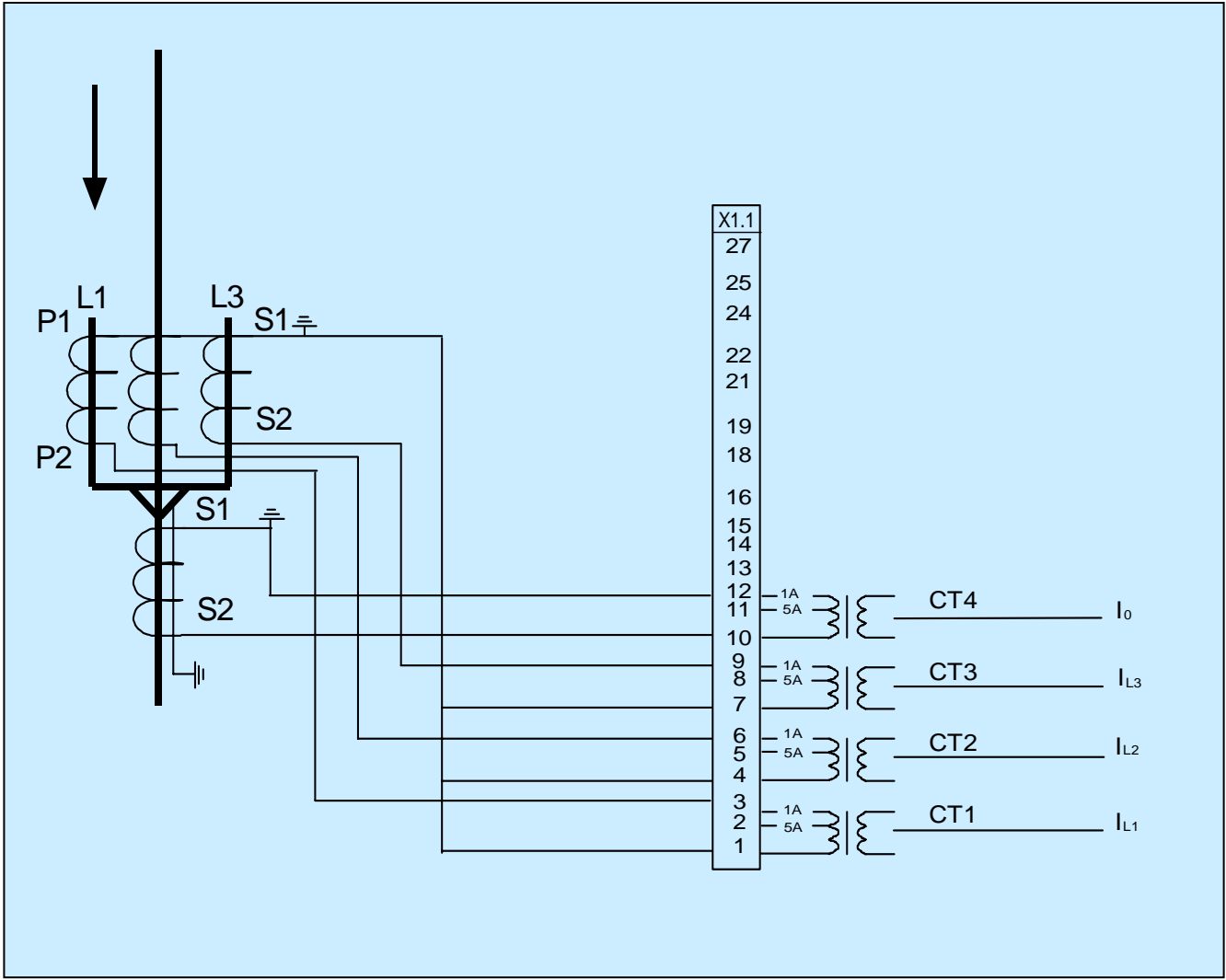
- 9 Digital inputs
 - DI 9 can be used for time sync.
- 6 Digital outputs
 - 4 power outputs
 - 2 signal outputs



