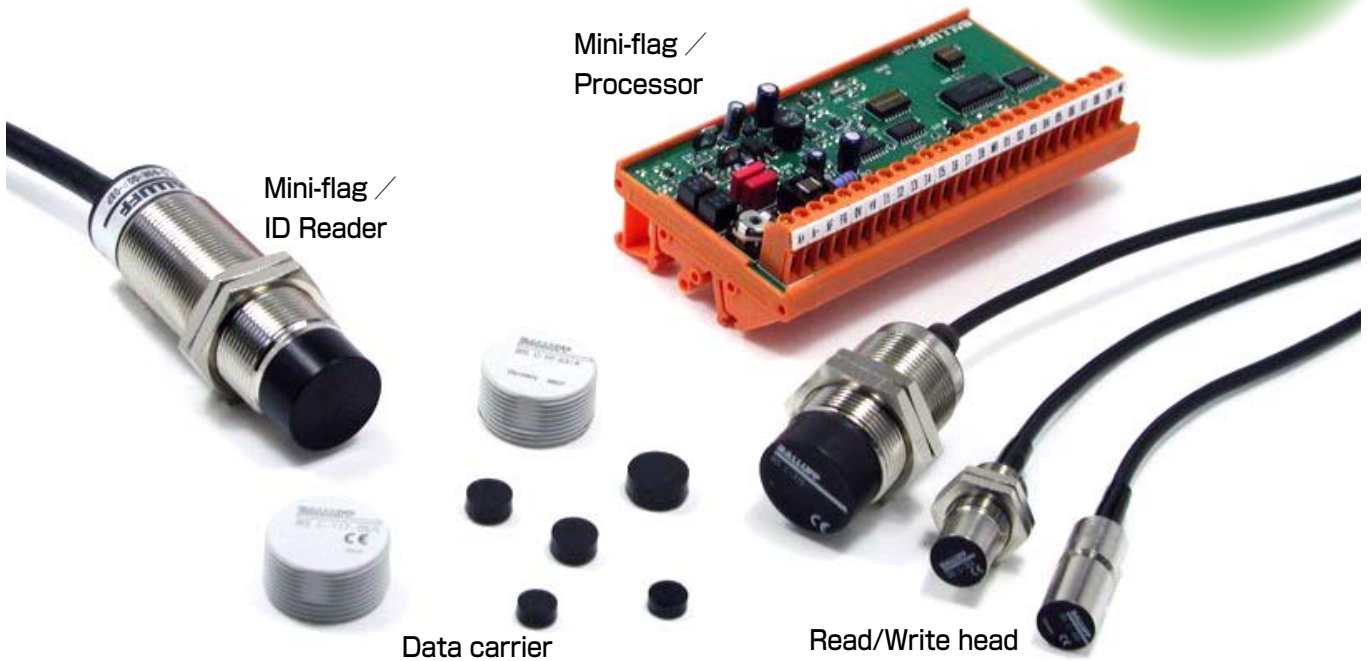


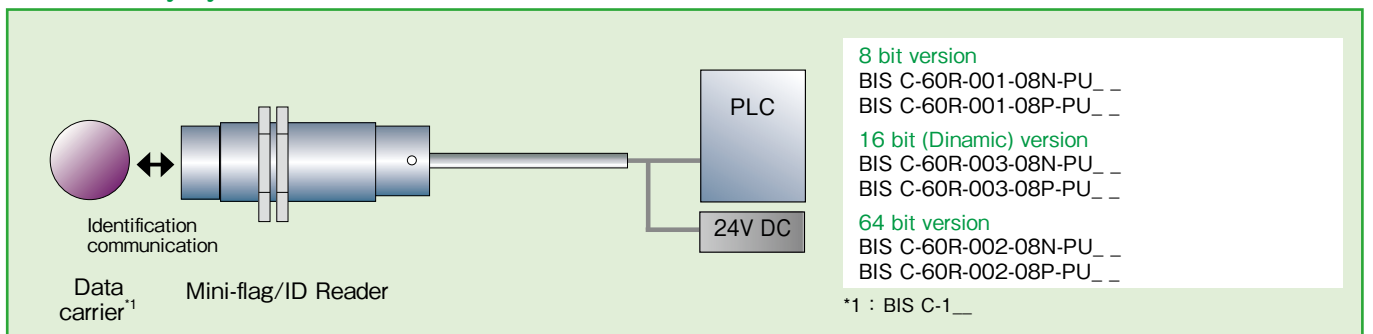
**A perfect solution for Numbering !
Simple Identification system ! !**

