

IEC 60870-5-103 Interoperability List for VAMP 150 v1.1

1. Physical layer

1.1 Electrical interface

EIA RS-485

Number of load for one equipment: 32

1.2 Optical interface

Glass fibre
 F-SMA type connector

Plastic fibre
 BFOC/2,5 type connector

1.3 Transmission speed

9600 b/s

19200 b/s

2. Link layer

There are no choices for the link layer.

3. Application layer

3.1 Transmission mode for application data Mode 1 (least significant octet first) as defined in 4.10 of IEC 60870-5-103

3.2 Common address of ASDU

One common address of ASDU (identical with station address)

More than one common address of ASDU

3.3 Selection of standard information numbers in monitor direction

3.3.1 System functions in monitor direction

	INF	
<input checked="" type="checkbox"/>	0	End of general interrogation
<input checked="" type="checkbox"/>	0	Time synchronization
<input checked="" type="checkbox"/>	2	Reset FCB

	INF	
<input checked="" type="checkbox"/>	3	Reset CU
<input checked="" type="checkbox"/>	4	Start/restart
<input checked="" type="checkbox"/>	5	Power on

3.3.2 Status indications in monitor direction

	INF	
<input type="checkbox"/>	16	Auto-recloser active
<input type="checkbox"/>	17	Teleprotection active
<input type="checkbox"/>	18	Protection active
<input type="checkbox"/>	19	LED reset
<input type="checkbox"/>	20	Monitor direction blocked
<input type="checkbox"/>	21	Test mode
<input type="checkbox"/>	22	Local parameter setting
<input type="checkbox"/>	23	Characteristics 1

	INF	
<input type="checkbox"/>	24	Characteristics 2
<input type="checkbox"/>	25	Characteristics 3
<input type="checkbox"/>	26	Characteristics 4
<input checked="" type="checkbox"/>	27	Auxiliary input 1
<input type="checkbox"/>	28	Auxiliary input 2
<input type="checkbox"/>	29	Auxiliary input 3
<input type="checkbox"/>	30	Auxiliary input 4

X = Indication enabled

(X) = Indication can be enabled, but is disabled or mapped to private area by default

3.3.3 Supervision indications in monitor direction

	INF	
	32	Measurand supervision I
	33	Measurand supervision V
(X)	35	Phase sequence supervision
	36	Trip circuit supervision
	37	I>> back up operation

	INF	
	38	VT fuse failure
	39	Teleprotection disturbed
	46	Group warning
	47	Group alarm

3.3.4 Earth fault indications in monitor direction

	INF	
	48	Earth fault L1
	49	Earth fault L2
	50	Earth fault L3

	INF	
	51	Earth fault forward, i.e. line
	52	Earth fault reverse, i.e. busbar

3.3.5 Fault indications in monitor direction

	INF	
	64	Start / pick-up L1
	65	Start / pick-up L2
	66	Start / pick-up L3
X	67	Start / pick-up N
	68	General trip
	69	Trip L1
	70	Trip L2
	71	Trip L3
	72	Trip I>> (back-up protection)
	73	Fault location in X ohms
	74	Fault forward / line
	75	Fault reverse / busbar
	76	Teleprotection signal transmitted
	77	Teleprotection signal received
	78	Zone 1

	INF	
	79	Zone 2
	80	Zone 3
	81	Zone 4
	82	Zone 5
	83	Zone 6
X	84	General start / pick-up
(X)	85	Breaker failure
	86	Trip measuring system L1
	87	Trip measuring system L2
	88	Trip measuring system L3
	89	Trip measuring system E
X	90	Trip I>
X	91	Trip I>>
X	92	Trip IN>
X	93	Trip IN>>

3.3.6 Autoreclosure indications in monitor direction

	INF	
	128	CB 'on' by AR
	129	CB 'on' by long-time AR

	INF	
	130	AR blocked

3.3.7 Measurands in monitor direction

	INF	
X	144	Measurand I
	145	Measurands I,V
	146	Measurands I,V,P,Q

	INF	
X	147	Measurands IN, VEN
	148	Measurands IL1, IL2, IL3, VL1, VL2, VL3, P, Q, f

3.3.8 Generic functions in monitor direction

	INF	
	240	Read headings of all defined groups
	241	Read values of attr of all entries of one group
	243	Read directory of a single entry
	244	Read value or attr of a single entry

	INF	
	245	End of general interrogation of generic data
	249	Write entry with confirmation
	250	Write entry with execution
	251	Write entry aborted

X = Indication enabled

(X) = Indication can be enabled, but is disabled or mapped to private area by default

