

SIEMENS

Climatix™

Technical Limits

Quick Reference Guide

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Legal note concept

This guide includes notes that must be followed to prevent damage to property. Notes dealing only with damage to property use the signal word NOTICE and an exclamation point. They are depicted as follows:

!	NOTICE
	Type and source of hazard Consequences in the event the hazard occurs <ul style="list-style-type: none">Controls/prohibitions to prevent the hazard

Qualified personnel

Only qualified personnel may commission the device/system. Qualified personnel for purposes refer to qualified due to training and experience to recognize and avoid risks when working with this device/system.

Proper use

The device/system described here may only be used in building technical plants and for the described applications only.

The trouble-free and safe operation of the device/system described here requires proper transportation, correct warehousing, mounting, installation, commissioning, operation, and maintenance.

You must comply with permissible ambient conditions. You must comply with the information provided in the Section "Technical data" and notes in the associated documentation.

Fuses, switches, wiring and grounding must comply with local safety regulations for electrical installations. Observe all local and currently valid laws and regulations.

Exemption from liability

The content of this document was reviewed to ensure it matches the hardware and firmware described herein. Deviations cannot be precluded, however, so that we cannot guarantee that the document fully matches the actual device/system. The information provided in this document is reviewed on a regular basis and any required corrections are added to the next edition.

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1 About this document

1.1 Revision history

Version	Date	Changes	Section
d	Current version	New touch panel types mentioned. Old types deleted.	Touch panels [→ 11]
		New limits, when using 'mixed mode'	Extensions: IO and communication modules [→ 12], Modbus via RS485 [→ 22]
		Note on "Number of objects"	Memory and file sizes [→ 13]
		New chapter 'Archive'.	Archive for offline trends [→ 16]
		S-Mode limits included	Process bus (PB) / KNX [→ 18]
		Cloud and JSON limits separated. New limits.	Cloud /JSON [→ 27]
c	2020-01-29	New recommended values for BACnet objects, when using communication modules	BACnet [→ 19]
b	2019-05-13	Values included for POL46x	All sections
		Concept of "typical values" introduced	Technical limits [→ 7]
		Nomenclature for POL6.. and POL4..	Naming of the POL6.. range [→ 7], Naming of the POL4.. range [→ 7]
		Summary of POL46x hardware	Inbuilt hardware of POL46x [→ 8]
		Separate column for POL6x8	IP connections [→ 9]
		Touch panels completely revised	Touch panels [→ 11]
		Value corrected for POL6x8 communication modules	Extensions: IO and communication modules [→ 12]
		Memory and file sizes: <ul style="list-style-type: none"> Value corrected for POL6x8 HMI-Cnf-Comp Included: Event history, Alarm list, Alarm history Included: COV groups POL4...: represented analogously to POL6.. Clarified: time deviation of RTC 	Memory and file sizes [→ 13]
		BACnet limits completely revised	BACnet [→ 19]
		Modbus via RS485 for POL4...: separate columns for VVS10 and VVS11	Modbus via RS485 [→ 22]
		Value for SNVTs for LON	LON [→ 25]
		New: Cloud and JSON limits	Cloud /JSON [→ 27]
a	2017-03-16	First draft	

1.2 Before you start

1.2.1 Target readers

This reference documentation is for the following target readers:

- OEM engineering staff
- System integrators

1.2.2 Trademarks

The trademark used in this document is listed together with its legal owner in the following table. The use of this trademark is subject to international and national statutory provisions.


Trademark	Legal owner
BACnet™	American National Standard (ANSI/ASHRAE 135-1995)
KNX®	Konnex Association, B - 1831 Brüssel-Diegem, Belgium http://www.konnex.org/
LON®	Echelon Corporation
MODBUS®	The Modbus Organization, Hopkinton, MA, USA

Further to the note in this section, and to facilitate the reading of the text, this trademark will not be indicated elsewhere in the text (e.g. by use of symbol ™).

1.3 Technical limits

Recommendations

- Recommendations are 'soft limits' that can be exceeded.
- Recommendations are communicated to ensure the full and correct functioning of the system.
- Recommendations are marked with "R".