**Mini-flag
system
BIS C/R_{series}**

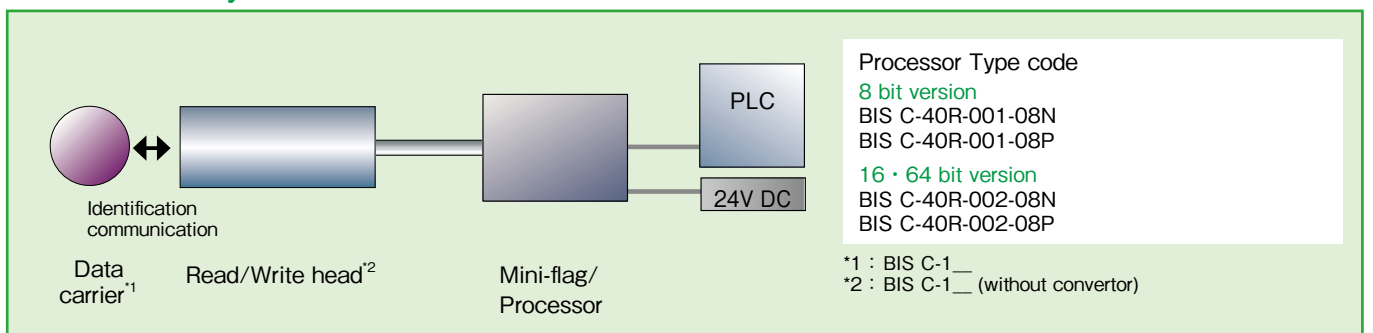


Three versions - 8 bit, 16bit and 64bit - are available.
16bit version reads data from a data carrier in dynamic.

Read only system




Read/Write system



Data carrier

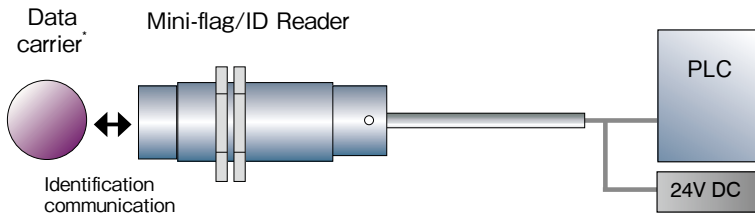
Data carrier of BIS C series is used.

recommended Data carrier	Size	Type code	Note
	φ 16xH7	BIS C-130-05/L	Processing volume of data is 8 bit, 16 bit or 32 bit.
	φ 26xH6	BIS C-128-05/L	
	M30xH16	BIS C-117-05/A	
		BIS C-117-05/L	
W32xL52xH11	BIS C-108-05/L		

Read only system

ID Reader	Interface	Type code	Size	Note
8bit	parallel 8bit	NPN	BIS C-61R-001-08N-PU-__	□40x149
		PNP	BIS C-61R-001-08P-PU-__	
8bit	parallel 8bit	NPN	BIS C-60R-001-08N-PU-__	M30x95
		PNP	BIS C-60R-001-08P-PU-__	
64bit (8 x 8)	parallel 8bit	NPN	BIS C-60R-002-08N-PU-__	
		PNP	BIS C-60R-002-08P-PU-__	
16bit Dynamic	parallel 8bit	NPN	BIS C-60R-003-08N-PU-__	
		PNP	BIS C-60R-003-08P-PU-__	

■ Configuration of the System



■ Function of ID Reader


	8 bit version	16 bit version	64 bit version
Data(flag) area in Data carrier memory	Occupies the first [3 bytes]	Occupies the first [6 bytes]	Occupies the first [24 bytes]
Data reading	Executes reading process automatically, outputs [read data (flag)] in 8 bits parallel signal to external unit.	Executes reading process of selected address automatically, outputs [read data (flag)] in 8 bits parallel signal to external unit. Address select	Executes reading process of selected address automatically, outputs [read data (flag)] in 8 bits parallel signal to external unit. Address select
Address select	---	Input with 1 bit in parallel.	Input with 3 bit in parallel.

For writing data

Following Unit can be used to writing data for Mini-flag System.