*) Power flow direction
**) In H03 can also be connected to U_{12b}



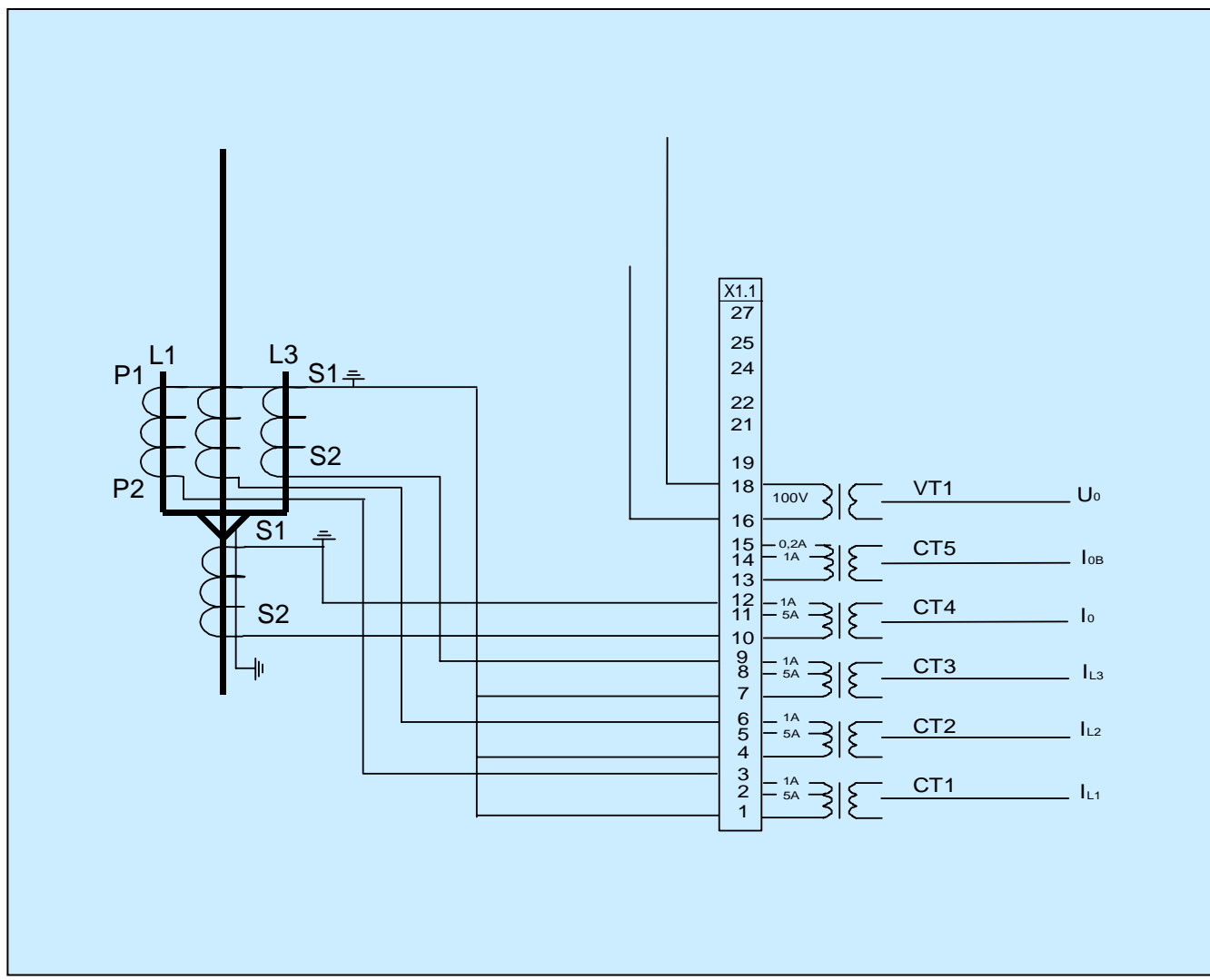
Hardware



- Basic
- 4 CTs



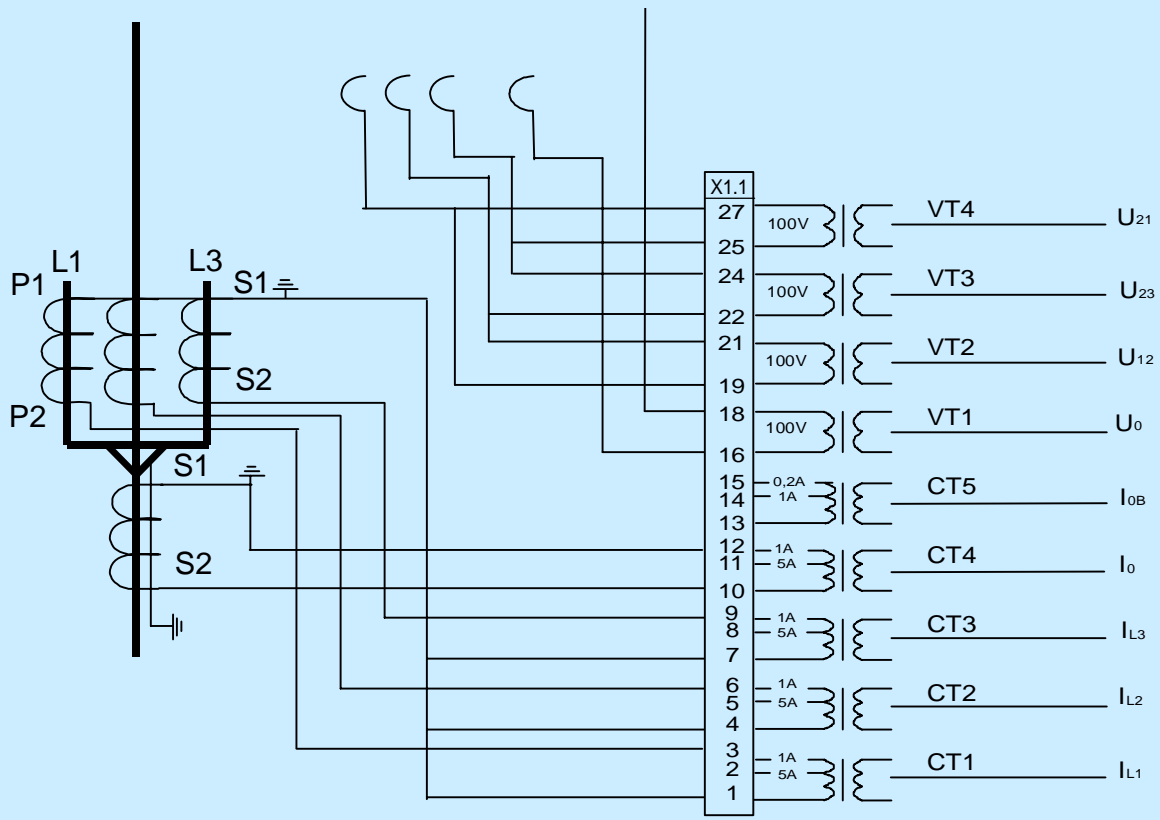
Hardware



- Medium
- 5 CTs
- 1 VT



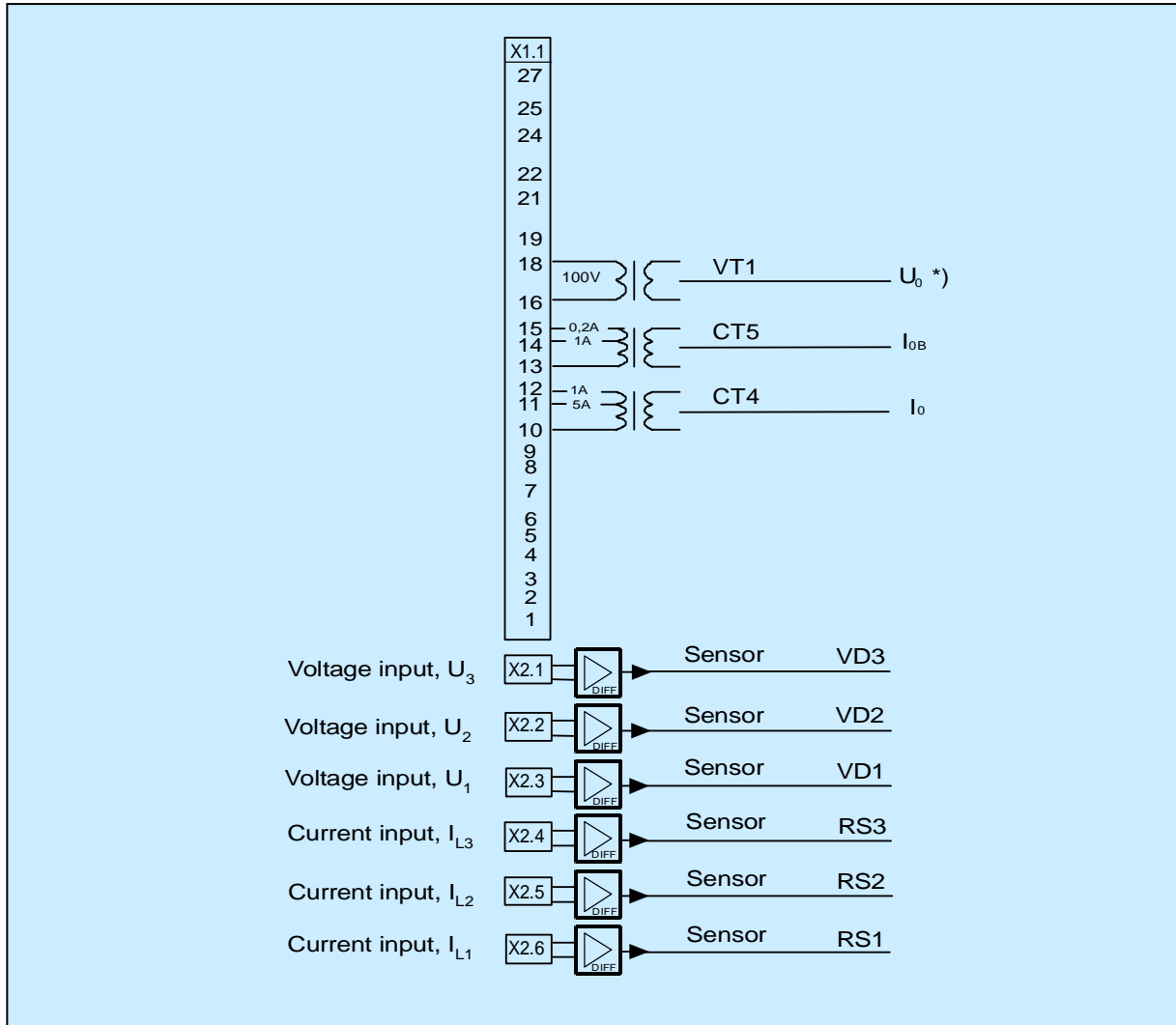
Hardware



- High
- 5 CTs
- 4 VTs



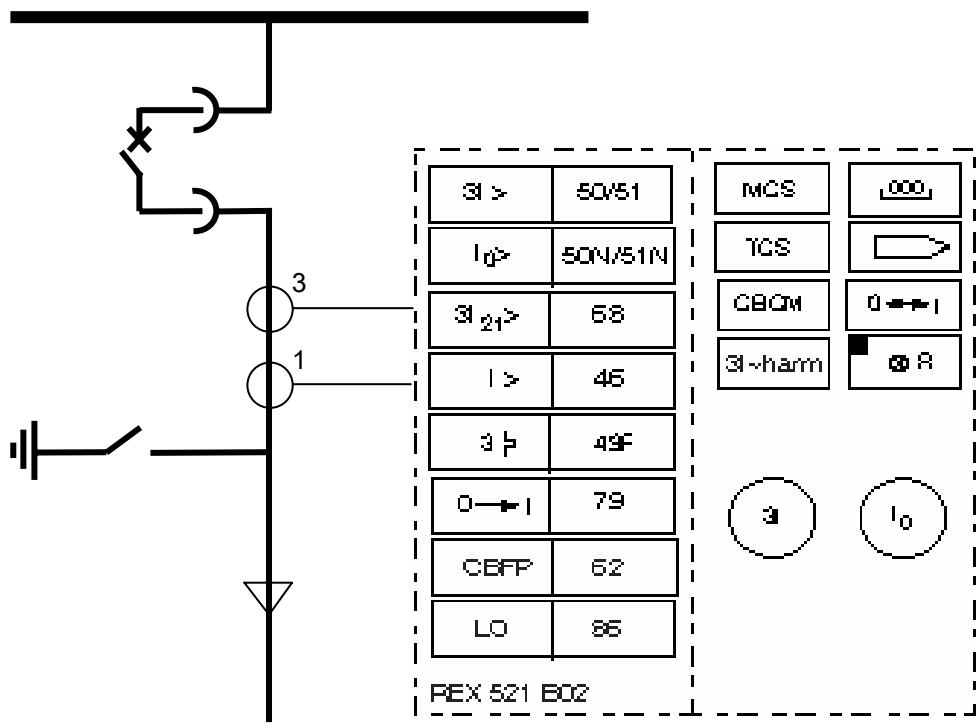
Hardware



- High sensor
- 6 sensors
- 2 CTs
