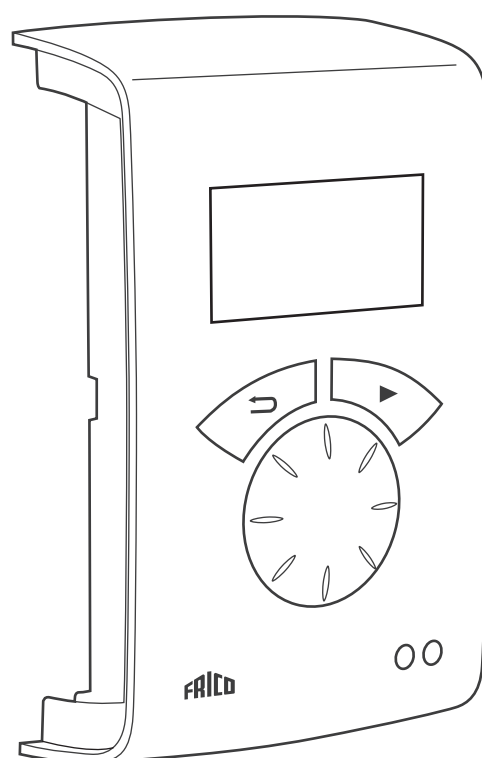


Original instructions

SIRe Advanced

Modbus communication



SIRe Modbus

This manual describes how to connect SIRe Advanced with Modbus/RTU via RS485, the technical specification of the protocol in SIRe, the parameters and their use.

For more information about other functions in SIRe, please see the main manual.

For more information about Modbus please contact your BMS supplier or www.modbus.org

Connection

Modbus/RTU via RS485, connects on a 3 pole contact on terminal [BUS] on the SI-ReA1N.

What information is presented

Please see list of parameters.

What information is not presented

Information regarding run times for each individual unit is stored on the B1-pcb and can only be viewed locally.

Modbus Information

Supported functions

Function codes 01, 02, 03, 04, 05, 06, 08, 15, and 16 are supported. Diagnostics (08) supports sub-codes 0, 2, 10, 11, 12, 13, and 14.

PDU length

Maximum PDU length is 256 bytes.

Supported network topology

General 2-wire topology described in Modbus specifications is supported. Multiple slaves are supported.

Software supports only RTU mode; ASCII mode serial transmission is not supported.

Ground level

Internal and external bus shares the same common ground, the RS-485 signals are not isolated.

Start and stop bits

One start bit, one stop bit.

Parity

Current software uses only 'None' parity mode.

Broadcast

Broadcast not supported because A1 fails to not to respond broadcast.

Setting values outside valid range

If written values are outside their allowed range, they will be set to the nearest value which is in the range.

