EtherNet/IP Communication Converter

COM-ML [For SRZ] Communication Data List

IMR02E07-E2

Thank you for purchasing this RKC product. In order to achieve maximum performance and ensure proper operation of your new instrument, carefully read all the instructions in this manual. Please place this manual in a convenient location for easy reference.

This manual describes the communication data of the COM-ML. For the installation, the detail handling procedures and various function settings, please read if necessary the following separate manuals.

- COM-ML [For SRZ] Installation Manual (IMR02E05-E□): Enclosed with COM-ML
- COM-ML [For SRZ] Quick Instruction Manual (IMR02E06-E□): Enclosed with COM-ML
- COM-ML [For SRZ] Instruction Manual (IMR02E08-E□): Separate (Download or sold separately)

The above manuals can be downloaded from our website:
URL: http://www.rkcinst.com/english/manual_load.htm

1. EXPLANATION OF DATA MAP ITEMS

The communication data map shows data which can be used for communication between the PLC/host computer and COM-ML.

Name: Name of communication data
Symbols
❑: Data for each SRZ unit
♠: Data for each channel
On a Z-TIO module (2-channel type), the communication data of CH3 and CH4 becomes invalid.
♦: Data for each module
★: Parameters which can be used in multi-memory area function
♣: Parameters only used for heat/cool control or position proportioning control, therefore data for CH2 and CH4 of Z-TIO module are unused. [Read is possible (0), but the result of Write is disregarded.]

RKC Identifier: Communication identifier of RKC communication

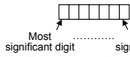
Modbus register address:
A register address of Modbus and EtherNet/IP data item specification
HEX: Hexadecimal DEC: Decimal

Digits: The number of communication data digits in RKC communication

Attribute: A method of how communication data items are read or written when viewed from the host computer is described
RO: Read only data (Host computer or PLC ← The controller)
R/W: Read and Write data (Host computer or PLC ↔ The controller)

Data range and Number of data:
Read or Write range of communication data
[ ]: Number of data (This is the maximum number per communication data that can be handled by one SRZ unit.)

- ASCII code data (Example: 7 digits)



- 16-bit data

Factory set value: Factory set value of communication data

2. COMMUNICATION DATA MAP

■ Communication data of COM-ML

Name	RKC Identifier	Modbus register address HEX	Modbus register address DEC	Digits	Attribute	Data range and Number of data	Factory set value
Model code ♦ (COM-ML)	ID	—	—	32	RO	Model code (character)	—
Model code ♦ (Function module*)	IE	—	—	32	RO	Model code (character) [100]	—
ROM version ♦ (COM-ML)	VR	—	—	8	RO	ROM version	—
ROM version ♦ (Function module*)	VQ	—	—	8	RO	ROM version [100]	—
Integrated operating time monitor ♦ (COM-ML)	UT	—	—	7	RO	0 to 19999 hours	—
Integrated operating time monitor ♦ (Function module*)	UV	—	—	7	RO	0 to 19999 hours [100]	—
Error code ❑ (COM-ML)	ER	0000	0	7	RO	• RKC communication 1: Adjustment data error 2: Data back-up error [1] 4: A/D conversion error 32: Logic output data error 64: Stack overflow [2] 512: Network module error [2] • Modbus b0: Adjustment data error b1: Data back-up error [1] b2: A/D conversion error b3, b4: Unused b5: Logic output data error b6: Stack overflow [2] b9: Network module error [2] b7, b8 and b10 to b15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 615] For the identifier ER, the error condition is shown by the *OR* of each module. When multiple errors occur, the error No. is the sum value. [1] Common item of the COM-ML and function module [2] Item of the COM-ML [COM-ML: 1, Z-TIO and Z-DIO: 100]	—
Error code ♦ (Function module*)	EZ	0001 ⋮ 0064	1 ⋮ 100	7	RO		—
Backup memory state monitor ♦ (COM-ML)	EM	0065	101	1	RO	0: The content of the backup memory does not coincide with that of the RAM. 1: The content of the backup memory coincides with that of the RAM. [COM-ML: 1, Z-TIO and Z-DIO: 100]	—
Backup memory state monitor ♦ (Function module*)	CZ	0066 ⋮ 00C9	102 ⋮ 201	1	RO		—
Unused	—	00CA ⋮ 00CB	202 ⋮ 203	—	—	—	—
Network error code ❑	ES	00CC	204	7	RO	0: Normal 1: Network operation not possible [1]	—
Unused	—	00CD ⋮ 0131	205 ⋮ 305	—	—	—	—