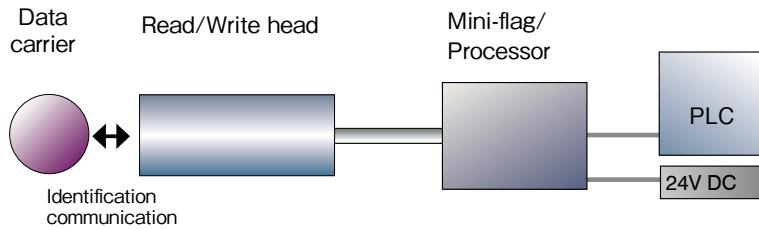
Applicable unit	Type code
BIS C series	BIS C-810-0-006
Handy unit (Control unit + Read/Write head)	BIS C-85_
Mini-flagssystem BIS C/R series	BIS C-40R-00_08_
Processor + Read/Write head	BIS C-3_
BIS Cseries Processor + Read/Write head	Informations such as writing data format etc. are necessary, please contact us for the details.

Read/Write system

Read/Write head	Size	Type code	appropriate data carrier
	M16x55	BIS C-306-__	BIS C-130
	M30x70	BIS C-310-__	BIS C-108/C-117/C-128/C-130
	50x25x10	BIS C-305-PU1-__	BIS C-108/C-117/C-128/C-130
	□80x40	BIS C-315-__	BIS C-108/C-117/C-128/C-130

Processor	Interface	Type code	Note
for 8 bit	parallel 8 bit	NPN	BIS C-40R-001-08N
		PNP	BIS C-40R-001-08P
for 64 bit (8 x 8) or 16 bit (8x2)	parallel 8 bit	NPN	BIS C-40R-002-08N
		PNP	BIS C-40R-002-08P

■ Configuration of the System



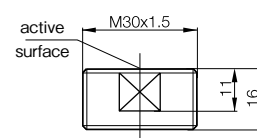
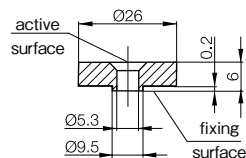
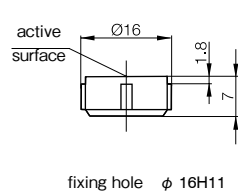
■ Function of Processor

	8 bit version	16 bit version	64 bit version
Data(flag) area in Data carrier memory	Occupies the first [3 bytes]		Occupies the first [24 bytes]
Data writing	Executes by ON or OFF with 1bit of writing command input and inputs write data with 8 bit signals.		Executes by ON or OFF with 1bit of writing command input to selected address and inputs write data with 8 bit signals.
Data reading	Executes reading process automatically, outputs [read data (flag)] in 8 bits parallel signal to external unit.		Executes reading process of selected address automatically, outputs [read data (flag)] in 8 bits parallel signal to external unit.
Address select	---		Input with 3 bit in parallel.



Data carrier

Size	φ 16 x 7	φ 26 x 6	M30 x 16
Housing material	EP	EP	PBT
Weight	2g	6g	20g



Type	1023 bytes ¹⁾ /EEPROM	BIS C-130-05/L	BIS C-128-05/L	BIS C-117-05/A
Operating temperature range		-30...+70°C	-20...+70°C	-30...+70°C
Storage temperature range ²⁾		-30...+85°C ³⁾	-30...+85°C ³⁾	-30...+85°C
Protection class (Per IEC 60529)		IP68	IP68	IP68

		BIS C-130-05/L		BIS C-128-05/L		BIS C-117-05/A				
		flush	non-flush (mount in resin)	flush	non-flush (mount in resin)	flush	non-flush			
Max. Read distance	Read/Write head	BIS C-305	6mm	7mm	BIS C-305 ⁴⁾	3.5mm	6mm	BIS C-305	8mm	10mm
		BIS C-306	4mm	4mm	BIS C-310	8mm	13mm	BIS C-310	12mm	13mm
		BIS C-310		11mm	BIS C-315		18mm	BIS C-315	15mm	22mm
		BIS C-315		18mm						
ID Reader		BIS C-60R	5mm	8mm	BIS C-60R	4mm	8mm	BIS C-60R	8mm	-
		BIS C-61R	4mm	7mm	BIS C-61R	3mm	7mm	BIS C-61R	7mm	-