- 1 VT



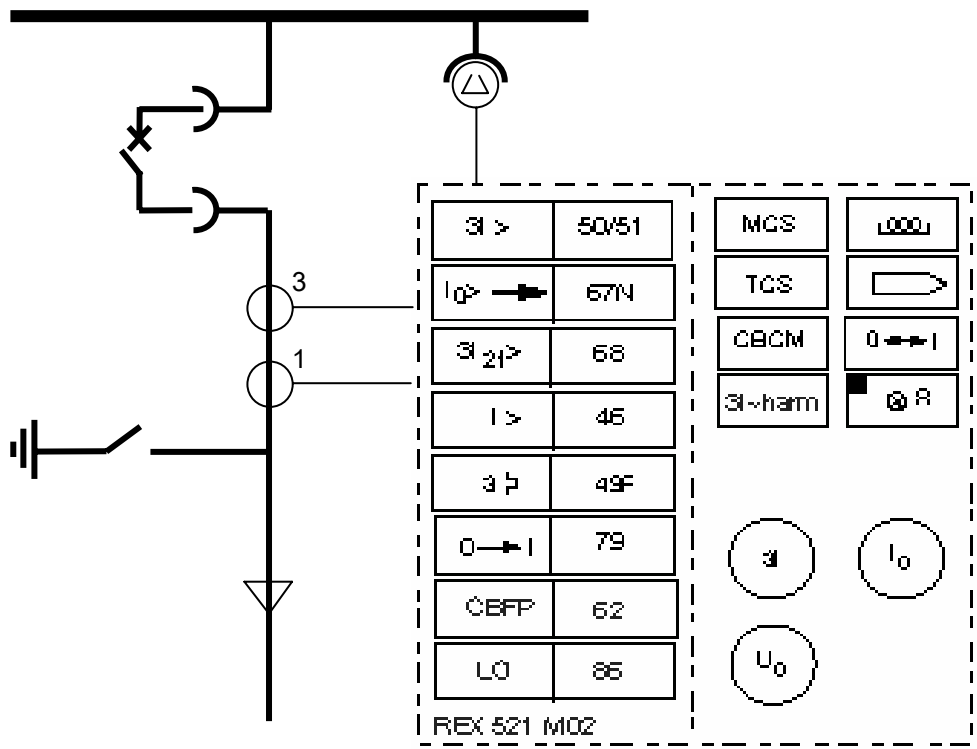
Application Example: B01/B02



- Outgoing feeder of a single busbar:
 - All network types (Solidly earthed, etc.)
 - Overheadlines (AR in B02)
 - Supervision and condition monitoring of primary equipment for preventive maintenance
 - Current measurements for network supervision and operations
 - Non-directional protections