* Function module: Z-TIO-A/B module or Z-DIO module

Name	RKC Identifier	Modbus register address HEX	Modbus register address DEC	Digits	Attribute	Data range and Number of data	Factory set value
Monitor for the number of connected modules ❑	QK	0132	306	7	RO	0 to 31 [1]	—
RUN/STOP transfer (Each SRZ unit) ❑	SR	0133	307	1	R/W	0: STOP (Control stop) 1: RUN (Control start) [1]	0
RUN/STOP transfer (Each module) ♦	SW	0134 ⋮ 0197	308 ⋮ 407	1	R/W	0: STOP (Control stop) 1: RUN (Control start) [100]	0
Control RUN/STOP holding setting (Each module) ♦	X1	0198 ⋮ 01FB	408 ⋮ 507	1	R/W	0: Not holding (STOP start) 1: Holding (RUN/STOP hold) [100]	1
The following items are enabled when the power is turned on again or when control is changed from STOP to RUN.							
Unused	—	8000 ⋮ 8003	32768 ⋮ 32771	—	—	—	—
Communication protocol ❑	VP	8004	32772	1	R/W	0: RKC communication 1: Modbus [1]	0
Communication speed ❑	VU	8005	32773	1	R/W	0: 4800 bps 2: 19200 bps 1: 9600 bps 3: 38400 bps [1]	2
Communication data bit configuration ❑	VW	8006	32774	7	R/W	0 to 5 See table 1. [1]	0
Communication interval time ❑	VX	8007	32775	7	R/W	0 to 250 ms [1]	10
Unused	—	8008 ⋮ 8010	32776 ⋮ 32784	—	—	—	—
Method for setting the number of connected modules ❑	RY	8011	32785	7	R/W	0: No action. 1: Automatically set the maximum number of connected function modules only when power is turned on. 2: Execute automatic setting of the maximum number of connected function modules. [1]	1
Unused	—	8012	32786	—	—	—	—
Number of connected modules [2] (Z-TIO module) ❑	QY	8013	32787	7	R/W	0 to 16 Maximum number of Z-TIO modules connected to COM-ML. [1]	—
Number of connected modules [2] (Z-DIO module) ❑	QU	8014	32788	7	R/W	0 to 16 Maximum number of Z-DIO modules connected to COM-ML. [1]	—
Unused	—	8015 ⋮ 801A	32789 ⋮ 32794	—	—	—	—
First-byte of IP address ❑	QB	801B	32795	7	R/W	0 to 255 [1]	192
Second-byte of IP address ❑	QC	801C	32796	7	R/W	0 to 255 [1]	168
Third-byte of IP address ❑	QD	801D	32797	7	R/W	0 to 255 [1]	1
Fourth-byte of IP address ❑	QE	801E	32798	7	R/W	0 to 255 [1]	1
DHCP selection ❑	QF	801F	32799	1	R/W	0: DHCP is invalid 1: DHCP is valid [1]	0
Communication data items setting ❑	QG	8020 ⋮ 8051	32800 ⋮ 32849	7	R/W	0 to 65535 [50]	65535
Number of measured data items (IN) ❑	QH	8052 ⋮ 8083	32850 ⋮ 32899	7	R/W	0 to 128 0: Unused [50]	0
Number of setting data items (OUT) ❑	QI	8084 ⋮ 80B5	32900 ⋮ 32949	7	R/W	0 to 127 0: Unused [50]	0
Unused	—	80B6	32950	—	—	—	—
Control RUN/STOP holding setting (Each SRZ unit) ❑	X2	80B7	32951	1	R/W	0: Not holding (STOP start) 1: Holding (RUN/STOP hold) [1]	1

[1] After automatic setting of the number of connected function modules, the value automatically reverts to 0.

[2] When 1 or 2 is set for the communication identifier RY (method of setting the number of connected modules), the maximum number of connected modules is set automatically. When 0 is set, the maximum number of connected modules is set manually.
Maximum number of connected modules: Maximum address of function modules (address setting switch set value + 1)
COM-ML uses this set value to calculate the number of channels of communication data (RKC communication only).

Table 1: Data bit configuration

Set value	Data bit	Parity bit	Stop bit	Settable communication
0	8	Without	1	Modbus RKC communication
1	8	Even	1	
2	8	Odd	1	
3	7	Without	1	RKC communication
4	7	Even	1	
5	7	Odd	1	

