



# HARL-U2

## Communication Specifications

Before using this product, read this manual thoroughly to fully understand its specifications, performance, and operating procedures.  
Keep this manual handy so that you can consult it whenever necessary.

Robotics Division, HIRATA Corporation  
1016-6 Kusuno, Kumamoto  
Tel: 096-245-1333 Fax: 096-245-0816

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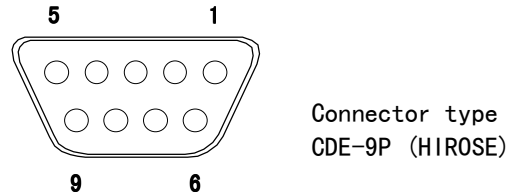
## Chapter 1 Overview

This manual presents descriptions of the communication commands exclusive to the HARL-U2. For descriptions of any other items not covered in this manual, refer to the manual for the HRCS-R3.

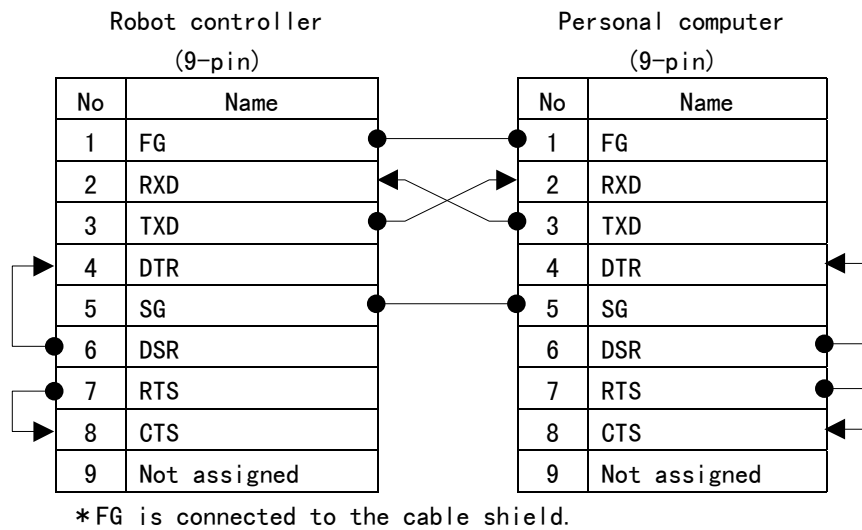
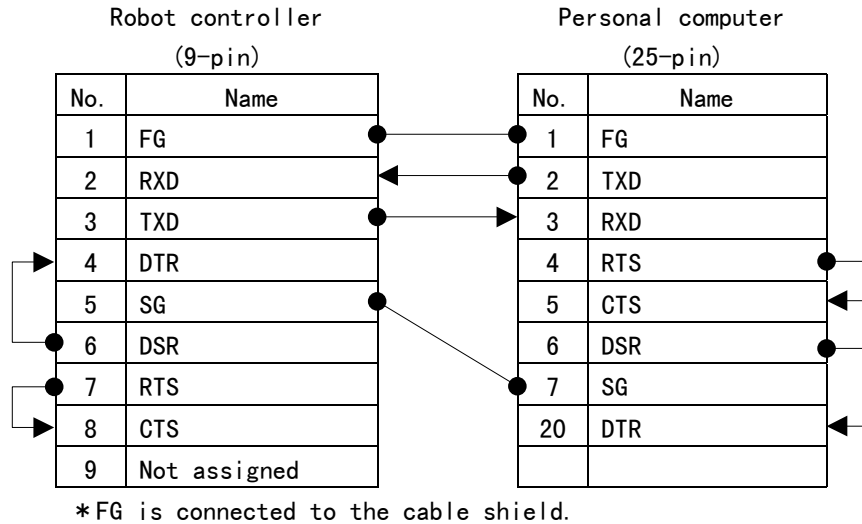
# Chapter 2 Specifications

## 2.1 Connection

On the HNC-58 series controller, the following type of connector is used for the serial port. The following shows pin configuration and connection to an external device such as a personal computer.