Bus termination

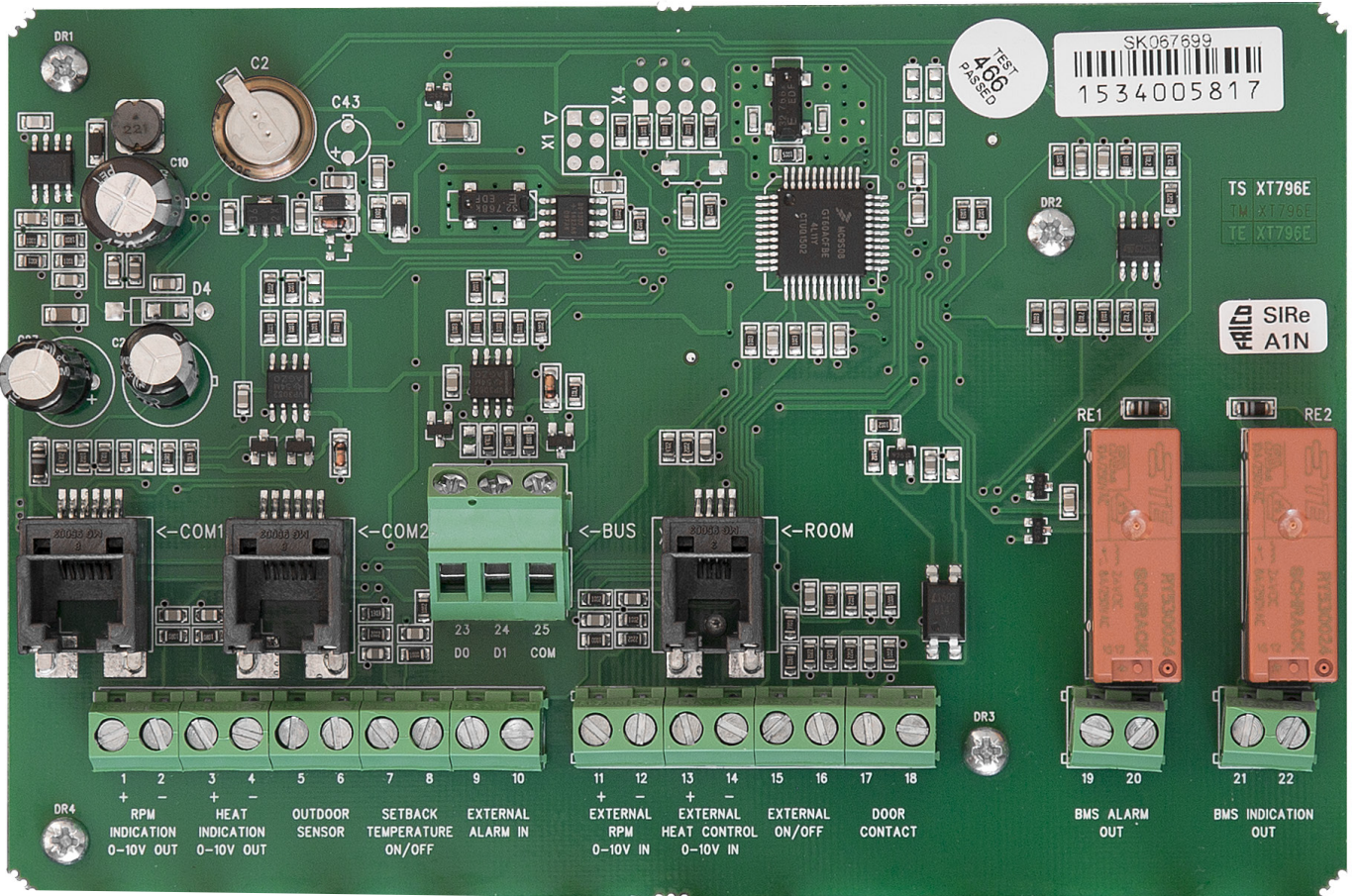
Bus is not terminated but it has 4.7 kohm pull-up and pull-down resistors.

Registers used

Coils, discrete inputs, and input registers are supported, but there are no registers. So the response is always "Illegal data address".

Holding register

16 bit integer register R/W



Terminal	Modbus/RTU	RS-485 (EIA/TIA-485)	Function	
23	D0	A/A'	Non-inverting	Pull-down [-]
24	D1	B/B'	Inverting	Pull-up [+]
25	Com	C/C'	Signal ground	

SIReUA1 Menu structure - Gateway functions

> Installer menu
Mixing cabinet
External control
 General settings

> Installer menu > External control
 0-10V fan control
 0-10V heat control
Gateway functions

> Installer menu > External control > Gateway functions
System on/off enable
 Room temp. enable
 Outdoor temp. enable
 =4x00051

> Installer menu > External control > Gateway functions
Fan speed enable
Heating step enable
 Door position enable
 =4x00049

> Installer menu > External control > Gateway functions
System on/off enable
 Room temp. enable
 Outdoor temp. enable
 =4x00046

> Installer menu > External control > Gateway functions
Heating step enable
 Door position enable
 Week program enable
 =4x00050

> Installer menu > External control > Gateway functions
 Room temp. enable
Outdoor temp. enable
 Water temp. enable
 =4x00047

> Installer menu > External control > Gateway functions
 Door position enable
Week program enable
 Modbus ID
 =4x00052

> Installer menu > External control > Gateway functions
 Outdoor temp. enable
Water temp. enable
 Fan speed enable
 =4x00086

> Installer menu > External control > Gateway functions
Week program enable
 Modbus ID
 Baud rate
 Set using UA1

> Installer menu > External control > Gateway functions
Water temp. enable
Fan speed enable
 Heating step enable
 =4x00048

> Installer menu > External control > Gateway functions
Week program enable
 Modbus ID
 Baud rate
 Set using UA1

Baud rate and Modbus ID is set locally, using the control panel, SIReUA1, see menu structure.