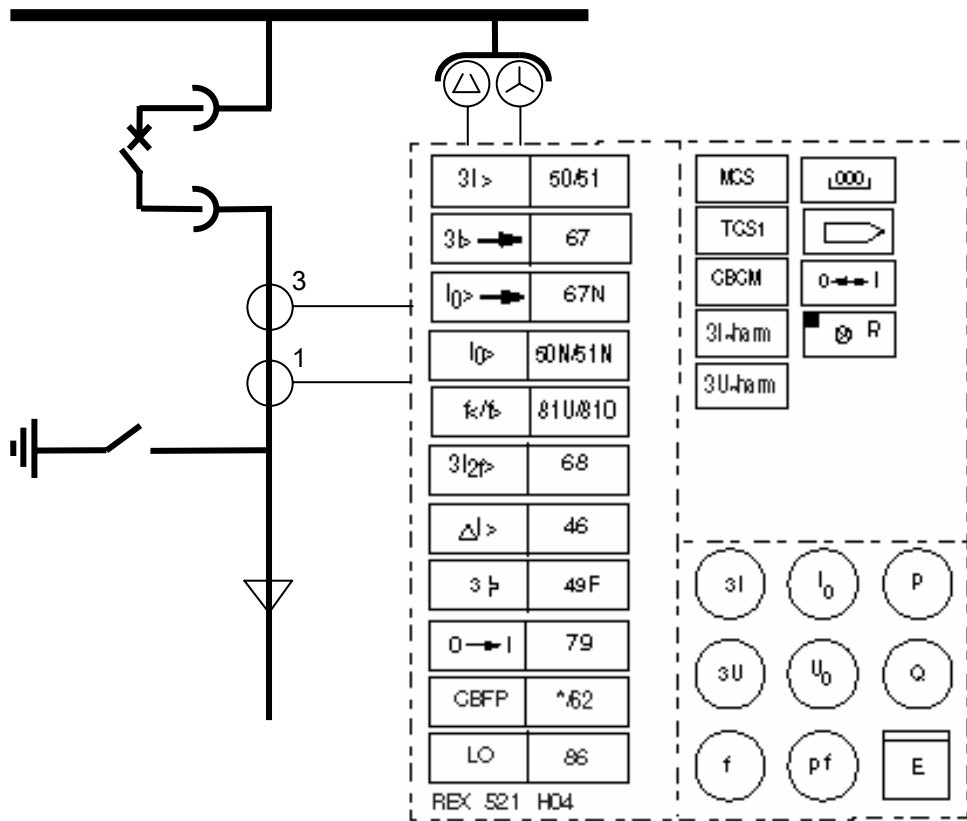
Application Example: M02



- Outgoing feeder of a single busbar:
 - All network types (Solidly earthed, etc.)
 - Cables (Dir E/F) and overheadlines (AR in M02)
 - Supervision and condition monitoring of primary equipment for preventive maintenance
 - Current measurements for network supervision and operations
 - Thermal overload protection for cable/line