Special instruction: Tightening torque 2.5Nm

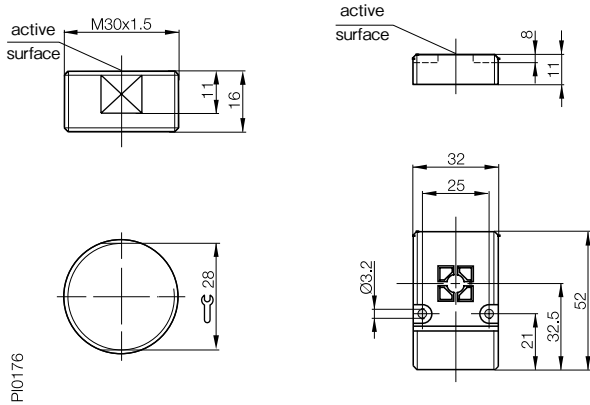
- 1) Processing data amount is 8,16,64 bits despite of memory capacity of data carrier.
- 2) During transporting, storing or when it is outside of communication area
- 3) Unit can be stored at the temperature over 85 degree C, (max. 120 degree C).
Data retention period and write cycle will be down according to temperature and time period.
- 4) Available when fixing with resin screw

Other than those above, data carriers on page 18...21 on the catalog "Identification system can be used with.

Memorytype	data retention period	Write cycle		Read cycle
		= <30°C	= >70°C	
1023 bytes / EEPROM	8 years	1,000,000	500,000	Unlimited

Read only system / ID Reader

M30 x 16	52 x 32 x 11
PBT	PBT
13g	28g



BIS C-117-05/L	BIS C-108-05/L
-30...+70°C	-30...+70°C
-30...+85°C	-30...+85°C
IP68	IP68

	flush	non-flush (mount in resin)		flush	non-flush
BIS C-305		7mm	BIS C-305	6mm	
BIS C-310		13mm	BIS C-310	12mm	
BIS C-315		20mm	BIS C-315	16mm	
BIS C-60R	-	8mm	BIS C-60R	6mm	8mm
BIS C-61R	-	7mm	BIS C-61R	5mm	7mm

Remarks of flush-mounting to non-ferrous metal

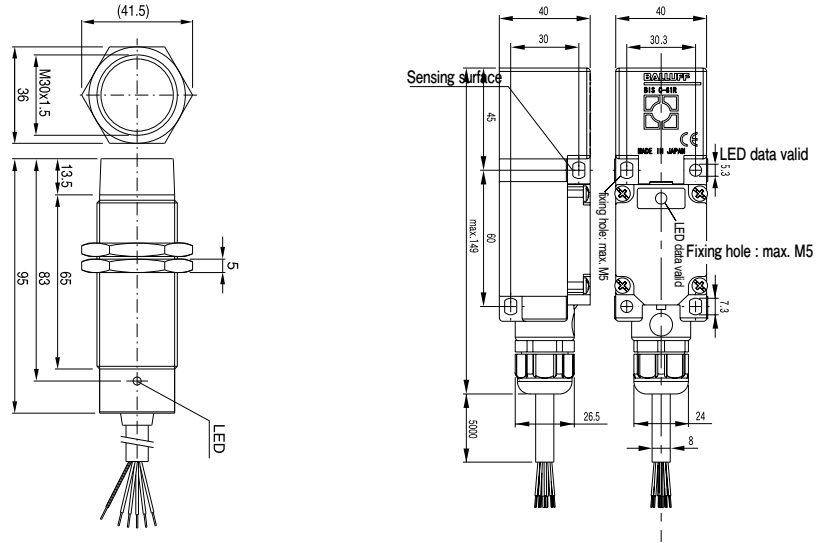
When data carrier or R/W head is used at flush mounted condition to nonferrous metal (aluminum/ brass), R/W distance and offset tolerance will be different from above-mentioned value.

Please contact us about required condition for fixing to non ferrous metal.

