INTEGRA METERING

CALEC® ST III – BACnet® MS/TP

BACnet Protocol Implementation Conformance Statement (=PICS)

Version 03

04.09.2026

1. Product information

Vendor Name: INTEGRA METERING AG (Vendor ID 431)

Product Name: CALEC ST FAMILY BACnet MSTP

Product Model Number: CALEC ST III

BACnet Protocol Version: 1

BACnet Protocol Revision: 18

BACnet Device Profile: B-ASC

BACnet Firmware Revision: V3.00.01

BACnet Application Software Version: V3.01.11

2. Product description

The Thermal Energy Calculator CALEC® STIII can be use in various commercial buildings, apartments, district energy and industrie, mainly for cooling and heating applications.

The system based on signal inputs of two paired temperature sensors and any of e.g. INTEGRA METERING flow meters. CALEC® STIII provides high accuracy e.g. energy, flow, volume, power, mass and temperature data via the local display and various communication protocols, like BACnet MS/TP, Modbus RTU, LON FTT-10A, M-Bus, N2Open and KNX TP1, Wireless M-Bus and LoRaWAN radio technology.

3. Supported BIBBs

Data Sharing - ReadProperty - B	DS-RP-B
Data Sharing - ReadPropertyMultiple - B	DS-RPM-B
Data Sharing - WriteProperty - B	DS-WP-B
Data Sharing – WritePropertyMultiple - B	DS-WPM-B
Data Sharing - COV - B	DS-COV-B
Device Management - Dynamic Device Binding - B	DM-DDB-B
Device Management - Dynamic Object Binding - B	DM-DOB-B
Device Management - DeviceCommunicationControl - B	DM-DCC-B
Device Management - TimeSynchronization - B	DM-TS-B
Device Management - UTCTimeSynchronization - B	DM-UTC-B
Device Management - ReinitializeDevice - B	DM-RD-B

4. Segmentation Capability

Segmentation is not supported.

☐ Able to transmit segmented messages Window Size _____

☐ Able to receive segmented messages Widow Size _____

5. Standard Object Types Supported

✓ **Device related parameters are supported in the Device Object**

✓ **All measurement values are mapped to Analog Input (AI) objects**

✓ **All switching signals are mapped to Binary Output (BO) objects**

6. Device Address Binding

Is static device binding supported? ☐ Yes ☒ **No**

7. Data link Layer Option

MS/TP master. Baud rate(s): 9600, 19200, 38400, 57600, 76800, 115200

MS/TP slave. Baud rate(s): 9600, 19200, 38400, 57600, 76800, 115200

8. Character Sets Supported

ISO 10646 (UTF-8)

9. Maximum ADPDU size in octets

480

10. Default Property Value Restrictions

unsigned-integer: <minimum: 0; maximum: 18446744073709551615>
signed-integer: <minimum: -9223372036854775808; maximum: 9223372036854775807>
real: <minimum: -3.40282347E38; maximum: 3.40282347E38; resolution: 0.01>
double: <minimum: -1.7976931348623157E+308; maximum: 1.7976931348623157E+308; resolution: 0.0001>
date: <minimum: 01-January-1970; maximum: 31-December-2038>
octet-string: <maximum length string: 256>
character-string: <maximum length string: 64>
list: <maximum length list: 10>
variable-length-array: <maximum length array: 10>

11. Device objects

Property Identifier	Property Datatype	Conformance Code	Value
object-identifier	BACnetObjectIdentifier	R	Device id
object-name	CharacterString	W	"Calec ST III BACnet"
object-type	BACnetObjectType	R	device
system-status	BACnetDeviceStatus	R	operational
vendor-name	BACnetObjectIdentifier	R	"INTEGRA Metering AG"
vendor-identifier	Unsigned16	R	431
model-name	CharacterString	R	"CALEC ST III MS/TP"
firmware-revision	CharacterString	R	"V3.00.01"
application-software-version	CharacterString	R	CALEC firmware version
location	CharacterString	W	"No Location set"
description	CharacterString	W	"CALEC BTU METER"
protocol-version	Unsigned32	R	1
protocol-revision	Unsigned32	R	18
protocol-services-supported	BACnetServicesSupported	R	**Supported services:** confirmedCOVNotification subscribeCOV readProperty readPropertyMultiple writeProperty writePropertyMultiple deviceCommunicationControl reinitializeDevice I-am I-have unconfirmedCOVNotification timeSynchronization who-Has who-Is

