

Type 8793

Modbus TCP

Objects

Document version 2.00

Supplement to Operating Instructions

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1 History

Document version	Date	Changes
2.00	2022-07-19	Object Route Function is disabled by default Changed wording Config Client → Backup File KPopen and KPclose were interchanged Parameter in display unit zError added Fixed Description of NamurStatus (reserved bits 4-7)
1.03	2019-07-05	Added Description of Object Route Function Changed wording: SIM-Card → Config-Client Fixed cyclic Modbus addresses
1.02	2018-02-01	Add Parameters to start Tunes from fieldbus
1.01	2017-12-21	Initial released version

2 Overview

Used datatypes:

UINT8	8 bit: unsigned integer
UINT16	16 bit: unsigned integer
UINT32	32 bit: unsigned integer
SINT16	16 bit: signed integer
REAL32	32 bit: float value IEEE 754
String	C-string

3 Objects

3.1 Cyclic data

Device and Modbus address ranges

Device address	Modbus address	description	function	access
1... 10000	address - 1	Coils (outputs)	01	read / write
10001 ... 20000	address - 10001	Discrete Inputs	02	read
40001 ... 50000	address - 40001	Holding Registers	03	read / write
30001 ... 40000	address - 30001	Input Registers	04	read

FC	Modbus Address	Device Address	name	description	access type	Backup File
04	0	30001	POS	Current valve position REAL32 in %	RO	
04	2	30003	NamurStatus	Represents the device status ¹⁾ UINT8	RO	
04	4	30005	PV_UserUnit	Current process value REAL32 in display unit	RO	
03	0	40001	CMD	Position set point REAL32 in %	RW	
03	2	40003	PV	Process value used if PV source is bus REAL32 in display unit	RW	
03	6	40007	SP_UserUnit	Process set point REAL32 in display unit	RW	

1)

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
reserved				Namur state: 0 – normal 1 – diagnose active 2 – maintenance required 3 – out of specification 4 – warning 5 - error			

3.2 Acyclic data

3.2.1 Device Data (Offset 1000)

3.2.1.1 Object Route Function

The function is disabled by default.
It can be enabled via the device menu.

FC	Modbus Address	Device Address	name	description	access type	Backup File
03	1000 (0x03E8)	41001	Index / Subindex / NodeID	Target object: Writing Index and Subindex of the object. Index and Subindex are stored in the device description/EDS. The NodeID is always 0. Index: 2 bytes (MSB), Subindex: 1 byte, Node ID: 1 byte (always 0). For write access + 0x00000080 UINT32	RW	
03	1002 (0x03EA)	41003	Data length (write access)	Data length of the write command in bytes, number of valid bytes is not specified for reading. UINT32	RW	
03	1004 (0x03EC)	41005	Value UINT32	Here the value to be written is specified or the readout value is displayed. Data ≤ 4 bytes. UINT32	RW	
03	1006 (0x03EE)	41007	Value String	Is used to read and write texts. Data > 4 bytes. STRING	RW	
03	1016 (0x03F8)	41017	result	Process result: 0 = Command successfully executed > 0 = Error occurred during execution (see "Table 6") 0xFFFFFFFF: Read and write process not yet Concluded UINT32	RO	
03	1018 (0x03FA)	41019	call/cancel	Execute command: 1 = execute 0 = finish UINT8	RW	

3.2.1.2 Control Mode

FC	Modbus Address	Device Address	name	description	access type	Backup File
03	1019 (0x03FB)	41020	Control Mode	UINT32	RW	