Pin configuration and connection to a personal computer

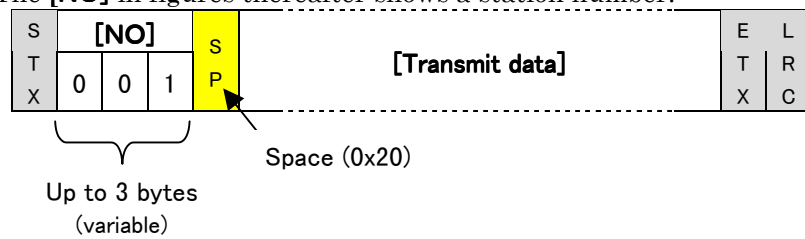


## 2.2 Station numbers

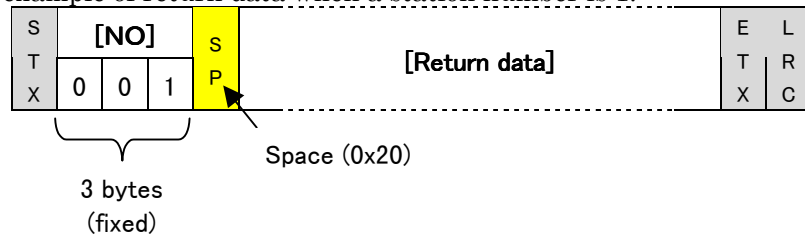
The HNC-58 series requires a station number to be specified at the beginning of transmit data. Station numbers can be set by SYSTEM GENERATION → MAINTENANCE → MAINTENANCE DATA → STATION NO. For a detailed procedure for setting station numbers, refer to the 580 Series Controller Teach Pendant Operation Manual. When the HNC receives data, it checks the station number contained and gives a command to the robot to which the same station number is assigned. If the HNC cannot find a robot with the same station number, it returns no data. Default station numbers are:

- Robot 1        1
- Robot 2        2
- Robot 3        3
- Robot 4        4

The following figure shows an example of transmit data when a station number is 1. The **[NO]** in figures thereafter shows a station number.

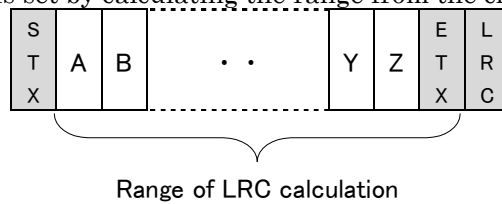


The data sent back from the HNC also contains a station number. The following is an example of return data when a station number is 1.

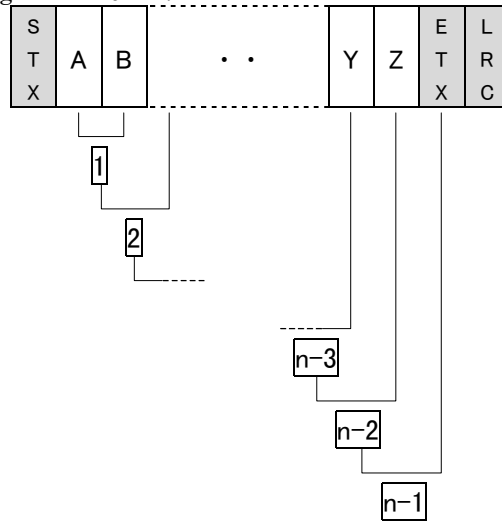


## 2.3 Calculation of LRC

LRC is set by calculating the range from the character after STX through ETX.



For example, when the number of characters from the character after STX through ETX is “n”:



- (1) Perform an XOR operation on the first character of transmit data ‘A’ and the second character ‘B.’ —  $\boxed{1}$
- (2) Perform an XOR operation on the operation result  $\boxed{1}$  and the third character. —  $\boxed{2}$
- •
- •
- (n-1) Perform an XOR operation on the operation result  $\boxed{n-2}$  and the last (n'th) character ‘ETX.’ —  $\boxed{n-1}$
- (n) The obtained result  $\boxed{n-1}$  is LRC.

The following is a truth table of XOR operations for reference.

XOR (  $\boxed{A}$  XOR  $\boxed{B}$  )

$\boxed{A}$	$\boxed{B}$	$\boxed{A}$ XOR $\boxed{B}$
0	0	0
0	1	1
1	0	1
1	1	0

## Chapter 3 Command list

- LN (load) commands
- SN (save) commands

### List of commands for HARL-U2 only

	LN (Load)	SN (Save)
A	START program	START program (*)
B	Memory bit status	Memory bit status
C		
D	Register data	Register data
E	Expanded parameters	Expanded parameters (*)
F		
G		
H	HAND program	HAND program
I	DI status	
J		
K		
L	Offset table	Offset table
M	MAIN program	MAIN program (*)
N		
O	DO status	DO status
P		
Q		
R	Execution status	
S	SUB program	SUB program (*)
T	Timer data	Timer data
U		
V	Version information	
W		
X	System settings	System settings (*)
Y		
Z	For semiconductors only	For semiconductors only

**(\*) Do not execute this command during automatic operation. It may cause the failure of a robot and/or its peripheral equipment.**

### 3.1 LN (load) commands

1. LN commands read the following information from the robots.
  - program
  - status of DI/DO or memory bit
  - timer value
  - data
  - offset table data
  - program information
2. When a robot is under abnormal conditions and is unable to return data normally, it sends “E” + **[Status]** instead of data, in order to indicate the occurrence of error.  
 For details on the **[Status]**, refer to the manual for the HRCS-R3.