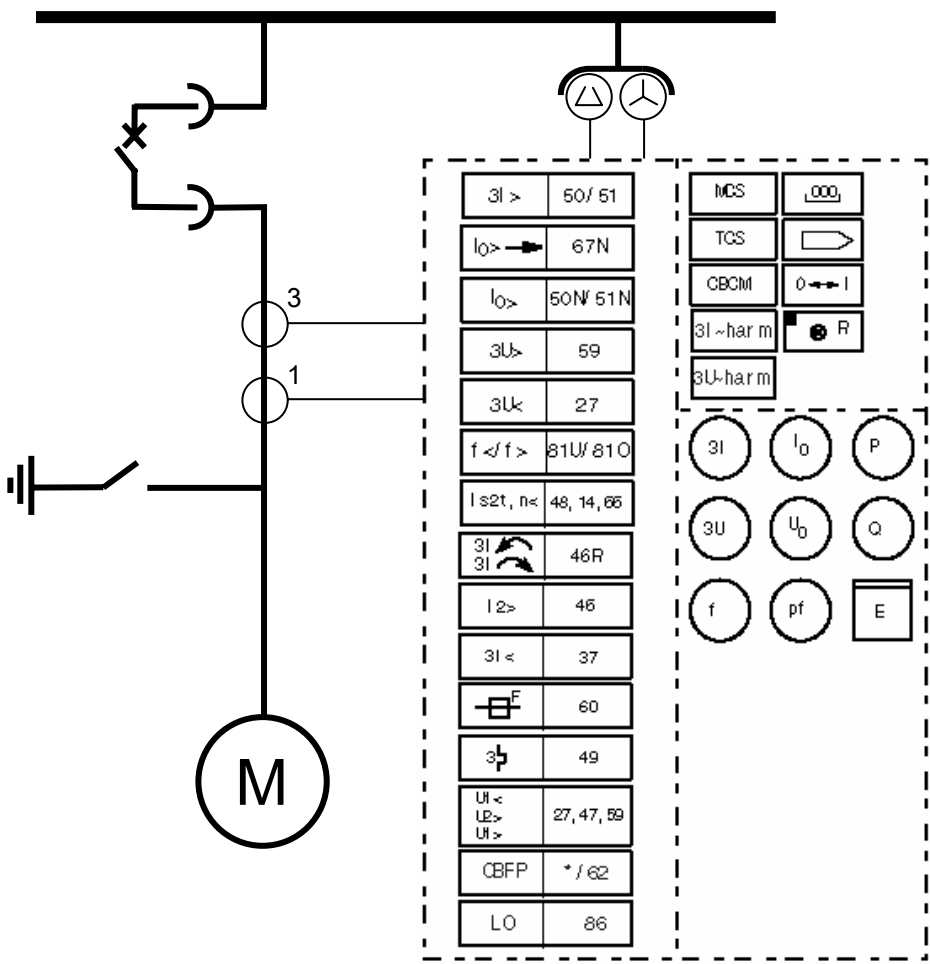
Application Example: H04



- Outgoing feeder of a single busbar:
 - All network types (Solidly earthed, etc.)
 - Cables and overheadlines
 - Extensive supervision and condition monitoring of primary equipment for preventive maintenance
 - Wide range of measurements for network supervision and operations
 - Directional and non-directional earth-fault protection
 - Thermal overload protection for cable or line



Application Example: H07



- Outgoing motor feeder:
 - For large and medium size synchronous and asynchronous AC motors
 - Thermal overload protection for devices
 - Motor start-up supervision (stall protection)
 - Extensive supervision and condition monitoring for preventive maintenance
 - Wide range of measurements for supervision and operation