Data range: Modbus: 0 to 2 RKC communication: 0 to 5

■ Communication data of Z-TIO module

Name	RKC Identifier	Modbus register address HEX	Modbus register address DEC	Digits	Attribute	Data range and Number of data	Factory set value
Measured value (PV) ♠	M1	01FC ⋮ 023B	508 ⋮ 571	7	RO	Input scale low to Input scale high [64]	—
Comprehensive event state ♠	AJ	023C ⋮ 027B	572 ⋮ 635	7	RO	• RKC communication Least significant digit to 4th digit: Event 1 state to Event 4 state 5th digit: Heater break alarm state 6th digit: Temperature rise completion 7th digit: Burnout Data 0: OFF 1: ON • Modbus b0 to b3: Event 1 state to Event 4 state b4: Heater break alarm state b5: Temperature rise completion b6: Burnout b7 to b15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 127] [64]	—
Operation mode state monitor ♠	L0	027C ⋮ 02BB	636 ⋮ 699	7	RO	• RKC communication Least significant digit: Control STOP 2nd digit: Control RUN 3rd digit: Manual mode 4th digit: Remote mode 5th digit to Most significant digit: Unused Data 0: OFF 1: ON [64]	—
Operation mode state monitor ♠	L0	027C ⋮ 02BB	636 ⋮ 699	7	RO	• Modbus b0: Control STOP b1: Control RUN b2: Manual mode b3: Remote mode b4 to b15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 15] [64]	—
Unused	—	02BC ⋮ 02CB	700 ⋮ 715	—	—	—	—
Manipulated output value (MV) monitor [heat-side] ♣ ♠	O1	02CC ⋮ 030B	716 ⋮ 779	7	RO	PID control or heat/cool PID control: −5.0 to +105.0 % Position proportioning control (FBR input): 0.0 to 100.0 % [64]	—
Manipulated output value (MV) monitor [cool-side] ♣ ♠	O2	030C ⋮ 034B	780 ⋮ 843	7	RO	−5.0 to +105.0 % [64]	—
Current transformer (CT) input value monitor ♠	M3	034C ⋮ 038B	844 ⋮ 907	7	RO	CTL-6-P-N: 0.0 to 30.0 A CTL-12-S56-10L-N: 0.0 to 100.0 A [64]	—
Set value (SV) monitor ♠	MS	038C ⋮ 03CB	908 ⋮ 971	7	RO	Setting limiter (low) to Setting limiter (high) [64]	—
Remote setting (RS) input value monitor ♠	S2	03CC ⋮ 040B	972 ⋮ 1035	7	RO	Setting limiter (low) to Setting limiter (high) [64]	—
Burnout state monitor ♠	B1	040C ⋮ 044B	1036 ⋮ 1099	1	RO	0: OFF 1: ON [64]	—
Event 1 state monitor ♠	AA	044C ⋮ 048B	1100 ⋮ 1163	1	RO	0: OFF 1: ON	—
Event 2 state monitor ♠	AB	048C ⋮ 04CB	1164 ⋮ 1227	1	RO	If the Event 3 type is temperature rise completion, check the temperature rise completion state in the comprehensive event state. (The Event 3 state monitor does not turn ON.)	—
Event 3 state monitor ♠	AC	04CC ⋮ 050B	1228 ⋮ 1291	1	RO		—
Event 4 state monitor ♠	AD	050C ⋮ 054B	1292 ⋮ 1355	1	RO	[Each 64]	—
Heater break alarm (HBA) state monitor ♠	AE	054C ⋮ 058B	1356 ⋮ 1419	1	RO	0: OFF 1: ON [64]	—
Output state monitor ♦	Q1	058C ⋮ 059B	1420 ⋮ 1435	7	RO	• RKC communication Least significant digit to 4th digit: OUT1 to OUT4 5th digit to Most significant digit: Unused Data 0: OFF 1: ON • Modbus b0 to b3: OUT1 to OUT4 b4 to b15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 15] [16]	—
Memory area soak time monitor ♠	TR	059C ⋮ 05DB	1436 ⋮ 1499	7	RO	• 0 minutes 00 seconds to 199 minutes 59 seconds: RKC communication: 0:00 to 199:59 (min:sec) Modbus: 0 to 11999 seconds • 0 hours 00 minutes to 99 hours 59 minutes: RKC communication: 0:00 to 99:59 (hrs:min) Modbus: 0 to 5999 minutes [64]	—
Unused	—	05DC ⋮ 05EB	1500 ⋮ 1515	—	—	—	—
Holding peak value ambient temperature monitor ♠	Hp	05EC ⋮ 062B	1516 ⋮ 1579	7	RO	−10.0 to +100.0 °C or 14.0 to 212.0 °F [64]	—
Unused	—	062C ⋮ 063B	1580 ⋮ 1595	—	—	—	—
Logic output monitor 1 ♦	ED	063C ⋮ 064B	1596 ⋮ 1611	7	RO	• RKC communication Least significant digit to 4th digit: Logic output 1 to 4 5th digit to Most significant digit: Unused Data 0: OFF 1: ON • Modbus b0 to b7: Logic output 1 to 8 b8 to b15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 255] [16]	—
Logic output monitor 2 ♦	EE	—	—	7	RO	RKC communication Least significant digit to 4th digit: Logic output 5 to 8 5th digit to Most significant digit: Unused Data 0: OFF 1: ON	—
Unused	—	064C ⋮ 080B	1612 ⋮ 2059	—	—	—	—
PID/AT transfer ♠	G1	080C ⋮ 084B	2060 ⋮ 2123	1	R/W	0: PID control 1: Autotuning (AT) * * Automatically reverts to 0 after auto-tuning ends. [64]	0
Auto/Manual transfer ♠	J1	084C ⋮ 088B	2124 ⋮ 2187	1	R/W	0: Auto mode 1: Manual mode [64]	0
Remote/Local transfer ♠	C1	088C ⋮ 08CB	2188 ⋮ 2251	1	R/W	0: Local mode 1: Remote mode [64]	0
Unused	—	08CC ⋮ 08DB	2252 ⋮ 2067	—	—	—	—
Memory area transfer ♠	ZA	08DC ⋮ 091B	2268 ⋮ 2331	7	R/W	1 to 8 [64]	1
Interlock release ♠	AR	091C ⋮ 095B	2332 ⋮ 2395	1	R/W	0: Normal state 1: Interlock release execution [64]	0
Event 1 set value (EV1) ★ ♠	A1	095C ⋮ 099B	2396 ⋮ 2459	7	R/W	Deviation action, Deviation action between channels, Temperature rise completion range *: −Input span to +Input span Process action, SV action: Input scale low to Input scale high MV action: −5.0 to +105.0 % * When temperature rise completion is selected at Event 3 type. [Each 64]	50
Event 2 set value (EV2) ★ ♠	A2	099C ⋮ 09DB	2460 ⋮ 2523	7	R/W		50
Event 3 set value (EV3) ★ ♠	A3	09DC ⋮ 0A1B	2524 ⋮ 2587	7	R/W		50
Event 4 set value (EV4) ★ ♠	A4	0A1C ⋮ 0A5B	2588 ⋮ 2651	7	R/W		50