	NOTICE
	Exceeding recommendations <ul style="list-style-type: none"> • Contact the manufacturer before exceeding recommendations. Please contact your Siemens representative. • Changes to the technical limits are published in internal (e.g. facts) and external publications.

Typical values

- Typical values can be found in relevant Modbus guidelines (best practice).
- Typical values are marked with "T".

1.4 Naming of the POL6.. range

The POL6.. controller naming convention in this document is:

- **POL6xx**: POL636.xxx, POL638.xxx, POL687.xxx
- **POL6x8**: POL648.xxx, POL688.xxx, POL698.xxx, POL69U.xxx
- **POL6..**: POL6xx and POL6x8

1.5 Naming of the POL4.. range

The POL4.. controller naming convention in this document is:

- **POL4xx**: POL421, POL422, POL423, POL424, POL425 and POL426
- **POL46x**: POL461.xxx, POL467.xxx and POL468.xxx
- **POL46x/IP**: POL46x controllers with Ethernet/IP port: POL467.xxx and POL468.xxx
- **POL4..**: POL4xx and POL46x

1.6 Inbuilt hardware of POL4xx and POL6xx

The properties and limits of the POL6xx (POL687, POL638 and POL636) and POL4xx are the same, since both are based on the same eco system. The data on POL6.. and POL4xx ranges are listed in separate tables to improve readability and due to the following hardware differences:

- POL4xx supports no extension and no communication modules
- POL4xx has no IP interface
- POL4xx has no new generation hardware. Does not belong to C series

1.7 Inbuilt hardware of POL46x

POL46x is designed for smaller scale applications, hence has less memory space available with limited amount of supported objects and program size.

- POL46x supports Modbus instead of KNX LTE.
- POL46x has several inbuilt communication possibilities.

2 Controllers

2.1 Connections

2.1.1 IP connections

Maximum amount of IP connections at the same time

Description	POL6xx / VVS10, VVS11	POL6x8 / VVS11	POL46x/IP VVS11
Software tools (e.g. SAPRO, SCOPE, OPC)	3	9	9
Modbus TCP/IP	3	9	3
HMI4Web	8	8	8
FTP	2	2	2
Climatix IC	1	1	1



This solution is not available for POL4xx controllers.

2.1.2 Room units

Maximum number of connected room units via Process Bus for POL6..

Room units are:

- POL822 HMI SG
- QMX3.xx

Description	POL6.. / VVS10, VVS11
Without additional power supply	6
With additional power supply	10

Maximum number of connected room units via Process Bus for POL4xx

Room units are:

- POL822 HMI SG
- QMX3.xx

Description	POL4xx / VVS10, VVS11
Without additional power supply	6
With additional power supply	10



This solution is not available for POL46x controllers (no Process bus).

2.1.3 Touch panels

Limits for Touch Panels (based on Android) communicating via Modbus-IP or RS485 for POL6.. and POL46x

Touch panels are:

- POL8T1.40 (4.3") – 16 : 9
- POL8T1.70 (7") – 16 : 9
- POL8T1.80 (12.1") – 4 : 3

Controller as master, touch panels as slaves (1 : n)

- For Modbus-IP, see section "Modbus IP [→ 20]"
- For RS485, see section "Modbus via RS485 [→ 22]"



The service port provides a 1:1 connection to the controller.

Touch panel as master, controllers as slaves (1 : n)

Touch panel interface	Connections	Comment
per COM port (COM1, COM2)	8	RS485/RS232 COM port
IP	2	Modbus-IP
COM1, COM2, IP	4, 4, 2	

Item	Limit
Maximum number of pages	100
Maximum number of data points in 1 page	300
Maximum number of data points, overall	3000
Maximum size of storage	30 MB

New capacitive Touch panel generation



NOTICE

New HMI devices

- New to the HMI range are: POL8T2.40, POL8T2.70 and POL8T5.70.
- If needed limit values will be published in one of the next editions.

2.2 Extensions: IO and communication modules

Limits of IO extension modules

IO extension modules are:

POL925, POL945, POL955, POL965, POL985, POL96U and POL98E.