Protection Functions

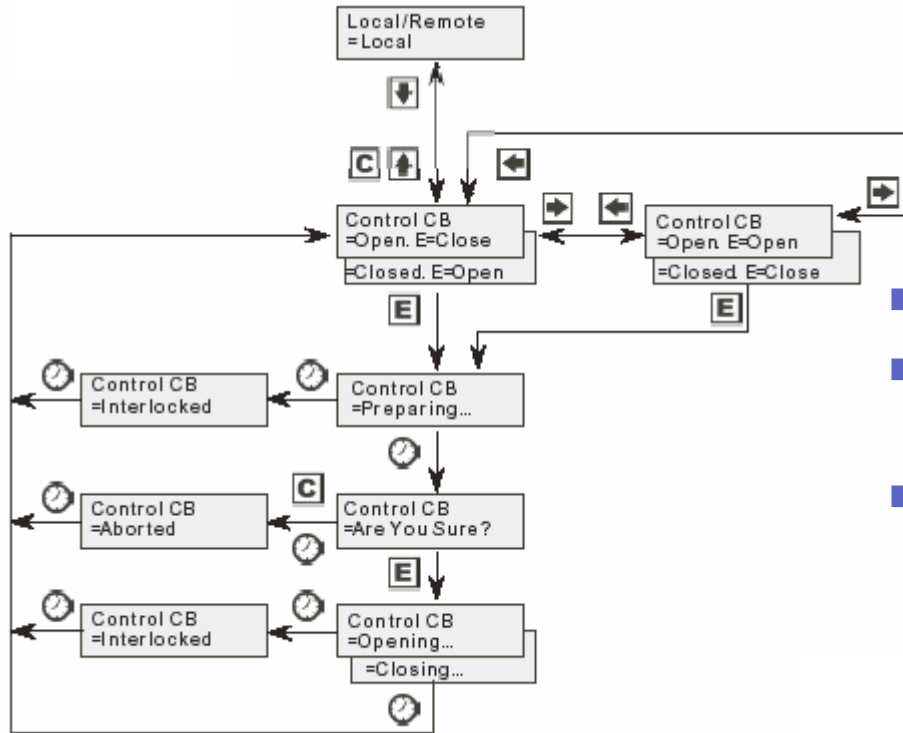
HW versions			Basic		Medium		High							
Standard configuration			B01	B02	M01	M02	H01	H02	H03	H04	H05	H06	H07	H08
Protection functions	FB Name	ANSI Code												
3l>	NOC3Low	51	x	x	x	x		x	x	x	x	x	x	x
3l>>	NOC3High	50/51	x	x	x	x		x	x	x	x	x	x	x
3l>>>	NOC3Inst	50/51	x	x	x	x	x		x	x	x		x	x
lo>	NEF1Low	51N	x	x						x		x	x	x
lo>>	NEF1High	50/51N	x	x						x		x	x	x
lo>>>	NEF1Inst	50N	x	x						x		x		x
lo>-->	DEF2Low	67N/51N			x	x	x	x	x				x	
lo>>-->	DEF2High	67N			x	x	x	x	x				x	
lo>>>-->	DEF2Inst	67N			x	x	x	x	x					
3l>-->	DOC6Low	67					x	x		x				
3l>>-->	DOC6High	67					x	x						
3l>>>-->	DOC6Inst	67												
3U>	OV3Low	59									x	x	x	x
3U>>	OV3High	59									x	x	x	x
3U<	UV3Low	27									x	x	x	x
3U<<	UV3High	27									x	x	x	x
3l2f>	Inrush3	68	x	x	x	x	x	x	x	x				x
lub>	CUB3Low	46	x	x	x	x	x	x	x					
3lth>	TOL3Cab	49F	x	x	x	x	x	x	x					
O-->l	AR5Func	79		x		x	x	x	x					
Uo>	ROV1Low	59N									x	x		x
Uo>>	ROV1High	59N									x	x		x
Uo>>>	ROV1Inst	59N									x	x		x
f1	Freq1St1	81U/81O						x		x		x	x	
f2	Freq1St2	81U/81O										x		
SYNC	SCVCSt1	25					x		x					
ls2t n<	MotStart	48, 14, 66											x	
3l()	PREV3	46R											x	
l2>	NPS3Low	46											x	
l2>>	NPS3High	46											x	
3l<	NUC3St1	37											x	
FUSEF	FuseFail	60											x	
3lthdev>	Tol3Dev	49M											x	x
U1<U1U2>	PSV3St1	27, 47, 59											x	

- Basic B01 & B02
- Medium M01 & M02
- High H01 – H06 & H08
- Motor protection H07



Control Functions

Included control functionality decreases the amount of external components



No extra auxiliary relays are needed for interlockings or control

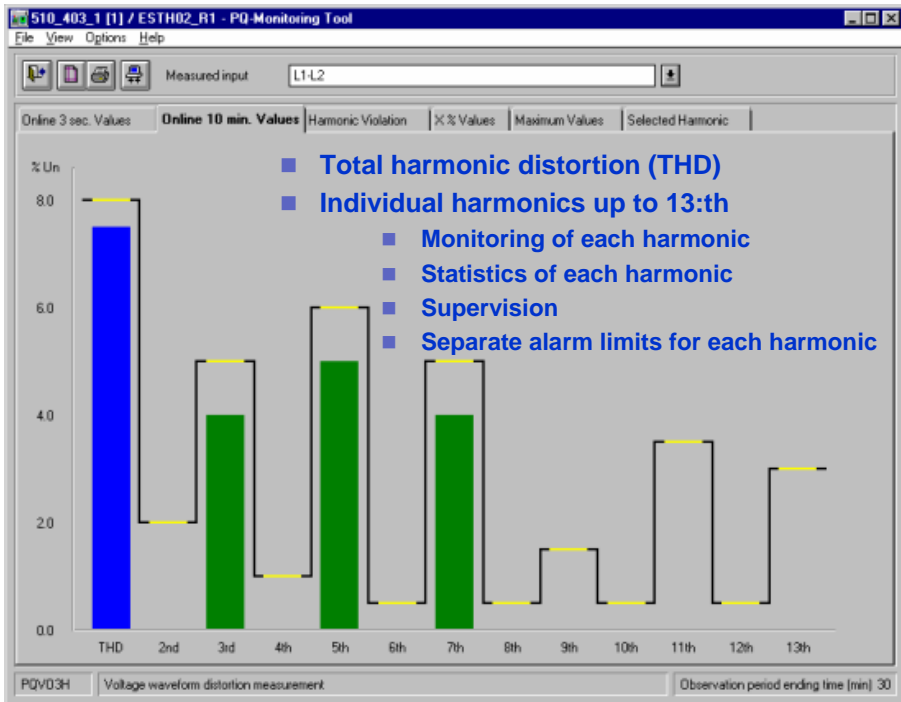
- Control of one breaker
- Pre-programmed interlocking conditions
- Operation by external push buttons, through communication or via menus



Measurements

Enhanced measuring functions improve the supervision of the process!