#### 3.1.1 LNA command

**【Function】**

Reads the a specified step in the START program.

**【Transmit data format】**

S T X	[NO]	S P	L	N	A	S P	0	S P	[Step]	E T X	L R C
-------------	------	--------	---	---	---	--------	---	--------	--------	-------------	-------------

**[Step]** Specifies a step between 0 and 255 (default, variable) in the START program.

**【Return data format】**

S T X	[NO]	S P	[Step]	S P	[Command]	S P	[Data 1]	~
-------------	------	--------	--------	--------	-----------	--------	----------	---

~	S P	[Data 2]	S P	[Data 3]	S P	[Data 4]	E T X	L R C
---	--------	----------	--------	----------	--------	----------	-------------	-------------

- [Step]** Contains the specified step between 0 and 255 (default, variable) in the START program.
- [Command]** Contains the command of the specified step in the START program.
- [Data 1]** Contains data 1 of the specified step in the START program. When data 1 does not exist, no further data will be returned.
- [Data 2]** Contains data 2 of the specified step in the START program. When data 2 does not exist, no further data will be returned.
- [Data 3]** Contains data 3 of the specified step in the START program. When data 3 does not exist, no further data will be returned.
- [Data 4]** Contains data 4 of the specified step in the START program. When data 4 does not exist, no further data will be returned.



**【Description】**

When the specified step is invalid, “E” + **【Status】** will be returned instead of data, in order to indicate the occurrence of error.

For details on the **【Status】**, refer to the manual for the HRCS-R3.

S T X	[NO]	S P	E	[Status]	E T X	L R C
-------------	------	--------	---	----------	-------------	-------------

**3.1.2 LNM command**

**【Function】**

Reads a specified step in the specified MAIN program.

**【Transmit data format】**

S T X	[NO]	S P	L	N	M	S P	[No.]	S P	[Step]	E T X	L R C
-------------	------	--------	---	---	---	--------	-------	--------	--------	-------------	-------------

**【No.】** Specifies a MAIN program number between 0 and 15 (default, variable).

**【Step】** Specifies a step between 0 and 255 (default, variable) in the MAIN program.

**【Return data format】**

S T X	[NO]	S P	[Step]	S P	[Command]	S P	[Data 1]	~
~	S P	[Data 2]	S P	[Data 3]	S P	[Data 4]	E T X	L R C

**【Step】** Contains the specified step between 0 and 255 (default, variable) in the MAIN program.

**【Command】** Contains the command of the specified step in the MAIN program.

**【Data 1】** Contains data 1 of the specified step in the MAIN program. When data 1 does not exist, no further data will be returned.

**【Data 2】** Contains data 2 of the specified step in the MAIN program. When data 2 does not exist, no further data will be returned.

**【Data 3】** Contains data 3 of the specified step in the MAIN program. When data 3 does not exist, no further data will be returned.

**【Data 4】** Contains data 4 of the specified step in the MAIN program. When data 4 does not exist, no further data will be returned.

**【Description】**

When the specified step is invalid, “E” + **【Status】** will be returned instead of data, in order to indicate the occurrence of error.

**3.1.3 LNS command**

Reads a specified step in the specified SUB program. Refer to the section of LNM command.

**3.1.4 LNH command**

Reads a specified step in the specified HAND program. Refer to the section of LNM command.

### 3.1.5 LNT command

#### 【Function】

Reads the data of a specified timer.

#### 【Transmit data format】

S T X	[NO]	SP	L	N	T	SP	[No.]	E T X	L R C
-------------	------	----	---	---	---	----	-------	-------------	-------------

[No.] Specifies a timer number between 0 and 15 (variable).

#### 【Return data format】

S T X	[NO]	SP	[Data]	E T X	L R C
-------------	------	----	--------	-------------	-------------

[Data] Contains the data between 0.00 and 9.99 (variable) of the specified timer.

#### 【Description】

When the specified timer is invalid, “E” + [Status] will be returned instead of data, in order to indicate the occurrence of error.

### 3.1.6 LND command

#### 【Function】

Reads the data of a specified register.

#### 【Transmit data format】

S T X	[NO]	SP	L	N	D	SP	[No.]	E T X	L R C
-------------	------	----	---	---	---	----	-------	-------------	-------------

[No.] Specifies a register number between 0 and 15 (variable).

#### 【Return data format】

S T X	[NO]	SP	[Data]	E T X	L R C
-------------	------	----	--------	-------------	-------------

[Data] Contains the data between 0000 and 9999 (variable) of the specified register.