Name	RKC Identifier	Modbus register address HEX	Modbus register address DEC	Digits	Attribute	Data range and Number of data	Factory set value
Control loop break alarm (LBA) time ★ ♠	A5	0A5C ⋮ 0A9B	2652 ⋮ 2715	7	R/W	0 to 7200 seconds (0: Unused) [64]	480
LBA deadband ★ ♠	N1	0A9C ⋮ 0ADB	2716 ⋮ 2779	7	R/W	0 (0.0) to Input span [64]	0 (0.0)
Set value (SV) ★ ♠	S1	0ADC ⋮ 0B1B	2780 ⋮ 2843	7	R/W	Setting limiter (low) to Setting limiter (high) [64]	TC/RTD: 0 V/I: 0.0
Proportional band [heat-side] ♣ ★ ♠	P1	0B1C ⋮ 0B5B	2844 ⋮ 2907	7	R/W	TC/RTD inputs: 0 (0.0) to Input span (Unit: °C [°F]) Voltage (V)/current (I) inputs: 0.0 to 1000.0 % of input span 0 (0.0): ON/OFF action ON/OFF action for both heat and cool actions in case of a heat/cool control type. [64]	TC/RTD: 30 (30.0) V/I: 30.0
Integral time [heat-side] ♣ ★ ♠	I1	0B5C ⋮ 0B9B	2908 ⋮ 2971	7	R/W	PID control or heat/cool PID control: 0 to 3600 seconds or 0.0 to 1999.9 seconds (0, 0.0: PD action) Position proportioning control: 1 to 3600 seconds or 0.1 to 1999.9 seconds [64]	240
Derivative time [heat-side] ♣ ★ ♠	D1	0B9C ⋮ 0BDB	2972 ⋮ 3035	7	R/W	0 to 3600 seconds or 0.0 to 1999.9 seconds (0, 0.0: PI action) [64]	60
Control response parameter ★ ♠	CA	0BDC ⋮ 0C1B	3036 ⋮ 3099	1	R/W	0: Slow 1: Medium 2: Fast P or PD action: 2 (Fast) fixed [64]	PID control, Position proportioning control: 0 Heat/cool PID control: 2
Proportional band [cool-side] ♣ ★ ♠	P2	0C1C ⋮ 0C5B	3100 ⋮ 3163	7	R/W	TC/RTD inputs: 1 (0.1) to Input span (Unit: °C [°F]) Voltage (V)/current (I) inputs: 0.1 to 1000.0 % of input span [64]	TC/RTD: 30 (30.0) V/I: 30.0
Integral time [cool-side] ♣ ★ ♠	I2	0C5C ⋮ 0C9B	3164 ⋮ 3227	7	R/W	0 to 3600 seconds or 0.0 to 1999.9 seconds (0, 0.0: PD action) [64]	240
Derivative time [cool-side] ♣ ★ ♠	D2	0C9C ⋮ 0CDB	3228 ⋮ 3291	7	R/W	0 to 3600 seconds or 0.0 to 1999.9 seconds (0, 0.0: PI action) [64]	60
Overlap/ Deadband ♣ ★ ♠	V1	0CDC ⋮ 0D1B	3292 ⋮ 3355	7	R/W	TC/RTD inputs: −Input span to +Input span (Unit:°C [°F]) Voltage (V)/current (I) inputs: −100.0 to +100.0 % of input span [64]	0
Manual reset ★ ♠	MR	0D1C ⋮ 0D5B	3356 ⋮ 3419	7	R/W	−100.0 to +100.0 % [64]	0.0
Setting change rate limiter (up) ★ ♠	HH	0D5C ⋮ 0D9B	3420 ⋮ 3483	7	R/W	0 (0.0) to Input span/unit time 0 (0.0): Unused Unit time: 60 seconds (factory set value) [64]	0 (0.0)
Setting change rate limiter (down) ★ ♠	HL	0D9C ⋮ 0DDB	3484 ⋮ 3547	7	R/W	0 (0.0) to Input span/unit time 0 (0.0): Unused Unit time: 60 seconds (factory set value) [64]	0 (0.0)
Area soak time ★ ♠	TM	0DDC ⋮ 0E1B	3548 ⋮ 3611	7	R/W	• 0 minutes 00 seconds to 199 minutes 59 seconds: RKC communication: 0:00 to 199:59 (min:sec) Modbus: 0 to 11999 seconds • 0 hours 00 minutes to 99 hours 59 minutes: RKC communication: 0:00 to 99:59 (hrs:min) Modbus: 0 to 5999 minutes [64]	RKC communication: 0:00 Modbus: 0
Link area number ★ ♠	LP	0E1C ⋮ 0E5B	3612 ⋮ 3675	7	R/W	0 to 8 (0: No link) [64]	0
Heater break alarm (HBA) set value ♠	A7	0E5C ⋮ 0E9B	3676 ⋮ 3739	7	R/W	When CT is CTL-6-P-N: 0.0 to 30.0 A (0.0: Not used) When CT is CTL-12-S56-10L-N: 0.0 to 100.0 A (0.0: Not used) [64]	0.0
Heater break determination point ♠	NE	0E9C ⋮ 0EDB	3740 ⋮ 3803	7	R/W	0.0 to 100.0 % of HBA set value (0.0: Heater break determination is invalid) [64]	30.0
Heater melting determination point ♠	NF	0EDC ⋮ 0F1B	3804 ⋮ 3867	7	R/W	0.0 to 100.0 % of HBA set value (0.0: Heater melting determination is invalid) [64]	30.0
PV bias ♠	PB	0F1C ⋮ 0F5B	3868 ⋮ 3931	7	R/W	−Input span to +Input span [64]	0
PV digital filter ♠	F1	0F5C ⋮ 0F9B	3932 ⋮ 3995	7	R/W	0.0 to 100.0 seconds (0.0: Unused) [64]	0.0
PV ratio ♠	PR	0F9C ⋮ 0FDB	3996 ⋮ 4059	7	R/W	0.500 to 1.500 [64]	1.000
PV low input cut-off ♠	DP	0FDC ⋮ 101B	4060 ⋮ 4123	7	R/W	0.00 to 25.00 % of input span [64]	0.00
RS bias * ♠	RB	101C ⋮ 105B	4124 ⋮ 4187	7	R/W	−Input span to +Input span [64]	0
RS digital filter * ♠	F2	105C ⋮ 109B	4188 ⋮ 4251	7	R/W	0.0 to 100.0 seconds (0.0: Unused) [64]	0.0
RS ratio * ♠	RR	109C ⋮ 10DB	4252 ⋮ 4315	7	R/W	0.001 to 9.999 [64]	1.000
Output distribution selection ♠	DV	10DC ⋮ 111B	4316 ⋮ 4379	1	R/W	0: Control output 1: Distribution output [64]	0
Output distribution bias ♠	DW	111C ⋮ 115B	4380 ⋮ 4443	7	R/W	−100.0 to +100.0 % [64]	0.0
Output distribution ratio ♠	DQ	115C ⋮ 119B	4444 ⋮ 4507	7	R/W	−9.999 to +9.999 [64]	1.000
Proportional cycle time ♠	T0	119C ⋮ 11DB	4508 ⋮ 4571	7	R/W	0.1 to 100.0 seconds M: Relay contact output T: Triac output V: Voltage pulse output D: Open collector output [64]	M output: 20.0 V, T, D output: 2.0