			utcTimeSynchronization
protocol-object-types-supported	BACnetObjectTypesSupported	R	**Supported object types:** analog-input binary-output device network-port
object-list	BACnetArray[N] of Object Identifier	R	(device), (analog-input, 0), (analog-input, 1), (analog-input, 2), (analog-input, 3), (analog-input, 4), (analog-input, 5), (analog-input, 6), (analog-input, 8), (analog-input, 9), (analog-input, 10), (analog-input, 11), (analog-input, 12), (analog-input, 13), (analog-input, 14), (analog-input, 15), (analog-input, 16), (analog-input, 17), (analog-input, 18), (analog-input, 19), (analog-input, 20), (analog-input, 21), (analog-input, 22), (analog-input, 23), (analog-input, 24), (analog-input, 25),

			(binary-output,0), (binary-output,1), (network-port, 1)
max-apdu-length-accepted	Unsigned32	R	480
segmentation-supported	BACnetSegmentaion	R	no-segmentation
local-time	Time	O	?
local-date	Date	O	?
utc-offset	Integer	W	0 <minimum: -780; maximum: 780>
daylight-savings-status	Boolean	W	?
apdu-timeout	Unsigned32	W	10000 <minimum: 100; maximum: 25500>
number-of-apdu-retries	Unsigned32	W	5 <minimum: 0; maximum: 10>
max-master	Unsigned8	W	127 <minimum: 1; maximum: 127>
max-info-frames	Unsigned8	W	1 <minimum: 1; maximum: 127>
device-address-binding	Unsigned	R	()
database-revision	BACnetAddressBinding	R	?
active-cov-subscriptions	BACnetCOVSubscription	R	()

12. Analog Input Objects

Property Identifier	Property Datatype	Conformance Code	Value
object-identifier	BACnetObjectIdentifier	R	(analog-input, 0-25)
object-name	CharacterString	W	"AI-X-abcdefgh"
object-type	BACnetObjectType	R	analog-input
present-value	REAL	R	? Writable when “out-of-service” is TRUE
description	CharacterString	O	One of: "Energy" "Energy 2/Tariff 1" "Volume" "Volume 2/Tariff 1" "Mass" "Auxiliary counter 1" "Auxiliary counter 2" "Power" "Volume Flow" "Mass Flow" "Temperature hot" "Temperature cold" "Temperature difference" "Density" "Energy tariff 2" "Power 2" "Volume Flow 2" "Energy/Volume tariff R1" "Energy/Volume tariff R2" "Energy/Volume tariff R3" "Energy/Volume tariff R4" "Energy/Volume tariff R5"

			"Energy/Volume tariff R6" "Energy/Volume tariff R7" "Energy/Volume tariff R8"
status-flags	BACnetStatusFlags	R	IN_ALARM, FAULT, OVERRIDDEN, OUT OF SERVICE
event-state	BACnetEventState	R	normal (0), fault (1), offnormal (2), high-limit (3), low-limit (4), life-safety-alarm (5)
reliability	BACnetReliability	O	NO_FAULT_DETECTED, NO_SENSOR, OVER_RANGE, UNDER_RANGE, OPEN_LOOP, SHORTED_LOOP, COMMUNICATION_FAILURE, UNRELIABLE_OTHER
out-of-service	BOOLEAN	W	TRUE, FALSE
update-interval	Unsigned32	R	200
units	BACnetEngineering-Units	W	Unit list ⇨ see “Extended AI-Block description”
cov-increment	REAL	W	1.0