Read only system / ID Reader

Data number (flag)	8 bit	
Size	M 30	40 x 40

Dimension



Type code	NPN	BIS C-60R-001-08N-PU-__	BIS C-61R-001-08N-PU-__
	PNP	BIS C-60R-001-08P-PU-__	BIS C-61R-001-08P-PU-__
Input/Output specification	Output 9 (inc. Data valid)		
Interface	parallel		
Supply voltage	24V DC+10-20%		
Current consumption	max. 300 mA		
Operating temperature	0...+50°C		
Storage temperature	-25...+70°C		
LED indication	Data valid (Yellow)		
Protection class	IP67		
Material	Case:Nickel plated brass, Operating surface:nylon		ABS (inc. Glass fiber)
Cable	PUR / φ 8 : 2x0.5mm ² +9x0.18mm ²		

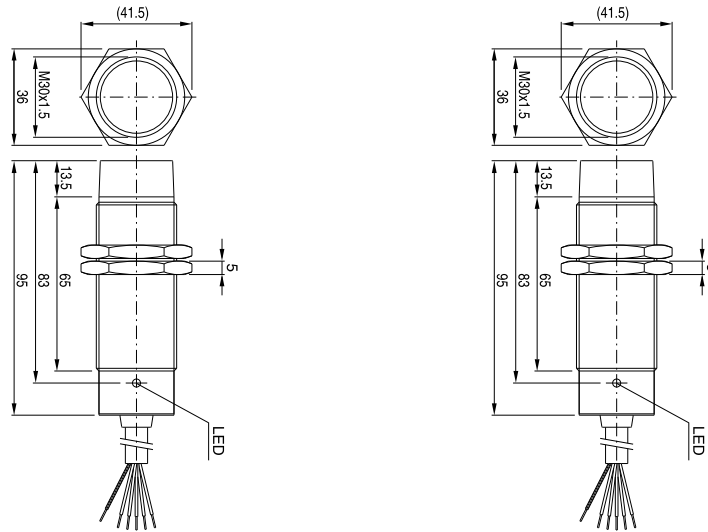
Applicable code tag

	BIS C-108-__/_/L		BIS C-117-05/A		BIS C-117-05/L		BIS C-128-05/L		BIS C-130-05/L		BIS C-108-__/_/L		BIS C-117-05/A		BIS C-117-05/L		BIS C-128-05/L		BIS C-130-05/L	
	flush	nonflush	flush	nonflush	flush	nonflush	flush	nonflush	flush	nonflush	flush	nonflush	flush	nonflush	flush	nonflush	flush	nonflush	flush	nonflush
Mounting in steel	0-6	1-8	1-8	1-8	0-4	3-8	0-5	1-8	0-5	1-7	1-7	1-7	0-3	3-7	0-4	1-7				
Read distance mm																				
Offset in mm	Read distance	1mm	± 7	± 7	± 5	± 7	± 6	-	± 3	± 4	± 7	± 7	± 5	± 7	± 5	-	± 3	± 4		
		3mm	± 7	± 7	± 5	± 7	± 5	± 7	± 3	± 5	± 6	± 7	± 5	± 7		± 7	± 3	± 5		
		5mm	± 6	± 7	± 5	± 7		± 6	± 3	± 5		± 6	± 5	± 6		± 6		± 5		
		7mm		± 6	± 5	± 6		± 5		± 5										
		10mm																		

Read only system / ID Reader

Data number (flag)	64 bit	16 bit (Dynamic type)
Size	M 30	M 30

Dimension



Type code	NPN	BIS C-60R-002-08N-PU-__	BIS C-60R-003-08N-PU-__
	PNP	BIS C-60R-002-08P-PU-__	BIS C-60R-003-08P-PU-__
Input/Output specification	Input 3, Output 9 (inc. Data valid)		Input 1, Output 11 (inc. Data valid)
Interface	parallel		
Supply voltage	24V DC+10-20%		
Current consumption	max. 300 mA		
Operating temperature	0...+50°C		
Storage temperature	-25...+70°C		
LED indication	Data valid (Yellow)		In Zone (Yellow): In communicating with a tag
Protection class	IP67		
Material	Case : Nickel plated brass Operating surface : nylon		
Cable	PUR / ϕ 9 : 2x0.5mm ² +13x0.18mm ²		PUR / ϕ 9 : 2x0.5mm ² +13x0.18mm ²

Applicable code tag for BIS C-60R-002 (64bits)	BIS C-108-__/_/L	BIS C-117-05/A	BIS C-117-05/L	BIS C-128-05/L	BIS C-130-05/L			
Mounting in steel	flush	nonflush	flush	nonflush	flush	nonflush	flush	nonflush
Read distance mm	0-6	1-8	1-8	1-8	0-4	3-8	0-5	1-8
Offset in mm per distance	± 7	± 7	± 5	± 7	± 6	-	± 3	± 4
	± 7	± 7	± 5	± 7	± 5	± 7	± 3	± 5
	± 6	± 7	± 5	± 7		± 6	± 3	± 5
		± 6	± 5	± 6		± 5		± 5