Explanation:



Ambient

Electrically heated

Water heated

AC Air Curtains

FH Fan Heaters

All All type

Modbus Register	Min	Max	Unit	Type	Notes
4x000001	-1500	1500	0.1°C	All	Read or write room temperature. To write: set parameter 4x000046=1
4x000002	-1500	1500	0.1°C	All	Read or write outdoor temperature. To write: set parameter 4x00047=1
4x000003	0	100	%	All	Read or write fan speed. To write: set parameter 4x00048=1
4x000004	0	100	%	All	Read or write heat step. To write: set parameter 4x00049=1
4x000005	0	1		AC	0 = Closed door, 1 = Open door. To write: set parameter 4x00050=1
4x000006	0	1		All	0 = Off, 1 = On. To write: set parameter 4x00051=1
4x000007	0	2		All	0 = Off, 1 = Day, 2 = Night. To write: set parameter 4x00052=1
4x000008	5	35	°C	All	Temperature setpoint during Day time (default value)
4x000009	5	35	°C	All	Temperature setpoint when Night is active
4x000010	0	100	%	All	Limits the fans maximum speed (For AC, at open door)
4x000011	0	100	%	AC	Speed limit at closed door
4x000012	0	1		All	0 = Summer (no heat), 1 = Winter (Heat available) Parameter not active in Advanced.
4x000013	0	2		AC	0 = Auto, 1 = Fix Open/Close, 2 = Fix open Set depending on use of door (Always open, open/closed or a mix.)
4x000014	0	3		FH	0 = Auto, 1 = Thermostat, Manual fan, 2 = Thermostat, Auto fan, 3 = Manual
4x000015	0	1		All	0 = Off, 1 = On Used for controlling a unit with frequency inverter, EC-motors or other 0-10VDC controlled fan.
4x000016	-30	30	°C	AC	At what outside temperature the AC should run at high speed during winter conditions
4x000017	-30	30	°C	AC	At what outside temperature the AC should run at low speed during winter conditions
4x000018	-30	30	°C	AC	At what outside temperature the AC should run at low speed during summer conditions
4x000019	-30	30	°C	AC	At what outside temperature the AC should run at high speed during summer conditions
4x000020	0	1		AC	0 = Auto, 1 = User See main manual for function description.
4x000021	0	180	s	AC	Reads currently used overrun time when 4x00020=0 and not the manually set value. Rounds to nearest multiple of 10. Manually set overruntime for High speed when parameter 4x00020=1
4x000022	0	500	s	AC	Set overruntime for low speed when parameter 4x00020=1
4x000023	5	35	°C	All	Blocks the heat when value on outdoorsensor is above set value.
4x000024	0	1		All	0 = Eco, 1 = Comfort. See main manual for function description.
4x000025	0	10,0	0,1°C	AC	Increase of temperature set value when the door opens.
4x000026	0	10,0	0,1°C	All	The temperature difference between activation of electrical heating steps or increase of fan speed for water heated FH.
4x000027	-10,0	10,0	K	All	Offset of the room temperature value
4x000028	-10,0	10,0	K	All	Offset of the outdoor temperature value
4x000029	0	1		🔹	0 = Room, 1 = Return water. If WTA is used, set 4x00029=1
4x000030	0	90	°C	🔹	Maximum temperature of return water when WTA is used (temp. > [set value] reduces the waterflow)
4x000031	0	3	Step	All	Limit the heat, when using stepless heat, 0-100%