13. Extended AI-Block description

Object Name	Allowed units	Related to value on display
AI-0-Energy	joules, kilojoules, kilojoules-per-kilogram, megajoules, watt-hours, kilowatt-hours, megawatt-hours, btus, kilo-btus, mega-btus, therms, ton-hours	E1 (Menu: Counter)
AI-1 Energy 2/Tariff 1	joules, kilojoules, kilojoules-per-kilogram, megajoules, watt-hours, kilowatt-hours, megawatt-hours, btus, kilo-btus, mega-btus, therms, ton-hours	E2 (Menu: Counter)
AI-2-Volume	cubic-feet, cubic-meters, imperial-gallons, liters, us-gallons	V1 (Menu: Instant)
AI-3 Volume 2/Tariff 1	cubic-feet, cubic-meters, imperial-gallons, liters, us-gallons	V2 (Menu: Instant)
AI-4-Mass	kilograms, pounds-mass, tons *CALEC uses the metric unit (tons), which is displayed on the screen like this. Over BACnet, this metric unit is converted to US unit (short tons).*	M1 (Menu: Counter)
AI-5-Auxiliary counter 1	joules, kilojoules, kilojoules-per-kilogram, megajoules, watt-hours, kilowatt-hours, megawatt-hours, btus, kilo-btus, mega-btus, therms, ton-hours, cubic-feet, cubic-meters, imperial-gallons, liters, us-gallons, kilograms, pounds-mass, tons, no-units	H1 (Menu: Counter)
AI-6-Auxiliary counter 2	joules, kilojoules, kilojoules-per-kilogram, megajoules, watt-hours, kilowatt-hours, megawatt-hours, btus, kilo-btus, mega-btus, therms, ton-hours, cubic-feet, cubic-meters, imperial-gallons, liters, us-gallons, kilograms, pounds-mass, tons, no-units	H2 (Menu: Counter)
AI-8-Power	milliwatts, watts, kilowatts, megawatts, btus-per-hour, kilo-btus-per-hour, horsepower, tons-refrigeration	P1 (Menu: Instant)

AI-9-Volume flow	cubic-feet-per-second, cubic-feet-per-minute, cubic-meters-per-second, cubic-meters-per-minute, cubic-meters-per-hour, imperial-gallons-per-minute, liters-per-second, liters-per-minute, liters-per-hour, us-gallons-per-minute	Qv1 (Menu: Instant)
AI-10-Mass flow	grams-per-second, grams-per-minute, kilograms-per-second, kilograms-per-minute, kilograms-per-hour, pounds-mass-per-second, pounds-mass-per-minute, pound-mass-per-hour, tons-per-hour *CALEC uses the metric unit (tons), which is displayed on the screen like this. Over BACnet, this metric unit is converted to US unit (short tons).*	Qm1 (Menu: Instant)
AI-11-Temperature hot	degrees-Celsius, degrees-Kelvin, degrees-Fahrenheit	Th (Menu: Instant)
AI-12-Temperature cold	degrees-Celsius, degrees-Kelvin, degrees-Fahrenheit	Tc (Menu: Instant)
AI-13-Temperature difference	degrees-Kelvin	dT (Menu: Instant)
AI-14-Density	kilograms-per-cubic-meter	DEN (Menu: Instant)
AI-15 Energy tariff 2	joules, kilojoules, kilojoules-per-kilogram, megajoules, watt-hours, kilowatt-hours, megawatt-hours, btus, kilo-btus, mega-btus, therms, ton-hours	E3 (Menu: Instant)
AI-16-Power 2	milliwatts, watts, kilowatts, megawatts, btus-per-hour, kilo-btus-per-hour, horsepower, tons-refrigeration	P2 (Menu: Instant)
AI-17-Volume flow 2	cubic-feet, cubic-meters, imperial-gallons, liters, us-gallons	Qv2 (Menu: Instant)