3.2.1.3 Buerkert Device Description Object

FC	Modbus Address	Device Address	name	description	access type	Backup File
03	1021 (0x03FD)	41022	Device Name	Unique device name Visible string	RO	
03	1031 (0x0407)	41032	Ident Number	Device ID No. UINT32	RO	
03	1033 (0x0409)	41034	Manufacture Date	Visible string	RO	
03	1043 (0x0413)	41044	Software Ident Number	Uint32 ID No. of firmware UINT32	RO	
03	1045 (0x0415)	41046	Software Version	Version No. of firmware UINT32	RO	
03	1047 (0x0417)	41048	Hardware Version	Version No. of hardware UINT32	RO	
03	1049 (0x0419)	41050	Serial Number	Serial No. device UINT32	RO	

3.2.2 Position Controller Parameter (Offset 200)

FC	Modbus Address	Device Address	name	description	access type	Backup File
03	200 (0xC8)	40201	DBDx	Deadband of the position controller in % REAL32	RW	X
03	202 (0xCA)	40203	KPclose	Proportional gain for closing the valve SINT16	RW	X
03	203 (0xCB)	40204	KPopen	Proportional gain for opening the valve SINT16	RW	X
03	204 (0xCC)	40205	mCHARACT	Charact curve selected 0: No charact curve 1:Charact Curve 1:25 2:Charact Curve 1:33 3:Charact Curve 1:50 4:Charact Curve 25:1 5:Charact Curve 33:1 6:Charact Curve 50:1 7:FREE (See CHARACTy for defining the values) See User Manual for description of the function. SINT16	RW	X
03	205 (0xCD)	40206	CUTOFFmin	Lower CUTOFF level in % SINT16	RW	X
03	206 (0xCE)	40207	CUTOFFmax	Upper CUTOFF level in % SINT16	RW	X
03	208 (0xD0)	40209	POSmin	Lower position for X.LIMIT in % SINT16	RW	X
03	209 (0xD1)	40210	POSmax	Upper position for X.LIMIT in % SINT16	RW	X

03	210 (0xD2)	40211	XTIMEopen	Limited opening time of the valve in s (X.TIME) REAL32	RW	X
03	212 (0xD4)	40213	XTIMEclose	Limited closing time of the valve in s (X.TIME) REAL32	RW	X
03	214 (0xD6)	40215	mDIRact	0: direct effective direction (deaerated → 0 %; aerated 100 %) 1: inverse effective direction (deaerated → 100 %; aerated 0 %) See User Manual for description of the function. SINT16	RW	X
03	215 (0xD7)	40216	mSAFEpos	Position used as safepos in % SINT16	RW	X
03	216 (0xD8)	40217	TUNEflags	0 if last tune was successful UINT8	RO	
03	217 (0xD9)	40218	Menu_Items	Bitfield to Activate/Deactivate functions from ADD.FUNCTION menu Bit0 – Bit6: unused Bit7: CHARACT Bit8: CUTOFF Bit9: DIR.CMD Bit10: DIR.ACT Bit11: SPLTRNG Bit12: X.LIMIT Bit13: X.TIME Bit14: X.CONTROL Bit15: P.CONTROL (only 8693/8793) Bit16: SECURITY Bit17: SAFEPOS Bit18: SIG.ERROR Bit19: BINARY.IN Bit20: OUTPUT Bit21: CAL.USER Bit22: SET.FACTORY Bit23: SERVICE.BUES Bit24: EXTRAS Bit25: POS.SENSOR (only type 879X) Bit26: SERVICE Bit27: SIMULATION Bit28: DIAGNOSE Bit29: F.CONTROL (only with FMR option) UINT32	RW	X
03	219 (0xDB)	40220	startTune	Start Tune via fieldbus 2: X.Tune 9: P.Q.Lin 10 : P.Tune startTune is set back from device 0:TUNE successfully started 255:TUNE could not be started Tune has finished when zOPmode changed back to Auto or Manual mode. Get result of last tune by reading object TUNEflags *since Release B.02.01 UINT8	RW	
03	220 (0xDC)	40221	z_OPmode	Get the current operating mode 0: Auto 1: Manual mode 2: X.Tune 9: P.Q.Lin	RO	