#### 【Description】

When the specified register is invalid, “E” + [Status] will be returned instead of data, in order to indicate the occurrence of error.

### 3.1.7 LNL command

#### 【Function】

Reads the data of the specified offset table.

#### 【Transmit data format】

S T X	[NO]	SP	L	N	L	SP	[No.]	E T X	L R C
-------------	------	----	---	---	---	----	-------	-------------	-------------

[No.] Specifies an offset table number between 0 and 99 (variable).



**【Transmit data format 2】**

Reading by ports (eight bits)

S T X	[NO]	S P	L	N	I	D	S P	[No.]	E T X	L R C

[No.] Specifies a DI signal port number between 0 and 31 (variable).

**【Return data format 2】**

S T X	[NO]	S P	[MM]	E T X	L R C

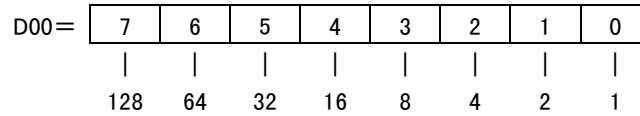
[MM] Contains the status between 0 and 255 (decimal number, variable) of the specified DI signal port.

**【Description】**

The following table shows the correspondence of signals and ports.

		Bit							
		B7	B6	B5	B4	B3	B2	B1	B0
Port	D00	7	6	5	4	3	2	1	0
	D01	15	14	13	12	11	10	9	8
	D02	23	22	21	20	19	18	17	16
	D03	31	30	29	28	27	26	25	24
	D04	39	38	37	36	35	34	33	32
	D05	47	46	45	44	43	42	41	40
	D06	55	54	53	52	51	50	49	48
	D07	63	62	61	60	59	58	57	56
	D08	71	70	69	68	67	66	65	64
	D09	79	78	77	76	75	74	73	72
	D10	87	86	85	84	83	82	81	80
	D11	95	94	93	92	91	90	89	88
	D12	103	102	101	100	99	98	97	96
	D13	111	110	109	108	107	106	105	104
	D14	119	118	117	116	115	114	113	112
	D15	127	126	125	124	123	122	121	120
	D16	135	134	133	132	131	130	129	128
	D17	143	142	141	140	139	138	137	136
	D18	151	150	149	148	147	146	145	144
	D19	159	158	157	156	155	154	153	152
	D20	167	166	165	164	163	162	161	160
	D21	175	174	173	172	171	170	169	168
	D22	183	182	181	180	179	178	177	176
	D23	191	190	189	188	187	186	185	184
	D24	199	198	197	196	195	194	193	192
	D25	207	206	205	204	203	202	201	200
	D26	215	214	213	212	211	210	209	208
	D27	223	222	221	220	219	218	217	216
	D28	231	230	229	228	227	226	225	224
	D29	239	238	237	236	235	234	233	232
	D30	247	246	245	244	243	242	241	240
	D31	255	254	253	252	251	250	249	248

For example, in the case of port D00, it consists of eight bits from bit 0 through bit 7, and **[MM]** shall be set based on the relationship shown below.



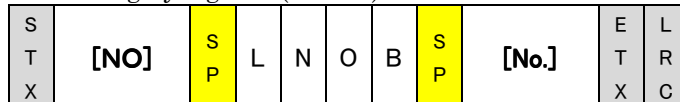
### 3.1.9 LNO command

**【Function】**

Reads the status of a specified DO signal.

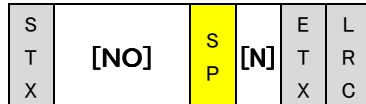
**【Transmit data format 1】**

Reading by signals (one bit)



**[No.]** Specifies a DO signal bit number between 0 and 255 (variable).

**【Return data format 1】**

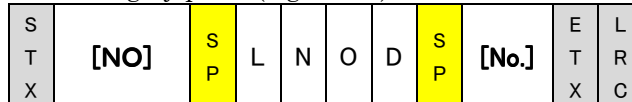


**[N]** Contains the status of the specified DO signal bit by 0 (OFF) or 1 (ON).

**【Description】**

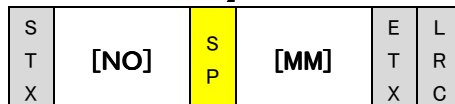
**【Transmit data format 2】**

Reading by ports (eight bits)



**[No.]** Specifies a DO signal port number between 0 and 31 (variable).

**【Return data format 2】**



**[MM]** Contains the status between 0 and 255 (decimal number, variable) of the specified DO signal port.

For the correspondence of signals and ports, refer to the section of LNI command.

**【Description】**

### 3.1.10 LNB command

**【Function】**

Reads the status of a specified memory bit.