AI-18-Energy/Volume tariff R1	joules, kilojoules, kilojoules-per-kilogram, megajoules, watt-hours, kilowatt-hours, megawatt-hours, btus, kilo-btus, mega-btus, therms, ton-hours, cubic-feet, cubic-meters, imperial-gallons, liters, us-gallons	R1 (Menu: Counter)
AI-19-Energy/Volume tariff R2	joules, kilojoules, kilojoules-per-kilogram, megajoules, watt-hours, kilowatt-hours, megawatt-hours, btus, kilo-btus, mega-btus, therms, ton-hours, cubic-feet, cubic-meters, imperial-gallons, liters, us-gallons	R2 (Menu: Counter)
AI-20-Energy/Volume tariff R3	joules, kilojoules, kilojoules-per-kilogram, megajoules, watt-hours, kilowatt-hours, megawatt-hours, btus, kilo-btus, mega-btus, therms, ton-hours, cubic-feet, cubic-meters, imperial-gallons, liters, us-gallons	R3 (Menu: Counter)
AI-21-Energy/Volume tariff R4	joules, kilojoules, kilojoules-per-kilogram, megajoules, watt-hours, kilowatt-hours, megawatt-hours, btus, kilo-btus, mega-btus, therms, ton-hours, cubic-feet, cubic-meters, imperial-gallons, liters, us-gallons	R4 (Menu: Counter)
AI-22-Energy/Volume tariff R5	joules, kilojoules, kilojoules-per-kilogram, megajoules, watt-hours, kilowatt-hours, megawatt-hours, btus, kilo-btus, mega-btus, therms, ton-hours, cubic-feet, cubic-meters, imperial-gallons, liters, us-gallons	R5 (Menu: Counter)
AI-23-Energy/Volume tariff R6	joules, kilojoules, kilojoules-per-kilogram, megajoules, watt-hours, kilowatt-hours, megawatt-hours, btus, kilo-btus, mega-btus, therms, ton-hours, cubic-feet, cubic-meters, imperial-gallons, liters, us-gallons	R6 (Menu: Counter)
AI-24-Energy/Volume tariff R7	joules, kilojoules, kilojoules-per-kilogram, megajoules, watt-hours, kilowatt-hours, megawatt-hours, btus, kilo-btus, mega-btus, therms, ton-hours, cubic-feet, cubic-meters, imperial-gallons, liters, us-gallons	R7 (Menu: Counter)
AI-25-Energy/Volume tariff R8	joules, kilojoules, kilojoules-per-kilogram, megajoules, watt-hours, kilowatt-hours, megawatt-hours, btus, kilo-btus, mega-btus, therms, ton-hours, cubic-feet, cubic-meters, imperial-gallons, liters, us-gallons	R8 (Menu: Counter)

14. Binary Output Object

Property Identifier	Property Datatype	Conformance Code	Value
object-identifier	BACnetObjectIdentifier	R	(binary-output, 0-1)
object-name	CharacterString	W	"BO-X" (X=[0, 1])
object-type	BACnetObjectType	R	binary-output
present-value	REAL	W	?
description	CharacterString	W	One of: “Relay 1” “Relay 2”
status-flags	BACnetStatusFlags	R	IN_ALARM, FAULT, OVERRIDDEN, OUT OF SERVICE
event-state	BACnetEventState	R	normal (0), fault (1), offnormal (2), high-limit (3), low-limit (4), life-safety-alarm (5)
out-of-service	BOOLEAN	W	TRUE, FALSE
polarity	BACnetPolarity	W	NORMAL, REVERSE
priority-array	BACnetPriorityArray	R	{NULL, NULL, NULL, NULL, NULL, NULL, NULL, NULL, NULL, NULL, NULL, NULL, NULL, NULL, NULL, NULL}
relinquish-default	BACnetBinaryPV	W	INACTIVE