				10 : P.Tune *since Release B.02.01 UINT8		
03	222 (0xDE)	40223	CHARACTy1	freely programmable characteristic node 1 SINT16	RW	X
03	223 (0xDF)	40224	CHARACTy2	freely programmable characteristic node 2 SINT16	RW	X
03	224 (0xE0)	40225	CHARACTy3	freely programmable characteristic node 3 SINT16	RW	X
03	225 (0xE1)	40226	CHARACTy4	freely programmable characteristic node 4 SINT16	RW	X
03	226 (0xE2)	40227	CHARACTy5	freely programmable characteristic node 5 SINT16	RW	X
03	227 (0xE3)	40228	CHARACTy6	freely programmable characteristic node 6 SINT16	RW	X
03	228 (0xE4)	40229	CHARACTy7	freely programmable characteristic node 7 SINT16	RW	X
03	229 (0xE5)	40230	CHARACTy8	freely programmable characteristic node 8 SINT16	RW	X
03	230 (0xE6)	40231	CHARACTy9	freely programmable characteristic node 9 SINT16	RW	X
03	231 (0xE7)	40232	CHARACTy10	freely programmable characteristic node 10 SINT16	RW	X
03	232 (0xE8)	40233	CHARACTy11	freely programmable characteristic node 11 SINT16	RW	X
03	233 (0xE9)	40234	CHARACTy12	freely programmable characteristic node 12 SINT16	RW	X
03	234 (0xEA)	40235	CHARACTy13	freely programmable characteristic node 13 SINT16	RW	X
03	235 (0xEb)	40236	CHARACTy14	freely programmable characteristic node 14 SINT16	RW	X
03	236 (0xEC)	40237	CHARACTy15	freely programmable characteristic node 15 SINT16	RW	X
03	237 (0xED)	40238	CHARACTy16	freely programmable characteristic node 16 SINT16	RW	X
03	238 (0xEE)	40239	CHARACTy17	freely programmable characteristic node 17 SINT16	RW	X
03	239 (0xEF)	40240	CHARACTy18	freely programmable characteristic node 18 SINT16	RW	X
03	240 (0xF0)	40241	CHARACTy19	freely programmable characteristic node 19 SINT16	RW	X
03	241 (0xF1)	40242	CHARACTy20	freely programmable characteristic node 20 SINT16	RW	X
03	242 (0xF2)	40243	CHARACTy21	freely programmable characteristic node 21 SINT16	RW	X
03	221 (0xDD)	40222	mDIRcmd	0: Rise (direct effective direction) 1: Fall (inverse effective direction) See User Manual for description of the function. SINT16	RW	X
03	243 (0xF3)	40244	zError	Bit0 – Bit9: internal Bit10: cable break PV Bit11: cable break CMD Bit12: cable break SP Bit13: cable break PT100 Bit 14: cable break P1	RO	

				<i>Bit15: cable break P2</i> <i>Bit16: cable break MTMP</i> <i>Bit17 – Bit20: internal</i> <i>Bit21: WMS signal error</i> <i>Bit22: Puck signal too weak</i> <i>Bit23: CMD out of specification</i> <i>Bit24: SP out of specification</i> <i>Bit25: PV out of specification</i> <i>Bit26: MTMP out of specification</i> <i>UINT32</i>		
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3.2.3 Process Controller Parameter (Offset 400)