Modbus	Register	Min	Max	Unit	Type	Notes
4x00032	Stepless heat control	0	1		All	0 = Off, 1 = On. For water heated units 4x00032=1. For electrical units additional external components must be used for stepless heat.
4x00033	Control range limit	5	35	°C	All	Limits a Users maximum set value
4x00034	Filter timer on/off	0	1		All	0 = Off, 1 = On. Activates the filter timer
4x00035	Filter timer setting	0	9950	h	All	Set countdown time for the filter alarm. Rounds to nearest multiple of 50.
4x00036	External filter guard	0	1		All	0 = Off, 1 = On. Activate if external filter guard is connected to terminals 9 and 10.
4x00037	Last filter change HCFL			h	All	Time since last filter change. Read only
4x00038	Mixing cabinet ctrl ON/OFF	0	1		FH	0 = Off, 1 = On. Activate when fan heater is used together with mixing cabinet.
4x00039	Min outlet temp.	5	35	°C	FH	Set minimum air outlet temperature.
4x00040	Day damper pos. DPD	0	100	%	FH	sets damper position during day time or if no week program is used
4x00041	Night damper pos. DPN	0	100	%	FH	sets damper position during night time
4x00042	External on/off ON/OFF	0	1		All	0 = Off, 1 = On (ExternalOnOffEnable) A1XT15-16 Activate if external On/Off signal is connected to terminals 15 and 16
4x00043	0-10V fan control ON/OFF	0	1		All	0 = Off, 1 = On (ExternalFanControlEnable) A1XT11-12 Activate if external fan rpm signal is connected to terminals 11 and 12
4x00044	0-10V heat control ON/OFF	0	1		All	0 = Off, 1 = On (ExternalHeatControlEnable) A1XT13-14 Activate if external heat signal is connected to terminals 13 and 14
4x00045	Set point correction	-10	10	°C	All	If central sensor is used and offset is required
4x00046	Enable ext. room temp.	0	1		All	0 = Off, 1 = On Set =1 if BMS should write value to S1Re
4x00047	Enable ext. outd. temp.	0	1		All	0 = Off, 1 = On Set =1 if BMS should write value to S1Re
4x00048	Enable ext. fan speed	0	1		All	0 = Off, 1 = On Set =1 if BMS should write value to S1Re
4x00049	Enable ext. heating step	0	1		All	0 = Off, 1 = On Set =1 if BMS should write value to S1Re
4x00050	Enable ext. door contact	0	1		AC	0 = Off, 1 = On Set =1 if BMS should write value to S1Re
4x00051	Enable ext. on/off	0	1		All	0 = Off, 1 = On Set =1 if BMS should write value to S1Re
4x00052	Enable ext. week prgm.	0	1		All	0 = Off, 1 = On Set =1 if BMS should write value to S1Re
4x00053	Clock, year	2010	2099		All	Reading year copies system clock to internal buffer. All reads and writes are from/to internal buffer. Writing seconds copies time from internal buffer to system clock.
4x00054	Clock, month	1	12		All	
4x00055	Clock, day of month	1	31		All	
4x00056	Clock, hours	0	23	h	All	
4x00057	Clock, minutes	0	59	m	All	
4x00058	Clock, seconds	0	59	s	All	
4x00059	Max over run time Delay/ DelayF	10	300	s	All	Fan overrun countdown after heat has been on. Rounds to nearest multiple of 10.
4x00060	It over run stop T	10	40	°C	All	If internal temp. Drops below set value during overrun countdown, the fan stops.
4x00061	Time interval stages ET	1	10	min	AC	During the function Stages (see main manual) the roomtemp is measured every [set value] minute