* Data on RS bias, RS ratio and RS digital filter is that in cascade control or ratio setting.

(Continued on the next page ➔)

Name	RKC Iden-tifier	Modbus register address HEX	Modbus register address DEC	Digits	Attri-bute	Data range and Number of data	Factory set value
Minimum ON/OFF time of proportioning cycle ♠	VI	11DC ⋮ 121B	4572 ⋮ 4635	7	R/W	0 to 1000 ms [64]	0
Manual manipulated output value ♣ ♠	ON	121C ⋮ 125B	4636 ⋮ 4699	7	R/W	PID control: Output limiter (low) to Output limiter (high) Heat/cool PID control: −Cool-side output limiter (high) to +Heat-side output limiter (high) Position proportioning control (with FBR input): Output limiter (low) to Output limiter (high) Position proportioning control (without FBR input): 0: Close-side output OFF, Open-side output OFF 1: Close-side output ON, Open-side output OFF 2: Close-side output OFF, Open-side output ON [64]	0.0
Area soak time stop function ♠	RV	125C ⋮ 129B	4700 ⋮ 4763	1	R/W	0: No function 3: Event 3 1: Event 1 4: Event 4 2: Event 2 [64]	0
EDS mode (for disturbance 1) ♠	NG	129C ⋮ 12DB	4764 ⋮ 4827	1	R/W	0: No function 1: EDS function mode 2: Learning mode 3: Tuning mode	0
EDS mode (for disturbance 2) ♠	NX	12DC ⋮ 131B	4828 ⋮ 4891	1	R/W	EDS function: External disturbance suppression function [Each 64]	0
EDS value 1 (for disturbance 1) ♠	NI	131C ⋮ 135B	4892 ⋮ 4955	7	R/W	−100.0 to +100.0 %	0.0
EDS value 1 (for disturbance 2) ♠	NJ	135C ⋮ 139B	4956 ⋮ 5019	7	R/W		0.0
EDS value 2 (for disturbance 1) ♠	NK	139C ⋮ 13DB	5020 ⋮ 5083	7	R/W		0.0
EDS value 2 (for disturbance 2) ♠	NM	13DC ⋮ 141B	5084 ⋮ 5147	7	R/W	[Each 64]	0.0
EDS transfer time (for disturbance 1) ♠	NN	141C ⋮ 145B	5148 ⋮ 5211	7	R/W	0 to 3600 seconds or 0.0 to 1999.9 seconds	0
EDS transfer time (for disturbance 2) ♠	NO	145C ⋮ 149B	5212 ⋮ 5275	7	R/W	[Each 64]	0
EDS action time (for disturbance 1) ♠	NQ	149C ⋮ 14DB	5276 ⋮ 5339	7	R/W	1 to 3600 seconds	600
EDS action time (for disturbance 2) ♠	NL	14DC ⋮ 151B	5340 ⋮ 5403	7	R/W	[Each 64]	600
EDS action wait time ♠ (for disturbance 1)	NR	151C ⋮ 155B	5404 ⋮ 5467	7	R/W	0.0 to 600.0 seconds	0.0
EDS action wait time ♠ (for disturbance 2)	NY	155C ⋮ 159B	5468 ⋮ 5531	7	R/W	[Each 64]	0.0
EDS value learning times ♠	NT	159C ⋮ 15DB	5532 ⋮ 5595	7	R/W	0 to 10 times (0: No learning mode) [64]	1
EDS start signal ♠	NU	15DC ⋮ 161B	5596 ⋮ 5659	1	R/W	0: EDS start signal OFF 1: EDS start signal ON (for disturbance 1) 2: EDS start signal ON (for disturbance 2) [64]	0
Operation mode ♠	EI	161C ⋮ 165B	5660 ⋮ 5723	1	R/W	0: Unused 1: Monitor 2: Monitor + Event function 3: Control [64]	3
Startup tuning (ST) ♠	ST	165C ⋮ 169B	5724 ⋮ 5787	1	R/W	0: ST unused 1: Execute once * 2: Execute always * Automatically reverts to 0 after Startup tuning (ST) ends. [64]	0
Automatic temperature rise learning ♠	Y8	169C ⋮ 16DB	5788 ⋮ 5851	1	R/W	0: Unused 1: Learning * * Automatically reverts to 0 after automatic temperature rise learning ends. [64]	0
Communication switch (for logic) ♦	EF	16DC ⋮ 16EB	5852 ⋮ 5867	7	R/W	• RKC communication Least significant digit to 4th digit: Communication switch 1 to 4 5th digit to Most significant digit: Unused Data 0: OFF 1: ON • Modbus b0 to b3: Communication switch 1 to 4 b4 to b15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 15] [16]	0
Unused	—	16EC ⋮ 196B	5868 ⋮ 6507	—	—	—	—