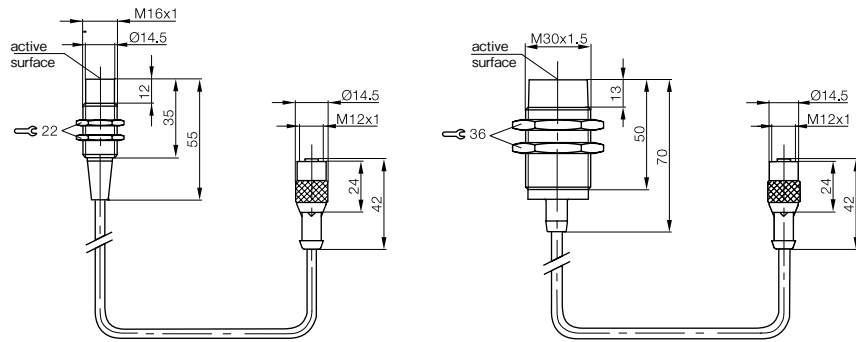
Applicable code tag for BIS C-60R-003 (16bits in dynamic)	BIS C-108-__/_/L	BIS C-117-05/A	BIS C-117-05/L	BIS C-128-05/L	BIS C-130-05/L	
Mounting in steel	flush	nonflush	flush	nonflush	nonflush	nonflush
Read distance mm	4-6	3-8	6-8	3-8	4-8	4-8
Read speed (max.) m/min	9	9	12	20	20	15

To avoid influence between parallel mounted sensors, keep the free zone as described below. When it is different from non-ferrous range of Data carrier, please use the upper range.

description	nonferrous range (mm)			mutual influence	
	fig.	A	B	fig.	f
BIS C-61R		110	-	32	60
BIS C-61R		40	40	40	60

Read/write system Mini flag/Processor

Dimension



Type	BIS C-306-__		BIS C-310-__						
Mounting in steel	Flush mountable		Non-flush mountable						
Operating temperature range	0...+70°C		0...+70°C						
Storage temperature range	-20...+85°C		-20...+85°C						
Protection class(Per IEC 60529)	IP67		IP67						
Connection type	cable		cable						
Connection cable	cable material	PUR		PUR					
	cable length	1m/5m/10m ¹⁾		1m/5m/10m ¹⁾					
Applicable Data carrier	BIS C-130-05/L		BIS C-108-_/L	BIS C-117-05/A	BIS C-117-05/L	BIS C-128-_/L	BIS C-130-05/L		
Mounting in steel(○:flush/ ×:non-flush)	○	×	×	○	×	○	×	×	
Write distance mm	0-4	0-4	0-12	1-12	0-13	0-8	0-13	0-11	
Read distance mm	0-4	0-4	0-12	1-12	0-13	0-8	0-13	0-11	
Offset mm at distance	1mm	± 3.5	± 5	± 10	± 7.5	± 11	± 8	± 10	± 9
	3mm	± 3	± 4	± 9	± 7.5	± 10	± 7	± 10	± 8
	5mm			± 9	± 7	± 10	± 6.5	± 9	± 7
	7mm			± 8.5	± 6.5	± 9.5	± 5.5	± 9	± 5
	10mm								
	15mm								
20mm									

Remarks of flush-mounting to non-ferrous metal

When data carrier or R/W head is used at flush mounted condition to nonferrous metal (aluminum/ brass), R/W distance and offset tolerance will be different from above-mentioned value.

Please contact us about required condition for fixing to non ferrous metal.

Please specify the type number as shown below;
(ex)

To order Read/write head BIS C-306-__ in 5m

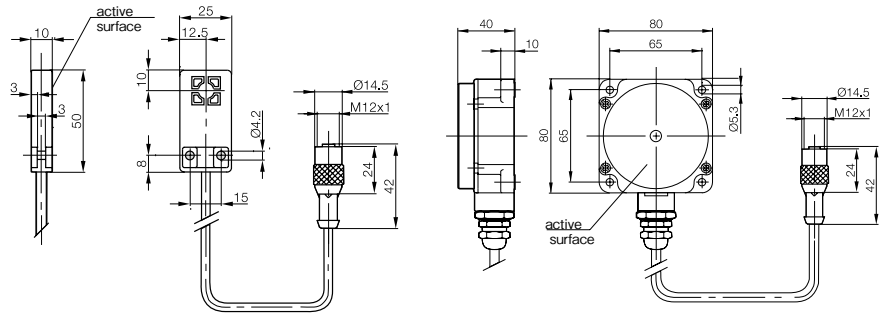
BIS C-306-05
cable length

1) When cable length is 10m, communication distance decreases 10%.