Modbus	Register	Min	Max	Unit	Type	Notes
4x00062	Functionality mode Comp/Adv	0	1		All	0 = Advanced, 1 = Competent. Set functionlevel. If competent is set, the system ignore outdoor sensor value or errors
4x00063	Min. water flow 0-3V, 0,1V step	0	30	0,1V	🔥	Set minimum waterflow when valve is closed. 0,1V=1%
4x00064	Door contact func. NC/NO	0	1		AC	0 = NC, 1 = NO. (Only physical contact). Invert door contact function
4x00065	It_react	5	15	°C	🔥	Frost protection: Internal temp sensor Set value opens valve
4x00066	It_alarm	5	15	°C	🔥	Frost protection: Internal temp sensor Set value opens valve , stops fan and closes damper
4x00067	RTG_react	5	20	°C	🔥	Frost protection: Return water sensor (WTA) Set value opens valve
4x00068	RTG_alarm	5	20	°C	🔥	Frost protection: Return water sensor (WTA) Set value opens valve , stops fan and closes damper
4x00069	Min. return temp.	5	30	°C	🔥	Frost protection: At stationary fan, [Set value] is the minimum return water temperature.
4x00070	Device ID Read only:				All	1=AC1, 2=AC2..., 129=AH1, 130=AH2... 254/255=Unknown or error. Unit program, Reads from B1. Depends on unit. Should not be changed.
4x00071	Motor alarm TK	0	1		All	0 = Normal, 1 = Disabled. Activate/Deactivate motorprotection alarm
4x00072	Over heating alarm ON/OFF	0	1		All	0 = Normal, 1 = Disabled. Activate/Deactivate internal over heat alarm
4x00073	Outlet temp. Limit	20	100	°C	All	[Set value] limits the air outlet temperature in Comfort mode, overrides set
4x00074	Outlet temp. limit Eco	20	100	°C	All	[Set value] limits the air outlet temperature in Eco mode (32°C) Heat decreases
4x00075	Outlet temp. limit Diff	0	100	0,1°C	All	[Set value] above outlet temp. Limit, Heat=0
4x00076	Outlet temp. limit Alarm	30	100	°C	All	[Set value] = overheat alarm
4x00077	Installation year				All	Read only. For information only.
4x00078	Installation month				All	Read only. For information only.
4x00079	Installation day				All	Read only. For information only.
4x00080	Reserved for future use, no access.					
4x00081	Return water temperature. (WTA)				🔥	SiRe to receive water temp. from BMS. Write/Read to/from BMS. To write: set parameter 4x00086=1
4x00082	Mixing Cab. Outdoor temp. limit	-50	50		FH	
4x00083	Reserved for future use, no access.					
4x00084	Modbus ID				All	Read only.
4x00085	Baud rate				All	0 = 2400, 1 = 4800, 2 = 9600, 3 = 19200, 4 = 38400, 5 = 57600
4x00086	Enable ext. return water temp.	0	1		🔥	1 = Off, 1 = On. Set =1 if BMS should write value to SiRe
4x00087	Reserved for future use, no access.					
4x00088	Reserved for future use, no access.					
4x00089	Reserved for future use, no access.					
4x00090	Reserved for future use, no access.					
4x00100	Reset alarm	0	1		All	Reads 1 if at least one alarm is active. Write 1 to reset all alarms.
4x00101	E1 Communication error	0	1		All	Communication error may sometimes not be presented via Modbus.
4x00102	E2 two or more B1 have same ID	0	1		All	Please see QG/main manual for information regarding alarm and errors.

Modbus	Register	Min	Max	Unit	Type	Notes
4x00103	E3 B1 without program	0	1			Please see QG/main manual for information regarding alarm and errors.
4x00104	E4 Missing/faulty RTX sensor on B1	0	1			Please see QG/main manual for information regarding alarm and errors.
4x00105	Always zero, writes ignored					
4x00106	E6 Faulty RTG sensor on B1	0	1			Please see QG/main manual for information regarding alarm and errors.
4x00107	E7 Missing RTG (when mandatory)	0	1			Please see QG/main manual for information regarding alarm and errors.
4x00108	E8 It sensor error	0	1			Please see QG/main manual for information regarding alarm and errors.
4x00109	Always zero, writes ignored					
4x00110	E10 two B1 with different program	0	1			Please see QG/main manual for information regarding alarm and errors.
4x00111	Always zero, writes ignored					
4x00112	E12 Missing/faulty RTX on A1X	0	1			Please see QG/main manual for information regarding alarm and errors.
4x00113	Always zero, writes ignored					
4x00114	E14 Outdoor sensor error	0	1			Please see QG/main manual for information regarding alarm and errors.
4x00115	Always zero, writes ignored					
4x00116	Always zero, writes ignored					
4x00117	Always zero, writes ignored					
4x00118	Always zero, writes ignored					
4x00119	Always zero, writes ignored					
4x00120	Always zero, writes ignored					E20 not available through Modbus. Please see QG/main manual for more information.
4x00121	E21 Sensor error in UA1	0	1			
4x00122	Always zero, writes ignored					E22 not available through Modbus. Please see QG/main manual for more information.
4x00123	E23 Incompatible B1					Units with software from different generations. Require exchange of components, contact Frico
4x00124	Always zero, writes ignored					
4x00125	Always zero, writes ignored					
4x00126	Always zero, writes ignored					
4x00127	Always zero, writes ignored					
4x00128	Always zero, writes ignored					
4x00129	A1 Motor alarm					
4x00130	A2 Overheat alarm	0	1			Please see QG/main manual for information regarding alarm and errors.
4x00131	A3 Freeze alarm	0	1			Please see QG/main manual for information regarding alarm and errors.
4x00132	A4 Filter alarm					
4x00133	A5 External alarm					
4x00134	Reserved for future use, no access.					
4x00135	Reserved for future use, no access.					
Empty	Empty					Empty