3.4 Selection of standard information numbers in control direction

3.4.1 System functions in control direction

	INF		
X	0	Initiation of general interrogation	
	INF		
X	0	Time synchronization	

3.4.2 General commands in control direction

	INF		
	16	Auto-recloser on / off	
	17	Teleprotection on / off	
	18	Protection on / off	
	19	LED reset	
	INF		
	23	Activate characteristics 1	
	24	Activate characteristics 2	
	25	Activate characteristics 3	
	26	Activate characteristics 4	

3.4.3 Generic functions control direction

	INF		
	240	Read headings of all defined groups	
	241	Read values of attr of all entries of one group	
	243	Read directory of a single entry	
	244	Read value or attr of a single entry	
	245	General interrogation of generic data	
	INF		
	248	Write entry	
	249	Write entry with confirmation	
	250	Write entry with execution	
	251	Write entry abort	

3.5 Basic application functions

	Test mode		Generic services
	Blocking of monitor direction	X	Private data
	Disturbance data		

3.6 Miscellaneous

Measurands are transmitted with ASDU 3 or ASDU 9. The maximum MVAL can either be 1,2 or 2,4 times the rated value. No different rating shall be used in ASDU 3 and ASDU 9 i.e. for each measurand there is only one choice.

Measurand	Max. MVAL = rated value times	
	1,2	2,4
Current L1		X
Current L2		X
Current L3		X
Voltage L1-E		
Voltage L2-E		
Voltage L3-E		
Active power P		
Reactive power Q		
Frequency f		
Voltage L1 - L2		

----- End of Interoperability List -----



Summary of Interoperable data and Private data in VAMP 150

Indications

Default On	FUN	INF	GI	ASDU	Standard / Private	
Yes	160	27	1	1	S	Auxiliary input 1
Yes	160	67	1	1	S	Start / pick-up N (IN > Start)
Yes	160	84	1	1	S	General start / pick-up (I > Start)
Yes	160	90	-	1	S	Trip I >
Yes	160	91	-	1	S	Trip I >>
Yes	160	92	-	1	S	Trip IN >
Yes	160	93	-	1	S	Trip IN >>
Yes	160	94	1	1	P	I >> Start
Yes	160	95	1	1	P	I >>> Start
Yes	160	96	-	1	P	I >>> Trip
Yes	160	97	1	1	P	IN >> Start
Yes	160	100	1	1	P	I2 > Start (Unbalance protection)
Yes	160	101	-	1	P	I2 > Trip (Unbalance protection)
Yes	160	102	1	1	P	T > Start (Thermal overload protection)
Yes	160	103	-	1	P	T > Trip (Thermal overload protection)
Yes	160	104	-	1	P	Arc protection, light detected
Yes	160	105	-	1	P	I > Arc Trip (Arc protection)
Yes	160	106	-	1	P	Io > Arc Trip (Arc protection)
No	any	any	-	1	P	CBFP Start (CB failure protection)
No	any	any	-	1	P	CBFP Trip (CB failure protection)
No	any	any	0/1	1	P	I < Start (Under current)
No	any	any	-	1	P	I < Trip (Under current)
No	any	any	0/1	1	P	Ist > Start (Stall protection)
No	any	any	-		P	Ist > Trip (Stall protection)
No	any	any	0/1	1	P	N > Alarm (Freq start protection, 1 start left)
No	any	any	0/1	1	P	N > Trip (Freq start protection, mot start dis.)
No	any	any	0/1	1	P	I2 >> Alarm (Phase sequence stage)
No	any	any	-	1	P	I2 >> Trip (Phase sequence stage)
No	any	any	0/1	1	P	Motor starting
No	any	any	0/1	1	P	Motor running

Measurands

Default On	FUN	INF	ASDU	Standard / Private	
Yes	160	144	3.1	S	Measurand I
Yes	160	147	3.4	S	Measurands IN, VEN
No	any	any	3 / 9	P	Measurand I (L1)
No	any	any	3 / 9	P	Measurand I (L3)
No	any	any	3 / 9	P	Measurand IN
No	any	any	4	P	Fault current of I >
No	any	any	4	P	Fault current of I >>
No	any	any	4	P	Fault current of I >>>
No	any	any	4	P	Frequency f

Note: The FUN (Function Type) and INF (Information Number) of the Private data items can be changed via parameter settings.

General commands in control direction

Default On	FUN	INF	ASDU	Standard / Private	
Yes	160	19	20	S	LED reset
No	any	any	20	P	Control Alarm relay 1
No	any	any	20	P	Control Alarm relay 2
No	any	any	20	P	Control Alarm relay 3

Note: The FUN (Function Type) and INF (Information Number) of the Private data items can be changed via parameter settings.