**【Transmit data format 1】**

Reading by bits (one bit)

S T X	[NO]	SP	L	N	B	B	SP	[No.]	E	L
									T	R
									X	C

[No.] Specifies a memory bit number between 256 and 383 (variable).

**【Return data format 1】**

S T X	[NO]	SP	[N]	E	L
				T	R
				X	C

[N] Contains the status of the specified memory bit by 0 (OFF) or 1 (ON).

**【Description】**

**【Transmit data format 2】**

Reading by ports (eight bits)

S T X	[NO]	SP	L	N	B	D	SP	[No.]	E	L
									T	R
									X	C

[No.] Specifies a memory port number between 0 and 15 (variable).

**【Return data format 2】**

S T X	[NO]	SP	[MM]	E	L
				T	R
				X	C

**【Description】**

[MM] Contains the status between 256 and 383 (decimal number, variable) of the specified memory port.

The following table shows the correspondence of bits and ports.

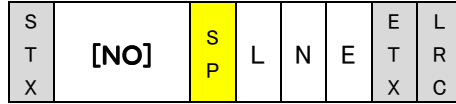
		Bit							
		B7	B6	B5	B4	B3	B2	B1	B0
Port	D00	263	262	261	260	259	258	257	256
	D01	271	270	269	268	267	266	265	264
	D02	269	268	267	266	265	264	273	272
	D03	287	286	285	284	283	282	281	280
	D04	295	294	293	292	291	290	289	288
	D05	303	302	301	300	299	298	297	296
	D06	311	310	309	308	307	306	305	304
	D07	319	318	317	316	315	314	313	312
	D08	327	326	325	324	323	322	321	320
	D09	335	334	333	332	331	330	329	328
	D10	343	342	341	340	339	338	337	336
	D11	351	350	349	348	347	346	345	344
	D12	359	358	357	356	355	354	353	352
	D13	367	366	365	364	363	362	361	360
	D14	375	374	373	372	371	370	369	368
	D15	383	382	381	380	379	378	377	376

### 3.1.11 LNE command

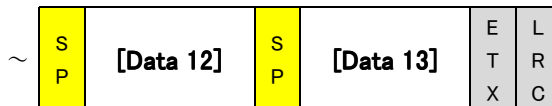
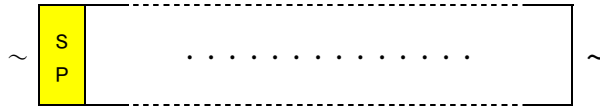
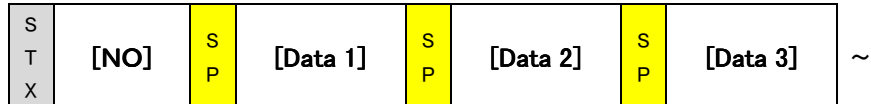
**【Function】**

Reads expanded parameters.

**【Transmit data format】**



**【Return data format】**



- 【Data 1】** Contains the PUL L LIMIT value.
- 【Data 2】** Contains the ARCH MOTION value.
- 【Data 3】** Contains the TABLE DATA value.
- 【Data 4】** Contains the Z UP DIS 1 value.
- 【Data 5】** Contains the Z DN DIS 1 value.
- 【Data 6】** Contains the Z UP DIS 2 value.
- 【Data 7】** Contains the Z DN DIS 2 value.
- 【Data 8】** Contains the Z UP DIS 3 value.
- 【Data 9】** Contains the Z DN DIS 3 value.
- 【Data 10】** Contains the PULL RATE value.
- 【Data 11】** Contains the I/O STATUS value.
- 【Data 12】** Contains the Z STOP POS. value.
- 【Data 13】** Contains the PRG. COUNT value.

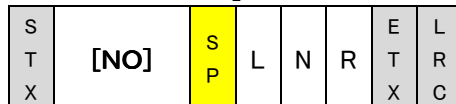
**【Description】**

### 3.1.12 LNR command

**【Function】**

Obtains the status, program type, program number, and step in execution on each task from task 0 through task 4.

**【Transmit data format】**



**【Return data format】**

S T X	[NO]	S P	Task 0					[L]	~
			[S]	S P	[K]	S P	[N]		
~	S P	Task 1						~	
		[S]	S P	[K]	S P	[N]	S P		[L]
~	S P	Task 2						~	
		[S]	S P	[K]	S P	[N]	S P		[L]
~	S P	Task 3						~	
		[S]	S P	[K]	S P	[N]	S P		[L]
~	S P	Task 4						E T X	L R C
		[S]	S P	[K]	S P	[N]	S P		

- [S]** Contains the status of each task.
- 0: Stop
  - 1: In execution
  - 2: Suspended
  - 4: Complete
  - 8: Error
- [K]** Contains the program type of each task.
- START: START program
  - MAIN: MAIN program
  - SUB: SUB program
  - HAND: HAND program
- [N]** Contains the program number of each task.
- [L]** Contains the step number of each task.