For communication data (Engineering setting), see the **COM-ML [for SRZ] Instruction Manual (IMR02E08-E□)**.

■ Communication data for multi-memory area data (only for Modbus)

Use the register addresses of 386CH to 3DABH to confirm or change set values of parameters in multi-memory areas which are not selected.

For the multi-memory area data, see the **COM-ML [for SRZ] Instruction Manual (IMR02E08-E□)**.

■ Communication data of Z-DIO module

Name	RKC Iden-tifier	Modbus register address HEX	Modbus register address DEC	Digits	Attri-bute	Data range and Number of data	Factory set value
Digital input (DI) state 1 ♦	L1	3E6C ⋮ 3E7B	15980 ⋮ 15995	7	RO	• RKC communication Least significant digit to 4th digit: DI1 to DI4 5th digit to Most significant digit: Unused Data 0: Contact open 1: Contact closed • Modbus b0 to b7: DI1 to DI8 b8 to b15: Unused Data 0: Contact open 1: Contact closed [Decimal number: 0 to 255] [16]	—
Digital input (DI) state 2 ♦	L6	—	—	7	RO	Least significant digit to 4th digit: DI5 to DI8 5th digit to Most significant digit: Unused Data 0: Contact open 1: Contact closed	—
Digital output (DO) state 1 ♦	Q2	3E7C ⋮ 3E8B	15996 ⋮ 16011	7	RO	• RKC communication Least significant digit to 4th digit: DO1 to DO4 5th digit to Most significant digit: Unused Data 0: OFF 1: ON • Modbus b0 to b7: DO1 to DO8 b8 to b15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 255] [16]	—
Digital output (DO) state 2 ♦	Q3	—	—	7	RO	Least significant digit to 4th digit: DO5 to DO8 5th digit to Most significant digit: Unused Data 0: OFF 1: ON	—
Unused	—	3E8C ⋮ 3FDB	16012 ⋮ 16347	—	—	—	—
DO manual output 1 ♦	Q4	3FDC ⋮ 3EFB	16348 ⋮ 16353	7	R/W	• RKC communication Least significant digit to 4th digit: DO1 manual output to DO4 manual output 5th digit to Most significant digit: Unused Data 0: OFF 1: ON • Modbus b0 to b7: DO1 manual output to DO8 manual output b8 to b15: Unused Data 0: OFF 1: ON [Decimal number: 0 to 255] [16]	0
DO manual output 2 ♦	Q5	—	—	7	R/W	Least significant digit to 4th digit: DO5 manual output to DO8 manual output 5th digit to Most significant digit: Unused Data 0: OFF 1: ON	0
DO output distribution selection ♠	DO	3FEC ⋮ 406B	16364 ⋮ 16491	1	R/W	0: DO output 1: Distribution output [128]	0
DO output distribution bias ♠	O8	406C ⋮ 40EB	16492 ⋮ 16619	7	R/W	−100.0 to +100.0 % [128]	0.0
DO output distribution ratio ♠	O9	40EC ⋮ 416B	16620 ⋮ 16747	7	R/W	−9.999 to +9.999 [128]	1.000
DO proportioning cycle time ♠	V0	416C ⋮ 41EB	16748 ⋮ 16875	7	R/W	0.1 to 100.0 seconds M: Relay contact output D: Open collector output [128]	M output: 20.0 D output: 2.0
DO minimum ON/OFF time of proportioning cycle ♠	VJ	41EC ⋮ 426B	16876 ⋮ 17003	7	R/W	0 to 1000 ms [128]	0
Unused	—	426C ⋮ 432C	17004 ⋮ 17196	—	—	—	—

For communication data (Engineering setting), see the **COM-ML [for SRZ] Instruction Manual (IMR02E08-E□)**.

3. OBJECT MODEL

EtherNet/IP is an implementation of CIP (Common Industrial Protocol) on Ethernet and TCP/IP. CIP is defined by means of an object model.