Description	POL6.. / VVS10, VVS11	POL46x / VVS11
Maximum number of IO extension modules	10 ^{a)}	1 ^{b)}
Maximum wiring length of a IO bus extension	30 m	30 m

^{a)} The theoretical limit is 31 due to the addressing range from 1 to 31. The maximum number depends on several factors including:

- total number of data-points
- application memory size (objects and functions)
- speed response time

Generally, we **recommend** not to exceed 10 extension modules.

^{b)} The extension interface can also be used in 'mixed mode' (this means extension module plus Modbus slaves). For details on 'mixed mode', see also "Modbus via RS485 [→ 22]".

Maximum number of POL6.. communication modules

Description	POL6xx / VVS10, VVS11	POL6x8 / VVS11
Communication modules (POL90x) of different module types	3	2



NOTICE

- POL4xx controllers offer no connection interfaces for IO and communication modules.
- POL46x controllers offer no connection interface for communication modules.

2.3 Memory and file sizes

Introduction

File typology

File type	SCOPE type name	Description
OBHyyy.xxx	Mapping-Comp	Mappings (language and communication support)
OBHVNyyy.xxx	Mapping-Comp	Mappings with view node support (since VVS11)
HMIyyy.xxx	HMI-Cnf-Comp	HMI template
MBRTyyy.xxx	Application	Sapro application
HMI4Webyyy.xxx	HMI4Web	Web application

Changes with VVS11

With VVS11 only compressed ("comp") files can be loaded. Bin files and not compressed files are no longer supported.

Loaded files versus operative files

The controller itself still works with the unpacked bin files. For an evaluation of the available memory space the bin files are relevant. In the file system of a Climatix project the folders "Output" and "Cache" contain the following:

- Output: files to load (since VVS11 only compressed files)
- Cache: bin files (their sizes correspondent to the situation in the controller)

Therefore in the table below the bin file sizes are listed.

Interconnection of MBRT and HMI4Web files

As the MBRT and HMI4Web files potentially need the most memory space and the hardware memory is limited a dynamic scaling is implemented for the two (see table below).

Dependent on the size, the MBRT file is automatically changed to the adequate file type. For more information see also the SAPRO online help, topic "Huge Application Support".

Maximum file sizes, memory and number of objects of POL6.. controllers

Description	POL6xx / ≥VVS10.36	POL6xx / VVS11	POL6x8 / VVS11
Maximum file size of Mapping-Comp	2 MB	2 MB	8 MB
Maximum file size of Mapping-Comp (with View Nodes)	-	2 MB	8 MB
Maximum file size of HMI-Cnf-Comp	256 kB	256 kB	3 MB
Maximum size of Application and of HMI4Web interconnected	≤1.0 MB, loaded as MBRTComp.ucf HMI4Web: 4 MB	≤1.0 MB, loaded as MBRTComp.ucf HMI4Web: 4 MB	≤3 MB, loaded as MBRTComp.ucf HMI4Web: 16 MB
	≤1.5 MB, loaded as MBRTHuge.ucf HMI4Web: 4 MB	≤1.5 MB, loaded as MBRTHuge.ucf HMI4Web: 4 MB	
	-	≤4 MB, loaded as MBRTExHuge.ucf HMI4Web: 1.5 MB	≤16 MB, loaded as MBRTExHuge.ucf HMI4Web: 3 MB
Number of objects *	2500	4000	8000
Event history	50	50	150
Alarm list	50	50	150
Alarm history	50	50	150
Maximum object store	80 kB	80 kB	256 kB
COV, maximum number of clients	15	15	35
COV groups (VVS11.42)	n/a	32	32
Alarm handler, maximum number of clients	8	8	8

* To get the number of customer application objects, the system objects must be deducted. The amount of system objects (e.g. alarming, trends and internal) can be identified with Scope tool and an 'empty' controller, without customer application. Go to 'SystemObjects > DiagObjHandler'.