**【Description】**

**3.1.13 LNV command**

**【Function】**

Obtains the version information of the HARL-U2.

**【Transmit data format】**

S T X	[NO]	S P	L	N	V	E T X	L R C
-------------	------	--------	---	---	---	-------------	-------------

**【Return data format】**

S T X	[NO]	S P	[Version]	E T X	L R C
-------------	------	--------	-----------	-------------	-------------

**[Version]** Contains the version number of the HARL-U2 (5.00).

**【Description】**



### 3.1.14 LNX command

**【Function】**

Reads the program information set in the HARL-U2.

**【Transmit data format】**

S T X	[NO]	S P	L	N	X	E T X	L R C
-------------	------	--------	---	---	---	-------------	-------------

**【Return data format】**

S T X	[NO]	S P	START			S P	MAIN			~
			[P]	S P	[S]		[P]	S P	[S]	

~	S P	SUB			S P	HAND			~
		[P]	S P	[S]		[P]	S P	[S]	

~	S P	[T]	S P	[M]	S P	[R]	E T X	L R C
---	--------	-----	--------	-----	--------	-----	-------------	-------------

- [P] Contains the number of programs set for each program type.
- [S] Contains the number of steps set for each program type.
- [T] Contains the number of timers.
- [M] Contains the number of memory bits.
- [R] Contains the number of registers.

**【Description】**

## 3.2 SN (SAVE) commands

1. SN commands write the following information into the robots.
  - program
  - status of DI/DO or memory bit
  - timer value
  - data
  - offset table data
  - program information
2. When a robot is under abnormal conditions and it is impossible to write data normally, it returns “E” + **【Status】**.  
 For details on the **【Status】**, refer to the manual for the HRCS-R3.

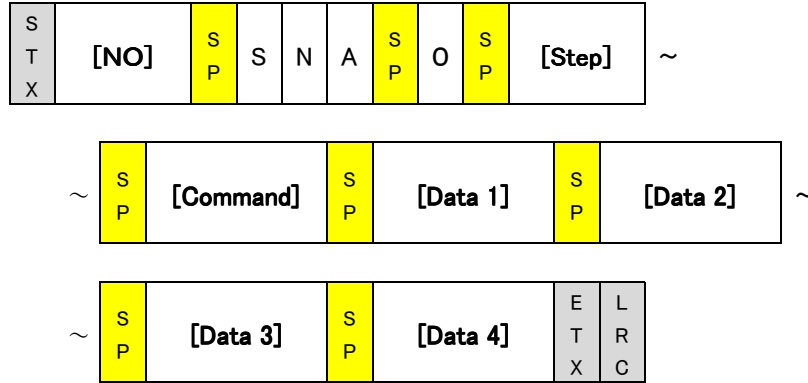
### 3.2.1 SNA command

(\*) Do not execute this command during automatic operation. It may cause the failure of a robot and/or its peripheral equipment.

**【Function】**

Writes a statement on a specified step of the START program.

**【Transmit data format】**



**【Step】** Specifies a step between 0 and 255 (default, variable) in the START program.

**【Command】** Specifies a command for the specified step in the START program.

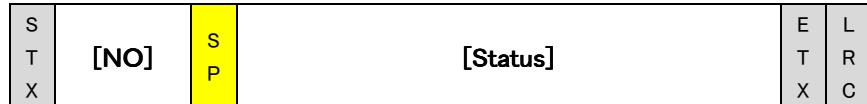
**【Data 1】** Sets data 1 of the specified step in the START program.

**【Data 2】** Sets data 2 of the specified step in the START program.

**【Data 3】** Sets data 3 of the specified step in the START program.

**【Data 4】** Sets data 4 of the specified step in the START program.

**【Return data format】**



**【Description】**

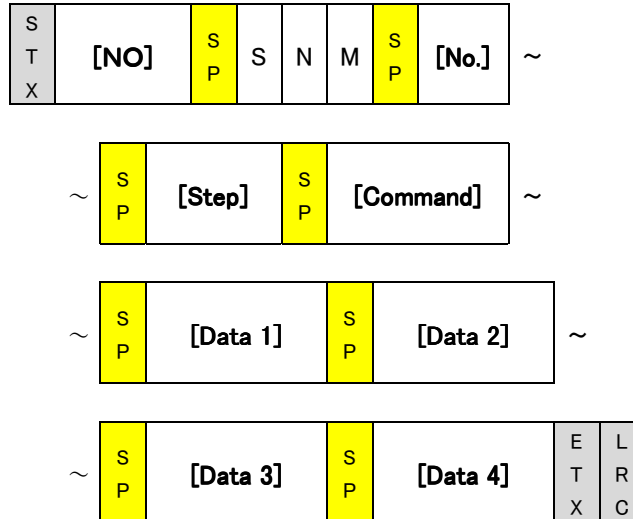
### 3.2.2 SNM command

(\*) Do not execute this command during automatic operation. It may cause the failure of a robot and/or its peripheral equipment.

