

01.04.2005

IEC 60870-5-103 Interoperability List for VAMP 140 v1.6

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

3.3.3 Supervision indications in monitor direction

	INF	
<input type="checkbox"/>	32	Measurand supervision I
<input type="checkbox"/>	33	Measurand supervision V
<input type="checkbox"/>	35	Phase sequence supervision
<input type="checkbox"/>	36	Trip circuit supervision

	INF	
<input type="checkbox"/>	38	VT fuse failure
<input type="checkbox"/>	39	Teleprotection disturbed
<input type="checkbox"/>	46	Group warning
<input type="checkbox"/>	47	Group alarm

	37	I>> back up operation		
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3.3.4 Earth fault indications in monitor direction

	INF			INF	
	48	Earth fault L1		51	Earth fault forward, i.e. line
	49	Earth fault L2		52	Earth fault reverse, i.e. busbar
	50	Earth fault L3			

3.3.5 Fault indications in monitor direction

	INF			INF	
	64	Start / pick-up L1		79	Zone 2
	65	Start / pick-up L2		80	Zone 3
	66	Start / pick-up L3		81	Zone 4
X	67	Start / pick-up N		82	Zone 5
	68	General trip		83	Zone 6
	69	Trip L1	X	84	General start / pick-up
	70	Trip L2	(X)	85	Breaker failure
	71	Trip L3		86	Trip measuring system L1
	72	Trip I>> (back-up protection)		87	Trip measuring system L2
	73	Fault location in X ohms		88	Trip measuring system L3
	74	Fault forward / line		89	Trip measuring system E
	75	Fault reverse / busbar	X	90	Trip I>
	76	Teleprotection signal transmitted	X	91	Trip I>>
	77	Teleprotection signal received	X	92	Trip IN>
	78	Zone 1	X	93	Trip IN>>

3.3.6 Autoreclosure indications in monitor direction

	INF			INF	
	128	CB 'on' by AR		130	AR blocked
	129	CB 'on' by long-time AR			

3.3.7 Measurands in monitor direction

	INF			INF	
X	144	Measurand I	X	147	Measurands IN, VEN
	145	Measurands I,V		148	Measurands IL1, IL2, IL3, VL1, VL2, VL3, P, Q, f
	146	Measurands I,V,P,Q			

3.3.8 Generic functions in monitor direction

	INF			INF	
	240	Read headings of all defined groups		245	End of general interrogation of generic data
	241	Read values of attr of all entries of one group		249	Write entry with confirmation
	243	Read directory of a single entry		250	Write entry with execution
	244	Read value or attr of a single entry		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	
X	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		X
Voltage L1 - L2		

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

Summary of Interoperable data and Private data in VAMP 140

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	98	1	1	P	IN >>> Start
Yes	160	99	-	1	P	IN >>> Trip
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)

Measurands

Default on	FUN	INF	ASDU	Standard / Private	
Yes	160	144	3.1	S	Measurand IL2
Yes	160	147	3.4	S	Measurands Io
No	any	any	3/9	P	Measurands IL1, IL3
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	3/4/9	P	Frequency f

General commands in control direction

Default on	FUN	INF	ASDU	Standard / Private	
Yes	160	19	20	S	LED reset (reset latches)
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.