15. Network Port Object

Property Identifier	Property Datatype	Conformance Code	Value
object-identifier	BACnetObjectIdentifier	R	(network-port, 1)
object-name	CharacterString	W	"Network-Port-Object MS/TP"
object-type	BACnetObjectType	R	network-port
description	CharacterString	O	"MS/TP data-link parameters"
network-number	Unsigned	R	?
network-number-quality	BACnetNetworkNumberQuality	R	unknown, learned, learned-configured, configured
status-flags	BACnetStatusFlags	R	IN_ALARM, FAULT, OVERRIDDEN, OUT OF SERVICE
reliability	BACnetReliability	R	NO_FAULT_DETECTED, NO_SENSOR, OVER_RANGE, UNDER_RANGE, OPEN_LOOP, SHORTED_LOOP, COMMUNICATION_FAILURE, UNRELIABLE_OTHER
out-of-service	Boolean	R	TRUE, FALSE

network-type	BACnetNetworkType	R	mstp
protocol-level	BACnetProtocolLevel	R	bacnet-application
changes-pending	Boolean	R	TRUE, FALSE
apdu-length	Unsigned	O	480
mac-address	OctetString	R	X'05'
routing-table	BACnetArray[BACnetRouterEntry]	O	?
link-speed	Real	O	?
link-speeds	BACnetArray[Real]	O	9600,19200, 38400, 57600,76800,115200
link-speed-autonegotiate	Boolean	O	TRUE, FALSE
max-master	Unsigned	W	127
max-info-frames	Unsigned	W	1

16. Object availability list for CALEC ST III

Logic unit	Input 1 function	Input 2 function	Calec ST III BACnet	AI-0 Energy	AI-1 Energy 2/Tariff 1	AI-1 Energy 2/Tariff 1	AI-15 Energy Tariff 2	AI-18 Energy/Volume Tariff R1	AI-19 Energy/Volume Tariff R2	AI-20 Energy/Volume Tariff R3	AI-21 Energy/Volume Tariff R4	AI-22 Energy/Volume Tariff R5	AI-23 Energy/Volume Tariff R6	AI-24 Energy/Volume Tariff R7	AI-25 Energy/Volume Tariff R8	AI-2 Volume	AI-3 Volume 2/Tariff 1	AI-3 Volume 2/Tariff 1	AI-4 Mass	AI-5 Auxiliary counter 1	AI-6 Auxiliary counter 2	AI-8 Power	AI-16 Power 2	AI-9 Volume flow	AI-17 Volume flow 2	AI-10 Mass flow	AI-11 Temperature hot	AI-12 Temperature cold	AI-13 Temperature difference	AI-14 Density	BO-0	BO-1	Network-Port-Object MS/TP
Standard (C0)	Volume	Volume	x	x												x	x					x		x	x		x	x	x	x	x	x
Standard (C0)	Volume	Mass	x	x												x						x		x			x	x	x	x	x	x
Standard (C0)	Volume	Energy	x	x	x											x						x	x	x			x	x	x	x	x	x
Standard (C0)	Volume	Alarm	x	x												x						x		x			x	x	x	x	x	x
Standard (C0)	Volume	HCA	x	x												x					x	x		x			x	x	x	x	x	x
Mass (C1)	Volume	Volume	x	x													x		x			x			x	x	x	x	x	x	x	x
Mass (C1)	Volume	Mass	x	x															x			x				x	x	x	x	x	x	x
Mass (C1)	Volume	Energy	x	x	x														x			x	x			x	x	x	x	x	x	x
Mass (C1)	Volume	Alarm	x	x															x			x				x	x	x	x	x	x	x
Mass (C1)	Volume	HCA	x	x															x		x	x				x	x	x	x	x	x	x
Flow (C2)	HCA	HCA	x																	x	x									x	x	x
Flow (C2)	HCA	Volume	x														x			x					x					x	x	x
Flow (C2)	HCA	Mass	x																	x										x	x	x
Flow (C2)	HCA	Energy	x		x															x			x							x	x	x
Flow (C2)	HCA	Status	x																	x										x	x	x
Flow (C2)	Volume	HCA	x													x					x			x							x	x	x
Flow (C2)	Volume	Volume	x													x	x							x	x						x	x
Flow (C2)	Volume	Mass	x													x								x							x	x
Flow (C2)	Volume	Energy	x		x											x							x	x							x	x
Flow (C2)	Volume	Status	x													x								x							x	x
Flow (C2)	Mass	HCA	x																x		x					x					x	x

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