**【Function】**

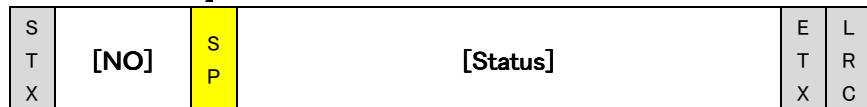
Writes a statement on a specified step of a MAIN program.

**【Transmit data format】**



- 【Program】** Specifies a MAIN program number between 0 and 15 (default, variable).
- 【Step】** Specifies a step between 0 and 255 (default, variable) in the MAIN program.
- 【Command】** Specifies a command for the specified step in the MAIN program.
- 【Data 1】** Sets data 1 of the specified step in the MAIN program.
- 【Data 2】** Sets data 2 of the specified step in the MAIN program.
- 【Data 3】** Sets data 3 of the specified step in the MAIN program.
- 【Data 4】** Sets data 4 of the specified step in the MAIN program.

**【Return data format】**



**【Description】**

**3.2.3 SNS command**

(\*) Do not execute this command during automatic operation. It may cause the failure of a robot and/or its peripheral equipment.

Writes a statement on a specified step of a specified SUB program. Refer to the section of SNM command.

**3.2.4 SNH command**

(\*) Do not execute this command during automatic operation. It may cause the failure of a robot and/or its peripheral equipment.

Writes a statement on a specified step of a specified HAND program. Refer to the section of SNM command.

### 3.2.5 SNT command

#### 【Function】

Writes the data of a specified timer.

#### 【Transmit data format】

S T X	[NO]	SP	S	N	T	SP	[No.]	SP	[Data]	E T X	L R C

[No.] Specifies a timer number between 0 and 15 (variable).

[Data] Specifies timer data between 0.00 and 9.99 (variable).

#### 【Return data format】

S T X	[NO]	SP	[Status]							E T X	L R C

#### 【Description】

### 3.2.6 SND command

#### 【Function】

Writes the data of a specified register.

#### 【Transmit data format】

S T X	[NO]	SP	S	N	D	SP	[No.]	SP	[Data]	E T X	L R C

[No.] Specifies a register number between 0 and 63 (variable).

[Data] Specifies register data between 0000 and 9999 (variable).

#### 【Return data format】

S T X	[NO]	SP	[Status]							E T X	L R C

#### 【Description】

### 3.2.7 SNL command

#### 【Function】

Writes the data of a specified offset table.

**【Transmit data format】**

S T X	[NO]	S P	S	N	L	S P	[No.]	~
-------------	------	--------	---	---	---	--------	-------	---

~	S X	[X data]	S P	[Y data]	S P	[Z data]	S P	[W data]	~
---	--------	----------	--------	----------	--------	----------	--------	----------	---

~	S T X	[R data]	S P	[C data]	S P	[M data]	S P	[F code]	E T X	L R C
---	-------------	----------	--------	----------	--------	-------------	--------	-------------	-------------	-------------

- [No.]** Specifies an offset table number between 0 and 99 (variable).
- [X data]** Specifies X data between -9999.99 and 9999.99 (variable) for the specified offset table.
- [Y data]** Specifies Y data between -9999.99 and 9999.99 (variable) for the specified offset table.
- [Z data]** Specifies W data between -9999.99 and 9999.99 (variable) for the specified offset table.
- [W data]** Specifies Z data between -9999.99 and 9999.99 (variable) for the specified offset table.
- [R data]** Specifies R data between -9999.99 and 9999.99 (variable) for the specified offset table.
- [C data]** Specifies C data between -9999.99 and 9999.99 (variable) for the specified offset table.
- [M data]** Specifies M data between 0 and 99 (variable) for the specified offset table.
- [F code]** Specifies F code between 0 and 99 (variable) for the specified offset table.

**【Return data format】**

S T X	[NO]	S P	[Status]	E T X	L R C
-------------	------	--------	----------	-------------	-------------

**【Description】**

**3.2.8 SNO command**

**【Function】**

Writes the status of a specified DO signal.