- REX 521 measures :
 - 3-phase current*
 - Neutral current
 - 3 phase voltage
 - Residual voltage
 - Active / reactive power*
 - Energy
 - Cos ϕ
 - Frequency
 - Harmonics for currents and voltages
 - Total harmonic distortion (THD)
 - Individual harmonics up to 13:th
 - Monitoring of each harmonic
 - Statistics of each harmonic
 - Supervision
 - Separate alarm limits for each harmonic
 - Disturbance recorder



* Also mean values



Condition Monitoring

Coming errors/problems in auxiliary equipment can be foreseen with condition monitoring



- The monitored units are:
 - Current transformers
 - Voltage transformers
 - Trip circuit
 - Circuit breaker
 - Breaker wear
 - Counter
 - Inactive time
 - Travel time
 - Running time (motor protection)
 - Relay



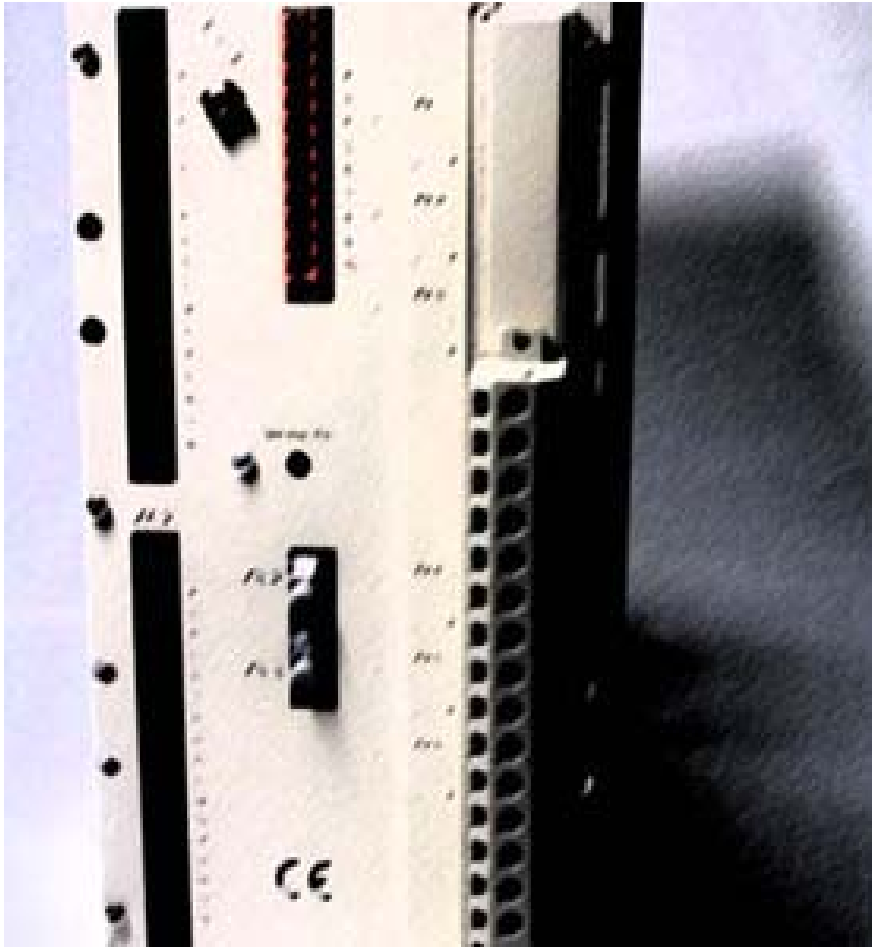
Improving the Network

REX 521 combined with sensors:

- Less engineering time as you have two universal versions to choose from
- Human safety improved, through low voltage levels
- Accuracy at high current
- Compact design, enabling easy installation



Communication Benefits

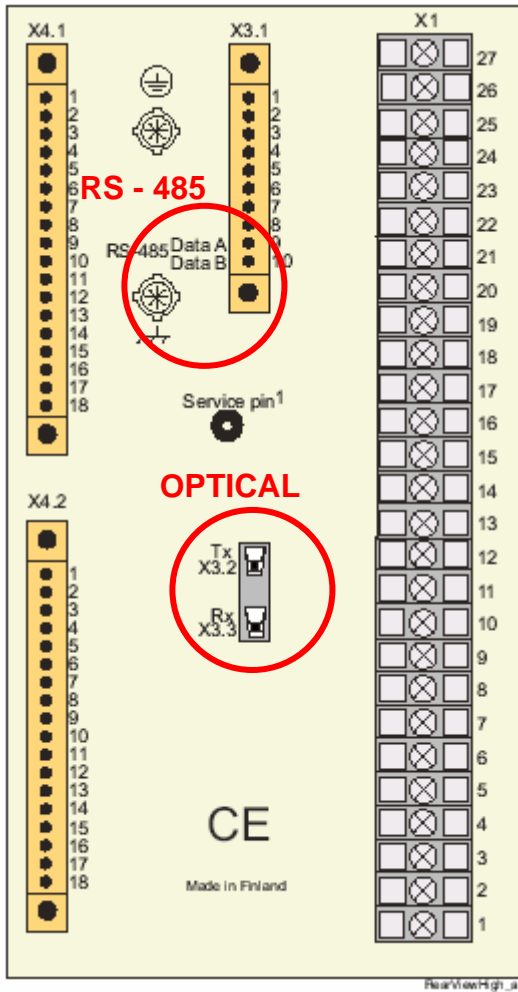


Information available through communication:

- Set values
- Measured values
- Registered values / events
- Uploading of disturbance recorder data
- Control
- Setting banks



Communication and System Integration



INBUILT PROTOCOLS IN REX 521		
Protocol	Rear port optical	Rear port opto isolated RS-485
SPA	X	X
LON	X	
IEC 60870-5-103	X	X
ModBus (RTU & ASCII)	X	X
DNP 3.0	X	X

WITH ADAPTER	
Protocol	ADAPTER
ProfiBus DPV1	SPA-ZC 302
IEC 61850-8-1	SPA-ZC 402

Note! Only one communication port and protocol can be active at a time (optical front connector can be used simultaneously, naturally).