3.1 CIP Common Object

■ Identity Object (0x01: 01Hex)

● Object class

	ID	Description	Get	Set	Type	Value
Attributes	1	Revision	Yes	No	UINT	1
	EtherNet/IP service		Parameter option			
Services	0x0E	Get_Attribute_Single	None			
	0x01	Get_Attribute_All	None			

● Object instance 1

	ID	Description	Get	Set	Type	Value
Attributes	1	Vendor ID	Yes	No	UINT	394
	2	Device type	Yes	No	UINT	0
	3	Product code	Yes	No	UINT	8
	4	Revision	Yes	No	Struct	
		Major revision			USINT	1
		Minor revision			USINT	1
	5	Status	Yes	No	WORD	Note
	6	Serial number	Yes	No	UDINT	(Unique serial number)
	7	Product name	Yes	No	Struct	
		Length			SHORT	8
		Name			SHORT_ STRING	"COM-ML-2"
	11	Active Language	Yes	Yes	Struct	
					USINT	"e"
					USINT	"n"
					USINT	"g"
	12	Supported Language List	Yes	No	Array of Struct	
					USINT	"e"
					USINT	"n"
					USINT	"g"
	EtherNet/IP service		Parameter option			
Services	0x0E	Get_Attribute_Single	None			
	0x10	Set_Attribute_Single	None			
	0x05	Reset	0			
	0x01	Get_Attribute_All	None			

Note A bit layout of "Status"
bit 0: Owned
bit 2: Configured
bit 4 to 7: Extended Device Status
bit 8: Minor Recoverable Fault
bit 9: Minor Unrecoverable Fault
bit 10: Major Recoverable Fault
bit 11: Major Unrecoverable Fault
(Bit 1, bit 3 and bit 12 to 15 is always 0.)

■ Message Router Object (0x02: 02Hex)

● Object class

Attributes	Not supported
Services	Not supported

● Object instance

Attributes	Not supported
Services	Not supported

■ Assembly Object (0x04: 04Hex)

● Object class

	ID	Description	Get	Set	Type	Value
Attributes	1	Revision	Yes	No	UINT	2
	2	Max Instance	Yes	No	UINT	(Highest Instance number)
	EtherNet/IP service		Parameter option			
Services	0x0E	Get_Attribute_Single	None			

● Object instance 100

	ID	Description	Get	Set	Type	Value
Attributes	3	Produced Data	Yes	No	Array of BYTE	
	EtherNet/IP service		Parameter option			
Services	0x0E	Get_Attribute_Single	None			

● Object instance 101

	ID	Description	Get	Set	Type	Value
Attributes	3	Consumed Data	Yes	Yes	Array of BYTE	
	EtherNet/IP service		Parameter option			
Services	0x0E	Get_Attribute_Single	None			
	0x10	Set_Attribute_Single	None			

■ Connection Manager Object (0x06: 06Hex)

● Object class

Attributes	Not supported
Services	Not supported

● Object instance

Attributes	Not supported	
	EtherNet/IP service	Parameter option
Services	0x4E	Forward_Close
	0x54	Forward_Open

■ TCP/IP Interface Object (0xF5: F5Hex)

● Object class

	ID	Description	Get	Set	Type	Value
Attributes	1	Revision	Yes	No	UINT	1
	EtherNet/IP service		Parameter option			
Services	0x0E	Get_Attribute_Single	None			
	0x01	Get_Attribute_All	None			

● Object instance 1

	ID	Description	Get	Set	Type	Value
Attributes	1	Status	Yes	No	DWORD	1
	2	Configuration Capability	Yes	No	DWORD	0000 0014h or 0000 0004h bit 0 and 1: 0 (fixed) bit 2: DHCP Client bit 3: 0 (fixed) bit 4: Configuration Settable bit 5 to 31: 0 (fixed)
	3	Configuration Control	Yes	Yes	DWORD	0: non-volatile memory 2: DHCP
	4	Physical Link Object	Yes	No	Struct	
		Path Size			UINT	2
		Path			Padded EPATH	20 F6 24 01h
	5	Interface Configuration	Yes	Yes	Struct	
		IP Address			UDINT	----
		Network Mask			UDINT	----
		Gateway Address			UDINT	----
		Name Server 1			UDINT	----
		Name Server 2			UDINT	----
		Domain Name			STRING	----
	6	Host Name	Yes	Yes	STRING	----
	EtherNet/IP service		Parameter option			
Services	0x0E	Get_Attribute_Single	None			
	0x01	Get_Attribute_All	None			
	0x10	Set_Attribute_Single	None			

■ Ethernet Link Object (0xF6: F6Hex)

● Object class

	ID	Description	Get	Set	Type	Value
Attributes	1	Revision	Yes	No	UINT	2
	EtherNet/IP service		Parameter option			
Services	0x0E	Get_Attribute_Single	None			
	0x01	Get_Attribute_All	None			