FC	Modbus Address	Device Address	name	description	access type	Backup File
03	400 (0x190)	40401	DBDp	Deadband of process controller in % (Scaled with PVmin and PVmax) REAL32	RW	X
03	402 (0x192)	40403	KP	Proportional gain of the process controller REAL32	RW	X
03	404 (0x194)	40405	TN	Integral action time of the process controller in s REAL32	RW	X
03	406 (0x196)	40407	TV	Derivative action time of the process controller in s REAL32	RW	X
03	408 (0x198)	40409	X_0	Operating point of the process controller, position in % REAL32	RW	X
03	410 (0x19A)	40411	mPCONsetp	0: Input of the set-point value on the process level 1: Default of the set-point value via fieldbus input SINT16	RW	X
03	411 (0x19B)	40412	mPCONinp	Selecting the type of analog input for ProcessValue of the process controller 1: 4-20 mA 2: Frequency 3: PT100 4: BueS/Fieldbus SINT16	RW	X
03	412 (0x19C)	40413	FTfgPV	Predefined filter setting Values for the process value input 0: Filter 0 (10 Hz) 1: Filter 1 (5 Hz) 2: Filter 2 (2 Hz) 3: Filter 3 (1 Hz) 4: Filter 4 (0,5 Hz) 5: Filter 5 (0,2 Hz) 6: Filter 6 (0,1 Hz) 7: Filter 7 (0,07 Hz) 8: Filter 8 (0,05 Hz) 9: Filter 9 (0,03 Hz) SINT16	RW	X
03	413 (0x19D)	40414	SCALunit	Unit of process controller 0: l/s ¹ 1: l/min ¹ 2: l/h ¹ 3: m ³ /min ¹ 4: m ³ /h ¹ 5: UG/s ¹ 6: UG/min ¹ 7: UG/h ¹ 8: IG/s ¹ 9: IG/min ¹ 10: IG/h ¹ 11: °C ² 12: °F ² 13: m/s	RW	X

¹ mPCONinp = 2 (Frequency) can only use values 0 - 10

² mPCONinp = 3 (PT100) can only use values 11 and 12

				14: bar 15: mbar 16: psi 17: % 18: mm 19: m 20: Liter 21 : NI/s 22 : NI/min 23 : NI/h 24: none SINT16		
03	414 (0x19E)	40415	SCALdp	Decimal point of process controller scaling (0-3) SINT16	RW	X
03	415 (0x19F)	40416	PVmin	Lower scaling point PV (display unit) REAL32	RW	X
03	417 (0x1A1)	40418	PVmax	Upper scaling point PV (display unit) REAL32	RW	X
03	419 (0x1A3)	40420	SPmin	Lower scaling point SP (display unit) REAL32	RW	X
03	421 (0x1A5)	40422	SPmax	Upper scaling point SP (display unit) REAL32	RW	X
03	423 (0x1A7)	40424	mCUTOFFtype	0: CUTOFF function is based on SP 1: CUTOFF function is based on CMD See User Manual for description of the function. SINT16	RW	X
03	424 (0x1A8)	40425	mERRpinp_func	0: signal break detection of PV inactive 1: signal break detection of PV active SINT16	RW	X
03	425 (0x1A9)	40426	mSPOSpinp_func	0: no safepos when PV signal break detected 1: safepos when PV signal break detected Requires that mERRpinp_func is activated SINT16	RW	X
03	426 (0x1AA)	40427	mPCONact	Deactivate process controller via bueS/fieldbus 0: process controller inactive 1: process controller active UINT8	RW	X

4 Unit conversion

Display Unit	bueS specific SI Unit	Scaling factor
l/s	l/min	1/60
l/min	l/min	1
l/h	l/min	60
m³/min	l/min	1/1000
m³/h	l/min	60/1000
UG/s	l/min	1/(3.7854 * 60)
UG/min	l/min	1/3.7854
UG/h	l/min	60/3.7854
IG/s	l/min	1/(4.5461 * 60)
IG/min	l/min	1/4.5461
IG/h	l/min	60/4.5461
°C	K	$T_{°C} = T_K - 273.15$ °
°F	K	$T_{°F} = T_K * 1.8 - 459.67$
m/s	m/s	1
bar	Pa	1/100000
mbar	Pa	1/100
psi	Pa	1.450377e-4
%	%	1
mm	m	1000
m	m	1
l	l	1
NI/s	NI/min	1/60
NI/min	NI/min	1
NI/h	NI/min	60