**【Transmit data format 1】**

Writing by signals (Bit specification)

S T X	[NO]	SP	S	N	O	B	SP	[No.]	SP	[N]	E T X	L R C
-------------	------	----	---	---	---	---	----	-------	----	-----	-------------	-------------

[No.] Specifies a DI signal bit number between 0 and 255 (variable).

[N] Sets the status of the specified DI signal bit by 0 (OFF) or 1 (ON).

**【Return data format 1】**

S T X	[NO]	SP	[Status]								E T X	L R C
-------------	------	----	----------	--	--	--	--	--	--	--	-------------	-------------

**【Transmit data format 2】**

Writing by ports

S T X	[NO]	SP	S	N	O	D	SP	[No.]	SP	[MM]	E T X	L R C
-------------	------	----	---	---	---	---	----	-------	----	------	-------------	-------------

[No.] Specifies a DI signal port number between 0 and 31 (variable).

[MM] Sets the status of the specified DI signal port by a number between 0 and 255 (decimal number, variable).

**【Return data format 2】**

S T X	[NO]	SP	[Status]								E T X	L R C
-------------	------	----	----------	--	--	--	--	--	--	--	-------------	-------------

**【Description】**

For the correspondence of bits and ports, refer to the section of LNI command.

**3.2.9 SNB command**

**【Function】**

Writes the status of a specified memory bit.

**【Transmit data format 1】**

Writing by bits

S T X	[NO]	SP	S	N	B	B	SP	[No.]	SP	[N]	E T X	L R C
-------------	------	----	---	---	---	---	----	-------	----	-----	-------------	-------------

[No.] Specifies a memory bit number between 256 and 383 (variable).

[N] Sets the status of the specified memory bit by 0 (OFF) or 1 (ON).

**【Return data format 1】**

S T X	[NO]	SP	[Status]								E T X	L R C
-------------	------	----	----------	--	--	--	--	--	--	--	-------------	-------------

**【Transmit data format 2】**

Writing by ports

S T X	[NO]	SP	S	N	B	D	SP	[No.]	SP	[MM]	E T X	L R C
-------------	------	----	---	---	---	---	----	-------	----	------	-------------	-------------

[No.] Specifies a memory port number between 0 and 15 (variable).

[MM] Sets the status of the specified memory port by a number between 0 and 255 (decimal number, variable).

**【Return data format 2】**

S T X	[NO]	SP	[Status]	E T X	L R C
-------------	------	----	----------	-------------	-------------

**【Description】**

For the correspondence of bits and ports, refer to the section of LNB command.

**3. 2. 10 SNE command**

**(\*) Do not execute this command during automatic operation. It may cause the failure of a robot and/or its peripheral equipment.**

**【Function】**

Writes expanded parameters.

**【Transmit data format】**

S T X	[NO]	SP	S	N	E	~
-------------	------	----	---	---	---	---

~	SP	[Data 1]	SP	[Data 2]	SP	[Data 3]	~
---	----	----------	----	----------	----	----------	---

~	SP	.....	~
---	----	-------	---

~	SP	[Data 12]	SP	[Data 13]	E T X	L R C
---	----	-----------	----	-----------	-------------	-------------

[Data 1] Sets the PUL L LIMIT value.

[Data 2] Sets the ARCH MOTION value.

[Data 3] Sets the TABLE DATA value.

[Data 4] Sets the Z UP DIS 1 value.

[Data 5] Sets the Z DN DIS 1 value.

[Data 6] Sets the Z UP DIS 2 value.

[Data 7] Sets the Z DN DIS 2 value.

[Data 8] Sets the Z UP DIS 3 value.

[Data 9] Sets the Z DN DIS 3 value.

[Data 10] Sets the PULL RATE value.

[Data 11] Sets the I/O STATUS value.

[Data 12] Sets the Z STOP POS. value.

[Data 13] Sets the PRG. COUNT value.

**【Return data format】**

S T X	[NO]	S P	[Status]	E	L
				T	R
				X	C

**【Description】**

**3.2.11 SNX command**

(\*) Do not execute this command during automatic operation. It may cause the failure of a robot and/or its peripheral equipment.

**【Function】**

Writes program information for the HARL-U2.

**【Transmit data format】**

S T X	[NO]	S P	START			S P	MAIN			~
			[P]	S P	[S]		[P]	S P	[S]	
			~	S P	SUB		S P	HAND		
[P]	S P	[S]	[P]	S P	[S]					

[P] Sets the number of programs.

[S] Sets the number of steps.

**【Return data format】**

S T X	[NO]	S P	[Status]	E	L
				T	R
				X	C

**【Description】**

Writes program configuration of the HARL-U2.

Program configuration **MUST** be set before writing a program. If you should change program configuration, programs made will be broken.