Saving Engineering Time

The REX 521 is suitable
for all kinds of switchgear



Saving Engineering Time

Before



After



Switchgear installation space
is reduced

Easy to Set with Graphical Setting Tool

New graphical setting tool in CAP 501 & CAP 505

The image displays three overlapping screenshots of the 'REX 521 - Graphical I/O Setting Tool' software interface. The top-left window shows the 'Input Matrix' tab with a ladder logic diagram featuring a 'TRUE' input and a 'DI1' input. The middle window shows the 'Output Matrix' tab with a legend for connection types: 'Not connected' (open circle), 'Connected and non-latched' (filled circle), 'Connected and latched' (circle with a dot), and 'Connection not possible' (circle with a red cross). Below the legend is a list of outputs including 'Trip 1' and various '3l' (latched) and 'Io' (interlocking) signals. The bottom-right window shows the 'Alarm LED Matrix' tab with a legend for alarm types: 'Not connected' (open circle), 'Non-latched alarm' (filled circle), 'Latched alarm, steady LED' (circle with a dot), and 'Latched alarm, blinking LED' (circle with a cross). Below the legend is a list of signals for 'LED1' including '3l Start', '3l Trip', '3l Start', '3l Trip', and '3l Start'. The background of the bottom window shows three vertical lines representing LED1, LED2, and LED3.



User Friendliness



Pre-tested in the factory providing ready
made test plans



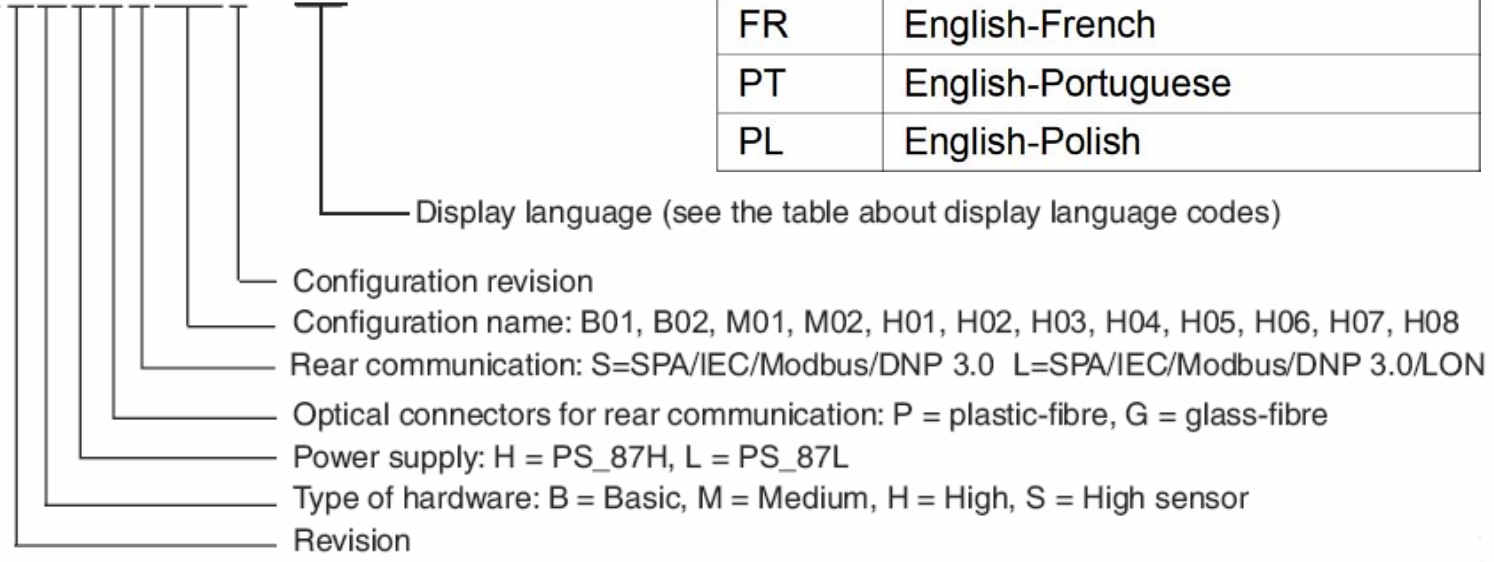
Ordering

When ordering REX 521 protection relays, specify the following:

- Order number
- Quantity
- Additional language

Code	Language combination
FI	English-Finnish
SE	English-Swedish
DE	English-German
ES	English-Spanish
FR	English-French
PT	English-Portuguese
PL	English-Polish

REX521EMHPSM01E XX



What It All Comes Down to Is...

- Reduce the need for local adaptations
- Improve efficiency through data information and prevent accidents from happening
- Engineering time is reduced thanks to easy implementation
- Reduce the need for advanced training

We are there for you !





Power and productivity
for a better world™