Maximum file sizes, memory and number of objects of POL4.. controllers

Description	POL4xx / ≥VVS10.36	POL4xx / VVS11	POL46x / VVS11
Maximum file size of Mapping-Comp	2 MB	2 MB	512 kB
Maximum file size of Mapping-Comp (with View Nodes)	-	2 MB	512 kB
Maximum file size of HMI-Cnf-Comp	256 kB	256 kB	512 kB
Maximum file size of Application and of HMI4Web interconnected , where applicable	≤1.0 MB, loaded as MBRTComp.ucf	≤1.0 MB, loaded as MBRTComp.ucf	≤512kB, loaded as MBRTComp.ucf HMI4Web: 1.5 MB
	≤1.5 MB, loaded as MBRTHuge.ucf	≤1.5 MB, loaded as MBRTHuge.ucf	
		≤4 MB, loaded as MBRTExHuge.ucf	≤1.5 MB, loaded as MBRTExHuge.ucf HMI4Web: 512 kB
Number of objects *	2500	4000	1200
Event history	50	50	n/a
Alarm list	50	50	50
Alarm history	50	50	50
Maximum object store	80 kB	80 kB	64 kB
COV, maximum number of clients	15	15	10
COV groups (VVS11.42)	n/a	32	16
Alarm handler, maximum number of clients	8	8	8

* To get the number of customer application objects, the system objects must be deducted. The amount of system objects (e.g. alarming, trends and internal) can be identified with Scope tool and an 'empty' controller, without customer application. Go to 'SystemObjects > DiagObjHandler'.

Maximum time deviation of POL6.. and POL4.. of the real time clock (RTC)

POL6.. per month	72 s
POL6.. per year	14.6 min
POL4.. per month	78 s
POL4.. per year	15.8 min

2.4 Archive for offline trends

Limits when using circular/interval time, not COV.

Description	POL6xx / POL4xx / VVS10	POL6xx / POL4xx / VVS11	POL6x8 / VVS11	POL46x / VVS11
For single and multi trend				
Archive memory	2 MB	2 MB	32 MB	2 MB
Only single trends (aoArchive/CFG:MultiPerc=0)				
CFG:TrendObjects	1...64	1...64	1...256	1...64
Max. entries per TrendObject	140'400...2160	140'400...2160	2'359'224...9072	140'400...2160
Min. possible circular time (s)	1...55	1...55	1...219	1...55
Only multi trends (aoArchive/CFG:MultiPerc=100), (valid for CFG:MultiEntires=20)				
CFG: MultiObjects	n/a	1...20	1...20	1...20
Max. entries per MultiObject	n/a	21'840...1080	366'912...18270	21'840...1080
Min. possible interval time (s)	n/a	1...18	1...18	1...18



The limits for a mixture of single and multi-trends must be calculated with a calculation sheet. Address to your regional Siemens contact for further support.

2.5 Alarms

Limits of alarm snapshots for POL6.. controllers

Description	POL6.. / VVS10, VVS11
Maximum number of sets of alarm snapshots	10
Maximum number of instances per set	100
Maximum number of values/entries per instance	25

Limits of alarm snapshots for POL4.. controllers

Description	POL4xx / VVS10, VVS11	POL46x / VVS11
Maximum number of sets of alarm snapshots	10	n/a
Maximum number of instances per set	100	n/a
Maximum number of values/entries per instance	25	n/a

3 Integration

3.1 Process bus (PB) / KNX

Limits of PB / KNX for POL6..

Description	POL6xx / VVS10	POL6xx / VVS11	POL6x8/ VVS11
LTE-Mode, Maximum number of mappings	230	230	900
S-Mode, Maximum number of mappings	99	99	253
PL-Link, Maximum number of PL-Link devices (e.g. QMX3.xx)	10	10	32

Limits of PB / KNX for POL4xx

Description	POL4xx / VVS10	POL4xx / VVS11
LTE-Mode, Maximum number of mappings	230	230
S-Mode, Maximum numbers of mappings	99	99
PL-Link, Maximum number of PL-Link devices (e.g. QMX3.xx)	10	10



This solution is not available for POL46x controllers (no Process bus).

3.2 BACnet

Limits of integration with POL6.. and communication modules



Solution provides BACnet Server and BACnet Client.

Communication modules are:

- POL908 – BACnet COM module
- POL909.80 – AWB, Web and BACnet COM module
- POL904 – BACnet MS/TP COM module

Description	POL6xx / VVS10	POL6xx / VVS11	POL6x8/ VVS11
BACnet objects	R300	R300	R300
BBMD networks (only BACnet IP)	10	10	10
IP version (only BACnet IP)	4	4	4



This solution is not available for POL4.. controllers.