● Object instance 1

	ID	Description	Get	Set	Type	Value
Attributes	1	Interface Speed	Yes	No	UDINT	10 or 100
	2	Interface Flags	Yes	No	DWORD	----
	3	Physical address	Yes	No	6 USINT	(MAC ID)
	4	Interface Counters	Yes	No	Struct	
		In Octets			UDINT	----
		In Ucast Packets			UDINT	----
		In NUcast Packets			UDINT	----
		In Discards			UDINT	----
		In Errors			UDINT	----
		In Unknown Protos			UDINT	----
		Out Octets			UDINT	----
		Out Ucast Packets			UDINT	----
		Out NUcast Packets			UDINT	----
		Out Discards			UDINT	----
		Out Errors			UDINT	----
	5	Media Counters	Yes	No	Struct	
		Alignment Errors			UDINT	----
		FCS Errors			UDINT	----
		Single Collisions			UDINT	----
		Multiple Collisions			UDINT	----
		SQE Test Errors			UDINT	0
		Deferred Transmissions			UDINT	----
		Late Collisions			UDINT	----
		Excessive Collisions			UDINT	----
		MAC Transmit Errors			UDINT	----
		Carrier Sense Errors			UDINT	----
		Frame Too Long			UDINT	----
		MAC Receive Errors			UDINT	----
	6	Interface Control	Yes	Yes	Struct	
		Control Bits			WORD	----
		Forced Interface Speed			UINT	----
	EtherNet/IP service		Parameter option			
Services	0x0E	Get_Attribute_Single	None			
	0x01	Get_Attribute_All	None			
	0x10	Set_Attribute_Single	None			
	0x4C	Get_And_Clear	None			

3.2 Application Object

■ Controller Object (0x64: 64Hex)

● Object class

Attributes	Not supported
Services	Not supported

● Object instance □ (□: 1 to 255)

	ID	Description	Get	Set	Type	Value
Attributes	100	Data 0	Yes	Yes	UINT	Note
	101	Data 1	Yes	Yes	UINT	Note
	⋮	⋮	⋮	⋮	⋮	⋮
	148	Data 48	Yes	Yes	UINT	Note
	149	Data 49	Yes	Yes	UINT	Note
	EtherNet/IP service		Parameter option			
Services	0x0E	Get_Attribute_Single	None			
	0x10	Set_Attribute_Single	None			

Note Modbus address data specified in the Controller Communication Item Setting Object (0xC5).
The instance number indicates how many data items the data is from the Modbus address data specified in the attribute ID of 0xC5.
When an RO item is written to, the value reverts to the original value several seconds later. Items that are not used are RO, and the data is 0.
Example: Data of instance 2, attribute 100 is the data of "first Modbus address + 1" specified in attribute 100 of 0xC5.

■ Controller Communication Item Setting Object (0xC5: C5Hex)

● Object class

Attributes	Not supported
Services	Not supported

● Object instance 1

	ID	Description	Get	Set	Type	Value
Attributes	100	Item setting of Data 0	Yes	Yes	UINT	Note
	101	Item setting of Data 1	Yes	Yes	UINT	Note
	⋮	⋮	⋮	⋮	⋮	⋮
	148	Item setting of Data 48	Yes	Yes	UINT	Note
	149	Item setting of Data 49	Yes	Yes	UINT	Note
	EtherNet/IP service		Parameter option			
Services	0x0E	Get_Attribute_Single	None			
	0x10	Set_Attribute_Single	None			

Note Set the first Modbus address of the data used in the Controller Object (0x64).
If not used, set 0xFFFF.

■ Controller Communication Measured Data Item (IN) Setting Object (0xC6: C6Hex)

● Object class

Attributes	Not supported
Services	Not supported

● Object instance 1

	ID	Description	Get	Set	Type	Value
Attributes	100	The number of Measured Data Item (IN) of Data 0	Yes	Yes	USINT	0 to 128 (0: Unused)
	101	The number of Measured Data Item (IN) of Data 1	Yes	Yes	USINT	0 to 128 (0: Unused) *
	⋮	⋮	⋮	⋮	⋮	⋮
	148	The number of Measured Data Item (IN) of Data 48	Yes	Yes	USINT	0 to 128 (0: Unused) *
	149	The number of Measured Data Item (IN) of Data 49	Yes	Yes	USINT	0 to 128 (0: Unused) *
	EtherNet/IP service		Parameter option			
Services	0x0E	Get_Attribute_Single	None			
	0x10	Set_Attribute_Single	None			

* A cumulative number of data items of up to 128 from attribute 100 is valid. A setting above this will be disregarded.

■ Controller Communication Set Data Item (OUT) Setting Object (0xC7: C7Hex)

● Object class

Attributes	Not supported
Services	Not supported

● Object instance 1

	ID	Description	Get	Set	Type	Value
Attributes	100	The number of Set Data Item (OUT) of Data 0	Yes	Yes	USINT	0 to 127 (0: Unused)
	101	The number of Set Data Item (OUT) of Data 1	Yes	Yes	USINT	0 to 127 (0: Unused) *
	⋮	⋮	⋮	⋮	⋮	⋮
	148	The number of Set Data Item (OUT) of Data 48	Yes	Yes	USINT	0 to 127 (0: Unused) *
	149	The number of Set Data Item (OUT) of Data 49	Yes	Yes	USINT	0 to 127 (0: Unused) *
	EtherNet/IP service		Parameter option			
Services	0x0E	Get_Attribute_Single	None			
	0x10	Set_Attribute_Single	None			

* A cumulative number of data items of up to 127 from attribute 100 is valid. A setting above this will be disregarded.

Regardless of the setting of this object, "setting state selection" is assigned to the first-word of the set data item (OUT).

Description		Get	Set	Type	Value
First-word of set data item (OUT)	Setting state selection	Yes	Yes	UINT	Bit data bit 0: Data setting disabled/enabled 0: Setting disabled 1: Setting enabled bit 1 to 15: Unused

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