Please do not extend or cut the cable of R/W head to avoid error caused by unstable communication.

Read/write system Mini flag/Read/write head

Dimension



Type	BIS C-305-__	BIS C-315-__						
Mounting in steel	Flush mountable	Flush mountable						
Operating temperature range	0...+70°C	0...+70°C						
Storage temperature range	-20...+85°C	-20...+85°C						
Protection class(Per IEC 60529)	IP67	IP67						
Connection type	cable	cable						
Connection cable	PVC	PUR						
<table border="0"> <tr> <td>cable material</td> <td></td> <td></td> </tr> <tr> <td>cable length</td> <td>1m/5m/10m¹⁾</td> <td>1m/5m/10m¹⁾</td> </tr> </table>	cable material			cable length	1m/5m/10m ¹⁾	1m/5m/10m ¹⁾		
cable material								
cable length	1m/5m/10m ¹⁾	1m/5m/10m ¹⁾						

Applicable Data carrier

	BIS C-108-__/_L	BIS C-117-05/A	BIS C-117-05/L	BIS C-128-05/L	BIS C-130-05/L	BIS C-108-__/_L	BIS C-117-05/A	BIS C-117-05/L	BIS C-128-__/_L	BIS C-130-05/L
Mounting in steel(○:flush/ ×:non-flush)	×	○	×	×	×	×	○	×	×	×
Write distance mm	0-6	1-8	0-7	0-6	0-7	2-16	0-15	0-20	0-18	0-18
Read distance mm	0-6	1-8	0-7	0-6	0-7	2-16	0-15	0-20	0-18	0-18
Offset in mm at distance										
1mm	± 8	± 5	± 8.5	± 8	± 5	-	± 15	± 17	± 17	± 16
3mm	± 7	± 4	± 7.5	± 7	± 5	± 14	± 15	± 17	± 17	± 16
5mm	± 5	± 3	± 6	± 5	± 4	± 12	± 14	± 17	± 17	± 16
7mm			± 4		± 2	± 11	± 12	± 15	± 15	± 14
10mm						± 8	± 12	± 15	± 15	± 14
15mm								± 14	± 14	± 11
20mm										

R/W head

Input/Output specification

Mini-flag ID Reader (8 bit and 64 bit)

A) Input/Output signal

Signal	I/O	Color	Description
24V	---	WH	for connecting + (24V) of supply voltage 24V DC
0V	---	Pale BU	for connecting - (0V) of supply voltage 24V DC
AD1	Input	BN + dot	for input of address select 1 ^{*6}
AD2	Input	RD + dot	for input of address select 2 ^{*6}
AD3	Input	OG + dot	for input of address select 3 ^{*6}
AD COM	---	YE + dot	address select common ^{*6}
OUT1	Output	BN	for output of reading data bit 0
OUT2	Output	RD	for output of reading data bit 1
OUT3	Output	OG	for output of reading data bit 2
OUT4	Output	YE	for output of reading data bit 3
OUT5	Output	GN	for output of reading data bit 4
OUT6	Output	BU	for output of reading data bit 5
OUT7	Output	VT	for output of reading data bit 6
OUT8	Output	GY	for output of reading data bit 7
OUT9	Output	BK	for output [read data valid] from Data carrier

*6 Only 64 bit version

B) LED indication

Light on when [read data valid] (output) is ON.