For BACnet MS/TP consult relevant BACnet best practice guidelines for number of connected devices and baud rates.

Limits of integration of POL6x8 (onboard) and POL4.. (onboard)



Solution provides BACnet Server.

Description	POL6x8/ VVS11	POL4xx VVS11	POL46x VVS11
BACnet objects	500	150	100
IP version (only BACnet IP)	4	n/a	4



This solution is not available for POL6xx controllers.



For BACnet MS/TP consult relevant BACnet best practice guidelines for number of connected devices and baud rates.

3.3 Modbus IP

Limits of integration for POL6.. (onboard)

Description	POL6xx / VVS10	POL6xx / VVS11	POL6x8 / VVS11
Maximum number of supported slaves	3	3	9
Maximum number of supported masters	3	3	9
Modbus Slave			
Maximum number of bindings (data points)	1999	1999	5999
Maximum number of holding registers	1000	1999	5999
Maximum number of input registers	1000	1999	5999
Maximum number of coil registers	1999	31984	65534
Maximum number of state registers	1999	31984	65534
Maximum mapping string length for 1 object (count of characters)	399	399	399
Modbus Slave Requests			
Read multiple holding/input registers	123	123	123
Read multiple coil/state registers	1968	1968	1968
Write multiple holding registers	123	123	123
Write multiple coil registers	1968	1968	1968
Modbus Master			
Maximum telegram length	252 Byte	252 Byte	252 Byte
Maximum number of registers (every type)	No limit, only Application limit	No limit, only Application limit	No limit, only Application limit

Limits of integration for POL46x (onboard)

Description	POL46x / VVS11
Maximum number of supported slaves	3
Maximum number of supported masters	3
Modbus Slave	
Maximum number of bindings (data points)	1999
Maximum number of holding registers	1999
Maximum number of input registers	1999
Maximum number of coil registers	31984
Maximum number of state registers	31984
Maximum mapping string length for 1 object (count of characters)	399
Modbus Slave Requests	
Read multiple holding/input registers	123
Read multiple coil/state registers	1968
Write multiple holding registers	123
Write multiple coil registers	1968
Modbus Master	
Maximum telegram length	252 Byte
Maximum number of registers (every type)	No limit, only Application limit



This solution is not available for POL4xx controllers.

3.4 Modbus via RS485

Limits of integration for POL6.. (onboard)

Description	POL6xx / VVS10	POL6xx / VVS11	POL6x8 / VVS11
Maximum number of supported slaves	31	31	31
Maximum number of supported masters	1	1	1
Modbus Slave			
Maximum number of bindings (data points)	1999	1999	5999
Maximum number of holding registers	1000	1999	5999
Maximum number of input registers	1000	1999	5999
Maximum number of coil registers	1999	31984	65534
Maximum number of state registers	1999	31984	65534
Maximum mapping string length for 1 object (count of characters)	399	399	399
Modbus Slave Requests			
Read multiple holding/input registers	123	123	123
Read multiple coil/state registers	1968	1968	1968
Write multiple holding registers	123	123	123
Write multiple coil registers	1968	1968	1968
Modbus Master			
Maximum telegram length	252 Byte	252 Byte	252 Byte
Maximum number of registers (every type);	No limit, only Application limit	No limit, only Application limit	No limit, only Application limit

Limits of integration for POL6.. with communication module

Communication module is:

- POL902 – Modbus communication module

Description	POL6.. / VVS10, VVS11
Maximum number of supported slaves	31
Maximum number of supported masters	1
Modbus Slave	
Maximum number of bindings (data points) for • POL902 channel 1 as Modbus slave	1999
Maximum number of bindings (data points) for • POL902 channel 1 and channel 2 as Modbus slaves	1000 + 999
Maximum number of holding registers	1000
Maximum number of input registers	1000
Maximum number of coil registers	1999
Maximum number of state registers	1999
Maximum number of mappings for 1 object	20
Maximum mapping string length for 1 object (count of characters)	499
Modbus Slave Requests	
Read multiple holding/input registers	123
Read multiple coil/state registers	1968
Write multiple holding registers	123
Write multiple coil registers	1968
Modbus Master	
Maximum telegram length	252 Byte
Maximum number of registers (every type)	No limit, only Application limit



When using onboard Modbus slave (RS485/IP) and POL902 module together:

In order not to be limited by the smaller limits, the onboard Modbus slave (RS485/IP) and the POL902 module can be handled in different COM languages (COM1, COM2).

Limits of integration for POL4.. (onboard)

POL4xx controllers are: POL421, POL422, POL423, POL424, POL425 and POL426.

POL46x controllers are: POL461, POL467 and POL468.

This controllers provide Modbus via onboard RS485.

Description	POL4xx / VVS10	POL4xx / VVS11	POL46x / VVS11
Maximum number of supported slaves	31	31	8 or 4/3 *
Maximum number of supported masters	1	1	1
Modbus Slave			
Maximum number of bindings (data points)	1999	1999	1999
Maximum number of holding registers	1000	1999	1999
Maximum number of input registers	1000	1999	1999
Maximum number of coil registers	1999	31984	31984
Maximum number of state registers	1999	31984	31984
Maximum mapping string length for 1 object (count of characters)	399	399	399
Modbus Slave Requests			
Read multiple holding/input registers	123	123	123
Read multiple coil/state registers	1968	1968	1968
Write multiple holding registers	123	123	123
Write multiple coil registers	1968	1968	1968
Modbus Master			
Maximum telegram length	252 Byte	252 Byte	252 Byte
Maximum number of registers (every type)	No limit, only Application limit	No limit, only Application limit	No limit, only Application limit

* The latter numbers "4/3" refer to 'mixed mode'. In 'mixed mode' the total amount of components is 4.

- 4 Modbus slaves possible, when 0 extension module is connected.
- 3 Modbus slaves possible, when 1 extension module is connected.

3.5 M-Bus

Limits of integration for POL6.. with communication module

Communication module is:

- POL907 – M-Bus communication module

Description	POL6.. / VVS10, VVS11
Maximum number of mappings for 1 device	200
Maximum number of M-Bus normal loads (without repeater)	6
Maximum number of M-Bus normal loads (with repeater)	64

Limits of integration for POL4.. (onboard)

Controller is:

- POL426 – Controller with onboard M-Bus
- POL467.75 – Controller with M-Bus

Description	POL4xx / VVS10, VVS11	POL46x / VVS11
Maximum number of mappings for 1 device	200	*
Maximum number of M-Bus normal loads (without repeater)	3	3
Maximum number of M-Bus normal loads (with repeater)	64	64

* configurable with M-Bus interface. Maximum depends on available heap.

3.6 LON

Limits of integration for POL6.. with communication module

Communication module is:

- POL906 – LON COM module

Description	POL6.. / VVS10, VVS11
Mapping for one object	10
Number of characters for mapping string	600
Max. number of SNVTs in POL906 (max. 174 bytes)	62



This solution is not available for POL4.. controllers.

3.7 OPC

Limits of integration for POL6.. and POL46x via OPC DA (via IP)

Description	POL6.. / VVS10, VVS11	POL46x / VVS11
Number of OPC mappings per Climatix device	100	100



This solution is not available for POL4xx controllers.

Restrictions due to license model

Description	Limitation
Number of OPC tags	200,000
Number of connected Climatix controllers	2000

4 Cloud /JSON

Climatix IC Cloud limits

Description	POL6xx / VVS10/11	POL6x8 / VVS11	POL46x /IP VVS11
Cloud connections	1	1	1
Watch pages (including 1 system page)	40	120	40
Cloud mappings (Watch page) (including 27 system data points)	2000	8000	2000
Max. mapping string length per object	399		

Climatix IC JSON limits

Description	POL6xx / VVS10/11	POL6x8 / VVS11	POL46x /IP VVS11
JSON interface (mapping required)			
JSON mappings, number of IDs	500	1500	500
JSON page mappings	20	60	20
Max. mapping string length per object	399		
IDs per requests	10		

Description	POL6xx / VVS10/11	POL6x8 / VVS11	POL46x /IP VVS11
JSON generic interface (no mapping required, but possible)			
OAs and View Nodes	unlimited		
IDs and OAs per request	100		

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