Mini-flag ID Reader (16 bit/ Dinamic type)

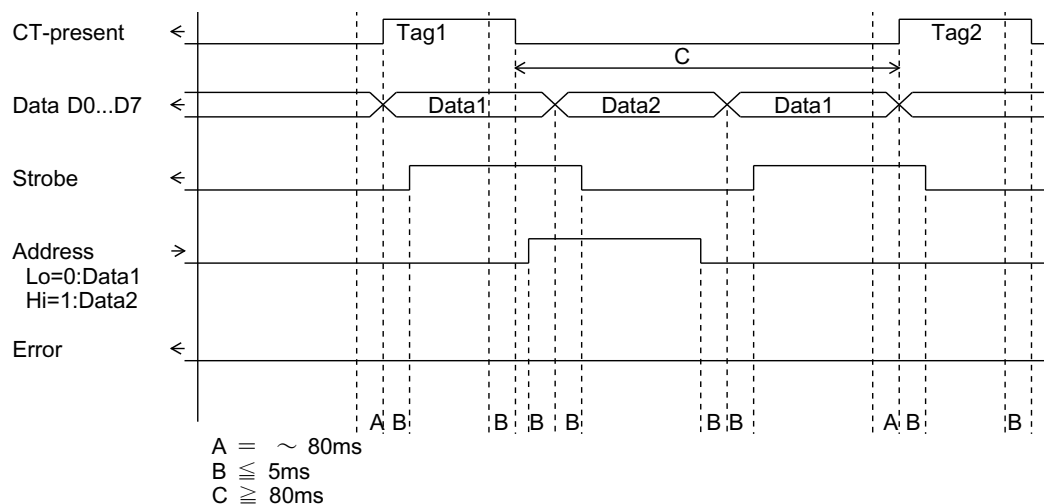
A) Input/Output signal

Signal	I/O	Color	Description
24V	---	WH	for + (24V side) of 24V DC
0V	---	Pale BU	for - (0V side) of 24V DC
Address	Input	OG + dot	address
Input select	---	YE + dot	Select NPN/PNP type of input signal (NPN : to 24V, PNP : to 0V)
Storbe	Output	BN + dot	invert at changeover timing of data output
Data D0	Output	BN	for output of reading data bit0
Data D1	Output	RD	for output of reading data bit1
Data D2	Output	OG	for output of reading data bit2
Data D3	Output	YE	for output of reading data bit3
Data D4	Output	GN	for output of reading data bit4
Data D5	Output	BU	for output of reading data bit5
Data D6	Output	VT	for output of reading data bit6
Data D7	Output	GY	for output of reading data bit7
CT-present	Output	BK	Turn ON when Data carrier is within communication range
Error	Output	RD + dot	Turn ON when data of Data carrier cannot be read

B) LED indication

Light on when ID Reader is communicating with a Data carrier.

Timing diagram / Normal



■ Mini-flag Processor

A) Input/Output signal

Signal	I/O	Pin No.	Description
A+	---	1	for connecting "brown" cable of read/write head
A-	---	2	for connecting "blue" cable of read/write head
AF	---	3	for connecting "black" cable of read/write head
FG	---	4	for frame ground
+V	---	5	for connecting + (24V) of supply voltage 24V DC ^{*1}
0V	---	6	for connecting - (0V) of supply voltage 24V DC ^{*1}
I1	Input	7	for input of writing data bit 0 ^{*2}
I2	Input	8	for input of writing data bit 1 ^{*3}
I3	Input	9	for input of writing data bit 2 ^{*4}
I4	Input	10	for input of writing data bit 3
I5	Input	11	for input of writing data bit 4
I6	Input	12	for input of writing data bit 5
I7	Input	13	for input of writing data bit 6
I8	Input	14	for input of data writing bit 7
WR	Input	15	for command to Data carrier for data writing
O1	Output	16	for output of reading data bit 0
O2	Output	17	for output of reading data bit 1
O3	Output	18	for output of reading data bit 2
O4	Output	19	for output of reading data bit 3
O5	Output	20	for output of reading data bit 4
O6	Output	21	for output of reading data bit 5
O7	Output	22	for output of reading data bit 6
O8	Output	23	for output of data reading bit 7
DV	Output	24	for output [read data valid] from Data carrier.
WF	Output	25	for output [writing finished] to Data carrier.

*1 BIS-C-40R-001-08P / BIS-C-40R-002-08P :
Power supply (+V, 0V) are in the opposite position.

*2 Also used as the address select data (AD1).

*3 Also used as the address select data (AD2).

*4 Also used as the address select data (AD3).

B) LED indication

READY	Light on when the processor is ready
I1...I8	Light on when writing data input is ON
IWR	Light on when data writing command (input) is ON
O1...O8	Light on when output is ON
DV	Light on when data valid (output) is ON
WF	Light on when data writing completed is ON ^{*5}

*5 In 64-bit version, light ON when address select data is input and OFF when data writing is finished.

Specification is a subject to change without notice.

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